



- Landscape of Overall Modification Business Drivers
- Our Understanding of Major Initiatives Across Lots for Upcoming Years

Our Understanding of Modifications and Enhancements

Deloitte understands that during the life of the contract term, application enhancements are required in an effort to advance DPW's technology goals of improving worker usability, system accuracy, and data quality. We understand DPW's application modification definition as:

A change to existing functionality of the application that requires execution of the systems development process (e.g., general and detailed designs, program specifications, coding, testing, implementation, and documentation).

We also recognize the distinct line between the modification of an application and simply performing maintenance tasks which do not qualify as modifications. Enhancements exist when program source code must be changed to implement a system, functional, or performance requirement beyond the current system's defined requirements, and may include:

- Implementation of new or changed functionality required to support programmatic or policy changes and/or new state or federal statutes or regulations.
- Enhancements to support desired operational improvements and efficiencies.
- At the Commonwealth's discretion, major in-scope upgrades and/or replacement of one or more components as a result of the Commonwealth/DPW MITA or EA-SOA vision.

As a long-time system integrator with DPW, Deloitte understands DPW's vision in terms of system modifications and the significance each enhancement carries in moving DPW closer to its goals. We will leverage this knowledge by delivering an experienced and skilled team to collaborate with DPW in future system modifications.

Our Understanding of the Allocation of Hours

As the need for application modifications arises and DPW provides Deloitte with the request for High-Level Estimate (HLE), we will collaborate with both DPW and the appropriate Lot 1-6 vendors to understand the business drivers, technology direction, and stakeholder expectations required to develop a HLE. We will then provide initial estimates for total hours and total cost for our respective SDLC phases and Lot 7 deliverables:

SDLC Phase	Deliverable(s)
Design	Detailed System Design
Development	Development report
Systems Testing	Integration Test Work Products
Implementation	Production Readiness Reports and Work Products, Operational Work Products, Production Readiness Notification, Production Deployment Report, Final Production Software Product

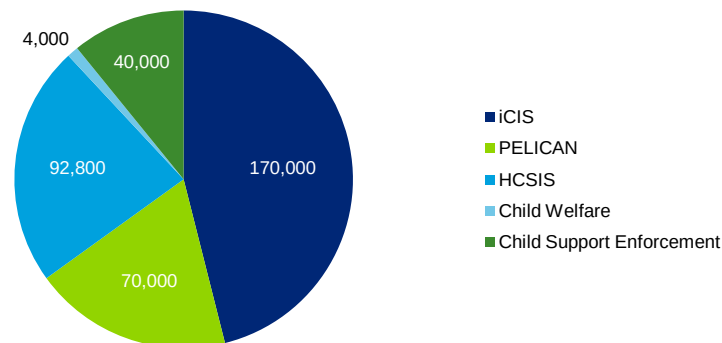
Figure 6.5-2. Deloitte understands the phases for the Lot 7 SDLC and the major deliverables associated for each phase.

We will leverage the input deliverables from the Lot 6 vendor detailing the system requirements and general system design to generate a work order listing cost and resource details, including:

- Total costs and hours of application/modification enhancement work.
- Itemized body of work to be completed based on specific work products/deliverables as appropriate for the Lot 7 vendor.
- Cost summary for the end deliverable which identifies resource classifications, quantity, and number of hours required to complete work product, and specific work products comprising the aforementioned Lot 7 vendor deliverables.

Deloitte understands DPW's Year 1 hour allocations across each of the the in-scope systems and will deliver the required number of qualified and experienced resources to successfully carry out approved modifications within this hour allocation. We will consider the hours allocated across the enterprise to note where resources may need to be heavily allocated, keeping in mind that our practitioners have the transferrable skills to adapt to tasks across several of the in-scope systems and can be leveled in this manner to undertake large enhancements.

DPW Year 1 Hour Allocations for Modifications and Enhancements



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Figure 6.5-3. Modification Hours Allocation for each DPW Application for Next Year as Outlined in Appendix L
Deloitte works with DPW to identify drivers of change and collaborate with DPW to implement the enhancements and modifications, which are in-line with the Enterprise Model.



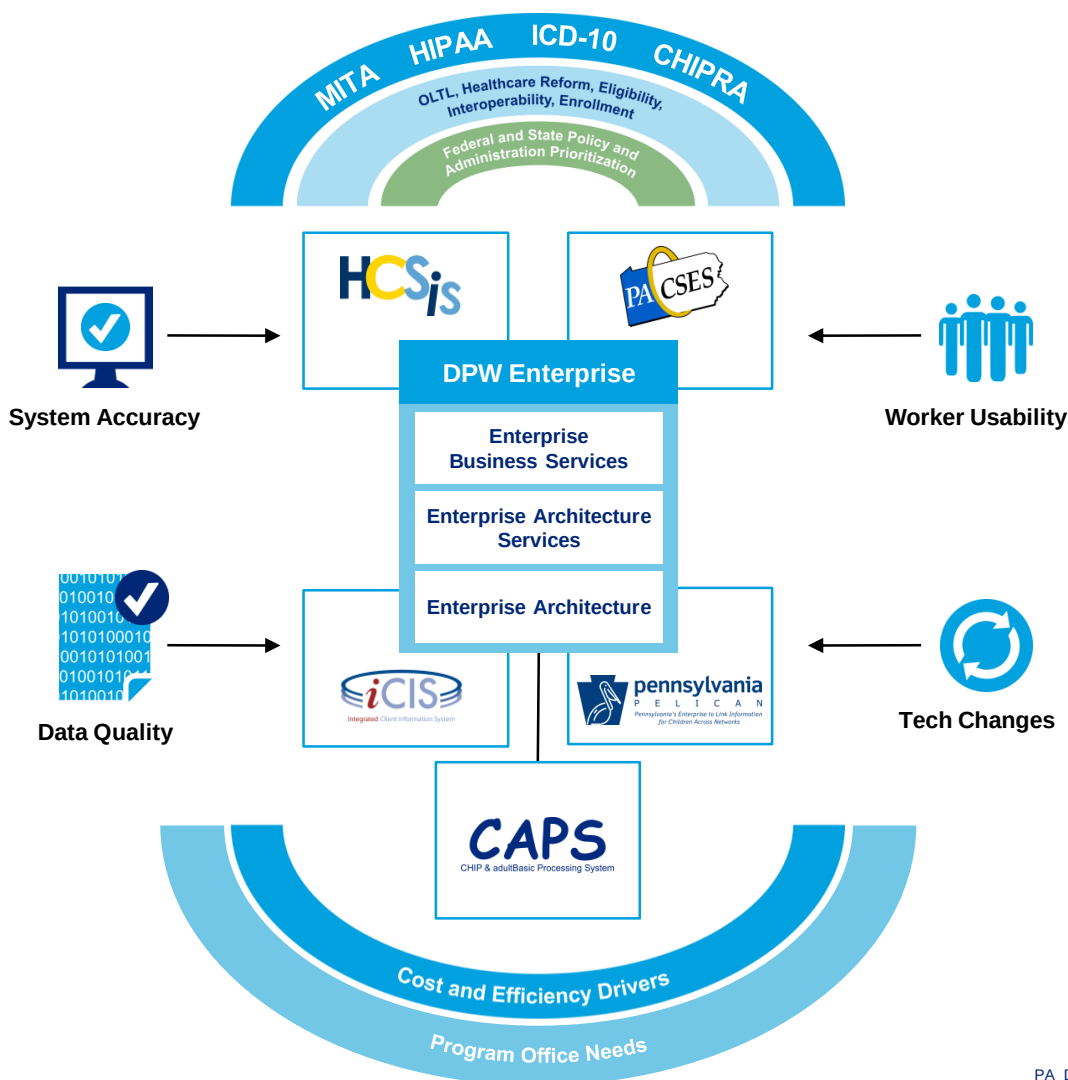
Deloitte has current resource capacity available to provide a minimum of 500,000 annual hours of modification work (consistent with FY09-10 and FY10-11 spend). While others will have to assemble a team of resources that have never worked together at DPW to provide 370,000 hours of modifications services, we are prepared and equipped to begin delivering those services promptly.

A key tenet of our approach to enhancements is that our support of normal maintenance activities will not be impacted by modification/enhancement work; we will work with DPW to carefully prioritize enhancements across the enterprise with the understanding that maintenance operations will not be interrupted from an effort, resource, or schedule perspective.

Landscape of Overall Modification Business Drivers

Figure 6.5-4 illustrates three major types of forces that drive modifications and enhancements within the DPW applications. Those forces can be categorized as follows:

- Transformative Policy Changes and Mandates
 - Healthcare Reform
 - Medicaid Information Technology Architecture (MITA)
 - Health Insurance Portability and Accountability Act (HIPAA)/International Classification of Diseases (ICD 10)
 - Children's Health Insurance Program Reauthorization Act (CHIPRA)
- DPW Program Office Initiatives
- DPW System and Technology Drivers
 - Worker Usability
 - System Accuracy
 - Data Quality
 - Technology Changes



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Figure 6.5-4. Drivers of Change.

Deloitte works with DPW to identify drivers of change and collaborate with DPW to implement the enhancements and modifications, which are in-line with the Enterprise Model.

Transformative policy changes such as national Healthcare Reform, MITA, HIPAA/ICD10, and CHIPRA promise to bring sweeping changes to the way states administer healthcare, deliver services to citizens, and enhance and maintain systems.

Similar driving forces exist in the form of the varying missions of each stakeholder population acting upon the DPW enterprise – each of whom can impact the direction of a system enhancement and modification. We recognize the coordination needed to successfully navigate complex policy changes and multiple stakeholder groups and will work with DPW to seek both system compliance to new regulation while satisfying the service delivery needs across a vast enterprise of stakeholders.

Finally, the overarching characteristics of a successful system that are continuous forces upon DPW – system accuracy, worker usability, data quality, and technology

changes – remain critical to DPW’s success as new initiatives are undertaken and continue to act as significant drivers of change for the enterprise.

The sections below describe each of the change drivers in detail including the timelines for implementing the change, how it will impact DPW, and how Deloitte can work hand-in-hand with DPW to navigate myriad of changes.

Transformative Policy Changes and Federal Mandates

Healthcare Reform

Health and Human Services agencies across the country are facing a myriad of new or changing policies requiring compulsory adoption in the coming years. Deloitte recognizes this challenge for states and has assembled its team of policy, business, and technology experts to synthesize what each of these drivers for change means. Much of this legislation and policy will impact DPW in that they will eventually take the form of modifications to DPW’s systems.

The Patient Protection and Affordable Care Act (PPACA) will impose sweeping changes to DPW services and systems centering on three areas (depicted in the Figure 6.5-5 below): Medicaid reform and simplification of eligibility rules, the creation of a health insurance exchange, and the establishment of a temporary high-risk pool allowing medical coverage for uninsured citizens with existing medical conditions.

PPACA and Impacts to Integrated Eligibility and Service Delivery

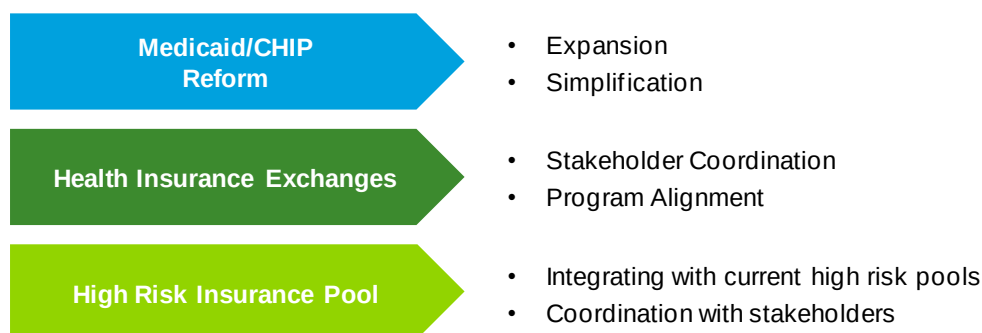


Figure 6.5-5. Major Categories of Changes Related to Health Care Reform.

Deloitte understands the changes that will be impacting DPW and thus can help DPW navigate through the changes.

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On the surface, adapting to these changes requires an expansion in technology services and software applications, expanded support staff, and increased administrative responsibilities. Deloitte helps DPW reduce this burden by integrating services across the enterprise and leveraging existing assets and business processes to comply with healthcare reform requirements thus reducing total effort of implementation.

Our Healthcare Reform POV: Leveraging Existing State Assets

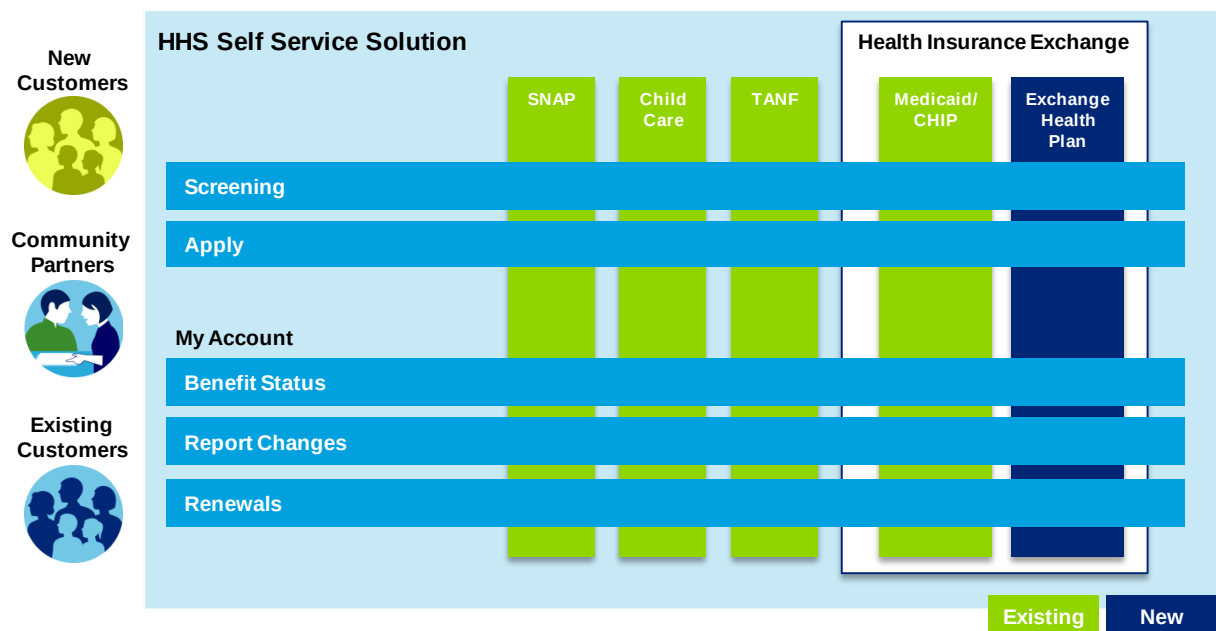


Figure 6.5-6. Deloitte leverages existing HHS State Assets.

Deloitte works with DPW to identify and build upon the blocks that are already there to address the policy changes.

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Deloitte's understanding of both healthcare reform and the current DPW enterprise places us in the unique position to team with DPW in delivering these system changes. Our policy and program experts have published their research in the form of Points-of-View (POVs) which we will share with DPW as part of the knowledge sharing and design processes. An example of this knowledge, centering on the establishment of a health insurance exchange, involves using DPW's existing self-service portal, COMPASS, to allow citizens access to the screening tools and applications for medical coverage.

We understand the long-term implications of healthcare reform in both the volume of system enhancement required as well as the impact to the fundamental services offered to Commonwealth citizens. We will work with DPW to prioritize its enhancement efforts in alignment with the DPW vision to achieve federal compliance and maintain the DPW enterprise vision.

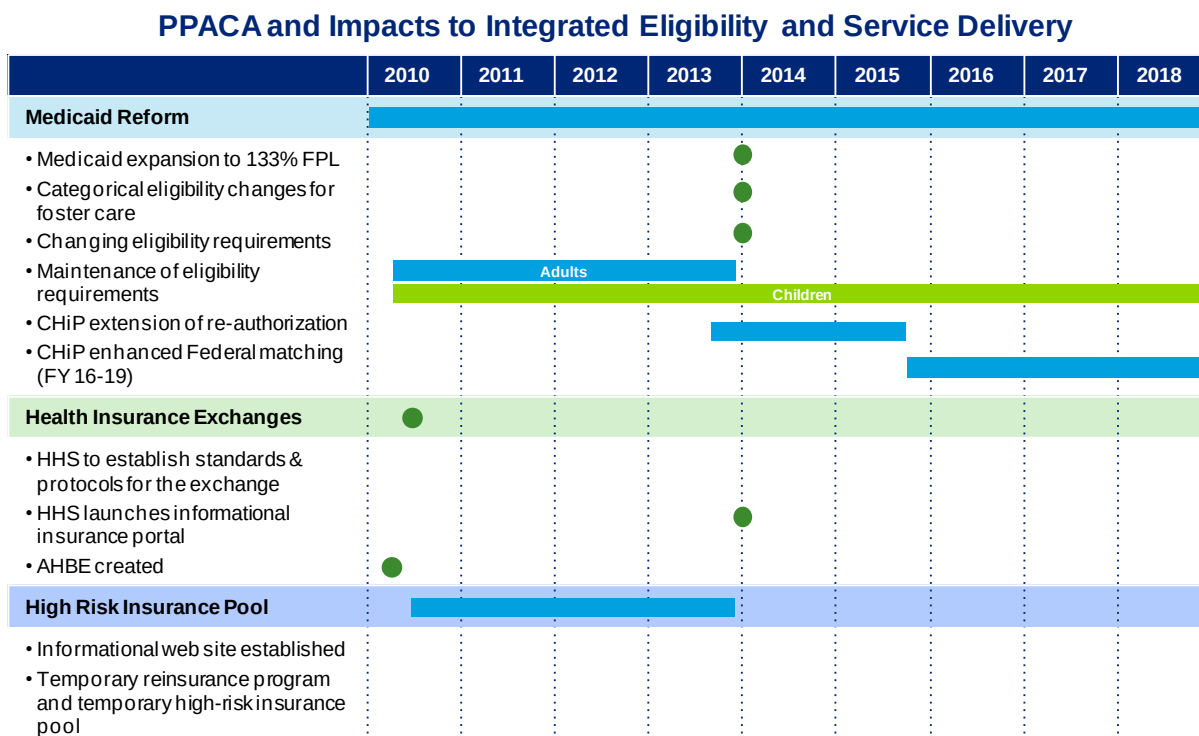
Have you heard?

Deloitte has a national group that researches and stays abreast of federal policy changes. The Deloitte Center for Health Solutions (DCHS) is the health services research arm of Deloitte LLP. The goal is to inform stakeholders in the health care system about emerging trends, challenges, and opportunities using rigorous research. The research is focused in three major areas:

- Health policy and health reforms in the US health care system
- Disruptive innovations that result in innovative solutions to improve efficiency and effectiveness
- Consumerism, incorporating how end users of health goods and services think and behave

We leverage this group and the findings to help our clients and DPW stay ahead of industry trends and challenges.

Figure 6.5-7 decomposes the major tasks within the healthcare reform act to illustrate the timelines set forth by law. By reviewing these timelines it is evident that significant coordination will be required across DPW stakeholders, program offices, and vendors to successfully achieve full compliance and deliver these increased services to citizens. The green dots on the timelines graphic below illustrate by when the States need to be ready to comply with the changes set forth in the Healthcare Reform.



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Figure 6.5-7. Healthcare Reform Timelines

In order to comply with the federal Healthcare reform timelines, Deloitte understands that a significant amount of work needs to be done by DPW over the next 24 months.

Medicaid Information Technology Architecture (MITA)

The MITA initiative, intended to foster service integration and coordination across state Medicaid systems, has significant impacts on the trajectory of Medicaid program delivery, interaction across the Medicaid enterprise, integration with broader human services programs in DPW's IT Portfolio, and DPW's overall abilities to react to the changing landscape of healthcare delivery. MITA provides a 10 + year vision for Medicaid Transformation. The high-level timeline and key milestones are identified in Figure 6.5-8 below:

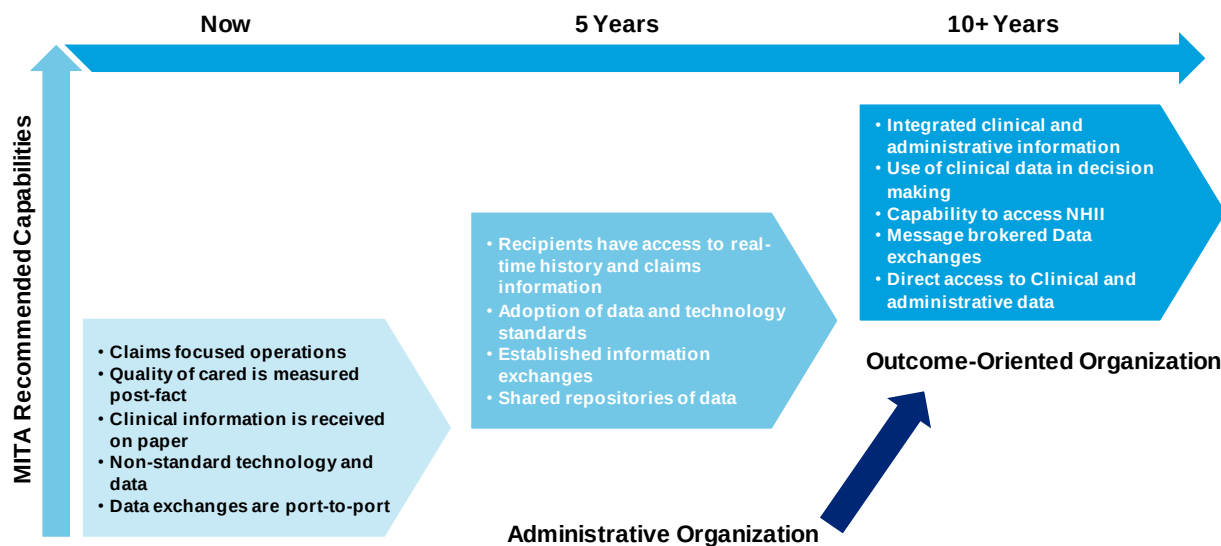
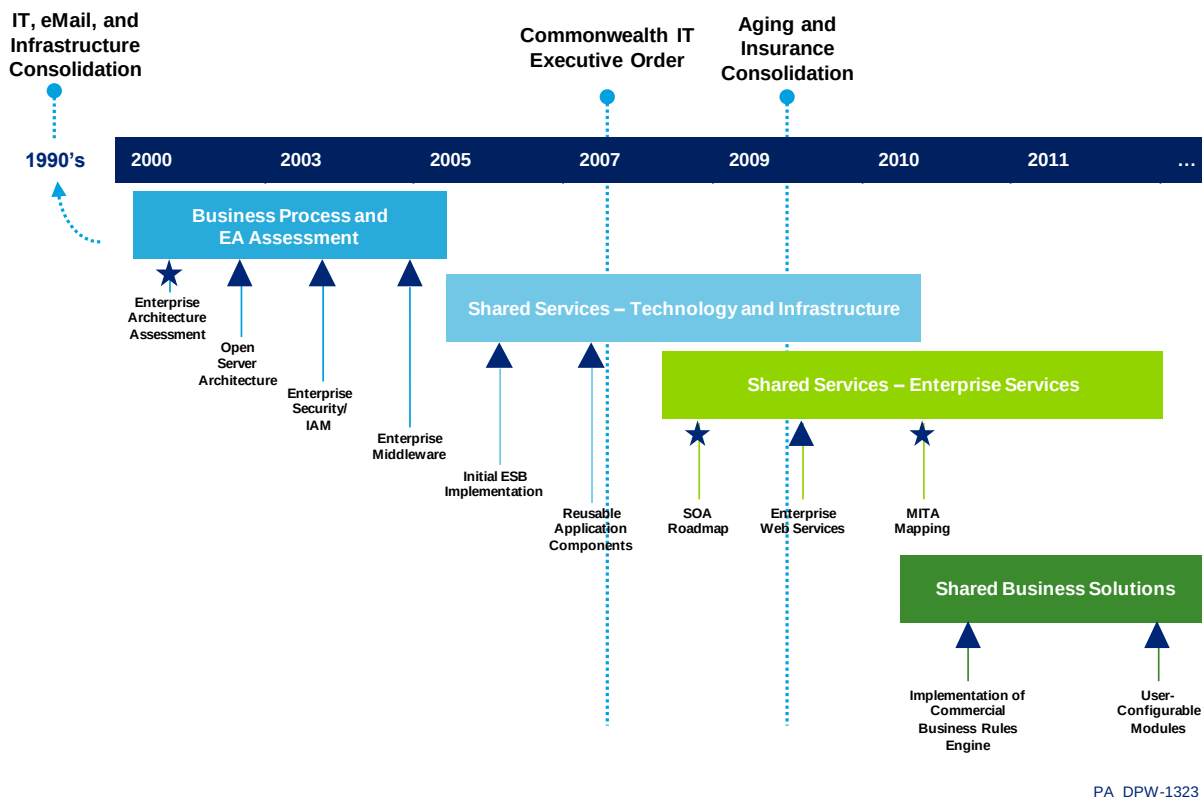


Figure 6.5-8. MITA changes over next 10 years

Based on the MITA changes, Deloitte recognizes the significant impact to DPW and will work with DPW to implement modifications to the applications that are in compliance with MITA.

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Deloitte understands that DPW has already undertaken MITA state self-assessments in order to determine its current landscape and future trajectory. We have worked hand-in-hand with DPW to help evolve Pennsylvania's Information Technology approach and continue to work with them to achieve the future vision. The Figure 6.5-9 below illustrates Pennsylvania's evolution and next steps:



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Figure 6.5-9. Evolution of Pennsylvania's Approach – Past, Present, and Future.

Deloitte has collaborated with DPW in the past and understands how to help DPW achieve the future vision.

As DPW continues down the MITA path, Deloitte will leverage the power of our national Health and Human Service (HHS) and State Health Care practice to provide resources to assist in your MITA evolution. We will work with DPW to accomplish the following goals:

- Envision and maintain MITA blueprint models and roadmaps describing the path to higher MITA Maturity Model (MMM) levels
- Translate SS-A maturity goal requirements into general design artifacts spanning the DPW Medicaid enterprise
- Ultimately, foster increased cross-program interaction by delivering SOA-based solutions to DPW systems

HIPAA/ICD 10

The ICD-10 transition affects citizens covered by the HIPAA act and those submitting Medicare claims, resulting in DPW system and business changes with a targeted go-live date October 1st, 2013 (depicted in Figure 6.5-10 below). We will work with DPW to transition smoothly into ICD-10 compliance and foster a strategic vision going forward to increase economies of service and pinpoint areas of need and areas for improvement.

Have you  heard?

America's Health Insurance Plans (AHIP) selected Deloitte to be a provider of subject matter experience, knowledge and training content related to ICD-10 and HIPAA 5010 compliance learning

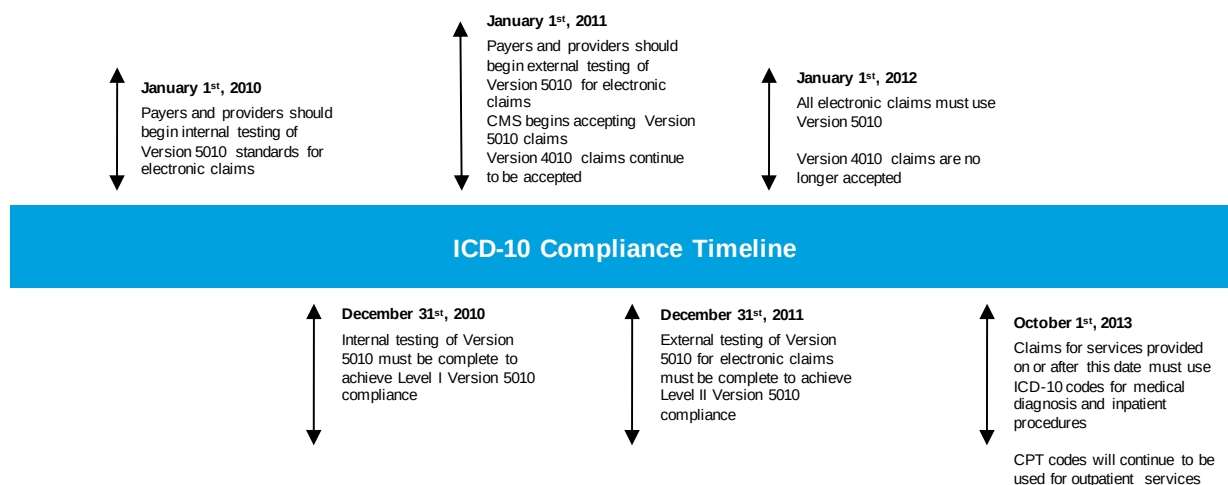


Figure 6.5-10. HIPAA/ICD 10 Timelines.

DPW will have to make significant changes to the existing systems that are in-line with the ICD 10/HIPAA rules over the next three years.

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Deloitte has established an ICD-10 timeline and ICD-10 Compliance Accelerators to share with DPW and ultimately improve coordination of healthcare services across the Commonwealth using ICD-10 data to better pinpoint populations and the services they are receiving.

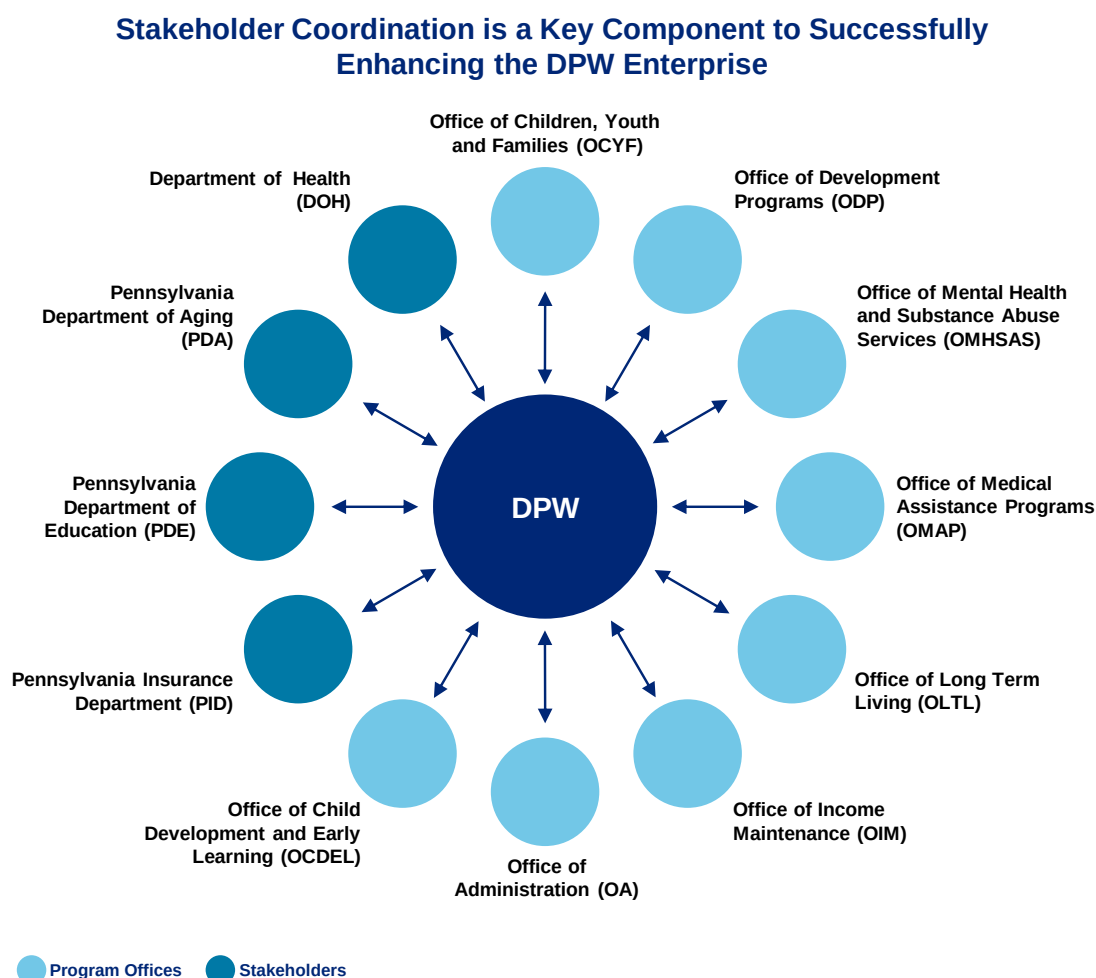
Children's Health Insurance Reauthorization Act (CHIPRA)

The Children's Health Insurance Program Reauthorization represents a significant increase in medical coverage to children and also federal funding to states to deliver this increase. This act also establishes a performance bonus system that measures the enrollment levels across states with bonuses being award to states with significant enrollment increases.

CHIPRA will maintain the CHIP program through 2019, with a 23 percent increase (up to a maximum of 100 percent) in the state's CHIP match rate beginning in FY2015.

DPW Program Office Initiatives

Deloitte is familiar with DPW's organization. In addition to the various Departments, there are eight program offices (POs) that represent various interests within the scope of this procurement, as depicted in the Figure 6.5-11 below.



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Figure 6.5-11. DPW Stakeholders – Program Offices and Departments.

Deloitte understands the various departments and DPW Program Offices depicted above will drive and support enhancement and modification to the applications.

When it comes to undertaking large system enhancements, understanding stakeholder needs becomes a paramount task and a key indicator of success. Deloitte has experience working with each of the eight DPW program offices and will continue to collaborate with program offices as they are impacted by system enhancements. In addition to the Program Offices, Deloitte coordinates and collaborates with other external stakeholders such as Pennsylvania Department of Education (PDE), Pennsylvania Insurance Department (PID), Pennsylvania Department of Aging (PDA), and Department of Health (DOH) to support modifications and enhancements.

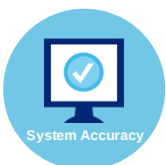
DPW System and Technology Drivers

Outside policy compliance and the varying interests of stakeholders, there exist several system-related goals that must be kept at the forefront of each enhancement to DPW systems. As the Lot 7 vendor, we will integrate these qualities into our general requirements and design documentation to continuously improve the system quality for both workers and Commonwealth citizens.



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Worker Usability. As updates to DPW systems are implemented, system adoption becomes a key consideration: a system's enhancement is only as valuable as the amount of acceptance it gains from its users. Deloitte works with DPW, Lots 1-5 vendors, and the Lot 6 vendor to develop enhancements and modifications with a clear idea of the end-user in mind, employing leading practice interface standards, performing end-user acceptance sessions, and incorporating valued user feedback into our product to achieve a level of usability that delivers immediate benefit to DPW and its workers.



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System Accuracy. We recognize that the accuracy of the systems within the DPW enterprise is of paramount importance to the Department. As DPW continues to expand its benefit footprint in light of program and policy changes, the correct execution of the systems' eligibility determinations, child support calculations, and the many other core business functions will remain a key indicator of DPW and Deloitte's success.



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Data Quality. With system accuracy, data quality comprises what users may describe as the "trust worthiness" of the system. Field workers and management staff must be able to stand by the data and results of DPW systems and reports, and Deloitte understands that this must be a consideration throughout each enhancement / modification undertaken in collaboration with DPW. Through the of the Software Development Methodology (SDM) and management of the Software Development Life cycle (SDLC), we employ proven, repeatable processes to capture and synthesize accurate and valuable data without negatively impacting existing data.



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Technology Changes. As technologies continue to evolve and bring promise of improved business results to adoptees, Deloitte works with DPW, Lots 1-5 vendors and the Lot 6 vendor to understand and assess new technologies in a very specific context – what will achieve the agencies’ goals of increased economies of service, reduced costs, expansion of enterprise services, and improved customer service? This question will be at the forefront of our analysis as we leverage broad knowledge of Health and Human Services (HHS) business processes, overarching agency challenges, and cutting edge technologies to assist the Commonwealth in continuing to be a leader in the successful delivery of HHS services.

To address the identified business drivers, Deloitte has the experience, knowledge, and right tools to continue to help drive DPW higher. Not only do we have the right people with right experience, we have numerous projects around the nation from which we bring the lessons learned to DPW. By leveraging of our current projects around the nation, we are able to document lessons learned along with leading practices and share them with DPW.

Our Understanding of Major Initiatives across Lots for Upcoming Years

In addition to major policy-influenced enhancements, we recognize that DPW has many mission critical initiatives already underway within the Department. However, there are significant plans over the term of this contract to expand these applications and the enterprise services. Each of these modifications has the potential to move DPW forward in their mission to better serve the citizens of the Commonwealth. At the same time, if not done properly, these modifications could severely impact the existing functionality of the systems, benefits to existing recipients and impact to those yet to be found eligible.

Deloitte’s comprehension of these enhancements, in tandem with our hands-on experience with the five major DPW systems and its enterprise architecture, offers us a significant advantage to team with DPW to expedite the process of designing and implementing large system changes. Deloitte has reviewed the list of future enhancements included in the RFP for Lot 1-5 and assessed the potential impact to DPW.

Lot 1 – Eligibility System Initiatives

Deloitte has intimate knowledge of the business needs for upcoming initiatives related to the Lot 1 – Eligibility System. Along with the policy and federal changes, we understand that the growing trend in reduction of workforce and increase in caseloads is resulting in implementing initiatives for Lot 1 that address cost reduction and efficiency. The following table identifies a sample set of system initiatives from your Eligibility



Systems Initiatives that map to the change drivers discussed earlier. Deloitte understands the need for these initiatives and can assist DPW in their implementation leveraging some of our past experiences and resources available.

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
COMPASS Attaching Scanned Documents	Will enable citizens and community partners to upload electronic verifications for COMPASS applications/renewals.	Deloitte has integrated document management solutions with online applications in other States and will bring these experienced resources to guide DPW through COMPASS modifications for electronic verifications.	- Worker Usability - Technology Changes - System Accuracy
Imaging Improvements	Will streamline the client case imaging process saving time and optimizing CAO resources.	Deloitte has an intimate knowledge of your existing processes and is able to leverage this in reviewing the change requests and discussing any further process improvements that may realize efficiencies.	- Worker Usability - Data Quality - System Accuracy
IVR (Integrated Voice Response)	Will automate part of the call-in process resulting in reduced call times and more time for customer service representatives to focus on other case management activities.	Deloitte has integrated IVR functionality at other clients leveraging existing services from their SOA infrastructure leading to a reduced cost of ownership and can bring these same innovative ideas to DPW.	- Worker Usability - Technology Changes
Incremental Renewal	- Continues the evolution of system supports for the CAOs and business partners - Expands the SOA model in DPW and reduces dependencies on legacy mainframe technology	Deloitte brings experience from multiple states and commercial clients that have successfully managed technology implementation risks by using an incremental refresh approach.	- Worker Usability - Technology Changes

Figure 6.5-12. Deloitte Understands Upcoming Initiatives for Lot 1 - Eligibility System.

Based on our understanding of your needs and our experience working with you over 30 years, we believe that the Lot 1 vendor will have to also consider the following initiative(s) in addition to the ones that are outlined in the RFP:



Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
CHIP Special Needs Referrals for MA Eligibility	- CAPS contractors will be able to flag a CHIP enrollee as a potential candidate to be referred to MA for eligibility determination. - Leverage the existing CAPS, COMPASS, eCIS, and CIS interface to electronically transfer a CHIP to MA PH-95 referral with the inclusion of up to 5 additional data elements. - Ability to report on the "Children with Special Needs" referrals out of CAPS and CIS.	Deloitte knows the systems well and understands the complexities associated with making this change. We will leverage our experience as well as our resources, who have intimate knowledge and skill-sets for this change, to implement this initiative.	- Worker Usability - System Accuracy

Figure 6.5-13. Based on Our Experience with DPW, Deloitte Recognizes Additional Initiatives, Beyond Identified in the RFP that Would be Needed for Lot 1 - Eligibility System.

Lot 2 – Provider Management

We understand that DPW is focused on creating opportunities for the Commonwealth's youngest children to develop and learn to their fullest potential. By developing an effective early childhood education system with high standards for programs and professionals, supports to meet these standards, accountability and community engagement, OCDEL is helping PA's children, families, teachers and communities reach their promise. Deloitte understands the priorities of OCDEL: Establish and support Early Learning Programs, improve capacity and quality of Early Learning Programs, assure access, engage and educate parents, and achieve full coordination between systems.

The following table identifies a sample set of system initiatives from your Provider Management System Initiatives that map to the change drivers discussed earlier. Deloitte understands the need for these initiatives and can assist DPW in their implementation leveraging some of our past experiences and resources available.

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Early Learning Network	Will expand the Early Learning Network by integrating PELICAN with TIMS (Teacher Management System) to centralize early learning educator's information.	The integration of PELICAN and TIMS will involve the addition of a new web service to the DPW infrastructure which is something Deloitte has done numerous times in the past and is positioned to successfully complete in the future.	- Data Quality - System Accuracy
PELICAN Adhoc Reporting	This initiative will move PELICAN data into the data repository and apply the Cognos Ad Hoc Reporting tools (Cognos Reports Studio and Query Studio) for data flexible reporting capabilities	Deloitte has an entire Information Management practice dedicated to the extraction, transformation and loading of data from one system to a warehouse for reporting purposes and will be able to leverage this depth of resources to successfully support the implementation of this system initiative for DPW.	- Data Quality - System Accuracy - Worker Usability

Figure 6.5-14. Deloitte Understands Upcoming Initiatives for Lot 2 – Provider Management.

Based on our understanding of your needs and our experience working with you over 30 years, we believe that the Lot 2 vendor will have to also consider the following initiative(s) in addition to the ones that are outlined in the RFP:

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Frequent Data Warehouse Refresh	Refresh of the Data Warehouse to provide more frequent refreshes of data and clear delineation of the usage of BIS reporting repositories.	Deloitte understands the challenges, associated with data warehouse initiatives and has established an Information Management (IM) group that can be leveraged to help gather clear requirements.	Data Quality

Figure 6.5-15. Based on Our Experience with DPW, Deloitte Recognizes Additional Initiatives, Beyond Identified in the RFP that Would be Needed for Lot 2 – Provider Management.

Lot 3 – Case Management

Case management applications, including HCSIS, have consistently required new functionality and changes to meet CMS mandates. These initiatives include improvements in data collection and reporting, quality assurance, financial management of services, provider oversight, and needs assessment. These changes have involved broad technical changes as well as far-reaching application support requirements. Deloitte recognizes that the management of these applications requires a maximum



amount of flexibility in planning, design, and implementation to address the needs of this turbulent climate of change. The following table identifies a sample set of system initiatives from your Case Management System Initiatives that map to the change drivers discussed earlier.

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
External Source Data Uploads	Will provide the ability to load information into HCSIS from external sources through data exchanges.	Deloitte understands that data from external sources can be of various qualities and in different formats. We understand how to develop data exchange functionality that is generic and service based that achieves efficiencies but at the same time is customized for the particular data source to achieve flexibility.	- Data Quality - Worker Usability
Consumer Demographic Merge Utility	Will allow end users to merge clients in HCSIS when duplicate demographics records are identified.	Deloitte has implemented merging and de-duplication in many systems and has experience working with master client indexes. This experience is something we bring to the table to help DPW implement effective client merge functionality without jeopardizing data integrity.	- Worker Usability - Data Quality - System Accuracy
HCSIS-Corticon Integration	Will enable integration with a common rules engine (Corticon®) resulting in efficiencies in maintaining system business rules from a resource and process perspective.	Deloitte has an established relationship with Corticon® and understands the requirement in integrating their solution. We will leverage this relationship and experience to provide a more accurate HLE and cost-effective way to integrate Corticon® with DPW's HCSIS solution.	- Worker Usability - System Accuracy - Technology Changes

Figure 6.5-16. Deloitte Understands Upcoming Initiatives for Lot 3 – Case Management.



Based on our understanding of your needs and our experience working with you over 30 years, we believe that the Lot 3 vendor will have to also consider the following initiative(s) in addition to the ones that are outlined in the RFP:

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Executive Dashboard Expansion	Enhance the Executive Dashboard to include targeted Certification, PA Pre-K Counts, Keys to Quality, Tiered Reimbursement and CCIS information for the purposes of answering executive level questions specific to those program areas and/or to provide a more holistic picture of the OCDEL PELICAN programs.	Provides management with a quick view of we quality statues	- Data Quality - System Accuracy

Figure 6.5-17. Based on Our Experience with DPW, Deloitte Recognizes Additional Initiatives, Beyond Identified in the RFP that Would be Needed for Lot 3 – Case Management.

Lot 4 – Child Welfare

Deloitte understands DPWs main goal to automate Child Welfare programs and leverage existing assets to upgrade the technology and evolve into a human services enterprise system using a services oriented architecture (SOA) strategy. The following table identifies a sample set of system initiatives from your Automated Child Welfare System Initiatives that map to the change drivers discussed earlier. Deloitte understands the need for these initiatives and can assist DPW in their implementation leveraging some of our past experiences and resources available.



Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Create a Child Welfare Data Reference Model as a preliminary blueprint for the Offeror of Lot #6 to create a General Systems Design (GSD) and Systems Requirements Document (SRD) for a Child Welfare central data repository and associated systems interfaces	Will provide the data reference model using NIEM standards which will be the foundation for the new automated Child Welfare System.	Deloitte has a practice that specializes in NIEM standards implementation and will be able to provide knowledgeable resources to DPW to assist in the development of a NIEM compliant reference model.	Data Quality
Define and validate County Interface Requirements	Develop the interface requirements for establishing data exchanges between the Child Welfare and external systems using existing interface technologies available at DPW when able.	Deloitte has developed many interfaces between DPW and external systems and is very familiar with the standards followed at DPH (data security, architecture, transmission methods, etc). We will be able to apply this knowledge to quickly produce an accurate detailed system design with minimal need for rework after architecture review boards.	- Data Accuracy - Data Quality

Figure 6.5-18. Deloitte Understands Upcoming Initiatives for Lot 4 – Child Welfare.

Lot 5 – Child Support Enforcement

Over the past years, Deloitte has teamed with DPW to bring PACSES to the forefront of the states in-terms of meeting federal requirements and has been fully certified since 2001. But with the change in policies and mandates, Deloitte understands that these changes continue to require enhancements that conform to changing federal and state regulations and to support business process improvements. The following table identifies a sample set of system initiatives from your Child Support Enforcement System Initiatives that map to the change drivers discussed earlier. Deloitte understands the need for these initiatives and can assist DPW in their implementation leveraging some of our past experiences and resources available.

Have you
heard? 

PA Child Support Portal
chosen as a finalist for
*2010 Recognition Awards
for Outstanding
Achievement in the Field
of Information
Technology* by NASCIO.

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Detailed Plan for Incremental Renewal Approach	Will result in the approach to incrementally migrate the PACSES system from older outdated technology to a new more maintainable platform while avoiding any disruption in client service administration.	Deloitte understands the importance of service continuity and has developed approaches to incrementally updating a system while keeping costs from redundant code/processes at a minimum.	Technology Changes
Debt Type Consolidation	Will consolidate the PACSES debt type codes into categories resulting in improved usability and ease of maintenance.	It is important to look at the consolidation of codes from a business process perspective but also from a system use perspective to identify the new categories that provide the most user-intuitive experience going forward. Deloitte understand both the business and systemic drivers and is well positioned to assist DPW in this effort.	- Worker Usability - Data Quality

Figure 6.5-19. Deloitte Understands Upcoming Initiatives for Lot 5 – Child Support Enforcement.

Based on our understanding of your needs and our experience working with you over 30 years, we believe that the Lot 5 vendor will have to also consider the following initiative(s) in addition to the ones that are outlined in the RFP:

Upcoming Initiatives	What this Means for DPW	How Deloitte's Approach Supports DPW Vision	Change Driver it Addresses
Predictive Analytics Implementation and Adoption	Will provide a data mining solution to assist with predicting the behavior of non-custodial parents potentially including the likelihood of paying child support or becoming in arrears	- Provide a data mining solution that address various data exploration techniques - Apply statistical techniques (like regression) after knowledge discovery phase is completed. - Quantify & synthesize relationships found during knowledge discovery - Establish the Target Variable: what the model is predicting, e.g., likelihood of the non-custodial parent to begin paying court mandated child support - Establish Independent Variables: the various risk characteristics that are used to predict the target variable - Develop the Scoring Engine	- Increase Performance incentives - Improve collections - Improve case management techniques

Figure 6.5-20. Based on Our Experience with DPW, Deloitte Recognizes Additional Initiatives, Beyond Identified in the RFP that Would be Needed for Lot 5 – Child Support Enforcement.

Our understanding of these and other DPW initiatives allows us to develop a broad view of DPW's projects that is used to coordinate efforts and resources across the enterprise. It is this understanding that will empower us to facilitate stakeholder agreement, gain user buy-in, and develop an enterprise-wide collection of systems design with which to progress forward.

Deloitte continues to grow its business relationship with DPW and undertake significant and meaningful system modifications and enhancements that are on the horizon.

Our past and current successes provide DPW with a firm that demonstrates repeatable, positive results for our clients. We feel this evidence is paramount when considering an HHS solutions integrator for a project of this size and complexity. To demonstrate our direct and relevant project experience, we feel there is no better voice than you hearing from our clients. On the following page, we are pleased to present DPW with a letter of reference from one of your peers demonstrating our capabilities and character in delivering successful and tangible results in the Health and Human Services programs and IT.

STATE OF COLORADO

GOVERNOR'S OFFICE OF INFORMATION TECHNOLOGY

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Denver, Colorado 80203
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www.colorado.gov/oit



Bill Ritter, Jr.
Governor

Leah Lewis
Acting State Chief Information Officer

August 19, 2010

To Whom it may concern,

For the project to update the automated system that supports the child care assistance program in Colorado, the Colorado Department of Human Services (CDHS) selected Deloitte Consulting to transfer, customize, and implement the State of Pennsylvania's PELICAN Child Care system to replace Colorado's existing legacy Child Care Automated Tracking System (CHATS).

The State of Colorado successfully launched the pilot of the new Child Care Assistance (New CHATS) system for use by State and Counties per the project schedule on June 14th, 2010. Despite challenging project time lines, the Deloitte onsite and off-site delivery Center teams worked collaboratively with the State team to deliver an on-time start of the pilot. I would attribute this shared success to strong project management, understanding of human services business processes, deep technical expertise, and constant communication between State and Deloitte team members.

If have any questions regarding the CHATS Project, please contact me at ron.ozga@state.co.us.

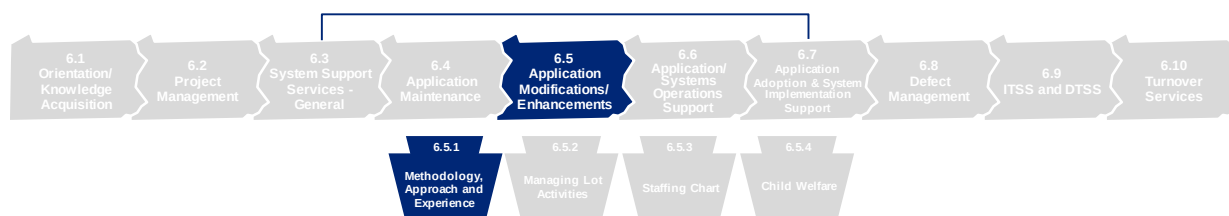
Ronald M. Ozga
Governor's Office of Information and Technology
IT Director - Agency Services
CDHS, HCPF, CBMS



Increasing the effectiveness of government through information technology

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6.5.1 Methodology, Approach and Experience



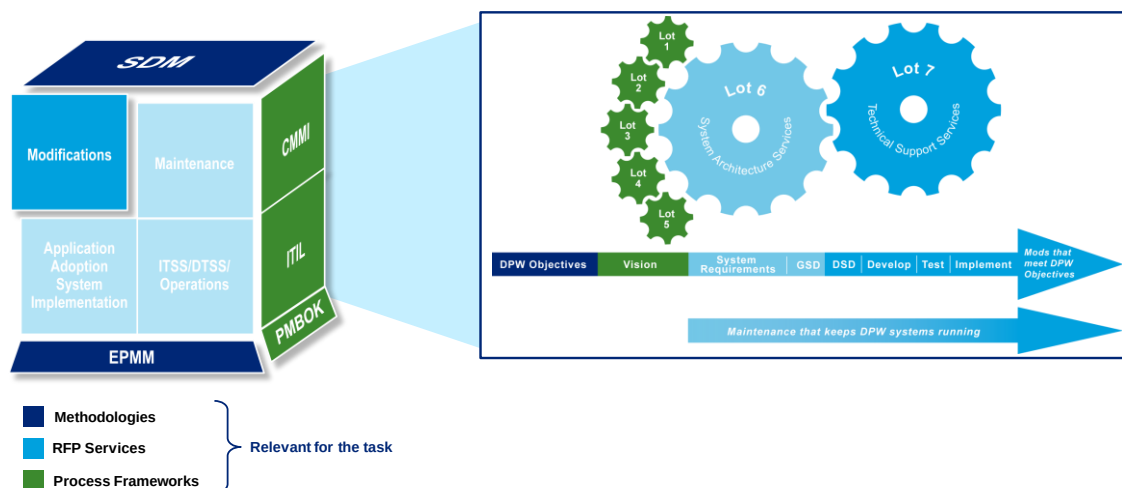
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II	Page II-2	RFP Reference: II-3. Work Plan

Where possible, the Offeror should provide specific examples of methodologies or approaches that will be used to fulfill the various requirements, how these methodologies will be adapted for this contract and implemented, and examples of the Offeror's similar experience and approach on comparable projects.

Methodology

We use DPW's IT Methodology, and specifically the System Development Methodology (SDM) and Enterprise Project Management Methodology (EPMM), to implement application modifications and new application enhancements. SDM provides a structured approach that maintains technology standards and guidelines, enables enterprise level solutions and fosters reusability across the DPW architecture. EPMM provides for consistent management and control disciplines consistently throughout project task groups in the form of structured controls to manage risk, monitor quality, measure performance, and maintain the project schedule. These methodologies and the application of the CMMI, ITIL and PMBOK process frameworks are the key components that comprise our Modification Methodology, which we depict in Figure 6.5-21.



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Figure 6.5-21. Modification Methodology.

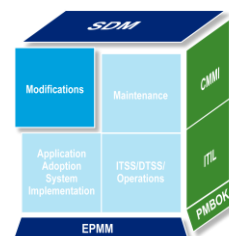
We use DPW's structured SDM and EPMM methodologies and extend with industry process frameworks to improve our performance and reduce budget, schedule and cost risks while implementing modifications.

We extend DPW's methodologies with process frameworks and Deloitte's internal investments to application development to better meet DPW's vision and improve service to stakeholders and users, while lowering our overall life cycle costs over time. We further describe below the two process frameworks, CMMI and ITIL, as well as how Deloitte's internal SDLC and Project Management methodologies aligning with DPW's SDM and EPMM provides benefits to DPW.

- **CMMi.** Capability Maturity Model Integration (CMMi) is one of the most effective models available to improve the software development process within and outside of an organization. Originally developed by The Software Engineering Institute or the SEI, it is intended to integrate software and system disciplines. We incorporate this framework to minimize risks, provide consistency, repeatability and predictability, and measurable means for improvement for software development project. The model also allows for continues improvement by allowing projects to capture "Lessons Learned" and providing a means of incorporating the changes in subsequent runs of the SDLC process.
- **ITIL.** The IT Infrastructure Library (ITIL) version 3 (and version 4 on its release) will provide focus throughout the modification process in facilitating business change and transformation to DPW's vision while implementing the specific modifications and enhancements. We incorporate the ITIL service life cycle to improve our performance and productivity, reduce efforts, costs and provide better service to DPW stakeholders and user groups.
- **Deloitte Internal SDLC and Project Management Methodologies.** DPW's SDM is consistent with Deloitte's internal SDLC and project management methodologies called the Systems Development Playbook and Project Management Methods (PMM4) respectively. We have used these methodologies together on more than 200 Public Sector IT projects including HHS projects of similar size, scope and complexity to DPW. It is based on a broad set of processes, tools, and artifacts to support a structured approach to application development and its management throughout a project's life cycle. While we use DPW's methodology, we incorporate artifacts, templates, tools, practices and lessons learned for our Public Sector IT projects within a framework of continuous improvement.

Systems Development Methodology (SDM)

DPW's SDM consists of phases from Feasibility to Completion, of which the Lot 7 vendor is responsible for activities starting with the Detailed Systems Design Phase through the Implementation phase. It is comprised of a broad set of processes, tools, and artifacts to define, design, develop, test and deploy application modifications and new system enhancements.





Phase and Key Activities	Deloitte Understanding of Lot 7 SDLC Activities
Detailed System Design	Develops the detailed program and database designs after receiving a DPW approved GSD from the Lot 6 vendor: • GSD to DSD is a critical handoff between the Lot 6 and Lot 7 vendors • Number of detailed design sessions depend on detail and quality of GSD, as well as complexity of the release • Prepares a physical data model • Presents DSD and physical data model to DPW for approval prior to moving to development Deliverables: • Detailed Design Document
Development	Creates program code and conducts unit test to verify correct program functioning: • Develop Application Code • Perform Unit Testing to exercise the individual software units • Perform Developer Peer Reviews Deliverables: • Development Report
System Testing (Unit, Module, Integration, Acceptance)	Perform a series of testing activities that exercise the application in order improve software quality and meet the business requirements: • Perform Integration Testing to evaluate the software units integrated as designed with other application components. • Support User Acceptance Testing • Perform ancillary testing activities such as accessibility testing, load testing, vulnerability testing, and performance testing. Deliverables: • Integration Work Products
Implementation (Pre and Post Implementation Activities)	Prescribe the plan for implementation including readiness reports and implementation timelines: • Work with appropriate stakeholders to coordinate implementation activities • Coordinate implementation activities across enterprise Deliverables: • Production Readiness Reports and Work Products • Operational Work Products • Production Readiness Notification • Production Deployment Report • Final Production Software Product
Completion	Closeout modification initiative • Work with DPW and other stakeholders to finalize the completion of the modification work order Deliverables: • Completion Letter

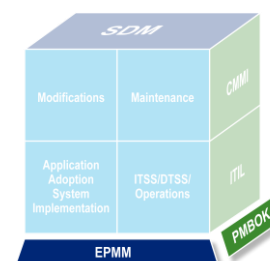
Figure 6.5-22. Software Development Methodology for Lot 7.
We use DPW's structured SDM methodology to implement modifications and enhancements.

We extend the DPW SDM with a Services Oriented Architecture thread that helps us better meet DPW's stated objectives and expectations with each modification or enhancement. The SDM is infused with SOA design principles and provides guidance throughout the life cycle for modifications and enhancements.

Further, we propose a SDM that includes a framework for continuous improvement that is consistent with CMMI principles to support our ability to continue to produce stable DPW strategic business systems while lowering overall life cycle costs. It includes Level 3 mature processes that incorporate the collection of process and performance metrics from which our project and quality management teams infuse metrics driven process improvements in alignment with SDM process areas and DPW goals and objectives.

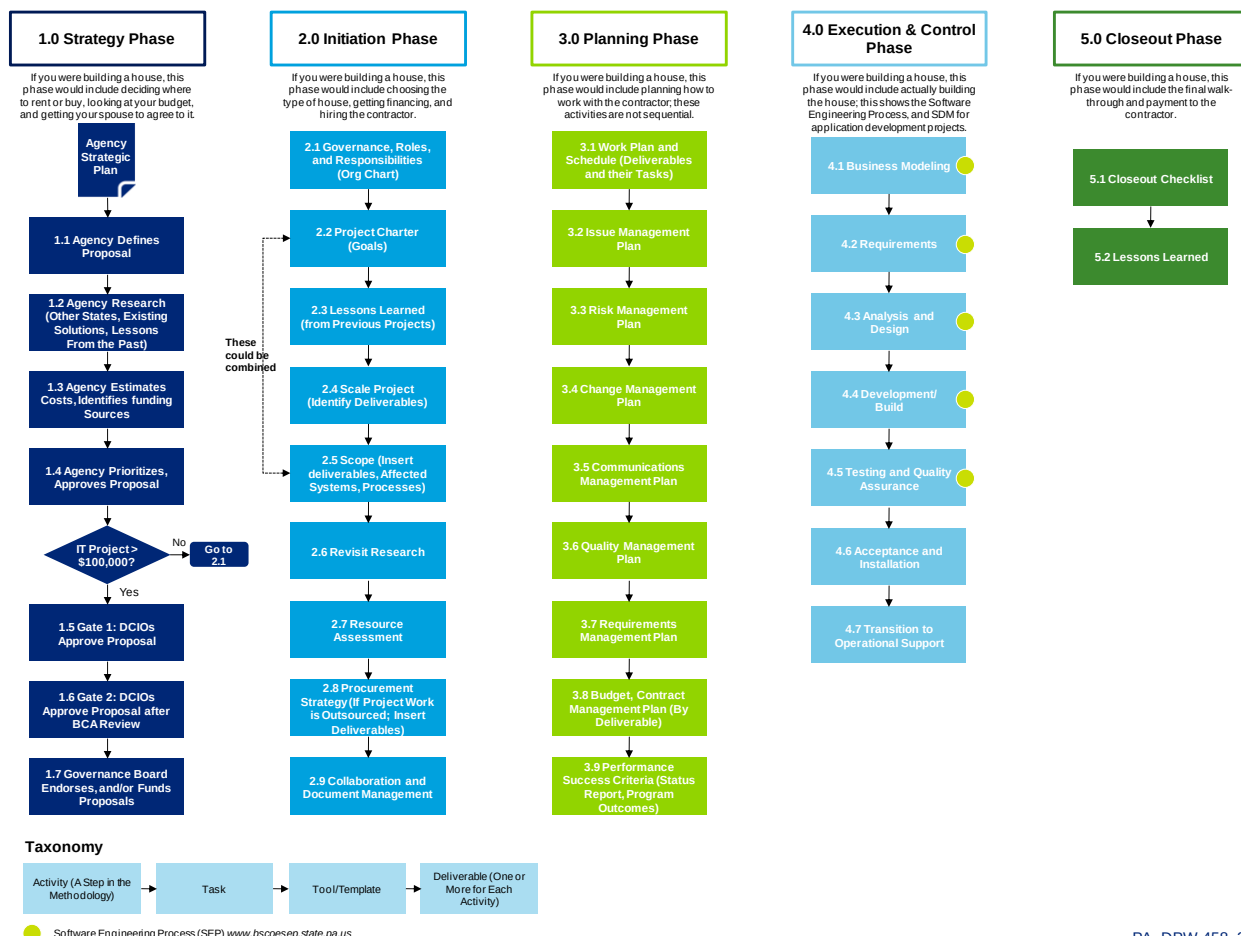
Enterprise Project Management Methodology (EPMM)

DPW's EPMM methodology for project management is consistent with PMI PMBOK and CMMI mature processes. We infuse rigor and discipline consistently throughout project task groups in the form of structured controls to manage risk, monitor quality, measure performance, and maintain the project schedule. Management controls also provide visibility into our processes, which allows us to apply continuous process improvements.



The EPMM methodology includes each aspect of project management related to software development. It is influenced by the Systems Engineering Process (SEP) developed by the Commonwealth. EPMM includes the phases of the project including strategy, initiation, planning, execution, control, and close out. PMM4 is based on and adheres to the concepts embodied in the Project Management Body of Knowledge (PMBOK), developed by the Project Management Institute (PMI). PMM4 focuses on applying demonstrated project management principles and leading practices to project delivery. EPMM includes a broad approach and contains standard project management related tools, detailed procedures, templates, standard work plans, status reports, and other materials that support the various initiatives of DPW. The following Figure 6.5-23 depicts the methodology, including phases and activities.

DPW's Enterprise Project Management Methodology for Application Development



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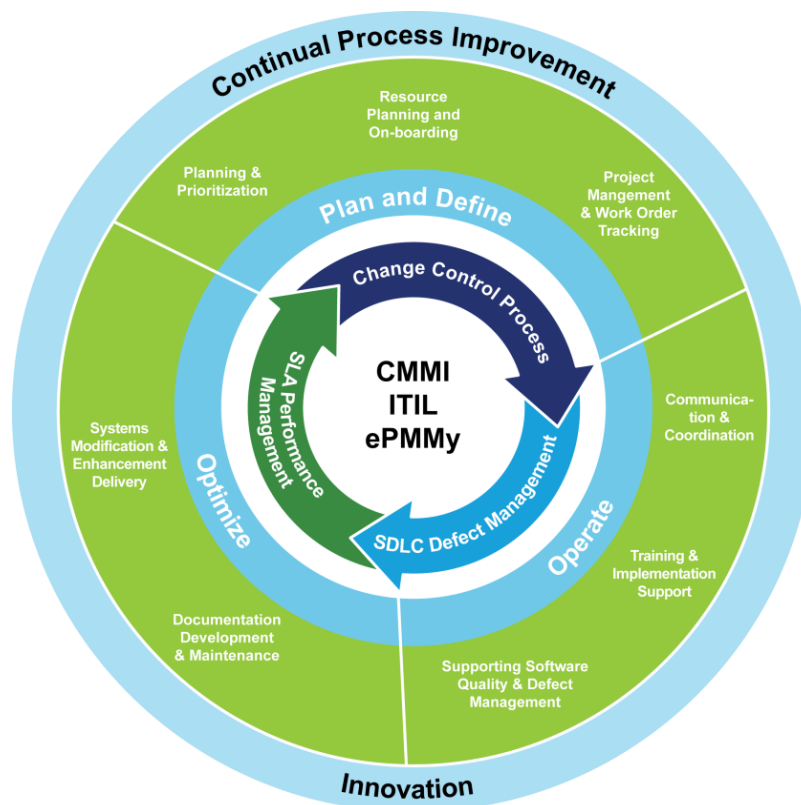
Figure 6.5-23. DPW EPPM for Lot 7.

EPPM provides discreet phases which facilitate a higher degree of communication, issue and risk management, staffing, and quality assurance to successfully maintain and operate the DPW mission critical systems.

We provide a more detailed response of the EPMM project management methodology in our narrative response to Methodology, Approach and Experience requirements in *Section 6.2.1, Project Management*.

Approach

Our approach to application modifications and enhancements uses methodologies described in the prior narrative within an integrated operational framework that includes continuous improvement and supports a multi-vendor, multi-system operating model. As we depict in Figure 6.5-24 we implement modifications and enhancements to DPW's strategic business systems working within and across DPW's program offices using a structured approach.



PA_DPW-875_2

Figure 6.5-24. Deloitte's Approach to Modifications and Enhancements.

We use a structured approach to implementing application modifications and enhancements that supports a multi-vendor, multi-system operating model.

We tailor our approach to applying these methodologies including procedures, artifacts and tools to better support this new operating model. Our experience in delivering services in the current operating model ideally positions us to support the new operating model going forward. Additionally, our prior experience supporting the lots allows us to proactively help DPW and other lot vendors minimize the hand-off. In order to understand where DPW is going, the selected Lot 7 vendor must know where you currently are and have been.

We summarize in Figure 6.5-25 our approach to addressing your key modification activities. Deloitte has developed this list of activity categories by logically grouping together the Lot 7 Offeror responsibilities as outlined in the RFP and detailed in our Offer Responsibilities response in this section.



Key Modification Activity	Deloitte Activities Supporting DPW Requirements
Planning and Prioritization	A critical first step to success will be the identification and prioritization of systems modifications and enhancements that will progress the DPW vision and meet business needs, ultimately improving the delivery of services to citizens of the Commonwealth. We support this process by providing timely and accurate estimations and aligning our priorities with those of DPW.
Resource Planning and On-Boarding	The delivery of successful modifications and enhancements depends upon qualified resources, with an understanding of both the business and technical environment of DPW. Deloitte brings not only our experience with DPW's business and systems but a wealth of knowledge from practitioners working across our national network of HHS projects.
Communication and Coordination	The new operating model put forth by DPW will demand continual communication between the lot vendors, DPW and project stakeholders to maintain alignment between business requirements and the solution delivered. Transitions between phases will need to become seamless and Deloitte will use our experience working across the lots to meet this goal.
Project Management and Work Order Tracking	In an environment where concurrent IT projects may be underway, project management and work order tracking will be essential to keep the stakeholders aware of issues, risks and overall project status. Communicating project plans/milestones, task expectations, sharing progress metrics and establishing processes for corrective action will result in more efficient and on time project delivery.
Documentation Development and Maintenance	Creation and maintenance of systems documentation is essential in the systems modification and enhancement delivery process. This will not only provide documentation of the technical solution and architecture, but will be the key to accurate estimations and successful transitions between projects phases, supplementing the handoffs between lot vendors.
Training and Implementation Support	Deloitte will work with DPW to provide requested technical training and implementation support. Deloitte brings an experience profile that is built on continued presence in the HHS market and therefore provides a vast array of current project experience with exposure to many leading edge technologies and leading practices.
Supporting Software Quality and Defect Management	It will be necessary to create a plan for effectively testing the predefined business and system requirements so that the solution being developed meets the established standards and that defects that arise are properly identified, tracked, and resolved. Furthermore, steps are taken to prevent the recurrence of such defects. Deloitte will work collaboratively in this effort with DPW and other lot vendors to deliver quality solutions in alignment with the business requirements and vision of DPW.



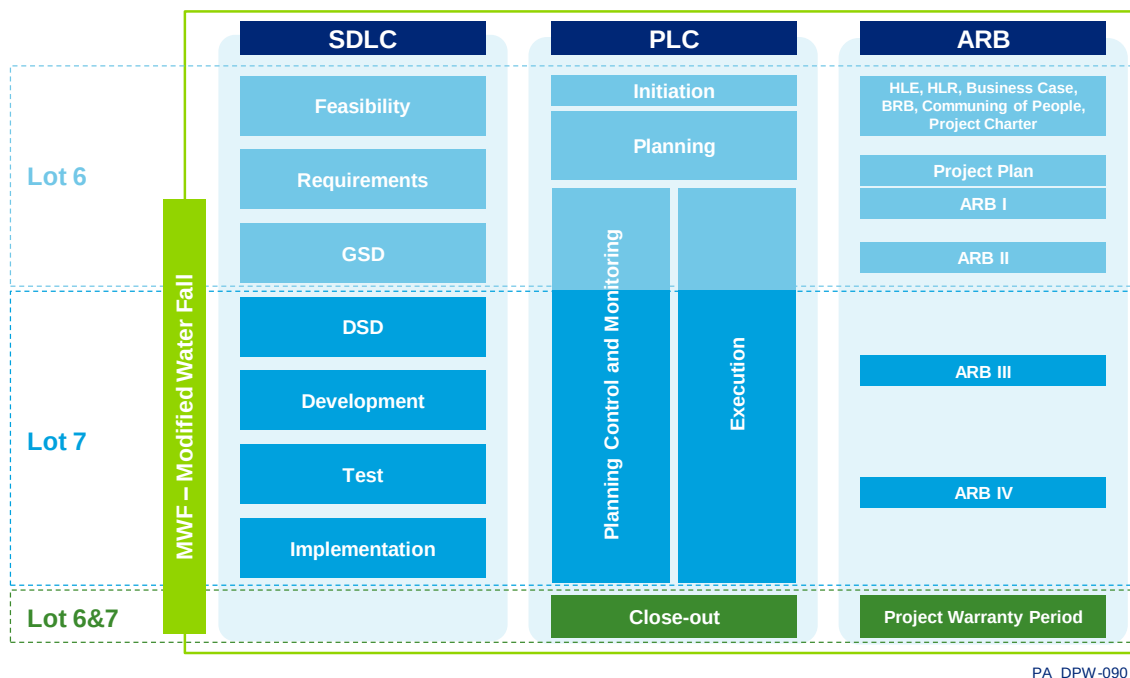
Key Modification Activity	Deloitte Activities Supporting DPW Requirements
Systems Modification and Enhancement Delivery	The successful delivery of systems modifications and enhancements will depend upon the completion of the responsibilities outlined in the RFP, and the coordinated efforts across teams and stakeholders. As the technical support services vendor, the Deloitte Team will deliver on each of the identified responsibilities, and work collaboratively with other lot vendors to help drive solutions to implementation. Deloitte's experience delivering the services in the current operating model with DPW helps us understand today's business and technical environment, ideally positioning us to meet these responsibilities in support of the new operating model. The sections outlined below address Deloitte's understanding and approach towards the individual responsibilities as defined by DPW for the technical support services vendor.

Figure 6.5-25. Our Approach to Your Key Modification Activities.

Figure 6.5-26 shows our understanding of DPW's Modified Water Fall (MWF) Methodology and highlights the responsibility and interactions between the Lot 6 and Lot 7 Vendors. The MWF uses the combination of the System Development Life Cycle (SDLC), Project Life Cycle (PLC) and the Architecture Review Board (ARB) Process for successful development and delivery of the modification. As the Lot 7 vendor, the Deloitte Team will be responsible, for Detailed System Design, Development, Testing and Implementation. We understand that the Lot 7 vendor has many coordination and touch point with the other vendors and are prepared to work with DPW to make this model a success.

Have you
heard? 

We have collaborated with the Commonwealth using our proposed SDLC methodology to successfully complete 203 modification projects since 2006 and another 49 are currently in progress.



PA_DPW-090_3

Figure 6.5-26. DPW Operating Model for Lot 6 and Lot 7.

Our incomparable experience with working on the DPW's MWF methodology over the last decade places us in the leading position to deliver timely and high quality custom software development modifications.

The following paragraphs describe our application of the aforementioned methodologies.

Detailed System Design (DSD)

After approval of the GSD is received, we will work on the next phase of design, DSD. Figure 6.5-27 shows how GSD serves as an input to DSD. During DSD, depending on the nature of the changes, we may extend the detailed system design sessions. During DSD, we will likely hold additional detailed system design sessions for interface and conversion detailed design, when required. The number of detailed system design sessions will depend on the level of detail reached through GSD as well as the complexity of the release.

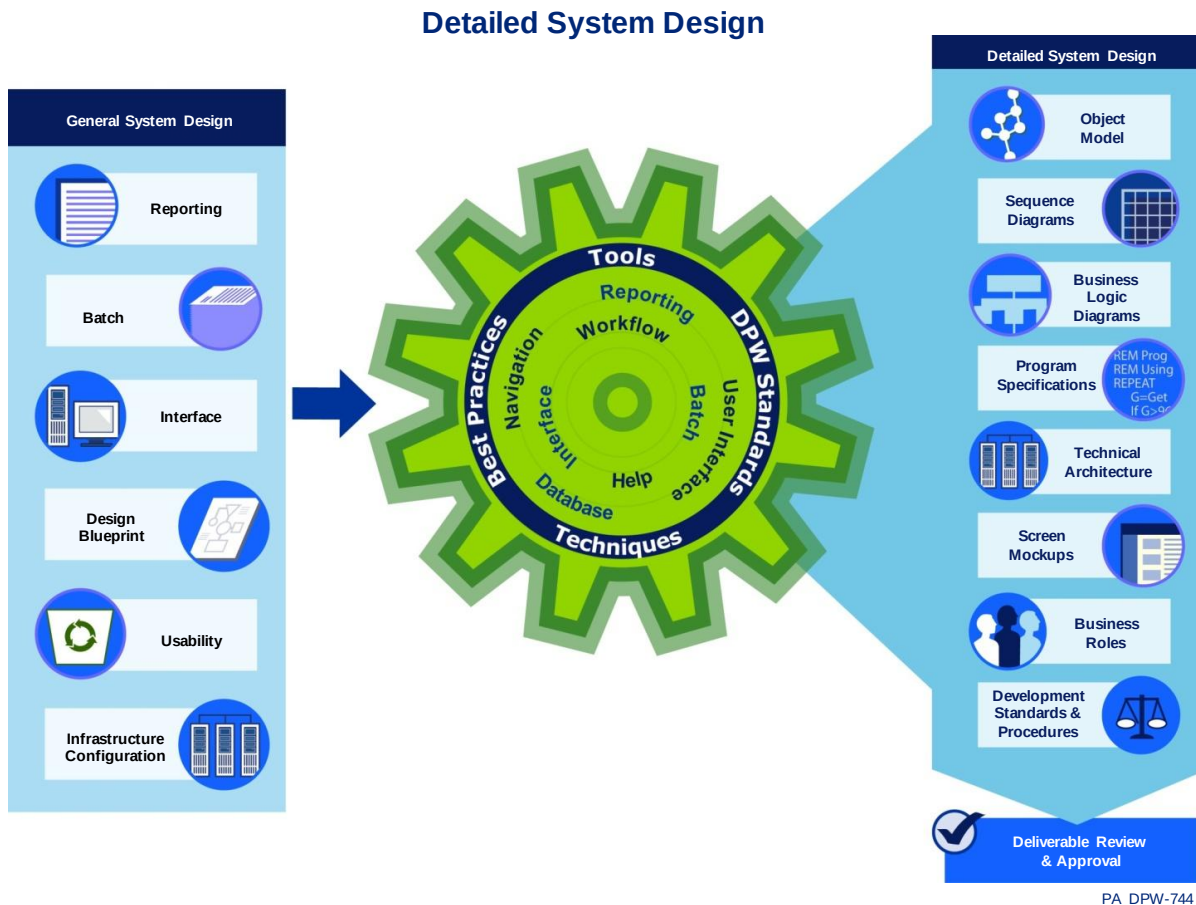


Figure 6.5-27. Detailed System Design.

Using the GSD provided by the Lot 6 Vendor as an input, we will apply our leading practices, tools, and techniques to develop a system design that meets your requirements.

Inputs

Inputs will include the:

- General System Design (GSD) Document
- Use Cases
- Logical Data Model
- Screen Shot Details Document
- Business Logic Diagrams or Activity Diagrams
- Initial Capacity Plan
- Initial Conversion Plan or Day 0 Data Population Plan
- Initial Key Considerations Document
- Requirements Traceability Matrix (*expanded*)
- Work Plan

Have you
heard? 

Deloitte has partnered with more states to incrementally renew their legacy systems for a longer tenure than any other vendor.

High Level Activities

The high-level activities for the DSD Phase consist of:

Key DSD Activities	Deloitte Lot 7 DSD Activities
Select System Architecture	As per the SDM, when the system architecture for the software has not been pre-determined by the existing computing environment or by the project stakeholders, architectural alternatives will be evaluated to determine the most effective solution to satisfy the project requirements. Selection of specific hardware, software, database management system, and communication facilities will be based on: • DPW architecture guidelines or standards • Hardware and software emphasizing simplicity, flexibility, ease of operation and maintenance • Cost to procure and maintain potential environment • Data backup/restore and disaster recovery procedures • Selection of a distributed or centralized processing environment • Communication requirements • Data configuration • Capacity requirements
Develop Detailed System Design	The DSD is the main deliverable from the DSD Phase. Before coding and testing begins, it translates the requirements into precise descriptions of the software components, interfaces, and data. The DSD is the blueprint for the Development Phase and is based on the software structure and data model established during the General System Design (GSD) Phase. After the formal approval of the DSD Document, the system design is base lined. Once the DSD has been base lined, future changes will be managed under the change control procedures established by the Department.
Refine Data Requirements	The data dictionary is reviewed and updated to complete the detailed information on data elements and their physical characteristics, data conversion requirements, and business information. The proposed team will review the data dictionary with the Department DBA team.
Design Physical Data Model	During the DSD phase the proposed team will design the physical data model, which is a description of the dynamics, data transformation, and data storage requirements of the modification initiative. To achieve a specific technical solution, the logical data model developed during the General System Design (GSD) phase is used to build a physical data model. We will retain the constructs inherent in the logical data model, with the exception of the naming constructs which will reflect the appropriate DPW standards. If the physical data model is not consistent with the logical data model, the differences will be reconciled by updating the general design, the detailed design, or both before proceeding.



Key DSD Activities	Deloitte Lot 7 DSD Activities
Manage Requirements	Each requirement identified in the System Requirements Document (SRD) will be traceable to one or more design entities. This traceability allows for the tracking of the system to satisfy the requirements and does not include inappropriate or extraneous functionality. Deloitte will expand the Requirements Traceability Matrix developed in the Requirements Phase to relate the DSD to the requirements.
Select Programming Standards	The proposed team will follow the DPW programming standards. When it is necessary to select a standard given that one does not exist, the team should select one based upon leading practices in government and industry. This standard can be updated to address reoccurring or likely problems that occur within the Department. This standard or updates to it then will be submitted to the application domain and get the approval.
Define Test Plan	The proposed team will define/refine the test plan during this phase and include integration testing, system testing, user acceptance testing, load testing, and the variations and forms of it. Testing of these types can take the form of parallel tests and pilot tests. Development of the test plan might require detailing generalized tests, updating any schedules. Tests defined will be specific and when test case scenarios are used, they are likely to be expanded upon to validate the processes. Tests that are likely to be added or detailed include: • Computations • New functions • Common components defined during the DSD • Look and feel tests • Navigational Tests • Verification of Inputs and Outputs • Verification of presentation and format • Workflows • Software component Interfaces
Develop Proof of Concept/Prototype	When agreed upon, the proposed team will develop Proof of Concepts or Prototypes. Proof of Concept/prototype will be developed to test and demonstrate the architecture. Different types of prototypes might be prepared. One or more prototypes may be chosen within the project. Reviews are conducted, if prototypes are built. The type of prototype or the creating of a proof of concept/prototype is dependent on the project to demonstrate feasibility of the whole, parts, or certain specific aspects of the application. A prototype will be used to close the communications gap between the end user, DPW, and the development team. In addition, a prototype can facilitate the essential participation of the end user in the project. It mitigates the likelihood of project failure of the delivered application not meeting the end users expectations.

Key DSD Activities	Deloitte Lot 7 DSD Activities
Refine Conversion Plan	The Conversion Plan created in the General System Design (GSD) Phase is modified based on new information gathered in the Detailed System Design (DSD) Phase. When not already done, identify the conversions needed, how the conversions are to be implemented, how the conversion process is to be tested, the conversion schedule, and how the conversion is to be implemented in the Conversion Plan. When appropriate, team will add reports detailing the rejected data as a result of the data cleansing/purification procedure. Data mappings, conversions, data cleansing procedures, computations, and derivations will be detailed. Manual processes must be described procedurally and conversion software components will have specifications. A test plan is important to validate the quality on the converted data and to provide feedback to the Department. It can never be assumed a conversion will be run once. It may be necessary to run it during development, system testing for acceptance testing, and finally prior to final implementation. Therefore, a conversion schedule is important to be consistent with and coordinated with the project schedule. We will include a conversion report or process summary for the project stakeholders and validate the conversion process results.
Develop Commonwealth Application Certification Accreditation (CA) ²	Prior to participating or initiating an electronic transaction, the proposed team will complete and submit for a Commonwealth Application Certification Accreditation (CA)² to the Office of Administration/Office of Information Technology (OA/OIT). The (CA)² evaluates the proposed use, transmission, or storage of the electronic record, and recommends the security procedures to be used based upon certain criteria(i.e. intended use of the electronic record, type of information being transmitted, received or stored, degree of risk to the Commonwealth, and users of the system, and potential legal liability). The purpose of the (CA)² is to assist program managers, information technology professionals, and senior agency leadership in determining the appropriate level of security necessary for sending, receiving, and processing electronic transactions. It is designed to provide a structured and consistent method for making such determinations. In addition, it provides guidance regarding the level of security designed into e-government applications.
Document the Design Defect Report	Working with the Lot # 6 Offeror and on the basis of approved General System Design, the proposed team will document the Design Defect report.

Figure 6.5-28. Key Activities.

Outputs

The output of this phase is the Detail System Design (DSD) deliverable. The deliverable components of the DSD will include the following components in addition to any other reference and supporting documents:

- **Physical Data Model.** This document provides a graphical representation of business requirements. It depicts any new logical database entities and any existing database entities being modified within the underlying in-scope systems and is a bridge to the Physical Data Model (PDM).
- **Data Dictionary.** This document is a detailed listing of database tables, fields, and reference tables as well as business descriptions and validations for those entities for the database affected by the modification initiative.
- **Screen Shot Details.** This document contains screen shots of the proposed modifications to the user interface as well as descriptions of the fields contained on those screens.
- **Interface Specifications.** This document outlines new interfaces or changes to existing interfaces because of the modification initiative. It identifies among other things whether it is inbound or outbound type relative to the in-scope system, the type of data exchanged, frequency etc.
- **Application Blueprint.** This document illustrates any changes to the architectural diagram at the in-scope system level and the DPW Enterprise level because of the modification initiative.
- **Program Specifications or Class and Sequence Diagrams.** These documents detail the program specifications for new and modified class and sequence diagrams added/updated for the modification initiative. In case of a Mainframe system the technical specification through a Program Specification document.
- **Final Conversion or Data Population Plan.** The proposed team will maintain the fully detailed conversion plan, complete with updated schedule, manual procedures, and program specifications in the Project Folder. The plan would be submitted to the project manager or management team for inclusions within the project schedule.
- **Final Capacity Plan.** The proposed team will refine the capacity plan submitted during the General System Design phase to add more detail which is generally available during the DSD phase.

Key Staff Spotlight

Wilson Maliackel

Track Lead



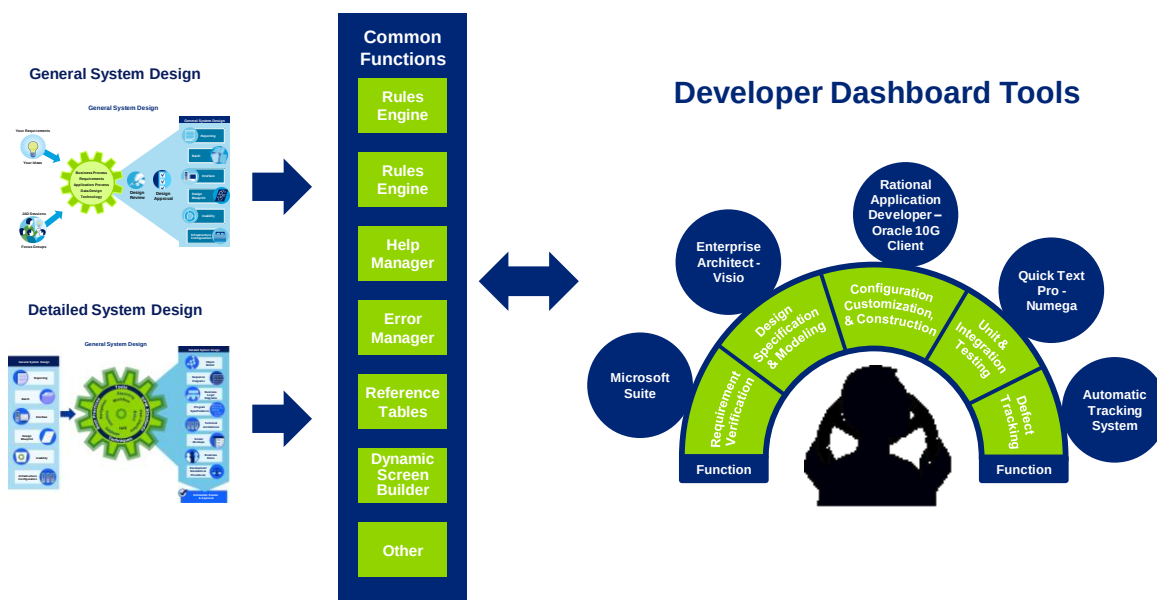
Delivering Results

"Working on the PA DPW projects gives me the opportunity to make the maximum positive impact on the citizens of the Commonwealth of Pennsylvania. I felt especially proud for myself and my team when the Certification Regional Director expressed her personal appreciation for our patience, expertise, and assistance provided to the OCDEL staff."

- **(CA)².** This document outlines security assessment for the in-scope systems pertaining to the modification initiative.
- **Updated Key Considerations.** This document will highlight areas of the modification initiative's Detailed System Design that were discussed and agreed upon with concerned stakeholders during design meetings as well as any other items that needed to be highlighted. This will essentially refine the Key Considerations documented during the GSD phase.
- **Updated Traceability Matrix.** Each requirement in the System Requirement Document (SRD) will be traceable to one or more design entities. This traceability allows for the tracking of the system to satisfy the requirements and does not include inappropriate or extraneous functionality. The proposed team will expand the Requirements Traceability Matrix developed in the Requirements Phase to relate the DSD to the requirements.
- **Updated Work Plan.** The proposed work schedule for the Development phase of the initiative will be outlined in the updates to the Work Plan document.
- **Other Components.** In addition to the components listed above the following documents will be created or updated as applicable to the modification initiative:
 - Training Plan
 - Implementation Plan
 - Data Acquisition Plan
 - Detail Report Requirements
 - Metadata Management Plan
 - Backup and Recovery Plan
- **Design Defect Report.** Working with the Lot 6 Vendor and on the basis of approved General System Design, the proposed team will document the deviations discovered during the DSD phase in the Design Defect report.

Development

Our approach to Development is depicted in Figure 6.5-29. The project development staff will be assigned to Program Change Requests (PCRs), allowing for project management to track resource utilization, for developers to find supporting requirements and documentation required to complete development within the PCR. As will be discussed later in this section, the Automated Tracking System (ATS) is used to assign PCR's and to track their progress. ATS is used to group these PCRs into logical Bundles, where similar or dependent functionality can be logically grouped for the purposes of assignments and migration through the environments. This process also provides a tool for managing these software migrations. As development and unit test are completed, the developer will make additional updates to the PCR detailing the work completed and updates the PCR status. Our team will also manage the software migration process by monitoring PCR status and migration of the Bundle and its attached components to the appropriate test environment.



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Figure 6.5-29. Developer Dashboard Tools.

We develop off of your approved design and unit test against your requirements.

Unit Test

We understand the need for and importance of broad unit testing. Following the completion of software development or modification, the developer is responsible for testing the individual software “units” or groups of related units. Depending on the nature of the application (mainframe/middleware/server), we have developed detailed checklists that expedite the validation of application characteristics. Using the unit test checklist, the developer will evaluate how well the “unit” meets predefined functional and technical requirements. The developer will also use the checklist to cross reference software functionality to detailed design specifications and/or defined requirements.

This includes an analysis of actual results vs. expected results. If, during this process, the developer identifies a software discrepancy, s/he is responsible for documenting, resolving, and retesting the “unit” until expected results are achieved.

Developer Peer Reviews

As part of our ongoing quality assurance process, we will conduct a developer ‘peer review’ of a sample of completed unit test checklists. This will assist in validating that the software adheres to the SDM standards and methodologies. Significant noncompliance issues will be addressed before the software is migrated to integration testing, the second testing phase of the SDM. Our unit testing forms a strong basis for integration and systems acceptance test. Testing in these higher environments found very few system defects.

Inputs

Inputs will include the:

- General System Design (GSD) components
- Detailed System Design (DSD) components

High Level Activities

The high-level activities for the Development Phase consist of:

Key Results	Deloitte's Approach for SDLC Activities
Write Programs	The activity involves generating source and object code, executables, and scripts for the software. Write the source code in accordance with the programming standards selected in the Detailed System Design (DSD) Phase. Regardless of the platform, code development is to adhere to a consistent set of programming techniques and error prevention procedures. This will promote reliable, maintainable code, developed in the most efficient and cost-effective manner.
Conduct Unit Testing	Unit testing is used to verify the input and output for each module. Successful testing indicates the validity of the function or sub-function performed by the module and shows traceability to the design. During unit testing, test each module individually and verify the module interface for consistency with the design specification. Test the important processing paths through the module for expected results. In addition, test the error handling paths. Unit testing is driven by test cases and test data designed to verify the software requirements, and to exercise the program functions, edits, in-bound and out-of-bound values, and error conditions identified in the program specifications. If timing is an important characteristic of the module, generate tests to measure time critical paths for average and worst-case situations. Plan and document the inputs and expected outputs for the test cases in advance of the tests. Log the test results. Analyze, correct, and retest errors using the scenarios defined in the test cases. Repeat this cycle until the errors have been corrected. While unit testing is generally considered the responsibility of the developer, the project management team must be made aware of the unit test results.
Manage Requirements	Review the components developed and cross-reference with those in the Requirements Traceability Matrix.
Develop Test Scenarios	Test scenarios are used to control the test cases to be processed and how to process them. The file may contain one or more scenarios and be cross-referenced. Test scenarios are based on the requirements, the General System Design (GSD), and Detailed System Design (DSD) Documents. Create the scenarios to identify likely production situations. Document the test scenarios in the Test Scenarios Template or recorded within software test tools
Finalize Capacity Plan	The Capacity Plan estimates the capacity for the application by usage, network bandwidth, disk storage capacity, demographic profile environment, load test environment, production environment, and batch/FTP capacity. Continuously revise the plan throughout the project to confirming the latest capacity requirements are captured and verified.

Key Results	Deloitte's Approach for SDLC Activities
Develop Batch Operations Manual	The Batch Operations Manual (BOM) is structured to give a step-by-step overview of batch operations. The user can either peruse the whole document top-down or focus on key subsections of interest. The BOM contains the batch operations for the application and the relevant information to successfully operate the batch jobs when the application is released. Information captured includes: • Batch Job description • Pre-event • Post-event • Frequency • Start Time • Run Days • Expected Run Time • Input File • Output File • Escalation Process • Contact Person The document is used as reference information to assist the DPW Operations with detailed information on an application's batch strategy and approach.
Create Integration Test Scenarios	The proposed team will create test scenarios that will be used to validate the software components once they are integrated.
Document Build Defect Report	The proposed team will document the defects found during the build of the application.

Figure 6.5-30. Key Results.

Outputs

The output of this phase is the Development Report deliverable. The deliverable components of the Development will include the following components in addition to any other reference and supporting documents:

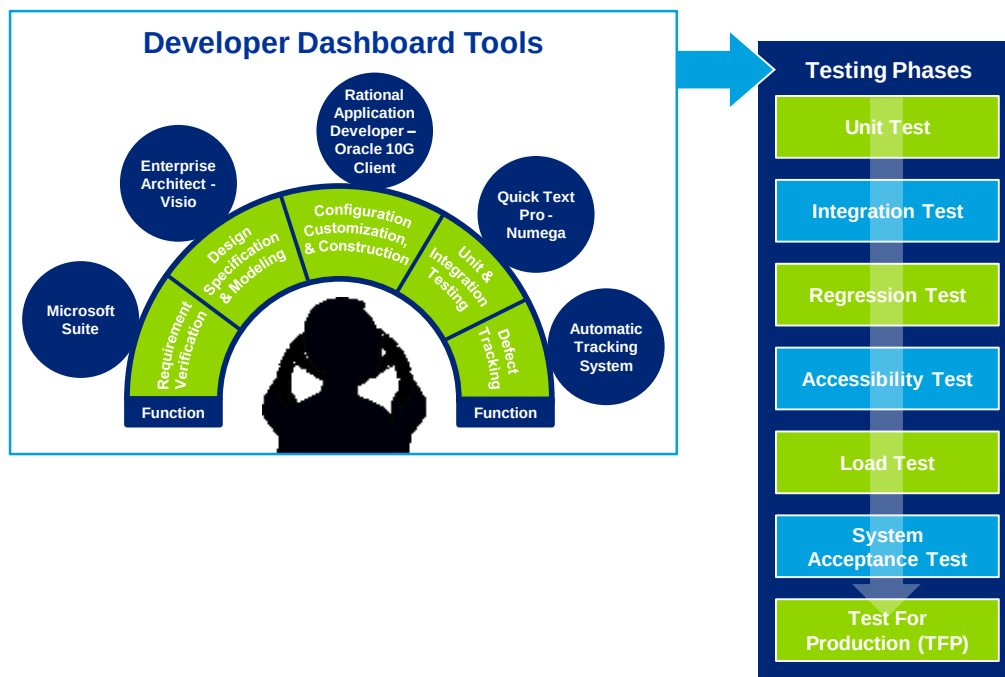
- **Unit Test Checklist Summary.** This document summarizes the components that were developed or modified within the in-scope application for the modification initiative with reference to the code and individual checklists.
- **Updated Traceability Matrix.** At this stage of the SDLC this document maps the requirements to each set of detailed documentation such as use cases, activity diagrams, screenshot details, sequence diagrams and testing scenarios.
- **Updated Work Plan.** The document is updated to outline the proposed work schedule for the Integration and User Acceptance Testing activities for this initiative.
- **Integration Test Scenarios.** This document lists the integration scenarios that have been written for the modification initiative in Automated Tracking System.
- **Build Defect Report.** The proposed team will document the defects found during the build of the application.

System Testing

Software integration and testing activities will focus on interfaces between the components of the software. Items that will be tested include functional correctness, software compatibility, system stability, overall system operability, security, and performance. Software integration and testing performed incrementally provides feedback on quality, errors, and design weaknesses early in the integration process.

In this phase, software components are integrated and tested to determine whether the software meets predetermined functionality, performance, quality, interface, and security requirements. Once the software is fully integrated, system acceptance testing is conducted to validate that the software will operate in its intended environment, satisfy the user requirements, and is supported with complete and accurate operating documentation.

Figure 6.5-31 shows distinct testing phases that will be executed when Development is completed.

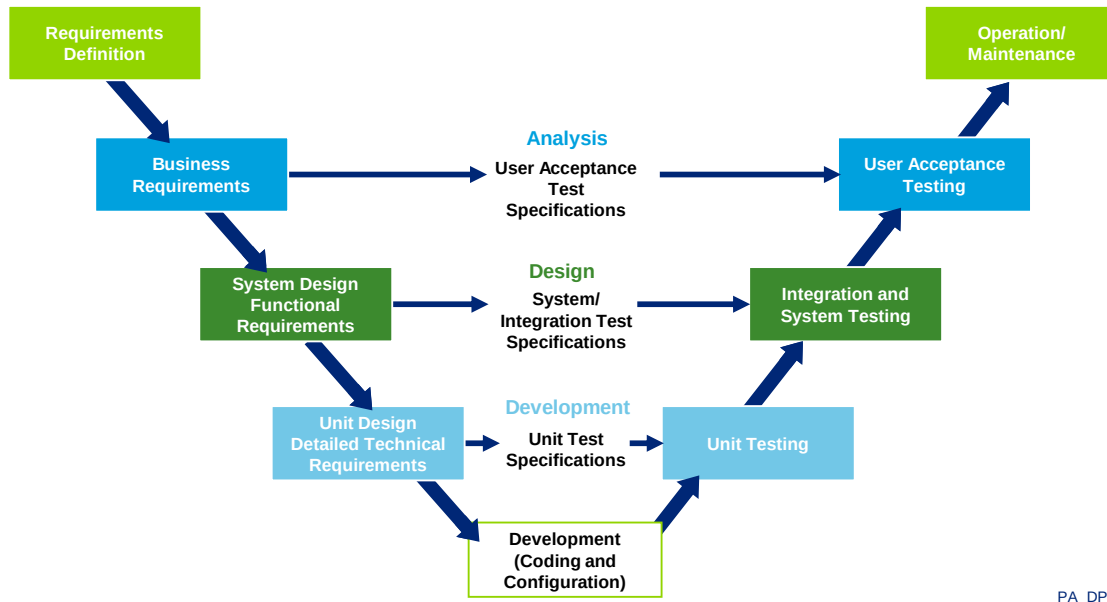


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Figure 6.5-31. Testing phases that will be executed.

After development is completed, each of the testing phases is executed in order, until the final Test for Production just before deployment.

Deloitte's approach to effective software planning and management increases software quality. Our iterative testing approach shown in Figure 6.5-32 illustrates important testing steps within the overall SDLC and supports various testing phases such as unit testing, system testing, and user acceptance testing.



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Figure 6.5-32. Software Testing Approach.

Deloitte's Testing Strategy is incorporated into the Software Development Life Cycle.

Inputs

Inputs will include the:

- Testing Ready Software Build
- Integration Test Scenarios
- SAT Test Scenarios (Created by IT Consulting Vendor)
- Detailed System Document (DSD) components

High Level Activities

The high-level activities for the System Testing Phase consist of:

High-level Activities	Description
Conduct Integration and System Testing	Integration testing is a formal procedure carefully planned and coordinated with the completion dates of the unit-tested modules. Integration testing begins with a software structure where called sub-elements are simulated by stubs. A stub is a simplified program or dummy module designed to provide one or more responses provided by the real sub-element. A stub allows testing of calling program control and interface correctness. As testing proceeds, unit-tested modules replace the stubs. The process continues until the entire modification has been integrated and tested. During system testing, the software will be tested to verify that the product meets requirements. System response timing, memory, performance, security, and the functional accuracy of logic and numerical calculations are verified under normal and high-load conditions. Query and report capabilities will be exercised and validated. Operating documentation will be verified for completeness and accuracy.
Conduct Load Testing	Load test can use scripts, batch files and user testers to place a normal and exceptional user loads on the system infrastructure simulating production conditions. Load testing will test likely user loads on a normal day as well as exceptional loads. Exceptional loads might include the data volume after a holiday weekend or the anticipated maximum load that is anticipated over a two year period. The number of and types of users as well as data volumes will be estimated by the proposed team based on existing user of an in-scope system and impacts if the modification initiative. The information tracked in the load test report includes the processes tested, data volume tested, data scenarios tested, the number of users simulated, and the types of user behaviors being simulated. Track the ramp up time, total load test time, and throttling occurring for each load test.
Conduct Regression Testing	Regression testing (i.e. re-runs of previous tests) verifies when code changes have not adversely impacted existing functionality. It confirms no additional defects are introduced when repairing defects or adding new functionality to 'approved' code. Regression testing occurs in each test phase. When code changes are made, the logic must be retested in the unit test, the function/integration test, the system test, etc., until the fixed logic reaches the area where the defect occurred. Automated regression testing will typically be employed when the system test phase has been completed. The decision to perform regression testing must be based on the risk introduced by the change, the size or impact of the change, or the criticality of the business functions impacted. Only those cycles affected by problems need to be re-tested.
Conduct User Acceptance Test	The User Acceptance Testing Activity is the responsibility of the IT Consulting Vendor and will be supported by the Lot 7 Vendor. Acceptance of delivered software is the primary objective of a software development project. Acceptance testing will demonstrate the software's compliance with the Department's requirements and acceptance criteria.

High-level Activities	Description
Manage Requirements	The proposed team will review the entire test plan (script) and test result items and cross-reference with those with the requirements using the Requirements Traceability Matrix.
Refine Batch Operational Manual	The team will refine the Batch Operational Manual to add more details to the document.
Create Test Plan	Deloitte, along with other appropriate Lot Vendors will define/refine the user acceptance testing plan. Testing of these types can take the form of parallel tests and pilot tests. Development of the test plan might require detailing generalized tests, updating any schedules. Tests defined will be specific and when test case scenarios are used, they are likely to be expanded upon to validate the processes.
Conduct Accessibility Test	During SAT we will perform accessibility testing including Bobby, ADA, and browser compatibility tests as appropriate for areas of the application that are browser-based as well as those that require specific self-service access needs.
Document Integration Defect Report	The proposed team will document any defects identified during the Integration testing.
Document SAT Defect Report	The proposed team along with the Department will document any defects identified during the Integration testing.

Figure 6.5-33. High Level Activities.

Outputs

The output of this phase is the Integration Test Work Products. The components include:

- **Integration Test Results.** This document lists test scenarios that were executed during the System Integration Test (INT) phase as part of the modification initiative.
- **Updated Traceability Matrix.** This document maps each requirement to each set of detailed documentation associated to that requirement.
- **Systems Test Plan.** This document will illustrate the tasks and activities that will take place during Integration, Regression, Accessibility, and Load testing phases.
- **SAT Test Plan.** The System Acceptance Test plan will describe the test activities planned for project acceptance. The plan will specify the tests necessary to validate the project requirements have been met and the deliverables are in accordance with existing standards. In addition, the fully developed plan documents the systematic approach to acceptance testing is established and the testing is adequate to verify functionality.
- **ADA Compliance Statement.** This document will reflect the status of the Accessibility Testing completed during this phase of the modification initiative.
- **Integration Defect Reports.** This document will report on the defects and their statuses identified during the Integration testing.

- **SAT Defect Reports.** This document will report on the defects and their statuses identified during the SAT testing.

Implementation (Pre and Post Implementation Activities)

Although many portions of the methodology may be performed concurrently, some of the activities in the latter phases of the life cycle are sequential. System testing must be complete before formal acceptance testing may begin. Likewise, the product must be formally accepted before installation can begin.

The activities in this phase focus on product verification and acceptance by the Department with the subsequent installation activities. The activities associated within this phase will be performed each time a modification release is implemented.

Load Testing

As part of the Installation phase, we will also execute automated testing and load testing as appropriate. As described in the Technology Shared Services section of our proposal, the proposed team will work with the Shared Services team and the Department to coordinate the execution of automated testing and load testing scripts. Load testing is an integral step to each major release, and we will work closely with DTE to validate capacity estimates.

More specifically, Shared Services will support each project by participating in the creation, execution, and maintenance of automated testing scripts for tools such as HP Performance Center. This will provide additional validation of system design and performance by emulating production-like conditions. For additional automated and load testing details, please refer to Technology Shared Services section of our proposal.

Our broad work in load testing is evident throughout our applications in various HHS engagements across the country.

Test for Production (TFP)

Test for Production (TFP) is the final component of the Implementation phase prior to the production implementation. TFP provides an opportunity to deploy the software in an environment that closely mimics production and provides a final rehearsal of the migration activities. It is used as the basis for the final migration instructions/plans developed for the production implementation. Lastly, the TFP phase is used to satisfy the requirements of successful co-existence with other DPW IT applications.

We understand the need to adhere to rigorous and independent testing processes within the TFP effort. Therefore, we will work with the Commonwealth to identify key TFP testers who will perform a final validation of software components before certifying that the software is ready to be migrated to production.

Similar to the integration test and SAT phases, the TFP phase will include:

- Validation of software deployment to TFP environment

- Identification, development, prioritization, and execution of representative test scenarios
- Documentation of test results
- Preparation and submission of Application QA Request

It is important to note that after we validate the software deployment to the TFP environment, we will execute a representative set of test scenarios to validate the software. Based on Commonwealth staff input, this representative set will include those scenarios designated as “most common” and “high priority.”

Team Deloitte will execute the identified test scenarios and analyze the actual results vs. expected results. If a discrepancy is found, we will use ATS to create the PCR. They will be used to track the discrepancy as it is resolved, tested, and migrated through the lower environments.

Upon successful execution and approval of the TFP testing effort, our Technology Shared Services team will prepare and submit the Application QA Request. The request will include modified source code scheduled to be migrated and specification documentation. The request will be submitted in accordance with predetermined QA timeframes.

Production Validation

For major releases, we will work to assemble a team to perform a final validation of software that is deployed to production. The Department may process mock cases to validate the flow and certify the readiness of the system prior to end user availability.

As part of our deployment process, the technical team provides DPW with concise instructions to access and exercise the application. As part of the continuous process improvement strategy we will work with the Department to automate the process so that automatic, repeated checks can be done throughout the day to proactively monitor application availability.

After successfully deploying the correction in the Production environment, the proposed team will use the formalized and implement the operational process with DPW to perform post production validations. In addition, our testing team will work with the Application team to employ, where possible, data integrity checks that run on a repeated basis. These checks scan the database for business rule violations. These reports are viewed by the project team and addressed as necessary.

Completion

After each phase during the SDLC, the proposed team will submit the completion details and the Variance Summary that will list the details of the estimated versus actual hours for the phase concerned. At the end of the last phase within Lot #7 a Final Completion Letter Package will be submitted which includes the following items:



- Submission History
- Financial Summary
- Lessons Learned
- Defect Summary
- Business Outcomes
- Section and Final Completion Variance Summaries

Experience and Examples

The methodologies, frameworks, lessons learned, and leading practices that the Deloitte Technical Support Services (Lot 7) Application Modification team employs for DPW is the product of our experience successfully delivering solutions for clients across Public Sector, Health and Human Services, and specifically the Pennsylvania Department of Public Welfare. Our practitioners who comprise this team have drawn - and will continue to draw - from this knowledge base, both from across the firm and from their own personal experience working with these clients and with you. Our team continues to be composed of resources you already know and trust to deliver successful solutions for DPW and will be supplemented as needed with new staff having the skills and experience to bring additional value to the team, especially in the form of fresh ideas, innovations, and leading practices they have successfully delivered previously. The Department will receive tried, true, and tested results that have already proven successful for other clients in the HHS marketplace, including other Commonwealth clients and at DPW itself.

With HHS eligibility and self-service implementations in 13 states along with additional Health and Human Services work in 25 states, we have not only the Deloitte network, but also our current client network to leverage experience from. We capture our innovations and “best in breed” solutions from our HHS implementations nationwide, including ones in Integrated Eligibility, Child Care, and Child Welfare, and consistently look for opportunities to integrate these innovations into the application modifications we deliver to DPW. This exposes these solutions to a wider set of Deloitte practitioners and end users who identify valuable enhancement and innovations that we can then bring back to the originating DPW applications.

We have included selected experience and examples of delivering Applications Modifications to DPW, as well as several states across the nation, involving Technical Support Services activities. We summarize these projects in Figure 6.5-34 below.

Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
Commonwealth of Pennsylvania 	DPW Strategic Business Systems	Deloitte provided Application Modification Services for DPW Strategic Business Systems, including iCIS, HCSIS, PELICAN, PACSES, and CAPS. In the last 5 years, we have responded to HLE requests from DPW and submitted work orders involving Feasibility Study, System Requirements and/or General System Design. In completing this work, Deloitte leveraged the DPW SDM Methodology to implement these modifications requests. Based on approved business requirements, we developed Systems Requirements documents and General System Requirements. Deloitte has been successful in collaborating with DPW to establish a project organization with CMMi Level 3 mature processes and continuous improvement framework.
State of Colorado 	Colorado Child Care Automated Tracking Systems (CHATS)	The Child Care Automated Tracking System (CHATS), adopted from the Pennsylvania PELICAN system, is a fully-integrated Web-based system that automates the core business functions that support the Colorado Department of Human Services in administering subsidized child care for TANF, Child Welfare, and Low Income programs. The CHATS system includes real-time attendance tracking using Point-of-Service (POS) devices, case management, eligibility determination/benefits calculation, provider management, correspondence, security, county hearings and intentional program violation (IPV) administration, and financial management - including automated payments through the use of POS devices. CHATS successfully launched in June 2010; it is currently being piloted in 5 of 64 Colorado Counties and will eventually be implemented throughout the rest of the State. The project began in May 2009 and enhanced the PELICAN system deployed in Pennsylvania as a replacement to Colorado's aging mainframe system. This project had a very aggressive time frame and used Point of Sale (POS) remote data capture devices to track attendance. Notably, CHATS is the first project delivered out of the Public Sector Delivery Center located in Camp Hill, PA

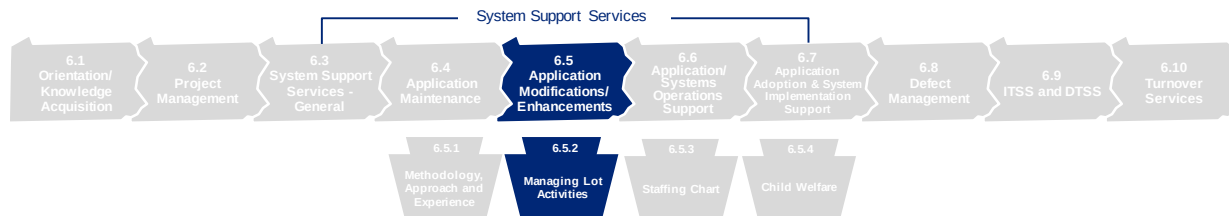
Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
District of Columbia 	DC FACES Structured Decision Making (SDM)	In April 2009, Deloitte assisted the District of Columbia with implementing the Structured Decision Making® tools (SDM) developed by the Children Research Center (CRC). These tools were integrated into the FACES.NET application which enables District workers to provide high-quality child welfare services for the children of the district and to serve them away from their offices. The SDM tools allow the District to better identify the warning signs that signal risk of harm to children; and as a result improve child safety and permanency for children in foster care, as well as promote the well-being of the children and families being served. Deloitte implemented the SDM modification that incorporates a set of assessment tools and decision guidelines designed to provide a higher level of consistency in the assessment and decision-making process for social workers as they strive to protect children from abuse and neglect. These tools are based on research conducted on actuarial data from thousands of cases across many jurisdictions. These assessment tools guide the case workers in arriving at fact based decisions to realize the holistic goal of any child welfare agency – achieving the most suitable permanency outcome for each child under its care and reducing the risk of recurring maltreatment.
State of Florida 	Access Management System (AMS) Workload Management	Deloitte assisted the Florida Department of Children and Families (DCF) with the development and implementation of their ACCESS Management System (AMS), which is an inclusive web portal that supports work management functions. With 95 percent of Florida's applications submitted via their online self service application, AMS handles the automated routing for the client applications, requests for redeterminations, requests for additional benefits, and reported changes into inboxes of administrative units that are responsible for the processing them. As part of this implementation, Deloitte completed the following modifications to AMS by implementing key features. Examples of these features include: automated routing, "get next" feature to retrieve tasks from the queue, and work assignment using "round robin" method. We have also worked with the Commonwealth of Pennsylvania to implement a similar workload dashboard solution that consolidates a worker's view of their tasks and provides the ability for them to drill down and get additional information related to the task they need to complete.

Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
Commonwealth of Massachusetts 	Commonwealth of Massachusetts Virtual Gateway	The proposed team on the Virtual Gateway project has successfully delivered many software releases that are similar in nature to those that would be required of DPW's program and technology needs. As the prime vendor on the Virtual Gateway project, Deloitte is responsible for each aspect of the system development life cycle and has experience preparing, reviewing, submitting, and maintaining each of the deliverables outlined within the RFP. As noted, Deloitte has implemented several notable application modifications for the Commonwealth of Massachusetts. For example, Deloitte undertook a significant enhancement release to the EIM/ESM services during the first half of 2009. This project included over 30 significant enhancement items and was completed in under six months from requirements to implementation. The release was technically complex and included executing multiple "code merges" as maintenance releases continued to occur to the services during the enhancement development. The project was delivered on time and on budget, meeting a strict business deadline. An additional example includes the enhancement release complete to create the My Account Page (MAP) service public facing for both the SNAP program and Medicaid. In Massachusetts. This release demonstrated Deloitte's ability to work with multiple program office stakeholders to develop a single integrated front door for citizens. This project was conducted over four months and has been key to managing the increased case loads of programs by diverting phone and walk-in traffic to the web.
State of Michigan 	Michigan BRIDGES	Deloitte provided implementation services to the Michigan Department of Human Services (DHS) to assist them with system development, integration and implementation services for their BRIDGES project. The goal of the Michigan BRIDGES project is to provide a statewide, single and integrated service delivery system for eligibility and benefit determination of Michigan's cash assistance, medical assistance, food assistance and child care assistance programs. Through the implementation of this solution, Deloitte has implemented numerous application modifications. These include: User Interface (enables DHS to incorporate multiple easy-to-use features within the user interface), IVR (allows DHS to provides a bilingual IVR System that allows recipients to review their benefits, appointments, worker contact information by calling a toll-free number), Model Office (transfers the way the State of Michigan operates, including moving from a case ownership processing to task based processing and office ownership), and Automating Case Information (develops an automated interface to establish new born Medicaid based on Vital Statistics information, which will reduce worker data entry).

Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
State of New Hampshire 	New Hampshire New HEIGHTS	New HEIGHTS is New Hampshire's statewide system for administering public assistance programs and is similar in functionality to DPW's iCIS suite of systems. Deloitte has collaborated with the Division of Family Assistance (DFA) since development on New HEIGHTS began in 1995. Ongoing enhancements to New HEIGHTS have consistently enabled New Hampshire to manage expanding caseloads while simultaneously improving customer service. New HEIGHTS includes: Integrated eligibility for over 105 benefit programs (similar to CIS), Document imaging and workflow management (similar to eCIS scanning and imaging solution), Web-based self service (similar to COMPASS), Data warehouse for metrics and reporting (similar to the Enterprise Data Warehouse),and TANF work programs.
State of Texas 	Texas Integrated Eligibility Redesign System (TIERS)	Deloitte currently provides Application Modification services to the Health and Human Services Commission (HHSC) in Texas. Since 2007, Deloitte has implemented over 220 Modifications. In the past two years alone, Deloitte has responded to over 100 High Level Estimate Requests submitted by HHSC. Deloitte conducted Business requirements meetings with HHSC stakeholders to develop Business Requirements and design documents, known as their Change Request Design documents. Deloitte leveraged the use of HHSC's PPM (Project and Portfolio Management) to monitor and track the progress of work orders.

Figure 6.5-34. Relevant Experience Demonstrating Success with Application Modifications.

6.5.2 Managing Lot Activities



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II

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II-2

RFP Reference: II-3. Work Plan

Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks.

Our application maintenance and enhancement approach for managing the Lot 7 required activities and tasks include the use of DPW's IT Methodology, including SDM and EPMM. It includes processes, procedures, tools and controls that we jointly established with DPW that we tailor to better meet the new multi-vendor, multi-system operating model. We propose staff that bring broad understanding and experience with DPW's businesses and systems that allow us to incorporate the needs of respective program offices and specific features and intricacies of DPW's strategic business systems. Our staff brings established working relationships with DPW stakeholders to further support management controls, communications and improve our combined performance.

In the following narrative, we highlight the issues, risks and proposed solutions, processes, tools and reports, and management controls, communication and evaluation for managing lot activities prior to our narrative response to Modification and Enhancement requirements.

Issues, Risks and Proposed Solutions

II

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II-3

RFP Reference: II-3. Work Plan

During this discussion, the Offeror should identify potential issues/risks and proposed solutions.

Deloitte is uniquely positioned to fully comprehend the issues and risks associated with providing Technical Support Services for DPW's strategic business systems. During our 30 year relationship, we have jointly established the current methodologies that include the processes, procedures, artifacts, templates and tools to effectively manage DPW projects within a framework of continuous improvement. Further, this relationship provides us with an understanding of DPW's vision of an integrated human services delivery model that includes multiple vendors and shared services within a service oriented environment.

Based on this understanding, as well as the lessons learned from our national HHS client and project base that includes those of similar size, scope and complexity to DPW, we provide a list of the most critical issues and risks regarding new application enhancements on this new contract. More importantly, we propose solutions that reduce or avoid these issues and risks and have incorporated them into our approach. We provide a full list of issues, risks and proposed solutions in our *Tab 4, Section 4.3, Issues and Risks* narrative response.

Issue/Risk	Deloitte's Mitigation Strategies
Ability to Respond to Production Issues The complexities and interdependence of DPW systems make issues and the impacts intricate and there exists significant potential to develop downstream affects.	- The proposed team has the collective experience from 10 plus years working with DPW to quickly assess the impacts of and the fixes to production issues that may arise. - Since we understand the complexities and interdependencies between these systems, especially since the Department is moving towards more SOA based applications, we can quickly correct the problem and minimize any negative downstream affects. - We do not wait until performance problems arise in production. We proactively load test our applications to minimize these risks.
Increased level of effort for maintenance and modifications efforts Significant resources will be required to first learn the application and what it does before it can be repaired. Testing will take significantly longer as a new resource has to determine how to regression test the system to make sure the system is not impaired.	Deloitte has worked closely with DPW to establish estimation procedures that have provided transparency to DPW and incrementally built trust. We will continue to build on these efforts.



Issue/Risk	Deloitte's Mitigation Strategies
Meeting Critical Milestones Directly Before and After Transition There are certain program requirements for DPW that must occur timely and at specific points during the year (e.g. COLA mass change, LIHEAP, etc).	- We have been side by side with you through many business cycles of these activities and fully understand the critical timelines associated with meeting these milestones. With Deloitte, you can feel confident that these deadlines are understood and will continue be proactively planned for so you can provide the needed services to your constituency. - By choosing the Deloitte Team, time can be spent on providing the solution rather than attempting to understand the problem and then constructing a solution.
Lack of Understanding of the Enterprise Applications - At the critical juncture of maturity of the DPW SOA based architecture, a failure in a component due to lack of understanding would have cross program impacts. - Also lack of understanding increases the probability of solutions not aligning with the DPW EA.	- As the DPW environment becomes more reliant on enterprise level services, it is essential that you have a vendor that fully understands their scope and also embraces your desire to create more business focused services. - For example, each of the core applications within DPW has an "intake" module. The Deloitte Team can help you evolve an enterprise level service that provides that functionality across your enterprise. This kind of service can have a significant return on investment as you save time and money and effort not having to reinvent the wheel for each of these applications. You fix/change the service one time – and you are done!
Breadth and Depth of Technology Resources The DPW technical environment requires not only deep, but broad technology skills that are not all readily available in the market.	- Deloitte has proven our ability to bring to the table the technical skill sets required to maintain and enhance your systems. We will continue to draw from our national Technology practice to provide you with the most current technology skills. - Not only the breadth and depth of the skills that we bring to the table, but the collective number of years we have using them.
Broad HHS program experience to support the program areas served by your enterprise systems 35 years of knowledge of HHS programs, policies, operations, lessons learned and leading practices, cannot be replaced during a 6 month transition period	- We have a history of HHS success across numerous states, to include: Massachusetts, California, Colorado, Wisconsin, West Virginia, Alabama, New Hampshire, Delaware, Texas, and Florida. - We have the track record and the data to back it up.

Issue/Risk	Deloitte's Mitigation Strategies
Access to Advanced Technology Thinking and Performance DPW has enjoyed this status and has been nominated for and has achieved many national awards.	- We have access to nationally recognized practitioners that have broad program knowledge and currently assist other states and the federal government with establishing and crystallizing new policies and initiatives. We have proven the invaluable insight and knowledge reservoir that we bring to the engagement with a wealth of nationally recognized practitioners such as Wade Horn, Margot Bean, Harry Radegue, and Dr. Paul Keckley. - We have published and presented extensively across the nation on many innovative programs and IT trends that may affect not only DPW but also the other states. - Because of our access to these resources we are able to provide insights into how these new or changed initiatives will impact you thus keeping you “ahead of the curve” and can help maintain your stature as both a program and IT leader.

Figure 6.5-35. Modification Issue/Risks and Mitigation Strategies.

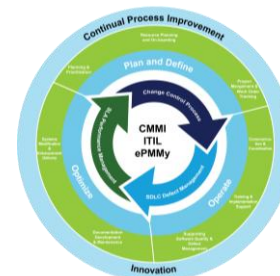
As the architects and engineers of many of the in-scope systems, Deloitte mitigates the risk of DPW spending precious resources on re-engineering each system component as it is enhanced or modified.

Processes, Tools and Reports

II	Page II-3	RFP Reference: II-3. Work Plan

For each of the Lot's Required Activities and Tasks, describe the processes that will be followed and tools that will be used; describe the reports that will be used to track, monitor work, and measure performance.

We understand that aligning to standard and proven processes and tools removes much of the unpredictability from performing application modification/enhancement activities for systems that support critical business functions for the Department. In the table below, we highlight the high level processes, tools and reports grouped by modification activity that we will use to deliver on the responsibilities and required items described in the RFP. These process groups are outlined in our approach to modifications as previously discussed in this section.



PA DPW-075

Activity: Plan and Define

Process	Tools
Perform High Level Estimates. This process also known as the HLE process involves performing a broad assessment of an estimation request and determines the resources required to perform the work order. Work Order Review and Approval. This process is done throughout the year with the DPW Contract Administrator and results in the authorized application modification/enhancement work order. Change Control Process. This process verifies that only approved change requests are incorporated into requirement baselines. Assign Resources. This process is used to assign resources to project tasks after a work order or PCR is approved by DPW.	• Project Management Center (PMC) 7.5. This tool allows Deloitte to estimate the schedule for HLEs as well as their impact on in-flight projects and to manage resource work assignments. • Automated Tracking System (ATS). This tool is used to track project change requests (PCRs) including system defects.

Figure 6.5-36. Plan and Define Processes and Tools.

Reports

- **Work Order Status Report.** This periodic report provides a list of the current work orders, their system affiliation and their current status. It is used by the PMO to assist in the prioritization of resources and identification of any risks or issues to the overall IT systems initiatives.
- **Program Change Request (PCR) Report.** This is an on demand report produced by ATS that shows the details for open PCRs and their current status. It is used by the change control board to review PCRs and determine if their benefits outweigh the impacts to existing project resources.
- **Resource Management Report.** Automatic report generated through PMC includes resource-based work calendars, resource dashboard showing capacity, load, and assignments, project capacity and load, and project resource usage down to the task level.

Activity: Operate

Process	Tools
Perform Detailed System Design (DSD). This process begins with the hand off of the GSD from the Lot 6 vendor to Deloitte in order to build the DSD specifications. Design “handoff” review sessions will be conducted as agreed upon to gain general agreement on the detailed specifications. The final output is the DSD documentation. Perform System Development. This process takes the DSD and implements the specifications in the system code. It includes code reviews and unit testing of the modified system code. Integration Testing. This process is performed after unit testing once the system modifications are integrated into a build. It can result in defects, new change requests or the modifications meeting the quality criteria to move on to the next testing phase. Acceptance Testing. This process validates that the modifications meet business and system expectations. Test for Production (TFP). This process validates that the application modifications will run within expected service level agreements in a production environment. It is the last step before production deployment. Operational Readiness. This process is invoked after the acceptance testing is complete and verifies that the modifications are ready to be moved production.	• Project Management Center (PMC) 7.5. This tool allows Deloitte to estimate the schedule for HLEs as well as their impact on in-flight projects. • Enterprise Architect. This tool allows Deloitte to maintain the systems architecture blueprint for each system being modified or enhanced in one central, integrated tool. • DocuShare. Used to share detailed system design as well as other Lot 7 documents with project stakeholders and to manage document version control. • TFS. This tool will be used to provide methods for software and system configuration version control in order to preserve the integrity of the data/development output while promoting a collaborative development environment. • Automated Tracking System (ATS). This tool is used to track test defects found during the test phases of software development. • Mercury LoadRunner. This tool is used to perform system load testing as a part of acceptance testing. • Quick Test Pro. This tool is used to automate regression testing scenarios. • HP Functional Tester. This tool is used to maintain test cases and track their execution results during integration and system testing. • Traceability Matrix. This tool enables Deloitte to create a broad test plan for integration and system testing as well as acceptance testing that provides coverage for system modification requirements. • Operational Readiness Certification Document. This tool documents operational readiness criteria to be recorded in one place for each work order.

Figure 6.5-37. Operate Processes and Tools.

Reports

- **Risk Manager Dashboard Report.** Automatic report generated through PMC includes risk activity, risk by status, open risk summary, risk priority by status matrix, risk by priority, risk detail, past due risks, and risk aging by priority.
- **Status Report.** Automatic report generated through PMC includes timeline, completed tasks, planned tasks, late tasks, issues/risks, project schedule, dashboard health of project, and Earned Value metrics.

- **Performance of Work Report.** Automatic report generated through PMC includes real-time Earned Value summary, Earned Value detail, time-phased Earned Value analysis, and project health exceptions. A sample portion of the Performance of Work Report is below.
- **Project Work Plan Report.** Automatic report generated through PMC includes Work Breakdown Structure with schedule and actual effort tracking and task-based exceptions and notifications.
- **Issue Manager Dashboard Report.** Automatic report generated through PMC includes issue activity, issues by status, open issue summary, issue priority by status matrix, issues by priority, issue detail, past due issues, and issue aging by priority.
- **Integration Test Report.** This report is produced after each integration test cycle and contains the execution results for each test case and number of defects. This, along with the defect report, can be translated into the overall quality of the software build and used to determine if the modifications are ready for the next testing phase.
- **Acceptance Test Report.** This report is produced after each acceptance test cycle (load, systems acceptance, etc) and contains the execution results for each test case and number of defects. This, along with the defect report, can be translated into the overall quality of the software build and used to determine if the modifications are ready for the next testing phase.
- **Defect Report.** The defect report provides the details for each defect logged during a test cycle and its corresponding severity and impact. This is used with the test reports to determine overall software quality at the end of each test cycle.

Activity: Optimize

Process	Tools
Process Improvement. Our CMMI framework identifies processes that can be refined based on historical data to be more efficient and effective.	• Project Management Center (PMC) 7.5. This tool provides Deloitte with the historical data needed to identify and define process improvements.

Figure 6.5-38. Optimize Processes and Tools.

Reports

- **Production Deployment Report.** This report is used to identify issues or gaps with deliverables which provides us with areas to be reviewed for potential improvement in our process to improve overall deliverable quality.

Management Controls, Communication and Evaluation

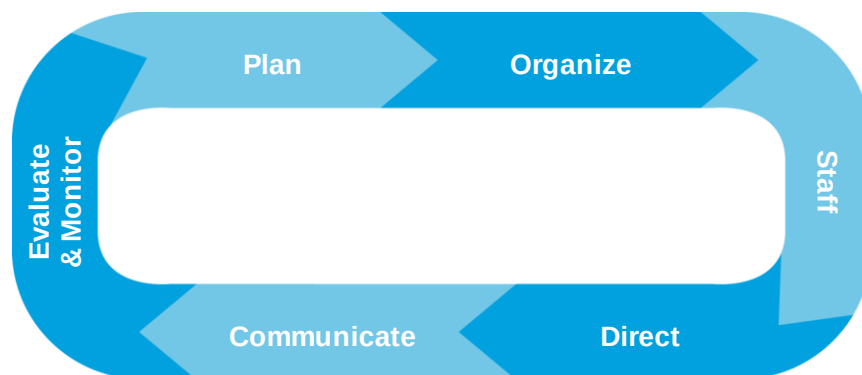
II

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RFP Reference: II-3. Work Plan

Describe the management controls that will be used to identify and manage risk, maintain project schedules, ensure the quality of the work, and meet all of the performance expectations. Based on its experience, the Offeror should include a discussion of its formal and informal communication processes within a project of this nature. The Offeror should also address its approach to internally monitoring and evaluating its effectiveness in meeting the RFP requirements for the Lot throughout the course of the contract.

Management controls, formal and informal communications processes, and monitoring and evaluating of project effectiveness are managerial functions that we use to identify and monitor potential errors from which we perform the necessary corrective actions. These functions on a project of this nature and as depicted in Figure 6.5-36, include planning, organization, staffing and directing of work to minimize deviation from standards and to achieve the stated goals of the organization. We establish controls by setting standards and based on these internal controls, measure and evaluate actual performance to these against these goals. Communication processes, internal and external to the project organization, are the means for facilitating these control mechanisms and the resulting corrective actions.



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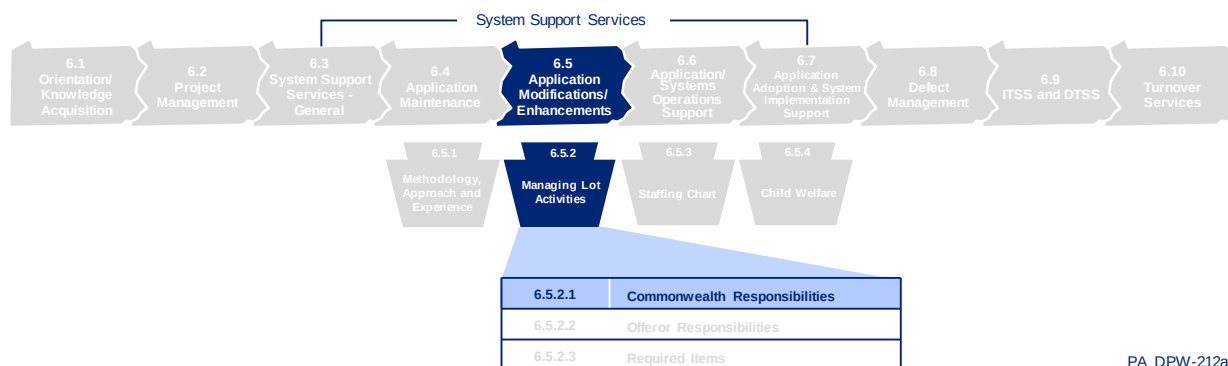
Figure 6.5-39. Management Control, Communication, and Evaluation Process.

Deloitte utilizes a disciplined approach to effectively provide management control, enable communication and facilitate evaluation.

Modification/Enhancement Process	Deloitte Approach
Plan	• Review GSD specification and prepare HLEs for each work order • Prioritize PCRs via the change control process and work orders with the DPW Contract Administrator • Develop the project schedule and identify resource needs
Organize	• Align approved work orders and PCRs with a release schedule for the fiscal year • Allocate work to resources using the PMC tool • Update roles and responsibilities for project resources as needed
Staff	• Acquire resources from the shared services pool • Identify track leads for modification/enhancement initiatives • Identify project stakeholders and key liaisons with DPW and other Lot vendors
Direct	• Conduct weekly team meetings • Review status of tasks and activities • Take corrective action as required
Communicate	• Attend PFM/PM meetings • Engage program offices through governance meetings • Facilitate user/stakeholder communication
Evaluate	• Review actual vs. estimated • Evaluate and adjust resource plan • Assess and refine SLAs

Figure 6.5-40. Management Controls, Communication, and Evaluation Process and Deloitte's Approach.

6.5.2.1 Commonwealth Responsibilities



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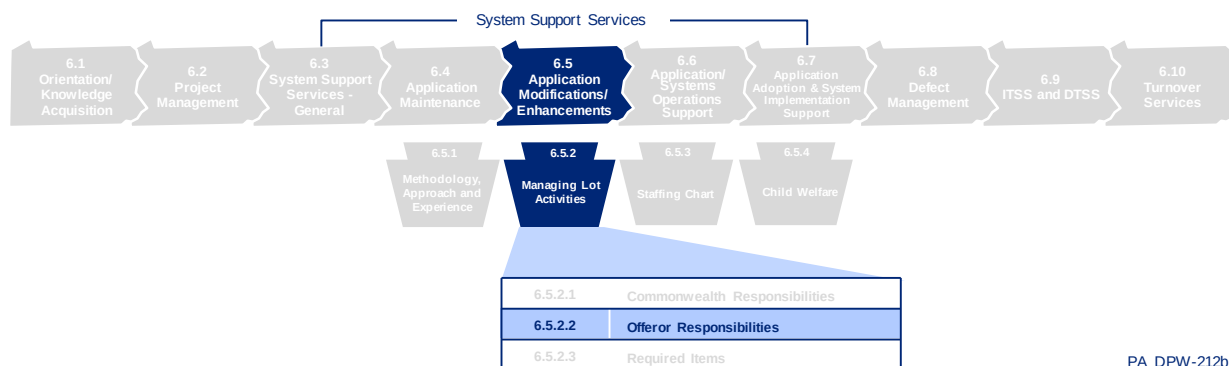
RFP Reference: 3.4.1 Commonwealth's Responsibilities: Application Modifications/ Enhancements

- DPW responsibilities

Deloitte acknowledges that for DPW to achieve its core missions and improve citizen services in a multi-vendor project environment, it requires well-defined responsibilities. We understand that both DPW as the client, and ourselves, as the vendor, have distinct responsibilities and will perform them in close coordination to achieve project success.

We will help facilitate activities that will allow the Commonwealth to meet the responsibilities specified in the RFP in a timely fashion. Through our current contract at DPW, we have had the opportunity to understand and operate in your existing services model and have established working relationships with DPW stakeholders. We understand your new operating model and plan on leveraging these relationships to help effectively support your responsibilities in concert with ours.

6.5.2.2 Offeror Responsibilities



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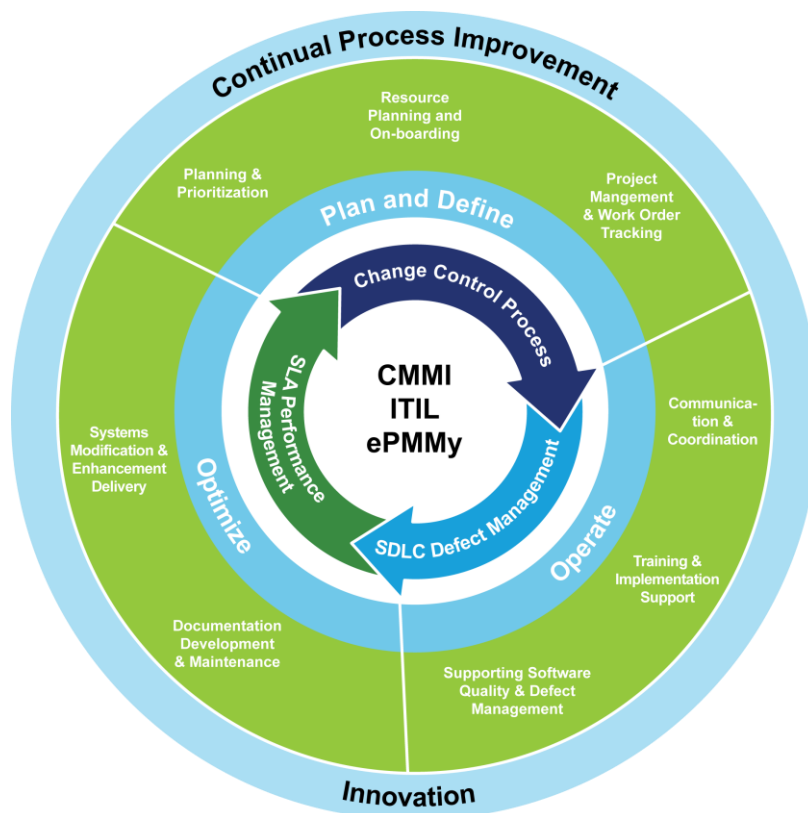
RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

The responsibilities of the selected Offeror will include:

The initiation and successful delivery of new systems modification and enhancement projects is the key to DPW's continued evolution and growth. Not only will these initiatives progress the DPW vision, but they will also be the driving force behind operational improvements, improved efficiencies and alignment with policy changes and/or new state or federal statutes or regulations.

Deloitte recognizes that there are a number of responsibilities that must be accomplished in coordination and collaboration with DPW and other vendors, to support the new DPW operating model and successfully deliver these essential modifications and enhancements.

Our approach to application modifications and enhancements uses methodologies within an integrated operational framework that includes continuous improvement and supports a multi-vendor, multi-system operating model. As we depict in Figure 6.5-41, we implement modifications and enhancements to DPW's strategic business systems working within and across DPW's program offices using a structured approach.



PA_DPW-875_2

Figure 6.5-41. Deloitte's Approach to Modifications and Enhancements.

We use a structured approach to implementing application modifications and enhancements that supports a multi-vendor, multi-system operating model.

The Lot 7 responsibilities defined by DPW span the life cycle of systems modifications and enhancements and fall into several key activity threads. Deloitte has developed this list of activity categories by logically grouping together the Lot 7 Offeror responsibilities as outlined in the RFP:

- Planning and Prioritization
- Resource Planning and On-Boarding
- Project Management and Work Order Tracking
- Communication and Coordination
- Training and Implementation Support
- Supporting Software Quality and Defect Management
- Documentation Development and Maintenance
- Systems Modification and Enhancement Delivery

Each of these key activities is outlined in the table below, along with the corresponding responsibilities.



Lot 7 Activity Thread	Lot 7 Offeror's Responsibilities	Deloitte's Approach Meets Lot 7 Requirements
Planning and Prioritization	• Perform work assignments according to priorities set by the Department • Receive requests for High Level Estimates and provide response with preliminary estimates and proposed approach within five (5) business days • Conduct detailed requirements and GSD analysis for each High Level Estimate request and provide an updated Work Order that includes a the problem definition, problem solution, and the number of hours required to design, code, test, implement, and update documentation related to the requested change(s) and the estimated completion date • Submit updated proposed project schedule for Work Order implementation within fifteen (15) business days after submittal of preliminary estimate, unless otherwise approved by the DPW Contract Administrator • As required, estimate the impact of specific Work Orders on other projects and priorities and submit any revised completion dates to the DPW Contract Administrator for approval • Update Initial Systems capacity Estimates and Plans	A critical first step to success will be the identification and prioritization of systems modifications and enhancements. We support this process by providing timely and accurate estimations and aligning our priorities with those of DPW.
Resource Planning and On-Boarding	• Provide the skilled resources required to perform modifications/enhancements for the in-scope systems • Supplement this team as required from time to time to complete Work Order requests per the required completion dates • Provide a monthly report that shows the expended time by each person for each work order	The delivery of successful modifications and enhancements depends upon qualified resources, with and understanding of both the business and technical environment of DPW. Deloitte brings not only our experience with DPW's business and systems but a wealth of knowledge from practitioners working across our national network of HHS projects.



Lot 7 Activity Thread	Lot 7 Offeror's Responsibilities	Deloitte's Approach Meets Lot 7 Requirements
Project Management and Work Order Tracking	• Submit proposed automated system work order tracking system to the DPW Contract Administrator and obtain approval to implement • Implement automated system work order tracking system that captures detailed information related to each system work order, maintains status of each system work order, and provides the necessary reports to manage the system work order process and provide easy access to the documents and information related to each system work order • Maintain information on the system work orders for the life of the contract • Create a systems operational readiness certification document • Release Management and Version Control • Use and maintain an automated system for tracking and reporting of system work orders and provide regular reports to the DPW Contract Administrator	In an environment where concurrent IT projects may be underway, project management and work order tracking will be essential to keep the stakeholders aware of issues, risks and overall project status. Communicating project plans/milestones, task expectations, sharing progress metrics and establishing processes for corrective action will result in more efficient and on time project delivery.
Communication and Coordination	• General Systems Design Review and Translation • Provide EA-Blueprint component update information to the selected Offeror of Lot # 6 • Participate in regularly scheduled status meetings with the appropriate Department and IT Consulting Services" staff to monitor current operations and to monitor progress on modification activities, provide status on open system Work Orders, and review deliverables related to system Work Orders as appropriate • Meet with the DPW Contract Administrator or designee annually to discuss the in-scope system related initiatives	The new operating model put forth by DPW will demand continual communication between lot vendors, DPW and project stakeholders to maintain alignment between business requirements and the solution delivered. Deloitte has a proven history of working collaboratively with other vendors and will continue this spirit of collaboration in the new operating model.
Training and Implementation Support	• Prepare and conduct technical training as required by the Department • Implementation Systems Technical Support and Training as required	Deloitte will work with DPW to provide requested technical training and implementation support. Deloitte brings an experience profile that is built on continued presence in the HHS market and therefore provides a vast array of current project experience with exposure to many leading edge technologies and leading practices.



Lot 7 Activity Thread	Lot 7 Offeror's Responsibilities	Deloitte's Approach Meets Lot 7 Requirements
Supporting Software Quality and Defect Management	• Coordinate with Lot # 1-5 for SAT test planning, executions, and defect management activities • Create and execute systems test plans • Perform systems testing (including unit, integration, system, and regression testing, pilot testing, will also be included as necessary) and correct any problems encountered • Walk through system test results with the selected IT Consulting Services Offeror and state staff. • Submit system test results to the DPW Contract Administrator and obtain approval • Use and maintain an automated defect management system for tracking and reporting of system defects throughout the SDLC phases per release and provide regular reports to the DPW Contract Administrator • Defect management and reporting throughout the SDLC phases per software release	It will be necessary to create a plan for effectively testing the predefined business and system requirements so that DPW can be assured that the solution being developed meets the established standards and that any defects that arise are properly identified, tracked, resolved, and furthermore, that steps are taken to prevent the recurrence of such defects. Deloitte will work collaboratively in this effort with DPW and other lot vendors to deliver quality solutions in alignment with the business requirements and vision of DPW.
Documentation Development and Maintenance	• Prepare and submit updates to systems documentation and any other necessary documentation and obtain approval within twenty (20) calendar days of the date that the modification/enhancement goes into production with the exception of report documentation • Documentation associated with report changes or newly created reports must be received prior to the first production run of that report • Submit required deliverables in accordance with DPW System Development Methodology for Department review and obtain approval • Update requirements traceability matrix Update Systems Architecture Blueprint Document (Appendix FFF) • Conduct walkthroughs of detailed system design documents, defect reporting documents, implementation playbooks, system test plans, data conversion and validation (methods and strategies), pilots or proof of concept planning and outcomes documents, capacity planning and operational data statistics, security vulnerability assessment documents, and project plans as requested by the Commonwealth	Creation and maintenance of systems documentation is essential in the systems modification and enhancement delivery process. This will not only provide documentation of the technical solution and architecture, but will be the key to accurate estimations and successful transitions between projects phases, supplementing the handoffs between lot vendors.



Lot 7 Activity Thread	Lot 7 Offeror's Responsibilities	Deloitte's Approach Meets Lot 7 Requirements
Systems Modification and Enhancement Delivery	• Assist in Custom, COTS, SaaS, and Transfer Technology solution options assessments, integrations, and implementations • Implement modifications/enhancements upon DPW approval • Participate in brainstorming discussion on DPW initiatives, as requested • Business Rules Integration, Implementation, and Testing • Data conversions and validations • Code programs/modifications • Systems and Technology Integrations, implementations, and testing	The successful delivery of systems modifications and enhancements will depend upon the completion of responsibilities and the coordinated efforts across teams and stakeholders. As the technical support services vendor, the Deloitte Team will deliver on each of the identified responsibilities, and work collaboratively with other lot vendors to help drive solutions to implementation.

Figure 6.5-42. Lot 7 Activity Threads and Responsibilities.

The complex business and technical environment of DPW reinforces the need for an experienced team to meet these responsibilities. Deloitte's experience delivering services in the current operating model with DPW provides us with the foundation to meet these responsibilities in support of the new operating model. We also leverage our national HHS and technology experience to continue bringing creative and efficient methods to deliver in support of DPW's mission.

The following sections will address Deloitte's understanding and approach towards each of these individual responsibilities as defined by DPW for the Lot 7 vendor.



Providing Skilled Resources to Perform System Modifications and Enhancements

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Provide the skilled resources required to perform modifications/enhancements for the in-scope systems
- Supplement this team as required from time to time to complete Work Order requests per the required completion dates

Each time a modification is scheduled, the portfolio coordinator identifies an appropriate initiative lead, based on the nature of the medication. That initiative lead then works with the portfolio coordinator to put together a team with the right skills, knowledge, and experience to successfully design, development, and implement the modification.

As the initiative lead staffs the modification, the lead draws on **competencies**, such as Adobe, as well as **functional** knowledge, such as client intake, and **application** knowledge, such as COMPASS, if needed. We have organized our modifications team so that it includes staff with the breadth of experience needed to successfully deliver a modification.

Additionally, our approach to sourcing and staffing, and our available pool of internal Deloitte resources and subcontractor relationships, is such that we can rapidly scale up or scale down for an initiative.

Resource Tracking

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Provide a monthly report that shows the expended time by each person for each work order

Deloitte understands the importance of resource tracking for proper control and execution of project initiatives. For approved modifications and enhancements, as we progress through the Lot 7 activities of detailed system design, development, testing, training, and implementation, our Application team members use the PMC tool to record their actual time spent on each task in the work plan. The sample project work plan below illustrates where the hours spent are captured for each activity in the work plan by the assigned resource.

Work Plan for YS-Demo Project (New: Health ■ Green)

View: Schedule View Change View ▾

Filter for: All Tasks ▾ All Tasks Total Tasks

Expand to: Level ▾ ⏮ ⏪ 📅 + - ✂ 📄 📁 🔍 Edit ▾ Actions ▾ Prev Next Seq #: 0 Go

Seq	Name	Status	Sche... Durat...	Scheduled Start	Scheduled Finish	Unassi... Effort (hrs)	Predec...	Resou...	Role	Activ.
0	YS-Demo Project	Active	57.00	09/04/10	09/06/30			Yuichi ...		
1	Project Management	Active	6.00	09/04/10	09/04/17			Yuichi ...		
2	Detailed PM Task 1	In Progress	5.00	09/04/10	09/04/16	0.00		Yuichi ...		
3	Detailed PM Task 2	Ready	3.00	09/04/10	09/04/14	0.00		Yuichi ...		
4	Detailed PM Task 3	Pending Pr...	0.00	09/04/17	09/04/17	0.00	2; 3	Yuichi ...		
5	Plan	Active	6.00	09/04/10	09/04/18					
6	Detailed Planning Task 1	In Progress	3.00	09/04/10	09/04/14	0.00		Yuichi ...		
7	Detailed Planning Task 2	Ready	5.00	09/04/13	09/04/17	40.00				
8	Detailed Planning Task 3	Ready	0.00	09/04/18	09/04/18	0.00				
9	Design	Pending Pr...	20.00	09/04/21	09/05/18	160.00	5			
10	Build	Ready	20.00	09/05/11	09/06/08	160.00				
11	Test	Ready	20.00	09/05/25	09/06/22	160.00				
12	Deploy	Pending Pr...	2.00	09/06/27	09/06/30	16.00	11			

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Resource Name	Work Order	Task	Hours Spend
Doe, Joe	Project A	DSD – Screenshot Development	55
Doe, Joe	Project A	DSD – Traceability Matrix	35
Smith, John	Project A	DSD – Screenshot Development	23
Smith, John	Project B	Development	57

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stakeholders to analyze who has worked on a particular task for each of the work orders and how many hours that resource spent.

Work Order Tracking

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

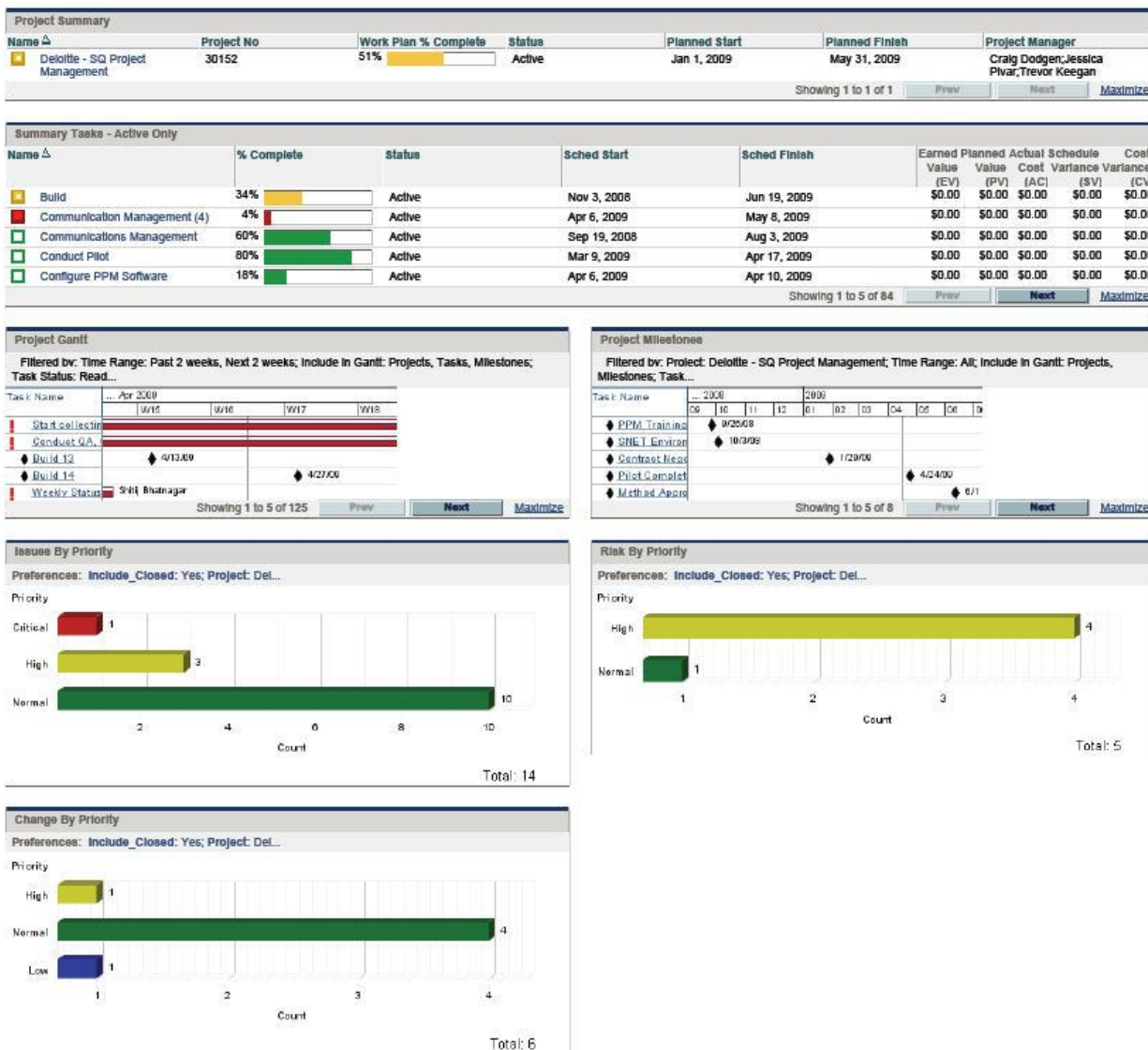
- Use and maintain an automated system for tracking and reporting of system work orders and provide regular reports to the DPW Contract Administrator

Deloitte understands the importance of tracking and monitoring the status of system work orders for timely delivery of application modifications and enhancements. As a Lot 7 Offeror, we receive approved user requirements (Business Requirements Document), system requirements (System Requirements Document), and general design (General System Design) from Lot 1-5 and Lot 6 vendors. We provide the DPW Contract Administrator with a work order that is used to track the detailed design, development, testing, and system adoption work for the change. We propose to use our centralized automated tool PMC to track and monitor the work related to an approved system work order.

For each application modification and enhancement, we commence our work with the development of a work plan. As part of the work plan, we identify the work breakdown structure (WBS) that lists the detailed tasks required to complete the work and deliverables by phase of an initiative. The work plan also includes a baseline schedule and is created in Microsoft Project initially and uploaded to PMC. The PMC tool automatically assigns resources to tasks based on resource allocation in the work plan.

The PMC tool provides automated support for tracking and reporting status of each work order. As we progress through detailed design, development, and testing phases for a work order, the application team continues to record actual hours spent on the work order in the PMC tool. The following is a sample of regular report that provides details for each work order to allow the DPW Contract Administrators to track and monitor progress.

Project Summary Dashboard



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Figure 6.5-45. Regular Reports to Track and Monitor Work Orders.

The PMC Report provides the health of the work orders to DPW Contract Administrator.

This report not only enables DPW Contract Administrators to have an easy way to track and monitor each work order but also provides a way to holistically monitor the progress and status of multiple work orders.



Defect Management and Tracking

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Use and maintain an automated defect management system for tracking and reporting of system defects throughout the SDLC phases per release and provide regular reports to the DPW Contract Administrator

Deloitte recognizes that defect management is an imperative element of success that requires thoughtful analysis and reporting of defects to DPW and also other vendors. We have a unified and mature defect management process that we have employed in prior engagements with DPW and will continue to improve upon. In addition, we will coordinate with vendors in Lots 1-5 and 6 to seek input on the defect management process, including defect prevention, discovery, tracking, categorization, resolution, reporting, and after-action activities.

As the Lot 7 vendor, we understand that defects can appear at any point throughout the Software Development Life Cycle (SDLC). In these situations, we are well-positioned to leverage our proven defect resolution methodology, in use today at DPW, to quickly analyze and resolve defects. In order to effectively manage and mitigate defects, tasks executed within both Lot 6 and Lot 7 need to follow an approach that provides structured processes and procedures which are defined and driven by Lot 7. The key activities we perform include:

- Maintain the enterprise defect management system and tracking of defects throughout the SDLC phases
- Synthesize modified general system designs based on Lot 6 vendor updates and produce updated detailed systems design
- Gain Approval of Detailed System Design deliverables from Commonwealth and project partners
- Perform appropriate testing and regression testing of defect, including those defects resolved during the pre-defined warranty period for enhancements/modifications

Defect Tracking

In order to successfully execute these key activities, Deloitte works with DPW to facilitate defect management and tracking in an automated fashion using the Automated Tracking System (ATS) tool. This system, maintained by Deloitte, acts as an effective defect management tool that supports accurate, detailed analysis, and reporting of defect information per software release to assist management with risk management, process improvement, project management, and Go or No-Go operational readiness decisions.

ATS allows for the creation of defects by both DPW authorized users and the vendors with whom we will collaborate. Defects are maintained by the establishment of regular internal meetings to understand source and criticality of defects. In addition, we also participate in triage meetings with the other vendors. Only when the system design for a

defect has been approved by the Commonwealth we modify the status of the PCR and begin detailed design and development upon the impacted system(s).

The ATS tool, used previously and customized for our work with DPW, acts as a repository and tracking tool for defects found across systems and throughout SDLC phases for each DPW system. Figure 6.5-46 below displays each of the elements that are captured in an effort to properly track defect details.

Program Change Request (PCR) Home Page

Search, Add PCRs

Assigned PCRs
Initiated PCRs
Add PCR

Latest PCRs

PCR#	Creation Date	Title	Environment	Status
19761	7/27/2010	Add Altoona (person who has left Altoona) to the Special Population drop-down	Production	Not Started
19760	7/27/2010	TT: HD Error - CMW View Individual's Status - Region BAS and ACAP	Development	Not Started
19759	7/27/2010	Unable to authorize services	Production	Not Started
19758	7/27/2010	Records missing from CPB table	Production	Not Started
19757	7/27/2010	TT: HD error attempting to clear new consumer	Development	Not Started
19756	7/27/2010	Duplicate service record in CBP	Production	Not Started
19755	7/26/2010	HD: HCSIS Common Error - Searching for child's demographic	Production	Not Started
19754	7/26/2010	ET-PS Duplicate Records for Lancaster Preschool Program	Production	Not Started
19753	7/26/2010	Determine why contracts for Wayne & York/Adams have not been created	Production	Research
19752	7/26/2010	BIS: Delete Duplicate Demographic Records - BEIS	Production	Not Started

Search PCRs

PCR#

Initiator

None--
Abu, Zuraida
Adams, Cachet
Adem, Satya

Assigned To

Build <

PIN

Tester A

Tester B

Keyword Search

☐ Title
 ☐ Description
 ☐ Note Subject

Created from to

Close Date from to

Bundle#

Target Release

None--
01/04/2011 - D/F
01/06/2011 - D/F
01/07/2010 - D/F

Staff ID

County/Agency

PIN Type

Root Cause

Defect Injection Phase

Call#

Status

None--
Approved
Approved by CGP
Awaiting Prioritization

Complexity

Type

Cust. Area

Environment

Defect Injected Release

Subsystem

None--
Administration
Alerts
Alloc. County Funds

Priority

Non-Bundled

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Figure 6.5-46. Program Change Request (PCR).

Automated Tracking System (ATS) allows for adding and maintaining details around a defect which helps in monitoring and tracking the defects.

As illustrated in the graphic above, ATS allows vendors and DPW to track defects across the DPW enterprise by characterizing them in the following ways:

- **System.** Indicates to which system the defect belongs (iCIS, HCSIS, PACSES, etc.)
- **Subsystem.** As many of the systems are divided further into subsystems, this designates a specifically area of functionality in which the defect resides.
- **Environment.** Indicates the environment in which the defect was identified (integration test, user acceptance test, etc.).
- **Creator.** The resource that created the defect ticket.

- **Release.** The specific enhancement bundle (if applicable) to which the defect belongs.
- **Priority.** The importance of the defect with regard to other system defects and enhancement priorities.

Defect Analysis, Categorization and Prioritization

Following the identification of the defect, we will work with both DPW and the applicable Lots 1-5 vendors to initiate a repeatable, standardized process that will both resolve the defect and analyze potential revisions of current processes to prevent further defects of the same nature. This process, at a high-level, is illustrated in Figure 6.5-44 below.



PA_DPW-720

Figure 6.5-47. Defect Management Process.
Deloitte follows established 4 step process to address each defect.

Defect Analysis. Analysis involves understanding the root of the defect, the impacted functionality, and the subsequent steps needed to resolve and successfully test and regression test the system.

Root causes of defects discovered during the design and road mapping phases of initiatives may include the following:

- Missed Requirements
- Design Flaws
- Lack of detailed and updated design documentation
- Poor Requirement Traceability
- Lack of Testable Requirements

Once the root cause has been established, Deloitte works together with the Lots 1-5 and Lot 6 vendor to determine the severity of the defect by analyzing other areas within the application that may be affected by the defect.

Defect Categorization. Categorization is performed to align the defect with a specific system area based on its characteristics and impact. This could refer to the defect originating within a specific business process, system configuration, system hardware, or functionality piece within the system. The defect's categorization allows us to place the most appropriate resources on the task of defect resolution.

Defect Prioritization. Prioritization is then performed by comparing the defect against other priorities for the specific system, initiative, and resources it impacts. The following table illustrates the defect priorities and the response mechanism.

Defect Priority Type	Key Response Mechanisms
1- Mission Critical	Severity 1 and Priority 1 system defects will be addressed promptly as an emergency. These are 'Fatal' defects which result in failure of complete system or entire software unit. Deloitte will participate in the emergency triage meetings to help analyze, prioritize and categorize the defect. We will work closely and expeditiously with the Lots 1-5 and Lot 6 vendor and will complete system design activities to have this problem fixed in production at the earliest. We will also work with the Commonwealth to determine the course of action for Priority-1 defects of lower severity.
2 – Mission Essential (OK with work-around)	We understand that the Priority 2 defects are 'Major' defects which cause failure of entire or part of system but there are some processing alternatives. They are also 'Minor' defects which do not result in failure but cause the system to produce incorrect, incomplete, or inconsistent results. Priority 2 system problems will need to be evaluated by business owners/project management on an individual basis to determine if the work-around process is too difficult or time-consuming to allow business to be conducted effectively. Deloitte staff will participate in this process and will work on resolution accordingly.
3 – Cosmetic	Priority 3 defects will be triaged during the daily defect triage meeting. Deloitte staff will participate in this meeting and will work on resolution accordingly.

Figure 6.5-48. Deloitte understands the defect priority types established by DPW and has an action plan to address each of them.

Defect Resolution. As the Lot 7 vendor, Deloitte works with the Commonwealth to forward defects related to incorrect requirements or System Acceptance Test scripts to the Lots 1-5 vendor and issues related to system design to the Lot 6 vendor. We will handle the other types of defects and implement the fix first in the development environment, test it and then plan a release and deploy the fix to the higher environments. After successful deployment of a release the defects will be closed in the Automated Tracking System with an appropriate resolution.

Regular Defect Status Reporting

In addition to the timely analysis and resolution of defects, we recognize that an equally important measure of success when enhancing or modifying systems lies in Deloitte's communication and collaboration with both DPW and other vendors. As such, we follow a regular and established method of communication across initiatives that is designed to inform each level of the organization with pertinent and valuable information regarding defect statuses. The below table describes the major defect reports that we will disseminate to other vendors and DPW team members.

Report Name	Content	Frequency
Defect Management Log	Real-time report of the defect data in the defect management tool.	Real-time
Daily Defect Log	Tactical report of the open production defects, anticipated resolution path and expected resolution data/time.	Daily
Weekly Defect Log	Summary of weekly defect activity, including new defects and closed defects.	Weekly

Report Name	Content	Frequency
Trends Report	Defect trends over time by Priority, Type, Repair Time and Severity.	Monthly
Defect Density/Lines of Code/Software Quality Index	Report of defects per Thousand Lines of Code (KLOC).	Monthly
Phase Yield	Number of defects resolved vs. Number of defects that existed at phase entry level.	Monthly
Root Cause	Number of defects based on root cause.	Weekly
Injection Phase	Number of defects in development based on injection phase. (Here injection phase will be system design).	Weekly
Defect Aging Report	Time defect is open between being assigned to Deloitte until closure or assignment for development.	Weekly

Figure 6.5-49. Deloitte generates and disseminates defect reports on a regular basis.

Deloitte seeks to continue maintaining a repeatable, production-proven approach for enhancement/modification defect resolution in collaboration with DPW. We work with both the Department and Lots 1- 6 vendors to adapt and improve these processes to create high quality deliverables and applications, efficiently assign project resources, and apprise vendors and DPW of the state of its systems throughout each phase of the SDLC. For details on Defect Management, please refer to *Section 6.8, Defect Management*.

Provide Operational Readiness Certification

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- Create a systems operational readiness certification document

As system modifications and enhancements progress to the Implementation Phase of the SDM, it will be essential for a systems operations readiness profile to be established and agreed upon by stakeholders before advancing to implementation. This will provide final signoff and confirmation of software readiness before going into production.

This process will be facilitated by the Lot 7 vendor; however, it will be imperative to include both the Systems Architecture Services and IT Consultant Services vendors in a coordinated approach to verifying operational readiness.

After advancing the solution to the test for production (TFP) environment, we will meet the requirements associated with the key activities outlined in the table below to confirm quality and alignment with business requirements.



Lot 7 Activity	Lot 7 Responsibilities	Deloitte Approach
Business Solution Operational Readiness Profile	Conduct a broad test and walk through of the following components with DPW and the selected IT Consultant Services Vendor : • Production Defect Report • SAT Test Results • Security and Performance Test Results • ADA Compliance Statement (if applicable) • Implementation Plan	• As the Lot 7 vendor, the Deloitte Team will submit corresponding deliverables and system documentation for each of the components of the Operational Readiness Profile. • These will be shared, maintained and made available for review by DPW and other vendors throughout the life of the project/engagement.
Defect Resolution	• All known Level 1 (Fatal) or Level 2 (Major) defects completely resolved. • All Level 3 (Minor) defects resolved unless waivers have been authorized.	• As the Lot 7 vendor, we will facilitate defect management and reporting throughout the SDLC phases per software release. • We will engage the appropriate DPW stakeholders and other vendors from Lot 1-6 to assist in defect management and alignment with requirements as applicable.
Operational Readiness Certification	Collaboration and certification from both Lots #1-5 and Lot 7 will be required here to confirm that both agree in the solution. • Certify that the business solution is functioning properly and ready to be deployed into production	• As the Lot 7 vendor, we will work collaboratively with Lots #1-5 to review and confirm that the business solution is functioning in alignment with requirements and DPW's vision. • This will not only be done prior to TFP, but will be a continuous process through design, development and testing where the input from Lots #1-6 is sought and incorporated when necessary. • Regular status meetings will help to facilitate this communication and confirm the solutions being developed remain aligned with the expected functionality.

Lot 7 Activity	Lot 7 Responsibilities	Deloitte Approach
Endorsement from ARB IV to DPW CIO	System architecture details and deployment strategy and readiness should be shared with the necessary technical stakeholders for approval.	- A detailed review of the system architecture and deployment strategy will be shared with the stakeholders and the CIO for endorsement prior to Production implementation. - This will be a continuation of the ARB review process which will be held during earlier phases of the work order, and should be the final review of the solution prior to implementation.

Figure 6.5-50. Operational Readiness Activities.

An example Operational Readiness Certification Document is shown in Figure 6.5-51. Deloitte will work with DPW to define the criteria to be included within this operational readiness document.

DPW Strategic Business Application Systems – Operational Readiness Certification				
ID	Certification Item	Date	Status	Comment
1	Detailed Systems Design Approved	10/1/2011	Completed	
2	Integration Test Results Approved	10/29/2011	Completed	
3	User Acceptance Test Results Approved	11/26/2011	Completed	
4	Test for Productoin Playbook Submitted	12/24/2011	Completed	
5	Test for Production Migration Completed	1/21/2012	Completed	
6	Conversion Plan Documented	N/A	Completed	
7	Conversion Executed in Test for Productoin	N/A	Completed	
	Production Playbook Submitted	2/4/2012	Completed	

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Figure 6.5-51. Operational Readiness Certification Document.

A defined operational readiness checklist for DPW will allow the stakeholders to confirm that the business solution is functioning properly and ready to be deployed into production.

Alignment of Work Assignments with DPW Priorities

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Perform work assignments according to priorities set by the Department		

Work must be performed by the Lot vendors in accordance with DPW priorities to confirm that each of the parties are working towards common goals. Deloitte works with DPW to understand your priorities then align our project plans and tasks to support these priorities across work assignments. We have carefully chosen several key tools and processes to implement as the Lot 7 vendor to validate that our work assignments are consistently in-line with DPW priorities resulting in cohesion between our two teams and a greater chance of success in meeting DPW objectives.

Deloitte tools and processes	Work assignments align with the Department's priorities
PMO Tracker V4.0	This tool tracks the contract related tasks, activities, artifacts, and manages the submission process of the contract required materials.
Project Management Center 7.5	All project tasks are documented in PMC for approved work orders in addition to issues, risks, and action items. Standard reports generated from PMC give complete transparency of the tasks being performed to DPW and allow us to verify they are in-line with DPW priorities.
CIO Dashboard V6.5.1	This tool provides latest information needed for escalation and management by DPW Contract administrator. The dashboard addresses key schedule, cost, and scope information including work order, deliverable and SLA status.
Project Runway V5.0	This tool tracks the deployment schedules across 23 application streams within DPW.
Automated Tracking System (ATS)	All change requests are logged in the defect and enhancement tracking tool, ATS. This allows the owner to track the progress and also allows the Lot vendor to assess and document the impact of the change request on project constraints (resources, scope, cost, schedule, etc.).
HLE process	By performing a High Level Estimate before the Department approves a work order, DPW is able to only select the work orders that offer the most benefit for the required resources or that represent the leading value to DPW.
Work Order review and approval process	Conducting a broad review of the work orders with DPW and acquiring formal approval allows Deloitte to only focus on the tasks that are most important to DPW and that helps in achieving Department objectives.
Annual review of maintenance and modification objectives	Reviewing the DPW modification/enhancement goals each fiscal year provides an opportunity for the Lot vendors and DPW to assess current projects and requested work orders to validate that the modification work being down is in-line with the Departments objectives and to re-assess DPW goals with your trusted partners as requested.
ARB meetings	At each architecture review board meeting, we review the work completed during that phase of the project and work planned for the next phase with the Department providing another opportunity to validate that work assignments are aligned with DPW priorities.
Change control process	When change requests arise, following a well-defined change control process that includes DPW and project stakeholders enables Deloitte to only perform work associated with change requests that have been formally approved by the Department.

Figure 6.5-52. Tools and Processes Used to Align Deloitte's work with DPW's Priorities.

Defect Management and Reporting

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- Defect management and reporting throughout the SDLC phases per software release

As the Lot 7 vendor Deloitte will provide to the Commonwealth and the other lot vendors, reports and metrics produced from the defect management tool to manage system defects. These reports will be produced on a regular basis and provide the following information from data within the Automated Tracking System (ATS):

- Total number of open defects per category per defect severity
- Total number of defects resolved, outstanding, and re-opened per category per severity
- Total Number of Defects per SDLC Phase per Defect Severity
- Total number of defects per software release by category
- Defect fix rate per software release by category
- Average fix cycle time per category per severity

Figure 6.5-53 below displays the Program Change Request (PCR) Reports Criteria screen where reports can be generated on demand using a number of defect properties as input parameters.

Program Change Request (PCR) Reports Criteria

Report:	☐ Page Breaks	PIN PIN Type
PCR#	Status: --None-- Approved Approved by CCP Awaiting Prioritization	Staff ID
Bundle#	☐ Open Status Rev-Sel	Environment: --None-- Development Integration Test Load Test
Call#	Type: --None-- Configuration Change Data Fix Defect	Subsystem: --None-- Alerts (Cold Mgmt) Application Entry Application Processing
Initiator: --None-- Abadilla, Patricia Abraham, Ebby Abu, Zuraidda	Priority: --None-- Critical High Low	Category: --None-- Change 34 CHIPRA Phase II Expedited
Assigned To: --None-- Abadilla, Patricia Abraham, Ebby Abu, Zuraidda	Complexity: --None-- High Low Medium	☐ Non Bundled
Tester: --None-- Abadilla, Patricia Abraham, Ebby Abu, Zuraidda	Customer Area: --None-- BIS BIS Non-Func BIS-DEA	☐ Sort Owner-Status
County/Agency: --None-- ADAMS	CCP Status: --None-- Approved by CCP	☐ Sort Status-Owner
		☐ BVA Date Returned NULL

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Figure 6.5-53. Program Change Request (PCR) Reports.

Automated Tracking System provides the ability to run reports on demand using a number of defect properties as input parameters.

Figure 6.5-54 below provides a sample of a defect management report that displays the total number of defects yielded by SDLC phase and release.

Phase	PACSES	HCSIS	PELICAN	iCIS		Phase	PACSES	HCSIS	PELICAN	iCIS
RDD	1	1	2	2	15 - 20	RDD				
GSD	35	15	12	11	15 - 20	GSD				
DSD	9	8	9	10	15 - 20	DSD				
Code	40	27	25	33	50 - 70	Code				
Unit Test	8	8	12	18	50 - 70	Unit Test	63.29%	55.56%	73.33%	71.88%
INTG Test	28	18	18	15	20 - 28	INTG Test	68.97%	50.00%	50.00%	55.56%
SAT	3	3	4	3	5 - 10	SAT	66.67%	50.00%	25.00%	50.00%
UAT	6	5	4	1	5 - 10	UAT	66.67%	66.67%	66.67%	50.00%
TFP	9	2	3	2	5 - 10	TFP	100.00%	100.00%	100.00%	100.00%
PROD Test	0	0	0	0	5 - 10	PROD Test	0.00%	0.00%	0.00%	0.00%

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Figure 6.5-54. Defect Analysis and Phase Yield Report.

Deloitte conducts defect analysis and provides a broad Defect Management Report to DPW throughout the SDLC phases.

These defect management reports provide input into defect analysis that can be used to improve current processes within the SDLC, assess releases and inform Go or No-Go decisions made by the Commonwealth. For details on Defect Management, please refer to *Section 6.8, Defect Management*.

Coordinating with DPW and Other Vendors

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- Participate in regularly scheduled status meetings with the appropriate Department and IT Consulting Services' staff to monitor current operations and to monitor progress on modification activities, provide status on open system Work Orders, and review deliverables related to system Work Orders as appropriate
- Meet with the DPW Contract Administrator or designee annually to discuss the in-scope system related initiatives

It is important to keep staff at the Department and other IT Consulting Services informed of status on modification activities, system Work Orders and other general issues, risks, and operational tasks so they remain involved and can take any necessary action to keep the project on track. By facilitating the following meetings, which are just a subset of the key meetings as discussed in *Section 6.2.2.1 General Contract Management and Project Management, Key DPW Governance Meetings*, Deloitte works with you to make informed project decisions that contribute to the success of application modification/enhancement initiatives:

- Status meetings
- Deliverable review meetings
- Annual steering meeting w/DPW Contract Administrator

Status Meetings

A key factor in having a successful meeting is in the preparation. When Deloitte attends a status meeting with DPW, we leverage our project management and work order tracking tools, Project Management Center (PMC) 7.5 and the PMO Tracker V4.0, to extract current status and then digest the information. Before attending the meeting, we not only identify the risks and issues and prepare the current status, but we prepare the various options that can be taken to mitigate new risks and resolve issues. This approach results in highly productive meetings where DPW staff's time is not wasted and decisions to keep a project on time and on budget can be made quickly and based on solid information. Figure 6.5-55 shows an example of a work order status report that serves as an input to work order review and status meetings.

Deloitte. PMO Tracker: Work Order Activity Report Friday, July 23, 2010				
CAPS				
255-WO-0304-CAPS Maintenance-July 2009-June 2010				
Support-Maint				
9/1/2010	Completion Letter	WO-0304-CAPS Support and Maintenance July 2009 - June 2010 Final Completion Letter		WIP
265-WO-0312-CAPS Data Warehouse Inpatient Outpatient				
GSD, DSD, Depl				
7/27/2010	Completion Letter	WO-0312-CAPS Data Warehouse Inpatient Outpatient-Mod-GSD-Depl Final Completion Letter		WIP
270-WO-0316-CAPS 5010 and ICD-10 Compliance				
Planning				
7/27/2010	Completion Letter	WO-0316-CAPS 5010 and ICD-10 Compliance-Mod-Planning Final Completion Letter		WIP
271-WO-0318-CAPS Security Baseline and HIPAA Assessment				
Planning				
7/27/2010	Completion Letter	WO-0318-CAPS Security Baseline and HIPAA Assessment-Mod-Planning Final Completion Letter		WIP
273-WO-0321-Program Monitoring Enhancements				
DSD, Depl				
7/7/2010	Work Order	WO-0321-Program Monitoring Enhancements-Mod-DSD-Depl Work Order Revision 1		Overdue
7/30/2010	Deliverable	WO-0321-Program Monitoring Enhancements-Mod-DSD-Depl-Integration Test Results		WIP
8/27/2010	Deliverable	WO-0321-Program Monitoring Enhancements-Mod-DSD-Depl-UAT Progress Report		Not Started
9/13/2010	Deliverable	WO-0321-Program Monitoring Enhancements-Mod-DSD-Depl-Production Deployment Report		Not Started
GSD				
7/28/2010	Completion Letter	WO-0321-Program Monitoring Enhancements-Mod-GSD Section Completion Letter		WIP

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Figure 6.5-55. Work Order Status Report.

The work order status report acts as a key input to regular status meetings where issues and risks identified on the report can be resolved or mitigated quickly to avoid impacts to project schedule, cost and resources.

Deliverable Review Meetings

Deloitte applies a similar approach to deliverable review meetings such as ARBs and phase reviews. In preparing for such meetings, we thoroughly read the deliverables being reviewed, such as a Lot 6 vendor's General System Design (GSD) document, and come to the meeting with items we believe may be missing, potential areas of concern, cross system impacts, feasibility and other relevant feedback that is useful to DPW staff. We also aim to resolve as many of these concerns directly with the appropriate Lot



vendor before bringing them to a formal review meeting with DPW staff to make these meetings more efficient.

Annual Steering Meeting with DPW Contract Administrator

On a periodic basis it is important to revisit the system modification initiatives that an organization undertakes to evaluate that resources are being spent in conjunction with the organization's strategy and goals. We commend DPW for conducting this type of annual review and provide the DPW Contract Administrator with information on past and potential future system modification initiatives so decisions on which initiatives to undertake can be made in line with the Department's goals. Deloitte understands that this process needs to begin early in the calendar year so the Department has sufficient time to review the proposed work orders and High Level Estimates (HLEs) to select the projects that are most valuable to DPW before the start of the fiscal year. Deloitte will perform the necessary technical assessments and feasibility studies to develop broad, cost-effective HLEs for the Development through Implementation phases of the SDLC. We come prepared to the annual review meeting with the DPW Contract Administrator to review the details of the HLEs for each work order under consideration by the Department and work with you to determine the benefits to DPW, risks and alignment with DPW objective. This collaboration will result in us undertaking the system related initiatives that represent the best use of Lot 7 resources and that aid DPW in reaching its goals ultimately improving the lives of Commonwealth residents served by DPW.

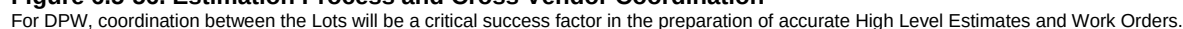
Systems Modification Estimation

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		• Receive requests for High Level Estimates and provide response with preliminary estimates and proposed approach within five (5) business days • Conduct detailed requirements and GSD analysis for each High Level Estimate request and provide an updated Work Order that includes a the problem definition, problem solution, and the number of hours required to design, code, test, implement, and update documentation related to the requested change(s) and the estimated completion date • Submit updated proposed project schedule for Work Order implementation within fifteen (15) business days after submittal of preliminary estimate, unless otherwise approved by the DPW Contract Administrator

Accurate estimation for systems modifications and enhancements is a critical step in the systems modifications and enhancements life cycle to identify feasibility, cost and timeline impacts, and that the proper resources are available for each funded project or work order to succeed.

Cross Vendor Coordination to Facilitate Accurate Estimation

To achieve accurate estimations under DPW's newly defined operating model, it will require a well defined and coordinated estimation process with participation and close collaboration across each of the lot vendors. The figure below provides a depiction of the High Level Estimate and Work Order process with the associated tasks for DPW and each lot vendor.



Once HLEs have been approved, updated Work Orders will need to be prepared and submitted by each of the Lot vendors. This will be an ongoing process, as it will require the completion of the previous vendor's activities before the subsequent phase can be accurately estimated. As the Lot 7 vendor, we will depend upon the completion and approval of the System Requirements and General System Design. We will then conduct a detailed analysis of the finalized GSD documentation before revisiting the estimation process and submitting an updated Work Order for Lot 7 activities.

Our Estimation Approach

Our estimations will be based off of the initial understanding of the work order, the documented requirements, and communication with both DPW and the Lots 1-6 vendors to confirm proper understanding of the scope and work required to successfully deliver the initiative.

Deloitte will use our continuously refined estimation approach and tools to provide DPW with a flexible, reliable and transparent estimation process resulting in accurate estimates for the hours and completion date of Lot 7 tasks and responsibilities associated to the requested change(s).

Estimation Methodology

Based on DPW's newly defined operating model, Three Point Estimation methodology, depicted in the figure below, will be most suited to accommodate the multiple lot structure and estimation by SDM phase for the associated vendors.

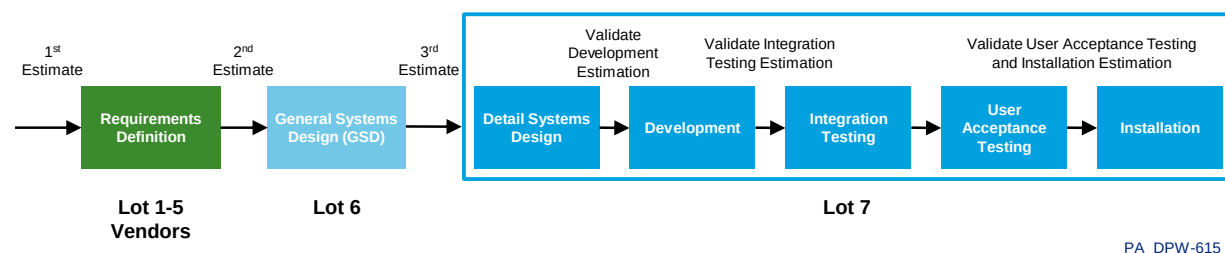


Figure 6.5-57. Three Point Estimation Methodology – Deloitte's Approach.

Based on DPW's newly defined operating model, this estimation methodology will be most suited to accommodate the multiple lot structure and estimation by SDM phase for the associated vendors.

In the Three Point Estimation methodology the effort estimation process is performed at three distinct points in the SDM. The first estimation is done before the Business Requirements Definition phase and includes the time estimation for the Business Requirements Definition phase only. This initial estimation will be performed by the Lots 1-5 vendors.

After client signoff is received for the Business Requirements Definition phase, the second estimation is performed for the GSD phase. This will be performed by the Lot 6 vendor.

The third effort estimation is done for the remaining five phases, the DSD phase, the Development phase, the Integration Testing phase, the User Acceptance Testing, and the Installation phase. This will be our responsibility as the Lot 7 vendor, which we will complete based on a detailed analysis of the estimations and assumptions prepared by the Lot 1-6 vendors. After each phase is completed, the estimate for the immediate next phase is validated.

Deloitte's Application Evaluator Tool

To support a standard estimating methodology for each project, a standard template and an Application Evaluator Tool (AET) has been developed to estimate each phase of the SDM process for a work order based on associated tasks and complexity level of the requirements and initiative objectives.

The figure below depicts a portion of the Detailed System Design section of the AET, which calculates total estimated hours based on an assumed number of hours per task and complexity level. These assumptions are continuously updated to improve this estimation tool based on past experience with DPW modifications, providing estimations that evolve and remain aligned with the current business and technical environment in consideration.

Deloitte Consulting

Application Evaluator Tool

Detailed System Design

Detailed System Design Documentation	Class Diagrams	0
	Sequence Diagrams	0
	Final Capacity Plan	No
	Security Assessment (CA)2	No
	Physical Data Model (New Tables)	0
	Data Dictionary (New Tables)	0
	Physical Data Model (Altered Tables)	0
	Data Dictionary (Altered Tables)	0
	Interface Details/Layout	No
	Final Conversion Plan	No
	Updated Key Considerations	No
	Updated Traceability Matrix	No
	Application Blueprint/Updates	No
	Development Work Plan	No
	Deliverable Walkthrough	No
	Internal Deliverable Review Cycle	0
Meetings/Presentations	Architecture Review (ARB-3)	No
Screenshot Details	Simple	0
	Complex	0
Security Changes	New/Modified Roles	0

DSD Phase Assumptions

Detailed System Design	Hours	Totals
Class Diagrams	X	Hours per class diagram
Sequence Diagrams	X	Hours per sequence diagram
Final Capacity Plan	X	Hours for research and compilation
Security Assessment (CA)2	X	Hours for research and compilation
Physical Data Model (New Tables)	X	Hours per table
Data Dictionary (New Tables)	X	Hours per table
Physical Data Model (Altered Tables)	X	Hours per table
Data Dictionary (Altered Tables)	X	Hours per table
Interface Details/Layout	X	Hours per interface
Final Conversion Plan	X	Hours for research and compilation
Updated Key Considerations	X	Hours for research and updates
Updated Traceability Matrix	X	Hours for research and updates
Application Blueprint/Updates	X	Hours for research and compilation
Development Work Plan	X	Hours for research and compilation
Architecture Review Board	X	Hours to Prepare Presentation and Meeting
Screenshot Details - Simple	X	Hours per simple screen
Screenshot Details - Complex	X	Hours per complex screen
Security new/modified roles	X	Hours per role
Total Hrs for DSD		

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Figure 6.5-58. Deloitte's Application Evaluator Tool (AET) for Estimation of Detailed System Design Activities.
We will leverage our AET tool for DSD estimation, which is continually revised based on project experience and tracking against actual effort.

Deloitte will continue to leverage this tool to aid in accurate estimation of the required services for the requested modification or enhancement initiative.

The following sections will describe each of the artifacts that will be considered in our estimation process for each phase of the SDM. Without a broad understanding of each possible artifact for each SDM phase the estimates DPW receives may not be reliable. Our vast experience with your enterprise systems, SDM, and project artifacts gives you comfort that our estimates will be reliable.

Detailed System Design Estimation

The estimate for the DSD phase is broken down into two types of tasks, the Detailed System Design Documentation and Program Specifications. The estimate for Detailed System Design Documentation is based on the average time it takes to create each DSD Document that is required including any reviews and revisions and the number of each document type that is required.

The DSD Documentation can include any or all of the following:

- **Class Diagrams.** A class diagram is a structure diagram that describes an application or system by showing the system's classes (groups of related variables and functions their attributes) and the relationships between the classes.
- **Sequence Diagrams.** A sequence diagram shows different processes in an application or system that live simultaneously and the messages and data that are exchanged between them, in the order in which they occur.
- **Final Capacity Plans.** Capacity plans include final estimates for data volumes of new tables or additional data that are added to existing tables in the database once the General System Design is complete, including the Logical Data Model.
- **Security Assessment.** The Security Assessment includes a review of the application and the security measures that will be used to protect data. This may or may not require an ECSA form to be completed.
- **Physical Data Model.** A model of the database that describes in an abstract way how the organization's data will be represented the database management system.
- **Data Dictionary.** The data dictionary includes a set of metadata that contains definitions and representations of data elements for the application.
- **Interface Details/Layout.** Interface layout details include a list of the interfaces that are included in the Work Order and details such as data elements, data formats, data layouts and other systems that will be sending or receiving data.
- **Application Blueprint.** A new or updated Application Blueprint that defines the architecture, GUI form designs, Reports, and interfaces between different systems.
- **Development Work Plan.** Work Plan including resources and timelines for the Development phase of the work order.
- **Architecture Review Board (ARB).** The time it takes prepare the Architecture Review Board (ARB) presentation and present the information to the ARB and do any follow up.

- **Program Specifications.** These are the definitions of what a program is expected to do and are used by the developer to code and test the program. Program specifications are estimated according to the average time it takes to create a program specification document for each type of object (such as an ASP page), and by Complexity (Very Simple to Very Complex).

After the GSD Phase is complete the Application Evaluator Tool is updated with the count of each type and complexity of program spec. It then calculates the total amount of estimated to complete the DSD Phase.

The DSD Phase begins after approval (sign off) for the GSD has been received and the updated DSD work order has been submitted and approved by DPW. Any changes to the GSD from this point needs to be analyzed and the impact to subsequent phases of the work order need to be assessed so that impacts to the timelines can be assessed.

Development Estimation

The estimate for the Development phase is broken down into two types of tasks, the Development Documentation and the Components. The estimate for Development Documentation is based on the average time it takes to create each Development Document that is required including any review and revisions. The Development Documentation can include any or all of the following:

Integration Test Work Plan. This work plan includes resources and timelines for the Integration Test phase of the work order.

Integration Test Scenarios. Test scenarios are used during the Integration Test Phase and validate that the system design meets the requirements gather during the Requirements Definition Phase.

Acceptance Test Work Plan. This work plan includes resources and timelines for the User Acceptance Test phase of the work order. This phase includes helping the client with the coordination of end user testing.

The estimate for the Components is based on the time required to code and test each Program Specifications defined in the Detailed System Design Phase. Development objects are estimated similar to Program Specifications in the DSD phase according to the average time it takes to code and test a program for each type of object (such as an ASP page), and by Complexity (Very Simple to Very Complex). After the DSD Phase is

Key Staff Spotlight

Mark Murphy

Track Lead



Delivering Results

"I always enjoy working closely with our end users. As part of the Performance Improvement Module initiative, I had the opportunity to visit the county sites and see how workers use the system. These opportunities give me the chance to see the impact our systems have on the day to day jobs of the county workers and lives of child support recipients. It's a rewarding payoff from all the hard work, that reflects the close coordination between ourselves, counties, BIS and the program office."



complete the Application Evaluator Tool is updated with the count of each type and complexity of component. It calculates the total amount of time estimated to complete the Development phase.

Integration Testing Estimation

After program specifications are coded and unit tested in the development environment the components are migrated to a more stable environment for Integration testing.

During the integration testing phase end-to-end functional testing is done by the application team. The end-to-end testing is based on scenarios developed using the requirements documentation. Regression testing is also done during the integration testing phase and consists of executing a series of scripts to test that changes to the application have not affected existing functionality.

The estimate for the integration testing phase is based on the time it takes complete the integration test scenarios and execute the regression testing scripts if required. Integration testing is based on the time it takes to create and execute the scenarios as well as identifying and resolving defects. Regression testing is based on the amount of time required to create and execute any new regression testing scripts in the integration test environment.

Throughout each of the testing phases, we work to leverage our automated testing capabilities with tools such as Quick Test Pro and WinRunner. These allow for additional rounds of regression testing and aid in the identification of defects, ultimately leading to higher quality software.

User Acceptance Testing Estimation

Once the components are tested in the integration testing environment they are migrated to the user acceptance test environment. During the user acceptance testing phase users test the functionality to see if the components meet the requirements defined in the requirements definition phase. The testing is based on scenarios developed using the requirements documentation. Regression testing consists of executing the same series of scripts from the integration testing phase to test that changes to the application have not affected existing functionality. Load testing consists of executing a series of scripts to simulate how the application will perform once it is moved to production.

The estimate for the User Acceptance Testing (UAT) phase is based on the time it takes to support the execution of the scenarios as well as identifying and resolving defects. Regression testing is based on the amount of time required to execute scripts in the UAT environment. Load testing is based on the amount of time required to create and execute any new load testing scripts in the UAT environment using data from the load test database.

Installation Estimation

Once the components are tested in the User Acceptance Test environment they are migrated to the Test for Production (TFP) staging environment. During the Installation phase the application team tests the functionality using production data prior to moving the components to the production environment. The testing is based on scenarios developed using the requirements documentation. Regression testing is also done during the installation phase and consists of executing the same series of scripts from the integration testing phase to test that changes to the application have not affected existing functionality.

The estimate for the Installation phase is based on the time it takes complete the TFP test scenarios and execute the regression testing scripts. TFP testing is based on the average time it takes per scenario multiplied by the number of testing rounds required. Regression testing is based on the amount of time required to execute the scripts in the TFP test environment.

High Level Estimate Documentation and Submission

We understand the importance of timely responses to requested HLEs, as this is essential to DPW's prioritization and budgeting process for modifications and enhancements.

Once the initial HLE and assumptions have been prepared, we will review the draft HLE with BIS (DTE and DEA) to allow for their IT cost analysis and update the HLE accordingly for submission and review by DPW.

pennsylvania DEPARTMENT OF PUBLIC WELFARE		DPW Strategic IT Systems High Level Estimate		Deloitte	
Estimate Title: Provide a brief title of this initiative					
Requestor:		Program Office/Bureau:			
Description of Estimate:					
HLE Total:		Estimate		Cost Range	
				\$ to \$	
☒ Insert item					
High Level Estimate *					
Understanding of Need:		Provide a narrative of your understanding of the enhancement request, the reason for the request, and the overall business improvements gained through the execution of the enhancement.			
Timeframes:		Months Weeks			
Application Estimation Checklist(s):		Click here to provide a CAPS Estimation Checklist			
Additional Assumptions:					
Application High Level Estimate:		System		Range of Hours	
				to	
		\$		to \$	
☒ Insert item					

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Figure 6.5-59. High Level Estimate Document.

Deloitte will leverage the existing HLE Documentation to submit estimates for modifications and system enhancements.

In addition to addressing preliminary estimates and proposed approach, our High Level Estimate documentation includes additional details such as a range of hours and cost, as well as more detailed application estimation checklists. This documentation has been refined through collaboration with DPW in what is now a mature estimation process, and we will work to continue this moving forward.

As the Lot 7 vendor, we will work to prepare preliminary estimates and proposed approaches for system modifications and enhancement requests within five (5) business days. Due to the criticality of coordination and clarification of intent and initiative objectives, this will require the availability of allocated DPW resources and other Lot vendor resources in order to meet the required timeline for preparation and submission.

Work Order Documentation and Submission

Once the system requirements and GSD from the Lot 6 vendor are approved, we will need to review the GSD Phase artifacts prior to completion of an updated work order for Lot 7 activities. Deloitte as the Lot 7 vendor will then use our estimation process and tools to draft a detailed work order outlining the problem definition, problem solution, and the number of hours required to design, code, test, implement, and update documentation related to the requested change(s) and the estimated completion date.

pennsylvania DEPARTMENT OF PUBLIC WELFARE		DPW Strategic IT Systems Work Order Request		Deloitte	
Work Order ID:	Deloitte-DPW-FY11-12-WO1234		PCR #s or Bundle #:		
Requestor:					
Program Office:		Request Date:			
Work Order Title:	Work Order Title				
Primary System(s):					
Brief Description:					
Business Justification:					
Impacted System(s):	List of impacted systems not part of estimates				
Estimated Initiative Timeline (Will be updated as Work Order Sections are Submitted and Approved)					
Phase	Estimated Phase Start Date		Estimated Phase End Date		
Requirements					
GSD					
DSD - Deployment					
Initial Ballpark Cost for Initiative *			\$		
* The Initial Ballpark Cost is determined before the work order is submitted. The actual cost of the work order will be determined via the submission and approval of each work order section.					

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Figure 6.5-60. Work Order Request Document.

Deloitte will leverage the existing Work Order Documentation to submit detailed estimates for modifications and system enhancements.

The work order will be reviewed with DPW, and once approved; the team can be mobilized to start working on the initiative. Within fifteen (15) business days after submission of the preliminary estimate, Deloitte will submit an updated proposed project schedule for the work order implementation. If during delivery of the work order, events necessitating a change in work order occur, then a formal work order revision will be drafted and submitted for approval by DPW before moving forward with the changes.

HLE and Work Order Experience

In 2009-2010, Deloitte submitted **984** total HLEs and Work Orders to DPW.

Our experience and knowledge of the details and structure of the programs and processes within your applications, allows us to deliver a more accurate estimation in a shorter period of time.

We currently operate under the same process but for managing full work orders. In our recent 10 years working on DPW's core business systems, we have not defaulted or had issues satisfying work order and contract obligations, which provides significant assurance to DPW that during a contract and operating model transition Deloitte will be able to operate effectively within the process without the need for ramp-up time. We look forward to the opportunity to continue teaming with DPW in future modifications and enhancement estimation and delivery, and will use our experience to aid other vendors in this process.

Systems Test Planning and Execution

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Create and execute systems test plans

Deloitte will work with DPW functional experts, third party vendors, and other lot vendors to fully understand the requirements and general system design. Based upon this understanding, we will create test plans that:

- **Identify Resources and Timelines.** The test plan will identify testing resources that will create and execute test plans and scenarios as well as identify a timeline for their creation and execution.
- **Document Integration Test Scenarios.** The integration test scenarios will describe the business functionality that is to be tested and provide the preconditions and expected results. The scenarios will be mapped to requirements and use cases to enforce traceability.
- **Document Test Cases.** The test cases will contain step by step instructions based on the test scenarios and provide detailed test data
- **Verify Completeness of the Integration Test Suite.** We will confirm test coverage by establishing forwards and backwards traceability from system requirements and use cases to test scenarios and vice versa.
- **Track Incidents through Resolution.** During the execution phase of test plan, Deloitte plans to track incidents through resolution. Incidents are managed, prioritized and tracked using ATS.

Providing Detailed System Design Documentation and Walkthroughs

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Conduct walkthroughs of detailed system design documents, defect reporting documents, implementation playbooks, system test plans, data conversion and validation (methods and strategies), pilots or proof of concept planning and outcomes documents, capacity planning and operational data statistics, security vulnerability assessment documents, and project plans as requested by the Commonwealth

Deloitte understands the importance and criticality of conducting detailed walkthroughs of system documentation. The DSD phase is one of the most critical and complex components of the systems modification and enhancement process, and walkthroughs of supporting documentation and key project materials provides DPW with a valuable opportunity to validate that the detailed solution design meets defined business requirements, is aligned and consistent with the general system design documentation and ultimately will meet end-user needs.

These sessions will be used to review and discuss the design and provide DPW the opportunity to ask questions, obtain clarification and confirm that the detailed design meets the defined business requirements and follows the approved BIS design



approach. Walkthrough sessions will be integrated into the Deloitte project plan, but may also be conducted on an as-needed basis as requested by DPW and agreed upon with Deloitte.

As the Lot 7 vendor responsible for conducting the DSD through deployment phase, we will schedule and conduct walkthroughs of the following documents as requested by the Commonwealth, as well as other documentation identified and agreed upon as necessary:

- Detailed System Design documents
- Defect Reporting documents
- Implementation Playbooks
- System Test Plans
- Data Conversion and Validation (methods and strategies)
- Pilots or Proof of Concept Planning and Outcomes documents
- Capacity Planning and Operational Data Statistics
- Security Vulnerability Assessment Documents
- Project Plans

These walkthroughs will also provide an opportunity to communicate and collaborate among lot vendors. Deloitte will engage both the IT Consultant Services Vendors and the System Architecture Services Vendor in the walkthrough process as necessary to confirm a seamless transition between vendors and project phases. The walkthrough of the design documents will provide an opportunity to confirm that the detailed design is consistent with the Business Requirements and General Systems Design produced by the other vendors and that the documentation is sufficient in detail to begin the development process.

The walkthrough sessions will be primarily focused on the technical aspects of the design, but functional considerations will also be addressed to confirm that the design documents are broad and complete. The goal at the end of each walkthrough session is to confirm that DPW has an in-depth understanding of each piece of the detailed design and is confident that the solution will satisfy the driving business need. This process will also put DPW in a position to complete documentation review and approval in a timely manner and facilitate progression to the next phase of the modification or enhancement.



Impact Analysis Estimation

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- As required, estimate the impact of specific Work Orders on other projects and priorities and submit any revised completion dates to the DPW Contract Administrator for approval

While performing High Level Estimates (HLEs) on new system work orders, Deloitte not only looks at the resources needed to complete the project, but assesses the impact of those work orders on the entire enterprise including other systems, projects and vendors. This results in a more accurate HLE which can help avoid 'surprises' in a project downstream such as being understaffed and meeting/exceeding project budget.

Deloitte provides HLEs for work orders starting with the Detailed System Design (DSD) phase by taking inputs from the Lot 6 vendor to fully understand the general system requirements that define the scope, schedule and budget needed to perform the DSD through to Implementation. By leveraging our intimate knowledge of the DPW systems and using the Enterprise Architect tool to properly assess the cross system impacts, we are able to develop more accurate HLEs leading to a more detailed list of impacts on other projects and priorities. For example if a work order request for a modification to the CIS system also results in a needed change to iCIS, Deloitte provides HLEs for both systems resulting in a more accurate assessment of the resources needed to complete the work order. With the information contained in the HLEs, Deloitte utilizes the PMC tool to assess the impact these HLEs have on existing project schedules, resource needs and costs to evaluate the best way to deliver the work order. Once established, Deloitte presents our recommendations to the DPW Contract Administrator so the Department has the information needed to make the most cost-effective decision when determining whether or not to approve the work order.

Deliverable Submission Adhering to the DPW Methodology

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Submit required deliverables in accordance with DPW System Development Methodology for Department review and obtain approval

Our broad understanding of the existing DPW processes and methodology gives Deloitte a 10 year head start over other Lot Offerors in producing quality deliverables that are in line with DPW System Development Methodology.

As the Lot 7 Vendor, Deloitte delivers the items outlined in the following table below as part of each SDM phase by aligning with the standards and guidelines defined by DPW:

SDM Phases (Applicable to Lot 7)	Lot 7 Required Deliverables	
Design (DSD)	- Physical Data Model - Data Dictionary - Updated Screen Shot Details - Interface Specifications - Application Blueprint - Program Specifications (Mainframe) or Class and Sequence Diagrams (Open Systems) - Final Conversion Plan - Final Capacity Plan - ECSA (Electronic Commerce Security Assessment) - Updated Key Considerations	- Updated Traceability Matrix - Updated Work Plan - Updated Training Plan (if applicable) - Updated Implementation Plan (if applicable) - Data Acquisition Plan (if applicable) - Detail Report Requirements (if applicable) - Metadata Management Plan (if applicable) - Backup and Recovery Plan (if applicable) - Design Defect Report (Lot #7 with input from Lot #6)
Development	- Unit Test Checklist Summary (reference code and individual checklists in VSS) - Updated Traceability Matrix (Lot # 7)	- Updated Work Plan - Integration Test Scenarios - Build Defect Report (Lot #7)
System Testing	- Documentation of Integration Test Complete (Scenario Results) - Updated Traceability Matrix - Systems Test Plan (Lot # 7) - SAT Test Plan (Lot #1-5 with input from Lot #7)	- ADA Compliance Statement (see template, applies to open systems only) - Integration Defect Reports (Lot #7) - SAT Defect Reports (Lot #7 with input from Lot # 1-5)
Implementation	- Final Production Ready Software Build - Production Defect Report - Systems Operational Readiness Certification - ADA Compliance Statement (if not submitted w/Integration Test Results; applies to open systems only, not mainframe) - Security Vulnerability Report - Batch Operations Manual - Load Test Report	- End-User Documentation (Lot # 1-5 with input from Lot #7) - Operational Readiness Profile and Production Notification (SAT Completed and ARB IV approval) - Production Deployment Report - Implementation Playbook - Security Certificate - Final Production Software Product
Section Completion	- Work Order with Completion Details - Completion Letter	Hour/Cost Variance Summary
Final Completion	- Work Order with Completion Details - Completion Letter	- Hour/Cost Variance Summary - Business Outcomes

Figure 6.5-61. Required Deliverables.

Once the above deliverables are submitted, we will review them with the stakeholders and seek their approval. As the DSD phase is one of the most critical and complex components of the systems modification and enhancement process, we will also provide walkthroughs as requested to provide DPW with a opportunity to validate that the detailed solution design meets defined business requirements, is aligned and consistent with the general system design documentation and ultimately will meet end-user needs.

The deliverable will be considered signed-off once the stakeholders agree and provide the necessary approval.

Have you heard?

Deloitte's experience with DPW's deliverable submission process is extensive.

- In the 09-10 fiscal year alone, over 3000 deliverables were submitted, reviewed and approved

Our experience in the creation and submission of deliverables aligned with DPW's System Development Methodology is unrivaled. We look forward to the opportunity to leverage this experience in our continued business relationship with DPW to deliver quality deliverables.

Development of Systems Modifications and Enhancements

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Code programs/modifications

Deloitte's solution to delivering application modifications and enhancements is based upon the Department's System Development Methodology (SDM). We understand that each application modification and enhancement goes through the phases of the SDM. In this section we discuss the development phase within the SDM for Modifications, as shown in Figure 6.5-62 below:

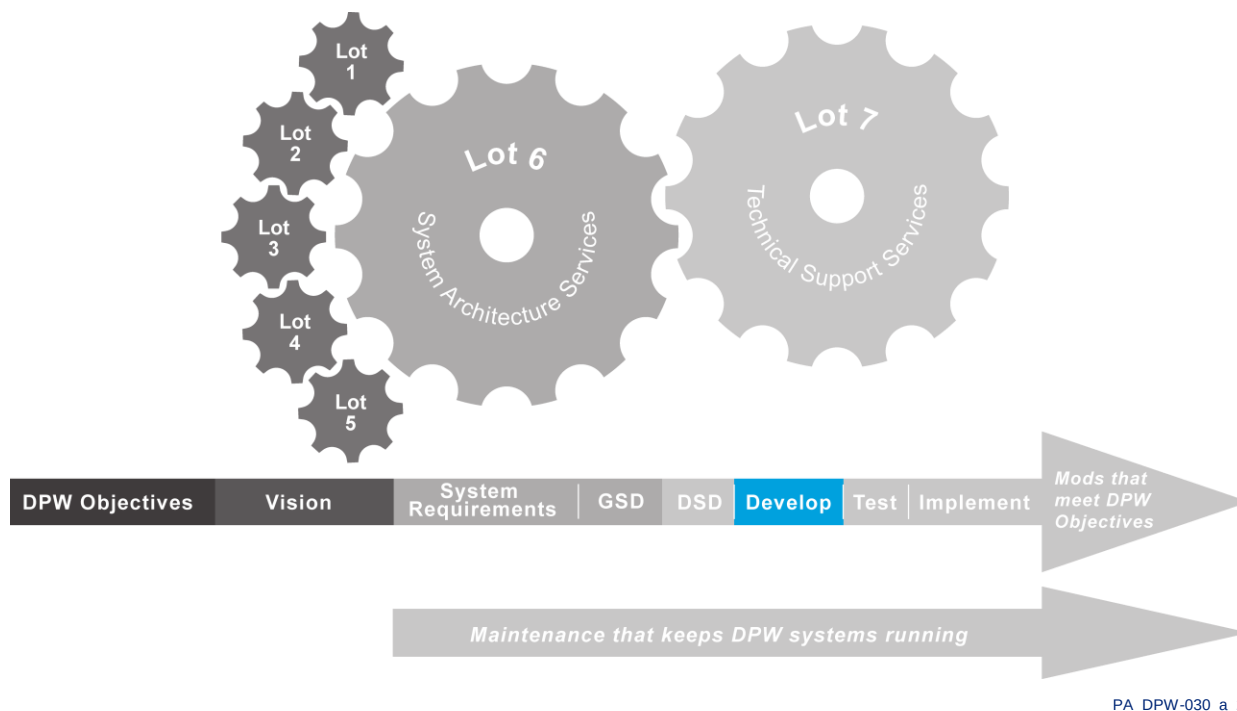


Figure 6.5-62. Development Methodology - Development Phase.

Deloitte understands the importance of the Development phase within the SDM to meet DPW's objectives around Modifications

Our **objective** for development of modifications and enhancements for any in-scope system change is to deliver high quality and high performance changes that meet business rules specified in the approved Detailed System Design (DSD).

Our **approach** to the development phase as a Lot 7 vendor is to thoroughly train application developers in system requirements and use application development tools, and framework components to decrease development time and errors and minimize re-work. We employ industry standards, leading practices, as well as automated testing tools to reduce risks and review and validate application code to reduce overall number of defects.

Our **process** to complete the development phase for modifications and enhancements starts with a review of the GSD and DSD documentation. Complete understanding of the system requirements and design is a key to quality application development. We use the approved DSD, which was created in collaboration with DPW and Lot 1-6 vendors for development so that the developed code meets the approved business and system requirements. We use application frameworks and COTS solutions where needed to reduce development time and errors. Further, we develop new and reuse existing components within business functions to share implementation ideas and work collaboratively to resolve issues.

The key activities performed during the development phase along with the input and output documents is illustrated in the Figure 6.5-63 below:

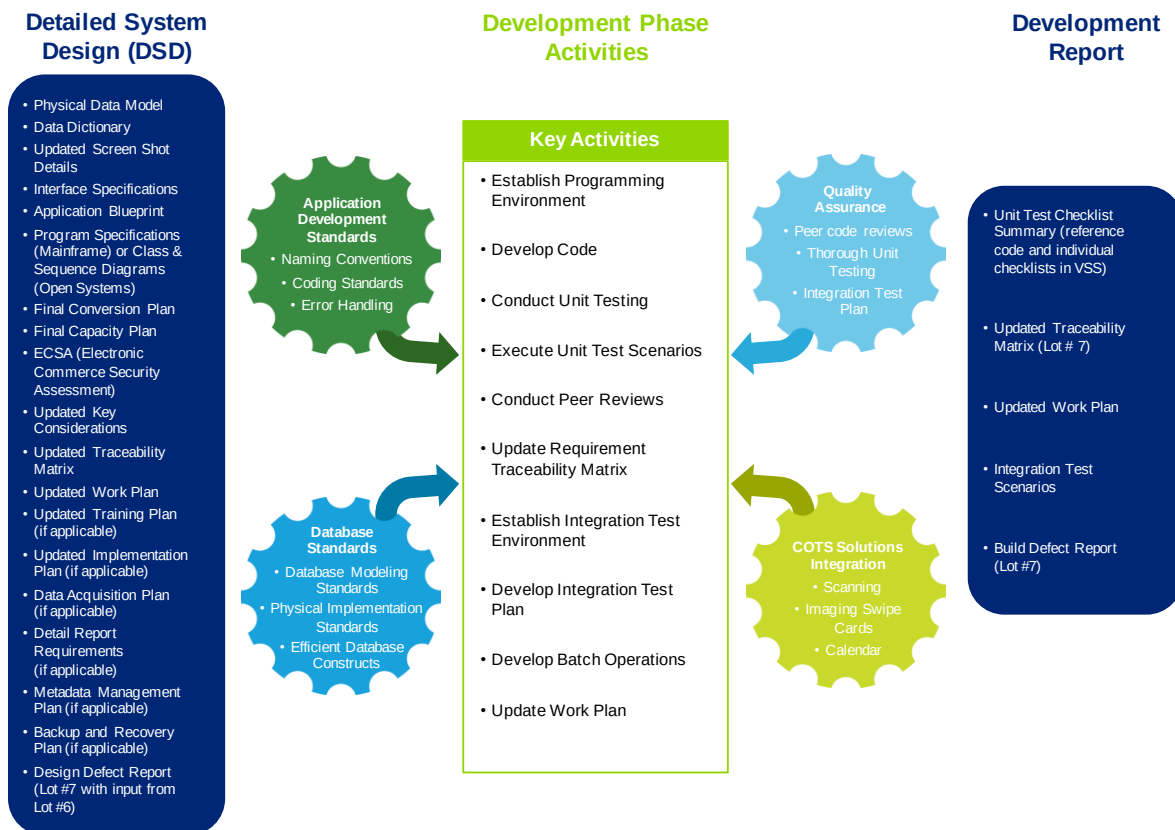


Figure 6.5-63. Development of Application Modifications and Enhancements.

Deloitte employs industry standards and leading practices during our development phase to deliver quality code to DPW.

PA_DPW-368_4

Application Modification/Enhancements Development Strategy

The key input to the development phase is the Detailed System Design document. The DSD provides the development team the detailed technical specifications to begin development.

Review Design

For each application modification and enhancement request, once the DSD is reviewed and approved, our development team reviews the DSD output – class and object diagrams and evaluate if existing code can be reused. We leverage re-use of existing code components and common services, wherever possible to minimize development time and reduce errors.

Develop Code

Once the review of the DSD is completed, we commence the development process by building new common services such as multi-channel integration, calendaring, interfaces etc., whenever necessary. We develop common support services across multiple channels – public users, workers, IVR, offline load etc. as this helps confirm a common process across the channels and results in highly maintainable applications. Along with the development of common functions, we also develop common batch and integration functions and conversion processes, as required. In order to help DPW



achieve its objectives of refining and expanding Enterprise Architecture frameworks, we implement code that is in line with DPW standards for Service Oriented Architecture and Enterprise Architecture. We develop common re-usable services and components that meet SOA and EA coding principles and results in efficient use of system resources. We develop componentized code that is granular, modular, and interoperable across multiple cross-program enterprise applications.

Unit Test

We understand the need for and importance of broad unit testing. We perform broad unit testing for each modification/enhancement and our developers complete a detailed unit test checklist prior to code migration to Integration environment. Unit test checklists are used by the developers and application development leads to cross reference software functionality to detailed design specifications and/or defined requirements.

Apply Industry Standards and Leading Practices

Deloitte applies industry standards and leading practices for application development throughout the development phase. We establish coding standards and guidelines to improve maintainability and readability of the application code base. We build optimized code through reuse of existing code components and common services. The use of existing developed and tested components helps us reduce development time and costs while maintaining code reliability. Deloitte continues to leverage COTS solutions for scanning, swipe cards, and calendar functions, where applicable.

Code Review

Code reviews are an integral part of development process. As part of the quality assurance process for development, modified code goes through rigorous code review process. During these reviews, we inspect the code for things such as conformance to standards, proper coding constructs, comments, error handling, tracing, maintainability, and performance. We leverage automated testing tools such as SWF Scan, FlexUnit, FXCop, LoadRunner, and Quick Test Pro to efficiently and effectively test the code (Refer to 'Supporting the Process of Achieving Software Quality' section for details on the automated testing tool that Deloitte leverages to deliver quality solutions to DPW). Ultimately, at the conclusion of the development phase, we produce a Development Report that would comprise of the application code, unit test checklist, updated requirement traceability matrix, updated work plan, integration test scenarios, and a build defect report.

Supporting the Process of Achieving Software Quality

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Perform systems testing (including unit, integration, system, and regression testing, pilot testing, will also be included as necessary) and correct any problems encountered
- Walk through system test results with the selected IT Consulting Services Offeror and state staff.
- Submit system test results to the DPW Contract Administrator and obtain approval

Deloitte is familiar with and will follow the DPW standard SDM, which includes unit testing, integration testing, ADA compliance, Load Testing, TFP and Production validation as part of the DSD-Deployment phase.

- **Unit Testing.** We will perform unit testing during the development phase. With the aid of detailed unit test checklists that list the individual software components that need to be validated, we will test each piece – i.e., “unit” of functionality and verify that it delivers the expected behavior. Throughout development and unit testing, a variety of automated tools are utilized to help identify issues with the code. These tools help the development team react potential errors and correct them accordingly. These tools include FxCop, NUnit, NDepend, and .NET Memory Profiler, and are described in detail in the software list section of the proposal.
- **Integration Testing.** The purpose of integration testing is to evaluate that the software “units”, when integrated with the rest of the application perform as expected.
- **Regression Testing.** This validates that the introduction of new or modified software has not adversely impacted existing functionality.
- **System Acceptance Testing (SAT), ADA Compliance and Load Testing.** System Acceptance Testing focuses on validating that functionality that has passed unit and integration testing will perform correctly when subjected to user perspective. SAT focuses on validating end-to-end business scenarios that are critical to the successful completion of the program.

During SAT we will perform accessibility testing including Bobby, ADA, and browser compatibility tests as appropriate for areas of the application that are browser-based as well as those that require specific self-service access needs

As part of SAT, we will also execute automated testing and load testing as appropriate to validate that the system performs as expected under typical user loads that can be expected in production.

- **Test for Production (TFP).** Test for Production (TFP) is the final component of the testing phase prior to the production implementation. TFP provides an opportunity to deploy the software in an environment that closely mimics production and provides a final rehearsal of the migration activities.
- **Pilot or Production Validation.** For major releases, we will assemble a cross functional team comprising DPW stakeholders, third party vendors and other lot



vendors to perform a final validation of software that is deployed to production. This may entail executing mock simulations of business processes to validate the flow and advise the readiness of the system prior to end user availability. If applicable, the production release will have limited rollout in order to pilot the functionality with a select group of users prior to being rolled out to the full user base.

Prior to go live, we will work with DPW stakeholders, third party vendors, and other lot vendors to review the test results. If defects exist, they will be entered and tracked to resolution in an enterprise defect management system such as ATS. We will assess the impact of the defect on business processes and if applicable, workarounds will be identified. Once the test results have been presented and outstanding defects are addressed or accepted by DPW, DPW can make an informed go/no-go decision.

For more details regarding the approach to testing, please refer to the Approach Section presented earlier in this document.

Upon completion of system testing, Deloitte will walk-through the system test with the selected IT Consulting Services Offeror and the Commonwealth staff. Furthermore, Deloitte will submit the system test results to the Contract Administrator and obtain approval following the prescribed submission and approval process.

Data Conversion and Validation

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Data conversions and validations

The success of any data conversion is reliant on an understanding of the data itself, and how this data is used to support the underlying business processes. Deloitte recognizes that this process is a delivery-critical activity that mandates a structured approach and a broad validation process to make sure the converted data will support ongoing business processes. Deloitte fully understands the importance of having the right tools and processes in place to successfully complete any conversion event, both large and small. Based on years of practical experience, Deloitte brings proven data conversion processes and procedures to reduce conversion risk and improve data quality.

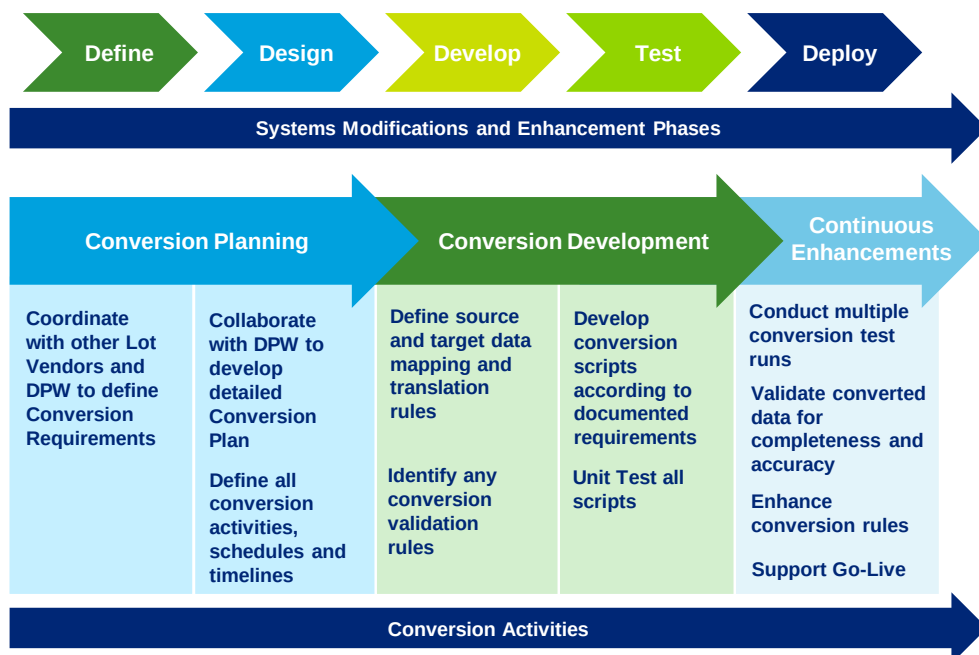
The success of any implementation is highly dependent upon a quality data conversion effort. Corrupt data leading to inaccurate information and processing errors can hinder implementation success and end-user buy-in. Deloitte has the experience to mitigate the inherent risks associated with data conversion, keeping data quality high and minimizing the manual post-conversion clean-up required.

Our team brings the experience, approach and framework to deliver quality results, mitigate risks and overcome the challenges associated with any conversion effort.

Our experience has shown that a successful data conversion process is grounded in early coordination and planning using an iterative approach. Results improve with each

conversion test run as any data issues or necessary changes in conversion logic are identified early and can be addressed in a timely manner. Conversion rules are continually enhanced with each conversion test run, further improving the quality and accuracy of the converted data. In the event that an issue cannot be addressed with an automated conversion approach, we work with DPW staff to identify a high quality approach to perform manual correction.

The diagram below presents a high level overview of our conversion approach:



PA_DPW-601_2

Figure 6.5-64. Deloitte's Broad Data Conversion Approach

Our Iterative Data Conversion Approach includes broad conversion planning and preparation, carefully developed conversion programs and an iterative process to continually refine the conversion process.

Conversion Planning

Requirements

The first step to a successful data conversion effort is proper conversion planning. Our plan sets expectations and establishes clear lines of accountability early in the process, which is a key factor in conversion success. We will work with the other Lot vendors as well as DPW to define the specific conversion requirements associated with the modification or enhancement being implemented. Conversion requirements are updated and refined as needed during conversion team sessions; these meetings will be facilitated with representation from relevant stakeholders.

Development of a Detailed Conversion Plan

Once the detailed requirements are defined, we will develop a detailed Data Conversion Plan, a document that will serve as a guide throughout the conversion process. This plan details the approach to cleansing, converting, loading and validating data from existing source format to the new target format. It clearly describes how the conversion effort will be verified and validated to confirm that the end conversion results successfully meet the business need. In addition, planned activities, timelines and schedules are clearly defined so that the parties are aware and involved as necessary in each step of the conversion process.

This first step of the overall conversion approach provides DPW with a broad, insightful conversion plan. The plan addresses the key conversion specifications and ultimately promotes a smooth, methodical conversion process. The plan will be executed with a collaborative spirit that makes the most of the knowledge, skills and abilities that each project team offers.

In our past experiences with large-scale conversion efforts in Wisconsin, Pennsylvania and Michigan, we worked with the project stakeholders to identify key stakeholders to the conversion process and form a conversion action team that was able to make design decisions. The team members were identified based on their knowledge of the legacy application and the business processes. The experience and knowledge of this team helped in defining the data conversion requirements and contributing to the Data Conversion Plan. We propose forming a similar team for any conversion activity at DPW.

Conversion Development

Legacy Study and Data Mapping

Once the Conversion Plan is in place and has been reviewed by DPW, we begin the development phase of the conversion process. The first step in this process is to identify the data sources required to meet the defined conversion requirements. This analysis process involves an information gathering phase to determine the overall architecture of the legacy systems, allowing us to gain an understanding of the data structures and examine the quality of the data.

Once the sources have been identified, we begin the process of mapping the source data elements to the new target data elements. This effort yields detailed source-to-target data mapping rules and logic that will be coded in the conversion scripts. We understand the importance of data translation that may arise due to non-matching data types between the source and the destination data elements and will identify and document such translations in agreement with DPW stakeholders.

We will work with DPW to confirm that the conversion rules defined make sense from a business perspective and meet the needs from an end-user perspective. Through our analysis, the team will build an understanding on how to isolate sections of systems that may be obsolete, redundant, or contain data which may not be relevant to the new

system. Rules and logic will be properly captured and documented for DPW's review and approval.

Conversion Validation Rules and Data Cleansing

Another aspect of the development phase is the definition of the detailed data validation rules used for data cleansing. This step is critical – the data must be clean coming into the conversion process to confirm accurate conversion results at the end of the process. We will work closely with DPW to define any necessary validation rules. When possible, the data is automatically cleansed during the conversion process. In the event certain errors or missing data are identified that require manual correction, we work with DPW to define the leading way to correct the data and track cleanup progress. We facilitate this process with detailed and easy to follow reports of validation errors. This approach helps confirm that the source data will be integrated and functional once converted.

Once the mapping and data validation rules are properly defined, the development of the conversion scripts can begin. Customized scripts promote an automated conversion approach, and we will work to confirm that the scripts meet the defined DPW development standards, processes and version control requirements. Scripts will be adequately unit tested and peer reviewed for completeness and accuracy.

Continual Enhancement

Mock Conversion Test Runs

In order for the conversion to be successful, it is imperative that a great deal of effort is placed upfront in analyzing data errors that may exist, identifying the correct approach to correct those errors, and conducting the actual data cleansing. Our strategy to conduct multiple conversion test runs prior to each go-live has worked very well to confirm at the time of the conversion the maximum amount of data is ready to be converted successfully and accurately.

Multiple conversion test runs are valuable to our overall testing efforts for the conversion process. In addition to full conversion test runs and initial unit testing conducted during conversion development, our testing process includes the following activities that align with the software modifications and enhancements testing methodology:

- **Integration Testing.** This is an activity which tests the conversion process as a whole. Conversion results are analyzed and critical processes are tested. At this point, the focus is to assess that the critical system processes execute within the system and that using converted data produces the expected results.
- **System Acceptance Testing (SAT).** This testing activity gives DPW the opportunity to test conversion specific scenarios, validating that critical and non-critical system processing functions correctly with converted data. The accuracy of the converted data using before and after views of the data is also verified.

Automation and Accelerators

The goal of the entire conversion testing process is to produce a series of automated software that promotes DPW's goal of automating conversion and keeping manual conversion to a minimum. This also includes the use of leading edge data transformation tools such as Informatica to accelerate the conversion process and aid in automation.

Deloitte is committed to broadly testing the conversion efforts so that it meets DPW's overall business needs and goals. Conversion logic will be continually refined based on the outcome of the testing process, with the end goal of converting as much data as possible with the accurate results and minimal validation errors.

Supporting Go-Live

Deloitte is committed to supporting the conversion process during the go-live and roll-out of the systems modification or enhancement. We will provide DPW with conversion rates and statistics, including the amount of data successfully converted and the output from the conversion script error logs. For any data that is not successfully converted with the automated scripts, we will work with DPW to analyze the errors and identify the leading course of action to correct the data, minimizing the manual intervention involved in the clean-up process.

The below table summarizes the features and benefits of our proven conversion approach:

Features of Our Conversion Approach	Benefits to DPW
Broad Conversion Plan	A conversion plan that is specifically tailored to meet DPW's requirements and business needs, specific to the modification or enhancement being implemented.
Iterative Conversion Approach	Our iterative conversion process improves accuracy and completeness of data that is converted to support modified or enhanced DPW systems.
Coordinating the Conversion Activities	Our experience in conversion efforts has taught us the importance of creating clearly defined roles and responsibilities for multiple stake holders. This coordination will be key in communicating amongst lot vendors to confirm the conversion results meet the defined business requirements and system design.
Data Cleansing	Our iterative approach to data cleansing addresses data quality issues early and monitors any data-cleansing efforts required, improving the quality of data converted.
Control Process and Support for Manual Conversion	While some manual conversions may still be required, our process focuses on minimizing the amount of manual conversion that will be necessary to address errors/exceptions encountered during automated conversion.

Figure 6.5-65. Features and Benefits of Deloitte's Conversion Approach.

Deloitte understands the criticality of a successful conversion to support a successful implementation of modifications and enhancements. DPW will benefit from a knowledgeable vendor with a proven conversion track record. The table below outlines several of Deloitte's large-scale HHS Program conversions.

Deloitte's Prior Conversion Success				
System Name	Client Name	Number of Source Systems	Amount of Data	Percent of Cases Successfully Converted (Case = Household)
LA LEADER Eligibility System	Los Angeles County	17	800,000 Cases	99.5%
New Heights Eligibility System	State of New Hampshire	1	200,000 Cases	98.6%
CalWIN Welfare Eligibility System	State of California	15+	2,000,000 Cases	99.2%
TIERS Welfare Eligibility System	State of Texas	6	1,700,000 Cases	98%

Figure 6.5-66. Deloitte's Prior Conversion Success.

Based on our prior implementations and successes with conversion for our clients, we are confident that we bring to DPW an understanding of the conversion process, various issues and risks to that can be managed and monitored and the value for DPW to be able to use and access legacy data effectively from the new systems. We will work jointly with the DPW staff to confirm that vital data is effectively converted in support of systems modifications and enhancements.

Supporting the Implementation and Technical Training Requirements of DPW

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Implementation Systems Technical Support and Training as required

Deloitte understands that the overall goal of DPW is to provide excellent service to citizens of Pennsylvania who are in need of assistance. One of the major reasons for modifications and enhancements is to support desired operational improvements and efficiencies. In order for DPW to fully realize its goals and maximize the benefit from these improvements in business operations and worker productivity, it is critical that end users be kept up to date and trained on any new changes that are introduced with each new release. In addition, we help BIS with technical support which includes providing with the technical training. We work collaboratively with DPW and its stakeholders to develop an effective implementation strategy with required pre and post implementation

activities to support technical implementation, support the end users of the applications, and improve the end users experience.

Implementation Systems Technical Support – Making Implementation a Non-Event

Our flexible approach to implementation begins with strong planning and carries through to post-implementation to transition to the new software. The approach allows us to tailor implementation support and user adoption to the specific project, while promoting a collaborative environment between the selected offerors, program offices, stakeholders, and the proposed team. We envision building on the past successes in a coordinating role to assist the Lots #1-5 vendors with the disparate implementation activities that must occur across the entire project.



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Figure 6.5-67. Deloitte's Support Activities for Program Office and Lots #1-5.

Deloitte understands the DPW's implementation approach and processes and is prepared to provide the support activities identified in the RFP. We have successfully performed these services for the last 10 years and can promptly support these activities under the new operating model.

Our primary goal is to make implementation of enhancements and modifications a non-event. Throughout the implementation phase, we provide an on-time and on-track implementation that assesses and addresses the impact of the application modifications and enhancements on service delivery and minimizes disruption to current business operations. Prior to each major release to Production, we conduct:

- **Pre-Implementation calls** that are used to provide awareness regarding upcoming system changes, respond to questions/concerns, prepare users for changes, and discuss training logistics.
- **A series of Go-Live calls** that are used to solicit input, collect feedback, and address concerns regarding system changes once the modifications and enhancements are implemented.
- **Post Implementation calls** that are used to gather information about any major system or performance issues related to the release.



Training – Users Embrace and Adopt System Modifications and Enhancements

The benefits inherent with any modification and enhancement for any application can be fully realized only when the end users embrace and adopt the change. In order for users to achieve this, they need to be made aware of upcoming changes and should be trained to facilitate easier adoption of changes. We develop a broad training strategy that employs creative training practices and enhances the delivery with each functional release. If required by DPW, we develop a training plan that focuses on a structured training process, providing staff with the knowledge, skills, and abilities they need to achieve competency and high performance. Our grounded training approach includes review of training material by the Lot 1-5 and DPW business users. We implement a collaborative training approach where the training staff works with the application teams to provide input and guidance on screen and field level help.

As Lot 7 vendor, Deloitte strives to work hand-in-hand with DPW and other Lots 1-5 vendors to support implementation and training activities as required. For further details on our approach to implementation and training, please refer to our response to *Section 6.7, Application Adoption and System Implementation*.

Development and Maintenance of Systems Documentation

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• Prepare and submit updates to systems documentation and any other necessary documentation and obtain approval within twenty (20) calendar days of the date that the modification/enhancement goes into production with the exception of report documentation • Documentation associated with report changes or newly created reports must be received prior to the first production run of that report		

Deloitte understands the need to maintain current system and operational documentation describing system logic and technical architecture. DPW needs up-to-date system and operational documentation which keeps pace with project changes. Keeping documentation complete, detailed and up-to-date is critical for maintaining cohesiveness among vendors while helping new staff transition into subsystem responsibilities across the project teams. Further, up-to-date system documentation is important in providing DPW with a detailed understanding of each system's current state, as well as the impact of proposed system changes and enhancements within DPW.

Deloitte has consistently provided quality system documentation during our involvement with DPW projects. We are committed to maintaining detailed system and operational documentation. Updates to systems documentation and other documentation identified as necessary will be submitted for review and approval no later than 20 calendar days from the date a non-report modification or enhancement is released into production. Documentation related to report modifications or newly developed reports will be submitted prior to the first production run of the report.

Although there are current standards to enable documentation updates as part of the software development and modifications process, it is often noted that systems documentation update is an after-thought. Deloitte is committed to a structure where system documentation update milestones are engrained into the overall software development and modifications release processes. These milestones are incorporated into project work plans which facilitate work order management and status reporting. Updating system documentation in this way allows Deloitte to demonstrate our understanding and implementation of the business requirements and provides DPW the opportunity to approve the documentation while the design is still top of mind. This approach also facilitates the ability to develop consensus with DPW around any proposed changes to business logic.

Deloitte employs a number of different tools to help maintain system information including the tools listed in the table below. These tools help the Deloitte project team develop and maintain detailed documentation across the DPW projects.

Key Tool	Project Use
Enterprise Architect	Used for modeling, documenting, building and maintaining object-oriented software systems.
CA Erwin	Used for data modeling and documenting the data elements that comprise the DPW systems.
Microsoft Office 2003	Used to develop the EA blueprint, General Systems Design documentation and other systems documentation.
TechSmith SnagIT	Used to capture screen shots for documentation.
Visual Source Safe	Used to store certain types of system and operational documentation for each system and subsystem.
Microsoft Visio 2003	Used to document system functionality and process flows.

Figure 6.5-68. Tools Used in Documentation Development and Maintenance.

Deloitte will continue to provide industry standard DSD through deployment documentation for DPW systems and subsystems. Our team's experience in this process will aid in the identification of required updates as modifications and enhancements progress through development and implementation and ultimately result in more accurate system documentation.

Providing Systems Capacity Estimates

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- Update Initial Systems capacity Estimates and Plans

Deloitte appreciates that for DPW to optimally provision IT services it must be able to accurately anticipate and plan for the evolving capacity demands of its business across the enterprise. Proper understanding of current capacity needs and likely changes over time enables DPW to more proactively and effectively plan for hardware and software

procurements, network bandwidth updates, and other resources needs that would be impacted by increased capacity.

Specifically, accurate capacity planning will benefit DPW by:

- Increasing IT cost-effectiveness through the efficient and timely provision of IT resources in line with changing demand
- Supporting the design of new services to confirm that they are sized correctly to support demand.
- Reducing the risk of service interruptions due to unanticipated demand increases

Our Approach to Capacity Planning

As the Lot 7 vendor, Deloitte updates the Initial Capacity Plan created by the Lot 6 vendor for each modification to create a Final Capacity Plan for the initiative. This artifact documents current capacity and the expected capacity impact of the planned modifications.

Capacity plans should cover three key areas in order to provide a detailed view of capacity needs. These are:

- **Business Capacity** involves considering, documenting, and planning for changing or new business requirements for IT services.
- **Service Capacity** involves understanding the IT Services being offered, their use of system resources and working patterns, plus accounting for changes in their demand to prevent delinquencies in service delivery.
- **Component (or Resource) Capacity** involves understanding, monitoring, and documenting the utilization of IT technical components, such as server and database space and network bandwidth.

Capacity Plan Updates

Proper review, validation, and update of a modification's Initial Capacity Plan involves confirmation and analysis across several areas for each element covered in the plan. These areas are:

- **Service Level Requirements.** Categorize the work done by the system and quantify users' expectations for how the work gets done.
- **Current Capacity.** Document and analyze current capacity of the system to establish a current baseline and determine the extent to which user needs are currently being met. This analysis focuses on key business drivers, workload, and workload characterization (transactions, batch jobs).
- **Estimated Future Change.** Determine anticipated capacity changes by identifying future technology requirements that must be supported and forecasting future business activity. Timely and proactive implementation of required changes in system



configuration promotes maintaining sufficient capacity to maintain service levels, even as the system evolves and is enhanced.

For application modification initiatives, Deloitte as the Lot 7 vendor, first reviews the Initial Capacity Plan developed by the Lot 6 vendor and follows up with the Lot 6 vendor to confirm proper understanding of the capacity plan and the underlying analysis that it resulted from. As newer, more accurate capacity-related information becomes available during the DSD through Deployment phases, it is used to revise the capacity plan. This information may result from the implications of further design elaboration during the DSD phase or from performance findings with capacity implications that are uncovered as part of the system testing process, in particular as part of Load Testing.

Capacity Plan Submission and Follow-up

As part of the development life cycle for an application modification, vendors submit multiple iterations of the initiative capacity plan to DPW to document anticipated capacity needs as they are understood at different stages in the life cycle based off of the information available at that time.

The initial drafting and submission of a capacity plan for a work order will be completed by the Lot 6 vendor as part of the GSD phase. However, subsequent update, maintenance and final submission of the capacity plan for a work order is completed by Deloitte as the Lot 7 vendor. The figure below depicts a sample of the Capacity plan document.

File System Storage (All Environments)				
Area	Description	Server Type (Web, Utility, Report) (add or delete rows as required)	Current Size	Change Expected
File System Storage (i.e. Non-Database)	Will there be any growth to the size of non-database server storage (e.g. application code, input files, log files, reports, etc.).	Development		
		Web Server		
		PWISDEVWEB01	1.79 GB	Increase of 10 MB
		PWISDEVWEB03	2.84 GB	Increase of 10 MB
		PWISDEVWEB06	0.32 GB	No significant increase expected
		Utility Server	N/A	No significant change expected
		Report Server		
		PWISSATRPT02 (CCMIS)	0.60 GB	No significant increase expected
		FSWS		
		PWISDEVSOA10	2.16 GB	No significant increase expected
		iRep	N/A	No significant change expected
		Data Warehouse Servers	N/A	No significant change expected
		Web Services Servers		
		PWISDEVSOA10	1.02 GB	No significant increase expected
		Integration Test		
		Web Server		
		PWISHBGINT04	0.41 GB	Increase of 10 MB
		Utility Server		
		PWISSATAPP21	10.7 GB	No significant increase expected
		FSWS		
		PWISDEVSOA10	6.65 GB	No significant increase expected
		iRep	N/A	No significant change expected
		Data Warehouse Servers	N/A	No significant change expected
		Web Services Servers		
		PWISDEVSOA10	1.08 GB	No significant increase expected
		System Acceptance Test		
		Web Server		
		PWISSATWEB17	0.95 GB	Increase of 10 MB
		PWISSATWEB18	2.45 GB	Increase of 15 MB
		Utility Server		
		PWISSATAPP21	10.6 GB	No significant increase expected
		FSWS		
		PWISSATSOA20	2.58 GB	No significant increase expected
		PWISSATSOA21	33.5 GB	No significant increase expected
		iRep	N/A	No significant change expected
		Data Warehouse Services	N/A	No significant change expected
		Web Services Servers		
		PWISSATSOA20	0.51 GB	No significant increase expected
		PWISSATSOA21	1.24 GB	No significant increase expected
		Test for Production		

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Figure 6.5-69. Capacity Plan Sample.

Deloitte will continue to create and maintain capacity plans which provide detailed information for current and expected increases in capacity across system components and environments.

The submission of the Final Capacity Plan will be included with DSD deliverable documents and a review of the updated capacity plan will be included as part of the ARB IV meeting. The ARB IV meeting takes place towards the end of the Systems Acceptance Testing phase and before the initiative's go-live date. Deloitte uses this meeting to present a revised capacity plan from the ARB II meeting. These revisions take into account and incorporate detailed design elaborations and the results of both Systems Acceptance Testing and Load Testing.

Furthermore, Deloitte is responsible for providing updated capacity details from each Final Capacity Plan for inclusion in the enterprise-wide Quarterly Capacity Plan in advance of each new quarter (PA Quarters: July – Sept., Oct – Dec, Jan. – Mar., Apr. – June).

We believe the Department would gain benefits by requiring just the Lot 7 vendor to perform capacity planning. This will discard handoffs and misunderstanding between the initial capacity plan and the final plan for the software developed. Making an error in capacity planning could lead to performance impacts and response time issues to thousands of end users and hinder the Departments ability to meet its obligations to serve the community.

Business Rules Management

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Business Rules Integration, Implementation, and Testing

The Deloitte Team is dedicated to DPW's EA-SOA vision and continuing our business relationship working towards a more flexible, interoperable, and service-based DPW IT organization. A key objective supporting this vision is to support continued evolution of the business rule management process at DPW from one that is rigid and specialized for each application (e.g., the legacy custom developed business rule engine in use by the CCW application) to one that is more flexible, supports rapid business rule update, and that can support DPW enterprise-wide.

Towards that end, Deloitte worked with DPW to conduct an assessment of rules engine solutions and then a subsequent proof of concept. This effort eventually resulted in selection and procurement of Corticon as the tool for supporting DPW business rule management needs. Currently, Corticon supports the business rule management needs of several DPW applications, including COMPASS. We anticipate that during the term of the new contract additional applications may move to using Corticon as part of an application modification initiative (e.g., Incremental Renewal Phase VI).

As a result, the current DPW business rule environment requires that Deloitte is able to support two variations of business rule integration, testing, and implementation for scoped application modification initiatives. Deloitte can execute and manage integration, testing, and implementation activities as they relate to enabling an application on a new business rule engine or instituting new or modified business rules in an application's existing business rule engine.

Integrating, Testing, and Implementing a Business Rule Engine

Whether enabling an application on a new custom developed business rule engine, on Corticon, or on a different COTS business engine solution, the overall process for developing and implementing the changes follows the traditional SDM Modifications methodology as detailed in the Methodology and Approach Section earlier in this document. Additionally, as outlined in following table, there are several activities specific to a business rule engine enablement that Deloitte follows when doing this type of implementation.

Activity	Details
Define Business Role Modeling Vocabulary and Syntax	• A standard vocabulary and syntax for business rule modeling must be established. • To support DPW staff's efficient use of this language, it should be developed in coordination with the affected stakeholders and validated as part of the Detailed System Design phase • The modeling vocabulary and syntax should be documented as part of the Detailed System Design

Activity	Details
Adopt Business Rule Governance Process	- As business rules can be enabled rapidly with a business rules engine, it is important to establish a business rule governance process to control both how business rule changes are how they are released into production - We recommend leveraging the existing change control and release management processes in order to maintain consistency and reduce redundancy but if desired more expedient processes can also be established to better leverage business rule engine flexibility - Deloitte can work with DPW to establish an enterprise-wide governance process in order to better align with the DPW's enterprise architecture vision and to reduce establishing redundant business rule governance structures

Figure 6.5-70. Business Rules Engine Implementation Activities.

Business Rule Modifications

Similar to deploying a new business rule engine, the overall process for introducing new business rules mirrors the SDM Modification methodology but with additional activities specific to business rule management. The following table highlights these activities.

Activity	Details
Assess and Update Modeling Vocabulary	- If the established vocabulary cannot be used to express the desired business rule, then Deloitte assesses the existing vocabulary to identify how it can be expanded to enable the desired business rule. - The supported vocabulary is then enhanced and implemented per the business rule governance structure
Assess Impact of Rule Change	As business rules are executed against as part of a rule set, the effect of a new or changed business rule on other related business rules is assessed in order to prevent unanticipated responses from being introduced
Perform Business Rule Input/Output Testing	- Prior to testing the interaction of the new rule with the system, the input and output of the business rule should be tested in isolation. - For example, with the Corticon service the XML input files that the application sends to Corticon can be captured via logging or created manually to simulate a given scenario. Test input files can then be loaded directly into Corticon Studio and ran against the updated rule set to whether the anticipated response is returned. - This allows for easier debugging and testing of changes with the exact same inputs as are seen in higher environments

Figure 6.5-71. Business Rule Modification Activities.



Systems and Technology Integrations

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Systems and Technology Integrations, implementations, and testing

System modifications and enhancements are often complex implementations that cross business function, technology and process domains. As the Lot 7 vendor, Deloitte will consider multiple components of systems integration, technology integration, implementation and testing including infrastructure and systems software and the applications themselves.

Infrastructure and Systems Software

When planning for modifications, Deloitte considers potential impacts on DPW systems hardware and software. We do an impact assessment to determine compatibility between the new modification and existing operating systems and databases. We also work with DPW to identify system impacts on modification initiatives when there is a change to the DPW hardware and systems operating environment.

As part of executing the modifications, we complete capacity plans that help DPW plan for increased resource needs. We provide transparency into our load testing process and results so DPW can assess readiness for production. We provide consultative services to BIS to not only forecast potential infrastructure and systems issues, but also work side by side to develop architecturally sound solutions for those issues.

Application

When implementing new modifications, as the Lot 7 vendor Deloitte assumes the responsibility of collaborating with the other Lot vendors and DPW to integrate, implement and test the applications.

We will conduct a Planning and Translation phase during the start of DSD to facilitate the smooth transfer of system requirements and GSD to DSD. We will use the opportunity to do a high level assessment of potential impacts on the application software and the corresponding interfaces, reports, data warehouse and database. Throughout the remainder of the SDLC, Deloitte will conduct the appropriate unit, integration, regression, security and load testing and provide those results to DPW to validate that the applications are ready for integration into the DPW hosted environments.

When developing new services, implementing COTS solutions or configurable solutions, Deloitte evaluates potential impacts across DPW's full suite of applications and services to identify potential roadblocks to implementation. These issues are raised through the governance structure and addressed with DPW through the ARB process and meeting with key BIS stakeholders.

Supporting the Alignment of General and Detailed Systems Design

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- General Systems Design Review and Translation

Successfully incorporating system requirements and carrying forth the General Systems Design will be the responsibility of Lot 7 vendor. In order to accomplish this and deliver solutions which meet the original business and system requirements there will need to be continuous interaction and coordination between each of the lot vendors and DPW across multiple tasks and responsibilities.

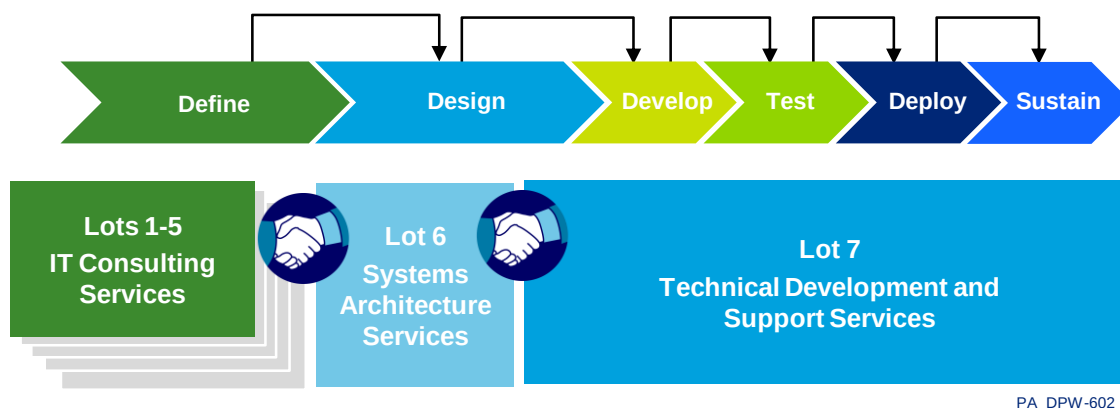
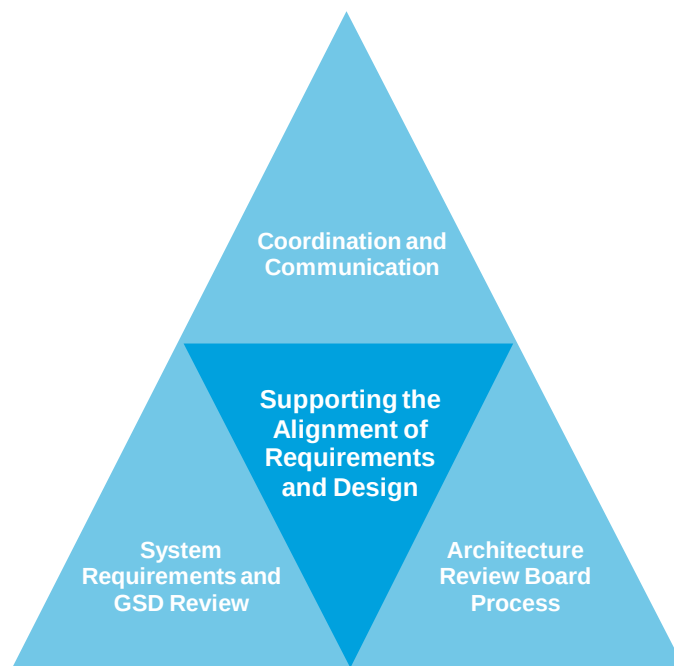


Figure 6.5-72. Lot Interaction Overview.

The new operating model put forth by DPW will demand continual communication between the lot vendors, DPW and project stakeholders to maintain alignment between business requirements and the solution delivered.

As the Lot 7 vendor, Deloitte understands our responsibility to work collaboratively with the Lot 6 vendor and support the alignment of the Detailed Systems Design with systems requirements and General System Design.

In order to support the transition from General System Design into Detailed System Design and maintain alignment with business and system requirements, Deloitte will work across several components, depicted in the diagram below.



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Figure 6.5-73. Supporting Components of Lot 6-7 Solution Alignment.

Deloitte's broad approach will support the progression of modifications and enhancements from General System Design to Detailed System Design.

Coordination and Communication

Coordination and Communication is paramount for successfully progressing modification and enhancements into Detailed System Design and eventually implementing a solution aligned with DPW's vision.

During the SDM life cycle, it will be essential for the Lot 7 vendor to work closely with the corresponding Lot 6 vendor for each initiative to properly understand the documented system requirements and GSD and to correctly use these inputs in development of a DSD that can be progressed to implementation.

Deloitte will work to facilitate this collaboration not only in the review and translation of GSD, but throughout the project life cycle. This will promote awareness by each stakeholder and keep the channels of communication open.

Additional details to this Deloitte Approach are available within the following section of our response: *Section 6.5.2.2, Working Collaboratively Across Vendors.*

System Requirements and General Systems Design Review

This review process will provide a technical review of the basic design approach and system requirements. This will be a formal review and will include each lot stakeholder as necessary, to allow both DPW and other lot vendors to confirm that the software design will meet the requirements for the systems modification or enhancement work order.



We understand that throughout the project life cycle priorities may change and new requirements may be introduced. To this end, the GSD review process will provide Deloitte, as the Lot 7 vendor, an opportunity to reevaluate the original estimation for Detailed System Design and Implementation and provide DPW and each project stakeholder with an accurate work order and agreed upon estimation for cost and timeline.

This activity will also allow for the identification of any potential high-risk areas in the design and provide sufficient time to allow for consideration of requirement changes or modifications to the detailed system design approach.

Architecture Review Board Process

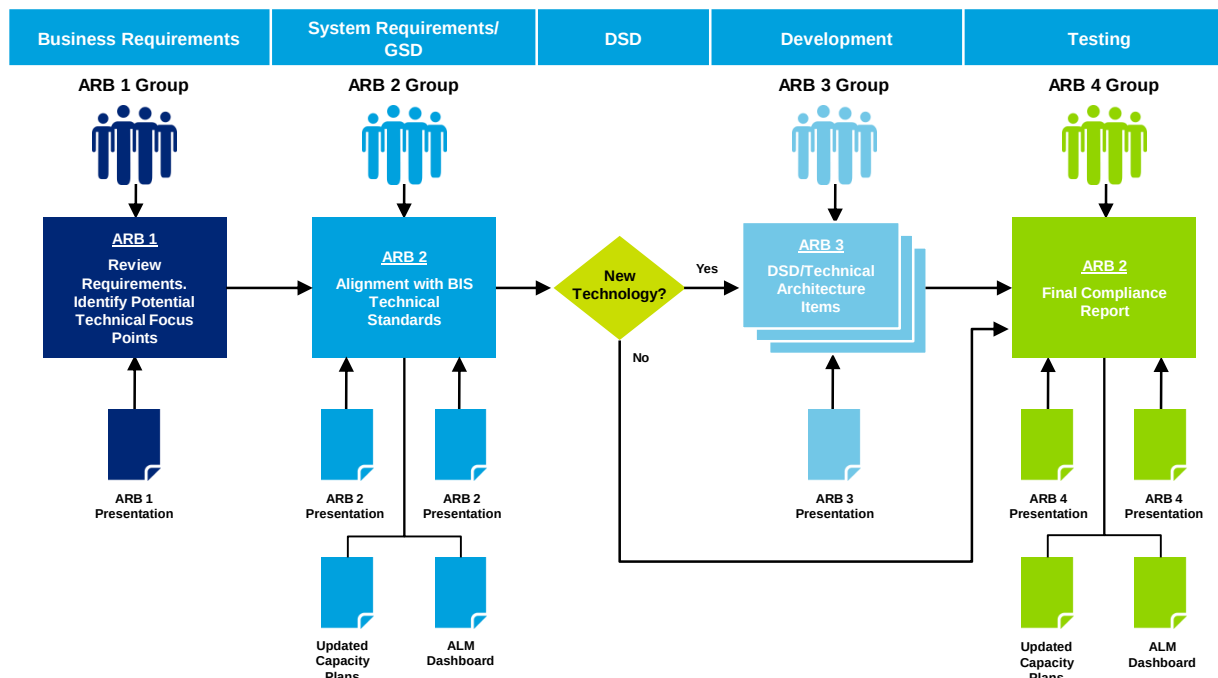
Another key component to the successful progression of modifications and enhancements from GSD to DSD is participation and adherence to the Architecture Review Board (ARB) Process.

The Architecture Review Board (ARB) meets to evaluate the architectural and technical direction of proposed modifications and is comprised of key business and technical stakeholders for the project:

- Program Office
- Database
- Security
- Middleware
- Data Warehouse

The Board critically reviews the proposed functionality, across domains, to verify that the various standards are being followed. The Board also evaluates whether or not existing DPW applications and resources are properly leveraged, per the existing enterprise architecture.

The ARB process has four distinct review steps, three of these steps are mandatory while one, ARB 3, is optional and may occur zero or more times. The figure below visually represents Deloitte's understanding of the ARB process and where each session falls with respect to DPW's system development life cycle (SDLC). The different colored ARB review groups represent the fact that the ARB review teams for each of these sessions may be distinct and different, although there are regularly BIS staff that participate in the ARB sessions across the SDLC. The ARB process will provide an opportunity for BIS to provide valuable insight and help facilitate the handoff between GSD and DSD. Additionally, the Deloitte Shared Services Team will participate in ARB sessions across the SDLC which will provide increased continuity as the modification or enhancement design progresses.



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Figure 6.5-74. A Series of ARB are Conducted by DPW to Evaluate the Architectural and Technical Direction of Proposed Modifications.

Deloitte's participation in the ARB Process will allow further review of the General System Design for progression to Detailed System Design.

In order to support the alignment of GSD and DSD, Deloitte as the Lot 7 vendor, will focus on participation in the ARB 2 session within the General Systems Design phase. This session is critical within the ARB Process as it is still early enough to impact the final design and the approach that we will carry forward into Detailed System Design.

The proposed team is the most qualified with the experience necessary to perform each of these activities in support the progression of modifications and enhancements from General System Design to Detailed System Design. DPW needs to have Deloitte as the common thread of experience to provide consistency across SDM phases. DPW will benefit with improved quality and the advancement of modifications and enhancements in alignment with DPW's mission. Furthermore, if Deloitte is selected for both Lot 6 and Lot 7 services, the additional tasks and activities required for GSD to DSD alignment are unnecessary as the same team will progress the modification through the SDM. This discards time spent on translation and results in a more consistent delivery, ultimately providing DPW with a higher quality product.



Maintaining the Systems Architecture Blueprint

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Update Systems Architecture Blueprint Document (**Appendix FFF**)

As a part of the Detailed System Design (DSD) phase, Deloitte updates the System Architecture Blueprint to reflect any changes to the DPW systems blueprint from any general system design specifications. We leverage the Enterprise Architect tool when performing updates such as server migrations during infrastructure expansions/upgrades to help identify indirectly impacted components and take action to address those impacts. Having the system blueprint changes in one consolidated repository and across a standard set of diagrams allows staff to go to a single place for information on the blueprint and helps avoid confusion that arises when different versions did exist. For more information on how we share the Systems Architecture Blueprint with other vendors and DPW after an architecture change, such as adding a web service consumption framework to the HCSIS application, refer to *Section 6.5.2.2, Coordination of EA-Blueprint Maintenance with the Systems Architecture Services Vendor*.

Release Management and Version Control

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Release Management and Version Control

The proposed team understands that Department of Public Welfare (DPW) applications operate in a highly integrated, complex IT environment that requires sound release management and version control practices to support successful implementation of system modifications. These release management and version control processes are needed to manage:

- Changes within a release
- Changes across multiple releases within the same system at the same time.
- Changes across multiple systems within the same applications at the same time or across different release schedules
- Changes that must be accounted for across applications at the same time or across different release schedules
- Changes across DPW systems and external systems and interfaces
- Enterprise wide application changes

The Department's application deployment model supports multiple business functions, consists of large application portfolios with high system interactivity and interdependence, and involves significant ongoing custom development efforts. In order to deploy new functionality in this complex environment, it is important that IT changes

are well planned, coordinated, controlled and monitored. Strong release management practices in these areas contribute to high quality production releases and reduced risk of schedule and cost overruns.

Release Management is the process for planning and managing the release(s) of a bundled set of application modifications and changes into production. It consists of a framework for managing the technical and non-technical logistics involved in migrating a release through the test environments and into production. As part of Deloitte's approach to release management, we also consider the impacts of those changes across releases, systems, applications and the Enterprise.

To support this responsibility, Deloitte as the Lot 7 vendor will continue to follow the release methodology defined by DPW for production deployment of the application changes. We approach release management not as a single stand alone task, but as a holistic set of activities supporting version control, configuration and deployment efforts throughout the SDLC. In particular, these tasks can be grouped into three broad areas as outlined in the following table:

Have you
heard? 

Over the past 4 years, Deloitte has supported approximately 8,000 environment migrations including scheduled, expedited and data fix releases for DPW

Release Management Thread	Description
Release Planning	- Identify a scoped set of changes to bundle together as a single release for production - Establish target production release date and initial migration dates for each of the lower environments - Plan for the coordination of activities across multiple applications that need to be released in tandem - Identify and avoid potentially conflicting activities across application teams
Build and Deployment	- Manage version control of code changes for a release - Generate release candidates for migration into lower environments for development and testing and eventually, when approved, for final migration into production - Develop reusable deployment scripts that migrate the code into each environment in an automated, consistent fashion
Production Pre-Deployment and Deployment	- Identify and plan activities required for deploying the release to production - Create playbooks documenting these production release activities - Execute and validate production deployment

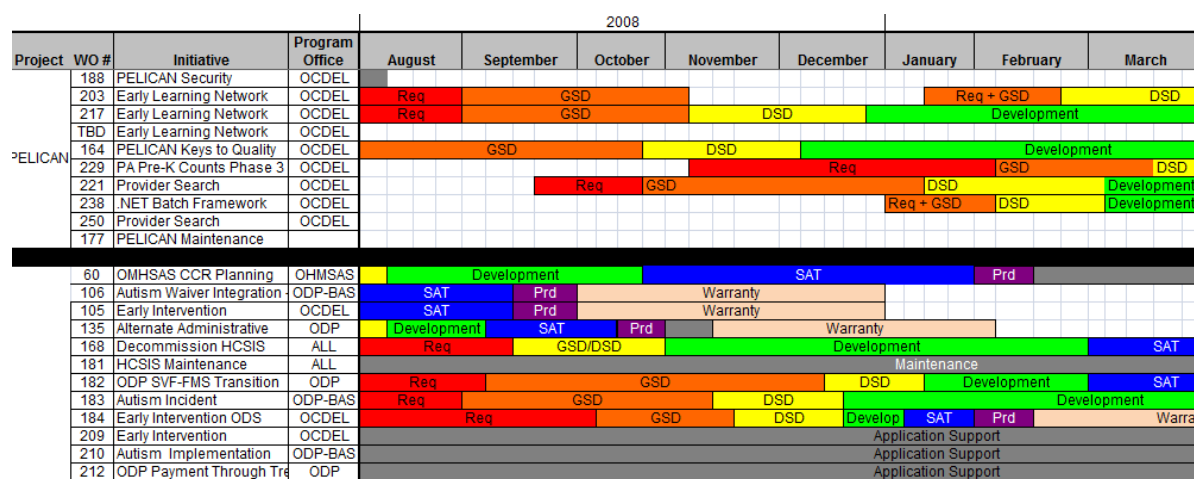
Figure 6.5-75. Holistic Grouping of Release Management Activities.

Release Planning

Upon approval of a work order for a new application modification initiative, release planning will commence. Deloitte as the Lot 7 vendor will manage this process in collaboration with stakeholders from across the other lots and DPW. Based on the timelines required to complete each phase of a work order, the application affected by the change, and other application modifications and maintenance efforts that are in the pipeline, the team will work to determine an appropriate set of application modifications and maintenance changes to bundle for a release along with a target production release date.

Runway

The proposed team will compile the proposed release timelines into a single depiction, the CIO Runway (Figure 6.5-76), that will be used to vet proposed timelines with DPW and once approved, to provide an overall view into the in-progress and planned release pipeline. This tool helps to confirm that interrelated deployment activities are synchronized. This tool is also used by DPW to plan and validate your resource allocation so that you can confirm resource availability and avoid resource constraints.



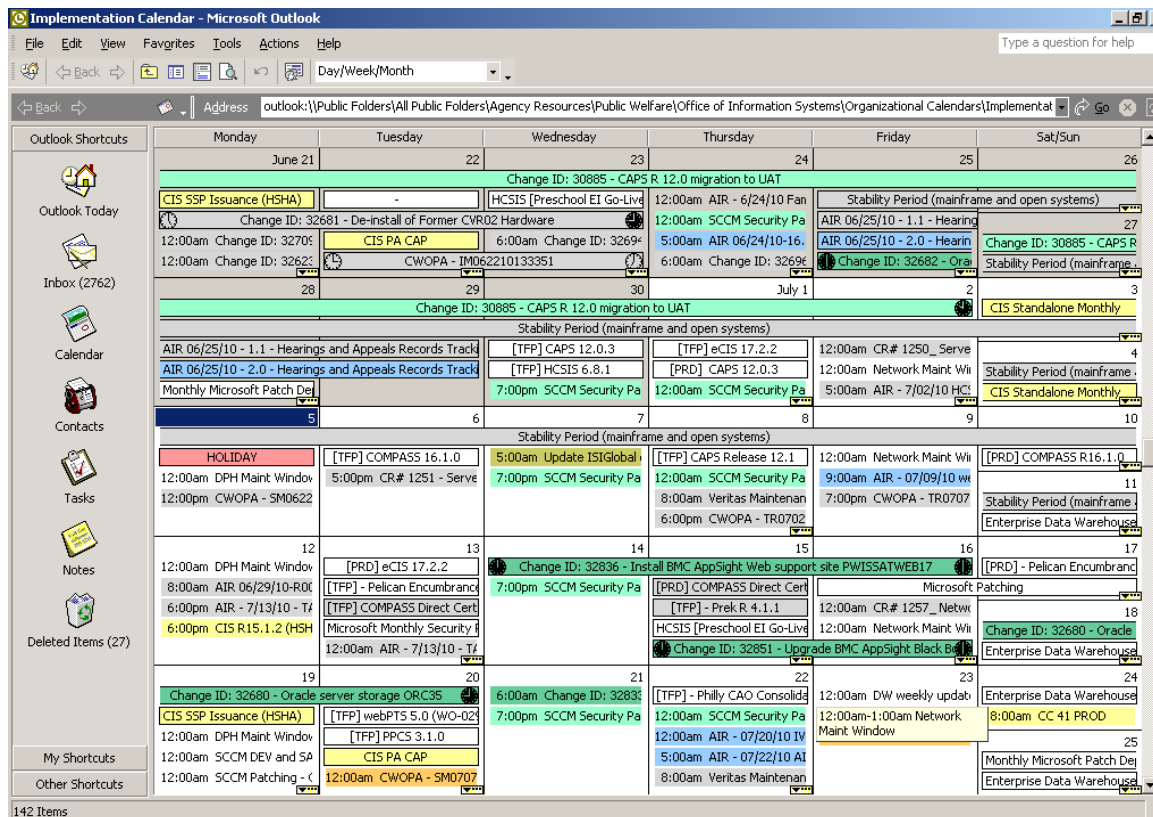
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Figure 6.5-76. Modification and Enhancement Runway.

The CIO Runway is used by both Deloitte and DPW to plan and coordinate releases and resources to support those releases.

BIS Implementation Calendar

Upon approval of a release implementation date, Deloitte will work with BIS to add the production deployment to the BIS Implementation Calendar as shown in Figure 6.5-77, which serves as a single view for BIS into approved release and configuration activities.



PA_DPW-750

Figure 6.5-77. Example BIS Implementation Calendar.

Careful planning and tracking of migration activities leads to improve quality of migration activities.

Build and Deployment

Build and deployment processes support proper version control and compilation of code changes into a single release candidate for migration through the environments and potential deployment into production. A robust and mature set of these processes is required for effective release management and is a key software development success factor overall. The following table highlights key build and deployment tools that Deloitte will use.

Tools	Features	Benefits
Team Foundation Server	- Code version or source control - Build metrics and reporting	Industry standard tool for supporting .NET development aligns DPW with industry leading practices

Tools	Features	Benefits
NAnt	- Framework for managing and creating builds and deployment scripts - Automated build process	- A consistent set of deployment scripts is used across each environment, including Production, confirming that the code migration process is tested and proven in lower environments before final deployment - A common deployment tool across applications confirms that support personnel need to learn and manage only one process
CruiseControl.NET	- Continuous integration server tool - Performs scheduled or on-demand builds and deployments to the development environment	- Provides a portal for the build and deployment team to manage and monitor their activities resulting in less configuration management issues and more time focused on software quality - Allows for scheduling time consuming build processes to occur off-hours when network usage is low and developers won't be interrupted
Application Portal	Single view for each application depicting current build and deployment information for each environment	- Stakeholders have a single resource to point them to the various environments and keep them informed of the current build available in each location. - No time needs to be spent searching for links or maintaining URLs locally in "Favorites" lists

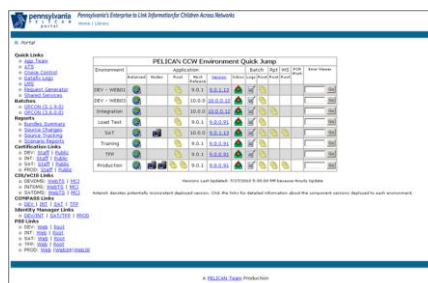


Figure 6.5-78. Build and Deployment Tools.

Production Pre-Deployment and Deployment

The third key component of release management is managing the logistics involved in deploying the release to production. This includes obtaining final DPW sign-off/approval for production deployment and creating a plan detailing the pre-deployment and deployment tasks required to successfully deploy the release to production.

The Application Implementation Request form (Figure 6.5-79) is used for requesting and capturing DPW's approval to go forward with production deployment activities.

REQUESTING DIVISION: _____ CONTACT NAME: <u>Hari Chengal</u> TYPE OF TRANSFER: <u>Emergency</u> Transfer After Date/Time: <u>6/19/2010 5:00 PM</u> (mm/dd/yyyy) (hh:mm:ss) (am/pm) Developer Assigned AIR Number (mm/dd/yyyy-Release Number): <u>6/19/10-16.0.1</u> Emergency Transfer Justification: <u>New build to fix issues from 6/5 release</u> Special Instructions: <u>TFS = \$1CIS/COMPASS</u> Application Name: <u>COMPASS 16.0.1</u> Source Project: <u>Acceptance</u> Does this project require Cross Platform Coordination: <u>No</u> DBMS Change? <u>Yes</u> Description: <u>All PCRs in Bundle 1050</u> Destination Server: <u>PWISPRDWEB36/37, PWISPRDSOA30/31, PWISPRDAPP30, PWISPRDRPT30, PWISPRDSRS30, ORC30/31/32</u>	DATE OF REQUEST: <u>6/18/2010</u> CONTACT PHONE #: <u>695-5809</u> Emergencies: Complete Justification Section below: Transfer Before Date/Time: <u>6/19/2010 5:00 PM</u> (mm/dd/yyyy) (hh:mm:ss) (am/pm) To be completed by the Software Quality Assurance Team: QA Authorization: _____ QA Date: _____ Comments: _____ Number of Modules Reviewed: _____ Number of Issues: _____ AIR Package Instructions: I. Standard AIR Package: Following the scheduled eight (8) day lead time process. a. Requestor (Commonwealth Employee or Contractor): i. Please complete the AIR form below. ii. Attach the Microsoft Excel Spreadsheets that list 1. the APPLICATION FILES and 2. the LIBRARY FILES to be implemented, iii. Email the AIR Package to your Supervisor for review. iv. Contractors email to "OIS QA Requests" or DPW Division Director for Emergency AIR Packages. b. Supervisor: _____

PA_DPW-752

Figure 6.5-79. Application Implementation Request.

Close coordination between Deloitte and DPW leads to consensus on production migration readiness.

In conjunction with DPW and other stakeholders as applicable, Deloitte as the Lot 7 vendor will assemble the deployment playbook. The playbook carefully lays out details of the steps to be performed and identifies dependencies, responsible parties, and estimated completion times so that impacted stakeholders are informed of the software release and validation cycle. Figure 6.5-80 depicts an example Production Deployment Playbook.

Enterprise Release 17.2.3, MCLNET 2.0.1, COMPASS 16.1.1 Production Implementation Play book: Deployment steps										
Check if Complete	Step	Migration Task	Migration Thread	Servers Impacted	Date	Duration	Begin Time	End Time	DPW Owner (s)	DC Support
	1	Verify batches for eCIS prod and DX prod are on hold for Friday \ Saturday	eCIS, MCLNET, COMPASS		7/31/2010	0:05	5:00 AM	5:05 AM		Santosh
	2	Place Applications on Maintenance mode	eCIS, MCLNET, COMPASS		7/31/2010	0:05	5:00 AM	5:05 AM	DIMO - Scheduling	Hari/Santosh
	3	Confirm Applications are on Maintenance mode	eCIS, MCLNET, COMPASS		7/31/2010	0:05	5:05 AM	5:10 AM		Hari/Santosh
	4	Perform eCIS, COMPASS Application Database Backup	eCIS, MCLNET, COMPASS		7/31/2010	2:00	5:00 AM	7:00 AM	DTE-Data Team	Raghu K
	5	eCIS release 17.2.3, COMPASS 16.1.1, MCLNET 2.0.1 Dial: 888.998.2663 Participant Code: 673828	eCIS, MCLNET, COMPASS		7/31/2010	0:05	7:00 AM	7:05 AM	DTE-Web Team, DTE-Data Team, DIMO - Scheduling	Chair Person: Santosh/Hari Chengal Attendees: BIS, ITSS, ICIS
	6	Perform eCIS 17.2.3 DB portion [Pre-Deployment steps] 1. Disable dashboard queue 2. ACD scripts, Archive data cleanup/move	eCIS, MCLNET	PWISPRDORC37 PWISPRDORC38	7/31/2010	2:30	7:00 AM	9:30 AM	DTE-Data Team	Raghu K
	7	Perform web deployment [WEB, BATCH, UTIL, SOA, RPT] and Database	eCIS, MCLNET, COMPASS		7/31/2010	1:30	7:00 AM	8:30 AM	DTE-Web Team	Hari/Santosh
	8	Perform eCIS, COMPASS WEB portion [Post-deployment steps] 1. Verify Deployment Logs 2. Verify all passwords are updated in config files 3. Perform post-deployment steps as provided in the instructions document	eCIS, MCLNET, COMPASS		7/31/2010	1:00	8:30 AM	9:30 AM	DTE-Web Team	Hari/Santosh
	9	Voicemail Status update Dial: 717-695-6995	eCIS		7/31/2010	0:05	9:00 AM	9:05 AM		Santosh/Hari Chengal
	10	Perform NANT DB deployment [WEB, BATCH, UTIL, SOA, RPT] and Database package - eCIS release 17.2.3 deployment Perform eCIS, COMPASS, MCLNET DB portion [Post-Deployment steps] 1. Verify, if there are any INVALID DB objects eCIS 2. Enable dashboard queue 3. MCI one off package deployment 4. Perform Pre-Validation Database backup	eCIS, MCLNET		7/31/2010	0:30	9:30 AM	10:00 AM	DTE-Web Team	Hari/Santosh
	11	Perform Server health checks listed in the document	eCIS, MCLNET, COMPASS		7/31/2010	0:15	10:00 AM	10:15 AM		Nagaraj
	12	Perform app pool recycle windows services and check services are started Enable MCI for CCW Enable MCI for HCIS	eCIS, MCLNET, COMPASS		7/31/2010	0:10	10:15 AM	10:25 AM	DTE-Web Team	Hari/Santosh, eCIS App Team
	13	Voicemail Status update Dial: 717-695-6995	eCIS		7/31/2010	0:05	11:00 AM	11:05 AM		Santosh/Hari Chengal
	14	Take application out of Maintenance mode	eCIS, MCLNET, COMPASS		7/31/2010	0:05	12:30 PM	12:35 PM	DTE-Web Team	Hari/Santosh
	15	Perform Application health checks	eCIS, MCLNET, COMPASS		7/31/2010	0:10	12:35 PM	12:45 PM		Hari/Santosh
	16	Begin application internal validations	eCIS, MCLNET, COMPASS		7/31/2010	2:00	12:45 PM	2:45 PM		Ram, Robin, Dwarak
	17	Begin application validations by DAPS	eCIS, MCLNET, COMPASS		7/31/2010	2:15	2:45 PM	5:00 PM		DAPS
	18	eCIS release 17.2.3, COMPASS 16.1.1, MCLNET 2.0.1 Go/ No-Go Call Dial: 888.998.2663 Participant Code: 673828	eCIS, MCLNET, COMPASS		7/31/2010	0:30	5:00 PM	5:30 PM	BIS	Chair Person: Santosh/Hari Chengal Attendees: DAPS, eCIS App Team, ITSS

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Figure 6.5-80. Example Deployment Playbook.

The Deployment Playbook keeps stakeholders informed of deployment steps and activities.



When putting together the deployment playbook, Deloitte will consider among other factors, the availability of program office staff for validation, other scheduled migrations, size of release, complexity of release, presence of external interfaces, need for conversion, composition of impacted user base, and extent of database changes.

On the day of the deployment, the proposed team, with DPW support, will facilitate execution of the release deployment playbook. Once the technical steps for deploying the release are completed, the proposed team will coordinate with program office representation to gain final approval for the release. A Go/No-Go Call is then held with representation from each stakeholder group to come to a consensus for final authorization of the deployed release.

Analysis and Implementation of New Technologies and Solutions

IV

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IV-373

RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Assist in Custom, COTS, SaaS, and Transfer Technology solution options assessments, integrations, and implementations

Deloitte recognizes that organizations such as DPW not only have the responsibility to provide mission critical operations support, but focus in tandem on strategic initiatives to maintain continuous improvement and change across the enterprise. DPW is one of the leading states in the nation in the area of innovative IT service delivery.

To help advance this leadership position, and to handle upcoming paradigm shifts and changes in overall IT strategy and approach, Deloitte provides specialist assistance and technology strategy support to DPW for annual planning efforts and COTS, Cloud Computing, and Transfer Technology product support. As one of the largest IT strategy practices in the world, unlike IT staff augmentation or business process outsourcing focused firms, Deloitte draws from a pool of specialized experience from across the country to assist DPW with addressing key technology strategic needs. These resources are either aligned with strategic DPW IT initiatives in a direct support role or as ongoing strategic advisors providing program, technology and innovation assistance during annual planning or regular DPW IT strategy forums.

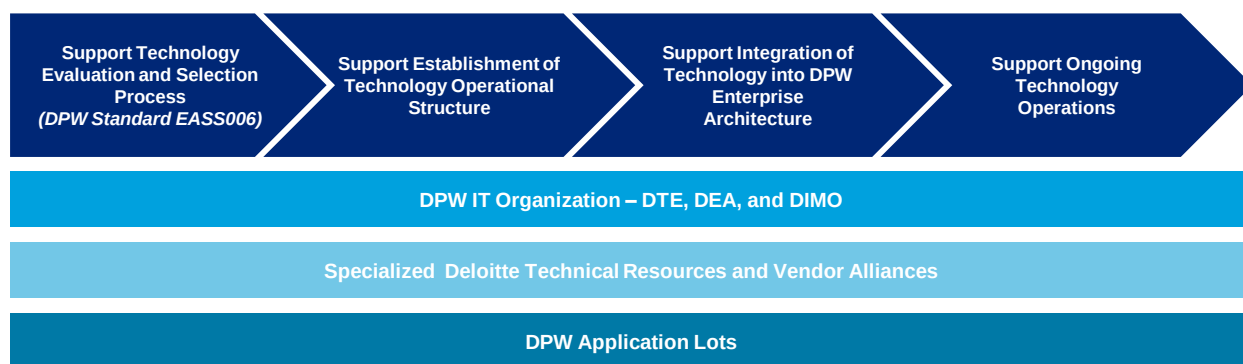
Deloitte works with DPW to identify the pertinent technology strategy resources and materials to support the technology planning process DPW is involved in. These resources are aligned with the planning process and engaged for targeted planning activities, facilitated workshops, or longer term engagements, based upon the immediate availability of these resources and the needs of DPW. Although it is not possible to foresee DPW's technology strategy needs over the coming three to five years, we have already engaged resources to begin collection of DPW-specific strategic points of view for the following three planning efforts identified in the RFP:

COTS

As DPW continues to evolve its EA-SOA architecture, COTS technologies are playing a more significant role across the enterprise in augmenting custom software development. Deloitte assists in COTS evaluations and selection processes according to the DPW

standard governing COTS product selection (STD – EASS006). We work with DPW after COTS product selection to prepare DPW's IT organization to support the COTS product and assist the application teams with integration of the COTS product into their application architectures.

We understand that the COTS process does not end with the evaluation and selection of a COTS product. Deloitte works with DPW through a three step process, illustrated in the Figure below and discussed in more detail below the figure, which includes evaluation and selection of the COTS product, establishing operational support for the selected product, and integrating the COTS product into DPW applications as part of work orders. We progress this process through coordination across the DPW IT organization, our modification and enhancement teams, DTSS and ITSS leveraging specialized technical resources and our vendor alliances to support each phase of the COTS product.



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Figure 6.5-81. Process to Evaluate, Select, Operationalize, and Implement COTS Products.

Deloitte's COTS process builds upon DPW evaluation and selection standards with additional steps to establish COTS product operations and integrate COTS products into DPW applications while leveraging specialized technical resources and Deloitte vendor alliances.

- **Evaluate and Select COTS Product.** Deloitte uses the DPW standard process (STD – EASS006) for evaluating and selecting COTS products. We work with DPW to coordinate involvement of Deloitte resources and technical specialists and involve our vendor alliance partners at DPW's request to complete the 7 phases of the evaluation and selection process: (1) business feasibility and research; (2) solicitation; (3) preliminary evaluation and selection; (4) detailed evaluation and selection; (5) assessment and recommendations; (6) approval and authorization; and (7) procurement and implementation.
- **Establish COTS Product Operational Support.** Deloitte provides continuity from the evaluation and selection process through the establishment of operational support for the COTS product. As part of this step in the process, we support DPW in the creation of procedures and processes specific to the COTS product as well as the establishment of operational controls such as configuration management and monitoring processes specific to the COTS product. When this process is complete, we work with DPW to establish the appropriate environments for the COT product so that the product can be integrated across DPW's applications.



- **Integrate COTS Product Into DPW Applications.** We coordinate COTS product integration between DPW and our application teams, both with specialized technical resources and as part of the ARB review process. Both specialized technical resources and our vendor alliances can be of particular value here to help overcome integration challenges to deliver COTS implementations on time and according to plan.

Vendor Alliances

In addition to our technical specialist resources, Deloitte has built national and local alliances with vendors whose technologies bring specific value to our clients – software vendors like Informatica, Adobe, Oracle, Computer Associates (Netegrity Suite of products), HP/Mercury, SAP, Cognos and webMethods, and hardware vendors such as Unisys – vendors whose products are used on DPW’s applications. These relationships provide us access to resources, use of products, and the ability to involve skilled practitioners in design reviews and issue resolution, which can often speed up response time.

Cloud Computing

Cloud Computing is a broad term covering a variety of approaches to supporting off-site virtualized computing. These approaches include Software as a Service (SaaS), Platform as a Service (PaaS) and Infrastructure as a Service (IaaS)– each of which may be available from a private, public, or hybrid cloud infrastructure. DPW may be interested in a variety of these services, from simple outsourcing of office functions to the availability of a full-scale utility computing cloud to augment their existing virtualization infrastructure with on-demand capacity that could be used to offset cyclical processing peaks such as the surge in usage during the annual LIHEAP application period. When integrating these services into the enterprise, our experience shows that organizations need to consider the technical, security, organizational, and governance aspects of integration prior to making the leap into the cloud. Deloitte will work with DPW to engage resources from across these disciplines and share our own cloud experiences to assist with the decision making and integration process.

Transfer Technology Support

As one of the leading providers of innovative HHS solutions across the country, Deloitte prides itself in support of transfer technology for best-of-breed solutions available across different states. We have implemented more than 100 transfers of solutions, components and concepts across the states in a collaborative fashion. We have also worked to bring concepts and solutions to DPW during this contract period to support continued knowledge sharing across the states.

Only Deloitte offers this breadth of network for the Commonwealth through its directly relevant HHS implementations in more than 25 states with technologies and concepts that are available for the Department to consider for incorporation into DPW systems.



Delivering System Modifications and Enhancements

IV

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IV-373

RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Implement modifications/enhancements upon DPW approval

As the Lot 7 vendor, we understand that it will be our responsibility to coordinate and drive the DSD through system implementation activities. This effort will require careful planning and collaboration with DPW, the lot 1-6 vendors, program offices and BIS to confirm that the system implementation plan and preparation activities are correctly aligned with the modification or enhancement being released into the production environment.

From a technology perspective, the application must be thoroughly tested and ready for production, the technology infrastructure must be in place, required interfaces must be validated and ready to be turned on, conversion processes must be ready for execution and cut-over procedures must be in place to shut down legacy systems if necessary.

From a business perspective, the impacted end-users must be trained and ready to accept and use the new or enhanced systems, which at times may mean a change in organizational culture or job function. In addition, it is critical that the necessary support structures and processes are in place to help with the transition.

An important success factor to the overall success of the implementation of modifications activities is the integration and alignment across project stakeholders for each deployment. This alignment is necessary to integrate the many "moving parts" of the project (infrastructure, people, process, operations and application) into a cohesive and coordinated effort, as demonstrated in the following figure:



Figure 6.5-82. Deloitte’s Integrated Implementation Approach Drives Success.

Deloitte applies an integrated implementation approach that includes application, infrastructure, people, process and operations so that each piece of the puzzle comes together at the critical juncture of go-live.

These “moving parts” are addressed across several key components that comprise any successful implementation effort. These components are highly integrated and their respective activities will overlap significantly over the course of the implementation timeline. Each of the following components is addressed below:

Establishing an Implementation Approach

Communication and Development of the Deployment Playbook

Implementation Support Activities

Post Implementation Support

Deloitte Application Support Services Team

Establishing an Implementation Approach

The implementation approach may vary greatly depending on the size and complexity of the modification or enhancement being delivered to production. We will work with DPW to determine the applicable approach by analyzing business constraints, risk and contingency planning, process considerations and operational impacts. The outcome of this analysis will help identify the appropriate rollout strategy for each implementation effort. While in some instances a phased roll-out with a controlled pilot group may be

the leading option, other efforts will benefit from a single, big-bang go-live that will implement the change statewide on a single day. We will include key stakeholders in the decision making process to confirm that each party involved is comfortable with the selected approach.

Communication and Development of the Deployment Playbook

Consistent and clear communication, though essential to each stage of the systems modification and enhancement process, is crucial to the success of the implementation effort. With multiple parallel threads of activity required for an implementation effort, it is critical that each involved party is aware of the ongoing activities, timelines and sequence of events.

To help facilitate with the communication and implementation coordination process, we will participate in the development of the Deployment Playbook. The playbook lists the key activities and dependencies, roles, responsibilities and duration times for each step required to complete the installation and deployment of the modification or enhancement. Key contacts from DPW, Deloitte and other lot vendors will also be included in the playbook. Once developed, regularly scheduled walkthroughs of the playbook with the involved parties will be conducted to help confirm the playbook is both accurate and complete.

Enterprise Release 17.2.3, MCLNET 2.0.1, COMPASS 16.1.1 Production Implementation Playbook: Deployment steps										
Check if Complete	Step	Migration Task	Migration Thread	Servers Impacted	Date	Duration	Begin Time	End Time	DPW Owner (s)	DC Support
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	2	Place Applications on Maintenance mode	eCIS, MCLNET, COMPASS		7/31/2010	0:05	5:00 AM	5:05 AM	DMO - Scheduling	Hari/Santosh
	3	Confirm Applications are on Maintenance mode	eCIS, MCLNET, COMPASS		7/31/2010	0:05	5:05 AM	5:10 AM		Hari/Santosh
	4	Perform eCIS, COMPASS Application Database Backup	eCIS, MCLNET, COMPASS		7/31/2010	2:00	5:00 AM	7:00 AM	OPE-Data Team	Raghu K
	5	eCIS release 17.2.3, COMPASS 16.1.1, MCLNET 2.0.1 Dial: 888.998.2663 Participant Code: 673828	eCIS, MCLNET, COMPASS		7/31/2010	0:05	7:00 AM	7:05 AM	OPE-Web Team, OPE-Data Team, DMO - Scheduling	Chair Person: Santosh/Hari Attendees: BIS, ITSS, ICIS
	6	Perform eCIS 17.2.3 DB portion [Pre-Deployment steps] 1. Disable dashboard queue 2. ACD scripts, Archive data cleanup/move	eCIS, MCLNET	PWSPRDORC37 PWSPRDORC38	7/31/2010	2:30	7:00 AM	9:30 AM	OPE-Data Team	Raghu K
	7	Perform web deployment [WEB, BATCH, UTL, SOA, RPT] and Database	eCIS, MCLNET, COMPASS		7/31/2010	1:30	7:00 AM	8:30 AM	OPE-Web Team	Hari/Santosh
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	13	Perform app pool recycle windows services and check services are started Enable MCI for CCW Enable MCI for HCIS	eCIS, MCLNET, COMPASS		7/31/2010	0:10	10:15 AM	10:25 AM	OPE-Web Team	Hari/Santosh, eCIS App Team
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	19	eCIS release 17.2.3, COMPASS 16.1.1, MCLNET 2.0.1 Go/ No-Go Call Dial: 888.998.2663 Participant Code: 673828	eCIS, MCLNET, COMPASS		7/31/2010	0:30	5:00 PM	5:30 PM	BIS	Chair Person: Santosh/Hari Chengal Attendees: DAPS, eCIS App Team, ITSS

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Figure 6.5-83. The Deployment Playbook.

The playbook provides a single point of access for the stakeholders to maintain direction and track progress against the required activities as modifications are implemented.

The playbook will serve as the single guide and reference for conducting the implementation activities – both when migrating to the test for production (TFP) environment, as well as migrating to production on the actual go-live date.



Implementation Support Activities

Deloitte understands that effective implementation support encompasses a wide range of activities; planning key pre- and post-implementation actions, getting both central and local offices ready for the implementation, planning and executing a pilot, performing cutover to the new system, and establishing effective support mechanisms after the go-live. Our approach to implementation begins with strong planning and carries through post-implementation to transition to the new technology. We also understand that there may be differences in support, depending on initiative and the impacted users.

Throughout our implementation activities, Deloitte's primary goal is an on-time and on-track implementation that assesses and addresses the impact of the system on service delivery and minimizes disruption to current business operations.

Post Implementation Support

As the Lot 7 vendor, we understand that our role does not end with the actual implementation of the modification or enhancement. Post go-live, we are committed to providing operational and technical support during the transition and acceptance phase as end-users begin to adapt and use the new system. The right post-implementation support can dictate the success or failure of user adoption and by extension, the initiative.

We use a data driven approach to monitor the status of implementations and user activity. We have found in past implementations that properly designed metrics can quickly identify systematic issues with users' adoption of the technology. For example, by monitoring the number of records in the system against the number of expected records, and analyzing that data against the implementation plan, trouble spots can quickly be identified and addressed to head off potentially more significant issues. We will support the triage, tracking and analysis of any post-implementation issues, and will collaborate with DPW and other lot vendors to determine the appropriate action for resolution.



Deloitte Systems Adoption Team

Under DPW's newly defined lot structure, there will be multiple transition points as system modifications and enhancements progress towards implementation. As the Lots # 1 – 5 vendors hand off the business requirements to Lot # 6, and then the Lot # 6 vendor hands the system requirements and general system designs to Lot # 7, there is an opportunity to lose focus on the end user.

To reduce this risk, Deloitte works closely with our Application Support Services Team to confirm a focus is maintained on the end users throughout the systems modifications and enhancements life cycle, providing a level of support and established process for implementation activities that positions DPW to achieve the identified business outcomes. Additional details to this Deloitte Approach are available within the following section of our response: *Section 6.7, Application Adoption and System Implementation Support*.

Deloitte has an entire Technology Adoption Service Line dedicated to this discipline, helping organizations adopt new systems and processes to transform their organizations through the management and creation of change leadership, communications, and training deliverables. This provides DPW with a knowledgeable pool of resources that can be prioritized to deliver these services based upon the modifications that are targeted for implementation.

Our experience providing system implementation services for modifications and enhancements in the past is unparalleled and we look forward to supporting these efforts under the new contract structure.

Supporting the Technical Training Requirements of DPW

IV

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Prepare and conduct technical training as required by the Department

As the Commonwealth continues to innovate and focus on developing services based solutions that are enterprise wide, staff within BIS need adequate technical training and support. This is especially important as the Department embarks on making significant modifications and enhancements to the applications over next several years. We are proud of our business relationship in the past and our record of preparing and conducting technical training across DPW technical staff. Now more than ever, we understand that budgets are tight and finding the dollars to support additional training efforts continues to be a struggle. We recognize that this limitation may make it difficult for BIS leadership to find the time and resources to send staff to outside vendor training. We continue to work with DPW to develop and prioritize a technical training plan for staff that is based on DPW's needs and engages Division of Enterprise Applications (DEA), Division of Technology Engineering (DTE), and Division of Infrastructure Management and Operations (DIMO) staff. Our plan focuses on a structured training process, providing staff with the knowledge, skills and abilities they need to achieve

competency and high performance. The technical operational support training provides DPW technical staff with realistic examples and hands-on training that equips them with the necessary skills to adapt to changing circumstances and challenges. The table below includes just a few examples of technical training we have provided in the past to DPW which are in-line with what we will continue to provide in the future:

Technical Operational Support Training

Tool/Skill	Objective
Introduction to .NET middleware approach	• Overview of the .NET middleware approach along with supporting code and process documentation • Review of the differences between .NET middleware and current approach to discuss concepts such as reliability, reusability and scope control
ITIL Certification	• Helped BIS staff get ITIL certified
Automated Unit Testing	• Outline how automated unit testing promotes reliability through development. • Explain what a unit test is and how to identify functionality that needs to be unit tested. Describe how to use NUnit as .NET unit testing framework and how it ties with the development process • Explain the concepts of test-driven development (TDD)
Build and Deployment	• Review automated build leading practices using TFS to improve quality and efficiency • Overview automated deployment practices using TFS • Review automated unit testing as an integrated part of the build process within TFS • Assist in developing an automated build, deploy, and source control and packaging methodology appropriate for the DEA Middleware team
Introduction to .NET 3.5	<i>.NET 3.5 Concepts</i> • Overview .NET project and solution, the differences between them and conditions under which each one needs to be utilized • Outline the features in .NET 3.5 that enable object-oriented design leading practices and provide examples <i>XML and .NET Framework</i> • The use of the .NET Framework capabilities to convert between data and storage formats such as generating XML through serialization

Figure 6.5-84. Technical Operational Support Training.

Given our success at providing technical training in the past, we are focused on continuing this effort to help DPW staff continue to evolve their technical skills and enhance the Department's ability to provide leading edge technology solutions. We will work with the Department to prioritize these training activities as part of the contract.

Maintaining Systems Requirements Traceability

IV

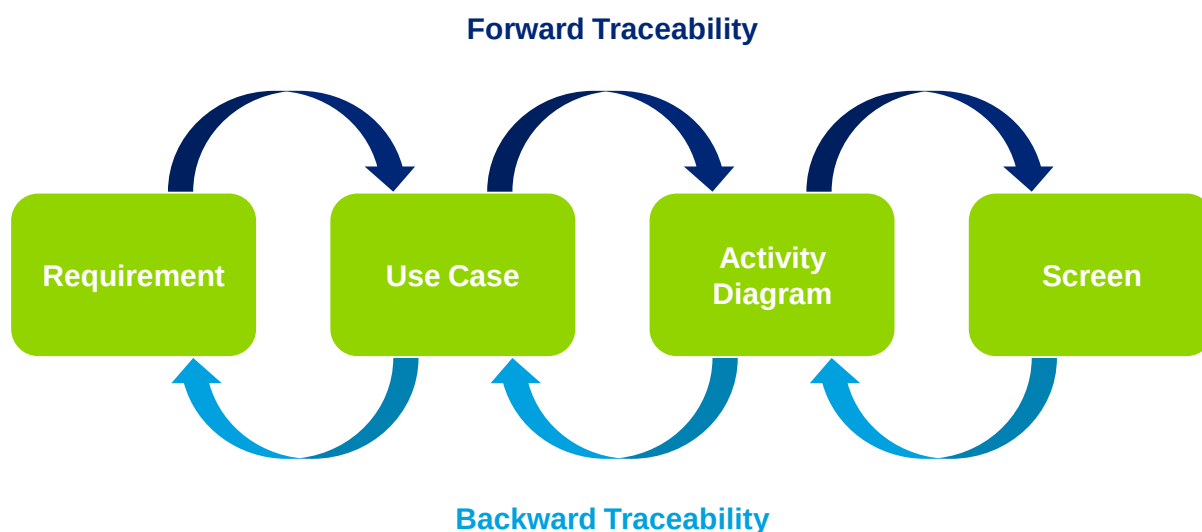
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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Update requirements traceability matrix

The Deloitte Team understands the value of controls that enable stakeholders to clearly validate, at each SDLC phase that the application under development is properly progressing towards an end product that will meet business needs, requirements, and technology standards. As discussed in *Section 6.3, System Support Services – General*, to achieve this goal it is important to establish and follow a process for creating, validating, and updating during each stage the traceability between key design, development, and validation/testing artifacts and the requirements they realize or support.

It is also important to understand that requirements traceability supports bidirectional verification (as illustrated in the example in Figure 6.5-85) of how requirements are met during the design phase. Forward traceability supports the progress refinement of requirements into specific design specifications while backward traceability confirms that no specification is implemented unless it is meant to support a key requirement (for example, there is no value in adding a field on a screen that is not used by the system for processing or reporting).



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Figure 6.5-85. Bidirectional Traceability.

Maintaining and following a bidirectional traceability process provides DPW with the means to validate that business stakeholder requirements are met by the project thus improving the quality of the end project.

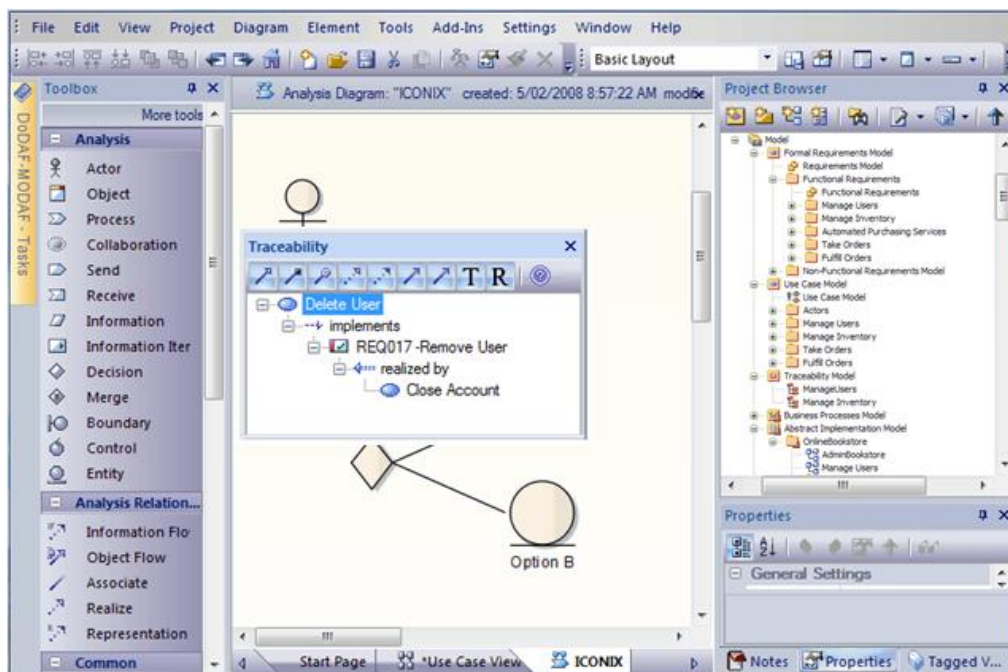
As part of the Lot 7 responsibilities, Deloitte is responsible for updating requirements traceability documents at the Detailed System Design, Development, Test and Implementation phases of the SDLC for each application modification/enhancement initiative. This will provide the tools necessary to validate at each phase that we are progressively meeting the requirements of the project stakeholders and ultimately

building a system that will help DPW realize its objectives. The following table outlines the key traceability matrix updates and benefit to DPW Deloitte performs at each SDLC phase managed by the Lot 7 vendor.

Phase	Traceability Matrix Updates	Benefit to DPW
Detailed System Design	Incorporate DSD specifications into the traceability matrix (sequence diagrams, class diagrams, security profiles, etc).	Providing traceability for the detailed design specifications results in a more accurate estimation of the development and test phases leading to a more realistic project schedule, scope and cost.
Development	- Identify any missing design specifications during development and add to the traceability matrix as needed. - Develop the test scenarios in parallel with development tasks and incorporate each test scenario into the traceability matrix.	Validating forward and backward traceability of the test scenarios results in broad test coverage providing the foundation needed for a high quality end product.
Test	- Use the traceability matrix to determine if a test discrepancy is a defect or an issue/enhancement. - Review test defects and identify/update gaps in the traceability matrix.	Referencing the traceability matrix to properly triage a test discrepancy means issue/enhancements will not be assigned to a developer for correction allowing them to spend their time on more appropriate tasks.
Implementation	Use the traceability matrix to triage ongoing production issues and determine if issues need to become a maintenance defect.	Referencing the traceability matrix to triage production issues will prevent non-maintenance defects from being sent to the maintenance team resulting in a more efficient use of their time.

Figure 6.5-86. Traceability Matrix updates across the SDLC.

In accordance with DPW's current practices and our plan to continue using the Enterprise Architect tool for creating and centrally storing SDLC artifacts, we propose using Enterprise Architect (EA) to capture the relationships between requirements and subsequent SDLC artifacts as depicted in Figure 6.5-87. This benefits DPW by leveraging a tool that does not require additional costs for licenses, that is familiar to and understood by current DPW staff resulting in no learning curve and that contains the traceability matrices of the current system initiatives at DPW eliminating the need for conversion or duplicate data entry. The output of these EA relationships, otherwise known as the traceability matrix, will then be shared via the DocuShare tool to provide the project stakeholders with a central location to retrieve the most current version of the traceability matrix.



PA_DPW-755

Figure 6.5-87. Traceability Management in EA.

Deloitte will use the EA tool to help document requirement traceability through the SDLC providing DPW with a familiar, consistent and no additional cost way to maintain requirement traceability.

Using EA for documenting requirement traceability throughout the SDLC will provide a familiar, consistent and no additional cost way to successfully update and maintain requirement traceability.

Coordination of EA-Blueprint Maintenance with the Systems Architecture Services Vendor

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Provide EA-Blueprint component update information to the selected Offeror of **Lot # 6**

Once the EA Blueprint has been updated, it is important that the Lot 6 vendor and other stakeholders are made aware and have access to the latest version of the document. The Lot 6 vendor will need to use the EA Blueprint in performing their HLEs as well as the General System Design in order to properly understand the scope of change for any new work order requests. Using the DocuShare tool, Deloitte is able to upload the new EA Blueprint to a common document repository where key staff on the Lot 6 vendor can access the most recent version and review the version change log. Just as we collaborate with the Lot 6 vendor in other aspects of application modification/ enhancement, we review the changes to the EA Blueprint with the Lot 6 vendor as needed to verify they fully understand the change and are able to apply it to their Lot 6 vendor responsibilities. Having a common understanding of any changes and being aware of the latest version of the EA Blueprint avoids rework later on in the project which can negatively affect its cost and schedule.



Testing and Defect Management Coordination

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- Coordinate with Lot # 1-5 for SAT test planning, executions, and defect management activities

SAT Planning and Execution. Although DPW stakeholders will have primary responsibility for planning and executing SAT, we will work with DPW stakeholders, third party vendors and the other lot vendors to identify a strategy for planning and executing SAT.

SAT planning will occur during the Integration Testing phase. Using the Integration Test scenarios as a guide, we will work with DPW stakeholders to identify SAT scenarios. During the SAT execution phase, we will coordinate with selected DPW stakeholders to provide access to a SAT environment in which business users can execute SAT scenarios.

Defect Management Activities. Deloitte will use an enterprise defect management and tracking system that will be used across the lots. This system will be accessible to DPW stakeholders, third party vendors, and other lot vendors and will enable defect prevention, discovery, tracking, categorization (i.e., type and severity), resolution, reporting, and after action activities to improve end product quality and solution development and delivery processes.

Assisting the Department in Managing Your Portfolio of Projects

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- Submit proposed automated system work order tracking system to the DPW Contract Administrator and obtain approval to implement
- Implement automated system work order tracking system that captures detailed information related to each system work order, maintains status of each system work order, and provides the necessary reports to manage the system work order process and provide easy access to all of the documents and information related to each system work order
- Maintain information on all system work orders for the life of the contract

As DPW rolls out new initiatives for application modifications and enhancements to support desired operational improvements and efficiencies, it becomes crucial to monitor and track status of each work order for successful delivery of the initiatives. We propose to use our centralized tool Project Management Center 7.5 (PMC) for the work order tracking. The tool has the ability to capture detailed information and status about each work order and produce reports to facilitate management of work orders. Our proposed PMC tool stores the work plan information and uses it to automatically assign resources to assigned tasks. Please refer to the *Section 6.2, Project Management*, for further details on PMC.

As we perform Lot 7 activities of detailed system design, development, testing, training, and implementation, our application team records the actual time spent on each work order in PMC. Status reports and dashboards are produced out of PMC and shared with



DPW stakeholders to provide status updates on project initiatives. We also continue to use PMO Tracker tool to track the contract related tasks and activities such as deliverables submission and sign-offs. This helps DPW Contract Administrator to gauge the health of each project initiative and the corresponding work orders.

Deloitte understands that we need to maintain information on each system work order for the life contract. This would allow DPW to have a holistic view of the accomplishments that are achieved. In addition to maintaining this information, Deloitte works with DPW to identify new information that may need to be captured to support the creation of chronological Work Orders.

Bringing New Perspective and Innovative Solutions to DPW

Have you
heard? 

The Commonwealth received the following ISM Awards related to Deloitte-assisted implementations

- 2008 Recognition Award for Excellence in Human Services Technology in the Innovation in Service Delivery category – for implementation of Workload Dashboard and Data Exchanges

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

- Participate in brainstorming discussion on DPW initiatives, as requested

Deloitte's knowledge of the existing processes and technologies at DPW allows us to make solid recommendations on improving those processes and refining the technology, however when you combine this with our ability to bring new and innovative ideas to the Department, collaborating with Deloitte keeps you on the leading edge of technology solutions for state government.

We bring the right mix of DPW veterans and new, fresh minds that have worked on numerous other Health and Human Service (HHS) solutions to the team proposed to support DPW. As requested, this team will participate in brainstorming discussions on DPW initiatives and leverage the combined experience and Deloitte resources accessible across our Firm.

As the business environment evolves and technologies advance, bringing promise of improved business results to adoptees, our team will work with you to brainstorm across a number of questions and opportunities for DPW initiatives as highlighted in the figure below.



PA_DPW-902

Figure 6.5-88. Deloitte's Support of DPW's Innovation and Success.

Deloitte will leverage our knowledge of DPW as well our National HHS experience and resources to support DPW's innovative thinking and service delivery.

Questions such as these will be at the forefront of our analysis as we leverage knowledge of HHS business processes, overarching agency challenges, and cutting edge technologies to assist the Commonwealth in continuing to be a leader in the successful delivery of HHS services.

Project Management, Defect Management, Test Management, SDLC Logistics

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

NOTE: Please reference Section D, System Support Service General narrative (Paragraphs 1.0, 1.1, and 1.2) in this RFP regarding project management, defect management, test management, SDLC logistics and coordination ownership and responsibilities for all application support service activities.

Please refer to *Section 6.3, Application Maintenance*, for items relating to the above RFP reference.



Providing Qualified Personnel

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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

DPW requires that the selected Lot # 7 Offeror have suitable qualified personnel resources, facilities, and supplies necessary to support the application support services (relevant services as required), shared and direct technical services outlined in this RFP. The Offeror will be required to align resource capacity to meet demands and to successfully support multiple engagements and business priorities independent of specific program, business function, and/or in-scope systems. Reference the Required Work Skills.

As indicated in the tables in *Section 6.3.2.1, Required Work Skills*, where we list detailed information about the experience of our staff, we have the ability to exclusively deliver hundreds of highly skilled individuals, with current DPW experience, to provide information technology services to DPW. *Tab 8.0, Personnel*, we provide resumes and skill summaries of our staff.

Deloitte realizes that unplanned situations occur, where immediate action is required to fill positions. This is not an unusual situation for our firm; as our client's business needs have evolved, we have had to deal with this issue many times. Our response to these situations has been to exercise a rapid deployment strategy. This strategy effectively increases the overall population for resources by broadening the subcontractor pool. When coupled with our internal network and existing contractor base, this reduces the overall time to market of potential candidates.

For example, using this strategy, we recently helped stand up a technology solution to support Pennsylvania Fair Care by quickly pulling together a cross-functional team and deploying within three weeks of the project start. At the same time, we led an effort with the federal government to establish a technology solution for the high risk pool; that effort involved forming a 50 person team in two weeks and deploying in less than three months. We intend to leverage our rapid deployment strategy as part of the staffing strategy approach for DPW. As a result, we have the ability to scale up and scale down rapidly to address changes in DPW's information technology needs.

The ability to allocate the right resources is fundamental to the success of any business. The right resources often are those that have specific skills which are in high demand and sometimes difficult to locate. Deloitte's services are routinely categorized as those in high demand, and we are proficient at the locating and allocating of these specialized resources. When a skill is identified as being something that will be in strong demand for our clients, we label this as a 'hot' skill and execute a campaign to focus on the attracting and hiring of those skill sets through our internal recruiting and staffing network of over 200 practitioners. Alternatively, we can also turn to our supplier network to provide those skills for us. It is a credit to our firm that because of the types of services and projects we perform, Deloitte attracts individuals with critical skills, even when market competition is difficult.

We understand that demands for staff needs can vary throughout the life-cycle of projects and also at times can place great demands on the ability of providers to allocate sufficient resources. Through our own qualified internal resource pool, internal

recruiting capabilities and an extensive subcontractor network, Deloitte is well suited to meet the resource needs of the Commonwealth, particularly to meet peak demand periods.

Working Collaboratively Across Vendors

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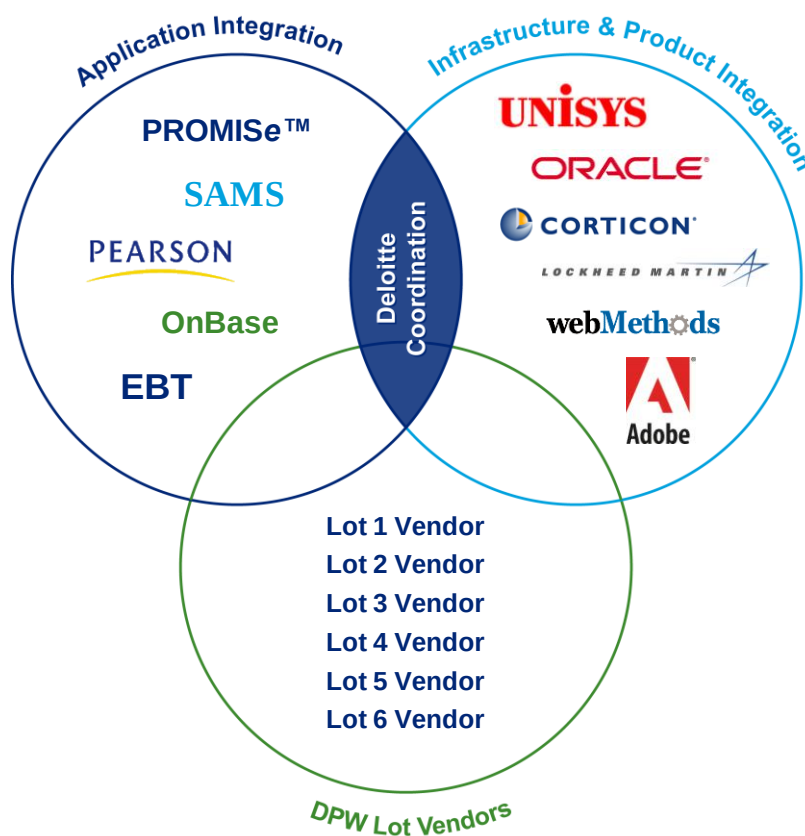
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RFP Reference: 3.4.2 Offeror's Responsibilities: Application Modifications/ Enhancements

NOTE: The selected Offeror must work collaboratively in the assessment and implementation of any application support services activities. The selected Offeror agrees to cooperate with any other selected Offerors, and shall not commit or permit any act that may interfere with the performance of work by any other Contractor.

The nature of any complex organization with mature information technology systems is that it requires collaboration with multiple vendors across multiple systems. Our more than 30 years of experience with DPW has given us the opportunity to demonstrate our ability to work with other vendors in delivering results for the Commonwealth.

The figure below illustrates the collaboration required with vendors of other applications and the role we support in this coordinated effort.



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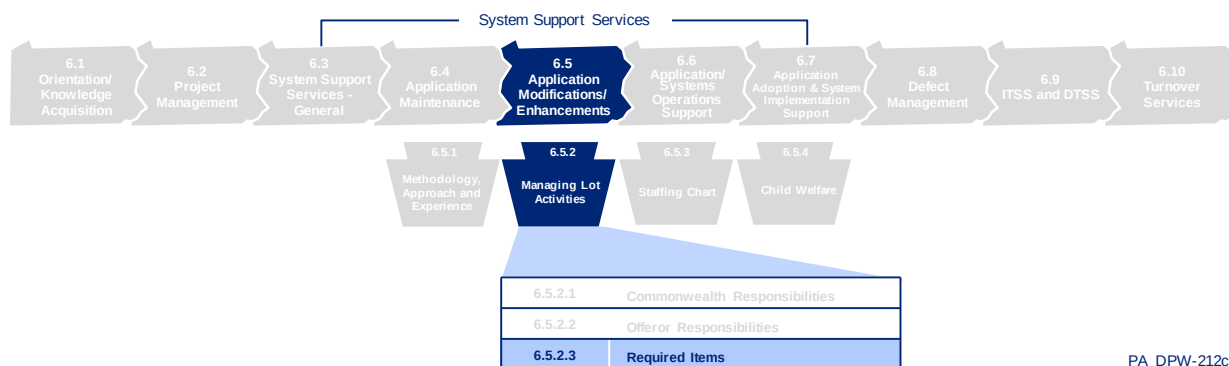
Figure 6.5-89. Collaboration with Other Vendors.

Maintenance of DPW applications requires coordination with a number of other vendors who manage infrastructure, applications, and operational activities that interact with the in-scope applications.



In just the last 12 months, our team has demonstrated our ability to successfully implement modifications that impacted each of these systems managed by other vendors. Given DPW's Enterprise Services vision, we fully expect that as we move forward together, the ability to assist in impact assessment around other systems, as well as to collaborate with other vendors, will be critical to DPW's ongoing success.

6.5.2.3 Required Items



PA_DPW-212c_6

We perform modifications and enhancements using DPW's IT Methodology, and tailor the appropriate work components including procedures, artifacts, and tools to support our activities within a multi-vendor, multi-system operating environment.

Deloitte is the only vendor with an HHS client network and projects across 10 states which are relevant to DPW's strategic business systems. Deloitte makes significant internal investments to address HHS policy and technology trends across our client and project base that can be leveraged to enable DPW's vision. We highlight the key features of our approach to Application Modifications/Enhancement Required Items in Figure 6.5-90.

Deloitte brings the business knowledge and EA/SOA experience to enable DPW's vision

- 200+ modifications and enhancement projects over the past 5 years
- 25 services implemented
- Working with 10 states of similar size and complexity that include EA/SOA advancement, similar incremental renewal projects and policy changes

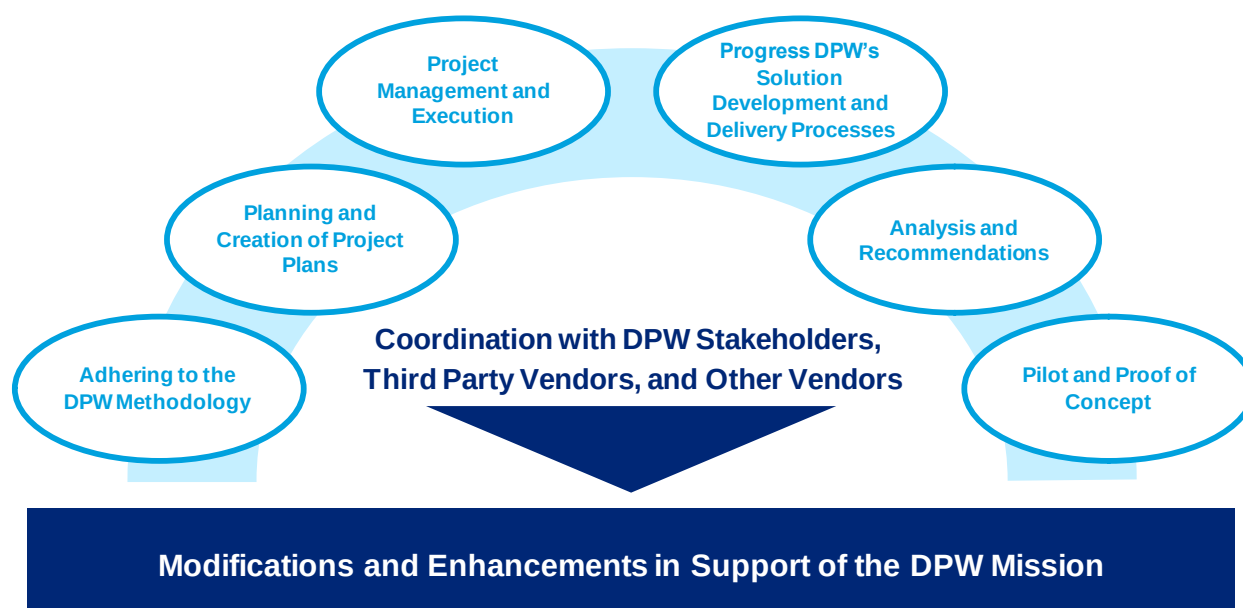
Features	Benefits
Applies CMMi Level 3 maturity and ITIL framework to extend DPW's IT Methodology including SDM, EPMM and PCR process with: • Procedures, artifacts, templates, tools and training tailored to meet the needs of the new operating model • Continuous improvement program consistent with CMMi • SOA thread incorporating service identification, service refinement and governance and service design and implementation within the SDM procedures	• Predictable projects that are on-schedule and within budget • Improves validation of operational readiness, and process and product quality improvement • Better aligns DSD and GSD documents to requirements, while furthering EA-SOA frameworks • Better meet DPW's stated objectives and expectations with each modification or enhancement
Applies broad defect management and test management throughout the SDM that builds quality in to the code throughout each testing activity	• Improves end product quality

Features	Benefits
Provides early and consistent cooperation and communication with DPW BIS, program offices, and other stakeholders, as well as other Lot vendors throughout a project's life cycle	• Better service to DPW program offices and users • Reduces downstream risk
Proposes staff with direct DPW experience that brings an in-depth knowledge of DPW's business and systems, as well as experience in SOA technologies and EA-SOA principles	• Improves end product quality and user adoption • Better meet DPW's stated objectives and expectations with each modification or enhancement

Figure 6.5-90. Key Features and Benefits of Our Approach to Required Items.

With the DPW Operating Model, successful execution of modifications and enhancements will require the coordination and collaboration of multiple parties, each owning specific tasks throughout the SDLC.

This necessitates not just bilateral coordination between Deloitte and DPW, but multilateral coordination between Deloitte, various DPW agencies and other offerors as each party owns a segment of the SDLC.



PA_DPW-597

Figure 6.5-91. Systems Architecture Services Vendor Required Items.

Effective coordination will drive the successful completion of required items in support of the DPW mission.

Our goal is to see DPW be successful in their project endeavors so we will work closely and collaboratively with the DPW stakeholders and other offerors in our systems modifications and enhancement activities to achieve this goal.



As the Technical Support Services vendor, Deloitte will deliver on each of the required items outlined in the table below.

Required Items	Deloitte's Approach to Modifications Aligns with DPW Objectives
Modifications and Enhancements in Support of the DPW Mission	Well executed hand offs and the delivery of quality documentation following the DPW methodology will result in DPW application modifications that align with DPW's mission.
Adhering to the DPW Methodology	Following and enforcing standard methodologies across stakeholders and Lot vendors means projects will be executed more efficiently with less rework ultimately allowing DPW to realize its objectives faster.
Planning and Creation of Project Plans	More accurate project plans that have buy-in from stakeholders, third party and Lot vendors will result in more tasks completing on time and less need for corrective action.
Project Management and Execution	Use of common tools across projects will lead to more consistent results. Communicating project plans/milestones, task expectations, sharing progress metrics and establishing process for corrective action will keep stakeholders, third party and Lot vendors involved resulting in on time delivery of project end products.
Progress DPW's Solution Development and Delivery Processes	Having the right methodology frameworks in place and the experience of DPW business process puts the Lot 6 vendor in the right position to hold effective business solution development and process improvement discussions. Identifying process improvements and having an established process for approving and implementing them will result in DPW projects becoming more efficient as more projects are undertaken.
Analysis and Recommendations	Sound cost-effective solutions that take into account the total cost of ownership of an application modification means DPW will get the leading value solutions and will have an easier time planning their future year budgets.
Pilot and Proof of Concept	Pilots and proof of concepts will allow DPW to measure the expected benefit before committing to larger application modifications.

Figure 6.5-92. Required Items

The sections below provide a detailed description of Deloitte's understanding and approach towards the required items as defined by DPW for the technical support services vendor.



Modifications and Enhancements in Support of the DPW Mission

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

- 1) Perform their application modification/Enhancement activities and responsibilities to support DPW mission

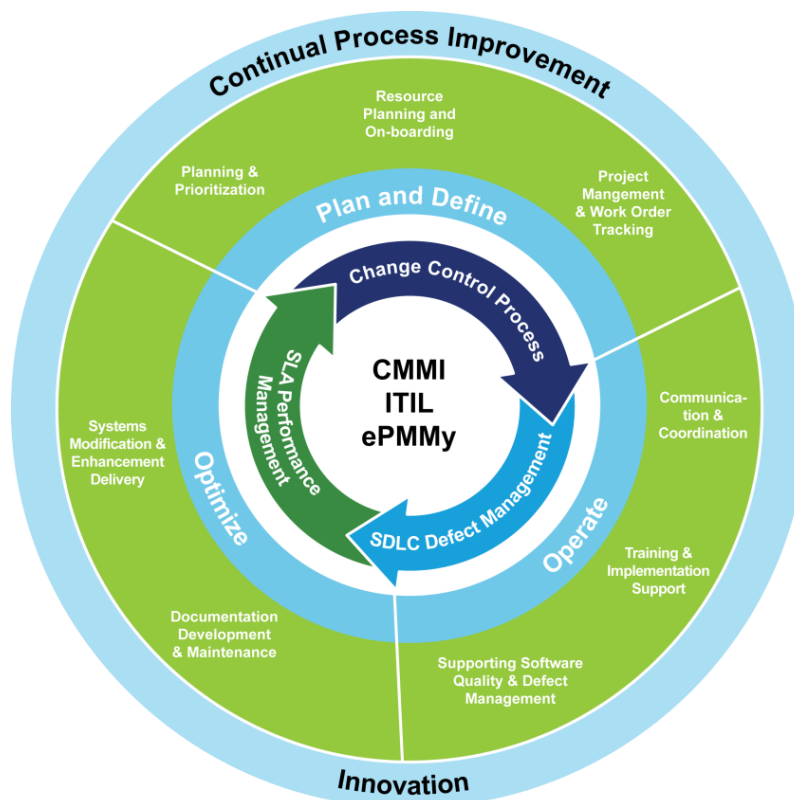
Deloitte brings a DPW-proven approach to performing application modification/enhancement activities and responsibilities to support DPW's mission. Together, we have implemented award winning applications while enhancing the delivery of the Commonwealth's Health and Human Services.

We propose the continued use of DPW's standard SDM methodology. The key features of this methodology that we believe make it appropriate for the on-going use at DPW are the inclusion of review and approval points to validate direction, structure to improve quality yet flexibility to adjust to different size initiatives, and activities which are relevant for stakeholders throughout the SDM. We have brought industry leading methodology practices to DPW and have worked side by side with DPW to tailor the procedures, artifacts and tools of the methodology to meet your changing needs for a robust SDM.

An Approach Tailored for DPW's Objectives

Our approach to performing the application modification/enhancement activities is most represented as in Figure 6.5-93 below. This approach is based on the following key tenets:

- Planning and Prioritization
- Resource Planning and On-Boarding
- Communication and Coordination
- Project Management and Work Order Tracking
- Documentation Development and Maintenance
- Training and Implementation Support
- Supporting Software Quality and Defect Management
- Systems Modification and Enhancement Delivery



PA_DPW-875_2

Figure 6.5-93. Deloitte's Approach to Modifications and Enhancements.

Based on a DPW-proven methodology, Deloitte is positioned to execute on your modification and enhancement objectives.

Planning and Prioritization

A critical first step to success will be the identification and prioritization of systems modifications and enhancements that will progress the DPW vision and meet business needs, ultimately improving the delivery of services to citizens of the Commonwealth. We support this process by providing timely and accurate estimations and aligning our priorities with those of DPW.

Resource Planning and On-Boarding

The delivery of successful modifications and enhancements depends upon qualified resources, with an understanding of both the business and technical environment of DPW. Deloitte brings not only our experience with DPW's business and systems but a wealth of knowledge from practitioners working across our national network of HHS projects.

Communication and Coordination

The new operating model put forth by DPW will demand continual communication between the lot vendors, DPW and project stakeholders to maintain alignment between business requirements and the solution delivered. Transitions between phases will need



to become seamless and the Deloitte will use our experience working across the lots to meet this goal.

Project Management and Work Order Tracking

In an environment where concurrent IT projects may be underway, project management and work order tracking will be essential to keep the stakeholders aware of issues, risks and overall project status. Communicating project plans/milestones, task expectations, sharing progress metrics and establishing processes for corrective action will result in more efficient and on time project delivery.

Documentation Development and Maintenance

Creation and maintenance of systems documentation is essential in the systems modification and enhancement delivery process. This will not only provide documentation of the technical solution and architecture, but will be the key to accurate estimations and successful transitions between projects phases, supplementing the handoffs between lot vendors.

Training and Implementation Support

Deloitte will work with DPW to provide requested technical training and implementation support. Deloitte brings an experience profile that is built on continued presence in the HHS market and therefore provides a vast array of current project experience with exposure to many leading edge technologies and leading practices.

Supporting Software Quality and Defect Management

It will be necessary to create a plan for effectively testing the predefined business and system requirements so that DPW can be assured that the solution being developed meets the established standards and that any defects that arise are properly identified, tracked, resolved, and furthermore, that steps are taken to prevent the recurrence of such defects. Deloitte will work collaboratively in this effort with DPW and other lot vendors to deliver quality solutions in alignment with the business requirements and vision of DPW.

Systems Modification and Enhancement Delivery

The successful delivery of systems modifications and enhancements will depend upon the completion of the responsibilities, and the coordinated efforts across teams and stakeholders. As the technical support services vendor, the Deloitte Team will deliver on each of the identified responsibilities, and work collaboratively with other lot vendors to help drive solutions to implementation.

Innovation In-Sourcing

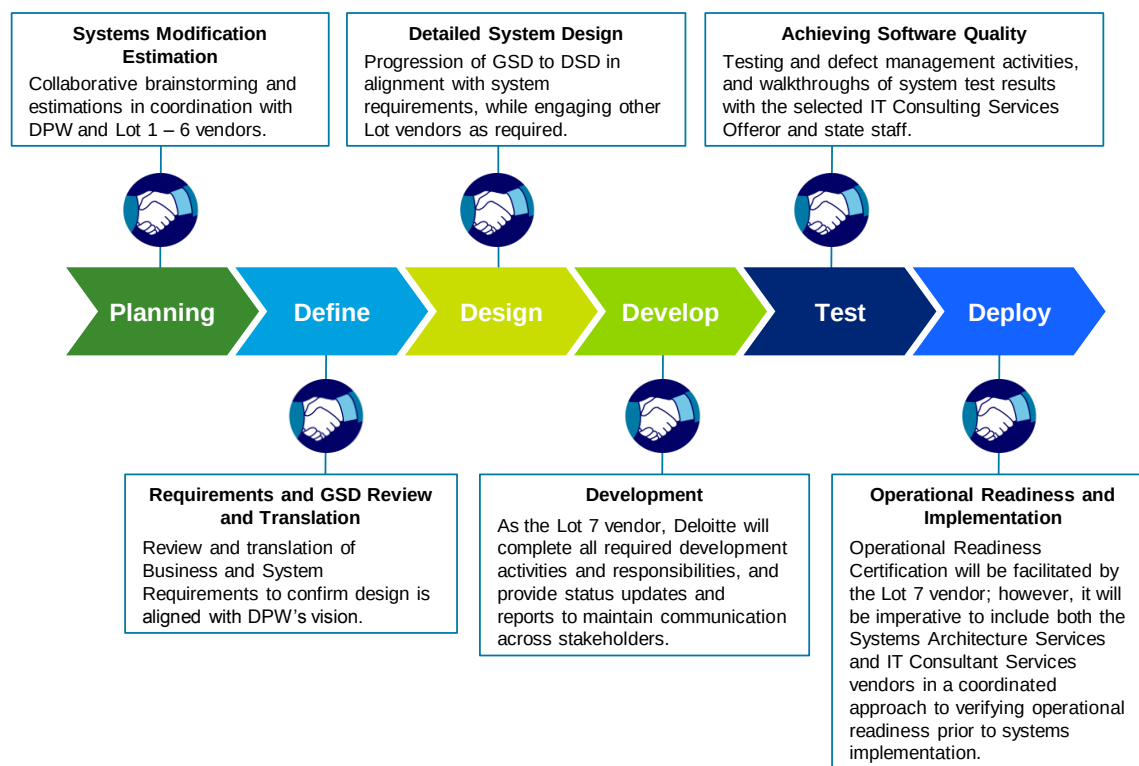
A distinguishing factor of our modification and enhancement approach is to bring to DPW “innovation in-sourcing” based on Deloitte’s national HHS client and project base including those of similar size, scope and complexity to DPW. As DPW plans for, and eventually implements the pending national policies including health care reform and

CHIPRA, we provide DPW with tools, templates, checklists and experienced staff to jump start enhancement initiatives. Further, during implementation, with DPW's approval, we can also facilitate the transfer of leading practices, lessons learned or even assets to DPW.

A Coordinated Approach Based on Clear Communication

Our approach to modifications and enhancements provides early and consistent cooperation and communication with DPW BIS, program offices, and other stakeholders, as well as other Lot vendors throughout a project's life cycle. The key features of this approach are:

- **Providing the Right Staff.** Our proposed team includes industry and technology leading practitioners who are familiar with DPW's business, DPW's technology and also stay abreast of national changes in both areas.
- **Assigning Clear Lines of Responsibility.** We will provide DPW, other lot vendors and stakeholders clear points of contact and responsibility so questions, risks, and issues can be addressed quickly and effectively.
- **Establishing a Collaborative Work Environment.** As shown in Figure 6.5-94, we will work to establish a collaborative work environment throughout the SDM. Based on the evolution of the new lot model, we will work with DPW to tailor our approach and the methodology to execute in this model.



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Figure 6.5-94. Collaboration and Communication.

We perform modification and enhancement activities with effective coordination and communication throughout a project's life cycle to better meet DPW's vision and mission.

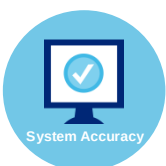
Supporting DPW's Mission

As we mentioned in the introduction to this section, we will design modifications to align with your mission as follows:



PA_DPW-739

Worker Usability. As updates to DPW systems are implemented, system adoption becomes a key consideration: a system's enhancement is only as valuable as the amount of acceptance it gains from its users. Deloitte works with DPW, Lots 1-5 vendors, and the Lot 6 vendor to develop enhancements and modifications with a clear idea of the end-user in mind, employing leading practice interface standards, performing end-user acceptance sessions, and incorporating valued user feedback into our product to achieve a level of usability that delivers immediate benefit to DPW and its workers.



PA_DPW-740

System Accuracy. We recognize that the accuracy of the systems within the DPW enterprise is of paramount importance to the Department. As DPW continues to expand its benefit footprint in light of program and policy changes, the correct execution of the systems' eligibility determinations, child support calculations, and the many other core business functions will remain a key indicator of DPW and Deloitte's success.



PA_DPW-741

Data Quality. In tandem with system accuracy, data quality comprises what users may describe as the "trust worthiness" of the system. Field workers and management staff must be able to stand by the data and results of DPW systems and reports, and Deloitte understands that this must be a consideration throughout each enhancement/modification undertaken in collaboration with DPW. Through our use of the Software Development Methodology (SDM) and management of the Software Development Life cycle (SDLC), we employ proven, repeatable processes to capture and synthesize accurate and valuable data without negatively impacting existing data.



PA_DPW-742

Technology Changes. As technologies continue to evolve and bring promise of improved business results to adoptees, Deloitte works with DPW, Lots 1-5 vendors and the Lot 6 vendor to understand and assess new technologies in a very specific context – what will achieve the agencies' goals of increased economies of service, reduced costs, expansion of enterprise services, and improved customer service? This question will be at the forefront of our analysis as we leverage knowledge of Health and Human Services (HHS) business processes, overarching agency challenges, and cutting edge technologies to assist the Commonwealth in continuing to be a leader in the successful delivery of HHS services.

Adhering to the DPW Methodology

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

2) Ensure compliance and use of the System Development Methodology (SDM), ARB, and SQA processes

Deloitte understands the importance of and will comply with the prescribed DPW System Development Methodology (SDM), Architecture Review Board (ARB) and Software Quality Assurance (SQA) processes and how adhering to these processes help improve the quality of the modifications and enhancements. Following these standards also helps to effectively implement business solutions in a complex business environment. Implementing the SDM, ARB and SQA processes is successful when the appropriate stakeholders are involved throughout the course of the modification or enhancement initiative. Furthermore, entry and exit criteria are identified at each phase of the process and serves as a checkpoint to help DPW assess compliance to the SDM, ARB and SQA objectives.

We use of the Software Development Methodology (SDM) to provide a framework for designing, developing and implementing modifications and enhancements. Using the SDM helps DPW reduce risk, identify issues across multiple threads and allows for a consistent approach across multiple threads of the project. One aspect of tracking the compliance to the SDM is performed through effectively executing stakeholder communication. Through standard project meetings, where issue and risks are reviewed and discussed, and informal and formal review cycles, DPW is able to track the software development life cycle through each phase of the SDM. Furthermore, several tools are employed to help track each modification and enhancement these tools include, but are not limited to, the PMO Tracker V4, Project Management Center 7, and Automated Tracking System (ATS).

We use the Architecture Review Board (ARB) process as a valuable component of the modification and enhancement process. The ARB is tightly integrated with the SDM and serves as an additional method for tracking and assessing process and methodology compliance with modification and enhancement initiatives. The four ARB sessions serve as a forum to thoroughly review initiatives with multiple stakeholder groups throughout the course of the software development process. Validation and verification are inherent features of the ARB and serve as a consistent control point.

We use the Software Quality Assurance (SQA) as an integral part of the software development process and serves as a driving measure in delivering quality software that meets the objectives of the modification or enhancement. As described in the Software Quality Assurance Tests standard document, the SQA process strives to achieve completeness, correctness, and quality and serves as another verification and validation point in the software development process.

Planning and Creation of Project Plans



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The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

3) Plan and create project plans and their associated frameworks for individual and multi-vendor project engagements

Deloitte is familiar with the Business Review Board (BRB) process that DPW employs to evaluate, prioritize, and authorize large project initiations. We are also well acquainted with the change control and release management processes that are used to prioritize project initiatives for maintenance and minor system enhancements. We understand that in the proposed operating model with potentially multiple vendors collaborating to maintain and enhance in-scope systems, DPW envisions the following two types of project engagements – Individual-vendor IT projects and multi-vendor IT projects.

We work collaboratively with DPW and other vendors, if necessary, to develop project plans in both individual-vendor and multi-vendor projects. If we are selected for Lot #7 only, we work together with other vendors for the successful completion of the project planning tasks. If we are selected for Lot #6 and #7, we understand that we have the primary ownership and responsibility for managing and coordinating each aspect of the project management life cycle and obtain proper approvals. We coordinate with other vendors if required for successful completion of tasks.

Individual-vendor IT projects

Individual-vendor IT projects initiatives are owned by a single Lot vendor and have no or little involvement of other Lot vendors. In this, we work collaboratively with DPW and its stakeholders to create detailed project plan that is used for project execution and project control and monitoring. The detailed project plan includes of our work plan, communication plan, issue/risk management plan, project schedule, effort and cost and sub-plans for configuration management, quality assurance, staff acquisition, data management, and project monitoring and control. We assign a project lead who coordinates aspects of the Project Management, provide the communication to the stakeholders and is the primary contact person for the project. We plan to leverage our proposed PMC and ATS tool for covering the mentioned project planning tasks.

Roles and Responsibilities

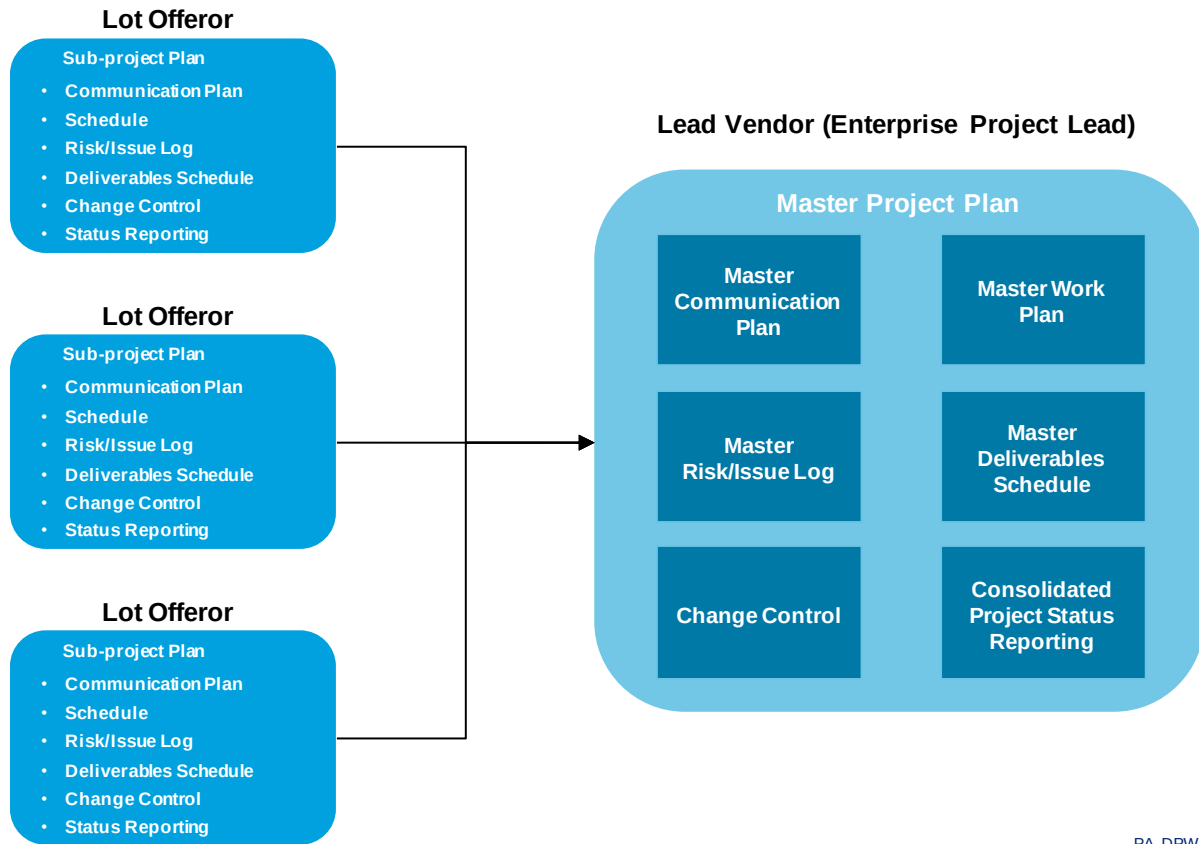
Owner	Responsibilities
Lot Offeror's Project Lead	• Coordinate each aspect of the Project Management • Update information to the centralized tools in a timely manner • Confirm completion of the Project Management deliverable and submission to the DPW on time • Provide regular communication to DPW stakeholders
DPW Contract Administrator	• Identify stakeholders for each phase of the project • Review and provide inputs to the Project Planning deliverables

Figure 6.5-95. Roles and Responsibilities

Our team works with DPW for the project management tasks. Our assigned Project Lead creates and manages the project management artifacts using our proposed tools which include PMC and ATS. These tools facilities open communication and sharing of project management information with the DPW and the stakeholders. Project lead monitors the project status with regular meetings with the Application Team and through project level reports. This information is shared with the stakeholders and the DPW through regular status meetings and reports.

Multi-vendor IT Projects

Multi-vendor IT projects initiatives involve multiple vendors and require continuous communication for the completions of the tasks. We understand that for such large-scale initiatives, DPW assigns a lead vendor who is the prime owner and is responsible to coordinate each aspect of the project. The prime vendor has the responsibility of assigning an Enterprise Project Lead who works with the Project leads from the other vendors to create the master project plan framework, as shown in Figure 6.5-96.



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Figure 6.5-96. Project Plan Integration on Multi-vendor Project Engagement.

The sub-project plans will form an integral component of the Master Project Plan Framework.

Roles and Responsibilities

- Enterprise Project Lead
 - Create the initial Master Project Plan framework
 - Coordinate each aspect of the Project Plan with other Lot Offerors and DPW
 - Provide regular project status updates to the stakeholders
 - Confirm completion of the Project Management deliverables and timely submission to DPW



- DPW Contract Administrator
 - Identify stakeholders for each phase of the project
 - Review and provide inputs to the Project Planning deliverables
- Sub Project Lead
 - Coordinate each aspect of the Project managed by the Lot Offeror
 - Update the information to the centralized Master Project Plan framework in a timely manner.
 - Coordinate with the Enterprise Project Lead for the successful completion of Project Management tasks if required

If selected as the prime vendor for an initiative, we assign an Enterprise Project Lead who is responsible for coordinating the development and management of the Master Plan framework. We use our proposed centralized tools, PMC and ATS for tracking tasks with other vendors and DPW stakeholders. Regular status meetings are set up with the appropriate vendors to discuss any open items and concerns, and to create a plan for timely resolution. Such items are tracked and maintained in our tools for DPW review. We have regular status meetings with DPW stakeholders briefing them on the project status along with the associated reports.

If we are not selected as the prime vendor, we assign a Project lead who is responsible for updating the project planning information to the centralized location identified by the prime vendor. Also, Project Lead works with Enterprise Project Lead for the successful and timely completion of project planning tasks.

Project Management and Execution

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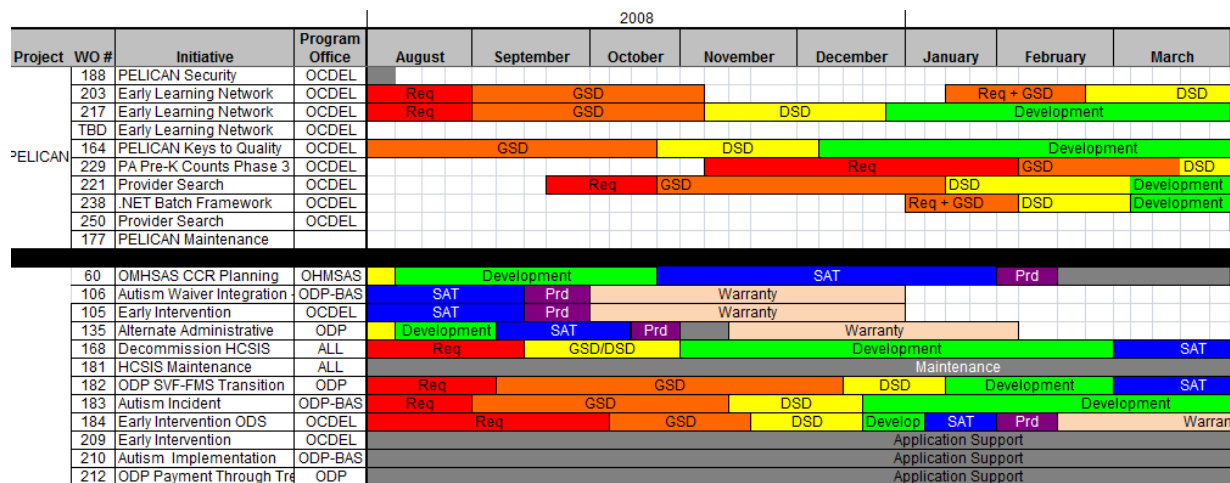
The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

4) Effectively execute, monitor, and manage multiple concurrent IT project initiatives relative to schedule, performance, and budget as well as ensure timely submittal of quality end products and deliverables

DPW currently administers multiple project initiatives across program areas and application systems. We understand that some of these project initiatives run concurrently with overlaps in their respective schedules. Through our current contracts at DPW, we have proven our ability to manage multiple concurrent IT initiatives by successfully delivering modification and enhancement requests across multiple systems.

Deloitte has worked with the Commonwealth in developing a CIO Dashboard tool that provides overall status for each project initiative across program areas that are currently being administered by DPW. This tool produces a dashboard report that is discussed with the executive management at DPW on a regular basis. Using the dashboard, the DPW executive committee is able to identify problem areas and reassign resources or

reset priorities, as required. A sample copy of the CIO Runway dashboard is shown in the Figure 6.5-97 below:



PA_DPW-749

Figure 6.5-97. CIO Runway – A snapshot of ongoing initiatives.

Deloitte develops a CIO Runway dashboard to provide overall status for the project initiatives as a means to monitor and manage concurrent initiatives.

We understand that DPW may undertake enterprise wide initiatives that require multiple vendors to work collaboratively. Such large-scale project initiatives usually involve multiple work orders to track and monitor work. We recognize the importance of tracking and monitoring each work order under a project initiative for successful completion of the initiative. Since multiple vendors could possibly be involved in such large-scale initiatives, the work order tracking could span across vendors. This requires coordination among different vendors and DPW stakeholders. Our PMC tool provides a centralized project control structure for work order tracking and facilitates delivery of projects.

Managing Project Schedule

We plan to successfully deliver concurrent IT project initiatives by implementing tight schedule management controls. Project schedules are baseline through Microsoft Project work plans. These baselines are uploaded to the PMC tool where both resources assigned to the particular project as well as applicable client stakeholders can track the project's progress. Additionally, resources can enter actual time against tasks assigned to them for a particular work plan, which promotes that actual effort is captured accurately and quickly. These actual effort changes are displayed to the work plan owner and external client reviews in 'real-time'.

This feature is particularly important for the project's track lead that continually monitors his/her initiative's work plan. Enabling the comparison of actual and baseline efforts promotes that the track lead is made aware of schedule deviations quickly so work on remediation strategies can begin.

Additionally, the Project Management team on each Business Application has access to their project's work plans. The dashboards displayed on the home page of the Center

can be configured to show high level schedule and cost tracking parameters such as Scheduled Performance Index (SPI) per work plan (this parameter and others are discussed further in the *Performance Management Controls* section), which eases managerial review. The Project Management team reviews the work plans with their track leads during the bi-weekly status meetings to discuss any schedule variations. This high level visibility promotes that schedule variations are quickly recognized, while the PMC makes sure the necessary parties have quick and easy access to those work plans pertinent to their work.

Managing Project Performance

Deloitte's Project Management Center (PMC) facilitates the 'real-time' tracking of actual effort on the project work plans. Since the tool is open to Deloitte subcontractors, it provides a holistic space to track actual versus planned and base lined efforts. This puts Deloitte and DPW in a position to continually monitor the performance of individual projects as well as the organization as a whole using industry wide standards such as Earned Value Management (EVM).

Managing Project Budget

PMC provides multiple variance reporting mechanisms Deloitte uses to monitor project scope, schedule, and budget. Earned Value Management reports can be automatically generated through PMC. Earned Value Management is based on three key pieces of information:

- Planned Value (PV)
- Actual Cost (AC)
- Earned Value (EV)

Cost Performance Indicator (CPI) and Schedule Performance Indicator (SPI) are values calculated based on PV, AC, and EV. The following table provides the variance measurements and the calculations PMC uses to generate the Earned Value and variance reports:

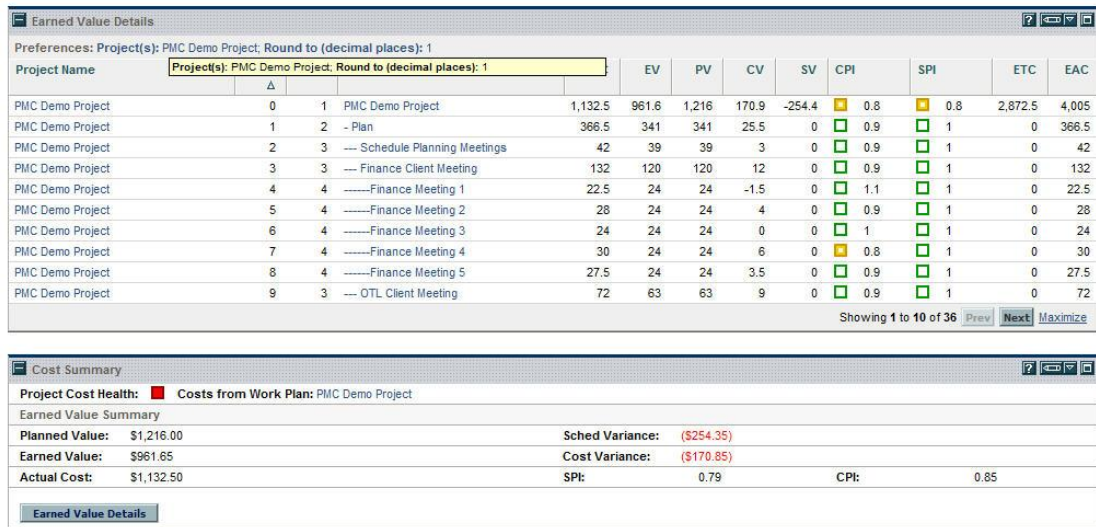
Variance Measurement	Calculation
Planned Value	Approved budget planned to be spent at a point in time
Actual Cost	Cost incurred in performing planned task
Earned Value	Budgeted cost of work completed at current time
Cost Performance Indicator	Earned Value/Actual Cost
Schedule Performance Indicator	Earned Value/Planned Value
Effort Variance Percentage	$(\text{Actual Effort} - \text{Baseline Effort}) * (100 / \text{Baseline Effort})$
Schedule Variance Percentage	$(\text{Actual End Date} - \text{Baseline End Date}) / (\text{Baseline End Date} - \text{Baseline Start Date} + 1) * 100$
Cost Variance	Earned Value – Actual Cost

Variance Measurement	Calculation
Schedule Variance	Earned Value – Planned Value

Figure 6.5-98. Key Variance Measurements and Calculations Used for Earned Value and Variance Reports.

These customizable reports can display thresholds to indicate the health of project. Each of the above measurements can be adjusted over time as required. These measurements are displayed in PMC through an Earned Value Metrics Dashboard and Earned Value Analysis, displayed in Figures 6.5-99 and 6.5-100 below:

Earned Value Dashboard



PA_DPW-320

Figure 6.5-99. Earned Value Dashboard.

This is a sample Earned Value Dashboard that shows EVM metrics and project health based on a red, yellow, green reporting.

Earned Value Analysis



PA_DPW-319

Figure 6.5-100. Earned Value Analysis.

The Earned Value Analysis contains EV Analysis Summary, Project Cost, and Cumulative Cost Metric.

Deloitte also manages scope variance through risk/issue management and a requirements traceability matrix. Reports based on scope and EVM are shared in management meetings where strategies can be discussed for any parts of the project that are beyond the acceptable variance. For further details on our approach to monitoring and executing projects relative to schedule, performance, and budget, please refer to our response to *Section 6.2, Project Management*.



Progressing DPW's Solution Development and Delivery Processes

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The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

5) Lead or assist DPW in business solution development and delivery process improvement initiatives leveraging ITIL and CMMi methodologies

We understand the importance of following consistent, repeatable processes when developing and delivering strategic initiatives. Leveraging industry standards and leading practices such as CMMi and ITIL allow organization to improve quality of output and implement business solutions in a complex business environment. Deloitte has worked with DPW since the early stages of adopting ITIL standards and assessing DPW's CMMi practices to help DPW achieve its CMMi level 3 rating and will continue to be a valued partner as you achieve CMMi level 4. Leveraging our firm's resources that specialize in ITIL standards and CMMi practices along with our history of collaborating with DPW in its delivery process improvement, we are well positioned to lead DPW with its future goals for CMMi and ITIL adoption ultimately leading to reduced cost of IT operations and higher availability, reliability and overall quality of their IT services provided by the Department.

Deloitte leverages the ITIL and CMMi Continual Service Improvement processes to assess CMMi and ITIL model maturity level baselines and map strategies for DPW annual targets. We use our metrics models and IT service reporting techniques to identify and map these strategies to meet incremental and significant improvements in service quality and operational efficiency. Improvement strategies look beyond just technologies and may also include people, process and service improvement opportunities. This is evident through the initial ITIL assessment we completed for ITSS in 2009 where certain challenges were identified such as 1) resources were being shared across projects due to their skill sets even though they were not part of a shared services group, 2) certain knowledge resides with key individuals to the extent that the project suffers when these individuals are out of the office, 3) ITSS Management line staff tend to be more reactive than proactive, etc. For our broad, detailed approach to working with DPW to achieve CMMi level 4 and further adopt ITIL standards and practices, refer to *Section 6.9, ITSS and DTSS, DPW CMMi and ITIL Assistance – Refinement and Expansion of CMMi and ITIL*.

Technical Analysis and Recommendations

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The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

6) Conduct a comprehensive technical assessments and feasibility study and provide sound cost-effective recommendations

Deloitte understands that DPW wants to pursue application modifications/enhancements, where requested, that meet business needs but that are also cost-effective. This is why we perform broad analysis for any technical assessment and feasibility study before providing cost-effective recommendations. Our analysis on feasibility does not just take into account the immediate work needing to be done to meet business objectives, but we assess the impact across systems, projects, and on the ongoing operations post implementation resulting in a total cost of ownership. Deloitte performs a technical assessment and feasibility study when they receive a work order request and GSD documentation from the Lot 6 vendor. We then perform the required technical assessment and conduct a detailed feasibility study on the work order before providing the High Level Estimate (HLE) to DPW for review and approval. Our feasibility study consists of the following high level components:

Feasibility Study Component	Feasibility Study Component Description	Benefit to DPW recommendations
Technology and System feasibility	Determines if DPW has the necessary hardware, software, and technical infrastructure to support the work order	Knowing the technology needs of a project up front avoids schedule delays and cost overruns down the road in the event that the organization's technical assets are not sufficient to complete the project.
Economic feasibility	Measures the value of the project through cost/benefit analysis considering total cost of ownership	By looking at the total cost of ownership of the project, DPW will have the information needed to budget for the not only the completion of the project but the ongoing operations as well.
Legal feasibility	Reviews any of the legal restrictions that may impact the project such as the use and sharing of personal identifiable information	Legal restrictions often cannot be changed so planning your system design with these restrictions in mind will avoid surprises later in the project life cycle that can be costly to resolve.
Operational feasibility	Measures the extent to which the project will meet the business needs and 'solve the problem' at hand	Often new systems are contrived by IT with good intentions but their design does not fully solve a significant business issue so the operational value is reduced. By reviewing the operation feasibility, DPW will know if the project is in-line with its business objectives and can make a more informed decision spending its resources on the 'right' projects.



Feasibility Study Component	Feasibility Study Component Description	Benefit to DPW recommendations
Schedule feasibility	Determines if the project can be completed in enough time to still be valuable to its stakeholders	With legislation constantly changing, IT projects often have schedule constraints to be compliant by a certain date or to receive monetary incentives from the federal government. Knowing the schedule feasibility allows DPW to determine if the project will achieve its perceived value when deciding whether or not to approve it.

Figure 6.5-101. Key Components of Deloitte's Feasibility Study.

By looking at a project's feasibility from each of these angles, Deloitte is able to identify technical system implementation options that will result in the most cost-effective solution that still satisfies the business stakeholders' needs. These cost-effective solutions are what make it into our HLEs that are provided to DPW for review in order to approve work orders resulting in DPW getting the leading value out of its Lot 7 resources.

Pilot and Proof of Concept

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The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to: 7) Plan, manage, and execute a pilot and proof of concept		

Deloitte understands the importance of executing a pilot or developing a proof of concept (POC) prior to committing to an enterprise, agency or program area specific initiative. As DPW plans for the future, application modifications provide the avenue to implement innovative technology solutions to address specific business objectives. Many of these innovative solutions require the use of new tools, techniques, and technologies to accomplish these tasks. Deloitte is prepared to work with DPW to develop a pilot or proof of concept to address specific, fundamental questions regarding the pursuit of innovations in uncharted areas. The decision to pursue a pilot or proof of concept for a particular initiative is evaluated on the onset of the engagement based on the relative scope, schedule and cost of the overall initiative and associated benefits of this upfront investment.

The pilot or proof of concept may address, at a minimum, the following areas:

- Evaluate the usefulness and effectiveness of the system modification
- Validate the useful and effectiveness of the system or technology
- Assess implementation feasibility
- Validate new user interface/user experience concepts and themes

- Provide insight into the system performance and usability
- Help identify challenges with the production implementation
- Determine compatibility with current DPW Enterprise Architecture
- Clarify and solidify overall design concepts and objectives
- Address and validate software selection prior to full scale development
- Help solidify the scope of the initiative
- Confirm alignment with DPW IT Strategy

As with any initiative that involves multiple stakeholders, effective coordination and communication is paramount to successfully achieving the expected outcomes. Deloitte understands that as the Lot 7 vendor, we will be expected to closely coordinate the tasks and activities associated with developing a pilot or proof concept across multiple stakeholders including DPW stakeholders, appropriate third party vendors, and other selected Offerors. Deloitte intends on accomplishing this task through the identification of the necessary stakeholders during the planning process and effectively engaging and communicating with this group throughout the entire pilot or proof of concept process. Specifically, this is accomplished through regularly scheduled meetings, including Steering Team Meetings, Project Team Meetings, and specific meetings intended to track the progress the pilot or proof of concept. Depending on the scope and complexity of the pilot or proof of concept, project management tracking tools such as Project Management Center 7.5 (PMC) may be used to track and manage the initiative and provide valuable for the multiple stakeholder groups. In this case, a detailed work plan is created encapsulate the tasks and activities required and help drive to successful outcomes.

Planning a pilot or proof of concept includes careful consideration of the overall goals of the exercise along with defining the scope, developing a realistic timeline and allocating the appropriate resources. The objective of the pilot or proof of concept is carefully considered and documented prior to commencing the engagement with the appropriate stakeholders. Deloitte works with DPW to carefully plan the pilot or pilot to define the scope, the purpose, the timeline and the outcomes.

Key Pilot/POC Considerations	Key Benefits
Define the purpose, goals, objectives, and scope of the proof of concept or pilot project	• Provide insight, transparency, and direction for the stakeholder groups • Allow stakeholders to effectively plan and clearly define the goals and objectives • Allocate and assign sufficient resources to achieve objectives
Outline the Evaluation and Testing Approach	• Defines the criteria that will determine the success of the pilot/POC • Clearly defines the next steps of process given the results of the pilot/POC

Key Pilot/POC Considerations	Key Benefits
Define the key decisions to be made at the conclusion of the initiative	- Success is defined at the onset of the pilot or POC by clearly identifying the decisions that will be made based on the outcome of the exercise - Clearly defines the next steps of process given the results of the pilot/POC
Business process reengineering/change management strategy	At this step in the planning process, DPW has an opportunity to be certain the right stakeholders are included to be sure the potential business and technology decisions that will be made are in line with the enterprise goals of the department
Define proof of concept or pilot stakeholders and participants	Effectively coordinate and communicate across stakeholder groups to define, manage and execute
Baseline, interim, and final evaluation studies	Established checkpoints throughout the engagement to effectively track the progress of the pilot or POC
Knowledge transfer and training requirements for business and technical staff	Pursuing any new, innovative idea or concept, may require additional training and knowledge transfer therefore these requirements must be assessed throughout the course of the pilot/POC and be factored into the overall decision to move forward with the initiative
Establish the success criteria for the pilot, with input from stakeholders, technical staff, records management staff, and users	Involving the right stakeholders from the start allows perspective to be gathered from each party that may be impacted by the result of the pilot/POC
Outline the benefits of conducting a pilot and risks of not doing so	Executing a pilot/POC involves a commitment of time and resources and therefore outlining the cost/benefit and documenting the risk helps evaluate the feasibility and perceived benefits of the process
Establish an executive sponsorship and associated administrative infrastructure to guide, govern, and support the proof of concept or pilot project initiative	Garnering the support of executive leadership from the start of the pilot/POC helps to more clearly define the objective of the pilot/POC and assist with executing the next steps after the completion of the exercise
Establish a detailed project and quality management framework	As with any initiative, it is import to establish a framework to effectively manage and drive projects in order to adequately staff, track and report on the pilot/POC

Figure 6.5-102. Key Pilot and POC Considerations.

Key Planning Considerations as described in the Proof of Concept-Pilot Guideline Document (Appendix FFF).

Effectively managing and executing the pilot or proof of concept is the key to delivering successful outcomes. Throughout the course of the pilot/POC, Deloitte works with DPW and other stakeholders to manage and execute the plan and work to achieve the overall objective of the exercise. Ultimately, pursuing a pilot/POC as part of the overall modification process leads to increased software quality, better alignment with technical and business objectives, increased understanding of the cost/benefit analysis, improvements in scoping the overall modification initiative, and improved estimation.

At the completion of the pilot or proof of concept, Deloitte works with DPW and other stakeholders to develop a Pilot, Proof of Concept, or Prototype Evaluation Planning (PEP) Document. At a high-level the document describes the What, Why, the How and the Results. As prescribed in the Proof of Concept -Pilot Guideline document (Appendix FFF), the PEP includes an Executive Summary, an Introduction (Background, Purpose, Scope), Goals and Key Objectives, Constraints, Evaluation Approach Overview, Key Decisions, Evaluation Design and Logistics, Lessons Learned, Evaluation Findings and Conclusions, Recommendation and Final Decisions. The outline of PEP is reviewed at the start of the pilot/POC in order to level set the expectations across multiple stakeholder groups and provide a clear understanding of what will be delivered and reviewed as a result of the initiative.

At the end of the pilot or POC, results are measured against the objectives and a decision between the stakeholders, third party and Lot vendors is made to take the project further beyond the pilot or POC stage.

Achieving Operational Readiness and Quality Improvement

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The Selected Offeror of Lot#7 must propose the tools, processes, and methodology that demonstrates how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to fully test and validate the operational readiness of the business solution and assist in process and product quality improvement program initiatives.

Before a system modification/enhancement can be deployed to the production environment, key project stakeholders must determine its readiness in several categories, one of which being 'Operational Readiness'. Operational readiness refers to the extent that the solution meets its business expectations and whether or not the operations team is prepared to support the new modifications once they are released for general end user consumption. Although validating the operational readiness encompasses the activities performed during the SDLC, there are a few key tasks at the end of the process where Deloitte collaborates with DPW stakeholders, third party vendors, and other Lot vendors to make a joint decision on the operational readiness: ARB4, Test for Production (TFP) and Production validation.

- ARB4 involves the key project stakeholders and includes a review of system test artifacts to determine the quality of the software and if it meets certain thresholds for production environment acceptance. By holding this review meeting, DPW can rest assured that project stakeholders are consulted and approve any decision to move the system modifications to TFP.
- TFP validates that the deployment process for the modifications is accurate and that the modifications will operate successfully in a production-like environment. Reviewing the TFP results with Deloitte provides DPW with a level of confidence that once the modifications are migrated into the production environment they will function in-line with the requirements for the project.



- Production validation is the final test activity that is performed before releasing the new modifications to the end users. This allows for one final opportunity to identify any problems that would not have surfaced during the previous test activities. If any problems are identified, Deloitte promptly involves key project stakeholders and DPW to provide the information needed to make the decision to back out the modifications or leave them in the Production environment.

In addition to leveraging the SQA process to achieve operational readiness, Deloitte constantly looks for opportunities to improve the process itself. For example, identifying ways to automate repetitive test activities such as regression testing can be implemented to make the process more proficient while not compromising the results or outcome. The benefit to DPW is that HLEs could end up with a reduction in resources or schedule required for certain modification work orders over time. Our CMMi framework is a key tool that will enable to us to identify, assess, and document these process improvements during our responsibilities as the Lot 7 vendor.

Aligning the Detailed System Design with the General System Design

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It is imperative that the Detailed Systems Design and General Systems Design documents align and the design interpretations correctly address all functional and nonfunctional requirements as well as align with EA models and service-oriented architecture frameworks, systems requirements, applicable standards, and technology life cycle roadmaps. The selected Offeror for Lot #7 must propose a methodology that demonstrates how they will work with designated DPW stakeholders, third party vendors and other selected Offerors (if applicable) to: 1) Review, clarify points of uncertainty, negotiate and recommend design changes regarding the Detailed Systems Design (DSD) Document, 2) Clarify concerns and uncertainties associated with the detailed design specifications, GSD, and systems requirements, 3) Ensure EA-SOA frameworks, business, and systems requirements alignment with DSD, and 4) Formulate a comprehensive Detailed Systems Design Document.

The solution that is ultimately developed and deployed as part of the Lot 7 activities must correctly align with the activities executed earlier in the life cycle by the Lots 1-5 and Lot 6 vendors. Establishing a methodology to facilitate a smooth handoff and appropriate backward and forward traceability mitigates the risk of design gaps and minimizes the likelihood that requirements will not be met. The methodology must also establish the processes for resolving any inconsistencies, updating designs as necessary and enforcing adherence to design standards, business requirements, and system constraints. It is also essential to continuously assess the design against the requirements and vice versa as this will identify situations where the design and the requirements are incompatible and allow them to be addressed.

In Deloitte's 30 years of working with DPW across the full software development life cycle, we have established various processes to facilitate consistency between requirements, design, and development and aid end to end traceability of the solutions. We will continue to work with DPW stakeholders, third party vendors and other lot vendors to refine and implement these processes. If Deloitte is selected to perform both the Lots 6 and 7 responsibilities, DPW can be at ease knowing there will be no loss in translation between GSD and DSD.

The following figure illustrates the specific activities that will be performed to make sure that the design documents are aligned and that the design interpretations correctly address the functional and nonfunctional requirements as well as align with EA models and service-oriented architecture frameworks, systems requirements, applicable standards, and technology life cycle roadmaps.

Offeror Activities	Our Approach	Benefit to DPW
1) Review and clarify points of uncertainty, negotiate and recommend design changes regarding the Detailed Systems Design (DSD) Document.	- Establish points of contact for DPW stakeholders, third party vendors and each lot vendor. Involve these representatives in the DSD-Depl phase to provide continuous input and identify inconsistencies with earlier phases. - Collaboratively identify design changes to resolve inconsistencies or ambiguities during DSD.	By resolving inconsistencies in the requirements and design early on in the life cycle, DPW gets a higher quality end product and the risk of “band-aid” fixes is mitigated.
2) Clarify concerns and uncertainties associated with the detailed design specifications, GSD, and systems requirements.	Enforce the updating of business requirements and GSD to clarify inconsistencies and ambiguities as a necessary criterion for exiting the Requirements and GSD phases before commencing the DSD phase.	Properly updated documentation for each phase allows smooth handoffs between vendors and minimizes confusion and rework.
3) Confirm EA-SOA frameworks, business, and systems requirements alignment with DSD.	- Establish an application baseline that identifies currently mandated versions of frameworks and software. - Involve DPW-BIS representatives in ARB III (and ARB IV, if applicable) sessions to confirm compliance with DPW’s architectural strategy.	- Adherence to an established technological baseline facilitates compatibility within and across systems. - Troubleshooting is simplified because the appropriate technical resources are readily available.
4) Formulate a Detailed Systems Design Document.	Use DPW standard tools and methodologies such as Enterprise Architect (EA) to create class diagrams, sequence diagrams, and application blueprints; ERwin to create data models and define the data dictionary; and a variety of custom templates to outline capacity plans, security assessments, interface specifications, screenshot details, traceability and other key considerations.	A Detailed System Design sets the stage for a successful development effort that produces a high quality end product.

Figure 6.5-103. Activities Performed to Validate DSD is in Alignment with GSD.



Achieving Quality through Software Testing and Tracking

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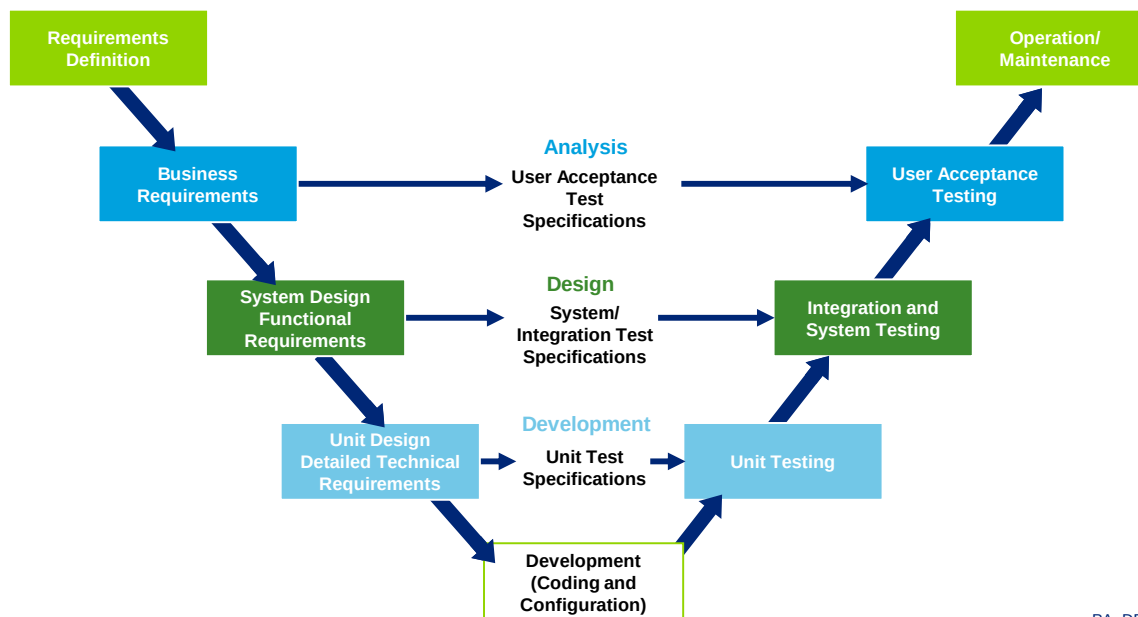
The Selected Lot#7 Offeror must propose the tools, processes, and methodology that demonstrates how they will manage, coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to effectively manage and report defects and demonstrate how defect management will be incorporated into both the software development life cycle phases and software quality assurance programs striving for process improvements and timely delivery of quality end products. Reference the defect management paragraph in Application Support Services General; Section D 1.

The Selected Offeror for Lot #7 must describe in detail how they will work with designated DPW stakeholders, third party vendors and other selected Offerors (if applicable) to: Establish comprehensive defect management system and processes that address but is not limited to, the following elements: 1) Defect Prevention, 2) Defect Discovery, 3) Defect Tracking, 4) Defect Resolution, 5) Defect Reporting, 6) Defect Origination, and 7) Software Quality Assurance and SDLC Process Improvements. The Offeror must propose a methodology to address defect categorizations, severity levels, and reporting per software release that is in compliance with the defects management and reporting guideline document provided in APENDIX BBB.

DPW seeks an offeror who will create a plan for effectively testing the predefined business and system requirements so that DPW can be assured that the solution being developed meets the stakeholder needs that have been established earlier in the life cycle.

In order to achieve a high quality end product, the plan must establish a process for finding, tracking and addressing variances from the desired requirements (i.e., defects) and provide information on the quantity and relative severity of these defects in order to facilitate how they are addressed in the project life cycle. Furthermore, steps must be taken to prevent the recurrence of similar defects in future builds and releases. The plan should also identify an approach for integrating defect discovery and defect fixes into the overall life cycle with the goal of achieving a high quality end product delivered on time.

Deloitte's approach to effective software planning and management increases software quality. Our iterative testing approach shown in Figure 6.5-104 illustrates important testing steps within the overall SDLC and supports various testing phases such as unit testing, system testing, and user acceptance testing.



PA_DPW-898_2

Figure 6.5-104. Software Testing Approach.

Deloitte's Testing Strategy is incorporated into the Software Development Life Cycle.

Deloitte will use an enterprise defect management and tracking system that will be used across the lots. This system will be accessible to DPW stakeholders, third party vendors, and other Lot vendors and will enable defect prevention, discovery, tracking, categorization (i.e., type and severity), resolution, reporting, and after action activities to improve end product quality and solution development and delivery processes.

Figure 6.5-105 shows a sample of the defect entry screen in the defect management system.

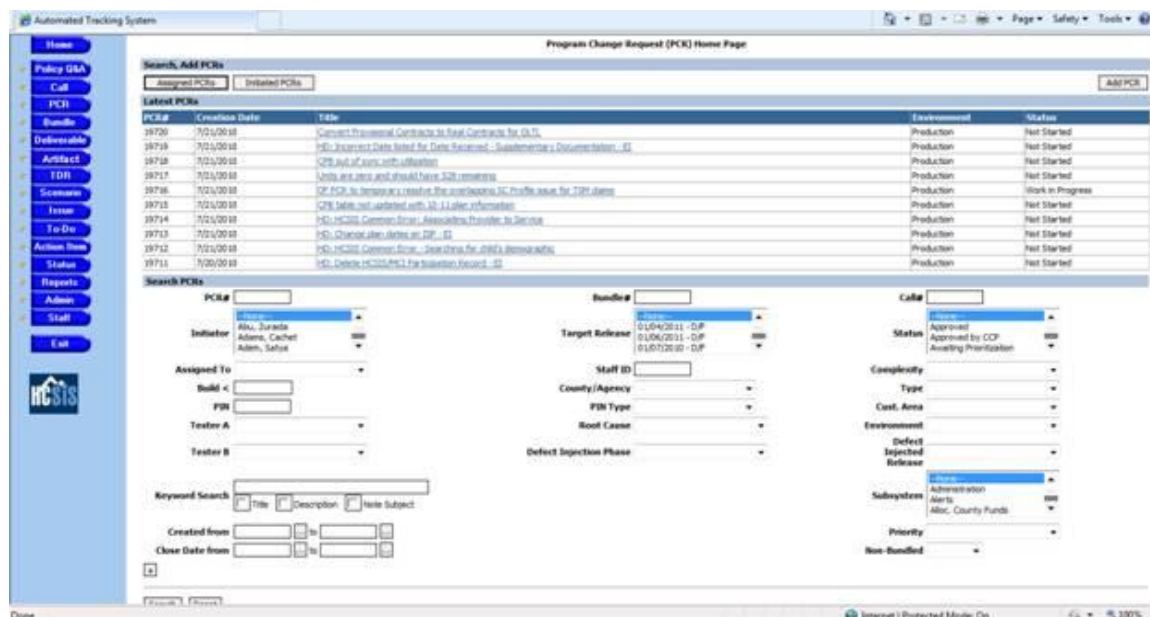


Figure 6.5-105. Enterprise Defect Management.

PA_DPW-899

An Enterprise Defect Management System like the Automated Tracking System (ATS) shown here will allow collaboration across vendors.

Deloitte will work with DPW stakeholders, third party vendors, and other Lot vendors to establish a defect management process that addresses the following activities:

1) Defect Prevention. A high quality end product can be achieved by proactively taking steps to get it right the first time rather than fixing it later. These steps include:

- Enforcing Inclusive and Unambiguous Design Documentation as an Exit Criterion for the Design Phase.** Deloitte will work with the Lot 1-5 and Lot 6 vendors to clarify any inconsistencies in the requirements and design and identify any potential design gaps. Using the traceability matrix and mapping requirements to use cases to scenarios, we will then work to resolve these inconsistencies and gaps and confirm that the requirements and general system design are properly defined and aligned prior to beginning the detailed system design and development work.
- Establishing Uniform Coding Standards and Leading Practices.** To maintain high quality code development, we will use our established coding standards and guidelines, including guidelines on reuse of application components to improve maintainability and readability of the application code base. We will configure tools such as FxCop to check for non-compliance and also employ our QA team to conduct walkthroughs, inspect code, and monitor and track quality and prepare reports to be shared with DPW stakeholders, third party vendors, and other Lot vendors.
- Conducting Unit Testing of Functionality during the Development Phase.** Prior to exiting the development phase, the code will be unit tested to verify that it adheres to the functional and technical requirements and design. Following the completion of software development or modification, the developer is responsible for testing the individual software units or groups of related units. We will use detailed checklists that enumerate each software component to expedite the validation of application

characteristics. This includes an analysis of actual results vs. expected results. If, during this process, the developer identifies a software discrepancy, they are responsible for documenting, resolving, and retesting the unit until expected results are achieved.

2) Defect Discovery. Despite proactive efforts to prevent defects by identifying and addressing software discrepancies in the development phase, there may continue to be some discrepancies in the code after it has exited the development phase and entered the testing phase. Also, there may be instances where the units work as expected when tested individually, but may not when integrated into the rest of the application. Steps to facilitate identifying these remaining defects include:

- **Establishing a Broad Set of Integration Test Scenarios.** We will identify a representative set of business scenarios that will comprehensively test the developed functionality. The scenarios will include details of the setup/preconditions, any test data that may be required and expected results.
- **Rigorously Testing the Delivered Solution Against the Suite of Integration Test Scenarios.** Using the scenarios as a guideline, individual test cases will be executed against the solution. Results will be documented and compared against the expected result to identify variances. Typically, the integration testing will be executed by a separate team from the development team in order to cast a “fresh set of eyes” on the functionality and to encourage new viewpoints.
- **Confirming Variances with Business/Functional Experts.** A discrepancy between the expected results and actual results does not necessarily imply that a defect is present. Other circumstances such as bad data, incorrect scenarios or tester error could result in a variance. In situations where there is a discrepancy between actual and expected results, we will reconfirm the requirement and the test scenario with functional experts who have been identified by DPW to determine if the defect is valid. If it is not, we will update the requirement or scenario or take other corrective action as needed to confirm that the requirement, design, development and testing are properly aligned.
- **Recording Valid Defects in the Defect Management System.** Defects identified by testers or end users will be recorded in an enterprise defect management system such as the Automated Tracking System (ATS) currently used by DPW. This will enable DPW stakeholders, third party vendors and other Lot vendors to share details of the defect. Defect details will include information about the defect such as a description of the defect and steps to reproduce it, severity, category, and status.

Defect severity will be assessed on a four point scale based on the potential impact to production. A severity of 1 corresponds to a critical defect, one that prevents the user from accessing the functionality and for which there is no workaround. It must be addressed promptly. A severity of 2 corresponds to a major defect, one that significantly affects functionality and for which if a workaround exists, is complex/cumbersome. A severity of 3 indicates an average defect. Functionality is affected, but not significantly and a relatively simple workaround exists. These defects will be prioritized in the normal maintenance path. A severity 4 defect corresponds to a minor defect such as a

cosmetic defect for which the workaround is very simple or not required. These defects will be addressed as resources permit within the course of the normal maintenance cycle.

3) Defect Tracking. Once a defect has been recorded in the defect management system, Deloitte will collaborate with DPW stakeholders, third party vendors and other Lot vendors to resolve the defect. As the defect progresses through its life cycle from new to resolved/closed, the status will be updated at each stage and notes will be appended. Some of the steps in the defect tracing process include:

- **Regularly Reviewing Defects.** Open defects will be reviewed with DPW stakeholders, third party vendors and other Lot vendors in order to report on the status and progress of the defects as well as address any issues associated with the defects.
- **Triaging Defects.** Based upon severity and complexity of fix as well as the business needs, open defects will be triaged and assigned to a target build/release in the defect management system.

4) Defect Resolution. The goal of tracking defects is to ultimately drive them to their resolution. Those defects that are determined to be valid will be fixed after being assigned to a target build/release. Steps to resolve defects include:

- **Fixing and Unit Testing Triaged Defects.** Upon fixing defects, we will update the status in the defect management system and update the notes and resolution with details of the fix.
- **Integration Testing the Defects Assigned to the Build.** Fixed defects will be integration tested as part of their target build and the status and notes will be updated with test results.
- **Promotion to Production.** Defects that have successfully completed the testing cycle will be promoted to production and marked as resolved.

5) Defect Reporting. Throughout the defect management process, we will share the status of defects and progress on defect fixes with DPW stakeholders, third party vendors, and other Lot vendors. This will include:

- **Preparing Defect Reports.** We will create regular (daily, weekly or monthly) reports that show key defect metrics such as the number of defects opened within a certain period or for a certain build, the severity distribution of the defects, the number of defects closed within a certain period or build, and the age of the open defects.

6) Defect Origination. To achieve a high quality end product, it is not enough to merely fix the defect. We will also take steps to prevent similar defects from recurring. This can be achieved by:

Have you
heard? 

Project Quality Measure
Beats Industry Benchmark
On the recent iCIS IV-B
enhancement, cumulative
defects found were 5.5
percent lower than an
industry benchmark using
performance data from
7,500+ projects across
500+ organizations.

- **Analyzing the Root Cause of the Defect.** There may be situations where the defect manifests as a symptom of a deeper issue. For example, certain data may not show up on a screen – while this may simply be a matter of the data not having been entered in the first place, it could also indicate a deeper issue such as a problem with the underlying data model. By analyzing the root cause of a defect, we will not only fix the current defect, but prevent it from recurring in the future.
- **Analyzing the Code Base and Architecture.** Due to code reuse and common architecture, a problem that manifests in one area of the solution may potentially exist in other areas. By analyzing the code base and architecture, we can identify areas where defects with similar root causes may occur and proactively address them.

7) Software Quality Assurance. We will employ our software development practice, assessed at CMMI Level 3 and our seasoned judgment from 30 years experience with public assistance systems to implement software quality, maintainability and code improvement processes. These processes include:

- **Code Optimization.** We will identify reusable code components wherever possible and if new components are needed, they will be developed with a view to future reusability, thereby reducing development time and costs while maintaining code reliability.
- **Establishing Coding Standards.** We will establish coding standards and guidelines to improve maintainability and readability of the application code base. We will configure tools such as FxCop to check for non-compliance and also employ our QA team to conduct walkthroughs, inspect code, and monitor and track quality, resulting in improved application performance, stability and compliance with industry standards.

Managing the Software Testing Process

IV	Page IV-375	RFP Reference: Applications Modifications/Enhancements Required Items
The Selected Lot#7 Offeror must propose the tools, processes, and methodology that demonstrates how they will coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to: 1) Create detailed test plans that ensure test coverage and effectiveness; 2) Provide timely accurate test summary reports; 3) Ensure proper systems operations and performance; and 4) Demonstrate how tests management will be incorporated into the software development life cycle phases, defect management, and software quality assurance programs striving for process improvements and timely delivery of quality end products.		

The centerpiece of the testing approach will be a test plan that will detail the functionality to be tested in each phase, the entry/exit criteria for that phase, and the defect tracking life cycle. It will also contain a detailed list of testing scenarios and their expected results.

Deloitte will work with DPW stakeholders, third party vendors and other Lot vendors to identify a set of scenarios that fully cover the defined requirements. In addition, we will develop tools to continuously report on testing progress in order to achieve the goal of a fully functional solution. Specific activities that will take place are outlined below:



1) Creating Detailed Test Plans. Deloitte will work with DPW functional experts, third party vendors, and other Lot vendors to fully understand the requirements and general system design. Based upon this understanding, we will create test plans that:

- **Identify Resources and Timelines.** The test plan will identify testing resources that will create and execute test plans and scenarios as well as identify a timeline for their creation and execution.
- **Document Integration Test Scenarios.** The integration test scenarios will describe the business functionality that is to be tested and provide the preconditions and expected results. The scenarios will be mapped to requirements and use cases to enforce traceability.
- **Document Test Cases.** The test cases will contain step by step instructions based on the test scenarios and provide detailed test data
- **Verify Completeness of the Integration Test Suite.** We will confirm broad test coverage by establishing forwards and backwards traceability from system requirements and use cases to test scenarios and vice versa.

2) Providing Timely, Accurate Test Summary Reports. To facilitate management of the testing cycle and confirm that involved parties are on the same page, we will share the status and progress of the testing phase with DPW stakeholders, third party vendors, and other Lot vendors. This will be accomplished by:

- **Quantifying the Number of Test Scenarios and Test Cases.** This will create a baseline against which progress can be tracked by expressing a completion percentage or identifying the number of outstanding scenarios/test cases.
- **Estimating the LOE.** Once the number of the test scenarios/cases is known, the time and resource levels needed for testing completion can be established, along with intermediate milestones. The LOE will be based on the length and complexity of the identified cases and the amount of set up required.
- **Providing Regular Reports.** We will create daily and/or weekly reports that show the proportion of testing that has been completed, including extrapolated data for the remaining testing and a comparison of planned vs. actual completion.

3) Confirming Proper Systems Operations and Performance. Deloitte will work with DPW stakeholders, third party vendors and other Lot vendors to confirm software quality through appropriate tracking of defects and testing of the code. This will include:

- **Enforcing Standards.** Achieving pre-defined standards will be an exit criterion for the testing phase. Depending on the size and scope of the release, we will establish an acceptable threshold for defects of each severity level.

Have you
heard? 

Deloitte recently worked with the State of Michigan to implement an IVR within the BRIDGES eligibility system as a bilingual solution that mirrors key functionality of the web-based application. This experience is directly relevant to the IVR enhancement to iCIS.



- **Identifying Business/Functional SMEs to Conduct UAT.** User Acceptance Testing focuses on validating that functionality that has passed unit and integration testing will perform correctly when subjected to user perspective. UAT focuses on validating end-to-end business scenarios that are critical to the successful completion of the program.
- **Obtaining Signoff From Business/Functional SMEs.** In order to exit the UAT phase, DPW business/functional experts will sign-off on the testing, indicating that the functionality meets the requirements.

4) Incorporating Test Management into the Software Development Life Cycle.

Deloitte is familiar with and will follow the DPW standard SDM, which includes integration testing, Regression Testing, UAT support, ADA compliance, Load Testing, TFP and Production validation as part of the DSD-Deployment phase.

- **Integration Testing.** The purpose of integration testing is to evaluate that the software “units”, when integrated with the rest of the application perform as expected.
- **Regression Testing.** This validates that the introduction of new or modified software has not adversely impacted existing functionality
- **User Acceptance Testing (UAT), ADA Compliance and Load Testing.** User Acceptance Testing focuses on validating that functionality that has passed unit and integration testing will perform correctly when subjected to user perspective. UAT support focuses on assisting the chosen ‘super users’ performing the UAT in their validation of end-to-end business scenarios that are critical to the successful completion of the project.

During UAT we will perform accessibility testing including Bobby, ADA, and browser compatibility tests as appropriate for areas of the application that are browser-based as well as those that require self-service access needs

As part of UAT, we will also execute automated testing and load testing as appropriate to validate that the system performs as expected under typical user loads that can be expected in production.

- **Test for Production (TFP).** Test for Production (TFP) is the final component of the testing phase prior to the production implementation. TFP provides an opportunity to deploy the software in an environment that closely mimics production and provides a final rehearsal of the migration activities.
- **Production Validation.** For major releases, we will assemble a cross functional team comprising DPW stakeholders, third party vendors and other Lot vendors to perform a final validation of software that is deployed to production. This may entail executing mock simulations of business processes to validate the flow and advise the readiness of the system prior to end user availability.



Facilitation of Enterprise Project Tracking

IV

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Lot #7 Offeror must propose the tools, processes, and methodology that demonstrates how they will coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to: 1) Establish an automated tracking system and manage Work Orders throughout the life of the contract; 2) Establish and maintain a project tracking and management system; 3) Provide access to DPW, and designated IT Consulting Services Offeror's management staff to review current project priorities and timeliness 4) Maintain the Enterprise Architecture Blueprint Documents.

In order to achieve the outcome of a high quality end product delivered on time and on budget, it is essential to use proven tools, processes and methodologies that are known to the stakeholders including DPW, third party vendors, and other Lot vendors. *Tools* enable the stakeholders to track and review the status and progress of the project; *processes* facilitate the handoff of responsibilities and coordination of activities between DPW stakeholders, third party vendors and Lot vendors; methodologies provide the overarching framework for defining tasks and assigning responsibilities for each of the phases of the software life cycle.

Deloitte has worked with DPW to establish many of these tools, processes and methodologies and we will continue to update them to keep pace with new innovations in IT project management. We are familiar with your Software Development Methodology (SDM) as well as many of your tools and processes such as Automated Tracking System (ATS) and Architecture Review Board (ARB). Furthermore, to keep DPW at the forefront of project tracking and management, we will introduce new tools such as Deloitte's innovative Project Management Center (PMC) that will enable DPW stakeholders, third party vendors and Lot vendors to track and manage the project and review project priorities and timelines.

The following table outlines the tools, processes and methodologies used for each of the enterprise project tracking activities.

Offeror Task	Tools	Processes and Methodologies	Benefit to DPW
1) Establish an automated tracking system and manage Work Orders throughout the life of the contract	• Work Order Tacking Tool • Work Order SharePoint	• Capability Maturity Model Integration (CMMI) • Software Development Methodology (SDM)	• Smooth coordination between vendors allows PMs to focus on larger project issues.

Offeror Task	Tools	Processes and Methodologies	Benefit to DPW
2) Establish and maintain a project tracking and management system	- Project Management Center (PMC) - Automated Tracking System (ATS)	- CMMI - Project Management (PM)	- A consistent tool allows different vendors to move seamlessly between projects and across different phases within projects. - Stakeholders only need to familiarize themselves with one tool instead of several.
3) Provide access to DPW, and designated IT Consulting Services Offeror's management staff to review current project priorities and timeliness	- Work Order Dashboard - PMC	Project Management (PM)	DPW stakeholders, third party vendors and lot vendors have access to the same consistent information and can get a unified picture of project status and progress.
4) Maintain the Enterprise Architecture Blueprints	- Enterprise Architect (EA) - ERwin	- SDM - ARB	System architecture is vetted by DPW-BIS and documented

Figure 6.5-106. Tools, Processes and Methodologies Used by Deloitte for each of the Enterprise Project Tracking Activities.

Supporting the Process of Achieving Software Quality

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The Selected Offeror for Lot#7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to: 1) Provide assistance, technical guidance, and analyze test results with regard to systems and technology integration testing, systems design and capacity variances, systems security and performance variances and/or anomalies, systems vulnerabilities, and problem resolution initiatives (as required).

As the leading HHS systems integration firm performing the Lot 7 responsibilities, we will be responsible for the majority of the SDLC phases including execution of the software quality assurance (SQA) process. During the SQA process we provide assistance, technical guidance and analyze test results across various testing activities to help drive software quality while collaborating with the DPW stakeholders, third party vendors and other Lot vendors as needed. Facilitating this collaboration will ultimately result in a more robust SQA process and a higher quality end product.

The following table outlines our approach to providing assistance, technical guidance and analyzing test results with regard to the identified activities:



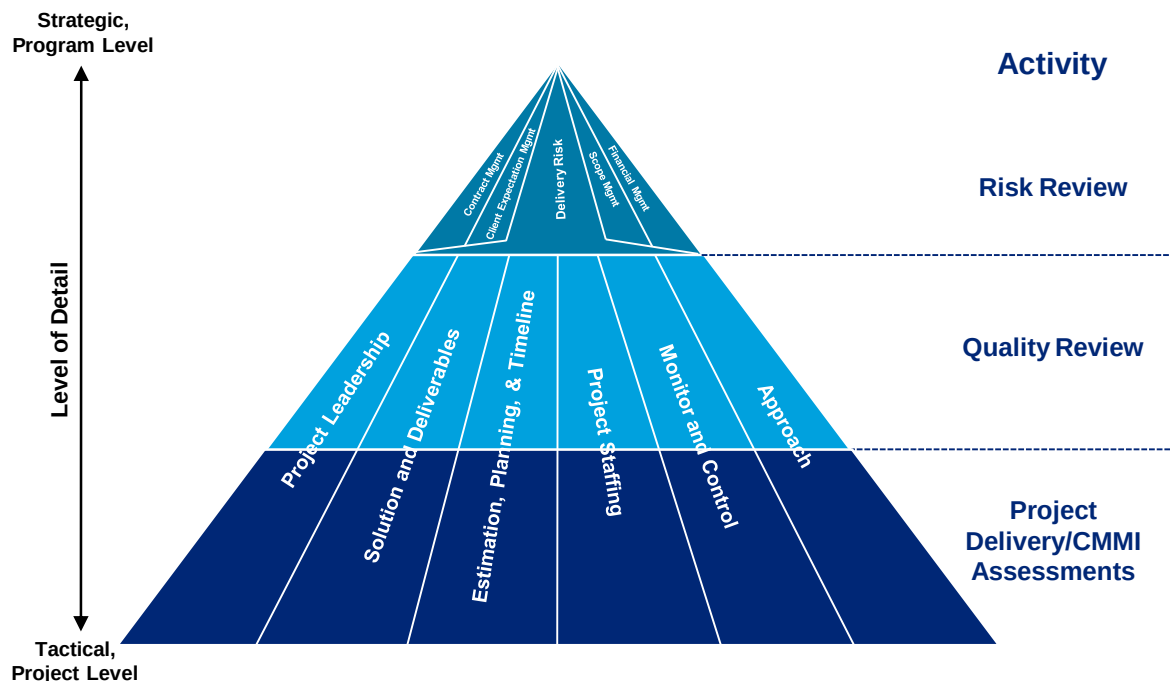
Offeror Task	Deloitte approach to providing assistance, technical guidance and analyzing test results	Benefit to DPW
Systems and technology integration testing	• Triage of any identified issues or defects and collaboration with project stakeholders and other Lot vendors in determining their resolution. • Identification of any change requests and supporting the change control process with level of efforts and technical impacts.	• An established triage process efficiently identifies the most crucial issues to be addressed, providing greater “bang for the buck” and improving overall quality.
Systems design and capacity variances	• Work with the Lot 1-5 and Lot 6 vendors to analyze user base and review business requirements to estimate transaction volume and load for design and test purposes. • Work with the Lot 6 vendor to review the system architecture and capacity plans to identify inconsistencies between the anticipated and designed capacities.	• Comparing the detailed design and capacity test cases with the requirements gives us the data needed to coordinate with the Lot 1-5 and Lot 6 vendors to validate that the system meets any business stakeholder capacity needs.
Systems security and performance variances	• Review security and performance requirements and general design to identify potential inefficiencies and if inefficiencies exist, suggest improvements. • Triage security and performance variances identified during testing and collaborate with the Lot 1-5 and Lot 6 vendors on their resolution approach.	• Security is vital to any system and especially DPW systems containing sensitive citizen information. By reviewing design specifications early in the software life cycle and then security test results later in the process, DPW can be confident that the security of any application modification to its systems is properly integrated. • Validating performance prior to going live allows the project to take corrective action before it impacts the project schedule and lets DPW make an informed go/no-go decision before a system release go-live.



Offeror Task	Deloitte approach to providing assistance, technical guidance and analyzing test results	Benefit to DPW
Anomalies, systems vulnerabilities, and problem resolution initiatives	- During the general system design phases, we will provide technical guidance to the Lot 6 vendor to enforce architectural standards and design leading practices that minimize system vulnerabilities. - During the testing and later phases, we monitor system behavior and will involve the other Lot vendors as well as DPW stakeholders in the triage, assessment, and corrective action planning for any system anomalies, vulnerabilities or problems.	Collaborating across project stakeholders in the resolution of any system anomalies, vulnerabilities or problems results in corrective action that is in-line with stakeholder expectations eliminating surprises post go-live.

Figure 6.5-107. Deloitte's Approach to Providing Assistance, Technical Guidance and Analyzing Test Results for Key Software Quality Assurance Tasks.

In addition to proven processes that allow us to support software quality assurance, Deloitte as a firm has implemented a broad, independent project review conducted by internal Deloitte staff not associated with the DPW project. Although this review serves multiple purposes within Deloitte, a large component includes a quality review that focuses on six project areas as depicted in Figure 6.5-108. This extra layer of independent quality review results in a higher quality end product with no extra cost to DPW, ultimately creating value for you and Pennsylvania citizens.



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Figure 6.5-108. Deloitte's Internal Project Review Framework.

Combining the quality review checks from Deloitte's internal project review framework in addition to our proven software quality assurance processes leads to a higher quality software end product.

Implementing Enterprise Project Coordination

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Offeror of Lot #7 must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to: 1) Engage and support the Change Control process, including detail narrative regarding the methodology to assess the change; 2) Ensure compliance and use of the System Development Methodology (SDM), ARB, and SQA processes; 3) Manage and respond to defects associated with requirements or GSD translations, design, build, SAT, or a latent production defect; 3) Produce the best quality end products, 4) Ensure requirements traceability throughout the SDLC phases, and 5) Ensure alignment with EA-SOA strategies and technology roadmaps.

Deloitte understands the need for coordination. To achieve smooth coordination amongst the participants, it is necessary for the stakeholders, third party vendors and Lot vendors to have a uniform way to track the project's status and progress.

1) Engaging and Supporting the Change Control process. The DPW Steering Team will establish the initial project baseline based on the annual planning meeting, the resource estimations, and other project constraints. Modifications to the established baseline will be managed and controlled via the Change Control process.

The institutionalization of the change control process is a critical component to validate that resources are aligned appropriately based on business drivers. Once changes are approved by the Change Control Board (CCB) we will allocate the right resources to get the project completed successfully.



Deloitte has worked with DPW stakeholders and other vendors to define, document, communicate, and implement a robust change control process. Defining which enhancements would be included in a release is now a transparent and open process with appropriate input from project stakeholders. By effectively managing this process, DPW has been able to address the critical change requests in the backlog and adjust the baseline to address unanticipated mandates. We look forward to continuing to use this change control process, modifying it as necessary to remain at the forefront of change control processes.

The Change Control process, shown in Figure 6.5-109, is used to determine whether or not the application modifications should be proposed for approval to the baseline.

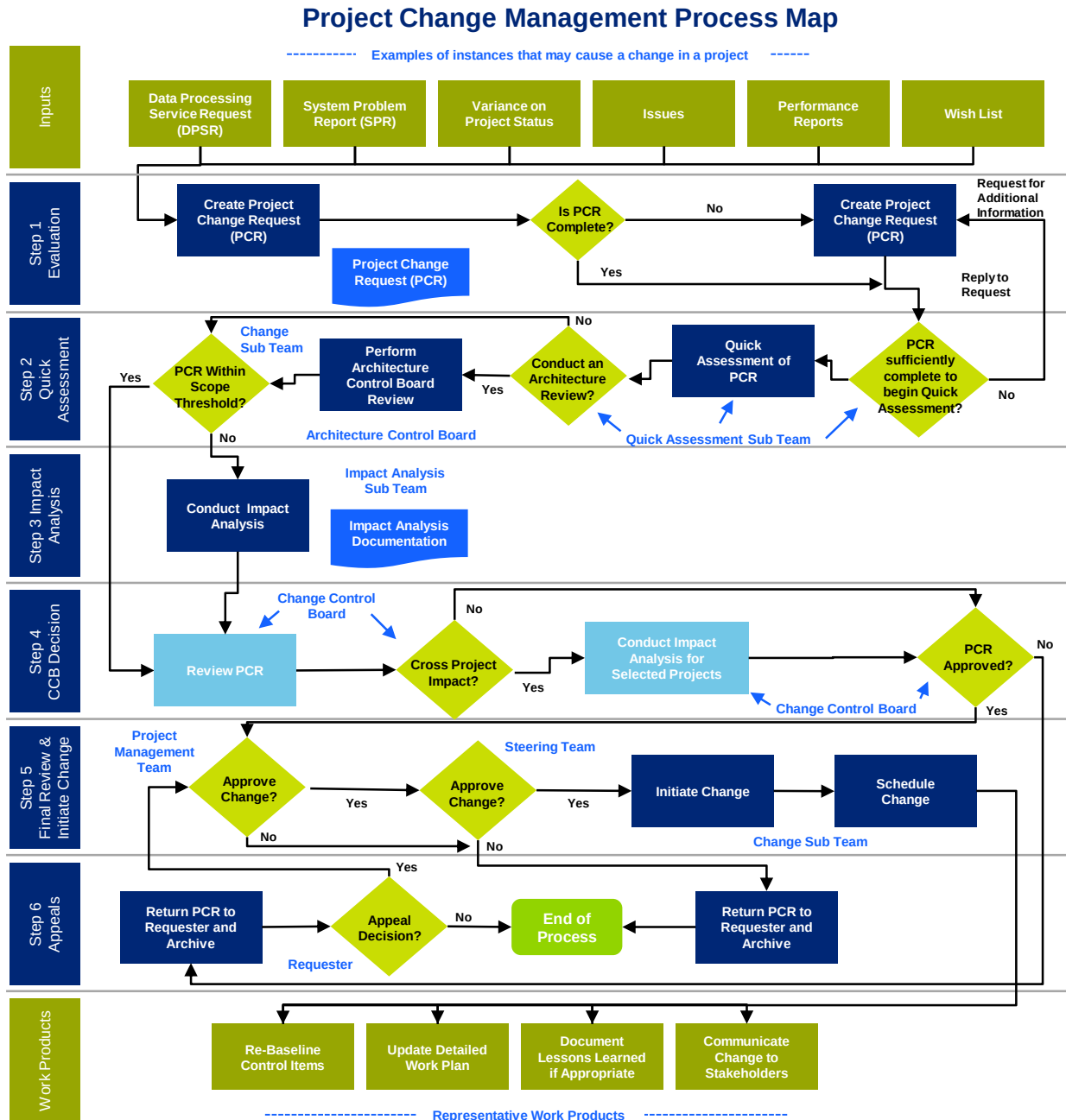


Figure 6.5-109. Project Change Management Process Map.

PA_DPW-565

A consistent, broad approach to reviewing and approving any project change requests results in more effective management of project scope, resources, cost and schedule leading to on-time and on-budget project execution.



2) Confirming Compliance and Use of the System Development Methodology

(SDM), ARB, and SQA Processes. Deloitte will work with DPW, third party vendors and other Lot vendors to produce DSD artifacts that adhere to the DPW SDM, ARB, and SQA processes. In doing so, we will use the standard tools, processes and methodologies that we have collaboratively developed with DPW:

- **Traceability Matrix.** We will review the traceability matrix produced by the Lot 1-5 and Lot 6 vendor to confirm that the listing of functional and non-functional requirements is detailed, accurate and unambiguous, and that the GSD is aligned with the requirements. We will identify gaps or inconsistencies and work with the other Lot vendors to address these prior to beginning DSD.
- **Class and Sequence Diagrams and Application Blueprints.** We will create class and sequence diagrams that provide a visual representation of the code layout. The class diagrams will demonstrate how the classes relate to each other and describe the methods contained within each class along with their intended behaviors. The sequence diagrams will visually represent the flow of messages amongst the system components and provide a listing of the specific messages used in each functional area. The application blueprint will visually represent how the sub-systems within the application relate to each other and how the application may relate to other applications.
- **Screen Shot Details.** Deloitte will conduct DSD sessions with the DPW stakeholders and where appropriate, third party and other Lot vendors to flesh out the detailed system design based upon the requirements and GSD submitted in the previous phases. As part of the detailed system design, we will add technical details to the screen shots, including default values for data elements where appropriate and mapping those data elements to reference table or other database values.
- **PDM and Data Dictionary.** Building upon the LDM, we will define the Physical Data Model, which will show detailed schemas, including the database tables, how they relate to each other and the columns contained within each table. The PDM will also show the data types for each column and identify the primary key for each table. The Data Dictionary will further expand upon the PDM by identifying additional details such as the precision, scale and description for each column.
- **Final Capacity Plan.** We will work with the Lot 6 vendor to review the initial capacity plan that includes estimates for storage capacity as well as other elements such as network bandwidth, user base and transaction volume for the production and non-production environments. Based on the updated requirements and design and taking into account the technical architecture, we will confirm or update the capacity estimates in advance of setting up the technical infrastructure.
- **Interface Specifications.** If the solution has interfaces with another system or sub-system, we will create an interface specification document. The document will categorize each of these interfaces with a name and description and identify the end points as well as type of middleware used for the interface. Additional interface details will include the specific tags/fields used in the interface and the data types for each tag/field.

- **Security Assessment.** In conjunction with DPW's infrastructure team, we will perform a security assessment for any proposed modifications. As part of this effort we will assess compliance with new or existing security policies and identify potential risks and their mitigation strategies. In addition to an overview of the requirements and architecture, the security assessment will address data domain considerations such as where and how the data are stored, authorization and authentication considerations such as password policies and access rights, and infrastructure considerations such as firewall requirements and exposure to the intranet/Internet.
- **Key Considerations.** These will serve as a "catch-all" for capturing any information not identified in the above tools and documents. The Key Considerations document will highlight technical considerations that will need to be kept in mind during the DSD-Deployment phase.
- **ARB.** We will also meet with key technical stakeholders to present an outline of the proposed design architecture. As part of Architecture Review Board II and III (and IV, if necessary), we will present an overview of the requirements and design to DPW-BIS, with a focus on vetting the detailed system architecture and infrastructure.

3a) Responding to Defects Associated with Requirements or GSD Translations, Design, Build, SAT, or a Latent Production Defect. We will work with the Lot 1-5 vendor to review the requirements and the Lot 6 vendor to review the General System Design. Prior to beginning DSD, we will review the requirements and GSD in order to clarify any uncertainties in the requirements or identify any gaps in the design.

In the event that an issue or gap is found, we will work with DPW stakeholders and the Lot 1-5 and Lot 6 vendors to re-validate the requirements and design with the business owners and to ascertain that there are no contradictory and/or incomplete requirements or ambiguous designs. Once we have identified the needed corrective action we will then conduct an impact analysis to determine its effect on the detailed system design and overall project cost and timeline. Then as the Lot 1-5 vendor makes the appropriate changes to the requirement and the Lot 6 vendor updates the GSD, we will incorporate the corresponding changes into the Detailed System to bring the system documentation in-line with the new baseline.

Key Staff Spotlight

Purvi Shah

Track Lead



Delivering Results

"The last year has been a rewarding, exciting and challenging experience for me on HCSIS. I've leveraged the industry best practices that I've learned in other states and brought that knowledge to Pennsylvania and applied it to some of the most challenging and transformational initiatives we have done over the past year. I've been able to work collaboratively with BIS and OCDEL to implement the Early Intervention Preschool Program – and we're now live in production tracking plans and services!"



Defects identified by testers or end users will be recorded in an enterprise defect management system such as the Automated Tracking System (ATS) currently used by DPW. This will enable DPW stakeholders, third party vendors and other Lot vendors to share details of the defect. Defect details will include information about the defect such as a description of the defect and steps to reproduce it, severity, category, and status. We will review these defects at a regularly scheduled defect triage meeting that would assess the impact of the defect and assign a target build/release for the fix.

3b) Producing High-Quality End Products. A quality end product can be achieved by proactively taking steps to get it right the first time rather than fixing it later. These steps include:

- Enforcing inclusive and unambiguous requirements and GSD documentation as an entry criterion for the Detailed System Design phase. Deloitte will work with the Lot 1-5 and Lot 6 vendors to clarify any inconsistencies or gaps in the requirements and confirm that the GSD and Requirements are aligned. We will then work to resolve these inconsistencies and gaps to confirm that the requirements and GSD are properly defined prior to beginning the detailed system design.
- **Effectively Triaging and Resolving Defects.** As part of the DSD-Deployment phase, we will work with DPW stakeholders, third party vendors and other Lot vendors in triaging defects arising from the testing phase. We will assess the impact of these defects and assign them to an appropriate target build or release based their severity and impact.

4) Confirming Requirements Traceability Throughout the SDLC Phases. Although our focus for this phase will be on the detailed system design, we will work with the DPW stakeholders, third party vendors and other Lot vendors to facilitate backwards and forwards traceability throughout the software life cycle to mitigate the risk of design gaps and minimize the likelihood that requirements will not be met. Traceability activities include:

- **Clarifying Concerns and Uncertainties Associated with the Requirements and General System Design.** By working with the Lot 1-5 and Lot 6 vendors, we can clarify any inconsistencies or gaps in the requirements. We will then work to resolve these inconsistencies and gaps to confirm that the requirements are properly defined prior to beginning the general system design and that the Requirements and GSD are properly aligned prior to beginning the DSD.
- **Incorporating Design Changes into the Detailed System Design.** Once the general system design is completed and aligned with the requirements, we will work with the Lot 1-5 and Lot 6 vendors to clarify any inconsistencies or gaps in the requirements and confirm that the GSD and Requirements are aligned. We will then work to resolve these inconsistencies and gaps to confirm that the requirements and GSD are properly defined prior to beginning the detailed system design. Once DSD is complete, we will incorporate further design changes into the DSD-Deployment phase by triaging and resolving defects arising from the testing phase and correspondingly updating the documentation with the fix.

5) Confirm alignment with EA-SOA strategies and technology roadmaps. Although application modifications/enhancements will be performed on DPWs many systems, the architecture standards and guidelines will be consistent across the DPW technical environment. Deloitte has collaborated with DPW to develop these EA-SOA strategies and technology roadmaps since the HNET project and will continue to collaborate with DPW on future architectural strategies and roadmaps. Two key processes will assist in the adherence to this: Deloitte internal architecture review boards (DARBs) and DPW architecture review boards (ARBs).

- DARBs allow internal Deloitte system architects to review new design specifications to validate that projects make use of the architecture leading practices developed on each of the application development teams and that software re-use is promoted where possible.
- ARBs allow DPW to validate that the proposed system architecture meets the DPW technology standards and guidelines and represents that leading value and most cost-effective solution for business stakeholders.

Meeting Modification Requirements

IV	Page IV-376	RFP Reference: Applications Modifications/Enhancements Required Items

Lot # 7 Offeror must provide a brief description of how the Offeror plans to meet the Application Modifications/Enhancements requirements as presented RFP Page IV-348 Application Modifications/Enhancements., including the approach, organization resources and management controls that will be employed to meet Application Modification/Enhancements requirements.

Deloitte leverages current DPW methodologies such as the Modified Waterfall SDLC, along with methodologies used on other Deloitte engagements such as ePMM4 for management controls and combined with industry proven methodologies like CMMi and ITIL to meet the Lot 7 Application Modifications/Enhancements requirements. Using this best of breed approach allows us to leverage the features of each methodology to successfully execute each aspect of the project under the Lot 7 offer tasks. We bring a calculated mix of veteran staff working with DPW today and new staff from the wide breadth of available Deloitte resources to DPW giving you a team that knows your business but at the same time will be new and innovative ideas keeping DPW on the leading edge of public welfare enterprise system implementation. For more information on our approach to meeting DPW Application Modifications/Enhancements requirements refer to the below table of references

DPW Application Modifications/Enhancements requirement	Deloitte Approach Section Reference
Approach to meeting Application Modifications/Enhancements	6.5.1 Methodology, Approach and Experience
Organizational resources for meeting Application Modifications/Enhancements	6.5.4 Staffing Chart and Roles
Management Controls for meeting Application Modifications/Enhancements	6.5.2 Management Controls, Communication and Evaluation

Figure 6.5-110. DPW Application Modifications/Enhancements Requirement and Deloitte's Approach.

Recommendations on Implementing Change Management

IV	Page IV-376	RFP Reference: Applications Modifications/Enhancements Required Items
		Lot # 7 Offeror must provide a review of the current change management process used by the Department as summarized in Section D and specifically in Appendix U in this RFP, describing the strengths and potential limitations of the current process. Describe the Offeror's proposed methodology for managing the change management process, including techniques for estimating modification resources and scheduling. Describe the Offeror's proposed solution to changing priorities and/or requirements during modifications/enhancements activities.

Deloitte understands that a detailed and transparent change management process is vital for successful project management. Projects will be faced with change requests for valid business and technical reasons but those that have a consistent, broad process that involves all stakeholders will be able to successfully manage these change requests without jeopardizing the success of the project or other indirectly impacted projects. Deloitte leverages our existing knowledge of your process, provide suggested improvements and successfully execute the process to validate that only approved and necessary change requests are added to project baselines and are done in a way that minimizes the impact on in flight project resources, cost and schedule.

Review of Current Change Management Process

The DPW Change Management process begins by establishing a Change Control Board – commonly referred to as CCB and identifying the various stakeholders and participants of the process viz. Project Change Lead, DEPPM, project governance teams, program offices, Cross-Program IRM and IRM Leadership Team. Thereafter we follow the 6 key steps as part of the Change Management process:

- **Step 1.** Record and evaluate the Project Change Request (PCR)
- **Step 2.** Approve the change for assessment, or reject, or defer the PCR
- **Step 3.** Conduct and share the Impact Analysis details with CCB which will determine whether or not to approve the PCR
- **Step 4.** Assessment Complete - Decision by CCB
- **Step 5.** Final Review and Project Change Request Initiation
- **Step 6.** Appeals

The following figure provides an overview of the key tasks including the change management process and the various resources responsible for completing them.

	Process Owner	Change Manager	Change Control Board	Change Initiator	Change Implementer	Business Owner	Technical Owner
Change Management Process							
Process Monitoring and Measurement	✓	✓					
Process Improvements	✓	✓					
Prepare a list of Standard Changes			✓				
Change Control Board (CCB) Meetings							
Compile a list of Changes to be discussed before the CCB meeting	✓	✓					
Distribute the Agenda and the list of Changes to be discussed at the CCB meeting	✓	✓					
Facilitate CCB meetings		✓					
Attend CCB meetings	✓	✓	✓	✓			
Assess Planned Changes			✓				
Approve/Reject Planned Changes			✓				
Record decisions about the Changes discussed	✓	✓					
Prioritize Changes		✓	✓				
Schedule Approved Changes		✓	✓		✓		✓
Review Implemented Changes			✓				
Distribute Meeting minutes	✓	✓					
Produce Forward Schedule of Changes	✓	✓					
Project Change Requests (PCR)							
Create PCR's				✓			
Submit Changes to be discussed at the CCB				✓		✓	
Review for completeness	✓	✓					
Assess for submission readiness		✓					
Conduct Quality Reviews		✓	✓				

Figure 6.5-111. Overview of Key Tasks.

Based on our past experience with DPW, we are in a position to identify and highlight the key strengths as well as recommend possible improvements in the existing process.

Strengths

- The existing process is a process that supports proper validation of the utility of a change and identification of downstream impacts/risks
- The existing process involves multiple levels of approval by the project stakeholders which results in a broader assessment and acceptance, if approved, of the impacts each PCR has on existing project constraints.
- The existing process not only looks at the impacts of a PCR on the individual system it may be requested for, but also any cross-system and hence cross project impacts leading to a broader understanding of the resources demands for each PCR.
- The existing process includes steps for returning a PCR to the requestor if sufficient information is not available. This prevents misuse of technical resource hours in evaluating PCRs that are incomplete or too vague.

Possible Improvement Areas

- Depending on the complexity and scope of the PCR, there could be instances where a PCR does not require both Quick Assessment and a Thorough Impact Analysis. If the process allowed these steps to be consolidated when a PCR has a limit scope it could streamline the change control process for those PCRs.
- Although flexible enough to accommodate the lot-based operational model, it will require a change to the governance language detailing differing interactions and responsibilities for each vendor participating in the change control process.
- An alternate flow in the process could be added to accommodate the revision of a PCR in the event a stakeholder does not want to approve the entire PCR but would like to revise the scope and approve part of the PCR. Rather than initiating the entire change control process again for the revised PCR, the process could begin at step 4 creating a streamlined approach for negotiating PCR scope to achieve approval.

Deloitte follows the current change management process described by DPW but as the Lot 7 vendor, we also review any process improvement suggestions with the Department to assess the benefits and gain the necessary approval before piloting or implementing the improvements.

Managing the Change Management Process

Our approach to managing the change control process is embracing the current proven DPW process, suggesting potential process improvements and collaborating with DPW to make recommendations on the approval of any submitted PCRs. The following table highlights some of the key tasks we perform at each stage in the change management process to support its success.



DPW Change Management Process Step	Key Deloitte Lot 7 Tasks
Step 1: Evaluation	If Deloitte is the submitter, we will create accurate and broad PCRs so the necessary information is available to complete future steps without having the PCR returned for more information.
Step2: Quick Assessment	- Provide the resources necessary to perform the quick assessment based on the target system of the change request. - Participate in the change sub team and architecture review board reviews of the PCR and provide Deloitte recommendations.
Step 3: Impact Analysis	- Identify the technical resources with the right skill set to complete an impact analysis considering the cross system impacts. - Use the Application Evaluation Tool (AET) to estimate level of effort, then use the PMC tool to assess impact across project resources and schedule for each PCR resulting in a more accurate impact assessment on in flight projects.
Step 4: CCB Decision	- Identify the project resources to perform cross project impact analysis as needed and work with the PCR submitter to review alternate approaches that may reduce the cross project impacts. - Provide our unbiased review and recommendation as a part of the CCB to DPW for each PCR.
Step 5: Final Review and Initiate Change	- For approved changes only, update the project baseline artifacts and use the PMC tool to properly plan and schedule the PCR and assign appropriate resources to the implementation tasks. - Update the Work Order Tracking Tool (WOTT) as needed to incorporate any approved change requests.
Step 6: Appeals	Validate the denied PCRs are archived with the necessary information to allow them to be reviewed in the future without conducting the quick assessment and impact analysis steps over again.

Figure 6.5-112. DPW Change Management Process Step and Key Deloitte Lot 7 tasks.

Our Response to Changing Priorities and/or Requirements

After a PCR is approved and the impacts on project resources, schedule and cost are accepted, the change is added into the project work plan as a part of Step 5. However, resources may be working on current tasks from the previous project work plan and a transition needs to occur to the new priority tasks resulting from the PCR. Using the PMC tool, Deloitte determines if the new priority tasks are a part of the project's critical path which determines our approach for transitioning resources onto the new priorities.

- If new priority tasks are on the project critical path resources are promptly moved to the new priority tasks regardless of their current status on in progress tasks from the previous work plan.** This approach results in some potential re-work when the resource moves back onto the previous work plan task but does not cause any schedule delays which means the project can complete on-time and on-budget.



- **If new priority tasks are not on the project critical path resources complete their current task from the previous work plan (or if its duration is more than several days they find a natural break point) before moving on to the new priority tasks.** This approach allows the resource to leverage their current momentum to complete the task at hand before changing to the new priority tasks eliminating the need for any rework down the road.

Managing the change management process for any new project change requests, consistently looking for opportunities for process improvement, having the right resources to perform the project change request analysis and being able to change project priorities when changes are approved results in successful navigation of project change control by accommodating stakeholder requests while minimizing the impact to project schedule, budget and resources.

Measuring Our Performance in Meeting Your Requirements

IV	Page IV-377	RFP Reference: Applications Modifications/Enhancements Required Items
Lot # 7 Offeror must provide a discussion of how the Offeror will meet, measure, track, and monitor the performance expectations as well as corrective actions that may need to be taken if inefficiencies occur. Include a description of the steps that the Offeror plans to take to ensure that application modifications/enhancements meet the user requirements and are installed on time, within budget and with minimum defects.		

In addition to fulfilling the Lot 7 Offeror responsibilities, we understand that DPW has certain performance expectations that need to be adhered to when executing the Detailed System Design through Implementation phases for application modifications/enhancements. Without meeting, measuring, tracking and monitoring these performance expectations, a project may get completed but at the same time, not meet the expectations of its sponsor and stakeholders (for example, a project could complete over-budget or suffer from schedule delays). Deloitte is well positioned to capture the key metrics that are used to measure project performance, use tools to track these metrics, and monitor our progress against performance metrics to constantly validate that our performance meets or exceeds DPW expectations.

Once the General Systems Design (GSD) specifications for application modifications are defined, Deloitte utilizes proven processes and tools to validate that they are met, measured, tracked and monitored during the Detailed System Design through the Implementation phase of the project. If at any point discrepancies between the GSD specifications and the DSD documentation or system behavior, Deloitte takes corrective action, collaborating with the other Lot vendors to bring the documentation or system back in-line with the GSD. The following table indicates our approach during each phase of the SDLC to meeting DPW performance expectations.



SDLC Phase	Deloitte Approach to Meeting, Measuring, Tracking and Monitoring Performance Expectations and Corrective Action	Key Benefits to DPW
Feasibility, System Requirements and General System Design	Assist the Lot 6 vendor with any technical feasibility or system impact questions that come up during or before GSD.	By involving the Lot 7 vendor during the early phases of the SDLC to address detailed technical design questions, the GSD is more complete and accurate reducing the need to revisit the specifications later in the project.
Detailed System Design	- Review the GSD documentation to develop the DSD and update the Traceability Matrix. - Review the Traceability matrix for gaps in requirements to detailed design specification mapping and open issues in PMC to track any needed documentation updates. - Update risks, issues, and action items for performance requirements in the PMC tool. - Produce reports to stakeholders on project progress, risks, issues and action items from PMC. - If project schedule delays are reported, assess the root cause to address the issue then take action to bring the project back on track through: - Adjusting our resource mix - Performing parallel task execution - Crashing scheduled task	At the onset of the DSD, we pick up the Traceability Matrix from the Lot 6 vendor and continue to validate that any DSD specifications are traceable back to the GSD and requirements which results in fewer defects or issue in the development phase.



SDLC Phase	Deloitte Approach to Meeting, Measuring, Tracking and Monitoring Performance Expectations and Corrective Action	Key Benefits to DPW
Development	• Review unit test results for the requirements and if gaps exist when compared to the DSD validate that a defect is logged in ATS for tracking its resolution. • Use ATS to provide defect reports to the project stakeholders. • Verify that the integration, system, load, performance and user acceptance test plans have broad coverage of requirements by comparing them to the Traceability Matrix. • Update the risks, issues and action items for performance requirements in the PMC tool. • Produce reports to stakeholders on project progress, risks, issues and action items from PMC. • If project schedule delays are reported, assess the root cause to address the issue then take action to bring the project back on track through: - Adjusting our resource mix - Performing parallel task execution - Crashing scheduled task	• Identifying defects early in the process during UT allows more time to resolve them resulting in less risk to the project schedule. • Comparing the test plans to the traceability matrix provides a proven approach to having broad test coverage which leads to a higher quality software product in the end.



SDLC Phase	Deloitte Approach to Meeting, Measuring, Tracking and Monitoring Performance Expectations and Corrective Action	Key Benefits to DPW
Test	• Review integration, system, load, performance, and user acceptance test results to identify gaps between the system and requirements. Validate that the gaps are logged as defects in ATs. • Use ATS to provide defect reports to the project stakeholders and collaborate with the other Lot vendors when business feedback is needed for defect resolution. • Work with the other Lot vendors to capture business stakeholder input on defect resolutions and document these resolutions in ATS. • Participate in ARB3 to review software quality and provide feedback on the adherence to requirements captured during the Requirements and General System Design phase. • Update the risks, issues and action items for performance requirements in the PMC tool. • Produce reports to stakeholders on project progress, risks, issues and action items from PMC. • If project schedule delays are reported, assess the root cause to address the issue then take action to bring the project back on track through: - Adjusting our resource mix - Performing parallel task execution - Crashing scheduled task	• Using a common tool to track software inefficiencies and the Lot 6 vendor as a facilitator, provides the means to involve business stakeholders in defect resolution increasing customer satisfaction in the software end product.

SDLC Phase	Deloitte Approach to Meeting, Measuring, Tracking and Monitoring Performance Expectations and Corrective Action	Key Benefits to DPW
Implementation	• Participate in ARB4 and production readiness reviews to verify that software quality with regards to requirements has met or exceeded the appropriate defect thresholds. • Produce reports to stakeholders on project progress, risks, issues and action items from PMC. • If project schedule delays are reported, assess the root cause to address the issue then take action to bring the project back on track through: - Adjusting our resource mix - Performing parallel task execution - Crashing scheduled task • Review the post production validation results to confirm that no discrepancies exist between the SQA results from the lower environments. • Verify that the necessary defects in ATS have been resolved and their resolution is appropriately measured and documented in the tool. • Verify that the necessary risks, issues and action items in PMC have been resolved and their resolution is appropriately measured and documented in the tool. • Work with the operations team to establish processes and procedures for ongoing monitoring and reporting on system performance post production deployment.	• Verifying that the defects, risks, issues and action items are properly resolved at the end of the project helps validate that the requirements were properly implemented meeting the business needs. • By establishing the process and procedures to perform ongoing monitoring and reporting on system performance, DPW is able to quickly identify any impacts to system performance by changes in end user usage, the system environment or other external factors.

Figure 6.5-113. Deloitte Approach to Meeting, Measuring, Tracking and Monitoring Performance Expectations.

With our broad approach to meeting, measuring, tracking and monitoring performance expectations across the SDLC, Deloitte has excellent visibility into the activities being performed by the Lot vendors to validate that application modification requirements are being met by the system and delivered on-time with minimum defects. Following a proven methodology to software development, discussed in *Section 6.5.1, Methodology, Approach and Experience*, during the design phase results in clear, broad documentation on application modification requirements. After completing the DSD and development based on the Lot 6 vendor's GSD, we monitor a rigid SQA process to verify that no gaps exist between the system implementation and the GSD. More information on our approach to monitoring the SQA process can be found in *Section 6.5.2.3, Supporting the Process of Achieving Software Quality*.



Bring Qualified Resources to Support Key System Modifications

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Lot #7 Offeror must describe in detail: 1) The resources required to support Application Modifications/Enhancement tasks including skill sets and experience

The resources required to support Application Modification are provided in the following section: Staffing Chart. Skill sets and experience are listed by role in *Section 8.4, Staffing Narrative*.

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RFP Reference: Applications Modifications/Enhancements Required Items

The Selected Lot #7 Offeror must describe in detail: 2) The associated organizational chart.

The organization chart for the Application Modifications team is provided below. As the chart illustrates, when putting together a team to execute on an initiative, Deloitte has the ability to draw from a ready team of individuals with functional, application, and competency experience.

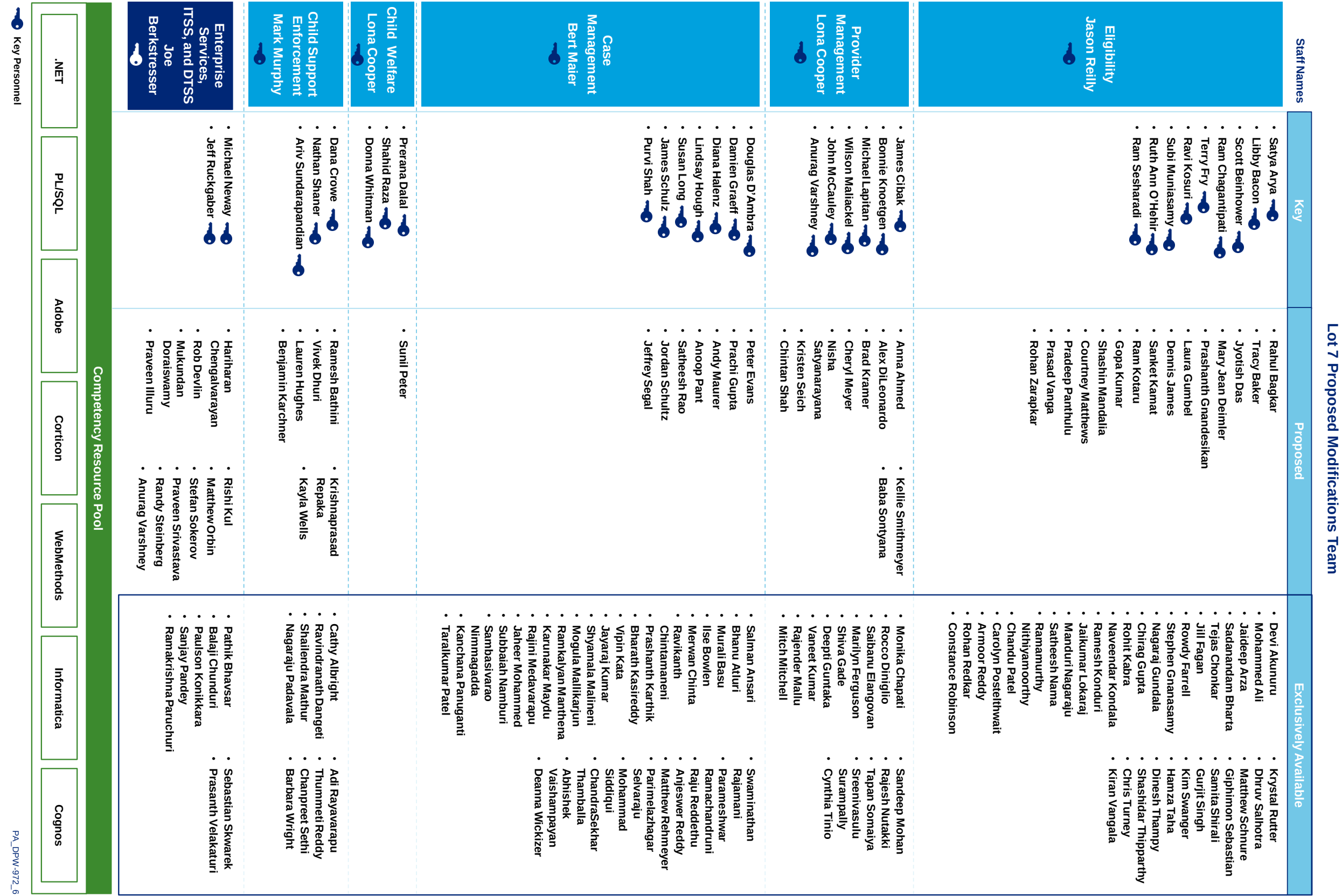


Figure 6.5-114. Application Modifications Organization Chart.

The Application Maintenance team includes a mix of resources with different competencies, business functional knowledge, and application experience.



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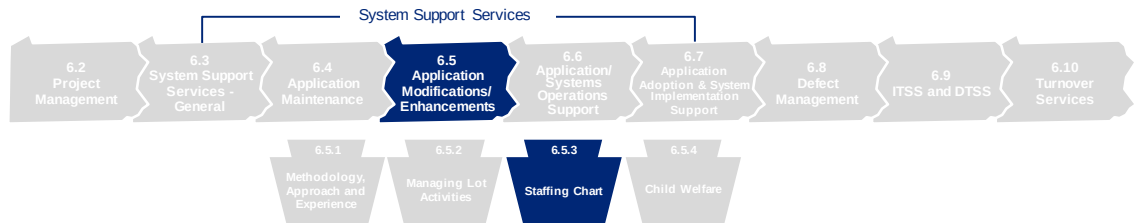
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RFP Reference: Applications Modifications/Enhancements Required Items

NOTE: The selected Offeror will assist in assessing the impact on other applications for any modifications to the in-scope systems. Should there be multiple vendors involved in the support of other applications; the selected Offeror must work collaboratively in the assessment and implementation of any application changes that impact other applications. The selected Offeror agrees to cooperate with any other selected Offerors, and shall not commit or permit any act that may interfere with the performance of work by any other Contractor.

Deloitte has been a trusted partner of DPW's for over 30 years. We will work collaboratively to assess and implement application support services activities and facilitate coordination amongst other selected Offerors to form one cohesive team.

6.5.3 Staffing Chart



PA_DPW-205c_6

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RFP Reference: II-3. Work Plan

Provide staffing charts for the ongoing operational Activities and Tasks that show the proposed staff by labor category and job function.

Provide a role/description table for the Offeror's proposed staffing roles for all Activities and Tasks to support the requirements of the RFP. A description of the duties and functions to be performed by the staffing role must be indicated.

Proposed Staff by Labor Category and Job Function

The resources required to support Application Modifications will vary based on the currently planned modifications. The names listed below include staff that our team has available to support the planned modifications, subject to final confirmation of scope.

Eligibility

Proposed Staff	Labor Category/Job Function
Reilly, Jason	Portfolio Coordinator
Bhatti, Ajmad	Application Team Lead
Chagantipati, Ram	Application Team Lead
Fry, Terry	Application Team Lead
Kosuri, Ravikiran Doraraju	Application Team Lead
Muniasamy, Subi	Application Team Lead
Puthuparambil, Sijumon	Application Team Lead
Schnure, Matthew S	Application Team Lead
Sesharadi, Ram	Application Team Lead
TBD iCIS A-7	Application Team Lead
Arya, Satya	Sr. Developer/Analyst
Arza, Jaideep	Sr. Developer/Analyst
Bagkar, Rahul Rajanikant	Sr. Developer/Analyst
Beinhower, Scott Alan	Sr. Developer/Analyst
Bharta, Sadanandam	Sr. Developer/Analyst



Proposed Staff	Labor Category/Job Function
Chonkar, Tejas	Sr. Developer/Analyst
Deimler, Mary Jean	Sr. Developer/Analyst
Fagan, Jill	Sr. Developer/Analyst
Gnanadesikan, Prashanth	Sr. Developer/Analyst
Gnanasamy, Stephen	Sr. Developer/Analyst
Gumbel, Laura	Sr. Developer/Analyst
Gundala, Nagaraj Doraswamy	Sr. Developer/Analyst
Gupta, Chirag	Sr. Developer/Analyst
Kabra, Rohit	Sr. Developer/Analyst
Kamat, Sanket	Sr. Developer/Analyst
Konduri, Ramesh	Sr. Developer/Analyst
Kotaru, Ram Arvind	Sr. Developer/Analyst
Kumar, Gopa	Sr. Developer/Analyst
Lokaraj, Jaikumar	Sr. Developer/Analyst
Mandalia, Shashin	Sr. Developer/Analyst
McHenry, Doug	Sr. Developer/Analyst
Nama, Satheesh	Sr. Developer/Analyst
Panthulu, Pradeep	Sr. Developer/Analyst
Patel, Chandu	Sr. Developer/Analyst
Postelthwait, Carolyn	Sr. Developer/Analyst
Redkar, Rohan	Sr. Developer/Analyst
Salhotra, Dhruv	Sr. Developer/Analyst
Schaeffer, Paul	Sr. Developer/Analyst
Sebastian, Giphimon	Sr. Developer/Analyst
Seshan, Prabakaran	Sr. Developer/Analyst
Shirali, Samita	Sr. Developer/Analyst
Sivashanmugam, Saran	Sr. Developer/Analyst
Swanger, Kim	Sr. Developer/Analyst
Taha, Hamza	Sr. Developer/Analyst
Thampy, Dinesh	Sr. Developer/Analyst
Turney, Chris	Sr. Developer/Analyst
Vanga, Prasad	Sr. Developer/Analyst
Zarapkar, Rohan Jairam	Sr. Developer/Analyst
Ali, Mohammed	Application Developer

Proposed Staff	Labor Category/Job Function
Bulumulla, Pasidu	Application Developer
Das, Jyotish	Application Developer
Dondeti, Srikanthreddy	Application Developer
Farrell, Rowdy	Application Developer
James, Dennis	Application Developer
Matthews, Courtney	Application Developer
Nakkani, Kranthi Kiran	Application Developer
Newell, Ken	Application Developer
Nithiyamoorthy, Ramamurthy	Application Developer
Reddy, Armoor Santosh	Application Developer
Sheehy, Timothy	Application Developer
Vangala, Kiran	Application Developer
Bacon, Elizabeth Jeannette	Application Adoption Lead
O'Hehir, Ruth Ann	Implementation Specialist
Rutter, Krystal	Implementation Specialist

Figure 6.5-115. Proposed Staff by Labor Category and Job Function.

Provider Management

Proposed Staff	Role (This is the Master Column)
Brown, Neil R.	Project Executive
Cooper, Lona	Portfolio Coordinator
Knoetgen, Bonnie Mossor	Project Control Analyst
Cibak, James Edward	Application Team Lead
Krahulec, James Thomas	Application Team Lead
Lapitan, Michael Allen Reyes	Application Team Lead
Mccauley, John Carl	Application Team Lead
SmithMyer, Kellie	Application Team Lead
Walker, Robert Irvine	Application Team Lead
Ahmed, Anna	Sr. Developer/Analyst
Chapati, Monika	Sr. Developer/Analyst
DiLeonardo, Alex	Sr. Developer/Analyst
Diniglio, Rocco	Sr. Developer/Analyst
Elangovan, Saibanu	Sr. Developer/Analyst
Ferguson, Marilyn	Sr. Developer/Analyst

Proposed Staff	Role (This is the Master Column)
Gade, Shiva Prasad	Sr. Developer/Analyst
Gupta, Alok	Sr. Developer/Analyst
Mallu, Rajender	Sr. Developer/Analyst
Mitchell, Mitch	Sr. Developer/Analyst
Natarajan, Arun	Sr. Developer/Analyst
Shah, Chintan Nayaneshbhai	Sr. Developer/Analyst
Somaiya, Tapan Viren	Sr. Developer/Analyst
Varshney, Anurag	Sr. Developer/Analyst
Bhemireddy, Kishore Reddy	Application Developer
Boyadjiev, Roumen	Application Developer
Kasani, Pavan, Syed	Application Developer
Kumar, Vaneet	Application Developer
Mohan, Sandeep	Application Developer
Nutakki, Rajesh	Application Developer
Meyer, Cheryl Ann	Application Adoption Lead
Kramer, Brad	Implementation Specialist
Satyanarayana, Nisha	Implementation Specialist
Seich, Kristen Leigh	Implementation Specialist

Figure 6.5-116. Proposed Staff by Labor Category and Job Function.

Case Management

Proposed Staff	Role (This is the Master Column)
Maier, Bert	Portfolio Coordinator
Bowlen, Ilse	Project Control Analyst
Beeman, Kyle	Application Team Lead
Graeff, Damien	Application Team Lead
Hough, Lindsay	Application Team Lead
Pant, Anoop	Application Team Lead
Rao, Satheesh	Application Team Lead
Shah, Purvi	Application Team Lead
Ansari, Salman	Sr. Developer/Analyst
Basu, Murali	Sr. Developer/Analyst
D'Ambra, Douglas Joseph	Sr. Developer/Analyst
Evans, Peter J.	Sr. Developer/Analyst



Proposed Staff	Role (This is the Master Column)
Maurer, Andy Nathan	Sr. Developer/Analyst
Rehmeyer, Matthew	Sr. Developer/Analyst
Schultz, Jordan Robert	Sr. Developer/Analyst
Segal, Jeffrey David	Sr. Developer/Analyst
TBD-11-BTA	Sr. Developer/Analyst
Allala, Mahender	Application Developer
Atluri, Bhanu Kiran	Application Developer
Bastiampillai, Jude	Application Developer
Chinta, Merwan	Application Developer
Chintamaneni, Ravikanth	Application Developer
Karthik, Prasanth	Application Developer
Kasireddy, Bharath	Application Developer
Kata, Vipin Kumar	Application Developer
Kumar, Jayaraj Darla	Application Developer
Malineni, Shyamala	Application Developer
Mallikarjun Goud, Mogula	Application Developer
Manthena, Ramkalyan	Application Developer
Maydu, Karunakar Reddy	Application Developer
Medavarapu, Rajini	Application Developer
Mohammed, Jaheer	Application Developer
Namburi, Subbaiah Chowdary	Application Developer
Oleti, Praveen Kumar Reddy	Application Developer
Panuganti, Kanchana	Application Developer
Patel, Taralkumar	Application Developer
Rajamani, Swaminathan	Application Developer
Ramachandruni, Parameshwar Rao	Application Developer
Reddethu, Raju	Application Developer
Reddy, Anjeswer	Application Developer
Selvaraju, Parimelazhagar	Application Developer
Siddiqui, Mohammad Arif	Application Developer
Thamballa, ChandraShekar	Application Developer
Vaishampayan, Abhishek	Application Developer
Halenz, Diana Marie	Application Adoption Lead
Long, Susan	Sr. Implementation Specialist

Proposed Staff	Role (This is the Master Column)
Bogden, Louis	Implementation Specialist
Burgess, Jonathan N	Implementation Specialist

Figure 6.5-117. Proposed Staff by Labor Category and Job Function.

Child Welfare

Proposed Staff	Role (This is the Master Column)
Raza, Shahid	Application Developer
Seelam, Ravi	Application Developer

Figure 6.5-118. Proposed Staff by Labor Category and Job Function.

Child Support Enforcement

Proposed Staff	Role (This is the Master Column)
Murphy, Mark	Portfolio Coordinator
Wright, Barbara	Project Control Analyst
Albright, Cathy	Project Administrator
Shaner, Nathan	Application Team Lead
Sundarapandian, Ariv	Application Team Lead
Bommisetty, Swarna	Sr. Developer/Analyst
Dangeti, Ravindranath	Sr. Developer/Analyst
Karchner, Benjamin	Sr. Developer/Analyst
Bathini, Ramesh	Application Developer
Cannon, Thomas	Application Developer
Dhuri, Vivek	Application Developer
Madamanchi, Manoj	Application Developer
Mathur, Shailendra	Application Developer
Padavala, Nagaraju	Application Developer
Rayavarapu, Adi	Application Developer
Reddy, Thummeti Sreekanth	Application Developer
Repaka, Krishnaprasad	Application Developer
Sethi, Chanpreet	Application Developer
Crowe, Dana	Sr. Implementation Specialist
Groff, Cherie	Implementation Specialist

Figure 6.5-119. Proposed Staff by Labor Category and Job Function.

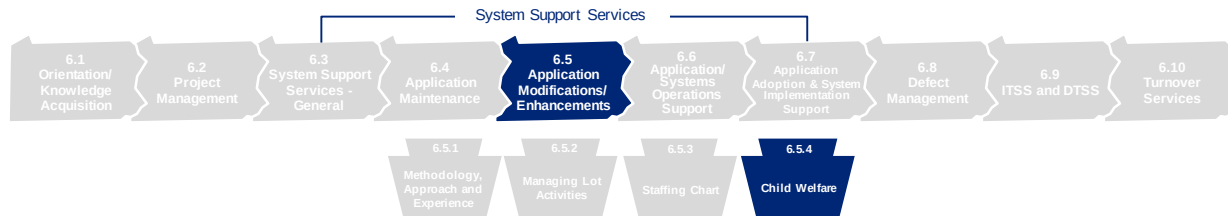


Enterprise Services, ITSS, and DTSS

Proposed Staff	Role (This is the Master Column)
Berkstresser, Joe L.	Shared Services Manager
Steinberg, Randy Alan	Quality Manager or Software Process Engineer
Devlin, Rob	Software Quality Assurance Specialist
Doraiswamy, Mukundan	Chief Database Architect
Kesavan, Vinod K.	Systems Architects
Skwarek, Sebastian	Systems Architects
Chengalvarayan, Hariharan	Systems Configuration Specialists
Brohi, Husam Ali	Security Specialist
Srivastava, Praveen	Security Specialist
Loka, Vineeth	Sr. Application Developers
Anand, Ravi K.	ITSS and DTSS Team Member
Drag, Richard	ITSS and DTSS Team Member
Konikkara, Paulson	ITSS and DTSS Team Member
Paruchuri, Ramakrishna	ITSS and DTSS Team Member
Sahai, Sanjay	ITSS and DTSS Team Member
Velakaturi, Prasanth	ITSS and DTSS Team Member

Figure 6.5-120. Proposed Staff by Labor Category and Job Function.

6.5.4 Child Welfare



PA_DPW-205d_6

IV

Page
IV-202

RFP Reference: Lot#4, Child Welfare IT Consulting Services

Child Welfare Central Repository DSD through Implementation, Lot #7

The Child Welfare Central Repository represents a significant and critical initiative for DPW. Deloitte has a 30 year history of delivering successful technology solutions to Pennsylvania. We build on this legacy and combine it with our experience with Child Welfare to deliver a solution that helps you meet state and federal reporting needs and program monitoring more efficiently.

As an experienced HHS and child welfare systems integrator, we understand DPW's need to implement an automated Child Welfare solution that will integrate the 67 County Children and Youth Agencies with a broad human services enterprise in order to streamline business practices and processes while providing a centralized platform for federal reporting requirements and program monitoring.

We understand DPW has decided on a non-SACWIS, hybrid approach as its long-term solution for Child Welfare and that the hybrid approach will be planned and implemented over the span of five years while initiating an interim plan to consolidate and help transition counties onto sustainable case management systems in order to support county case management needs and provide DPW with information required for federal reporting.

Planning and implementing the interim plan is critical to DPW achieving their vision of a fully integrated and automated Child Welfare system, and DPW is taking the first right step in laying the foundation for standardized data collection through a Child Welfare Central Data Repository (CWCDR).

Deloitte will collaborate with DPW, Lots 1-5 vendors, and the Lot 6 Vendor to deliver an implementable Detailed System Design for the Child Welfare Centralized Data Repository.

Relevant Experience

Deloitte is a leader in creating information management solutions, similar to the Pennsylvania Child Welfare Data Repository, across a variety of State agencies and industries. We have collaborated with public sector agencies to transform data into information—a transformation from disconnected pieces of raw data to unified insight from which decisions can be made and meaningful reports can be generated.

Our experience provides us with an in-depth understanding of the business environment and information needs for public sector and child welfare data reporting, and we have been able to help our public sector clients evolve their information systems into centralized data repositories.

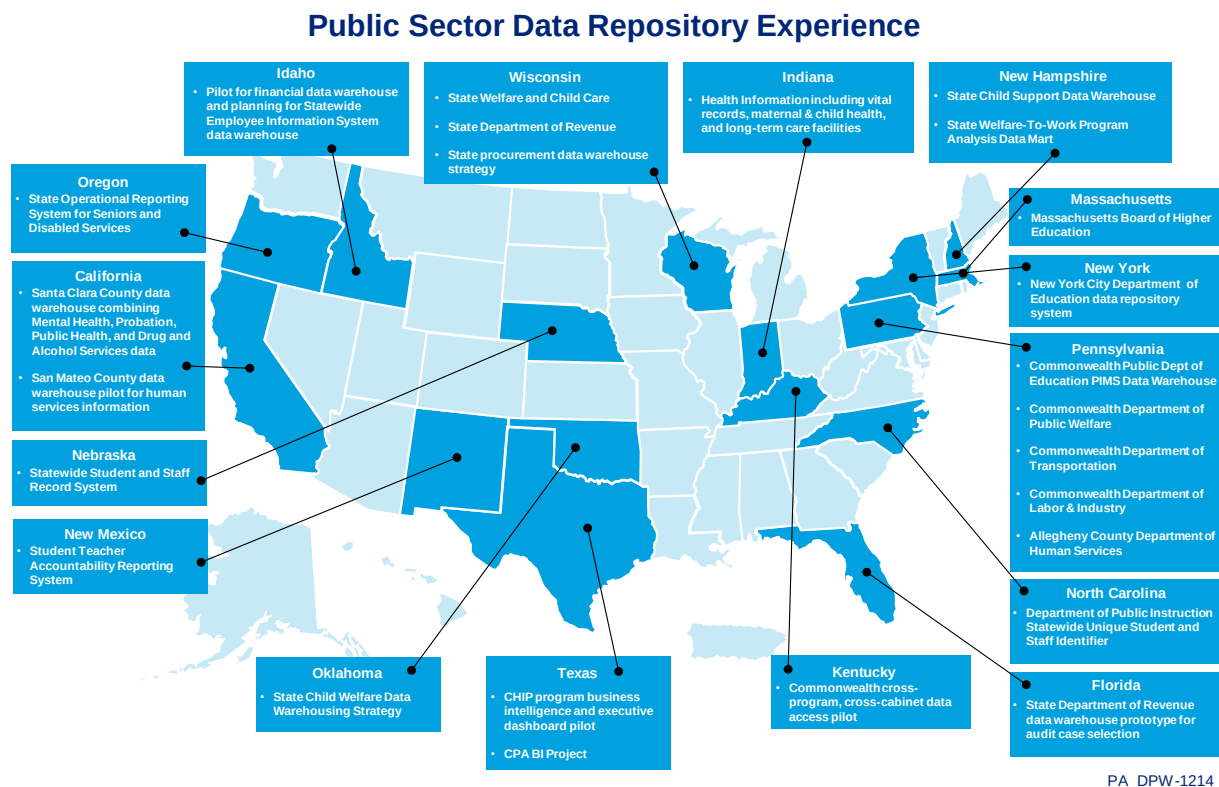


Figure 6.5-121. Deloitte's Public Sector Data Warehousing Experience.

We bring a wealth of experience to deliver a quality design for the Pennsylvania Child Welfare Data Repository.

Deloitte offers an experience to DPW with our background in delivering data integration and storage systems across the Pennsylvania state agencies. We highlight three of our relationships with Pennsylvania below that enable us to bring familiar methodologies, leading practices and lessons learned forward.



Allegheny County Department of Human Services Data Warehouse

Deloitte also worked with Allegheny County, Pennsylvania to develop an enterprise data warehouse to support the delivery of services across the County's major county program areas including behavior health, mental retardation, community services, and community relations. In production since April 2001, the DHS Data Warehouse is a result of a 1996 merger of four separate Allegheny County Human Services entities that became the DHS. It was recognized early on that integration posed substantial challenges for the new departments' IT systems since the formerly independent entities stored information on clients, providers, and services in more than 80 disparate databases and systems. There was a significant need to track client demographic and service data across different service areas.

In June of 2007, the DHS Office of Information Management (OIM) was honored at the Computerworld Honors Award night for their design and implementation of the DHS Data Warehouse. The title of Laureate is awarded to "individuals, organizations and institutions around the world, whose visionary applications of information technology promote positive social, economic and educational change."

By December 2007, the Data Warehouse contained more than 15 million client records, received data from 24 independent operating applications, was supplemented with the U.S. Census bureau data, and was made capable of reporting data in "real time"—meaning, if required, the system could be refreshed on an as-needed basis. The near-real time data warehouse is now source independent and allows DHS to load and track client information on a weekly basis. With these enhancements and development to the data warehouse, DHS was able to meet its primary goal of the Data Warehouse enabling data-driven decision making among DHS staff to support better outcomes for the individuals and families that DHS serves.

Pennsylvania Home and Community Services Information System (HCSIS) Data Warehouse

Deloitte helped DPW transform the HCSIS information system by developing a data warehouse that allows the HCSIS data to be supplemented by other DPW systems, including DPW's Master Client Index (MCI) and Master Provider Index (MPI). The HCSIS DW is the primary source for monitoring and reporting for the HCSIS system.

HCSIS and the HCSIS DW were initially developed as the information management tools for DPW's ODPMR program. The success of this initiative, and the value provided by HCSIS and the DW, expanded DPW's vision for HCSIS to become the information management system for the State's federal-waiver programs funded by the CMS. As a result, HCSIS and the DW have expanded to multiple agencies within DPW: ODP's Bureau of Autism Services, OLTL, OMHSAS, OCYF, and OCDEL Bureau of Early Intervention Services. HCSIS also supports the PDA, which is outside of DPW.

Each of these DPW programs use specific modules of HCSIS and corresponding subject areas of the HCSIS DW based upon their service delivery management needs—the system and the data warehouse have truly resulted in multi-agency technology consolidation and standardization. The system management modules and DW subject areas include: Quality/Incidents, Individual Intake, Plan, Service Coordination, Provider, and Financial. HCSIS reaches approximately 5,000 county and central office staff and 1,200 providers, and supports ODPs management of 100,000 cases each year. HCSIS supports the Department's tracking of approximately 340,000 quality management incidents and the management of \$1.5 billion in state and federal funds annually.

Pennsylvania Child Support Enforcement (PACSES) Data Warehouse

The PACSES Data Warehouse supports business intelligence for the Bureau of Child Support Enforcement (BCSE) and the 67 County Domestic Relations Sections to monitor, plan and prioritize their staff activities. Deloitte and the Commonwealth created the Child Support Data Warehouse and DRS Directors' Dashboard to achieve these objectives and give county Directors better insight into their performance. With both federal and state reporting requirements the PACSES Child Support Data Warehouse consolidates and aggregates the appropriate information and allows for the quick delivery of this data to the necessary individuals across the Commonwealth. Specifically the warehouse includes data to support the federal reporting done on a quarterly and yearly basis as well as tracking of key performance indicators that drives funding from the federal government. The PACSES data warehouse supports the following federal Office of Child Support Enforcement reports:

- OCSE 157 – Child Support Enforcement Annual Data Report
- OCSE 34A – Child Support Enforcement Program Collection Report
- Self Assessment

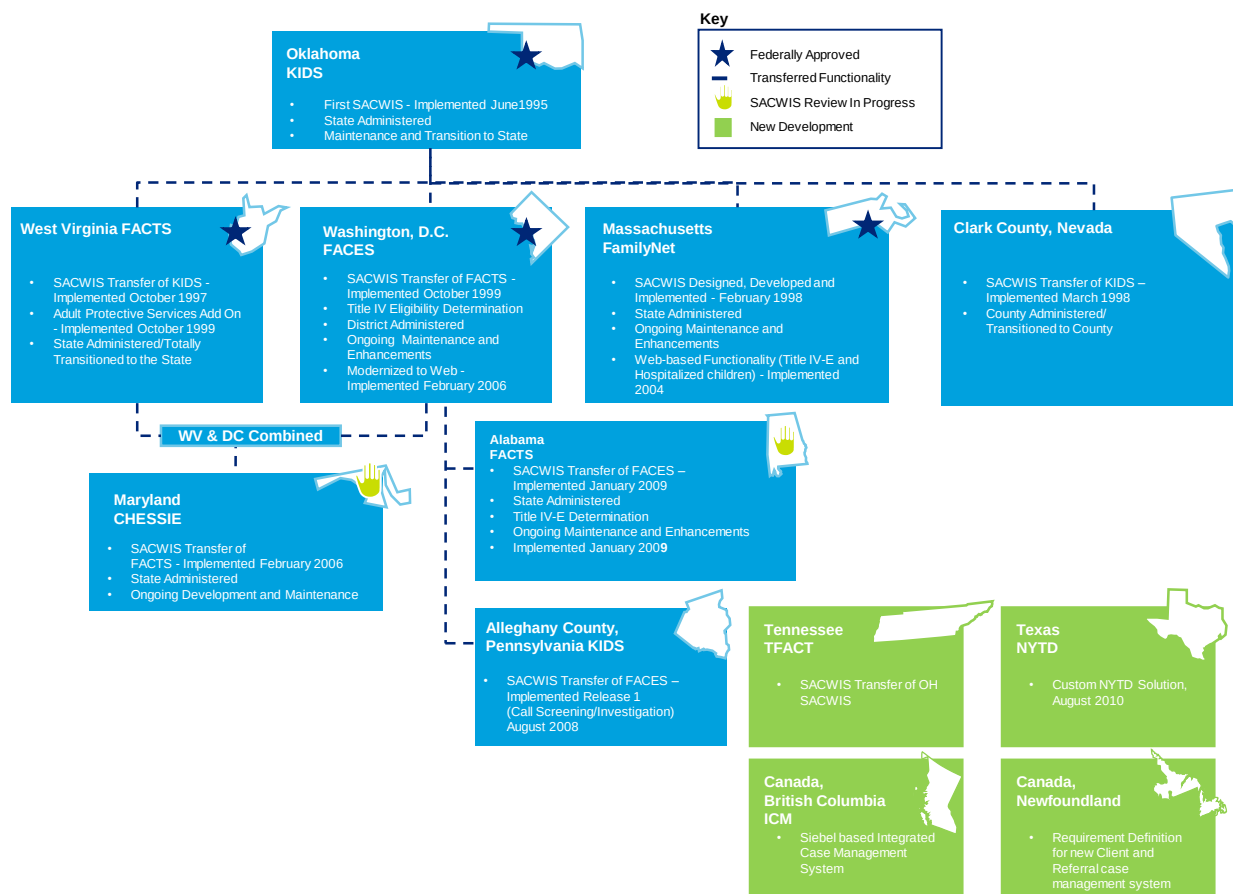
The PACSES data warehouse provides counties with tools that enable them to monitor and track performance on key performance indicators and give management greater visibility into their progress towards performance targets, as well as recommended actions to help improve particular performance areas. It also provides a central repository designed to support the reporting and data analysis needs of the organization and a consolidated view of the information they need to effectively manage their program.

Figure 6.5-122. Deloitte's Relevant Experience to DPW.

Child Welfare Experience

In addition to bringing relevant systems experience, Deloitte offers DPW experience in child welfare and SACWIS. We have a dedicated national Child Welfare practice that focuses on delivering quality business and technology services to our clients. Over the past 16 years, Deloitte has worked with child welfare agencies across the nation to plan, design and implement child welfare and SACWIS solutions. We have served as the prime system integrator in the implementation of six operational SACWIS systems – Oklahoma, West Virginia, Commonwealth of Massachusetts, the District of Columbia, Maryland, and Alabama where four of the six have been federally certified and two are currently in the process of certification. Through this systems integration experience, we fully understand child welfare data, the challenges in establishing relationships between disparate data sources and the need for accurate and meaningful reporting and data analysis.

Deloitte Child Welfare Solution Knowledge – 1995 to Present



PA_DPW-1215_3

Figure 6.5-123. Deloitte's Child Welfare Experience.

Deloitte's Child Welfare experience brings unparalleled capabilities to DPW to offer an insightful perspective on designing the Pennsylvania Child Welfare Data Repository.

Our broad experience of child welfare across the nation provides the foundation of capability and capacity upon which we can bring value to DPW and deliver a quality design for the Pennsylvania Child Welfare Data Repository and ultimately the future vision for an automated Child Welfare system within a broad human services enterprise architecture.

NIEM Experience

Unique to Deloitte, is our experience with helping federal and state departments drive the adoption and use of the National Information Exchange Model (NIEM) throughout their organization for standardized data sharing. Since 2007, Deloitte has helped the Department of Homeland Security (DHS) Enterprise Data Management Office (EDMO) drive the adoption of NIEM throughout DHS and other Federal agencies as well as to a broader NIEM community. Deloitte works with DHS EDMO to mature the NIEM program and run the Sharing Exchange Services (ISES)/NIEM PMO. As the NIEM PMO, Deloitte focuses on the following:

- Heighten the level of adoption for NIEM through supporting development of Information Exchange Package Documentation (IEPD)
- Communicate the business value of NIEM;
- Increased NIEM committee support through NIEM business, technical and communications subject matter experience;
- Further mature the NIEM program through a more robust Communications and Outreach Strategy, provide support for Code List Governance and Management within NIEM, and updating existing NIEM documentation; and
- Support the development of a functional standard for Cargo Screening.

We bring to bear our hands-on experience providing program coordination and support to the DHS EDMO to achieve its objective of supporting NIEM adoption and outreach to a wide variety of stakeholders and organizations at Federal, State, Local and Tribal levels of government. In addition, Deloitte has developed and delivered training to many Federal organizations and helped facilitate the NIEM National Training Event, which spread the priorities of the EDMO and PMO to over 500 people from around the world.

We have practical experience with implementing solutions using NIEM to help our clients evolve to an integrated information system. We apply NIEM best practices, and create project specific extension schemas where appropriate. We offer experience with creating enhances processes for generating NIEM exchanges by factoring in SOA architecture features and standardizing the approach to create IEPD's.

New York Statewide Police Information Network (NYSPIN)

The New York State Police awarded Deloitte a multi-year contract to replace their existing 25 to 30 year old NYSPIN message switch system. The MSS connects Law and Justice Entities in the State with the Federal/National integrated justice agencies such as National Crime Information Center (NCIC), National Law Enforcement Telecommunication System (NLETS) and others.

The Deloitte solution interfaces with the NYeNET network and external information sources, such as NCIC, NLETS, New York State Division of Criminal Justice Services (DCJS), New York State Department of Motor Vehicles (DMV), New York State Department of Taxation and Finance (DTF), National Weather Service (NWS), Stolen Vehicle recovery system and others. This enables the State system to evolve from a multitude of 'criminal justice information systems' to an 'integrated justice information system'. In addition to the replaced messaging switch, the project delivers a portal application and "Hot File" application system to provide access to locally maintained investigative data. The National Information Exchange Model (NIEM) is used for business services and are exposed through Web-Services technology to the external metros such as New York Police Department (NYPD), Erie County and Onandaga county thus replacing the legacy NYSPIN ascii tcp/ip protocol. In addition, the NYSPIN solution integrates with non-vendor external systems such as Division of State Police and Division of Criminal Justice Services. It can be integrated with third party applications such as Mobile Data Transmitters (MDT) in troopers' cruisers and PDAs.

Figure 6.5-124. Deloitte Brings Broad NIEM Experience to DPW.

Having broad understanding of NIEM allows our team to effectively design a data repository solution for DPW that is in conformance with NIEM data standards and

proficient utilization of the Family Services domain to support the business needs of OCYF.

Designing the Child Welfare Central Data Repository

As Lot 7 systems integrator, we collaboratively work with DPW and the other Lot vendors to deliver a broad design for the Child Welfare Central Data Repository that will enable DPW to establish interoperability across county, state and external systems, as used by private providers, with a focus on preserving data integrity and producing accurate reporting.

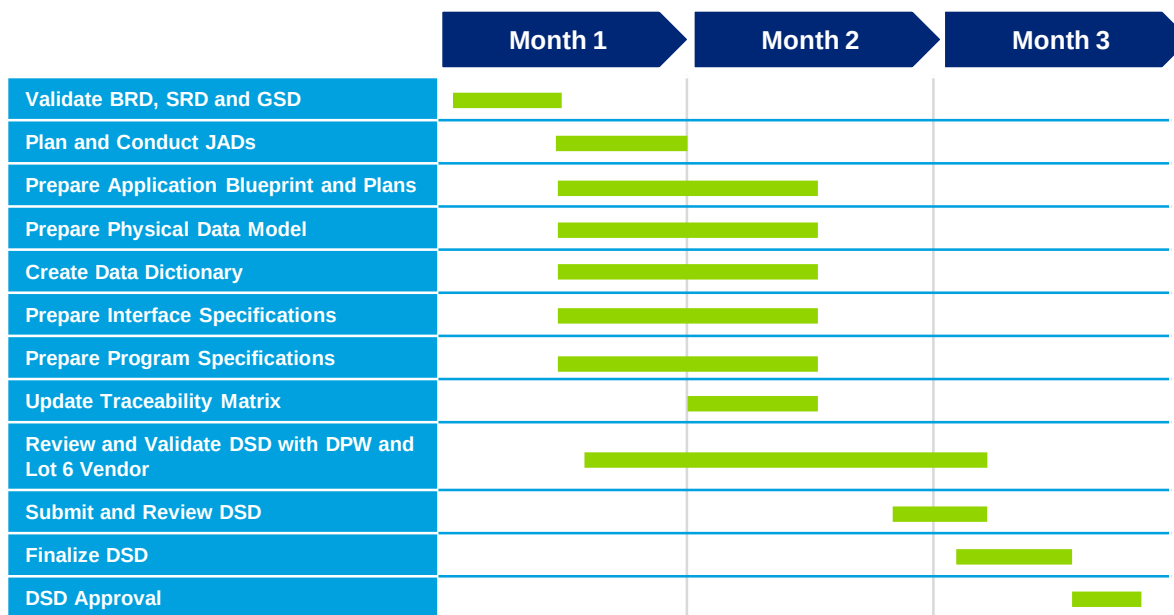
Key attributes of our approach to delivering an implementable design for the Child Welfare Central Data Repository is provided below.

Key Attributes	Description
Standardized Data Structures	We will use the National Information Exchange Model (NIEM) to establish data exchange standards to effectively share information across stakeholders.
Leverage Existing DPW Investments	We will design the Child Welfare Data Repository to comply with and use proven and reusable DPW resources and assets.
Service Oriented Architecture (SOA)	We will base the design on SOA principals to allow for seamless interoperability across interfacing systems where applicable.

Figure 6.5-125. Key Attributes of Child Welfare Data Repository.

Timeline

Understanding the criticality of implementing the Child Welfare Data Repository as the first step in creating a Child Welfare Central Data Repository for Pennsylvania, we work closely with Lot 6 vendor to initiate the design phase in a timely manner upon approval of the System Requirements Document (SRD) and the General Systems Design Document (GSD). We propose a three month design phase to complete the required components of the DSD as outlined by the RFP. The main components of the DSD and associated timeline are depicted in the figure below.



PA_DPW-1216_3

Figure 6.5-126. DSD Timeline.

We apply our DPW IT Methodology to deliver a quality Child Welfare Data Repository DSD.

Approach

We apply our DPW IT Methodology to deliver a quality and broad DSD for the Child Welfare Central Data Repository. We will base the design on the following parameters:

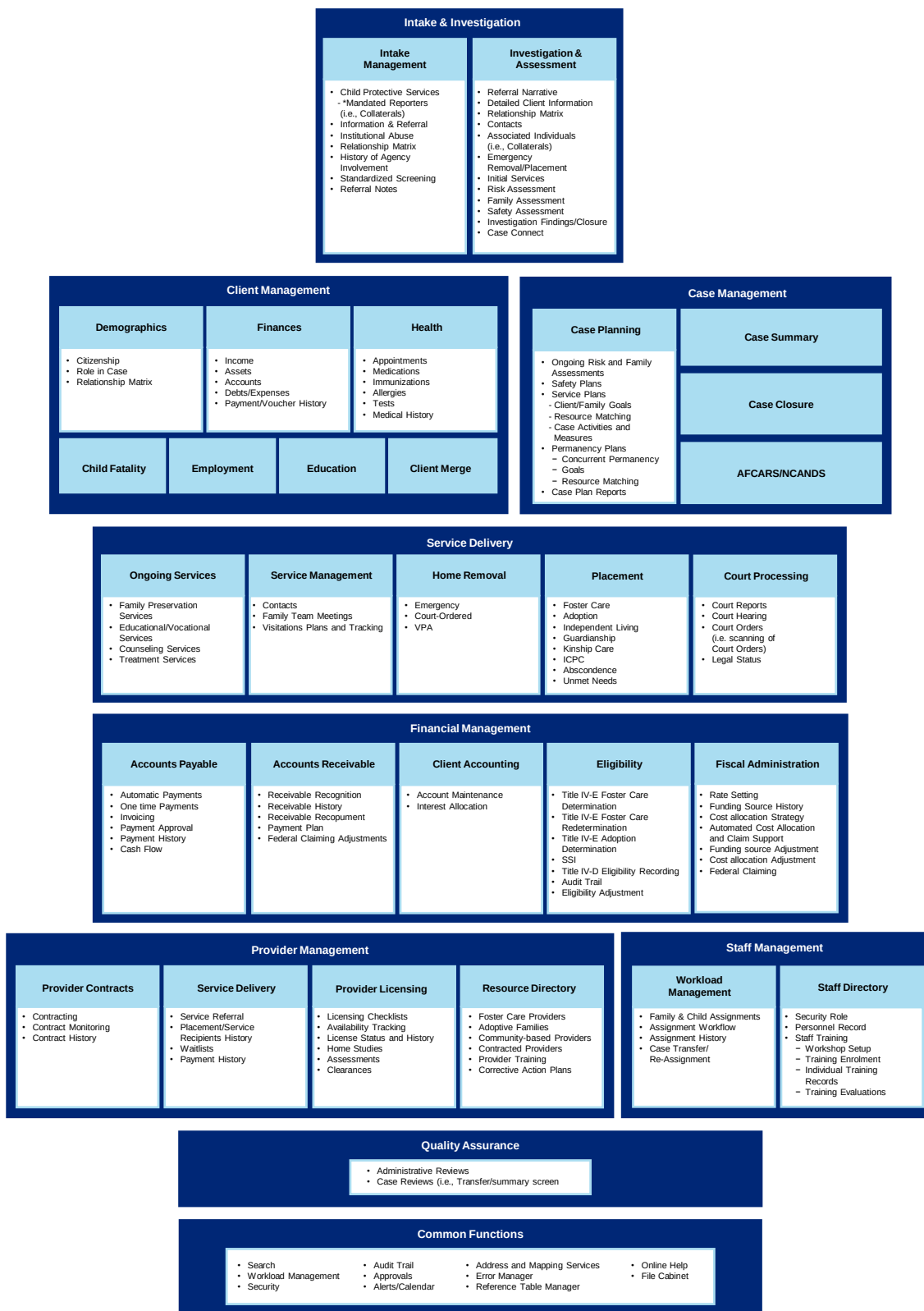
- **Defined number of data elements.** We assume the preliminary data reference model provided by Lot 4 vendor does not exceed 300 data elements based on the NIEM Family Services domain, AFCARS and other pertinent child welfare information to satisfy the business needs of OCYF.
- **Standard XML file layout.** A standard file layout is used by the data exchange source systems (i.e., KIDS, CAPS, FACTS, DPW state systems) to provide required data collection for the repository.
- **Repeatable ETL process.** A standard file transformation and upload process for the data files received from source systems is used to establish a repeatable and proficient process. It is assumed the source systems will design the extraction programs to comply with the provided standard XML file layout.
- **Data Acquisition Transactions.** The data source systems provide the required data for the data repository on a transactional basis, monthly.



Defining Data Repository Core Data Domains

Upon review of the BRD, Data Reference Model, SRD and GSD from Lot 4 and Lot 6 vendors, we work with DPW to prioritize the data repository data domains to address commonly used data by the Office of Children, Youth, and Families (OCYF).

Traditionally in a child welfare or a statewide automated child welfare information system (SACWIS), there can be up to 30-40 core functional areas as illustrated below.



PA_DPW-1325

Figure 6.5-127. Traditional SACWIS Schema.

Deloitte brings broad experience in SACWIS and supporting data model to drive the CWCDR design.

As the state is currently undergoing an effort to achieve common case management processes in the 67 counties by transitioning counties onto sustainable case management systems such as Alleghany KIDS and CAPS, we have defined the initial design release of the Child Welfare Data Repository to include a subset of commonly used and collected child welfare data to lay the ground work for centralized and standardized data structures that will position DPW and OCYF to support federal reporting from the Child Welfare Central Data Repository.

Therefore, we define the core data domains and associated data elements to the following 12 entities and sub-entities.



Figure 6.5-128. We Define the Core Data Domains and Associated Data Elements to the Following 12 Entities and Sub-Entities.

The Child Welfare Central Data Repository data domains are further broken down by data elements as described in the data dictionary and defined by existing NIEM Core, NIEM Family Services domain, or new data elements according to NIEM standards. As described above in our relevant experience, we are uniquely qualified to work with DPW to post extended exchanges to NIEM.

We selected to design the data repository around these core 12 data domains based on our broad knowledge of the child welfare program and SACWIS, and the federal reporting needs. The data domains are comprised of independent and related information such as Date of Birth (DOB) and Placement Episode. A client's DOB is captured in the Client data domain as a unique data element whereas the Placement Episode is captured across data domains – Client, Foster Care, Provider – therefore

each data domain includes foreign key information to create the data relationships in the data repository based on the linking established in the XML based data exchange.

Data Acquisition Plan

As part of the data acquisition plan, we assume the 67 counties provide requested data to populate the Child Welfare Central Data Repository through standardized XML-based formats. If alternative data acquisition approaches are desired, we will work with DPW to identify additional viable methods and prioritize their design against the overall project schedule. In order to estimate the level of effort for the DSD, we propose to design up to 24 data population transactions to upload data into the repository from external source systems such as the 67 county case management systems, across the 12 entities and sub-entities with the assumption that the maximum number of unique data elements does not initially exceed 300 data elements. The data population transactions facilitate the insertion of new data as well as the overlay of updated data to provide the most accurate and up to date information. This allows DPW to populate the Child Welfare Central Data Repository with the latest known data to satisfy key federal reporting data needs. This approach therefore requires no upfront conversion activities are expected as the extraction (completed by source system), transformation, and load (ETL) process handles the first load into the data repository in the same way as subsequent loads. To support the population of accurate data transactions, our approach includes designing file upload validation and error reports.

Design Sessions

We initiate the design phase with validation activities to review and understand the approved BRD, SRD and GSD deliverables in preparation for the joint application design (JAD) sessions where we walk DPW and key stakeholders through the draft design to engage in an interactive working session to receive confirmation of the translation of system requirements to physical design components. The number of JAD sessions is based on the quantity and complexity of the system requirements.

Upon completion of the JAD sessions, we continue to finalize the DSD components as outlined below to produce the DSD.

DSD Components	Component Description
DSD	This document contains information regarding the anticipated scope, expected business outcomes, current and proposed processes, assumptions, and dependencies for this initiative.
Physical Data Model	Provides the physical data model which includes tables, columns and relationships for the CWCDR. This physical data model is separated into subject areas consistent with CWCDR requirements.
Data Dictionary	This document is a detailed listing of the database tables, fields, and reference tables as well as business descriptions. Provides details of the additions, changes, and deletions of tables and fields at the database level.

DSD Components	Component Description
Interface Specifications	The data exchange file layout (schema) using the NIEM standard will be produced that will be used by the various system to feed data in to the central data repository.
Application Blueprint	This document illustrates any changes to the architectural diagram at the in-scope system level and the DPW Enterprise level because of the modification initiative.
Program Specifications (Mainframe) or Class & Sequence Diagrams (Open Systems)	These documents detail the program specifications for new and modified class and sequence diagrams added/updated for the modification initiative. In case of a Mainframe system the technical specification through a Program Specification document.
Final Capacity Plan	The proposed team will refine the capacity plan submitted during the General System Design phase to add more detail which is generally available during the DSD phase.
ECSA (Electronic Commerce Security Assessment)	This document outlines security assessment for the in-scope systems pertaining to the modification initiative.
Updated Key Considerations	This document will highlight areas of the modification initiative's Detailed System Design that were discussed and agreed upon with concerned stakeholders during design meetings as well as any other items that needed to be highlighted. This will essentially refine the Key Considerations documented during the GSD phase.
Updated Traceability Matrix	This document maps requirements in scope for initiative to DSD traceability items.
Updated Work Plan	The proposed work schedule for the Development phase of the initiative will be outlined in the updates to the Work Plan document.
Updated Training Plan (if applicable)	This planning document will be updated based on the DSD to address specific training needs for the CWCDR.
Updated Implementation Plan (if applicable)	This planning document will be updated based on the DSD to address specific implementation needs for the CWDR.
Data Acquisition Plan (if applicable)	This document outlines the data migration process from the source systems to the CWCDR.
Metadata Management Plan (if applicable)	This planning document will be updated based on the DSD to address specific metadata management needs for the CWDR.
Backup and Recovery Plan (if applicable)	This planning document will be updated based on the DSD to address specific backup and recovery needs for the CWDR.

Figure 6.5-129. DSD Components and Description.

Upon submission of the DSD, we work with DPW to review the DSD in a timely and proficient manner and address any questions or comments in the same regard in order to deliver a quality and detailed design for the Pennsylvania Child Welfare Central Data Repository.



6.6 Application/Systems Adoption and Operations Support



PA_DPW-200f

II	Page II-2	RFP Reference: II-3. Work Plan

Describe in narrative form your technical plan for accomplishing the work. Use the task descriptions in **Part IV** of this RFP as your reference point.

IV	Page IV-299	RFP Reference: Systems Architecture Lot #6 and Technical Support Services Lot #7

Systems Support Services – The selected Offerors for Lot # 6 and Lot # 7 will be responsible for providing following services for all the in-scope systems identified in this RFP:

iii. Application/Systems Adoption and Operational Support: assist in the deployment and adoption of business solutions and to maintain ongoing operational support of the in-scope applications and associated systems throughout their useful life in live production environments.

Additional RFP Reference: Systems Architecture Lot #6 and Technical Support Services Lot #7, Page IV-377

Deloitte Operations Support team brings the right mix of critical DPW systems knowledge and deployment experience with the in-scope applications and systems, enabling uninterrupted support across DPW's diverse production environments. The team enables Operational Excellence using ITIL-based processes in an expanded shared service model that enhances efficiency, quality, IT delivery service as well as reliable support to DPW in implementing new technologies.

Introduction

Deloitte's Operations Support team provides a demonstrated approach to deployment and maintenance of ongoing operations as well as support for new IT initiatives in complex production environments. DPW's IT environments include a heterogeneous set of six applications with 27 disparate ancillary systems.

Additionally, DPW manages over 25 enterprise services, open system and legacy technologies, batch and online processing, and COTS and custom systems using more than 50 different technology products.

Our approach focuses on the different needs to support these environments. Deloitte has spent over 10 years working with you to assemble the right mix of resources that properly align with your current and future vision. It is safe to say that a six month transition, while covering the basis of what we do, will not replicate the experience our team has working in your environment. Deloitte is the only vendor who will allow you to maintain your current momentum toward your strategic business goals. Any other option will require those goals to be deferred for possibly years while the knowledge base is built. Unfortunately, program office demands will not subside during this period, making for a challenging working environment.

Unique and *Distinguishing* Factors

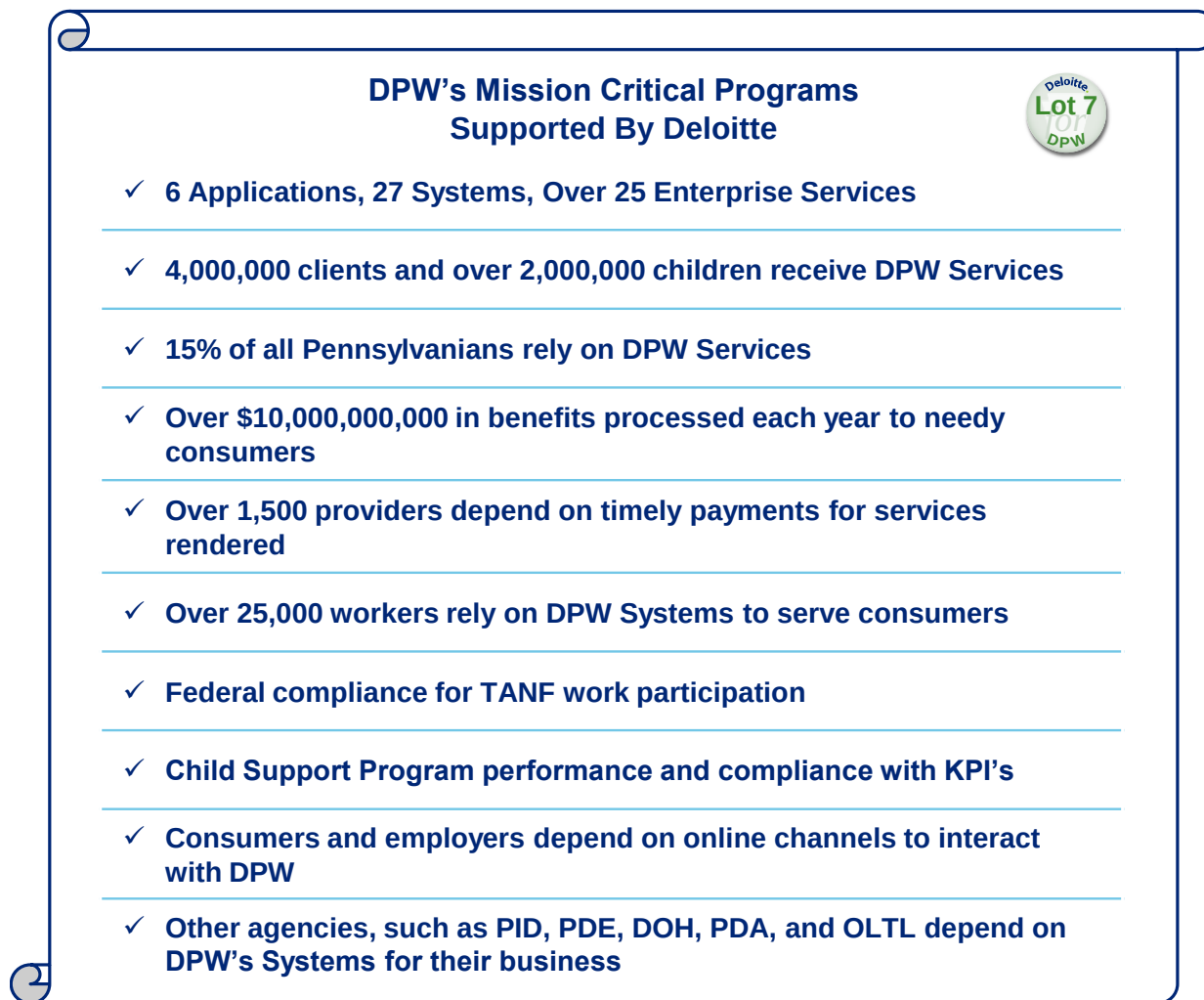


Deloitte Enables DPW Operational Excellence

- Knowledgeable Operations Support Team with over 2,000 years of experience with DPW
- Only team that can meet current SLAs on day one
- Understands DPW business, and IT impact on the Department and citizens
- Decreased risk to DPW, especially with upcoming legislative mandates, e.g. Health Care Reform
- Exclusive teaming agreement with Unisys, bringing infrastructure operations experience



Deloitte Brings Reliable Operational Experience to DPW's Mission Critical Enterprise



PA_DPW-897b_2

Figure 6.6-1. Deloitte's Reliable Operational Experience Supports Mission Critical Operations.

Deloitte understand the complexity, scope and criticality of business processes, and IT systems that are core to DPW service delivery.

The DPW operating environment is extremely complex while its business services are crucial to maintain the support needs for the people of Pennsylvania. The support of DPW operations is critical to operational impacts can have a tremendous, and very public, impact on up to 15 percent of the Commonwealth's population.

We embrace the challenge the complexity and critical nature of your business and look forward to working with you to support your business needs. Our strategy to support these needs will be based on industry leading practices and Deloitte's own blend of experience, methodologies and capabilities.

We use ITIL-based approaches to evolve DPW production operations to elevate DPW to new levels of Operational Excellence.

Deloitte Enables DPW Operational Excellence	Benefits to DPW
Seasoned team with over 2,000 years of combined experience, averaging 6+ year per person, in delivering IT performance in complex DPW environments with diverse systems	• Speeds delivery of value with minimal learning curves • Optimizes use of DPW time and resources • Compliant with Commonwealth and DPW standards, methodology, and guidelines • Lowers risk to DPW and Commonwealth's people
Demonstrated ITIL and CMMI based processes, tools, reports and other re-usable Deloitte assets that extend DPW IT Methodology, enabling continuous uninterrupted service and support	• Minimizes transition risk • Enables effective delivery • Enables continuous improvement approach to Quality • Increases confidence in meeting and exceeding SLAs • Continued security of citizen, partner, and DPW data • Lowers DPW and program risk
Effective production environment planning, upgrade, and monitoring, using automated tools, metrics-based techniques and feedback mechanisms	• Enhances utilization and stewardship of DPW assets • Optimizes use of Commonwealth resources
Expanded support and implementation of new EA-SOA frameworks, shared services model, and advanced technologies	• Improves IT flexibility, efficiency, service • Speeds delivery of value • Lowers efforts, schedule, performance risk • Supports DPW IT leadership position in Commonwealth and nationally
Efficient, knowledgeable support within new multi-vendor operating model, providing mentorship and knowledge to other lot vendors	• Minimizes transition risk • Lowers risk to DPW and Commonwealth's people

Figure 6.6-2. Our Approach Supports Enables DPW Operational Excellence.

We built our approach based on our understanding of DPW's business model and processes, IT system topology as well as a thorough understanding of your strategic business and IT visions. In the past, we have and will continue to support implementation of enterprise architecture frameworks and advanced technologies as part of DPW's strategic evolution to a more flexible SOA-enabled operating platform and expanded shared services model.

Our past and current successes provide DPW with an organization that demonstrates repeatable, positive results for our clients. We feel this evidence is critical when considering an HHS solutions integrator for a project of this size and complexity. To demonstrate our direct and relevant project experience, we feel there is no better voice than you hearing from our clients. On the following page, we are pleased to present DPW with a letter of reference from one of your peers demonstrating our capabilities and character in delivering successful and tangible results in the Health and Human Services programs and IT.

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Child and Family Services Agency



Child Information Systems Administration
FACES
702 H Street NW
Second Floor
Washington, DC 20001
(202) 434-0010 Office
(202) 434-0099 Fax

August 12, 2010

To Whom It May Concern:

Deloitte has been a trusted technology and business partner of the Child and Family Services Agency (CFSA) of the District of Columbia for the past 12 years. In 1998, the District of Columbia contracted with Deloitte Consulting to develop a client server Statewide Automated Child Welfare System (SACWIS), called FACES. Since the implementation, Deloitte has managed all aspects of the systems development lifecycle including system maintenance and enhancements. As a result CFSA had a highly successful client/server system that could support the case management activities but required workers to input information only at their desks.

In October 2004, CFSA engaged Deloitte to redevelop FACES as a web-based system using Microsoft .NET 1.1. The District's challenge to Deloitte was to web enable FACES thus making the system accessible from any location with an internet connection while preserving its stability and maturity. To mitigate this challenge, Deloitte reverse engineered the client/server legacy system to extract all business rules that had to be incorporated in the new system. FACES.NET 1.1 was implemented in February 2006 and included additional functionality related to provider and contracts management and automated workflow.

In 2007, the District realized the need to keep up with the changing technology landscape and to improve user experience. As part of the existing maintenance and support contract, CFSA charged Deloitte Consulting to upgrade from .NET 1.1 to .NET Framework 3.0. The .NET Framework 3.0 sets the foundation for Service Oriented Architecture (SOA). This version of FACES.NET was rolled out to the user base in March 2008. Since then alongside maintaining the system, the Deloitte team worked with CFSA to add the following key functional enhancements to FACES.NET in the recent past:

PA_DPW-1306a

Deloitte's Approach to Enable Operation Excellence

Our approach to Operational Excellence builds on our collective team's current experience in managing production operations while being positioned to adeptly support anticipated future change.

Key Staff Spotlight Joe Berkstresser

ITSS/DTSS Team Lead



"I'm proud to be associated with DPW – organizationally as well as personally. Organizationally, it's very rewarding to know the work we do together makes a real difference in the lives of many people. Personally, I'm proud to be part of a team that's on the cutting edge of technology adoption and global IT service delivery best practices."

Managing Current Production Operations

Operational excellence starts with a thorough understanding of the existing business and computing landscape. DPW's core enterprise IT applications are large and complex as a result of intricate federal and state policy, financial and fiduciary requirements, evolving technologies and expanding service options. The Department provides mission critical services to its people, providers, DPW program stakeholders, and other Commonwealth departments and Federal agencies leveraging scalable, high availability solutions. Deloitte understands the production criticality of these various mission critical systems, the diverse technical and operational knowledge required to support these systems and the business impacts if these processes are not executed smoothly on a daily basis.

The following table highlights some of the operational considerations of your core systems and business processes that must be considered when providing operational support:

Application	Deloitte Understands the Characteristics of DPW Operational Support
I-CIS	• Suite of applications that comprises the core of DPW systems, including substantial mainframe COBOL processing • Manages disbursements in excess of \$1 Billion annually • Provides key delivery of benefit services such as eligibility determination, funds disbursement, vendor payments, case management and client intake • Supports multiple Program Offices and Departments including PID, Aging, Health and Education • High probability that Health Care Reform legislation will have large impacts to operating logistics and processing • Undergoing a substantial transformation as legacy mainframe components are being transitioned to the open system platform as part of Incremental Renewal Phase 4B



Application	Deloitte Understands the Characteristics of DPW Operational Support
HCSIS	- Core case management and financial management application managing Health and Human Service waiver programs - Over 15,000 registered Commonwealth and business partner users, who use HCSIS repeatedly for delivering business services - Requires adherence to Federal Agencies including CMS
PACSES	- The Commonwealth leads the nation in child support collection/management metrics - The program manages over \$1.6 Billion of dollars in child support payments annually - Core business processing engine is mainframe COBOL based - Combines with additional open system applications to create the PACSES suite of applications, including Quick, PTS, PHP, Web PACSES and the Child Support Web site
PELICAN	- The Commonwealth leads the nation by expanding child care services to improve developmental outcomes and quality - Child care systems manage development from birth through college
Child Welfare	- Currently supported by multiple applications consuming disparate technologies – some of which are desktop based - Provides systems that capture extremely sensitive data and that are required to be available on a 24x7 basis

Figure 6.6-3. DPW Mission Critical Production Systems and Impact to DPW Operations.

DPW's computing topology is extremely complex managing millions of daily transactions. It requires an understanding of numerous technologies, platforms and operational leading practices.

To augment our team, Deloitte has entered in to an **exclusive** teaming agreement with Unisys to provide specialized mainframe infrastructure and application consultation to our team. This means Deloitte, and only Deloitte, has Unisys experience jointly staffed on our project teams. Deloitte is the only vendor who has direct access to Unisys internal technicians, engineers and architects to help us address application centered design considerations, configurations, tuning and performance challenges. Since the vast majority of your core business transactions continue to be supported by Unisys mainframe technology, this relationship positions our joint team to provide high quality service, and unmatched value, to DPW.



- Expert level Unisys 2200, DMS 1100 mainframe experience and operating system knowledge
- Demonstrated PACSES 'Support Layer' experience and engineering knowledge
- Thorough understanding of CIS functionality especially batch and online architectures
- Premier understanding of OpenTI, WebMethods and other integration solutions
- Substantial familiarity with production topology, DR solutions and BIS relationships



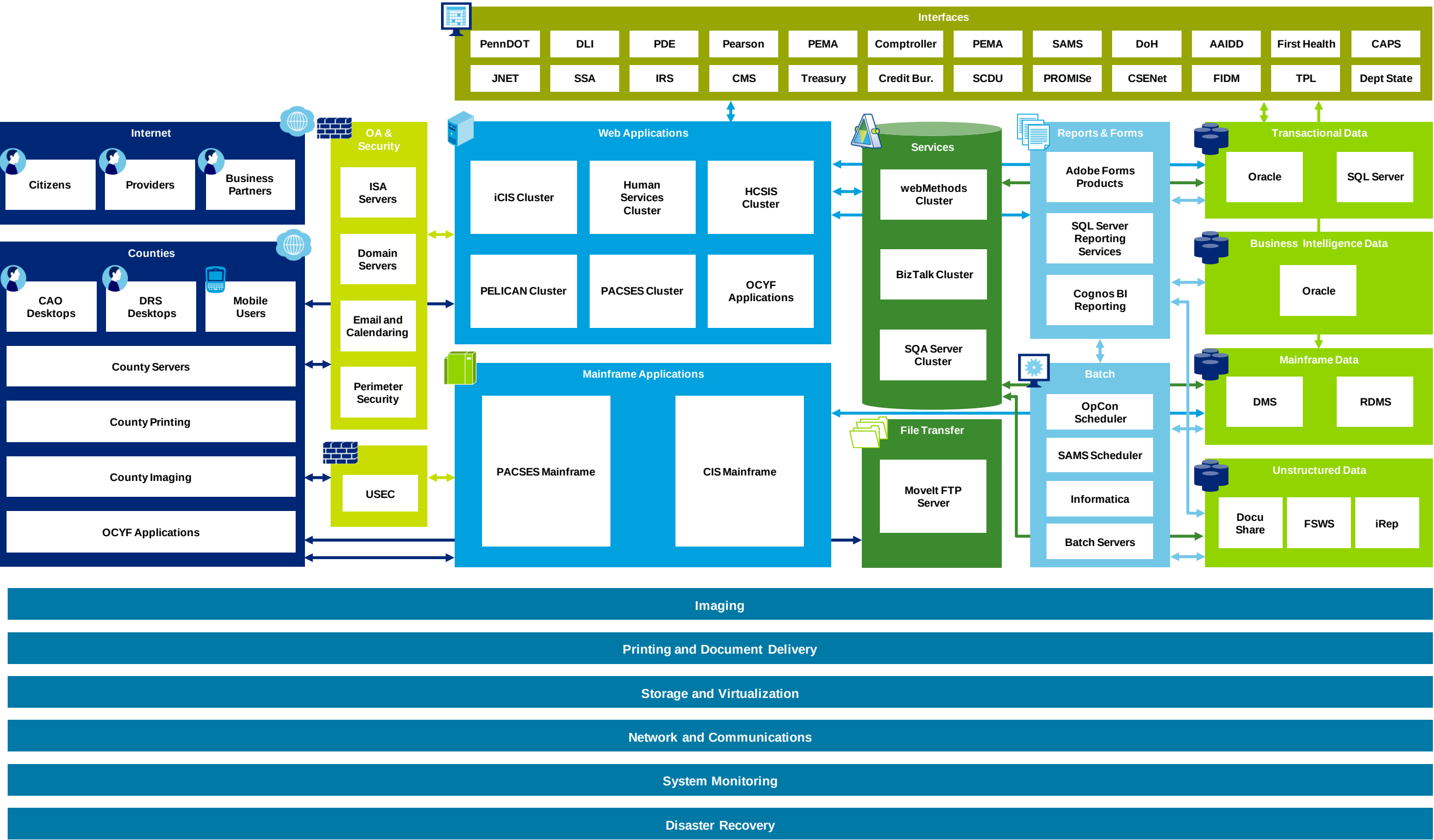
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Figure 6.6-4. The Deloitte and Unisys Teaming Relationship Brings DPW Specific Outsourcing Excellence.
The Deloitte and Unisys team delivers in-depth experience in outsourcing, production operations, and specialized platform support.

Figure 6.6-5 provides a high level view of DPW's current system topology and the complexity of the applications, infrastructure and service integration. Deloitte is the only vendor who can work with you to operationally maintain and manage the complex interactions between systems and infrastructure components as you move forward with your overall service oriented strategy.



Deloitte's Understanding of DPW's Production Topology



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Figure 6.6-5. DPW High Level Production Environment Topology.
DPW Production environments represent a complex set of interconnected environments enabling an enterprise-wide business capability across diverse technical layers and programs.

Deloitte's Operations Support team understands the mission critical nature of the DPW business as well as the configuration, operational details, and intricacies of the environments. We are very familiar with the operational support needs of the in-scope applications through their useful life in live production environments. Figure 6.6-6 describes the DPW environment by production layer and the vital importance of continued Operational service excellence to address your needs.

DPW Production Layer	Deloitte Operations Team Addresses Production Environment Needs
Web Applications	- Managing 4 clusters of 12 production web servers - Support of hybrid COM+/.NET application deployment - Co-location of multiple applications on a single physical server
Mainframe Applications	- Prevalence of older technologies such as MAPPER, COBOL, and ECL that are difficult to support due to dwindling resource availability - Changes to the interaction model with mainframes to support coordination with open system transactions
Batch Operations	- Management of resource constraints across a time-constrained batch window - Distribution of open systems batch across multiple services, services, and physical locations, and requiring coordination with mainframe batch - Heavy dependency on batch operations for critical business processes including financiers, forms, and interfaces
Reporting and Forms	- Generation of millions of forms monthly that require timely printing and dissemination - Physical distribution of printers including DGS central printing and distributed county printing
Database and Business Intelligence	- Use of distributed transactions across mainframe and open systems impacts performance - Increased demand for ad hoc reporting and dashboards
Interfaces	- Management of SLAs and impacts of performance due to interfaces with external organizations - Business processes dependent upon sending and receiving files across business entities
Services	- Rapid growth of services is placing strains on service infrastructure - Service dependencies and versioning require increased governance and coordination
OA and Security	Alignment of timelines and resources with OA resources to meet DPW initiative timelines
County Internet and Access	Complexity of supporting a variety of technologies deployed in the field, including desktops, tablet PCs, imaging infrastructure and other county hardware and software, and access to DPW environment

Figure 6.6-6. Operations Team Mission Critical Support by Production Architecture Layer.



Deloitte's approach enabled by prior experience provides a solid foundation to address DPW production environment challenges. Our team brings detailed knowledge that reduces the time, effort and risk of transition as well as meeting the strategic goals identified in the RFP. The staff is highly experienced in Commonwealth and DPW IT Methodology, standards and tools. Through our support to DPW over the past five years, the team has extended and evolved a set of detailed day-to-day ITIL and CMMI-based operational processes, procedures, tools, reports, and lessons learned.

We have developed metrics-based performance mechanisms in coordination with DPW that consistently support DPW availability and performance SLAs. The team continues its provision of services with no interruption, and DPW benefits by eliminating risks associated with the transition of mission critical production system support.

Managing Future Production Operations Demands

Deloitte's familiarity with the DPW environment goes well beyond today's existing complex DPW technical architecture. As DPW's business and technology requirements continue to shift, so too will the demands and stress placed on the DPW IT operations team. Our Operations Support Team possesses the skills, capabilities, and desire to support both the existing and the evolving needs of the DPW IT organization, including implementation of new business processes and innovative technologies.

This will become increasingly important in the near future given the rapid pace of business and technology change in the state health and welfare environments. These changes will drive the implementation of new business applications and shared services, new technologies as well increased demands on production operating environments. These new business drivers bring increased complexity as well as timely response to new DPW business and citizen support requirements.

Business Drivers Requiring Operational Excellence

Deloitte has identified five industry-wide and Commonwealth-specific business drivers that we believe will bring change to DPW IT operations. The following highlights the business driver, anticipated impacts on DPW, and our recommended approach to address the changing business requirements.

- **Significant Changes in the CAO Operating Models.** Spearheaded by efforts such as OIMs Modern Office study, counties are changing the way they do business, and shifting their operating models to make more effective use of technology. This is increasing imaging volume, bandwidth consumption, hardware profiles, and system usage patterns. The increased use of technology impacts the operational support DPW needs to provide. Deloitte will support the increased volumes with additional managerial and technical services as well as diligent systems resource monitoring of these patterns and capacity forecasting services.
- **Incremental Modernization of the Child Support System.** The PACSES application, like CIS, will involve a significant effort across multiple years to modernize and migrate to DPW's open systems platform. Before this modernization can address



core child support functions on the mainframe, DPW's operations support strategy will need to address a number of factors. These include the impact on DRS Office and employer processing functions, increasing DPW enterprise capacity and throughput requirements as well as additional disaster recovery requirements. Deloitte will support DPW with software and technical platform migration services.

- **Evolution to a Statewide Child Welfare Platform.** The current DPW child welfare solution is based upon a set of county-based and centrally managed applications. While DPW has decided not to develop a single statewide Child Welfare solution, the evolution of the platform towards a statewide enterprise child welfare repository, will impact network and enterprise application architecture and resource usage patterns as interactions shift between OCW and DPW. In addition, retirement and consolidation of systems will impact enterprise data storage and data reporting mechanisms, placing additional demands on these systems. Deloitte will provide DPW operations support in the areas of system blueprints, load testing, and systems resource monitoring and forecasting.
- **Health Care Reform Leads to Robust Data Exchange/HIEs Platforms and Interoperability.** Federal health care reform mandates are driving the rapid rise of health benefit exchanges and efforts to improve the electronic health record infrastructure through Health Information Exchanges (HIEs). These changes are leading to the rise of robust data exchange platforms that will be needed to support the increased level of medical data exchange. Initiatives such as the HIPAA 5010 and ICD-10 transaction standard upgrades are already impacting the DPW enterprise, driving the purchase of new hardware and software required to comply with the transaction mandates. Deloitte will provide IT operations assistance in the area of managerial and technical services required for ongoing operations as well as functioning as a technical liaison to BIS in the area of IT middleware operations.
- **Management of Enterprise Services Consumed by Multiple Program Offices and Business Applications.** As enterprise shared service adoption increases across the DPW enterprise, expectations about the reliability and operations of these services increase as well. Enterprise shared services are now responsible for one or more critical business functions for each of DPW's major enterprise applications. As a result, these enterprise shared services are increasingly being viewed as mission critical to one or more applications, raising the level of expectations on the operations support team around load testing, capacity planning, monitoring, and service management. Deloitte will support DPW through managerial and technical services to support operations.

New Technologies Requiring Operational Excellence

We understand the DPW EA-SOA strategy including the evolution to a more consistent, flexible open systems operating platform across DPW's technical architecture. Our Operations Support Team members and team leadership are well versed in technologies that will have an impact on DPW's IT operations in the coming years.

Deloitte provides both its clients and consultants access to high quality knowledge capital as well as hands-on and computer-based training in these technologies.

Access to this type of leading edge thinking and experience enables our Operations Support Team to remain a step ahead. Deloitte proactively helps our clients to understand, assess, and prepare for technology trends that will shape IT operations in the future. What differentiates Deloitte is our ability to use this IT operations knowledge in conjunction with our DPW program-specific knowledge to assist DPW in making progressive, forward-looking IT operations decisions. We anticipate significant change based upon our understanding of the DPW production environment as well as leading IT Operations drivers in the IT industry and in state government HHS organizations. Based on futuristic trends in operational sectors, we anticipate the DPW production environment will evolve as rapidly, if not more rapidly, over the next five years as it has in the past five years. Figure 6.6-7 outlines the technology trends we expect will shape and impact the DPW production environment in the near future.

IT Operations Trend	Impact to DPW Production Environment	Deloitte's Proactive Approach Benefits DPW
Enterprise Information Management	- Increased demand for business intelligence services impacts production reporting and database infrastructure - Increased storage of unstructured data in the form of documents and images drives the need for an enterprise ILM implementation	- System resource monitoring and forecasting that proactively addresses production challenges - Facilitate solutions to support business systems data and information life cycle management requirements
Operations Methodology - ITIL	New system monitoring tools and methodologies to support excellence in IT operations	Response time monitoring and problem resolution
Cyber Security	Increase in security infrastructure in the areas of perimeter security, IAM infrastructure, vulnerability management and auditing	- Security vulnerability assessments and resolution - Security implementation and monitoring
Virtualization	- Decreased reliance on physical hardware - Increased ability to scale infrastructure on demand - Overhead of managing virtualization, SAN, and licensing	- Maintain application environments and version control - Software release management and emergency implementation - System resource monitoring and forecasting - Systems operating systems that transcend operating platforms
Services Thinking	- Increased capacity of middleware software and the SOA infrastructure - Focus on governance of enterprise services used across program offices	- Technical liaison with BIS - Managerial and technical services required to maintain the ongoing operations

IT Operations Trend	Impact to DPW Production Environment	Deloitte's Proactive Approach Benefits DPW
Cloud Computing	- Complexity of physical (virtual) cloud multitenant environment drives improvements in IT operations - Focus on the security of data across the cloud environment	- Response time monitoring and problem resolution - Security implementation and monitoring

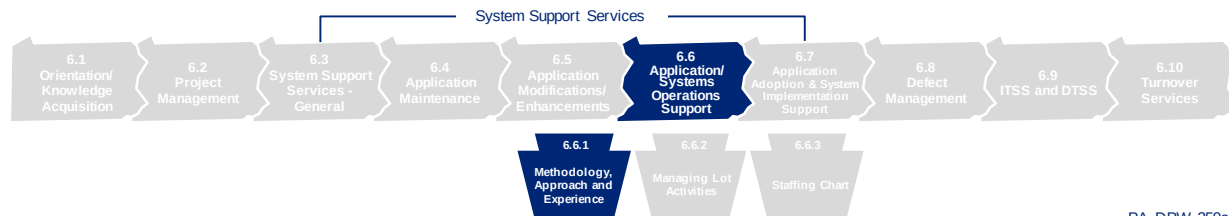
Figure 6.6-7. Drivers and Changes in the Future DPW Production Environment.

While it is not possible to say with certainty exactly what the DPW environment will look like five years from now, we have assembled our IT Operations Team based upon the ability to support both current and future DPW production environments. This includes the ability to augment the team with the latest technology skill sets from Deloitte's pool of resources from across the organization as well as skill sets from our Unisys teaming organization and their vast knowledge of operating platforms.

We propose to provide DPW with on-demand access to this broad set of technology specialists as operations needs arise. These specialists provide valuable insights and the latest thinking with respect to technology trends and implementation lessons learned in Public Sector environments.

Deloitte's highly experienced Operations Support Team has and continues to be fully committed to supporting the mission critical nature of the DPW production environments. We bring the right knowledge and skill mix to support DPW's systems, platforms, and technologies – both now and as they continue to evolve in the future. Our experience with the DPW IT methodology, standards and tools extended by our procedures, tools, reports, and other assets will enable Deloitte to support DPW's performance expectations.

6.6.1 Methodology, Approach and Experience



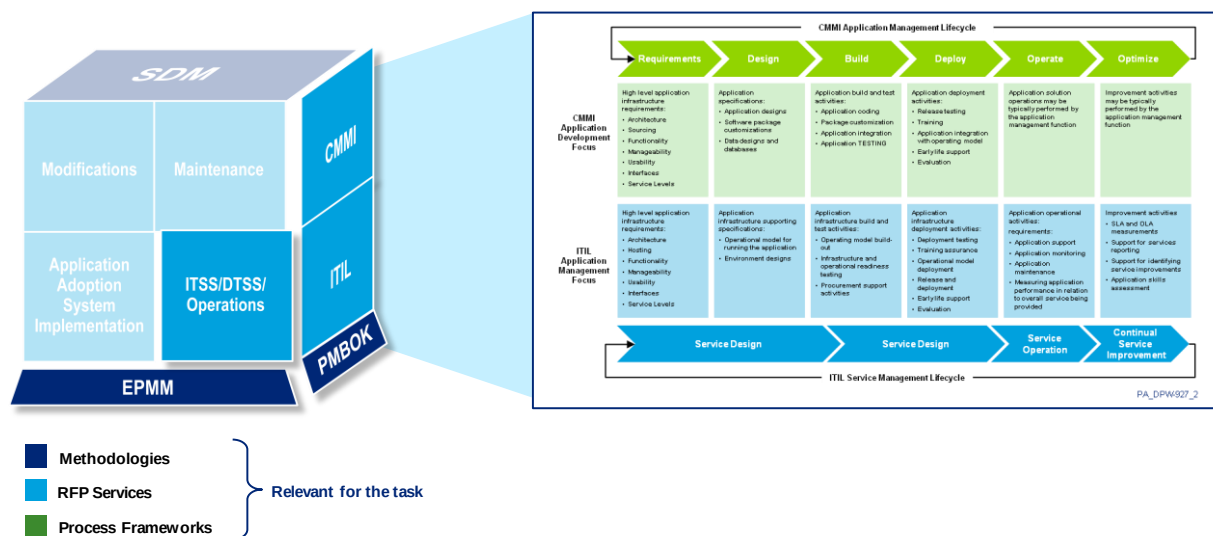
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II	Page II-3	RFP Reference: II-3. Work Plan

Where possible, the Offeror should provide specific examples of methodologies or approaches that will be used to fulfill the various requirements, how these methodologies will be adapted for this contract and implemented, and examples of the Offeror's similar experience and approach on comparable projects.

This section introduces the Methodology, Approach and Experience capabilities we bring to DPW.

Methodology



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Figure 6.6-8. Deloitte Uses Industry Leading Practices, Including CMMI and ITIL to Deliver Quality Services to DPW.

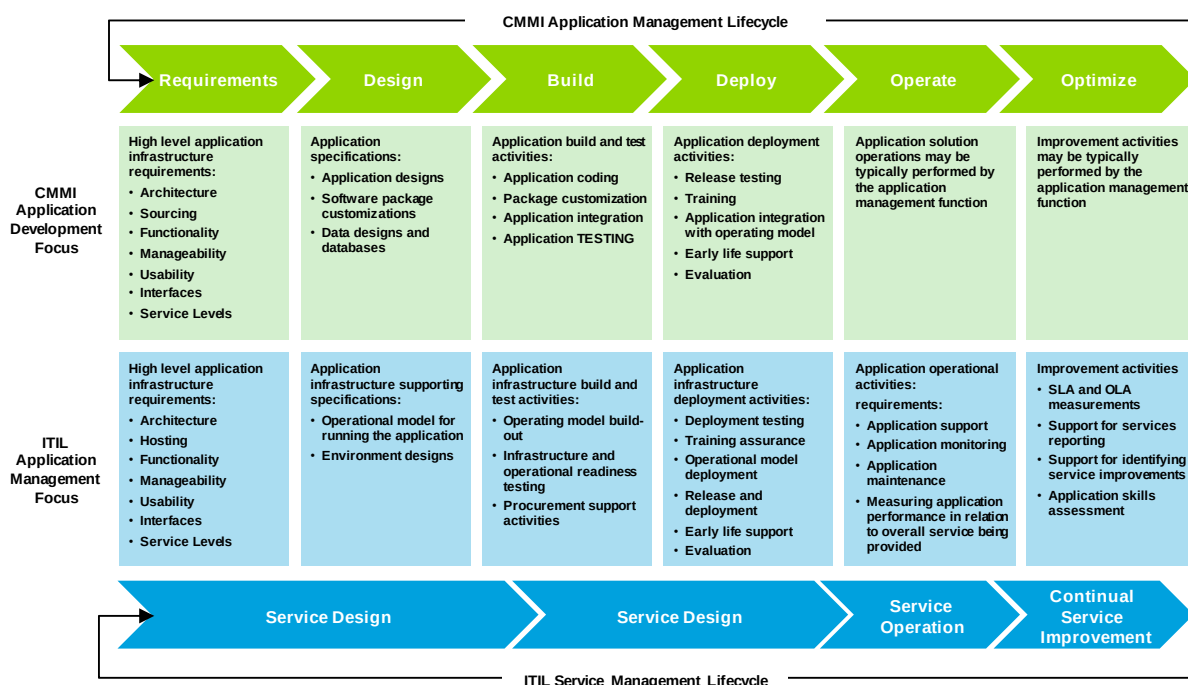
Our industry leading practices are based on ITIL, CMMI and EPMM principles.

Deloitte uses the DPW IT Methodology and its major components as the foundation for Operations Support efforts. In particular, we leverage the CMMI and ITIL components of the methodology to drive consistent, detailed processes in Operations Support, as a part of ITSS/DTSS activities, and in support of Maintenance and Modification efforts.

Operations Support, as a key element of the shared services model, is premised on the services it provides to the teams conducting maintenance and modifications. Operations Support uses a CMMI- and ITIL-driven frameworks that tightly couples the application management life cycle with the application development life cycle.

Deloitte uses the ITIL version 3 application management life cycle for our Operations Support services. Our approach aligns the ITIL process framework with the SDM. Activities that occur within each stage of the application development life cycle are paired with application management support activities to help confirm that application solutions are operable and integrated within the DPW IT infrastructure

Figure 6.6-9 illustrates the alignment of the application development life cycle and application management life cycle within ITIL version 3. Specifically, to the needs of DPW, our ITSS, DTSS, and operations team employ a detailed methodology that employs both the CMMI and ITIL process frameworks.



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Figure 6.6-9. Operations Support Shared Service Methodology.

Deloitte uses a CMMI- and ITIL-based shared service methodology that tightly couples the application management life cycle with the application development life cycle.

Deloitte's approach builds upon the successes gained by DPW in employing CMMI and ITIL as follows:

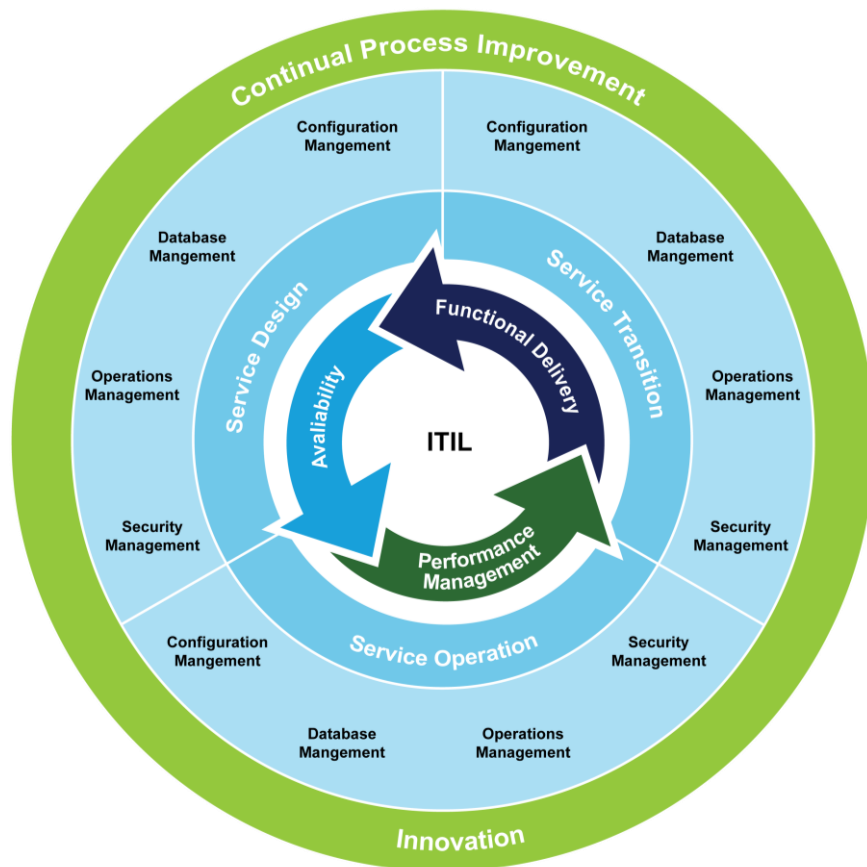
- **CMMI.** The Capability Maturity Model Integrated (CMMI), from Carnegie Mellon's Software Engineering Institute provides application development focus. We use CMMI to guide the development of new software as well as the ongoing maintenance of existing software. The maintenance and modification teams are the primary users of the framework which also forms an important basis for the work performed by

Operations Support. The DTSS, ITSS, and operations organizations align with the CMMI processes used by the maintenance and modifications teams, including the process standards and quantitative measures used by these organizations

- **ITIL.** We use the IT Infrastructure Library (ITIL) version 3 application management framework to guide the implementation of standard IT services for the modification and maintenance teams. Our IT support services consist of both the application development and infrastructure solutions required to support those maintenance and modification teams. We use the framework to guide ITSS, DTSS, and operations activities throughout the full service life cycle, including service strategy, design, transition, operation and continual service improvement.

Applying DPW Methodology

As part of our support effort over the past 10 years, we worked closely with DPW in the development of the Department's IT methodology to meet the ever-growing demands placed on DPW IT and the enterprise. We used the ITIL framework and high level processes as the foundation for structuring our services for DPW, including the Operations Support services. Figure 6.6-10 provides the Operations Support "view" of the methodology framework, as defined by Deloitte.



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Figure 6.6-10. DPW Operations Support Uses an ITIL Framework.

Deloitte teamed with DPW to develop the Department's IT methodology and extended the framework to support each service including Operations Support.

We further extended the methodology into a set of IT activities or “services,” detailed processes, artifacts, outputs and overall body of knowledge that guide our team’s efforts on a day-to-day basis. ITIL promotes the philosophy of managing IT by value-driven services versus by technology capabilities and technology platforms.

The framework simplifies the management of complex IT infrastructures with thousands of assets and moving parts by bundling these into services tightly aligned with DPW business objectives. This level of consistency and predictability has resulted in a CMMI Level 3 assessment for the Deloitte DPW projects.

Operations Support Managed Through ITIL

Based on ITIL, Deloitte operates and manages each Operations Support service through a set of service life cycle stages. The service life cycle contains five stages, including:

- Service Strategy
- Service Design
- Service Transition
- Service Operation
- Continual Service Improvement

Each service relies on processes, functions, activities, organizational models and measurements. Together, they allow IT services to integrate with DPW business processes, provide measurable value and provide the basis for continuous improvement at DPW.

Each service uses a hub and spoke design. It begins with service strategy at the hub, service design, transition and operation as the revolving life cycle phases, and anchored by continual service improvement. Each part of the life cycle exerts influence on the other, and relies on the other for inputs and feedback. In this way, a constant set of checks and balances throughout the Operations Support service life cycle allow DPW to adapt quickly to changes in demand, policy, regulations, budget or other business change.

At the core of Deloitte’s approach is **Service Strategy**. We use this as the basis to create value for DPW based on our strong understanding of DPW objectives. Support activities are bundled into value-driven services and operated through a service portfolio to manage need and demand. In addition, we work with DPW to establish a common operating approach and foundation for governing and moving forward with CMMi- and

Key Staff Spotlight Randy Steinberg

CMMI and ITIL Panel Advisor



“DPW is making tremendous strides towards ITIL adoption and is already ahead of many other states – I really look forward to being part of the team that helps position DPW to become the gold standard in IT supporting the government services delivered to the Commonwealth’s constituents!”



ITIL-based approaches. We use strategies as guides to the overall development of ITIL-based service management capabilities and to improve the alignment between those capabilities and DPW business strategies.

Our **Service Design** approach transforms DPW service strategy into the blueprint for delivering DPW objectives. Our design approach considers not only the technologies, but also the people, processes and governance aspects needed to fully operate each service – in this case, Operations Support services. It includes the changes and improvements necessary to increase or maintain value to DPW stakeholders over the life cycle of services, the continuity of services, achievement of service levels, and conformance to DPW standards and regulations.

Our **Service Transition** approach provides capabilities for introducing new and changed services into live service operation while controlling risk for DPW. This includes leading practices to support change, configuration, asset, release and deployment, with high levels of efficiency while preventing undesired consequences.

Our **Service Operation** approach embodies the leading practices in the management of the day-to-day operation of services. Deloitte recognizes that DPW strategic objectives are finally realized when services are actually delivered, making this stage critical. Our approach includes assisting DPW in the implementation of leading practices in areas such as scheduling of operations, handling service requests and managing incidents and problems.

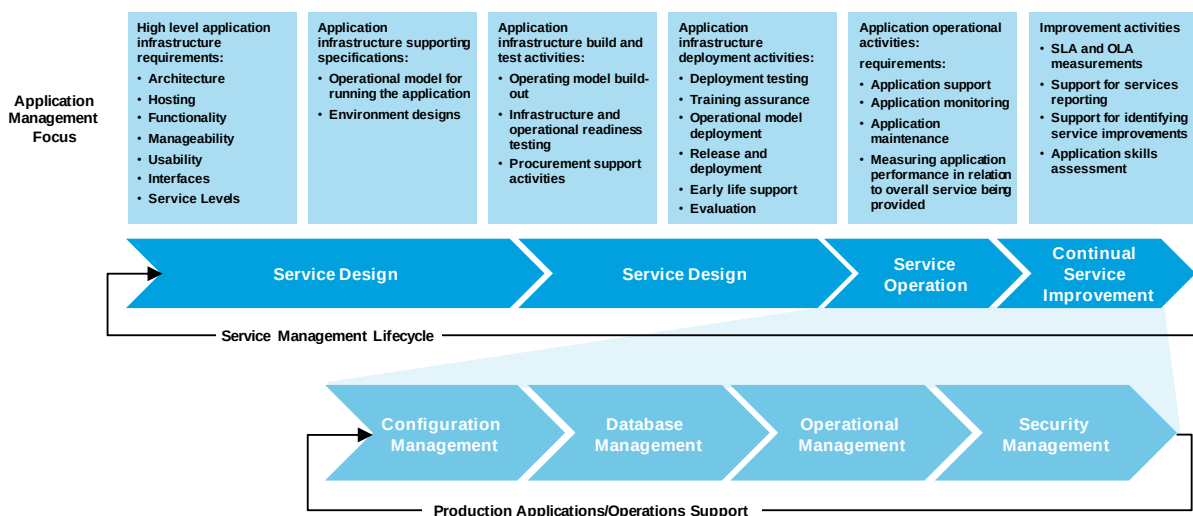
Our **Continual Service Improvement** approach is the cornerstone for creating and maintaining value for DPW stakeholders through better strategy, design, transition and operation of services. As demonstrated by the work of our team, we rely on the use of key metrics, performance baselines and maturity assessments to continually improve the quality of services, operational efficiency and business continuity. We use a closed loop feedback system, based on the Plan–Do–Check–Act (PDCA) Deming Total Quality Management improvement model. For DPW, this model executes improvements over waves of continuous improvement on an ongoing basis.

Within the ITIL service groups of Service Design, Service Transition, and Performance Management, Deloitte defines four major groups of Operations Support services. We manage the quality or service level of each of the four groups based on **Functional Delivery, Availability, or Performance Management**, as applicable. We discuss each of the four major Operational Service groups in detail in the following section.

Approach

Deloitte's ITIL-based approach aligns on-going Operations Support efforts with production application management efforts during the SDM. Supported by CMMI principles, we establish an Operations Support "service" catalog and set of processes for continuous service improvement and potential service expansion, as needed.

Our approach aligns ongoing Operations Support efforts with application management efforts during key phases of the SDM. Figure 6.6-11 depicts Deloitte's primary Operations Support efforts as a Lot 7 vendor.



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Figure 6.6-11. Operations Support Approach for Lot 7 Scope.

Our ITIL-based approach aligns Operations Support efforts with application management efforts and specific phases of the SDM life cycle.

Our Operations Support efforts fully align with the activities requested in the RFP. We organize our response across the key DPW technology domains that are crucial for ongoing operations, including:

- Configuration Management
- Database Management
- Operational Management
- Security Management

Operations Support facilitates system availability and performance in accordance with the service level agreements (SLAs). Our support and continuous improvement activities leverage relevant tools, technology, and metrics-based feedback loops which are essential components of our operations approach.

Configuration Management



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Figure 6.6-12. Configuration Management.

Deloitte's approach to Configuration Management (CM) support encompasses a set of activities that deliver improved functionality and reliable technologies to end-users as well as meeting performance expectations and on-going operational needs of the field. Our team uses a structured process to plan, test, and support configuration of new releases and upgrades to DPW software, COTS components, technology platforms, and infrastructure with strict version control.

Based on our extensive experience with DPW's IT environment and our leading practices from other similar IT operation models, we have extended DPW's methodology and established detailed, ITIL-based processes and DPW-specific playbooks to manage release, migration, and environment coordination activities. We also provide capacity planning, monitoring and performance management to support day-to-day operations and scalability for future initiatives.

Figure 6.6-13 describes key Configuration Management processes we use to support maintenance activities.

Configuration Management Activities	Deloitte Delivers Key Configuration Management Processes to DPW
Migration Support	Support software and technical platform migrations
Release Support	- Coordinate software release management and emergency implementation - Maintain application environments and version control
Environment Coordination Support	- Coordinate systems operating systems as well as patches or upgrades of other COTS products and technologies - Maintain business systems blue prints documentation
Capacity Planning Support.	- Provide system resource monitoring and forecasting - Perform database related capacity planning
Performance Support	- Provide response time monitoring and problem resolution - Conduct load and performance testing and monitoring

Figure 6.6-13. Key Configuration Management Activities.

Database Management



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Figure 6.6-14. Database Management.

Our Database Management activities include design support through development as well as database administration and production support processes to optimize application and database server performance and availability. Database support is core to the operational platform and a critical aspect of our support to DPW.

Figure 6.6-15 describes key Database Management processes used to support maintenance activities.

Database Management Activities	Deloitte Delivers Key Database Management Processes to DPW
Database Design Support	• Conduct data modeling and normalization for both OLTP and Data Warehouse initiatives • Provide physical database design • Support database creation and update
Database Coordination Support	• Coordinate and consult with application teams
Database Release Support	• Test and migrate database code and structure changes to Development, Integration, Systems Acceptance Test, Training and Load Test environments • Provide database centric deployment scripts and playbooks for TFP and Production migrations
Database Operations Support	• Provide input into database standards identification and perform compliance monitoring • Develop database maintenance and reorganization scripts • Develop application related data fixes • Develop scripts and/or utilities and accompanying documentation for refreshing lower environments
Performance Support	• Provide database administration and performance tuning • Review database query performance and make recommendations for improvement
Information Life Cycle Support	• Facilitate solutions to support business systems data and information life cycle management requirement

Figure 6.6-15. Key Database Management Activities.

Operational Management



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Figure 6.6-16. Operational Management.

Deloitte's Operational Management approach facilitates systems availability and performance in accordance with service level agreements (SLAs). We use automated monitoring tools and a metrics-based approach to proactively identify and resolve production incidents and problems.

Our team provides critical batch schedule management and batch performance analysis. We have a sound understanding of the batch architecture and operational intricacies of the thousands of jobs that run each evening for mainframes, open systems, and PACSES platforms. In addition, we establish effective frameworks for enabling the successful integration of new batches and resolving issues with existing jobs, and the interoperability between DMS1100 and ES-7000 platform. We also support DPW and ITIL-based incident and problem management identification and resolution processes through a systematic framework that:

- Restores normal operations as soon as possible
- Minimizes adverse impacts on business operations
- Conducts root cause analysis and promotes proactive problem prevention

We work with DPW to correct production defects and coordinate migration of the fix into the production environment. Figure 6.6-17 describes key Operational Management processes used to support maintenance activities.

Operational Management Activities	Deloitte Delivers Key Operations Management Processes to DPW
Operational Support	• Maintain on-going operations • Participate in scheduled production meetings • Support daily, weekly, and monthly production status reporting • Provide technical liaison with BIS
Problem Support	• Research potential system defects • Provide problem identification and resolution • Support production migrations should issues be encountered • Assist in troubleshooting and debugging database-centric issues
Batch Schedule Support	• Scheduling and assisting in monitoring batch production runs and in resolving issues • Specifying batch scheduling criteria

Operational Management Activities	Deloitte Delivers Key Operations Management Processes to DPW
Performance Support	• Monitor batch reports for correctness and performance improvement opportunities • Review and streamline production batch schedules

Figure 6.6-17. Key Operational Management Activities.

Security Management



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Figure 6.6-18. Security Management.

Deloitte’s approach and processes for Security Management enable our team to integrate application, data, infrastructure, and network security controls throughout the SDM life cycle. Our approach places DPW as one of the leading agencies in the Commonwealth and a model for OIT. The Deloitte security team leverages the DPW Risk Framework to work with the project teams to identify potential security and privacy risks for new initiatives and design controls to mitigate them. Before going live, applications are subjected to a battery of security vulnerability assessment tools through different attack vectors. Post go-live, we monitor real-time authorization and authentication activity and capture data for forensic analysis.

In addition, we provide access to Deloitte’s broad portfolio of security disciplines as they apply to Operations Support, including security management, privacy and data protection, application security, identify and access management, vulnerability management, operations security, and business continuity management.

Figure 6.6-19 describes key Security Management processes used to support maintenance activities.

Key Staff Spotlight Srini Subramanian

ITSS/DTSS Subject Matter Expert



“DPW is a leader in the adoption of modern security technologies and risk management processes. I am privileged to have been part of DPW’s methodical transformation to a services based enterprise, protected by a robust security infrastructure, tools and processes. I look forward to contributing to the elevation of the DPW Enterprise Architecture, Shared Services and Security program to new heights.”

Security Management Activities	Deloitte-Delivers Key Processes to DPW
Security Support	• Provide security implementation and monitoring • Conduct security vulnerability assessments and resolution • Provide and implement database security and encryption measures

Figure 6.6-19. Key Security Management Activity.

Experience and Examples

Deloitte has extensive experience in providing application systems operation support similar to the scale and complexity of DPW across more the Federal Government and more than 100 Commercial organizations. We have more than 2,000 practitioners who specialize in this field, providing application systems operations support for State government and Federal projects. This extensive experience and talent is further augmented by our teaming organization Unisys, who specializes in application systems support operations in the state, federal and commercial sector as well. Unisys has been contracted by the Commonwealth as part of the Data Powerhouse (DPH) contract for over 10 years and has been a provider of infrastructure and operations support to DPW for over 40 years. Our combined team provides unmatched experience to DPW that combines IT operations knowledge, Unisys infrastructure, DPW systems and business experience.

The following section summarizes the breadth of experience we bring to DPW in ongoing support:

Industry	Deloitte Role in Providing Services Similar to DPW Requirements
State Government	• More than 25 States • More than 1,000 staff providing IT Operations support • Experience ranging from legacy Unisys and IBM mainframes to open system technology and COTS products
Federal Government	• Large federal agencies- Health and Human Services (HHS), Department of Defense (DOD), Social Security Administration (SSA), Internal Revenue Service (IRS) and the United States Postal Service (USPS), Transportation Security Administration (TSA) • More than 2,000 staff provide IT Operations support • Wide range of operating platform experience – Open systems, client server and mainframe and COTS products
Commercial	• More than 100 commercial installations of enterprise class line of business applications supporting core functionality for large companies such as Agilent, Wal-Mart and Aetna

Figure 6.6-20. Deloitte Has Demonstrated Experience Supporting Similar State, Federal and Commercial Installations.

The following figure represents Unisys' experience in IT Operations and the benefit that the Deloitte brings to DPW:

Unisys Experience Footprint	Example	Unisys Role in Providing Services Similar to DPW Requirements
Los Angeles Department of Public Social Services	LEADER	Unisys is responsible for management, support and operations of the Los Angeles welfare system called LEADER. LEADER support the key welfare programs of TANF, MediCal and Food Stamps (SNAP). Unisys provides 8,000 hours a month of application support services, and Facility Management and Operations support of production enterprise servers, Disaster Recovery, network and local office technology. LEADER supports more than 11,000 users processing an average of 5.5 million transactions daily – 98% of which are handled in three seconds or less; prints between 70,000 and 200,000 images daily, and is capable of producing more than 1,000 different types of notices to clients. Utilizes Unisys Clearpath Enterprise Servers.
State of Michigan	ASSIST	Automated Social Services Information System developed and maintained over 20 years. Utilizes Clearpath OS_1000 mainframe with DMS-1100 dB of ~ 259GB. Services 1.6M client index with over 4M cases ~ 1M active. Services 800K+ transactions per day.
State of Virginia	ADAPT	ADAPT, Virginia's eligibility system has been developed and maintained over 15 years. It utilizes Clearpath with MAPPER database and more than 2M cases.

Figure 6.6-21. Unisys Experience and Role.

The following provides examples of the sample set of state government clients where we provide IT operational support.

The Department of Public Welfare, Commonwealth of Pennsylvania.

Deloitte currently provides application Operations support across the majority of in-scope systems for the Department of Public Welfare. The enterprise hardware infrastructure of DPW is a mission critical, complex, heterogeneous platform which supports several key Health and Human Service applications across the enterprise.

Applications such as eCIS/CIS are used by about 7,000 County Assistance Office workers to manage about 1.2 million cases for 2.5 million needy people of the Commonwealth. Operationally, these systems facilitate the eligibility determination and disbursement of services, including TANF (Temporary Assistance to Needy Families), SNAP (Supplemental Nutrition Assistance Program), CHIP (Child Health Insurance Program), Medical Assistance or LIHEAP (Low Income Home Energy Assistance).

PACSES is an enterprise-wide child support enforcement system that supports over 3,000 case workers in the Commonwealth to serve more than 3.8 million citizens. With over \$1.6 billion in collections per year, it ranks as the number #1 program in the country in terms of performance and cost-effectiveness of operations. The base mainframe application provides the ability to input and track cases, establish paternity and support orders, manage the financial processes related to the cases, and locate delinquent members.

Our team works with DPW to support the millions of transactions per day that are exercised to support eligibility, payments, notices, correspondence, worker alerts as well as infrastructure related planning such as performance tuning, system maintenance support and capacity planning. Our operations support team has demonstrated deployment and maintenance of ongoing operations as well as support for new IT initiatives in DPW's complex business and technology environment.

Deloitte supports the different needs of the DPW IT environment by strategically aligning its technology domains with aspects of the infrastructure.

Deloitte's Role in Providing Operations Services Requirements for DPW

Configuration Management

- Plan and coordinate detailed production implementation tasks
- Execute database and software migrations across diverse environment platforms
- Evaluate new tools which support file security, build automation or deployment management
- Assist in the Open System Back up/Recovery process

Database Management

- Monitor and report production database performance
- Optimize database object performance
- Support review of Logical and Physical Data Models

Operations Management

- Monitor and report on production batch across multiple batch platforms
- Support production batch issue resolution across batch cycles
- Execute individual project and integrated project load tests and report results
- Forecast hardware and network capacity requirements

Knowledge Management

- Maintain system documentation
- Work with the Knowledge Management team to monitor and review the completion of data extracts, creation of reporting cubes, and successful population into the EDW
- Work with the Knowledge Management team to monitor and review the performance of reports driven by cubes, ODS, and EDW. Provide tuning assistance as necessary

Security Management

- Perform security vulnerability assessments in open system, Internet and intranet platforms
- Support and coordinate upgrades to CA Siteminder, IdentityMinder, Radiant Logic Virtual Directory, SOA Security Manager and active directory infrastructure
- Maintain the delegated user management system, enabled by CA Identity Manager
- Monitor the security implementation – monitor log files for exceptions and analyze trends

Deloitte's Role in Providing Operations Services Requirements for DPW

Middleware

- Incorporate middleware design standards and DPW leading practices
- Assist in providing interface recommendations and exchange

Architecture

- Maintain Architectural Blueprint
- Participate in architecture review discussion
- Direct project architecture and design support for initiatives

Figure 6.6-22. Deloitte Has Vast Experience Providing Operational Support Services.

State of Colorado. Colorado Benefits Management System (CBMS) is a statewide system for administering public assistance programs that are similar in size and scope to CIS/eCIS. The CBMS incorporates eligibility determination for Medicaid, Food Assistance, Cash Assistance, the Children's Basic Health Plan including case management functions such as work programs, and others. The project encompasses programs that determine eligibility and anticipated benefits for more than 493,000 clients and for more than 264,000 cases. Deloitte transitioned maintenance, operations and modification responsibilities from HP-EDS less than three years ago. This includes operational management of batch processing, performance tuning, application deployment and infrastructure management as well as assistance in disaster and capacity planning.

Additionally, Deloitte has also implemented many strategic projects to the system in an effort to address the 2+ year backlog of program and IT needs. These projects include the first of multiple releases of the Program Eligibility and Application Kit (PEAK) which is similar to COMPASS.

The CBMS system has been in place since 2004, though the last several years one of the primary complaints of the users was the flow of the system. Since taking over support and maintenance of this system in 2008, Deloitte has worked with the State and user communities to identify changes to simplify and streamline the flow of the system. The outcome of this effort is a project that will incrementally modernize the PowerBuilder based screens to Java. Along with this, the flow of the system will be streamlined and simplified to address the concerns of the user community. Deloitte is responsible for both the maintenance and operations of the existing CBMS application, and performs the shared responsibilities for maintaining and operating the CBMS on State owned hardware and network infrastructures through 2011. The team is comprised of the staff necessary to manage the day-to-day system operations as well as the associated system and operational documentation to meet Federal and State requirements.

State of Florida. The Florida Online Recipient Integrated Data Access system (FLORIDA), is a statewide system for administering public assistance programs and child support enforcement, that is similar in size and scope to CIS/eCIS and PACSES. Deloitte was involved in the original design and implementation of the FLORIDA system

and in March 2006, Deloitte was awarded the contract for ongoing FLORIDA system maintenance and support.

Deloitte has worked with the State of Florida for the past four years providing project management, maintenance, enhancement, testing, and implementation support services for the Florida Online Recipient Integrated Data Access (FLORIDA) system, which is an integrated IV-A/IV-D system.

Operationally, this includes operational management of batch processing, performance tuning, application deployment and infrastructure management as well as assistance in disaster and capacity planning. This project demonstrates the breadth of Deloitte's eligibility and child support experience and its ability to bring skilled resources and concepts to the Commonwealth's future initiatives.

The integrated FLORIDA system serves approximately 600,000 child support cases, handles more than \$1.3 billion in annual collections, serves 2,500,000 clients for food stamps, 2,200,000 clients for Medicaid, 110,000 clients for TANF, and more than 9,000 public assistance and child support system users. The system supports eligibility requirements for Medicaid, Food Stamps, TANF (Temporary Assistance to Needy Families), Child Welfare, and Child Support Enforcement and serves over 6,000 concurrent users providing a transaction response time under two seconds.

During this period Deloitte has developed numerous Web-based systems for the Client's Self Service portal to help the department in the modernization efforts. The ACCESS WEBAPP System which enables the client's to apply for benefits collects more than 350,000 applications a month. The "My Account" system which enables the clients, partners and providers to check the benefit status and needed verifications serves more than a million visitors a month.

The table below provides a side by side comparison of DPW and similar engagements in other States.

IT Services	DPW	Florida	Colorado
Mainframe Technology	✓	✓	✓
Web Technology	✓	✓	✓
COTS Products	✓	✓	✓
Custom Coded Solutions	✓	✓	✓
State-Admin Programs	✓	✓	✓
State-Sup, County-Admin Programs	✓		✓
Enterprise Service Integration	✓	✓	✓

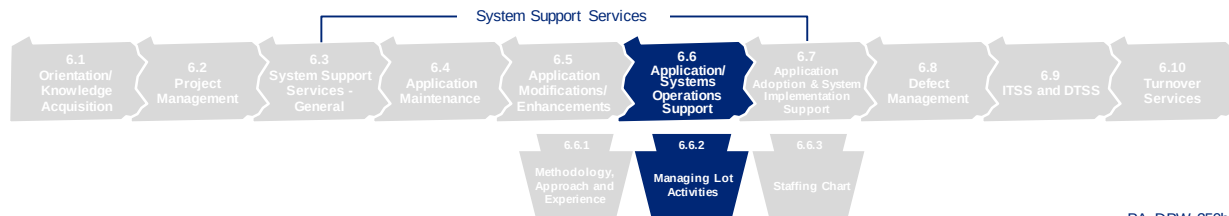


IT Services	DPW	Florida	Colorado
# Interfaces	75+	50+	15-20
# Lines of Code	16 Million	12 Million COBOL, 660,000 Java	12 Million
# Screens	250+ Mainframe, 1,500+ Open System	500 Mainframe, 250 Open System	725 Open System
# Reports	500+	2,400	190
# Database Tables	3,500	600 IMS Segments, 800 tables	650
# Enhancements/Year	14-20	20-25	8-10

Figure 6.6-23. Deloitte Has Demonstrated Operational Qualifications Reflect Our Ability to Support Your Business Needs.

These successful project implementations demonstrates our IT operations experience sharing knowledge across states and highlights our capability managing technical support services on a project similar in size and complexity to DPW systems.

6.6.2 Managing Lot Activities



PA_DPW-250b_4

II

Page
II-3

RFP Reference: II-3. Work Plan

Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks.

Through our demonstrated experience, Deloitte collaborates with DPW to deliver dependable, low risk operations and production support solutions in an expanded shared services model that meets your operational needs and service level agreements. For more than 10 years, Deloitte's DPW Operations Support team has been working side by side with DPW to deliver reliable operational services that facilitate the efficient delivery of IT services required to manage business processes.

DPW's business offerings, including multiple LIHEAP supplemental payments, PACSES child support collections improvements, the COMPASS technology transformation and, most recently, Fair Care application collection, have grown tremendously over the years. Our combined team has met the challenge of providing IT centric services that have met those challenges.

In addition, our collective teams have been able to advance the strategic goal of embracing SOA design patterns and solutions. Together, we have implemented and now operationally support over 25 reusable enterprise services that are available for the enterprise suite of applications to consumers

Our combined Operations Support team has extended the DPW IT Methodology and developed an Operations Support approach that includes detailed processes based on ITIL and CMMI principles. Our approach is based on DPW and Deloitte-developed methodologies, tools and technologies that we integrate with specific procedures, monitoring and controls. Our management approach also includes methods for problem identification and resolution, issues and risk mitigation, management controls, reporting and communication, quality controls and performance measurement against SLAs.

Have you
heard? 

- Deloitte delivers one of the global authors of the ITIL Framework to help mature your organization
- Deloitte system architects allocate time to mentor BIS staff on latest technologies
- Our team leverages our knowledge of DPW systems to recommend cost saving/efficiency improving solutions

Issues, Risks and Proposed Solutions

II	Page II-3	RFP Reference: II-3. Work Plan

Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks.

- During this discussion, the Offeror should identify potential issues/risks and proposed solutions. For each of the Lot's Required Activities and Tasks

The business of DPW covers millions of clients, thousands of providers, hundreds of services and numerous distinct applications consuming various architectures, COTS tools and custom built solutions. This alone presents substantial risk that needs to be effectively managed to help verify the needs of the business are met.

Deloitte provides centralized risk and issue management, complete with an automated daily distribution of risk and issues to management tiers for proactive review.

Our team works closely with you to manage these risks through the upcoming change of administration that will surely introduce new directions, strategies and expectations of the Department. Our vision is to work with you to proactively define related risks and to develop a mitigation strategy before they become true issues.

The following presents examples of key operational challenges presented by significant IT transformation and our approach to managing these emerging operational needs:

Issue/Risk	Deloitte's Mitigation Strategies
Availability of Mission Critical Infrastructure. The Department must continue to support the mission critical systems regardless of the vendor selected for Lot 6 and 7.	The proven team at Deloitte provides a diverse and robust set of technology skills and experience amplified by a solid understanding of the business of DPW that is critical in continued DPW mission success.
Delays in Advancing the Shared Services Model to Other IT Functions. You have significant momentum and with a transition at a minimum the progress towards additional shared services will be 6 months with a high probability it will take several years to show additional progress.	At the onset, Deloitte has the established background and business knowledge in the DPW shared services model to not only maintain the current level of quality for the current services but to continue the growth trend towards improved efficiencies. Day 1 of the new contract Deloitte will be ready to perform annual planning to advance your shared services verses planning for orientation and knowledge transfer activities.
Striking the Balance Between Enterprise Architecture and SOA Against the Responsibilities Towards the Business Customer. Having support personnel that understand the program side of the house in addition to technology can help assist in striking that balance. SOA is an enabler, but it is not the be all and end all.	We have been at DPW's side as DPW has led the way in the sector in using suitable and proper appliance of SOA to provide consumable business services. This history establishes the trust between DPW and Deloitte to provide an appropriate balance in the usage of SOA for business services.

Issue/Risk	Deloitte's Mitigation Strategies
Challenges to Integrate COTS into existing Applications. DPW is increasingly using COTS products in adherence to current HHS IT leading practices. As a result, the interdependencies between these COTS products and the custom built solutions become more important to understand.	Deloitte has a large pool of resources to draw from that has a breadth of experience working with the COTS products as well as creating conduits of interconnectivity to optimize the use of COTS for DPW. Our detailed knowledge of custom built applications positions us to be able to effectively integrate COTS into the custom world.
Ability to Continually Upgrade to New Technologies in a Highly Integrated and Multi-Program Set of Business Solutions. As part of DPW's incremental renewal strategy it is inevitable that new technologies will be introduced into a complex business and system environment.	With multiple relationships with the leading companies across the industry, Deloitte maintains a posture on the leading edge of technologies and is positioned to assist DPW in maintaining the position of a technology leader in its sector. By providing a broad view of the program areas and application initiatives, ITSS helps to seamlessly progress upgrades and introduce new technologies.

Figure 6.6-24. Key Security Management Activities.

Deloitte works with DPW to continually identify, document and manage risks. Risks are minimally discussed on a weekly basis at various project, steering and executive staff level meetings and are housed and managed from a centralized repository. The risk management process (which highlights how risks evolve to issues and final closure) is one of the many defined, repeatable processes that support the business of DPW.

Processes, Tools, and Reports

II	Page II-3	RFP Reference: II-3. Work Plan
Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks. Describe the processes that will be followed and tools that will be used; describe the reports that will be used to track, monitor work, and measure performance.		

As stated, Deloitte works with DPW to define, document and operationalize repeatable processes that streamline the operational support mechanics for the Department. Each process flow has defined tools and reports that are used to collect, manage and distribute data to necessary stakeholders. The timely receipt of centralized, enterprise data allows stakeholders to act in concert in support of project initiatives.

To fully understand how, operationally, work is performed within DPW, it is important to have an understanding of the processes that exist - and their root function, the tools that are used - and their general purpose, and the reports that are generated and the business value they offer. The following section highlights those facts and builds upon our stated approach, which leverages ITIL based processes to provide IT services aligned with the DPW domain structure.

The remainder of this section lists the various processes, tools and reports used to provide operational support across the in-scope projects. We have listed the processes, tools and reports by domain and by the activity supported for easy reference.

Configuration Management

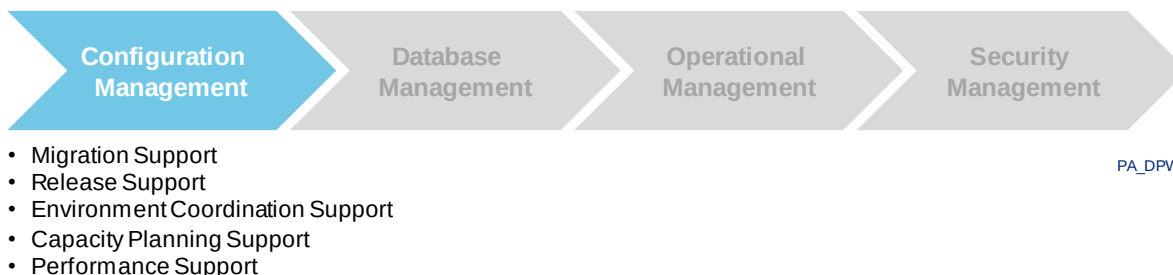


Figure 6.6-25. Configuration Management Activities Offer Valuable Service to DPW.

Migration Support

Process Description	Tools
Software and Technical Platform Migrations. This process leverages a detailed methodology to enable smooth migrations of business applications and impacted COTS products from the development environment through the final release into the production environment.	• CIO Runway. A summary list of initiative timelines by application through the SDLC • Deployment Playbook. A detailed listing of the steps necessary to support a deployment • nANT/MSBuild. Tools that facilitate automated bundling of executable code to be deployed • Cruise Control .NET. The deployment engine that consumes output from MSBuild/n ANT to physically deploy the code • TFS/VSS. Version control software to house the application source code checked in/out by developer staff • PACSES CONFIG Database. A consolidated repository used to track, manage and report on changes across the PACSES mainframe

Figure 6.6-26. Configuration Management Migration Support Processes and Tools.

Reports

Deloitte provides the following reports to support the migration support activities.

- **CTO Dashboard.** This daily report provides the information needed to verify the availability of the applications and associated infrastructure in the production environment. The report is produced and distributed daily at 7:30 a.m. to provide a summary view of application health. The dashboard is also used to communicate system issues by highlighting the health of an application as “red”, “yellow” or “green”.
- **Quality Assurance Difference Report.** This report compares new application build and the current production build to verify that the proper code and components are being changed. This is a critical quality step to confirm the right version of the application code is deployed to production.

- **Deployment Playbook.** This report details the steps to be followed during a TFP or production deployment and the approximate timings for each step. We provide playbooks to DPW for review several weeks before an actual deployment to allow time for addressing any questions or concerns. Using this report, both Deloitte and DPW will have a common understanding of the tasks necessary to execute a production deployment.
- **Deployment Instructions.** These detailed instructions build off steps included in the deployment playbook to instruct DPW web and server teams on the exact tasks to execute a production deployment. We provide instructions to DPW for review several days before an actual deployment so as to verify a mutual understanding of the tasks required to support deployment activities.
- **Migration Control Management (MCM) Report.** The CONFIG database is the repository for the PACSES migration information. Migration packages are defined in the database by application developers, with package review performed by application track leads. Packages identify software components that are included in a particular release. The MCM report identifies the current status of a package, including “System Acceptance Test”, “Ready for Production Signoff” and “Production Approved” so that stakeholders have a consistent understanding of the status of deployment packages.

Activity: Release Support

Process Description	Tools
Software Release Management and Emergency Implementation. This process establishes the plans, procedures and communications protocols with DPW stakeholders that enable smooth migrations of applications, COTS products, and platforms through the final release process into the production environment.	• CIO Runway. A summary list of initiative timelines through the SDLC • DPW Implementation Calendar. A detailed calendar view of scheduled application/infrastructure changes • ITSS Request Tracker. A Web-based application used by Deloitte to request services, including migration support, of ITSS • ATS. A Web-based tracking tool that tracks, from a software release standpoint, PCR, bundle and build information that comprise a release • Deployment Playbook. A detailed listing of the steps necessary to support a deployment • nANT/MSBuild. Tools that facilitate automated bundling of executable code to be deployed • Cruise Control .NET. The deployment engine that consumes output from MSBuild/n ANT to physically deploy the code • TFS/VSS. Version control software to house the application source code checked in/out by developer staff • PACSES CONFIG Database. A consolidated repository used to track, manage and report on changes across the PACSES mainframe

Process Description	Tools
Application Environments and Version Control. This process is used to maintain application and source code integrity, consistency and accuracy.	• Environment Health Check Scripts. Automated and manual scripts that are executed on a daily bases to verify application availability. These scripts are also executed after infrastructure maintenance activity to verify availability. • Infrastructure Alerts. DPW leverages automated monitoring tools that alert technical staff when defined negative thresholds are met (i.e. Excessive CPU utilization, limited available disk space, etc.) • TFS/VSS. Version control software to house the application source code checked in/out by developer staff • PACSES CONFIG Database. A consolidated repository used to track, manage and report on changes across the PACSES mainframe

Figure 6.6-27. Configuration Management Release Support Processes and Tools.

Reports

Deloitte provides the following reports to support the release support activities.

- **CTO Dashboard.** This daily report provides the information needed to verify the availability of the applications and associated infrastructure in the production environment. The report is produced and distributed daily at 7:30 a.m. to provide a summary view of application health. The dashboard is also used to communicate system issues by highlighting the health of an application as “red”, “yellow” or “green”.
- **Quality Assurance Difference Report.** This report compares new application build and the current production build to verify that the proper code and components are being changed. This is a critical quality step to confirm the right version of the application code is deployed to production.
- **Deployment Playbook.** This report details the steps to be followed during a TFP or production deployment and the approximate timings for each step. We provide playbooks to DPW for review several weeks before an actual deployment to allow time for addressing any questions or concerns. Using this report, both Deloitte and DPW will have a common understanding of the tasks necessary to execute a production deployment.
- **Deployment Instructions Package.** These detailed instructions build off steps included in the deployment playbook to instruct DPW web and server teams on the exact tasks to execute a production deployment. We provide instructions to DPW for review several days before an actual deployment so as to verify a mutual understanding of the tasks required to support deployment activities.
- **Migration Control Management (MCM) Report.** The CONFIG database is the repository for PACSES migration information. Migration packages are defined in the database by application developers, with package review performed by application track leads. Packages identify software components that are

included in a particular release. The MCM report identifies the current status of a package, including “System Acceptance Test”, “Ready for Production Signoff” and “Production Approved” so that stakeholders have a consistent understanding of the status of deployment packages.

Activity: Environment Coordination Support

Process Description	Tools
Systems Operating Systems. This process supports smooth installation of upgrades or patches for operating systems and COTS products. We collaborate with key stakeholders in workgroups to analyze the impact of system changes on current and upcoming initiatives as well as establish upgrade plans and timelines.	• System Center Configuration Manager (SCCM). The Department’s standard tool for automated, distributed software deployment across the network. The tool is used to update desktops with the latest versions of software, security patches and configuration files • Vendor Supplied Installation Objects. COTS products include automated executables to facilitate their installation on a server or desktop • ATS Regression Testing Scenarios Tracking. A defined and documented set of regression testing scenarios that are used to verify the integrity of the application after maintenance activities are performed • Environment Health Check Scripts. Automated and manual scripts that are executed on a daily bases to verify application availability. These scripts are also executed after infrastructure maintenance activity to verify availability
Business Systems Blue Prints Documentation. Deloitte maintains current blueprint documents to provide a more thorough understanding of each touch point involved in any upgrade.	• Microsoft Visio. Microsoft tool used to show the relationships between infrastructure components, communication protocols and relevant capacity • Sparx Enterprise Architect. Enterprise tool used to document details surrounding component design, interface protocols and signatures, configuration details as well as consumption documentation

Figure 6.6-28. Configuration Management Environment Coordination Support Processes and Tools.

Reports

Deloitte provides the following reports to support the environment coordination support activities.

- **Systems Blueprint.** This report show the detailed relationships between infrastructure components, communication protocols and relevant capacity across the enterprise. It provides technical stakeholders, including developers, DBA’s, system administrators, enterprise architects as well as IT management, the holistic view of the infrastructure to verify a common understanding of the system topology.

Activity: Capacity Planning Support

Process Description	Tools
System Resource Monitoring and Forecasting. This process supports the development of capacity plans to help forecast resource utilization. The capacity plan process includes a broad view of the infrastructure including the network, application servers, mainframes, and databases.	• SightLine Expert Advisor. DPW's enterprise wide tool supporting infrastructure resource utilization metrics collection • Perfmon. A complementary tool to Siteline that collects more detailed infrastructure resource utilization metrics • HP Performance Center. A software suite that supports the automated testing of Web-based applications under simulated load • SOAP UI. Provides a mechanism to load test web services singularly outside an application • Daily Business Metrics Report History. A Deloitte created repository that collects and distributes daily business metrics. The history of these metrics is used to trend consumption over time to support capacity planning • Daily Enterprise Service Report History. A Deloitte created repository that collects and distributes daily Enterprise Service utilization metrics. The history of these metrics is used to trend consumption over time to support capacity planning • UDSMON. Provides real time mainframe centric database monitoring that shows active reads/writes to the database areas/records/sets • OSAM. Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc. • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • Log Analyzer. A is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system • Batch Analyzer. A custom developed .NET application that processes the data from Torch to provide graphical and historical depictions of batch and online performance over time

Process Description	Tools
Database Related Capacity Planning. This process supports database specific capacity planning to forecast database centric resource utilization.	• Database Capacity Measurement Scripts. Custom solutions created by Deloitte DBA's to, in an automated fashion, collect database centric metrics that are used to trend storage consumption expectations within the database

Figure 6.6-29. Configuration Management Capacity Planning Processes and Tools.

Reports

Deloitte provides the following reports to support the capacity planning support activities.

- **Capacity Plans and Utilization Reports.** Capacity plans are provided on a quarterly basis and take into account progressive application growth due to additional users as well as increased clients, providers and other business partners. The same capacity plans also include expected consumption to do the roll out of new functionality supporting additional services, new client populations or new user groups. Estimates of increases in infrastructure, file server, and database storage are contained in each capacity plan to drive discussion around any potential procurement needs.

Activity: Performance Support

Process Description	Tools
Response Time Monitoring and Problem Resolution. This process provides for automated and manual steps to monitor and manage end user response time. Transactions identified as exceeding allowable thresholds are immediately investigated and a mitigation plan formulated. Deloitte then works with DPW to define a mutually agreeable go forward strategy to address the root cause.	• HP Performance Center. A software suite that supports the automated testing of Web-based applications under simulated load • SightLine Expert Advisor. DPW's enterprise wide tool supporting infrastructure resource utilization metrics collection • Perfmon. A complementary tool to SiteLine that collects more detailed infrastructure resource utilization metrics • Event Viewer. A repository for system generated error or warning messages. These messages highlight system wide error conditions that impact the entire machine (which could be supporting multiple applications) • Component Services. Manages COM objects that are frequently used in OpenTI transactions. Component Services will identify if services are not responding and, therefore, manifesting queuing on either the open system or the mainframe • SOAP UI. Provides a mechanism to load test web services singularly outside an application • Concord. DPW's enterprise solution for end user response time metrics collection. Concord leverages agents installed on end user machines to report response time metrics back to a centralized DPW server for reporting

Process Description	Tools
	• MyWebMethods Server. Provides for real time analysis and monitoring of the webMethods infrastructure • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • OSAM. Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc. • Log Analyzer. A is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system
Load and Performance Testing and Monitoring. This process provides the foundation for automated load testing of applications. Each major release is exercised under simulated load to a variety of anticipated business scenarios at anticipated production levels. Performance tuning opportunities are identified and mitigated prior to production deployment.	• HP Performance Center. A software suite that supports the automated testing of Web-based applications under simulated load • Batch Load Testing Framework. Deloitte's framework to manage, execute and report on production volume batch testing • Quick Test Pro. Automated regression testing tool used to verify application functionality behaves as expected after deployment. The tool will also assist in the identification of performance tuning opportunities • SOAP UI. Provides a mechanism to load test web services singularly outside an application • SMA OpCon/xps. Automated batch scheduler used to execute batch jobs during volume testing

Figure 6.6-30. Configuration Management Performance Support Processes and Tools.

Reports

Deloitte provides the following reports to support the performance support activities.

- **Concord Busy Applications Report.** This report provides response time metrics, transaction counts and SLA compliance information for individual open system transactions defined to Concord and executed on desktops with the Concord agent installed. The reports can be drilled down to specific locations which is important in pinpointing system issues.
- **HP Performance Center Analysis Report.** This report summarizes the results of a load test and includes such data as transaction response times, infrastructure utilization, and business metric counts. This information provides is critical in identifying performance tuning opportunities as well as the production readiness of an application release. Results of the load tests are shared with DPW prior to deployment for review and approval.

- **Load Test Database Performance Report.** This report provides an overview of the results of a load test from the database perspective. The Deloitte database team generates AWR and ADDM Reports, provides counts of key business metrics, and an analysis of queries that did not meet desired performance goals. This report, in conjunction with the HP LoadRunner Analysis report provides a large picture of application performance.
- **Load Test Results Report.** This report provides DPW management with an executive summary of the goals and scope of the load testing for an upcoming release. We provide response time and database performance metrics that compare the new application version to the current production version.
- **Top Queries for Performance Improvement Report.** This report provides the DPW database management team with an overview of queries that we have identified as the top candidates for performance tuning. We work with DPW to analyze the functionality and tuning opportunities of these queries and prioritize them through the standard PCR process.

Database Management

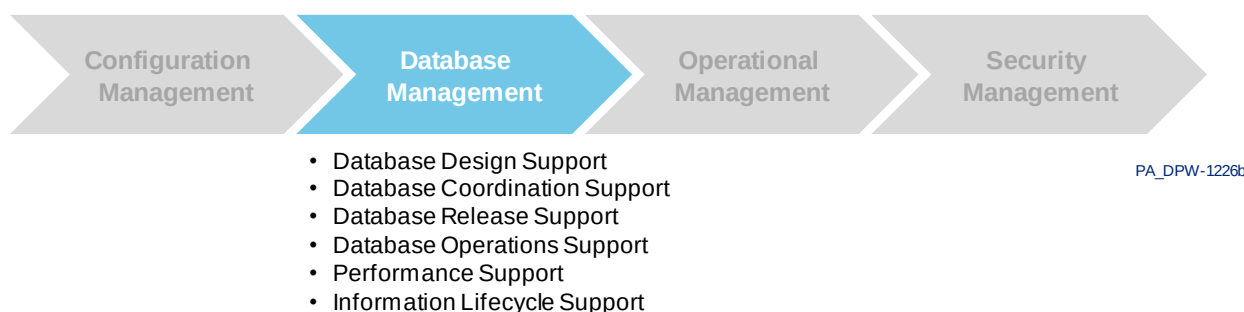


Figure 6.6-31. Database Management Activities Offer Valuable Service to DPW.

Activity: Database Design Support

Process Description	Tools
Data Modeling and Normalization. A defined process supporting data modeling approaches, standards and artifact management. Logical Database Design (per RFP N/A for Lot 7) Physical Database Design. Our process to support the physical modeling of database structures, including These processes focus on providing DPW with flexible, stable, database designs. Our teams work closely with application architects and DPW staff to design, review and gain approval on normalized database designs that embrace the strategic vision of centralize SOA service capacities that maximize design reuse where possible.	• ERwin 7.3.4. Client desktop tool that is used to create and maintain logical and physical data models

Process Description	Tools
Database Creation and Update. This process provides for the physical creation of database structures used to progress project initiatives or to support maintenance activities.	• SQL* Plus. Oracle utility that provides a conduit to execute native SQL against an Oracle database • Golden. COTS tool that allows provides a slightly enhanced conduit to execute native SQL against an Oracle database • TOAD. COTS tool that provides a substantially enhanced c conduit to execute native SQL against an Oracle database as well as DBA centric monitoring, tuning and configuration tasks • Oracle Enterprise Manager. Oracle supplied tool used to manage objects, structures and configurations within the database • UDS. DMS/RDMS tool used to manage database objects, structures and configurations within the Unisys database platform

Figure 6.6-32. Database Management Design Support Processes and Tools.

Reports

Deloitte provides the following reports to support the database design support activities.

- **Logical Data Model.** The logical data model provides an overview of the business relationships between defined entities and attributes.
- **Physical Data Model.** The physical data model provides a detailed schematic of the physical manifestation of the database actually deployed. This includes normalization of database entities as well as the definition of physical partitions, schemas and primary key relationships. Additionally, details about new interfaces, expected capacity growth, archive/purge criteria, and migration and conversion strategies are included to support the project initiative.

Activity: Database Coordination Support

Process Description	Tools
Coordinate and Consult with Application Teams. This process defines the approach to manage change to database design as well as database centric application testing requirements.	• ERwin 7.3.4. Client desktop tool that is used to create and maintain logical and physical data models • Export/Import Data Pump. Oracle utility that allows for bulk data and/or structure copy from one environment to another • SQL* Plus. Oracle utility that provides a conduit to execute native SQL against an Oracle database • Golden. COTS tool that allows provides a slightly enhanced conduit to execute native SQL against an Oracle database • TOAD. COTS tool that provides a substantially enhanced c conduit to execute native SQL against an Oracle database as well as DBA centric monitoring, tuning and configuration tasks

Figure 6.6-33. Database Management Coordination Processes and Tools.

Reports

- **Database Quality Assurance Difference Report.** An on demand report used by Deloitte DBA's to compare and report differences in database schemas, objects, indices, columns, etc. between environments. This is critical to verify that only the desired constructs are moving to higher environments and, eventually, production. The results are shared with DPW for final review and verification before promoting the change to production.

Activity: Database Release Support

Process Description	Tools
Test and Migration of Database Code and Structure Changes. Database centric code is governed by the same code management solutions as traditional application server/mainframe code. To that end, Deloitte has created a process to manage the testing and deployment coordination database code through processes mirroring application code. We store database release codebases in version control software which allows for review of changes between releases and helps to confirm that critical components are ready for deployment. Database Centric Deployment Scripts and Playbooks. This process focuses on the creation, testing and delivery of scripts for the creation of new database objects in TFP and production. The submission also includes related instructions to support execution by Commonwealth staff.	• ERwin 7.3.4. Client desktop tool that is used to create and maintain logical and physical data models • nANT/MSBuild. Tools that facilitate automated bundling of executable code to be deployed • SQL* Plus. Oracle utility that provides a conduit to execute native SQL against an Oracle database • Golden. COTS tool that allows provides a slightly enhanced conduit to execute native SQL against an Oracle database • TOAD. COTS tool that provides a substantially enhanced c conduit to execute native SQL against an Oracle database as well as DBA centric monitoring, tuning and configuration tasks • Deployment Playbook. A detailed listing of the steps necessary to support a deployment • DDL/SDDL. Data Definition Language/Subschema Data Definition Language – Scripting language used to create mainframe objects on the Unisys platform • ISQL. Unisys “Interactive SQL”, similar to Oracle’s SQL*Plus, is a utility that allows for database command execution used to create/alter structures or to deploy code

Figure 6.6-34. Database Management Release Support Processes and Tools.

Reports

Deloitte provides the following reports to support the database release support activities.

- **Deployment Playbook.** This report details the steps to be followed during a TFP or production deployment and the approximate timings for each step. We provide playbooks to DPW for review several weeks before an actual deployment to allow time for addressing any questions or concerns. Using this report, both Deloitte and DPW will have a common understanding of the tasks necessary to execute a production deployment.

- **Deployment Instructions.** These detailed instructions build off steps included in the deployment playbook to instruct DPW web and server teams on the exact tasks to execute a production deployment. We provide instructions to DPW for review several days before an actual deployment so as to verify a mutual understanding of the tasks required to support deployment activities.

Activity: Database Operations Support

Process Description	Tools
Input Into Database Standards Identification/Compliance Monitoring. This process focuses on the quality assurance steps taken by Deloitte to verify compliance with DPW standards. Checkpoints such as verifying an approved data dictionary before moving to Integration, verifying approved abbreviations are used, verifying database code includes appropriate comments, etc. are proactive steps taken to manage compliance. Additionally, our team looks to leverage our experience to mature your existing standard set to keep current with the latest development practices. Database Maintenance and Reorganization Scripts. This process provides for maintenance scripting that supports non production or production (PACSES mainframe) database reorganization or configuration tuning. Actions taken are in accordance with DPW standards and leading practices. Develop Application Related Data Fixes. Data fixes are sometimes required to alter application configuration, activate functionality or to correct data anomalies. This process provides guidance around how data fixes are escorted through the testing process to production. Scripts/Utilities for Refreshing Lower Environments. Test data management is an important process in managing an application through the SDLC. This process outlines how data is refreshed from production or baselined versions to support repeatable testing or production impact assessments in a non production environment.	• SQL* Plus. Oracle utility that provides a conduit to execute native SQL against an Oracle database • Golden. COTS tool that allows provides a slightly enhanced conduit to execute native SQL against an Oracle database • TOAD. COTS tool that provides a substantially enhanced c conduit to execute native SQL against an Oracle database as well as DBA centric monitoring, tuning and configuration tasks • ISQL. Unisys “Interactive SQL”, similar to Oracle’s SQL*Plus, is a utility that allows for database command execution used to create/alter structures or to deploy code • Louis II. A COTS tool that provides high speed retrieval of data housed in the Unisys RDMS database. The tool can be leveraged from ECL streams to perform database maintenance in a timely, efficient manner • IQU Plus. A COTS tool used to access data from the DMS tables. Primarily used by the DBAs for minor data extract tasks or data fix tasks • IRU. Integrated Recovery Utility – software used by DBAs to perform database recoveries/reorganizations • RDMS FastLoader. Similar to Oracle’s SQL Loader, this tool provides the capability to quickly bulk load RDMS tables • Export/Import Data Pump. Oracle utility that allows for bulk data and/or structure copy from one environment to another

Figure 6.6-35. Database Management Operations Support Processes and Tools.

Reports

Deloitte provides the following reports to support the database operations support activities.

- **TFP Database Refresh Summary.** This report highlights the status of the scheduled, automated refresh of data from production to TFP. Refreshing data into TFP is critical to accurately rehearsing production deployments and subsequent testing and to proactively rehearse data fix scripts before going to production. This report allows for rapid determination of the success of the process or if additional analysis is required.

Activity: Performance Support

Process Description	Tools
Database Administration and Performance Tuning. This process highlights the continuous database performance monitoring that is performed to identify and address tuning opportunities. Deloitte tracks and reviews production queries to create a “Top 10” list for review with DPW. These tuning opportunities are managed through the non functional PCR process until resolved in the production environment. Database Query Performance Analysis. This process highlights the detailed tasks performed to analyze and optimize tuning opportunities.	• Oracle Grid Control. Oracle’s provided tool for administering and managing multiple database instances • Automatic Workload Repository (AWR). Oracle provided utility that collects and reports on critical performance statistics that aids in the tuning process • Automatic Database Diagnostics Monitor (ADDM). Oracle provided tool that assimilates the information collected by AWR, analyzes the results and provides turning recommendations to progress • TOAD. COTS tool that provides a substantially enhanced conduit to execute native SQL against an Oracle database as well as DBA centric monitoring, tuning and configuration tasks • UDSMON. Provides real time mainframe centric database monitoring that shows active reads/writes to the database areas/records/sets • OSAM. Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc. • SUDS. Supervisor for Universal Data Systems is a utility used for thread and transaction management within the database. The tool also provides space management capabilities as well as diagnostic information in the case of a process dump • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • Log Analyzer. LA is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system

Figure 6.6-36. Database Management Performance Support Processes and Tools.

Reports

Deloitte provides the following reports to support the performance support activities.

- **AWR Report.** An Oracle supplied report that summarizes the statistics found during a scheduled scan of the database. This includes technical metrics such as logical/physical reads, buffer gets, query response time, etc. The report feeds subsequent tuning processes to quickly identify and resolve performance tuning opportunities.
- **Top Queries for Performance Improvement Report.** This report provides the DPW database management team with an overview of queries that have been identified as top candidates for performance tuning. We work with DPW to analyze the functionality of these queries and prioritize them through the standard PCR process.
- **PACSES Performance Database.** Deloitte collects performance metrics that identify online and batch processes that generate high I/O levels and/or significant runtimes. The executions of the identified run units are then monitored on the mainframe using standard tools such as UDSMON, OSAM and SUDS.

Activity: Information Life cycle Support

Process Description	Tools
Support Business Systems Data and Information Life Cycle Management. This process facilitates the archival of aged data from a primary to secondary tier of storage. The process also supports the eventual purge of data in alignment with business requirements.	• Optim. DPW's enterprise tool to support the transition of structured and unstructured data from primary, high speed access storage to secondary storage devices and structures. The tool supports both the archiving and temporary retrieval of aged data in support of business activities • Batch Purge Processes. Scheduled batch jobs that physically purge databased on business requirements

Figure 6.6-37. Database Management ILM Processes and Tools.

Reports

- **Archive Batch Process Report.** A daily report listing the completion status of nightly batch jobs that support archive/purge processes.

Operations Management

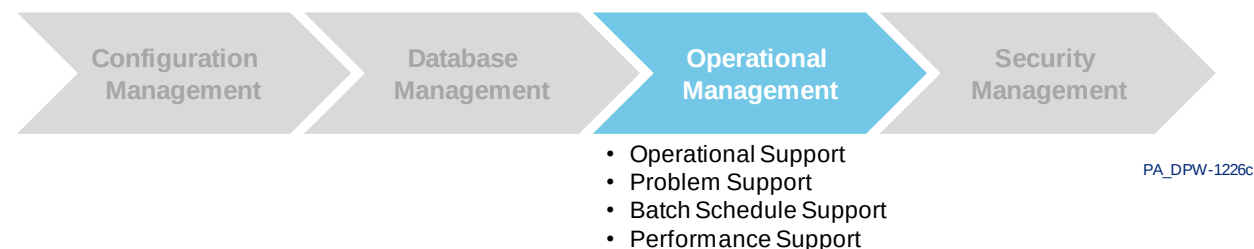


Figure 6.6-38. Operations Management Activities Offer Valuable Service to DPW.

Activity: Operational Support

Process Description	Tools
Maintain Ongoing Operations. This process focuses on the ongoing support of operational processes such as batch management, capacity planning, availability and performance management and standards compliance. Support Daily, Weekly, and Monthly Production Status Reporting. Deloitte provides repeated production status reporting in numerous venues and formats. This process defines our approach to submitting status information.	• Concord. DPW's enterprise solution for end user response time metrics collection. Concord leverages agents installed on end user machines to report response time metrics back to a centralized DPW server for reporting • SMA OpCon/xps. Automated batch scheduler used to execute batch jobs • SightLine Expert Advisor. DPW's enterprise wide tool supporting infrastructure resource utilization metrics collection • Oracle Enterprise Manager. Oracle supplied tool used to manage objects, structures and configurations within the database • UDSMON. Provides real time mainframe centric database monitoring that shows active reads/writes to the database areas/records/sets • OSAM. Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc. • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • Log Analyzer. A is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system • DPW Problem Status Reporting Inbox. E-mail account used to accept notifications of system issues from the field and to distribute this information to technical staff for immediate attention

Process Description	Tools
Provide Technical Liaison to BIS. This process highlights how the centralized technology support team serves as a liaison to BIS to communicate the needs of DPW and field, to highlight any risk/issues that impact BIS as well as providing a conduit from BIS back to the Program Offices, project teams and field staff. Participate in Scheduled Production Meetings. This process highlights our approach to engaging DPW to manage operational tasks in the production environment.	• ATS. A Web-based tool that provides centralized risk/issue management and reporting. Risks/Issues can be characterized as DTE, DEA or CIO level escalation

Figure 6.6-39. Operations Management Processes and Tools.

Reports

Deloitte provides the following reports to support the operational support activities. The following is a representative sample of Operational Reports provided, as the full list is quite extensive.

- **Daily Business Metrics Report.** This report provides key business metrics from the past three days, a 30-day average, and a 52-week high for each application. The report executes daily at 6:00 a.m. and is automatically distributed to an array of technical, project team, Program Office and Executive staff. The report provides an instant summary of the health of business processing for the previous day.
- **Enterprise Services Metrics Report.** This report provides quantitative data on enterprise web service consumption, such as correspondences generated, files stored, or applications submitted or referred to DPW systems. The report is executed daily and distributed to technical staff responsible for the overall health and management of enterprise services. The report provides an instant summary of usage metrics that is used to determine the overall health of the infrastructure.
- **Log File Disk Consumption Verification Report.** This report measures the storage space consumed by log, trace, exception, and temporary files generated during normal application operations. The report is critical to verify that disk consumption follows expected rates and that space is available to support operational processing. If space were not available, both batch and online processing failures could occur.
- **ITSS Reporting.** ITSS submits weekly and monthly status in the form of project/steering team meeting minutes as well as a monthly summary of work completed for the past month and that to be completed in the coming month. This reporting facilities to exchange important technical and project information with BIS, project teams, Program Offices and Executive staff.

Activity: Problem Support

Process Description	Tools
Problem Identification and Resolution. This process leverages the ITIL foundation to track, manage, mitigate and resolve system problems. Research Potential System Defects. This process highlights the steps used to methodically review system behaviors to identify performance, configuration or functional issues. Troubleshooting and Debugging Database Centric Issues. Deloitte assists DPW in the investigation, analysis and mitigation of database centric issues, including performance, availability, functional and configuration opportunities. Support Production Migrations Issue Resolution. Deloitte assists DPW in the resolution of deployment centric issues such as code deployment, configuration file management, server configuration management and functional investigations.	• Concord. DPW's enterprise solution for end user response time metrics collection. Concord leverages agents installed on end user machines to report response time metrics back to a centralized DPW server for reporting • SightLine Expert Advisor. DPW's enterprise wide tool supporting infrastructure resource utilization metrics collection • Perfmon. A complementary tool to Siteline that collects more detailed infrastructure resource utilization metrics • AppSight. DPW's standard tool to support application instrumentation. The tool is used to collect substantial metrics for components exhibiting problematic behavior to hasten the identification of the issue root cause • MyWebMethods Server. Provides for real time analysis and monitoring of the webMethods infrastructure • Oracle Enterprise Manager. Oracle supplied tool used to manage objects, structures and configurations within the database • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • Log Analyzer. LA is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system • UDSMON. Provides real time mainframe centric database monitoring that shows active reads/writes to the database areas/records/sets • OSAM .Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc.

Figure 6.6-40. Operations Management Processes and Tools - Deloitte Provides a Robust Set of Processes and Tools that are Directly Applicable to Increasing Automation for Operations Support.

Reports

Deloitte provides the following reports to support the problem support activities.

- **CTO Dashboard.** This daily report provides the information needed to verify the availability of the applications and associated infrastructure in the production environment. The report is produced and distributed daily at 7:30 a.m. to provide a summary view of application health. The dashboard is also used to communicate system issues by highlighting the health of an application as “red”, “yellow” or “green”.
- **Monthly Outage Report.** This report provides a summary to DPW management of system outages that occurred in the past month, including the duration, root cause, remediation steps taken.
- **TKPROF Report.** This report provides the DPW database team with a comparison of query performance before and after tuning and optimization. We submit this report after implementing any query changes to validate anticipated performance improvements are reflected in the production environment.

Activity: Batch Schedule Management

Process Description	Tools
Batch Schedule Management and Operational Support. Deloitte provides assistance in the scheduling and monitoring of batch executions. This process highlights the steps used to engage DIMO to support batch processing.	• SMA OpCon/xps. Automated batch scheduler used to execute batch jobs during volume testing • Batch Scheduling Framework. DPW reusable framework that governs the design, structure and implementation of batch processes • Batch Addition/Change/Deletion Form. Form and associated process to engage DIMO to enhance the batch schedule as required to support business processes

Figure 6.6-41. Operations Management Processes and Tools - Deloitte Provides a Robust Set of Processes and Tools that are Directly Applicable to Increasing Automation for Operations Support.

Reports

Deloitte provides the following reports to support the batch schedule management support activities.

- **Production Batch Exceptions Detail Report.** Deloitte generates a daily exception report prior to the start of the online processing to inform support teams of any batches that did not finish successfully during the past 24 hours. The report initiates a prompt root cause and business impact analysis which is summarized and distributed via the Production Batch Exception Summary Report.
- **Production Batch Exception Summary Report.** This report provides key DPW stakeholders with a management summary of the root cause and business impacts of the batch failures or anomalies that occurred the previous evening.

Activity: Performance Support

Process Description	Tools
Batch Performance Management. This process focuses on the tools and tasks necessary to manage batch performance. Other processes, such as Database Query Performance Analysis, are leveraged as well to support overall batch efficiency.	• ANTS Memory Profiler. Tool used to analyze the resources consumed by individual application components • .NET Memory Profiler. Tool used to analyze memory consumption patterns within application components. • Torch. Provides mainframe system usage information for overall capacity planning. It can be used to review SIP, MFD, and tape management data to help with projections • Log Analyzer. LA is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system • SUDS. Supervisor for Universal Data Systems is a utility used for thread and transaction management within the database. The tool also provides space management capabilities as well as diagnostic information in the case of a process dump

Figure 6.6-42. Operations Management Processes and Tools - Deloitte Provides a Robust Set of Processes and Tools that are Directly Applicable to Increasing Automation for Operations Support.

Reports

Deloitte provides the following reports to support the performance support activities.

- **Production Batch Exceptions Detail Report.** We generate this exception report at the start of the online processing window to inform ITSS and the application teams of any batches that did not finish successfully during the past 24 hours. As a result of the report, we conduct prompt root cause and business impact analysis which is included in the Production Batch Exception Summary Report.
- **Production Batch Exception Summary Report.** This report provides key DPW stakeholders with a management summary report of the root cause and business impacts of the batch failures or anomalies that occurred the previous evening.
- **Batch Long Runtime Report.** This reports is generated at the start of the online processing window and provides the names of any batches that exceed their average runtime from the past 60 days by more than one standard deviation.
- **Batch Load Testing Report.** At the end of any batch load testing cycle, we provide a detailed analysis of testing results including batches tested, functionality tested, runtime durations, and infrastructure utilization.

- **Daily Batch Timeline.** This report displays the resource usage of the production environment throughout the night mapped against the timelines for the most critical batch processes. We use the report to identify times of low resource utilization and opportunities to more efficiently spread the load over the batch window.
- **PACSES Performance Database.** Deloitte collects performance metrics that identify online and batch processes that generate high I/O levels and/or significant runtimes. The executions of the identified run units are then monitored on the mainframe using standard tools such as UDSMON, OSAM and SUDS.

Security Management

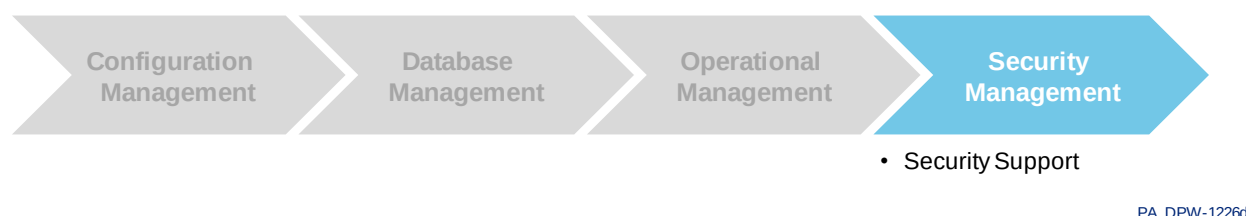


Figure 6.6-43. Security Management Activities Offer Valuable Service to DPW.

Activity: Security Support

Our security support processes incorporate security and privacy considerations throughout the SDM life cycle. Our team conducts real-time security vulnerability monitoring in production environments, including data capture for forensic analysis. We also provide and implement database security and encryption measures, including encrypting database credentials, sensitive client data in lower environment database refreshes, and production database exports and backups.

Process Description	Tools
Security Implementation and Monitoring. Processes used to manage application level security across the enterprise.	• CA SiteMinder. A centralized web access management tool which provides authentication and policy (or role) based authorization services. It enables single sign-on between protected applications and has ability for federated access management between enterprise directories • CA Identity Manager. A centralized user account life cycle management tool. It is used by delegated administrator to manage users identity and access. It can be configured to provide self-service password and self-registration features to end users • SOA Security Manager. A centralized web service security management solution • IBM Tivoli Identity Manager • RADIANTONE VDS. RadiantOne VDS aggregates and correlates user identity and access existing in multiple user repository into one enterprise directory for efficient identity and access management

Process Description	Tools
	• Password Reset Utility. Password Reset utility is a custom developed tool to help reset user passwords due to password expiration or user account lockouts • User Migration Utility. A custom tool to automate user migrations from one domain controller (Active Directory) to another domain controller • Password Management Utility. A custom develop tool to help end-users to retrieve/reset their credentials such as “Forgot Password” functionality based on “Hint Questions” • IBM Tivoli Identity Manager. A policy based user life cycle management solution with workflow capabilities that manages user access across DPW applications\ from on-boarding through termination • SIMAN. Unisys mainframe centric tool that governs system access by userid
Security Vulnerability Assessment and Resolution. Process used to proactively scan, identify and mitigate security vulnerabilities before reaching the production environment.	• HP WebInspect. A web application and web services security testing tool for automated vulnerability scanning • HP SwfScan. HP SWFScan is an open source security tool to decompile and identify security vulnerabilities in applications developed with the Adobe Flash platform • Paros Proxy. An open source proxy used to evaluate security of the web applications by intercepting HTTP and HTTPS data, including cookies and form fields, between web server and a client • HP DevInspect. An automated source code analyzer that helps to consistently identify vulnerabilities in the source code through static and dynamic code analysis • Risk Prioritization Tool. Risk Prioritization tool evaluates the security risks from each security domain for each application/systems and provides the prioritized risks that an organization (DPW) has to consider • RSA Envision. A system incidents and events management tool. It aggregates access logs from other enterprise tools, correlates, analyzes and provides a holistic view of users’ access in the system
Database Security and Encryption Measures. Process used to safeguard production data through various encryption, masking and redaction methods.	• SQL* Plus. Oracle utility that provides a conduit to execute native SQL against an Oracle database • Optim. DPW standard tool that supports data redaction, scrambling and masking when copying to test environments • SIMAN. Unisys mainframe centric tool that governs system access by userid • RDMS Table/View Security. Unisys RDMS utility to govern access and authorities against database structures

Figure 6.6-44. Security Management Processes and Tools – Deloitte Provides a Robust Set of Processes and Tools that are Directly Applicable to Increasing Automation for Operations Support.

Reports

Deloitte provides the following reports to support the security support activities.

- **Security Vulnerability Assessment Report.** A documented list of potential vulnerabilities or security improvement opportunities found during proactive testing. The results are reviewed by the application team and managed by the PCR process.
- **Security and Privacy Monthly Steering Team Report.** A monthly report providing status on security and privacy based initiatives as well as the measured key performance indicators for the security infrastructure.

Management Controls, Communication, and Evaluation

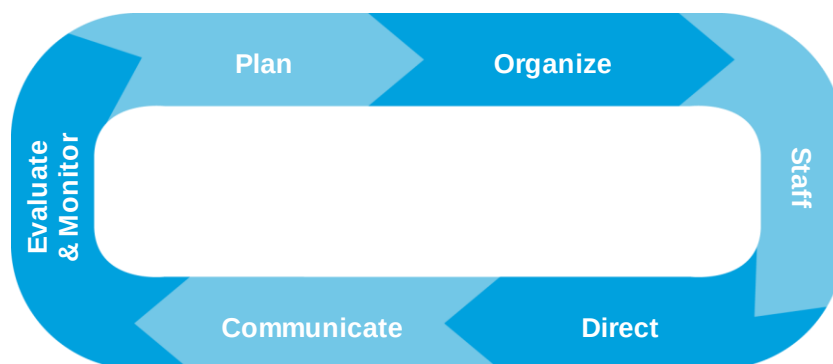
II	Page II-3	RFP Reference: II-3. Work Plan

Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks.

- Describe the management controls that will be used to identify and manage risk, maintain project schedules, ensure the quality of the work, and meet the performance expectations.
- Based on its experience, the Offeror should include a discussion of its formal and informal communication processes within a project of this nature. The Offeror should also address its approach to internally monitoring and evaluating its effectiveness in meeting the RFP requirements for the Lot throughout the course of the contract.

Management controls, formal and informal communications processes, and monitoring and evaluating effectiveness are managerial functions that we use to identify and monitor potential errors from which we perform the necessary corrective actions. These functions include planning, organization, staffing and the directing of work to minimize deviation from standards and to achieve the stated goals of the organization.

We establish controls by setting standards and based on these internal controls, measure and evaluate actual performance against these goals. Internal and external communication processes to the project organization are the means for facilitating these control mechanisms and the resulting corrective actions.



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Figure 6.6-45. Management Control, Communication, and Evaluation Process.

Deloitte utilizes a disciplined approach to effectively provide management control, enable communication and facilitate evaluation.

The following highlights our approach to delivering quality management controls that align with the requirements listed in the RFP.

Management Control Process	Deloitte Approach to Providing Management Control, Communication and Evaluation Support
Plan	• Participate and contribute to the DPW Strategic and Annual planning efforts specific to impacts relating to ongoing operations • Participate and contribute to the review of High Level Estimates and Work Orders with BIS prior to initiative start to help confirm the incorporation of operational needs in estimates • Work with BIS to review impacts, risk and issues with associated operational maintenance activities and incorporate in overall plan • Work with BIS to review, confirm and document the implementation plan for the numerous releases that will be supported through the fiscal year
Organize	• Consistently use CMMI complaint tools to organize, track and manage Risks, Assumptions, Action Items, Issues and Decisions Reached • Use work plans to organize and manage anticipated work items relating to operational support • Define roles and responsibilities to clearly delineate expectations across the team for operational tasks
Staff	• Deploy high skilled resources intimately familiar with the technology of DPW from our shared pool of resources • Mentor staff by defining fiscal year goals, achievement metrics and training opportunities for each and identify ongoing training needs to maintain proficiency in the latest technologies supporting operational activities • Educate staff on the business processes, technical direction and strategic goals of the Department on an ongoing basis
Direct	• Manage and maintain the Web-based request tracker tool that allows for Internet based submission of work requests to the shared services team. Use this tool to assign, manage and track work activities. • Review status of tasks and activities on a weekly basis to verify project and Department needs are being met • Effectively prioritize tasks or direction as required to effectively support business processing, including problem or incidents that impact system availability, performance or usability
Communicate	• Facilitate and manage frequent track, project and steering team meetings including the associated agendas and meeting minutes • Use defined protocols to alert DPW stakeholders to critical issues that require immediate attention. Complement the notification with a summary of the issue, business impact and mitigation options • Include both project and DPW staff in automated business communications such as the daily metrics report, daily batch exception report, etc. • Participate in key project team and BIS facilitated meetings that discuss project initiatives and its impact on overall operational support



Management Control Process	Deloitte Approach to Providing Management Control, Communication and Evaluation Support
Evaluate and Monitor	• Review open work requests to shared services to verify timely and accurate completion • Follow up with project team and BIS leads to discuss, review and improve overall service delivery related to operational support • Perform post deployment QA verifications on each deployment; mature the “release scorecard” concept to grade release efficiency; support midyear and end of year evaluation of staff for acceptable performance against goals

Figure 6.6-46. Deloitte’s Approach to Providing Management Control, Communication and Evaluation Methodology Services.

6.6.2.1 Activities

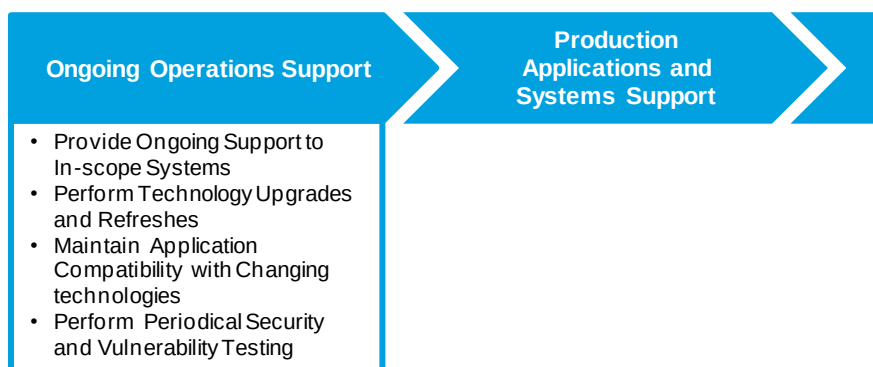
IV	Page IV-377	RFP Reference: 4.1 Applications/Systems Operations Support

The Offeror of **Lot #7** will have responsibility to maintain ongoing operational support of the in-scope applications and associated systems throughout their useful life in live production environments. Applications and associated systems platforms may be subject to periodic upgrades, technology migrations, latent production anomalies, and platform consolidations as directed by the Department. The Offeror of **Lot # 7** is required to verify application compatibility against new versions of the operating system and third party products on a schedule mutually agreed to with DPW. In addition, Applications shall be subject to regular vulnerability scanning performed by the Department. This may include third party penetration testing. Critical vulnerabilities, as determined by the Department, must be mitigated immediately after testing based on DPW approval of the mitigation strategy of the operating system and third party products on a schedule mutually agreed to with DPW.

Deloitte maintains ongoing operational support of DPW's in-scope applications leveraging an ITIL and CMMI based process framework to guide technology migrations, platform upgrades, and compatibility with core operating system changes over time.

We are committed to bringing our technology support, migration, upgrade, and change experience to bear to continue our history of dependable operational support to DPW.

The structure of this *Section 6.6.2.1* is divided into three subsections that cover the RFP content. Each are highlighted in the chevrons below and will help you navigate this response. They include Ongoing Operational Support, Production Applications and Systems Support and Database Administration Support.



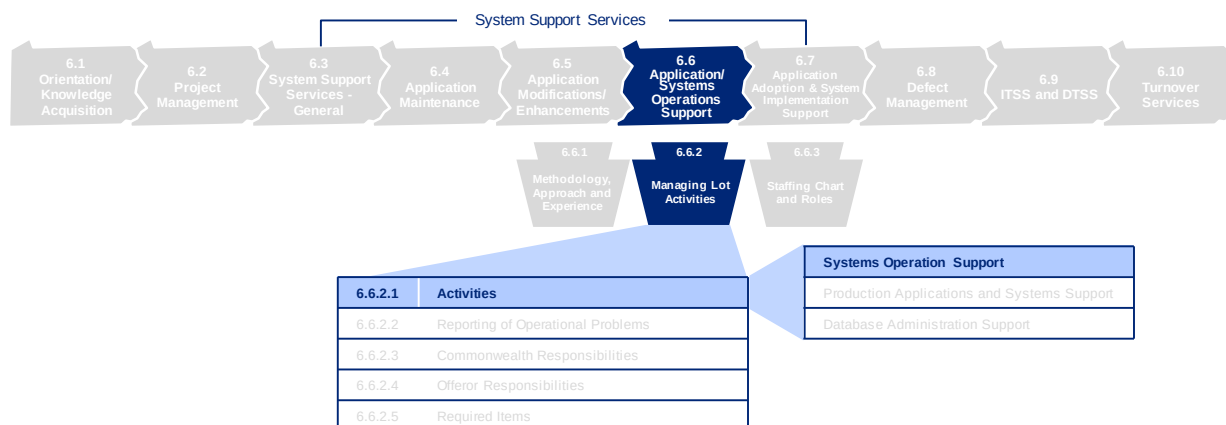
Have you heard?

The Commonwealth is ranked as the overall best large state (more than one million individuals enrolled) by the U.S. Department of Agriculture based on having the smallest number of cases involving errors for Food Stamp eligibility. The departments have been able to maintain this ranking while managing an 11 percent reduction in County Assistance Office staff.

Figure 6.6-47. Deloitte's Approach to Providing Management Control, Communication and Evaluation Methodology Services.

Our approach to providing ongoing operations support effectively uses tested principles for management control, communications and evaluation.

6.6.2.1 Activities - Systems Operation Support



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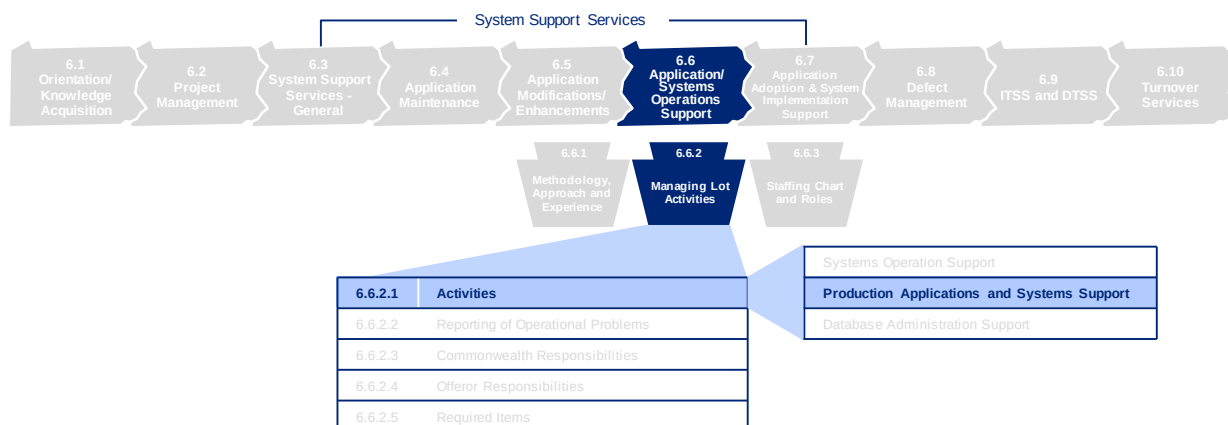
The following highlights our approach to managing RFP requirements pertaining to Ongoing Operations Support.

Deloitte Ongoing Operational Support Activity	Deloitte Performs Operational Tasks Meeting DPW Requirements
The Offeror of Lot 7 will have responsibility to maintain ongoing operational support of the in-scope applications and associated systems throughout their useful life in live production environments.	- Deloitte is responsive to managing and maintaining the ongoing operational support of the in-scope systems throughout their useful lives in production environments. - We understand the depth and breadth of DPW systems, the important role they play in the welfare programs and ongoing mission critical operations. - We understand that keeping these systems operationally sound each day is the top priority for BIS and its constituents.
Applications and associated systems platforms may be subject to periodic upgrades, technology migrations, latent production anomalies, and platform consolidations as directed by the Department.	- We actively participate and provide support to periodic upgrade activities, technology migrations, production anomalies and platform consolidations. - We bring to DPW a broad knowledge and understanding of your technology infrastructure and intimate familiarity with the migration path of the Department. - We bring our knowledge and experience in these activities to facilitate future product and solution transformations.
The Offeror of Lot 7 is required to verify application compatibility against new versions of the operating system and third party products on a schedule mutually agreed to with DPW.	- We verify application compatibility against the new version of operating systems and third party products during operating system upgrades. - Involve project teams into the testing efforts to confirm that the respective applications work well with upgraded patches, service packs or upgrades. - Use automated testing tools chosen by DPW to regression test the applications in a timely and automated manner to minimize the manual efforts required.

Deloitte Ongoing Operational Support Activity	Deloitte Performs Operational Tasks Meeting DPW Requirements
Applications shall be subject to regular vulnerability scanning performed by the Department. This may include third party penetration testing. Critical vulnerabilities, as determined by the Department, must be mitigated immediately after testing based on DPW approval of the mitigation strategy of the operating system and third party products on a schedule mutually agreed to with DPW.	We perform the security and vulnerability testing by taking a two-fold approach: • Scanning Approach - We demonstrate how vulnerability scanning is integrated into the development process via automated and manual tests done by the application team during integration testing and by BIS in Systems Acceptance Testing phase. - Execute penetration testing using the third party products chosen by DPW. • Mitigation Strategy - We document security vulnerabilities as non-functional change requests and assign them to the respective application team. - We work with DPW to manage critical vulnerabilities through testing phases to either resolution or a mutually agreeable solution.

Figure 6.6-48. Deloitte Performs Operational Tasks Meeting DPW Requirements.

6.6.2.1 Activities - Production Application and Systems Support



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RFP Reference: 4.1 Applications/Systems Operations Support

The Department expects that the selected Offeror of **Lot #7** shall provide all services associated with Production Application/Systems Operations Support

Deloitte provides production application and system operations support services across the in-scope systems and associated applications. These services, which are primarily in the operations, configuration management and security realms, support online and batch transaction processing for DPW's critical programs and serve as the foundation upon which continued operation and enhancement of these programs depends.

Our knowledge of the DPW operating environment, stakeholders, and technologies will enable us to continue to provide an unrivaled level of support to the Department's programs.

- **Understanding of DPW's Operating**

Environment. Our team has detailed knowledge and understanding of the online and batch operations required to support some of DPW's most critical business functions: eligibility determinations, financial transactions to clients and providers, forms and reports generation, and application of child support enforcement remedies.

- **Working Relationships with DPW Stakeholders.**

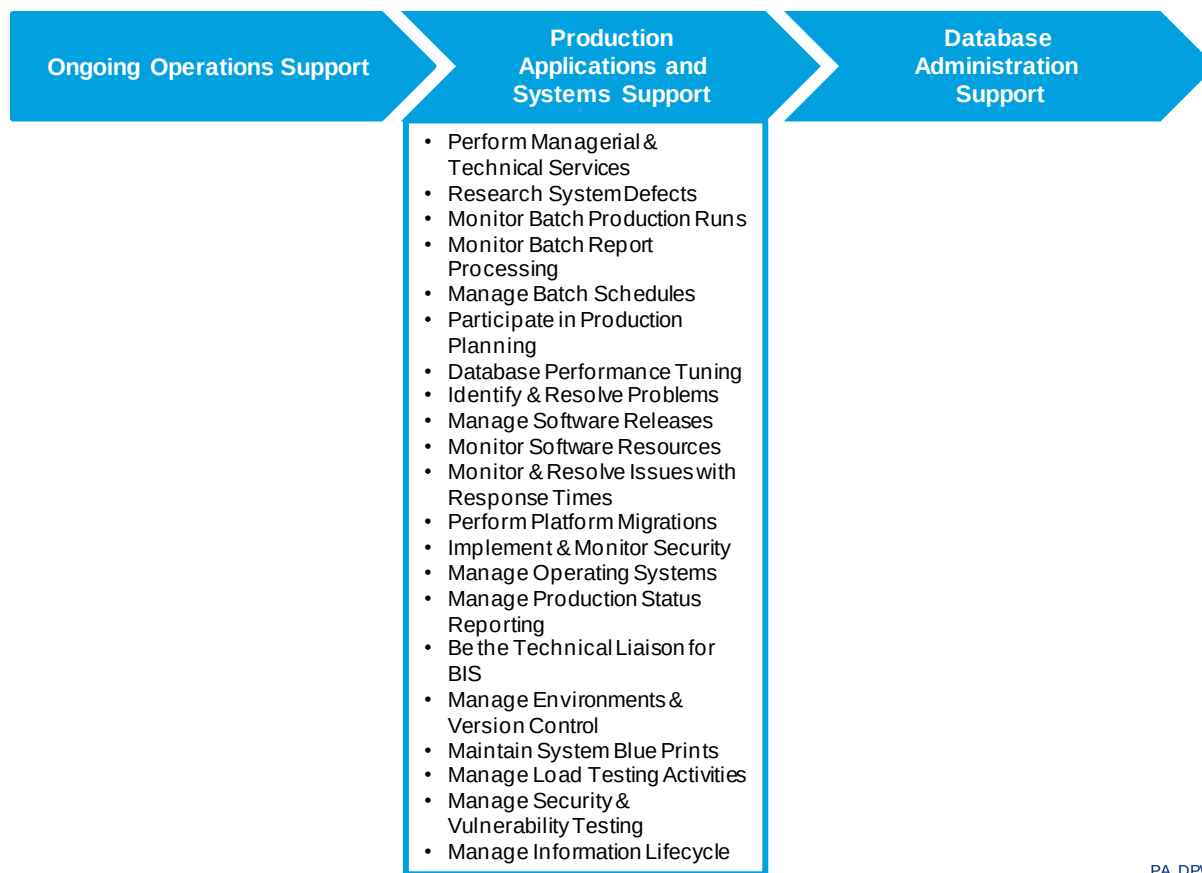
Deloitte has years of working experience with key DPW stakeholders: the program offices, BIS, and other system and technology vendors supporting DPW applications. If system anomalies arise, our team knows the process, the technologies, and, most importantly, the people to engage to resolve these anomalies and return the systems to normal operations.

- **Broad Technical/Institutional Experience.** DPW's architectural topology is very complex. A combination of mainframe, legacy open system as well as the latest .NET service enabled technologies serve as the foundation of DPW's core systems. Numerous COTS products such as Oracle, SQL Server, Adobe, Corticon, and Site Minder are critical to the overall application design.

We are committed to bringing our experience, relationships and knowledge to DPW to continue our history of high-quality production application and system operations support. As defined below, the following sections highlight our commitment and approach to satisfying RFP requirements pertaining to Production Applications and Systems Support.

Have you heard?

Pennsylvania has been recognized as one of the 10 most digitally advanced state governments in the nation, according to the Center for Digital Government's 2008 Digital States Survey, a comprehensive biannual review of digital solutions and best practices.



PA_DPW-673

Figure 6.6-49. Deloitte Performs Operational Tasks Meeting DPW Requirements.

Our Production applications and systems support functions run the full range of activities needed to keep your systems operational.

Managerial and Technical Services to Maintain Ongoing Operations

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- Managerial and technical services required to maintain the ongoing operations

Deloitte provides managerial and technical services required to maintain the ongoing operations of in-scope applications.

We define ongoing operations as the coordination, communications, planning and technical activities required to maintain the level of availability, performance and functional delivery necessary to meet business objectives. Numerous tasks are required to maintain production efficiencies, including accommodating capacity increases brought forth by expanding caseloads and additional users, infrastructure upgrades and patches, performance tuning reviews and alterations as well as application patching. These efforts are required regardless of the level of enhancements planned and serve as the basis for our maintenance scope.

To effectively support the operational scale the business of DPW provides, it is important to understand the processing “footprint” and different characteristics each

application presents. Operational processing is identical each business day. There are peaks and valleys in system resource consumption introduced by the dynamic needs of the business that must be managed. Deloitte is the only vendor with the awareness of the business of your application suite and how that translates to system resource consumption.

The following highlights a representative summary of processing considerations that must be sustained.

Applications	Deloitte Supports Critical Production Support Needs
i-CIS	CIS. ADI Payday batch must finish each night prior to 6:00am to allow the CIS system to be brought online to allow county workers to process cases. CIS. Various cost of living adjustments and benefit mass change processes are executed throughout the year to manage benefit distribution. CIS. Daily eligibility interface file exchanges are crucial to manage operational processes between Promise (Medicaid), PID (CHIP/AB), PACSES (Child Support) and OCDEL (Child Care) COMPASS. Peak client self-service operations during LIHEAP season, and late summer supporting renewals of benefits for School Meals and Child Care benefits introduce substantial increases in usage and resource consumption. eCIS. LIHEAP processing introduces a sharp increase in e-CIS processing and resource consumption during the heating season. Typically, supplemental payments are issues that requires expeditions execution of processes to identify, calculate and reissue benefits to those eligible.
HCSIS	TSM Billing. HCSIS performs monthly processing of billable case comments which are submitted in bulk to PROMISE for vendor payments. ERS. HCSIS facilitated the creation of the Enterprise Rate Service that created a reusable service to leverage Promise as the system of record for service rates. The service is used in both real time and batch. CMS Compliance. CMS requires the timely provision of CMS related compliance information.
PACSES	PACSES. Mainframe batch must finish prior to 6:00am to allow county workers access to the online system. Batch duration is impacted by the number of financial receipts that are processed, which typically averages 150,000 financial receipts per week with the heaviest processing days normally being Monday (40,000-50,000) and Friday (30,000-40,000). Open Systems - Data in the PACSES open systems databases are refreshed nightly from the PACSES Mainframe and are critical to the operational availability of the CSWS, PIM, JNET, PTS, IVR and QUICK applications.
PELICAN	PELICAN executes an annual "Fiscal Year Rollover" process to run to close, reconcile, and open new budgets for each case within Child Care Works.
Child Welfare	The Child Welfare suite is composed of over 10 systems with very disparate operational needs, including ChildLine must maintain availability 24/7 and 365 days a year. AFCARS processing must occur in a timely fashion in order to maintain Federal compliance.

Applications	Deloitte Supports Critical Production Support Needs
Enterprise Services	DPW's 25+ Enterprise Services are used by multiple applications with the DPW enterprise, including: • MCI. An enterprise service that uses a publish/subscribe approach to send automated notification of demographics changes to subscribing systems. Operationally, this presents coordination, governance and logistical challenges in managing maintenance activities. • FSWS. The File Storage Web Service provides mass storage solutions for notices, correspondence, etc. The solutions houses millions of artifacts annually and is substantially used in both batch and on line processing. • Correspondence. The Correspondence services leverages Adobe and WebMethods architectures to support orchestrated creation of correspondences and notices and is used by the PELICAN, e-CIS and PACSES applications.

Figure 6.6-50. Processing Considerations Supported by Our Combined Operations Team.

The level of production mission criticality is immense. These systems are core to DPW's mission and ability to function as an organization whose key goal is to serve the needy of the Commonwealth. Our approach to providing ongoing operational support is divided into two key areas – managerial services and technical services. Managerial services cover coordination activities, meetings, and communications required independent of software change activities. The technical services component explores management of areas within the applications and infrastructure required for regular operations, again withstanding software or hardware changes.

Managerial Services

Deloitte's approach to providing managerial oversight, as part of ongoing operational support, centers on our ability to effectively communicate and coordinate project centric activities to BIS as well as be the steward of BIS back to the projects. Frequent, efficient communication is crucial to maintain a consistent understanding between the various groups so we can collectively act as one centralized team. Our approach includes:

Coordination Meetings

Our team facilitates reoccurring coordination meetings with stakeholders within each technology domain within DPW. By leveraging the shared services model, Deloitte staff participating in these meetings represents the entire suite of projects and project related needs. Conversely, this same staff will be responsible for disseminating the information gained from these meetings back to the larger Deloitte application support team.

Management Services – Coordination	Deloitte's Approach Brings Reliable Operations Support to DPW
Middleware Coordination	Weekly; Review upcoming initiatives, status of current design and development activities, and assist in workload prioritization. Also used as a forum for issue management.
Database Coordination	Weekly; Review upcoming initiatives, status of current design and development activities, review production behaviors and performance tuning opportunities as well as discuss approaches to manage operational patching, upgrades and outages. Also used as a forum for issue management.
Infrastructure (Server) Team Coordination	Weekly; Review any pending hardware, software, network or platform centric items surrounding capacity planning and configuration management and status of project initiatives impacting the infrastructure. Also used as a forum for issue management.
Batch Operations Coordination	Weekly; Review current status of batch processing and any outstanding operational support issues; review upcoming schedule change needs as well as any required maintenance activity. Also used as a forum for issue management.
Security Operations Coordination	Weekly; Security project team meeting to discuss relevant security topics, review key performance indicators and plan upcoming activities, deployments and maintenance needs.
Cross Project Logistics	Monthly; Team summary and prioritization session for any pending hardware, software or platform changes, status of current tasks and assignment of activities.
Change Management Board	3x Week; Deloitte presents information on business/technology changes for the proposed application implementation request (AIR). The AIR provides information on business reason for the application change, code diff sheet and program office approval information.
Production Deployment Logistics	Weekly; Deloitte presents the production playbook during the meeting. Production playbook lists the deployment steps/resources/dependencies for production deployment. We determine that the domains have clarity on the steps involved for the production deployment support.
Project Team Meeting	Weekly; Executive summary and working session to discuss any project or BIS initiative, any opportunities for improvement and strategies to continue the capabilities of the collective teams. Also used as a forum for issue management and escalation.

Figure 6.6-51. Deloitte's Approach Brings Reliable Operations Support to DPW.

Through these discussions, project required tasks are proactively discussed, planned and tracked. Operational issues effecting performance, availability and functional delivery are managed and coordinated. Any associated risk or issue is discussed upon identification at DEA/DTE escalation level before being escalated to the CIO.

Artifact Management

In addition to this level of personal interaction, the following project artifacts are used to collaborate between our team and BIS, including:

Management Services – Artifacts	Deloitte’s Approach Brings Reliable Operations Support to DPW
Project/Steering Team Meeting Artifacts	CMMI complaint meeting agendas and minutes that track project related items requiring management discussion.
Risk/Issue Log	A report generated from the centralized risk/issue repository that is used to actively manage risk and issues across the project suite; As stated, these are discussed (minimally) on a weekly basis for progression.
Quarterly/Monthly Report	Deloitte submits a monthly report to BIS listening the accomplishments for the month, planed activities for the subsequent month, infrastructure/application outages as well as deployment coordination metrics. Quarterly reports are also submitted highlight performance against defined SLA’s, etc.
Work Orders	In addition to work orders submitted for project modifications, Deloitte submits work order to BIS to facilitate the procurement of project required desktop hardware and software to support maintenance activities.
Capacity Plans	Deloitte will submit quarterly capacity plans highlighting expected resource consumption over the coming quarter and beyond.
Application Life Cycle Baseline	Deloitte will manage the ALM that serves as the current listing of approved architectural components, software packages and products (including relevant version). The ALM is submitted monthly with the monthly report submission.

Figure 6.6-52. Deloitte’s Approach Brings Reliable Operations Support to DPW.

Deloitte has demonstrated the ability to effectively coordinate with you to manage maintenance initiatives. Our collegial, “one team” approach fosters an environment of tight integration between our teams to singularly support the needs of the Department.

Technical Services

Each BIS domain contributes to the operational performance, availability and functional delivery of DPW services. These technical services provide the capabilities needed to smoothly manage business complexities to meet operational needs. The following provides a representative sample of the technical services needed to maintain current operations:

Technical Service – Configuration Management	Deloitte's Approach Brings Sound Operational Related Configuration Management Principles to DPW
Cleanup of Logs and Temporary Data Files	Coordination and configuration of a periodic batch process to manage and purge files which are unnecessary to maintain past usefulness to the business. This activity includes data purges within the open systems and mainframe applications.
Capacity Planning Execution	Collect data regarding test environment and production disk utilization and forecasted consumption.
Upgrade Compatibility Analysis	Review any proposed changes to hardware and software versions, such as operating systems, COTS products, or libraries/drivers.
Coordinate Maintenance Activities	Work with DPW stakeholders to coordinate scheduled and unscheduled maintenance activities and work to minimize their impact on application development and end-user system availability.

Figure 6.6-53. Deloitte's Approach Brings Sound Operational Related Configuration Management Principles to DPW.

Technical Service – Operations	Deloitte's Approach Brings Operational Confidence to DPW End Users
Batch Schedule Monitoring and Reporting	Review the OpCon schedules to confirm that nightly batch for Mainframe and Open Systems applications completed successfully.
Performance Monitoring and Reporting	Work with DPW stakeholders to review performance using Concord, Sightline and other tools to identify any opportunities that may exist.
Capacity Planning and Reporting	Consolidate and review data for quarterly capacity reports. Present these reports to DPW on a quarterly basis.
Availability Monitoring and Reporting	Work with DPW stakeholders to review the availability of open systems and mainframe applications and report on periods of unavailability.

Figure 6.6-54. Deloitte's Approach Brings Operational Confidence to DPW End Users.

Technical Service – Middleware	Deloitte's Approach Brings Dependable Middleware Integration Services to DPW
Product patch and Compatibility Review	Review the COTS integration platform software (webMethods, BizTalk, Informatica) for patches addressing any compatibility or reliability issues with other DPW products.
Support Capacity Planning	Collect information on service consumption and utilization to assist in reviewing capacity and predicting future growth.
Performance monitoring and Reporting	Work with DPW stakeholders to review the performance of services and orchestrations and perform tuning as needed.

Figure 6.6-55. Deloitte's Approach Brings Dependable Middleware Integration Services to DPW.

Technical Service – Database	Deloitte's Approach Brings Operational Related Database Reliance to DPW
Support Data Integrity Checks	Perform periodic database data integrity checks, and work with the data team to resolve any inconsistencies through data fixes and constraints.
Support Capacity Planning	Collect information on table spaces and disk utilization to assist DPW in establishing current sizing information and predicting future growth.
Review and Tune Database Performance	Work with the data team to review query and index performance characteristics and to enhance performance as necessary.

Figure 6.6-56. Deloitte's Approach Brings Operational Related Database Reliance to DPW.

Technical Service – Knowledge Management	Deloitte's Approach Supports Integrated Operational OLAP Reporting
Review and Monitor Data Extracts and Loads	Work with the Knowledge Management team to monitor and review the completion of data extracts, creation of reporting cubes, and successful population into the EDW.
Review and tune ODS, EDW and Report Performance	Work with the Knowledge Management team to monitor and review the performance of reports driven by cubes, ODS, and EDW. Provide tuning assistance as necessary.

Figure 6.6-57. Deloitte's Approach Supports Integrated Operational OLAP Reporting.

Technical Service – Security Management	Deloitte's Approach Brings Trustworthy Security Operational Features to DPW
Support Capacity Planning	Collect data regarding security test environment and production open systems infrastructure utilization/response times and forecasted consumption.
Monitor COTS product Vulnerability Announcement	Identify threats/vulnerabilities to DPW applications from COTS products through proactive monitoring for emergence of new threats/vulnerabilities such as CERT and vendor vulnerability announcements.
Availability Monitoring and Reporting	Work with DPW stakeholders to review the availability of open systems security infrastructure and report on periods of unavailability.
Cleanup of Logs and Temporary Data Files	Manage and purge files which have been identified unnecessary to maintain past usefulness to the business supporting open systems.
Performance Monitoring and Reporting	Work with DPW stakeholders to review performance using Concord, Sightline and other tools to identify system performance and response times.

Figure 6.6-58. Deloitte's Approach Brings Trustworthy Security Operational Features to DPW.

In summary, maintaining the ongoing operations of DPW requires a thorough understanding of the overall DPW system architecture, the business objectives to be met and the right processes and methodologies needed to provide required services.

Perform Research Upon Recognizing Potential System Defects

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RFP Reference: 4.1 Applications/Systems Operations Support

- Perform research immediately upon recognizing potential system defects in order to minimize system impact and improve processing.

Deloitte performs research upon recognizing potential system defects in order to minimize system impact and improve processing for the in-scope systems.

As stated, the primary focus of maintenance management is to maintain system performance, availability and functional delivery. The timely mitigation of system issues impacting any of these is the first priority of any IT department. Although many interruptions can be resolved quickly by restarting infrastructure components, other defects may require coordination with development teams and prioritization within the SDLC to research and rectify. The following provides a summary of characteristics of each application that is valuable to know during issue investigation.

Applications	Deloitte Understands System Specifics Needed for Issue Investigation
i-CIS	CIS. CIS makes extensive use of OpenTI functionality to communicate with open system components. Typical issues impacting these components cause queuing on the mainframe. A restart of the halted component has historically provided resolution to the issue. CIS. As previously discussed, the implementation of 4B functionality will substantially increase the traffic between the mainframe and the open system. If issues are identified in the future, a quick validation of middleware centric traffic would be a good first step at determining where the issue lies. eCIS. e-CIS uses Oracles Advanced Queuing to support Workload Dashboard task assignment. Traditionally, if there are issues with alerts not showing on a users dashboard, a quick inspection of the Queue activity would be warranted. COMPASS. The COMPASS architecture makes use of RIA technologies that include deployment of code on the user machine. Behavioral issues within the COMPASS application would warrant a quick analysis of .swf file configuration and management to the end user.
HCSIS	HCSIS. HCSIS makes use of Web Garden configurations to make better use of system resources. This configuration, by design, spawns multiple connections to the web and database server. This is a unique confirmation across the DPW suite and should be taken into consideration when doing issue investigation.

Applications	Deloitte Understands System Specifics Needed for Issue Investigation
PACSES	PACSES. The PACSES mainframe makes use of a custom coded set of 16 "complexes" that are known as the Support Layer. This application layer manages interfaces between the application code and the underlying system software products that reside on the Unisys platform and it allows the application developer to focus solely on the COBOL business logic. The communication between the COBOL application code and the Support Layer complexes (and thus the underlying system software) is managed through API interfaces. In addition to providing simple access to system software products, the Support Layer also manages the entire application migration and generation process through the Programmer's Workbench complex. Open Systems. Data in the PACSES open systems databases are refreshed nightly from the PACSES Mainframe and are critical to the operational availability of the CSWS, PIM, JNET, PTS, IVR and QUICK applications. Issues with these systems frequently stem from issues with the daily load process.
PELICAN	PELICAN makes use of table PC's to offer disconnected processing capability to users doing provider certifications. Issues pertaining to this functionality could stem from problems with the automated deployment of the software, installations of the local database or application configuration issues impacting the overall behavior of the application.
Child Welfare	The Child Welfare suite is architected on a variety of platforms including Excel and Microsoft Access. Issues stemming from these applications may lie in the scalability of the desktop tools used or the configuration management of the Access databases.
Enterprise Services	At the heart of DPW's enterprise services is the WebMethods integration broker engine. The tool provides massively scalable orchestration and messaging services. The configuration of the tool is managed through various WebMethods queues that can be configured in number to allow for parallel processing. Issues impacting service calls traversing the infrastructure are usually reflected in the health of the processing queue. This is typically a good place to start initial investigations into web service issues.

Figure 6.6-59. Processing Characteristics Whose Awareness Aids in Issue Investigation.

Our approach to recognizing and researching potential system defects involves both the identification of anomaly, and working closely with BIS to coordinate the investigation of the issue. Key activities during researching and correcting defects include:

- **Recognize Potential System Defects.** Use the tools available to, if possible, immediately and proactively alert technical staff that an issue or "oddity" within the processing infrastructure exists.
- **Perform Research and Manage System Impact.** Leverage our vast understanding of the DPW infrastructure, application architecture and overall business process to understand what the end user is doing, how it manifest itself within the application and what root cause/mitigation steps arise. After a plan of action is considered, immediate notification of the latest status to stakeholders is required. Collaboration is crucial during this early stage to confirm that the appropriate staff are aware of the issue and can be engaged to facilitate resolution.

Recognizing Potential System Defects

In the DPW operational environment, we identify potential defects or system interruptions in a multitude of fashions. Our first approach is to carefully monitor the available information in each environment, and to attempt to identify issues before end-users are impacted. In order to identify defects and interruptions we will use the following monitoring tools and processes:

Deloitte Monitoring Activity	Deloitte Proactive Activities to Recognize Potential System Defects
Application and Infrastructure Health Checks	The Open Systems Application health checks contain the critical test scenarios for each DPW application, and are run each morning. The Infrastructure health check will contain validating the availability of the servers and dependant web services and COTS products that support each application. Completion of this testing identifies any areas of the application or infrastructure that may be failing. The health check for PACSES Mainframe is performed by our team each day.
Production Business and Service Metrics Reports	The production business metrics and service metrics reports include a summary of the amount of transactions completed by each DPW system. This report highlights when activity, such as case creation or demographics updates, exceed or fall below expected levels, and can be used to identify areas for further research.
Production Batch Exception Report	The Production Batch Exception Report highlights any anomalies in the production batch cycle, including jobs which fail to run, jobs which take longer than their anticipated time to complete and any variances to the jobs that appear on nightly schedules from what is expected.
Database Performance Monitoring	Work with the DPW database team to identify the most-executed queries within each application have performance improvement opportunities. This monitoring is finalized by DBA staff using Oracle Enterprise Manager.
Open Systems and Mainframe Performance Monitoring	Monitoring runtime performance on the open systems and mainframe applications occur using a variety of tools installed at DPW, including Concord and BMC AppSight on the open systems, UDSMon and other tools on the mainframes, and Sightline across the platforms. We work with DPW to identify and establish thresholds within these tools and to configure alert to support personnel incase anomalies are detected.

Figure 6.6-60. Deloitte Proactive Activities to Recognize Potential System Defects.

In addition to the processes identified above, Deloitte also understands that users of the systems can often be the best source of information when issues occur. The DPW Helpdesk and Hotlines, and the application specific helpdesks supporting HCSIS and PACSES are valuable sources of problem reports. In this contract, we will coordinate with DPW and/or Lot 1-5 Vendors to understand Level 1 Helpdesk information.

Perform Research and Manage System Impact

Our team will work with BIS to investigate potential issues by leveraging the available tools, logs and system metrics to identify a potential root cause. The following highlights the tools, logs and system metrics used in our analysis:

Deloitte Monitoring Activity	Deloitte Uses Automation and Tools to Support Issue Investigations
SiteLine	As discussed, SiteLine provides detailed data around system metrics consumption like CPU and memory utilization, system queuing, transaction response time, intersystem communication performance and connection management. This is critical to identify what particular component of the infrastructure is in distress which then helps focus the team on what to investigate.
IIS Logs	Our team reviews IIS Logs to collect metrics about web page access, including the quantity of hits by page as well as what pages were being accessed at a particular time. This helps pinpoint what functionally was being access, and how hard, during the particular issue period.
Application Logs	Application logs provide detailed diagnostic messages pertaining to error or warning conditions within the application. These logs provide detailed metadata surrounding the offending transaction such as case number, client id, etc. which aids in issues investigation.
Windows Event Viewer	The Event Viewer is a repository for system generated error or warning messages. These messages highlight system wide error conditions that impact the entire machine (which could be supporting multiple applications). Event Viewer messages also help pinpoint the focus area for immediate investigation.
Component Services	Component Services manages COM objects that are frequently used in OpenTI transactions. Component Services will identify if services are not responding and, therefore, manifesting queuing on either the open system or the mainframe.
Enterprise Manager	Enterprise Manager is Oracle's Enterprise monitoring and management tool that provides insight into database health, performance levels, SQL requests and connection metrics. It will highlight application code that is in need to tuning or is being executed an abnormally number of times or with parameters that make the query consume substantial system resources.
AWR Reports	As previously discussed, AWR reports are scheduled to run daily and collect historic metrics of database system resource consumption. The report highlights activity that can be proactively monitored and adjusted before becoming an issue.
MyWebMethods Server	MyWebMethods is the WebMethods equivalent of Enterprise Manager for the database. It provides monitoring and management capabilities of WebMethods queues that can be dynamically tuned to accommodate surges in demand or to queue requests so downstream resources are not overwhelmed. Requests that are behaving abnormally would be discoverable with the tool and would quickly direct the team to focus research in this arena.

Deloitte Monitoring Activity	Deloitte Uses Automation and Tools to Support Issue Investigations
Tipper Log	TIP\$*TIPERS is a collection of log files listing aborted mainframe transactions. Each log file contains information to assist in the debugging of processes and includes relevant database, transaction, OpenTI and application diagnostic information.
UDS Mon	Provides real time mainframe centric database monitoring that shows active reads/writes to the database areas/records/sets
AppSight	DPW's standard tool to support application instrumentation. The tool is used to collect substantial metrics for components exhibiting problematic behavior to hasten the identification of the issue root cause.
OSAM	Provides both real time and historical system monitoring of mainframe information on TIP transaction activity, UDS thread usage, mass storage and disc utilization, communications performance statistics, batch usage, etc.
Log Analyzer	LA is a mainframe centric tool used to review logon failures, file access rejections, unexpected changes in SIMAN, repeated use of privileged IDs. It is essentially a tool that can be used for security purposes and access attempts to a Unisys mainframe system.
SUDS	Supervisor for Universal Data Systems is a utility used for thread and transaction management within the database. The tool also provides space management capabilities as well as diagnostic information in the case of a process dump.

Figure 6.6-61. Deloitte Leverages Various Tools to Support Defect/Issue Investigations.

Our knowledge of DPW systems, combined with the data provided by the tools referenced, positions us to quickly identify the cause of system defects and various mitigation strategies. We work with DPW to develop short and long term solutions if necessary with the primary focus continuing to be performance, availability and functional delivery so as to meet end user needs and expectations.

Batch Operations Support

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- Scheduling and assisting in monitoring batch production runs and in resolving problems with batch jobs.
- Assist in monitoring batch report processing to ensure that reports are correct and optimized for performance.
- Work with the Commonwealth to periodically review the batch schedule and make recommendations for improving efficiency and streamlining performance
- Batch cycle scheduling specifications, including job turn-around time monitoring and problem resolution

The Deloitte works with DPW to support production batch operations for the in-scope systems, including:

- Scheduling and assisting in monitoring batch production runs and in resolving problems with batch jobs
- Assistance in monitoring batch report processing to confirm that reports are correct and optimized for performance

- Review of batch schedules to make recommendations for improving efficiency and streamlining performance
- Batch cycle scheduling specifications, including job turn-around time monitoring and problem resolution

Our team brings a broad specialized knowledge and an intimate familiarity with thousands of batch processes that execute in the DPW environment each night. We provide DPW batch operation support services including the scheduling of batch jobs, batch reports, optimizing batch cycles to increase operating efficiencies, monitoring nightly batch runs, and resolving any potential issues. Many critical DPW processes such as benefit issuance, income attachments, distribution, correspondence generation, and provider invoicing depend entirely on open systems and mainframe batches completing successfully and on time. Deloitte has vast experience, within our proposed operations team, with the SMA OpCon/xps tool and the DPW batch architecture to support ongoing batch operations.

Have you
heard? 

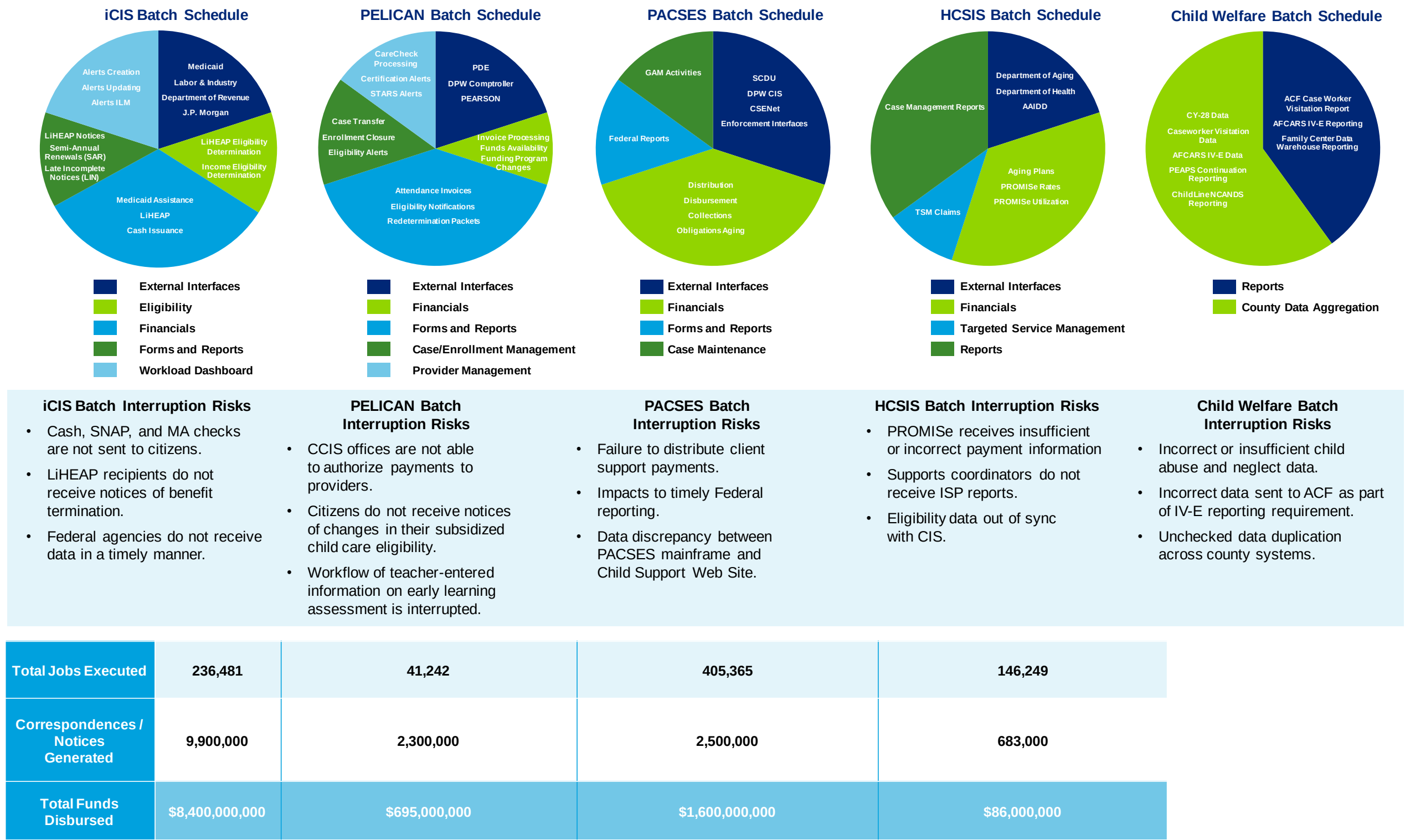
Since Governor Rendell took office in 2003, Pennsylvania has earned more than \$13 million in federal performance bonuses for its improved management of the program.

We believe that Deloitte is positioned to support DPW's mission critical batch and systems support operations. We have the technical, functional, and operational knowledge of DPW that cannot be matched by any other vendor.

As previously illustrated, the topology of DPW system architecture is quite complex. Enterprise batch management is also quite complex as it impacts virtually each facet of business processes and is extremely important to delivering the services of DPW, as demonstrated in Figure 6.6-62.



Deloitte. Deloitte Brings Deep Understanding of DPW Batch Architectures (20,000+ Batch Jobs) and Mission Critical Support Needed

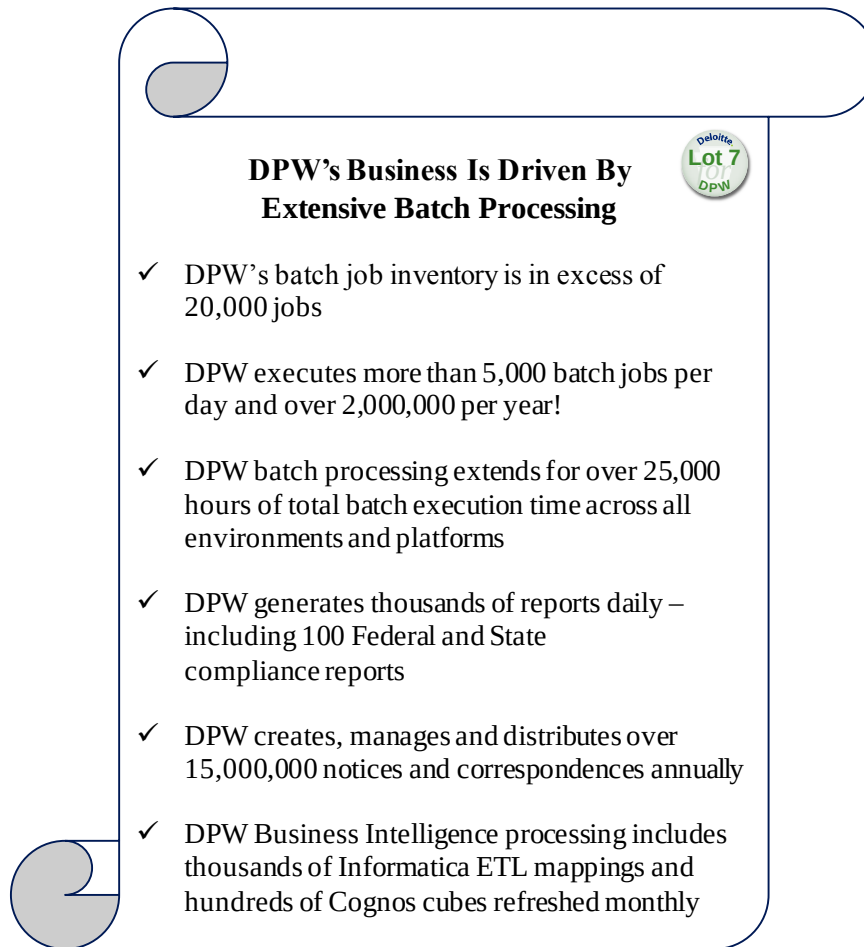




Our combined operations support team has demonstrated the capability to manage DPW's batch enterprise. In fiscal year 2010 alone, there were hundreds of thousands of successful batch job executions, millions of notices generated, and more than \$10,781,000,000 of funds disbursed!

Figure 6.6-63 highlights DPW's Operational Excellence surround batch processing capabilities and magnitude of business processing.

Deloitte Brings Reliable Operational Experience to DPW's Mission Critical Enterprise



PA_DPW-954b_2

Figure 6.6-63. DPW Batch Processing Capacities.

Deloitte and DPW have demonstrated capabilities to support enterprise class batch processing and business management.

The remainder of this section is organized as follows in response to your RFP requirements:

- Scheduling and Assisting in Monitoring Production Batch and Resolving Batch Problems
- Assist in Monitoring Batch Report Processing and Optimization



- Reviewing Batch Schedules for Efficiency and Performance Improvement Opportunities
- Batch Cycle Scheduling Specifications

Scheduling and Assisting in Monitoring Production Batch, and Resolving Batch Problems

This section discusses our approach to assisting the Department in the following areas:

- Batch Scheduling
- Batch Monitoring
- Batch Problem Resolution

Batch Scheduling

Deloitte works in close coordination with various stakeholders to implement new or changed batch jobs across the various environments within the batch infrastructure at DPW.

The process for updating the scheduling environment is essentially the same across the platforms, with specific variations for the PACSES mainframe environment. Following, we are providing you with an overview of the open systems batch scheduling processes and approach differences in the PACSES and CIS mainframe environments.

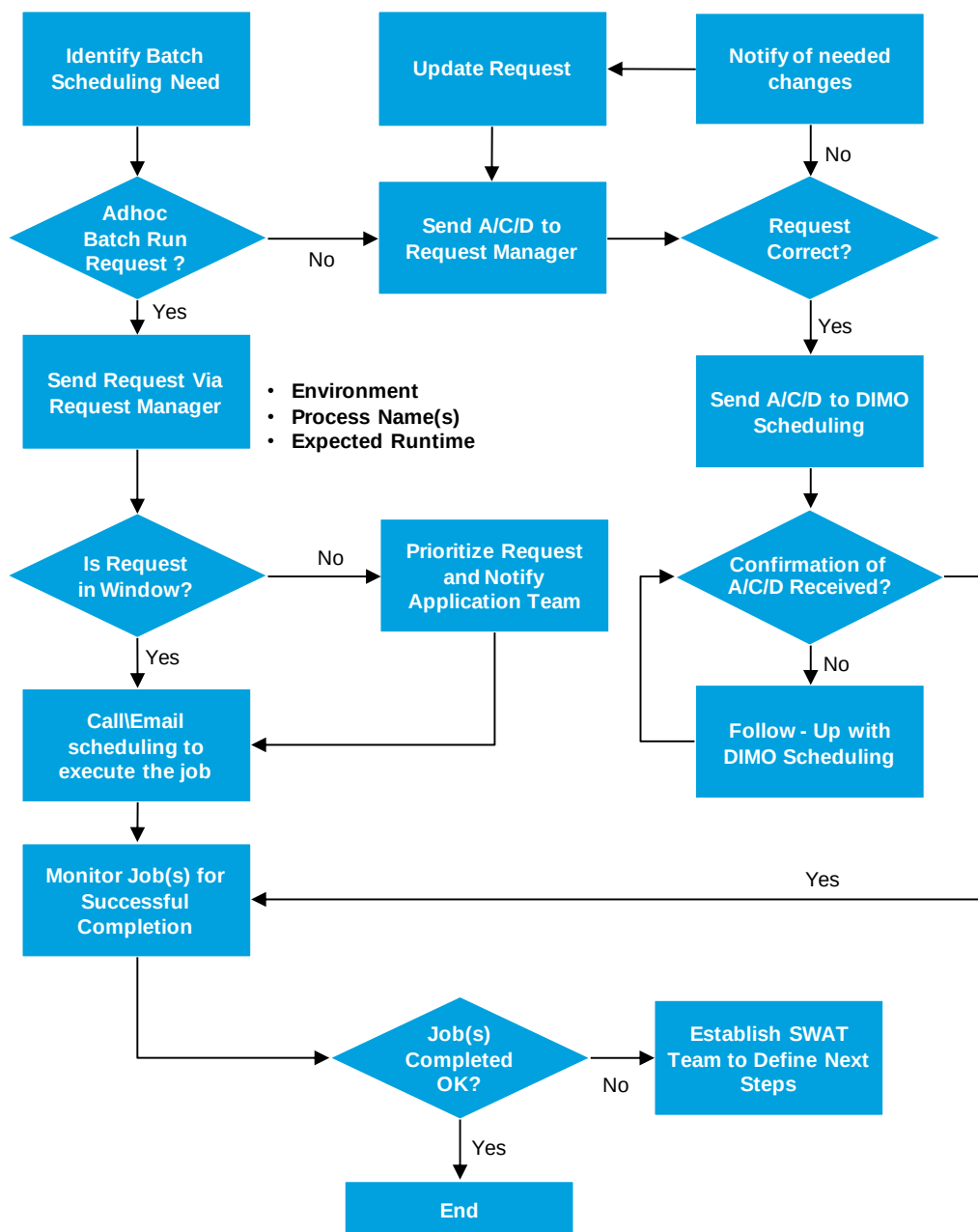
Open Systems/CIS Batch Scheduling

For open systems batch, Deloitte interacts with the following stakeholder groups including:

- Program Office Stakeholders
- DTE
- DIMO Scheduling

Figure 6.6-64 highlights the process to make additions, changes or deletions to the open systems/CIS batch jobs within the scheduling infrastructure.

Open Systems Mainframe Batch Scheduling



PA_DPW-683_6

Figure 6.6-64. Open Systems/CIS Batch Scheduling and Monitoring Process.

Deloitte collaborates with you to establish a standardized process for integrating new batches and scheduling ad hoc job executions.

The table that follows summarizes the batch scheduling process for the open systems and mainframe environments.



Activity	Deloitte's Approach To Batch Scheduling Support
Request	• The application teams initiate batch schedule changes based on the functional requirements of the current business initiatives. These changes include information such as: - The name of the batch job and the schedule to which it belongs - The frequency at which the batch job runs - How a batch job start (e.g., event-driven, based on a start time, or based on the completion of dependent processes) - The escalation protocol in the event of batch failure - The date of integration into the production schedule • Deloitte submits Batch Addition/Change/Deletion (ACD) requests for review once their batch requirements are defined. These forms provide the information listed above to DPW as batch scheduling instructions. • For ad hoc batch runs, Deloitte submits a request through the Request Manager.
Validation	• Deloitte then conducts a quality assurance check. Our considerable experience with the DPW batch environment allows us to understand how these changes function in the overall batch cycle. In an effort to continually increase quality of delivery, we also take lessons from prior successful batch implementations and leverage leading practices for making alterations to batch schedules. Deloitte also considers the resource footprint of the entire nightly DPW production batch environment to avoid implementing batches during periods of peak activity. • Any batch scheduling requests that need further information or propose less than optimal batch schedule specifications are updated. If needed, Deloitte may have sessions to help establish a better understanding of the overall batch environment and discuss more efficient ways to set up a new batch process. • For ad hoc batch runs, Deloitte verifies that the request has been submitted during the prescribed batch request time frame (typically 07:00 to 14:00).
Submission	• After completing the quality assurance check, Deloitte forwards the ACD requests to the DPW batch team. We work with you to establish an appropriate lead time for submission to review the ACDs and pose any questions. The DPW batch team then integrates the batches into the batch schedules on the date requested by the application team. • For ad hoc batch requests, Deloitte then contacts scheduling to run the batch job.
Monitoring	• Executing batch jobs are monitored by operations personnel that are responsible for notifying appropriate application on call personnel if issues do arise.
Problem resolution	• Deloitte works DPW resources to help identify and correct problems that may occur in batch. In situations where the batch failure required immediate correction or is large-scale in scope, a SWAT team may be convened to marshal the appropriate resources to fix the problem.

Figure 6.6-65. Deloitte's Approach to Batch Scheduling Support.

Batch Monitoring

Deloitte understands that a combination of knowledgeable on-call staff and automated batch monitoring is necessary to successfully manage the batch schedule. We team with you to diagnose and address any batch incidents that occur. Each batch cycle has assigned Deloitte batch support personnel that are contacted in the event of a job failure.

Deloitte has intimate knowledge of the enterprise batch schedule and the critical jobs that must be processed on a cyclic basis to meet business demands. Figure 6.6-66 highlights a representative sample of critical batch jobs that execute on various cycles and associated duration. Deloitte works closely with DPW to verify these jobs finish successfully and, in the event of application or infrastructure failure, will react quickly to mitigate the impact so as to maintain business continuity.

Daily	Weekly	Monthly	Quarterly
- Semi-Annual Renewals generated for citizens 2 hours - Refresh all mainframe data for PACSES into client-facing open system environment 3 hours - Update child care case information for PELICAN 7 hours	- Create HIPAA compliant Targeted Service Management billing file 2 hours - Send LiHEAP checks to citizens 1 hour	- Generate attendance invoices for PELICAN child care providers 3 hours - Renewal of CIS cases 36 hours - PACSES aging of financial obligations 2 hours	- Mass cost of living adjustment for CIS cases 24 hours - Generation of income eligibility verification file for eCIS 36 hours
More than 590,000 Batch Jobs Executed for DPW in 2009			

PA_DPW-882

Figure 6.6-66. Monitoring of Critical Batch Processes.

Deloitte recognizes that some of the most critical business services are delivered through batch processes. We understand the enterprise schedule and are staffed to provide batch execution support in the event of an issue or failure.

Additionally, we will continue to work with you to use automated batch event reporting functionality in OpCon. Based on defined events (e.g. batch failure, batch missed start time), automated emails and text messages can be transmitted to the appropriate stakeholders. This escalation technique brings resources to bear more quickly and offers a better chance of successfully completing batch before the opening of the online window.

Automated Batch Reporting

The Deloitte Batch Status Reporting Framework consists of a series of automated scripts that are executed at the conclusion of the “batch window” that interrogate the OpCon database to determine overall success or failure of the batch processes.

Those jobs that have not completed successfully are noted on this report and it is distributed to the appropriate list of stakeholders. Upon review, these stakeholders determine the impact plus any corrective action that may be required. In Figure 6.6-67, we have provided a graphical depiction of the Batch Status Reporting Framework.

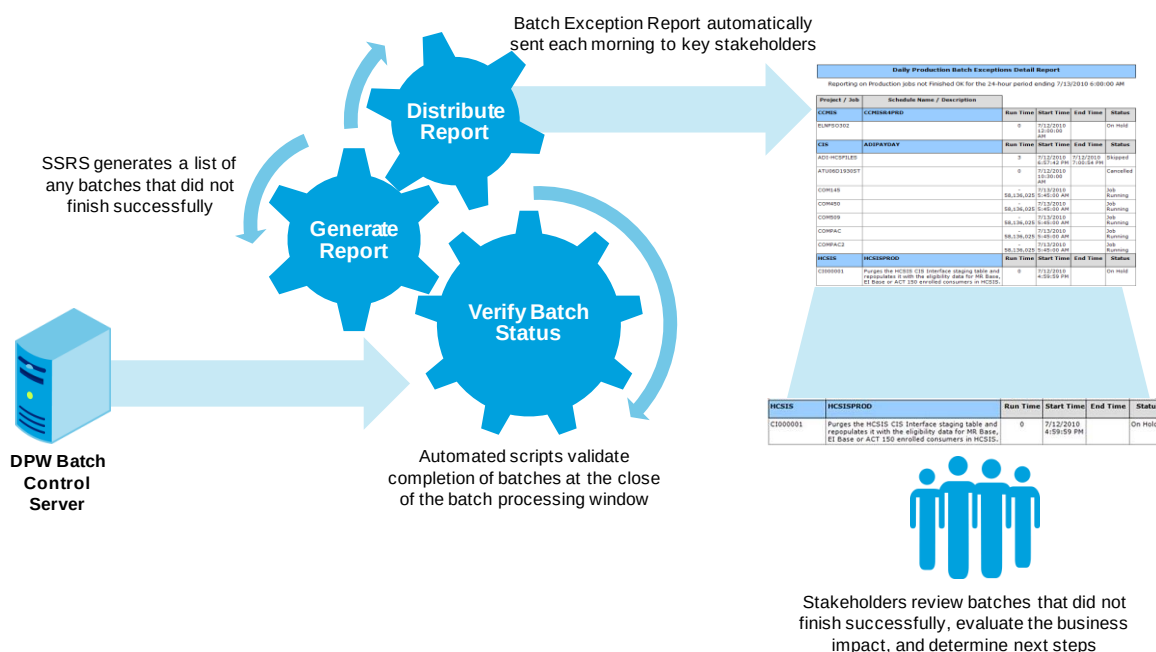


Figure 6.6-68 shows our framework for validating sustained batch performance levels on a daily basis:

Deloitte Batch Runtime Analysis Framework v1.5

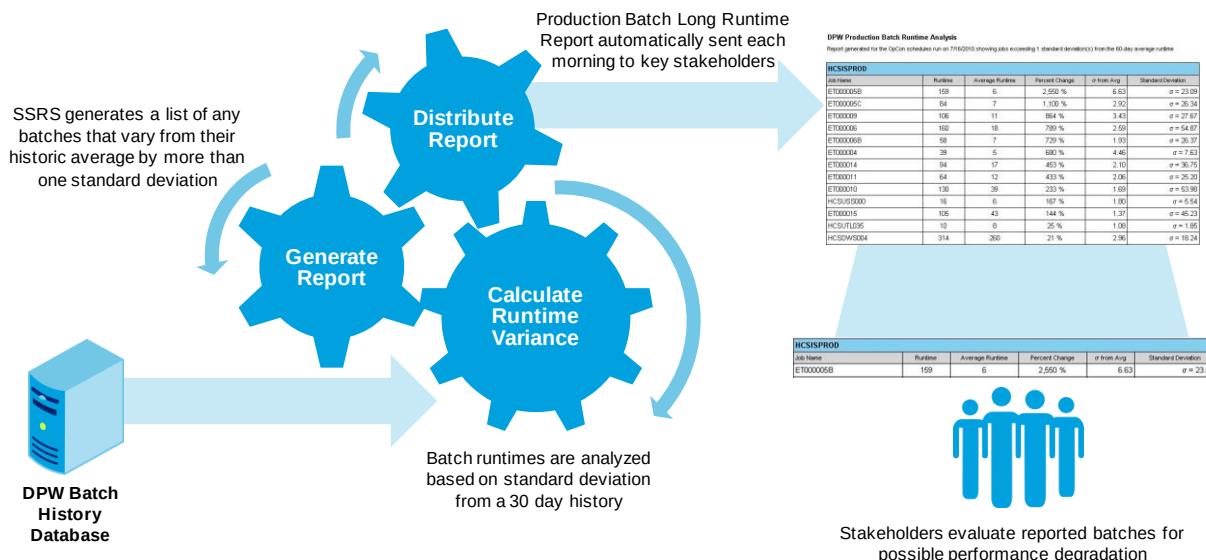


Figure 6.6-68. Batch Run Time Analysis.

Our batch runtime analysis framework intelligently identifies batch jobs that have possible performance degradation issues by analyzing historic batch runtimes and calculating the variance based on a standard deviation.

After identifying batches that have exceeded their historic averages, automated reports formats the data into an easy to read table and automatically distributes it to key stakeholders for review. Batch jobs that appear to present a risk to overall operations are flagged with a PCR for review and optimization.

Batch Quality Management

Each business day, Deloitte staff participates in an early morning call to review and discuss the information distributed on the batch execution report. Through this conversation, a management summary is created for distribution to a larger group of Deloitte ITSS/DTSS leads and DPW management. The call also helps coordinate the resources necessary to address batch failures that were not addressed overnight and to initiate communication with BIS for awareness and assistance. The daily management summary listing the batch failures includes:

- A business description of the job
- Failure root cause, if known
- Business impact of the failure
- Immediate mitigation steps necessary to resolve the failure



Within the DPW environment, certain batch processing, such as notice generation, are highly time sensitive and cannot wait until the next batch processing window. The morning batch status call is also used as a vehicle to discuss a detailed plan on how to restore normal batch and/or system operations.

Any detailed instructions either for corrective action or to finalize the batch processing is determined and typically executed by the batch scheduling team. Any ad hoc batch runs that are required to close out the batch cycle and/or minimize any impacts to the end users are also discussed and approved by appropriate staff. Deloitte will inform respective stakeholders prior to the execution of these corrective steps.

Deloitte also coordinates a weekly meeting with the batch operations team to provide an overview of issues. This meeting serves as a collaborative effort to address any batch failures from the previous week and to proactively coordinate and prepare for any important upcoming batch related activities. Deloitte also uses this meeting as a vehicle to discuss any upcoming production releases. This allows the batch scheduling team ample time to review and implement new batch jobs/cycles, or to alter existing production batch schedules supporting the requirements of an application release.

Batch Problem Resolution

In the event of a functional issue with a batch job/cycle, Deloitte leverages your standard Defect Management process to prioritize and track a fix. This PCR tracker is provided to DPW stakeholders for review through the morning Batch Exceptions Report referenced above. Until the final fix is implemented, Deloitte researches and provides the necessary alternative steps to minimize impact to the business operations.

Application issues, infrastructure outages and scheduling coordination opportunities that cause significant disruption to the batch schedules can warrant the creation of a SWAT team. The goal of this team is to escalate the issue and bring about timely resolution to support business needs. Key stakeholders from across the enterprise are brought to bear to diagnose and resolve the issue. Our experience in managing batch with DPW also gives Deloitte the insight into the most critical batch processes that have the highest impact on the overall business process. In the event of an outage or scheduling issue, certain batch jobs/cycles may be prioritized for execution in order to minimize these impacts and fulfill your business requirements.

Assist in Monitoring Batch Report Processing and Optimization

Batch reports that generated each evening deliver a wealth of information to the DPW stakeholders and business users. Reports generated by batch typically employ complex business logic that summarizes and aggregates databased on users' request or chronicles actions that have occurred on their respective systems databases. This complexity results in much higher system resource consumption than real-time reports. To minimize the system footprint during peak business hours, these reports are generated through the nightly batch processes. Deloitte understands the critical nature of these reports and how they provide important information to the stakeholders about the work being performed in administering their systems.



In this section, we discuss the following topics:

- Batch Report Monitoring
- Batch Report Testing

Batch Report Monitoring

Our approach to monitoring reports created by batch jobs and their optimization includes the following points:

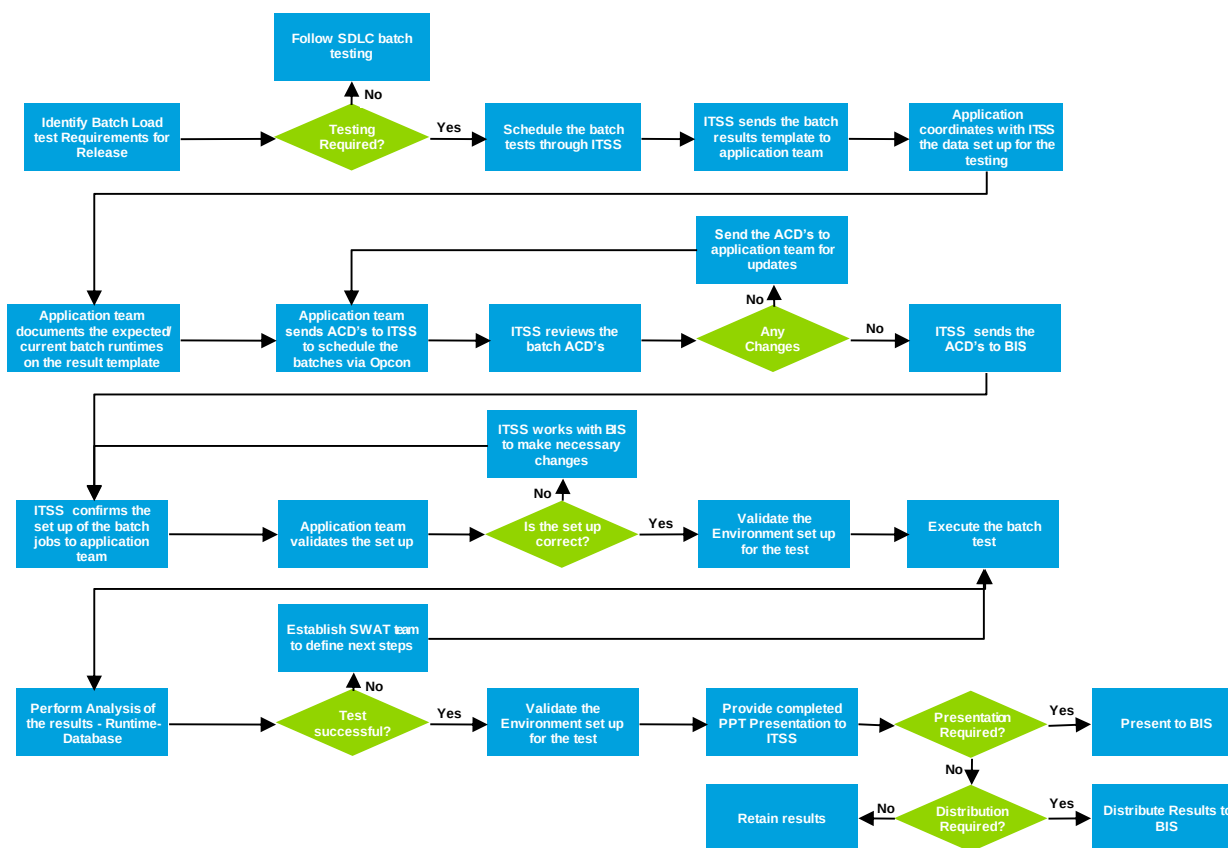
- Monitoring batch report execution
- Subjecting batch reports to load testing for performance optimization

Deloitte will continue to work collaboratively with you to manage report generation each morning by monitoring the execution of batch reports as part of the overall batch nightly batch cycles. For information on how we perform batch monitoring, please refer to *Scheduling and Assisting in Monitoring Production Batch Runs* at the beginning of this RFP question response.

Batch Report Testing

Batch reports are, by design, complex and expensive in terms of system resource consumption. To verify reports are running optimally, we work to verify performance levels before their integration into production schedules. To identify performance optimization opportunities, Deloitte load tests batch reporting jobs during the Systems Acceptance phase of the SDM. The methodology employed for load testing open systems and CIS mainframe batch reports is depicted in Figure 6.6-69.

Batch Load Testing Process



PA_DPW-770

DPW Batch Load Testing Process

Figure 6.6-69. Batch Report Testing Process.

Deloitte subject batch reports to a load testing process to validate production readiness before their integration into current batch schedules.

Batch Load Testing

To accurately gauge the performance of batch reports, they must be exercised against a database with production volume data with, optimally, similarly sized hardware. Deloitte works to create the requisite test data configuration to accurately reflect the behavior of the report in production.

For the PACSES mainframe, the database team loads a full sized copy of the production database into the PACSES test machine (HSH-D) and the batch reports are executed against that data.

Upon the completion of batch load testing, the results are analyzed, tuning opportunities addressed and presented for review.



Reviewing Batch Schedules for Efficiency and Performance Improvement Opportunities

Deloitte leverages our holistic knowledge of the DPW batch schedules to continuously monitor for improvement opportunities. We are the only vendor that has intimate familiarity with your different batch processes, knows when they execute during the “batch window”, how long they execute, and what parts of the infrastructure they impact. With this knowledge, Deloitte is well-positioned to collaborate with DPW to maintain optimal processing efficiency in the batch environment.

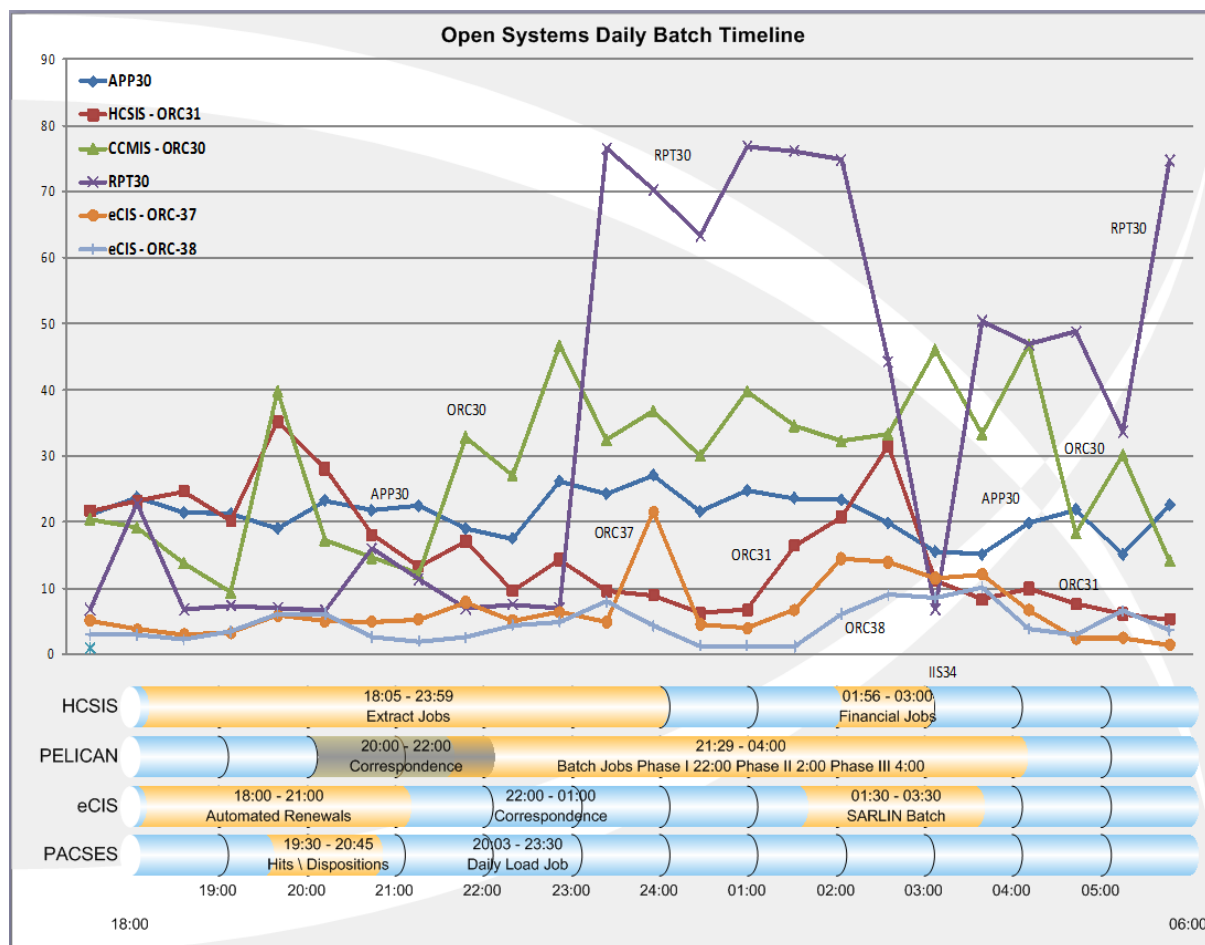
Operating in a shared services model gives Deloitte an overall view of this complex DPW batch environment. This allows for identification of periods where system resource levels can accommodate additional workload. We also take measures to prevent critical batch processes from being scheduled in an overlapping manner. This approach reduces the risk of failure due to resource or database contention or over-utilization of the application or database servers.

In this environment, we are discussing the following topics:

- Analysis of the Open Systems Batch Footprint
- Analysis of the CIS/PACSES Mainframe Batch Footprint

Analysis of the Open Systems Batch Footprint

Fortel’s SightLine tool is used to provide infrastructure usage statistics for both the online and batch environments. Deloitte uses that SightLine information and maps it against a daily batch timeline to create a graphical representation of the current batch resource footprint. The Figure 6.6-70 depicts resource usage over time across the open systems “batch window”.



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Figure 6.6-70. Daily Batch Timeline.

This diagram displays by application a timeline of the critical batch processes and their corresponding resource usage for planning efficient integration of new batch jobs.

Before introducing new batch jobs into the DPW schedules, we consider the current distribution of batch cycles across applications and their usage patterns during the night. During weekly operational meetings with the batch scheduling team, this diagram offers insight into the health of the batch environment and clearly identifies infrastructure and schedule improvement opportunities. By evenly distributing workload throughout the evening open systems batch cycles have the best chance to finish within the standard "batch window" (18:00 to 06:00).

Analysis of the PACSES and CIS Mainframe Batch Footprint

Although resource contention is less of an issue in the standalone CIS and PACSES mainframe environments, information from tools such as SightLine and Torch are used to provide an overall picture of the health and performance characteristics of those batch processes. We leverage this data to provide mainframe centric batch summary for management level reporting.

Figure 6.6-71 highlights CIS batch completion timelines while Figure 6.6-72 depicts PACSES completion metrics.

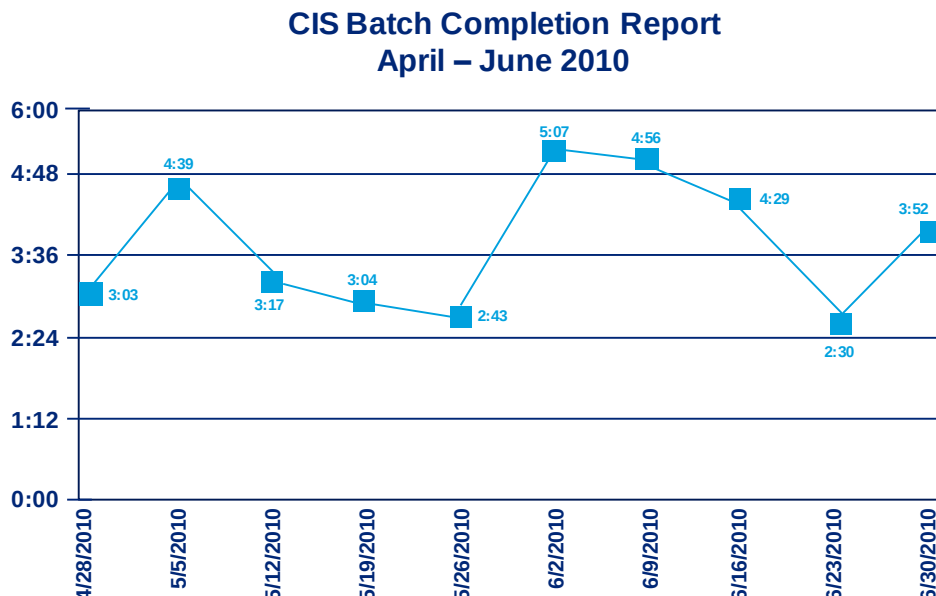


Figure 6.6-71. CIS Batch Completion Report Highlights Batch Execution Success.
Deloitte reports average wall clock completion time of daily CIS batch to verify no impact with online processing.

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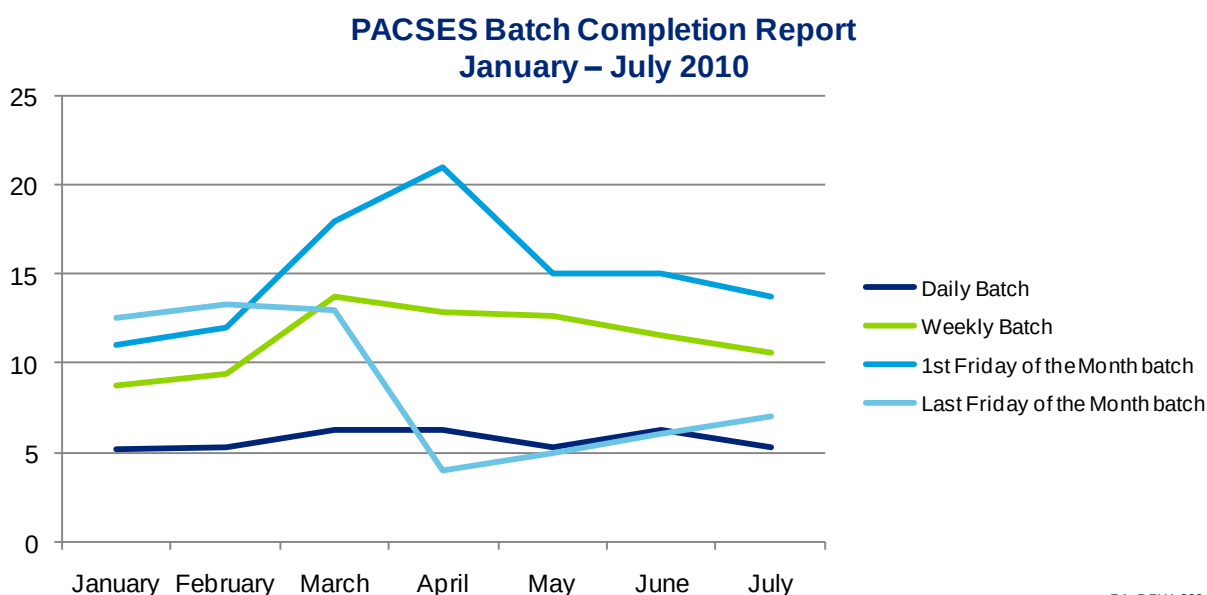


Figure 6.6-72. PACSES Mainframe Batch Cycle Execution Timelines.
Deloitte reports PACSES batch execution duration to trend batch progress over time.

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Batch Cycle Scheduling Specifications

Deloitte brings years of experience collaborating with the batch scheduling team to specify requirements for batch cycle additions and changes. These requirements include job turn-around time, which is defined as the duration a job executes before completion, and a problem resolution protocol for staff to follow in the event of a job failure.



The following sections highlight our approach to open system, PACSES and CIS batch scheduling specifications.

Open Systems/CIS Mainframe Batch Scheduling Requirements

As more functionality is added to the open system, open system batch will play a more critical role in the enterprise and open system batch scheduling requests will substantially increase. The upcoming iCIS Phase IV-B initiative will require 388 additional batch scheduling requests alone throughout its life cycle. Deloitte will provide these scheduling specifications through the existing batch addition/change/delete (ACD) form template.

Prior to each application release that includes a change to the Open Systems batch cycle, Deloitte:

- Provides accurate batch ACD forms to the DPW batch scheduling team as per the established template
- Provides an updated batch manual for the application being changed
- Leverages a custom front-end interface, known as OpCon Viewer, for application teams to validate master batch scheduling specifications

Batch ACD Submission

Deloitte leverages the standard template for batch ACDs across the application teams. These ACDs provide instructions on how to create or alter a batch in the OpCon master database. Some of the key information to be provided in the ACD:

- The frequency of the batch being scheduled, e.g. Monday through Friday or weekends only
- How the batch will be started, e.g. event-driven, based on a start time, or based on the completion of upstream processes
- The name of the job and where it is located on the batch server
- The steps to be taken should issues arise with the batch and contact information of batch owners
- The date which the batch ACD should go into effect

Deloitte provides the batch ACDs to DPW prior to entering each environment. We recognize that processing batch ACDs can be a time consuming process. In order to allow ample time for the DPW batch scheduling team to review and facilitate requests, we propose the following lead times for submission (unless an emergency or expedited change is required):

- One business day lead time will be provided for one to two batch ACDs
- Three business days lead time will be provided for three to six batch ACDs

- One week lead time will be provided for any requests involving seven or more batch ACDs

With these lead times, the DPW batch team can review and pose any questions around the schedule changes and specifications found in the ACDs.

Batch Manuals

In addition to providing batch ACDs, Deloitte creates and maintains a complete production batch reference manual for the Open Systems, CIS and PACSES mainframe environments. Figure 6.6-73 is an example of the iCIS batch manual:

ECIS-PROD Schedule Requirements

*All jobs are classified by Tier to denote level of importance. See escalation procedures (Appendix A) below for a description

Job Id	Description	Job Dependencies (predecessor)	Dependent Jobs (successor)	Frequency	Run time (24H Format)	Expected Run Time length (in minutes)	Input File	Output File	Resolution /Escalation Process	ECIS On-call support instructions
ECSIMPSAR001	The purpose of this job is to import the SAR flatfile which is sent to: \\pwisprapp30\Apps\MC\IApplication\Batch\PRD\input This job is only added to the ECIS-PROD schedule upon the arrival of the trigger file (CMR60D.tgr) in the input folder. This is accomplished by a \$job:ADD event from the Argus FileWatcher.	N/A	ECSGENSAR002	5 days a week (m-f)	On demand	5	CMR60D.tgr	Log file	Tier1: The escalation procedures described below should be followed.	Check the log and determine the reason for failure. If the job stopped abruptly, ask scheduling to restart it again. If the jobs encountered a different error, contact: Raj Gundala 717 215 8724 Or backup: Matt Schnure 717 982 3361
ECSGENSAR002	The purpose of this job is to generate data files that will be used by adobe server for merging with dynamic templates This job is only added to the ECIS-PROD schedule upon the successful completion of ECSIMPSAR001. This is accomplished by a post event \$job:ADD on the Finished OK event.	ECSIMPSAR001	ECSSNDSAR003	5 days a week (m-f)		5	None	Log file	Tier1: The escalation procedures described below should be followed.	Check the log and determine the reason for failure. If the job stopped abruptly, ask scheduling to restart it again. If the jobs encountered a different error, contact: Raj Gundala 717 215 8724 Or backup: Matt Schnure 717 982 3361

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Figure 6.6-73. Snapshot of the iCIS Production Batch Manual.

The DPW batch scheduling team and application teams will both use these documents as a quick resource to determine the business impacts of a job failure.

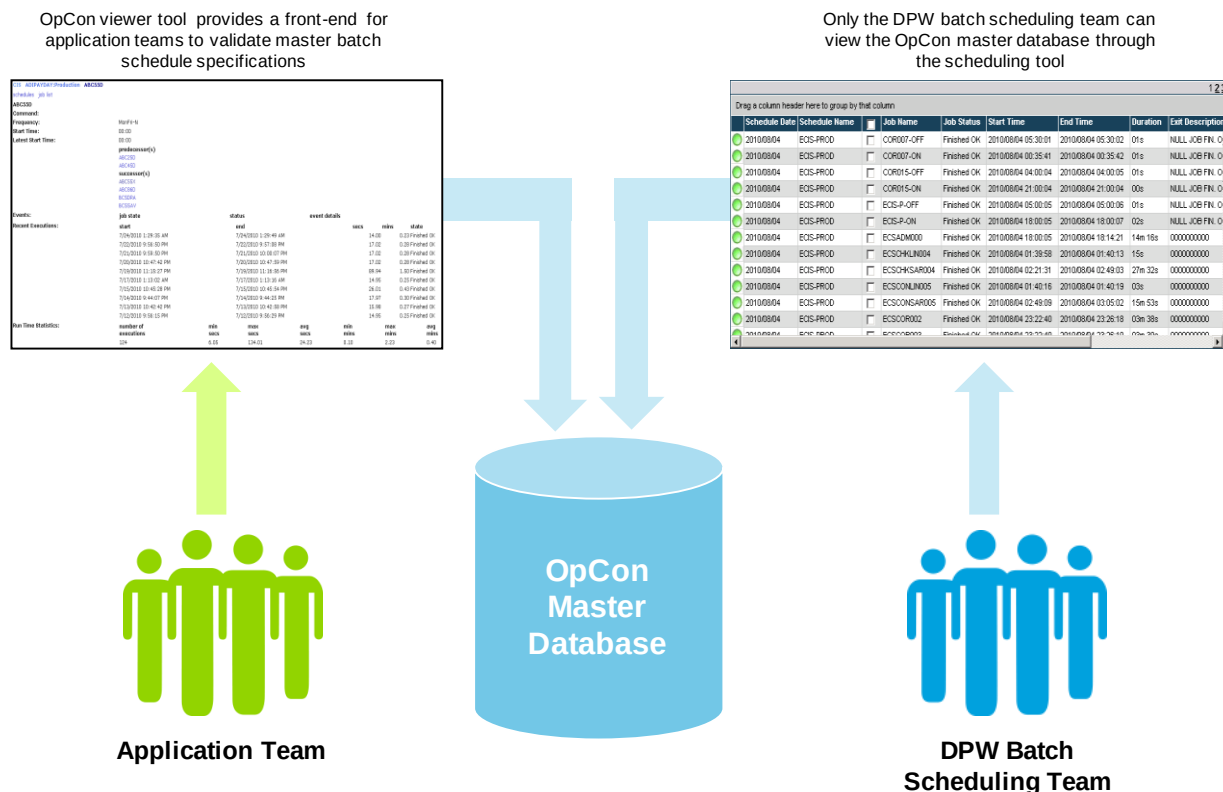
This document provides DPW with details about each production batch job for a particular application, including the specifications of batch scheduling as found in the original batch ACD, estimated job run-time, and problem resolution steps.

OpCon Viewer

Validation of master batch scheduling specifications is one of the last tasks before a batch goes live. In the current state, non-DPW staff members have no visibility into the master OpCon batch database, where these specifications are stored. Any validations require a physical visit to the DPW batch scheduling team. To remove this inefficiency from the validation process, our team leverages a custom front-end that provides visibility into batch properties on a job by job basis.

Figure 6.6-74 displays how this simple application provides a validation method without compromising access to the master database.

Deloitte OpCon Viewer Validation Tool v2.2



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Figure 6.6-74. Deloitte uses the OpCon Viewer Application to Support Critical Batch Processing.

The OpCon Viewer tool allows non-DPW staff visibility into the OpCon Master Database to perform final validations of batch specifications before migration into a new environment or before batch schedule changes go live.

The OpCon application also provides basic information about each batch job, similar to what is found on an ACD form, and historic job execution and runtime data stored. This extends the application's value beyond validations and into troubleshooting and research as well. The application provides search only functionality to protect the integrity of the OpCon master database.

PACES Mainframe Batch Scheduling Requirements

For the PACSES mainframe application, Deloitte manages the schedule change OpCon directly. Our team, working at the direction of the DPW, has the capabilities to add, change, and delete jobs and schedules. The Shared Services Team maintains batch job operations documentation that identifies job frequency, schedule, dependencies (pre and post), input/output file specifications, file transfer protocol (if required), and special instructions in case of batch failure.



Production Meeting Participation

IV

Page
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RFP Reference: 4.1 Applications/Systems Operations Support

- Actively participating in the scheduled production meetings

Deloitte actively participates in the scheduled production meetings for the in-scope systems.

Deloitte embraces the collaborative environment fostered within DPW. Participating in production meetings to actively share ideas and status while proactively managing risks and issues greatly contributes to initiative success. The following presents a representative sample of key production status meetings and our demonstrated contribution:

Technical Domain	Meeting	Frequency	Deloitte Activities Tracking Production Activities
All	Change Management Board	Thrice a week	Deloitte presents information on business/technology changes for the proposed application implementation request (AIR). The AIR provides information on business reason for the application change, code diff sheet and DPW approval information.
All	Production Deployment Logistics	Weekly	Deloitte present the production playbook during the meeting. Production playbook lists the deployment steps/resources/dependencies for production deployment. We determine that each of the domains have clarity on the steps involved for the production deployment support.
Operations	Batch Operations	Weekly	Deloitte reviews current status of batch processing and any outstanding operational support issues; review upcoming schedule change needs as well as any required maintenance activity. Also used as a forum for issue management.
Database	Database Operations	Weekly	Deloitte presents initiative status and review of operational concerns such as performance tuning and resource consumption; work closely with DTE DBA management to mature processes, standards and methodologies used to support the operational database environment.
Security	Security Operations	Weekly	Deloitte provides relevant status with regard to security based initiatives or infrastructure consumption, including key performance indicators and plan upcoming activities, deployments and maintenance needs.



Technical Domain	Meeting	Frequency	Deloitte Activities Tracking Production Activities
Configuration Management	Infrastructure (Server) Team Coordination	Weekly	Deloitte review any pending hardware, software, network or platform centric items surrounding capacity planning and configuration management and status of project initiatives impacting the infrastructure. Also used as a forum for issue management.
Middleware	Middleware	Weekly	Deloitte reviews upcoming initiatives, status of current design and development activities, and assist in workload prioritization. Also used as a forum for issue management.
All	Project Team Meeting	Weekly	Deloitte presents status, highlights, risk and issues covering supported initiatives. Also used as a forum for planning and issue management and escalation.
All	Cross Project Logistics Meeting	Monthly	Deloitte presents imitative status and impacts to other domains; Provides comment and input to status submitted by other domains with regard to initiative or Enterprise impact.

Figure 6.6-75. Representative Sample of Key Production Status Meetings and Our Demonstrated Contribution.

Database Administration and Performance Tuning

IV	Page IV-378	RFP Reference: 4.1 Applications/Systems Operations Support

- Database administration and performance tuning

Deloitte performs database administration and performance tuning in support of in-scope systems. Deloitte follows standard database design and coding practices that lead to a consistent architectural flavor across the in-scope applications. However, due to the different requirements of the systems, there are characteristics of each application that require close attention when managing database administration and performance tuning.

Applications	Application Characterization Related to Database Administration and Tuning
iCIS	- CIS transactions are driven by a keyed lookup/access. Database performance turning on the mainframe often focuses on data storage management (space allocation and alignment) through the very dynamic COLA, Mass Change, TSA Purge and annual purge processes done. The active management of the mass volumes of data is extremely important in maintaining CIS performance. - eCIS Incremental Renewal Phase 4B will introduce substantially more transactions to the open system platform. These transactions involve mass and frequent data migrations from the mainframe to the open system. Specialist level support, with a thorough understanding of the business process, will be required to tune this mammoth scale implementation. - COMPASS application data is stored in its native XML format within the Oracle database. This presents a slightly difference access paradigm compared to traditional "column" access. Specialist level tuning will be require to support

Applications	Application Characterization Related to Database Administration and Tuning
	operational growth and new business patterns over time.
HCSIS	• HCSIS capitalizes on Oracle's Virtual Private Database (Fine Grained Access) to provide extended data protection. The dynamic addition of predicates to application SQL as part of FGA requires developers and DBA's alike to have specialist level SQL tuning experience, a broad understanding of the business needs of the Oracle policies and an awareness of coding within the FGA model.
PACSES	• The PACSES mainframe consists of both DMS and RDMS database structures which are very heavily accessed in the online and batch environments. The ITSS DBA uses tools like SightLine, UDSMON, OSAM, and SUDS to validate the performance of these database engines and also for application performance tuning activities. • PACSES Child Support Web Site data is populated from daily loads from the mainframe. The loading needs to be optimally accomplished to verify availability before the start of the business day. Performance tuning of the load and management of this data will be required over time.
PELICAN	• PELICAN makes use of a number of batch generated operational reports. These reports are crucial to business processing and require the collection, assimilation and aggregation of large amounts of data. These reports are candidates for frequent tuning as business requirements change and data volumes grow.
Child Welfare	• Child Welfare centric applications leverage a variety of data sources. As DPW moves to align these solutions to enterprise class installations, our team will provide database administration and performance tuning support that aligns with other enterprise applications.

Figure 6.6-76. DPW Systems Have Different Database Related Characteristics.

To follow RFP response requirements, the scope of this RFP response will be limited to the database administration tasks and performance tuning efforts that are directly related to production operational activities. Deloitte's proposed team does not actively perform direct database administration activity in the production environment for the open system Oracle, SQL Server and CIS mainframe solutions as BIS staff performs these tasks. The Deloitte PACSES team does provide production DBA support for the PACSES mainframe.

Deloitte works closely with the BIS database administration team to monitor, analyze, and recommend database configuration and tuning changes that could improve production system responsiveness. These recommendations are primarily application centric such as indexing, partitioning and database related code improvements. The strong working relationship we have enjoyed over the last 10 years has caused BIS Database management to view our Deloitte DBA team as a logical extension of the BIS team, jointly working together to advance the performance, availability and functional delivery capabilities offered.

Database Administration

Deloitte DBA's assist BIS database administration with activities on both the mainframe and open systems platforms. Some activities are common across the platforms while

others are very platform specific. The various activities include, but are not limited to, those shown in the following table.

Platform	Deloitte's Approach to Support Production Database Administration
Open Systems/CIS/ PACSES	• Support quarterly capacity planning by providing current and expected resource consumption metrics and business insights about future consumption • Review database software/patch upgrades for operational impacts • Monitor database health via automated checks, management tools and custom scripts • Monitor daily alert logs to identify any potential issues and their resolution • Maintain the "Top 10" list of performance tuning opportunities with associated recommendations • Provide Production migration planning and implementation support • Provide production support as requested by DPW DBA management in support of in-scope systems, including configuration, installation and operational improvement recommendations • Liaison to BIS DBA for any production operational issue that requires administration/tuning coordination and implementation, including batch failures, production issue support, database engine or sever failure and critical application impacting performance, availability or functional delivery • Present that latest database technology offerings and associated benefit to DPW • Provide assistance and insight in disaster recovery planning and execution, backup and recovery strategies and base database installation and configuration approaches

Platform	Deloitte's Approach to Support Production Database Administration
Additional PACSES specific Mainframe tasks	• Creating, installing and updating DMS 2200 schemas, areas, records, sets and storage areas • Creating, installing and updating RDMS 2200 schemas, tables, views and storage areas • Managing Universal Data System (UDS) application group configurations • Managing UDS mass-storage audit trails • Managing prime page and overflow page usage in the storage areas • Reorganization of database areas and tables • Managing of data page and index page sizes • Managing disk storage that supports database storage areas • Maintaining and scheduling database backups using Integrated Recovery Utility (IRU) • Recovery of database storage areas as required • Maintaining and scheduling UDS application group backups using IRU and FAS • Support application software migrations to the environments, including Production, that include database changes, data conversions and/or data fixes • Managing and testing Disaster Recovery (DR) Plans

Figure 6.6-77. Deloitte Provides Database Administration and Performance Tuning Support to DPW.

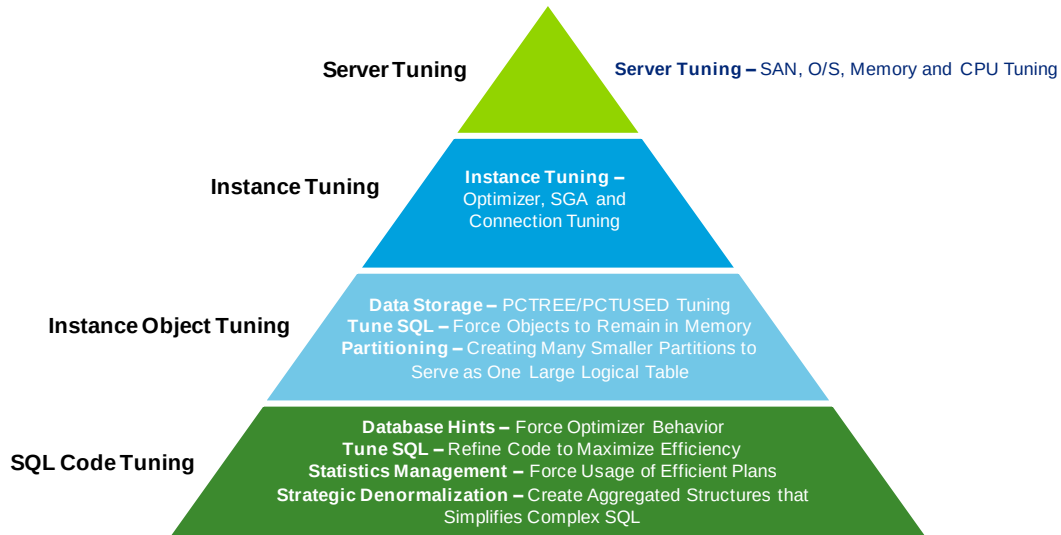
The Deloitte database team has the requisite tools, accesses and permissions to effect change in the Oracle production environment. This is necessary to perform the monitoring and analysis tasks required to deliver efficient production operations. We recognize this demonstrates the trust DPW has in our team as a logical extension of BIS DBA. We only use these permissions to actually implement changes in the production environment at the direct request/approval of BIS DBA management.

Performance Tuning

Performance tuning success is 80 percent monitoring and proactive identification and 20 percent implementation of physical tuning solutions. The optimal approach to performance tuning is to find and address opportunities before they impact end user satisfactions. Detailed approaches to performance monitoring are found throughout this section and our not specifically included here as the intent of the RFP response is to focus on performance tuning only.

Open Systems Performance Tuning Approach

Deloitte DBA's, working closely with BIS, follow a methodical tuning approach. The approach to tuning is reflected in the following figure and demonstrates, proportionally, where most of the tuning attention is focused.



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Figure 6.6-78. The Database “Tuning Triangle” Highlights Deloitte’s Approach to Effective Database Tuning.
Deloitte understands database tuning techniques and methodologies to deliver high performance and scalable solutions.

The following highlights the approach toward database tuning following the pyramidal methodology highlighted.

- **SQL Code Tuning.** Most tuning issues are resolved by enhancing the database code. Oracle’s latest generation of tools provide automated tuning opportunity identifiers and recommendations. At the heart of this tuning is the traditional “Explain Plan”. The Explain Plan visually identifies how the Oracle optimizer will access the physical database structures to return the requested data. There are access paths within the database that are more effective than others - Explain plans will highlight the access path selected and the “expense”, in terms to time, CPU and database resources spent, of the query. Queries with inefficient access paths and high “expense” are immediate candidates for review.

The following shows a sample Explain Plan via Enterprise Manager.

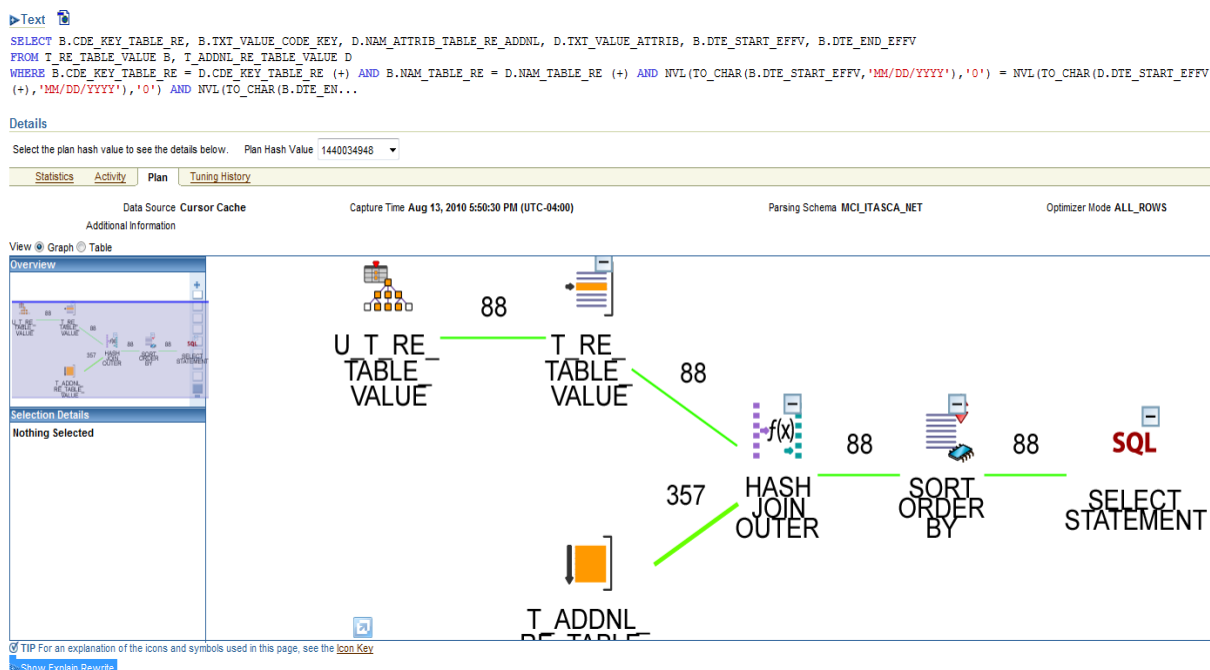


Figure 6.6-79. Sample Explain Plan.

Deloitte DTSS team utilizes TKPROF to review explain plans for PL/SQL code.

Our DBA's have specialist level PL/SQL coding skills that allow them to make code or database alterations to tune problem queries. After changes are made, the explain plan is re-executed to demonstrate an improved access path and query profile.

SQL tuning can also be enhanced altering the physical database design, including the creation of appropriate denormalized tables, database partitions and indexes. The following provides a sample of tuning techniques that will substantially improve overall performance:

- **Minimize Full-Table Scans.** A full table scan is a row by row review of the database to determine if said line meets the “where clause” criteria. For large tables, this could be *extremely* expensive. Full table scans on large tables typically indicate the lack of indexes on the table or an inappropriately coded “where clause”.
- **Cache Me If You Can.** When possible, smaller database objects that are frequently accessed should be “pinned” to memory to confirm the fastest access possible.
- **Maximize Indexing.** As stated, Explain Plans will highlight the need for indexes. Additionally, “Index Only Tables” are a great way to increase data access speed. In this case, the data required for a query can be supplied by the index, eliminating the need for Oracle to traverse an index and then go to the corresponding data table for detailed attributes.
- **Strategic Denormalization.** Create denormalized structures that house frequently access data in a single structure. This will reduce the need for expensive joins and extended database I/O.



- **Instance Object Tuning.** Deloitte DBA's work with BIS to review Instance Object Tuning. This includes settings that control the management of objects like tables, indexes, partitions, etc. Various configuration parameters, such as PCTFREE, PCTUSED, and FREELISTS can have a dramatic impact on Oracle performance by proactively managing the contiguous space allocated to objects. This will help support performance levels as data volumes grow over time*.
- **Instance Tuning.** Deloitte DBA's work with BIS to review Instance Tuning. This includes tuning the SGA and associated initialization parameters to verify the database has been properly configured to support anticipated workload. Example include how connection pooling is managed, how memory is allocated within the System Global Area (SGA), etc.
- **Server Tuning.** This includes the configuration and tuning of the server, disk subsystem and the networking infrastructure to verify database hardware is operating optimally. It is imperative that the hardware infrastructure supporting database transactions is extremely reliable and fault tolerant.
- **Open Systems Performance Tuning Execution**

Queries identified for performance tuning opportunities are documented, tracked and reported. Deloitte DBA's create "Non-Functional" PCR's and works with the application team to prioritize and implement the solution.

Once developed, the DBA's work with the developers to verify the results by comparing "before and after" execution plan reviews. The new version of the code demonstrates increased efficiency and responsiveness with less resource consumption.

Deloitte will then work with BIS DBA to plan and implement the code change in a methodical and timely manner. Operationally, the database "Top 10" list is used to track turning opportunities to their final resolution in production. This list is shared with BIS DBA management on a weekly basis for status tracking.

Mainframe Database Performance Monitoring and Tuning

Deloitte DBA's monitor the production mainframe database using tools including the Online System Activity Monitor (OSAM), Sightline, and Universal Data Systems Monitor (UDSMON). The primary use of OSAM is to monitor the average I/O rate of the Production online transactions which have the highest frequency of use.

Sightline is used to monitor I/O rates to the disk drives which support the Production database and audit trails. UDSMON is used to measure overall transaction hit rates and to identify and resolve transaction locking issues.

Performance of the batch system is also performed using some of the same tools used to monitor the online system. UDSMON also provides a view of the run units accessing the database simultaneously and reveals queuing as it happens. Sightline is also used to gather performance data that are recorded in a MS Access database to use for daily, weekly and monthly reporting purposes.

An additional product, SUDS, is used to create a daily report of the batch run units accessing the database and reveals queuing issues that need to be addressed. Examples of OSAM, Sightline and UDSMON user screens are provided below in Figure 6.6-80 and Figure 6.6-81, respectively.

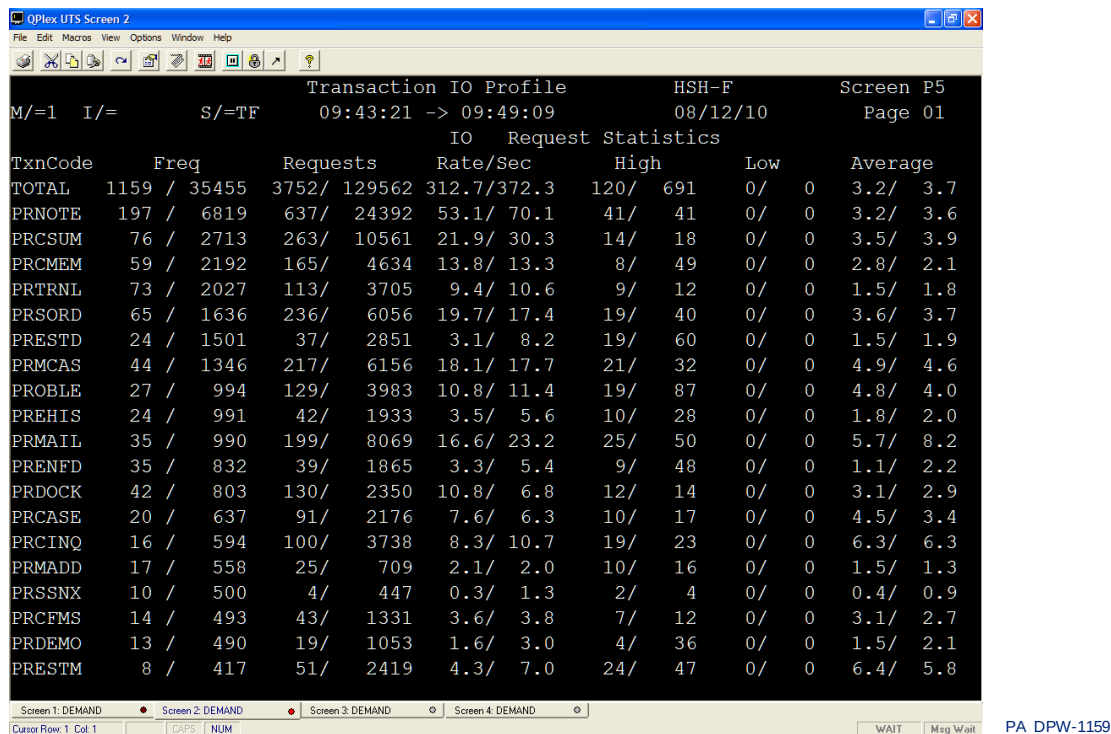


Figure 6.6-80. OSAM Monitoring of PACSES Production Transaction.

OSAM is used to monitor I/O rates of transactions and the information is useful in performance tuning and monitoring activities.

Deloitte uses OSAM to monitor the database I/O usage of the Production online transactions. The average number of I/Os used by each transaction is displayed on the right side of the graph. Through experience, Deloitte analysts have determined the average I/O rates of the highest used transactions and can quickly recognize when those transactions are running abnormally. The transactions are generally monitored after a Production application migration, database reorganization, and when system performance has noticeably degraded.

Related Performance Tuning Measures. Monitoring transaction I/O rates is a key method for recognizing that there may be a need to reorganize one or more database areas. This is especially true for transactions that are primarily accessing RDMS tables. As the pages in RDMS tables fill the pages are split and half of the data on the original database page is moved to a new page that is placed at the end of the table. As more pages split in the table the result is that up to half of the table reads require multiple I/Os to complete one read request.

As a regular performance tuning measure, the Deloitte mainframe DBA reorganizes (unload, initialize and reload) each RDMS Table on a yearly basis to confirm that page splits are kept to a minimum. Several RDMS tables in the PACSES system are

reorganized every six months due to the high volume of data in the tables and the high volume of transactions accessing the tables. In particular, the PRNOTE transaction is executed over 300,000 times per day. Even a minor increase in table I/O for that one transaction can have an adverse affect on the entire online system.

The mainframe DBA must also monitor overflow usage in DMS data areas. The more data that is stored to overflow pages the more I/O rates increase due to the increasing length of overflow chains. The performance tuning measure for DMS areas is slightly more complicated than for RDMS areas. To reduce overflow usage the DBA must unload the DMS data from the area, expand the number of prime pages in the area, initialize the area and then reload the data. The primary goal is to keep as much of the data on prime pages as possible to reduce I/O. DMS reorganizations are generally done only on an as-needed basis.

Qplex UTS Screen 2

<09:50:26> Tot Thrds = 174368039, 102/Sec, Actv/Avl = Txn: 6/29, Other: 0/25
UDSC15R2 LocalAP 1, Steps:~5047814, RBs:545854, Local DL: 303, Time DL: 0
I/O req/act= 7468505669/~7545787(Hit rate= 83%),Rcv(Retrn/Aud)=85424985/84877118

Slot	Runid	Gen,Org	SOS	Time	From	Seq	Update	Locks	MsgId	Scrb	Status
		*1CPQL	PRCSUM	*09:50:24	1809	26		2		0	Logged OFF
*	3	*1CQ49	PRCINQ	*09:50:26	3424	18		1		0	SOS Complete
		*1CLXP	PRDEMO	*09:50:15	2082	9		1		0	Logged OFF
*	9	*1CQ4D	PRNOTE	*09:50:26	1326	17				3	SOS Complete
		*1CLVF	PRSOR	*09:50:15	2066	42				1	Logged OFF
		*1CP\$8	PRISRQ	*09:50:25	1700	22				0	Logged OFF
*	13	*1CQ4H	PRNOTE	*09:50:26	2666	18				3	SOS Complete
		*1CLWY	PRNHIS	*09:50:15	2128	18				3	Logged OFF
*	16	*1CQ2J	PRMCLR	*09:50:25	2432	36		2		1	SOS Complete
		*1CQ34	PRESTM	*09:50:25	1604	29				1	Logged OFF
		*1CPYT	PRESTD	*09:50:25	3465	25		1		0	Logged OFF
		*1CP5G	PRNOTE	*09:50:22	1545	18		1		3	Logged OFF
		*1CQ2W	PRLEMR	*09:50:25	1621	47		5	5	1	Logged OFF
*	25	*1CQ4J	PRCSUM	*09:50:26	1188	18		2		0	SOS Complete
		*1CLXJ	PRDOCK	*09:50:15	2054	35		1		1	Logged OFF
		*1CQ2Y	PRDEMO	*09:50:25	2005	17				0	Logged OFF
		*1CQ35	PRFSUM	*09:50:25	1896	29				0	Logged OFF

-----U-D-S-M-O-N---L-E-V-E-L---15R1/15R2-----

< 200ms> <H,M,F,S,R,C,+,-> Func?>

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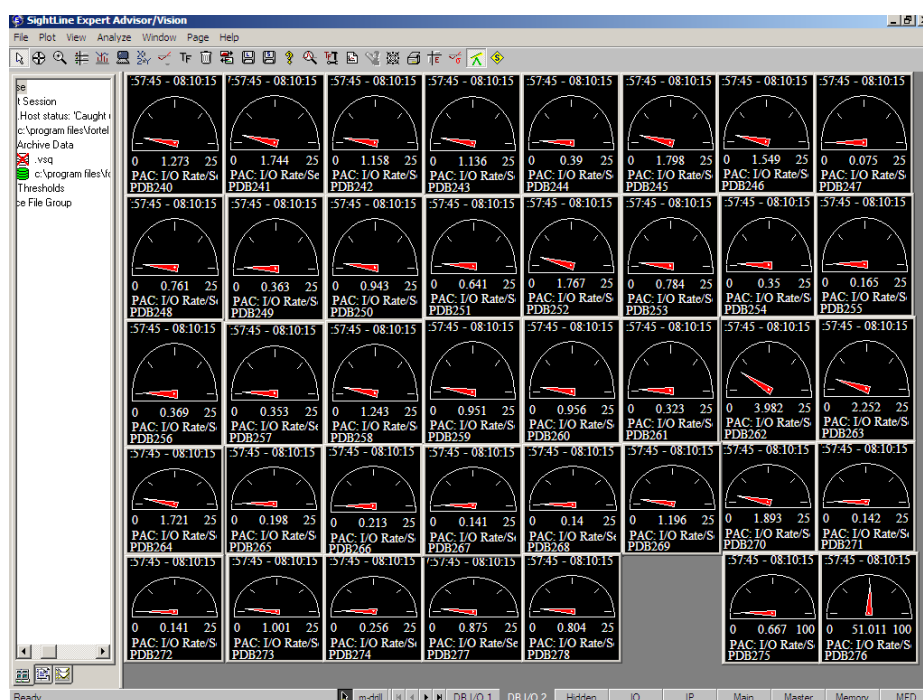
Figure 6.6-81. UDSCMON View of Production Database Transactions.

UDSCMON is used to measure the database activities of individual transactions and is useful as a transaction monitoring and response time analysis tool.

The previous graphic represents a point-in-time capture of run units accessing the Production database. In this case only TIP transactions were active. The transaction ID is shown in the third column, the number of database commands executed is shown in the sixth column, the number of update I/Os is in the seventh column, and the run unit status is shown in the rightmost column.

The key use of this screen is to identify items that are queuing (Status column) and run units that are performing large number of database commands which may lead to I/O performance issues.

Related Performance Tuning Measures. Transaction queuing generally happens more often with batch runs than with online transactions. However, if transactions are queuing the results can have a bigger effect because it can slow the entire online system down or even bring it to a halt. The performance tuning measures to eliminate queuing are situation dependent. Many times batch queuing can be resolved simply by changing dependencies in the OpCon batch scheduler so that the queuing runs do not run at the same time. Often times the most effective method to eliminate queuing is to partition database structures so that the data is spread across multiple instances of the same data structures. Segmentation can be performed for DMS and RDMS structures, but is more common with DMS. Database segmentation is a highly intensive activity because not only is the database changing, but the application programs that access the database also need to change as well. Therefore, the related application code needs to be regression tested to confirm it works with the new segmentation scheme.



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Figure 6.6-82. Sightline Monitoring of PACSES Database I/O Rates.

SightLine is used to measure I/O and shows which database "files" are being accessed.

The above graphic depicts a Sightline metrics display used to monitor I/O traffic on Production database disk packs. Each separate window represents a physical disk pack and the number of I/O being performed per second on the disk pack.

During periods of normal I/O traffic, each dial points to the lower quarter of the scale. A dial pointing above the quarter mark generally means that some run unit is performing a brute-force sequential read of an entire database file, which could affect overall access to the database files on the disk pack. An exception is disk pack PDB276 shown in the lower right corner. This disk pack contains a database audit trail that is supporting high-volume, write-only I/O. In this case the high usage is expected.

Related Performance Tuning Measures. When a database disk pack is performing excessive I/O it generally means that too many concurrent processes are accessing the same physical unit at the same time. They may not be accessing the same database areas but different areas on the same disk drive. To reduce concurrent disk accesses the DBA must manage which database areas are on each of the designated database disk packs. The first priority for the DBA is to spread the database areas evenly across the disks by size so that a similar amount of storage is used on each disk. The second key is to not put too many high-usage database structures on the same disk. Performing this type of disk management requires experience with system, which the Deloitte DBA team provides.

Problem Identification and Resolution

IV

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RFP Reference: 4.1 Applications/Systems Operations Support

- Problem identification and resolution, including CAP and test results

Deloitte performs issue identification and issue resolution as part of an established process based upon ITIL principles for the in-scope systems. We work with you in identifying problems, developing a corrective action plan to prioritize resolution activities, and take the needed actions to resolve issues, while collaborating with you to review the status and outcome.

The various application designs, disparate platforms and different business cycles across the suite of in-scope applications present challenges for problem identification. A detailed knowledge of the idiosyncrasies of the systems is crucial for effective problem management. The following highlights some system characteristics, the knowledge of which greatly helps in problem identification:

Application	Deloitte Understanding of System Characteristics That Drive Problem Identification
iCIS	CIS, TPL and IEVS. The OS2200 mainframe's job accounting subsystem provides transaction history details to aid in detecting performance anomalies and errors. eCIS. eCIS issue identification spans the largest number of technology platforms and the most servers. COMPASS. COMPASS has an automated batch process – ReSubApp - that retries referrals to other DPW systems automatically in the event of connectivity issues between systems.
HCSIS	As part of established HCSIS batch monitoring processes, over 250 batch log files are analyzed to confirm successful execution after each batch cycle.



Application	Deloitte Understanding of System Characteristics That Drive Problem Identification
PACSES	PACSES Mainframe. The PACSES mainframe solution contains an array of custom developed application framework “complexes” that make the analysis and debugging of issues somewhat more challenging than in traditional mainframe COBOL solutions. It often requires a specialized blend of skill sets and techniques in order to diagnose and rectify problems. PACSES Open Systems. The PACSES open systems applications are comprised of many “moving parts”. However, with the instrumentation and error detection and reporting capabilities within the applications along with the suite of enterprise tools used for debugging, error detection, and performance evaluation, issues that do occur are diagnosed and corrected more easily than in the past.
PELICAN	PELICAN's error management system identifies exceptions within the application and communicates these to the users with an alphanumeric code which when provided to the application support team, can assist with locating the issue in logs.
Child Welfare	Child Welfare systems leverage desktop software that do not have the metrics collection and alerting capabilities of enterprise class applications. Other's have not been exercised through load running software to identify potential performance tuning opportunities.
Enterprise Services	Enterprise Services hosted on DPW's webMethods platform use an enterprise Java-based logging solution to produce consistent trace files detailing both successful and error transactions for future analysis.

Figure 6.6-83. Deloitte Understands System Characteristics That Drive Problem Identification.

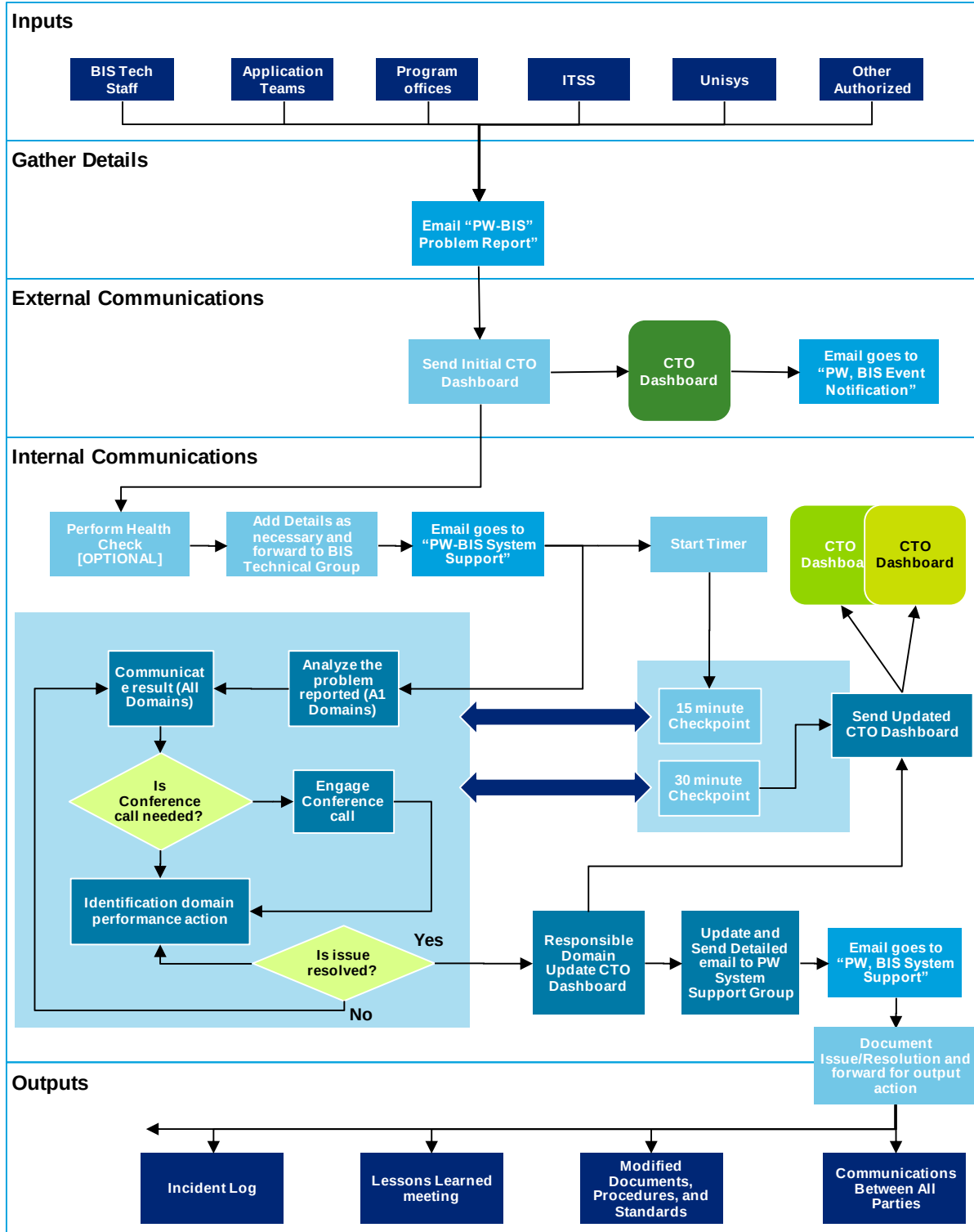
We recognize that within the past several years, DPW has made significant strides in operational issue triage with the establishment of their application problem reporting and resolution process. This process has brought a degree of standardization in both approach and has significantly increased the real time awareness of DPW application stakeholders on the operational state of their IT systems. DPW's application/system problem workflow process, which is illustrated in Figure 6.6-84, **has five core elements:**

- **Inputs.** Represents DPW stakeholders authorized to report application/system problems
- **Gather Details.** The DPW supported mechanism to capture problem reports as part of this process
- **External Communications.** Communications events triggered upon receipt and confirmation of a problem report, including email alert distribution and updates to the CTO dashboard



- **Internal Communications.** Represents the end-to-end problem resolution and progress reporting process within DPW
- **Outputs.** The knowledge-based and process and procedure improvement based outputs from the resolution of a problem

DPW Application/System Problem Workflow Process



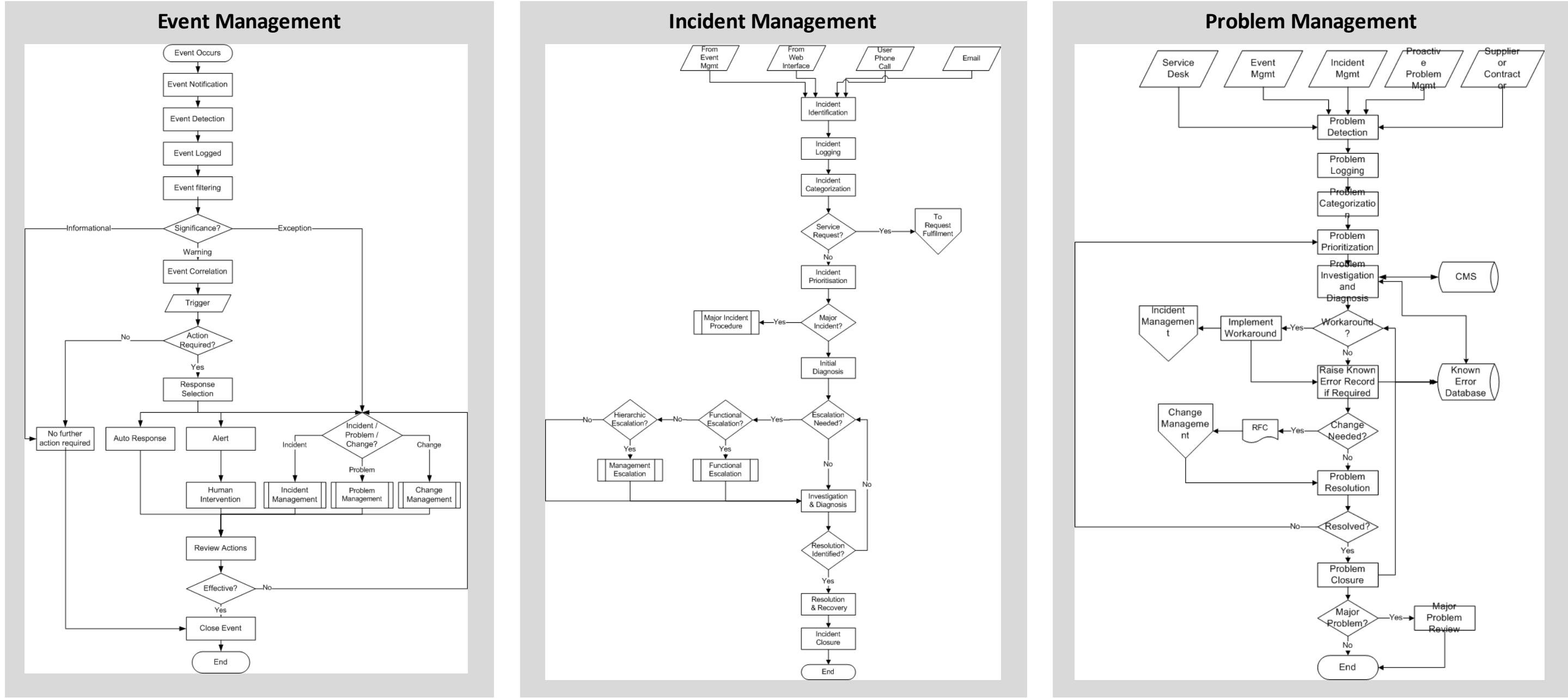
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Figure 6.6-84. DPW Application/System Problem Workflow Process.
Deloitte incorporates sound ITIL methodologies into DPW's Problem Workflow Process.



This process contains many of the elements commonly found in an issue triage and resolution process and has served DPW well. Deloitte recognizes the benefits of this process and are proposing, as part of our issue triage and resolution process, to continue to follow this process. In addition, we will continue to work with DPW to analyze this process for improvement opportunities as part of the implementation of ITIL-based processes across the DPW enterprise.

Based upon ITIL version 3, we will work with DPW to analyze the existing process for alignment with 3 ITIL processes: Incident, Problem and Event management. These processes, which are illustrated in Figure 6.6-85 and described in more detail in the following pages, provide the basic foundation for increasing overall problem resolution proficiency and a reduction in service disruptions. In addition, output information from these processes provides a basis for improving operational IT delivery, efficiency and quality.



PA_DPW-1143

Figure 6.6-85. Event, Incident and Problem Management Processes.
Deloitte will work with DPW to analyze existing processes for alignment with ITIL version 3 to improve Event, Incident and Problem Management service delivery.

- **Event Management.** This process focuses on monitoring the DPW system infrastructure to capture alarms, events and “changes in state” that, although may not be a true production issue, would document events that alter the behavior of the production environment. This could include spikes in CPU utilization that may be caused by true business processes, such as the opening of the LIHEAP season. However, these events could also be indicative of true issues. The proactive investigation of events will lead to early detection and probable avoidance of operational impacts.
- **Incident Management.** This process focuses on efficient handling of incidents when they do occur to restore normal state service operations as quickly as possible. Incidents, in this case, are defined as rudimental impacts to a particular end user that could be indicative of a larger problem. Issue management, including the creation of an incident knowledge base, will allow technical staff to more quickly respond to issues, implement a work around and identify/rectify the root cause in a timelier manner.
- **Problem Management.** This process focuses on identifying the root cause of many incidents that correlate to a singular problem. Like Incident Management, this includes the creation of a knowledge base to house historic problem information for future reference. Key benefits include increased availability due to lower number and duration of incidents and increased problem solving skills among IT support staff.

We work with DPW to map these core ITIL processes to the existing DPW Application/System Problem Workflow Process to identify gaps and develop a plan to migrate to the new process. Based upon our knowledge of ITIL and the current DPW process, we expect that there is a certain degree of synergy as well as opportunities for process improvement that ultimately benefits DPW in its operational model.

The following set of tables highlight what opportunities exist for process improvement, based on the Event, Incident and Problem Management model:

DPW Event Management Improvement through ITIL

Existing DPW Process	Corresponding Event Problem Management Activity	How Deloitte’s Proposed ITIL Approach Can Improve the Process
Inputs	Use effective monitoring and alerting to catch incidents before users see them	Provides continual program and measurements to establish effective alerting thresholds and implement effective automation that forward events to incident handling staff.
CTO Dashboard	Use effective decision making metrics to monitor and communicate measurements to IT executives	Provides metrics model and metrics communication architecture to develop knowledge and information that can be effectively used by DPW executives to take timely actions.

Figure 6.6-86. How Deloitte’s Proposed ITIL Approach Can Improve the Process.

DPW Incident Management Improvement through ITIL

Existing DPW Process	Corresponding ITIL Incident Management Activity	How Deloitte's Proposed ITIL Approach Can Improve the Process
Incident Log	Confirm incidents are appropriately logged, classified and prioritized	Our incident data templates and prioritization scoring schema provides the basis for effective incident communications and a foundation for proactive service improvement.
Corrective Action Plan	Develop a plan to outline the approach, tasks and activities required to bring an incident to resolution and validate success	Provides a roadmap towards incident closure and direction to involved stakeholders to use throughout resolution.
Analyze the Problem Reported	Use and structure incident analysis activities around a consistent incident life cycle	Effectively targets the focus areas for resolving incidents using a consistent approach across DPW IT areas.
Lessons Learned Meeting	Conduct post partum reviews for major incidents	Provides effective policies and meeting agendas to efficiently capture lessons learned and communicate these to DPW IT support staff.
Communications Between All Parties	Develop a standard Customer Statement for major incidents that includes a description of the incident/problem in brief business terms	Provides incident communications templates and policies for communicating major incidents.

Figure 6.6-87. How Deloitte's Proposed ITIL Approach Can Improve the Process.

DPW Problem Management Improvement through ITIL

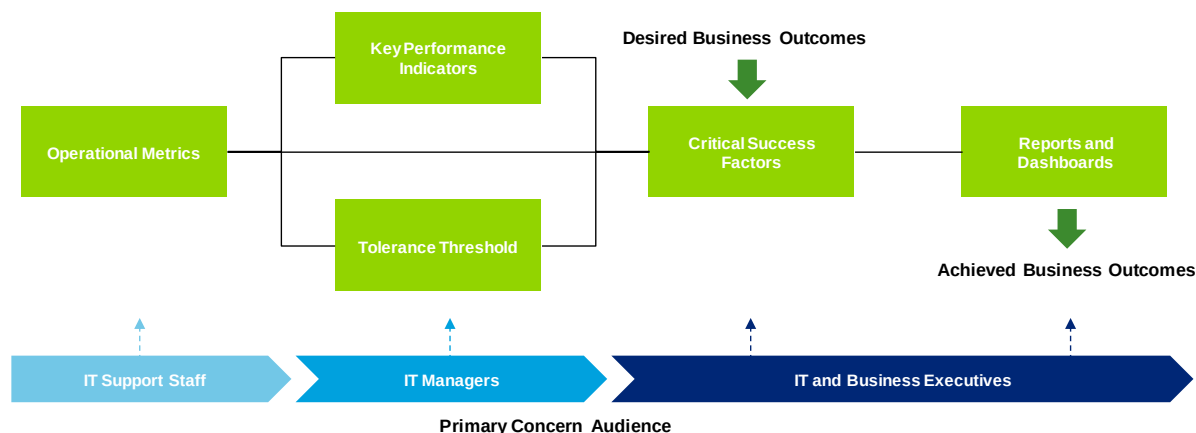
Existing DPW Process	Corresponding ITIL Problem Management Activity	How Deloitte's Proposed ITIL Approach Can Improve the Process
Analyze the Problem Reported	• Conduct discovery efforts to see what is going on – identify symptoms, what is happening • Conduct hypothesis to identify one or more candidates as to the root cause – identify root cause options in meeting and assign staff to investigate each one • Identify Root Cause	Provides a highly structured approach and set of analysis tools and aids for identifying root causes of problems.
Identified Domain Performs Action	Use structured problem removal approach and communicate known errors to the Service Desk	Effectively takes consistent steps to remove problems from the infrastructure – known errors at the Service Desk reduce incident down time for recurring incidents.

Existing DPW Process	Corresponding ITIL Problem Management Activity	How Deloitte's Proposed ITIL Approach Can Improve the Process
Modified Documents, Procedures and Standards	Proactively implement changes to remove root causes of problems and continually improve service quality	Deloitte approach takes a holistic view of problem causes and remedies that includes process, organization, training and communication changes in addition to technology changes.
Communicate Results	Use a 10 step problem resolution approach that can also quickly communicate the status of activities undertaken to solve a problem.	The 10 step approach identifies and problem resolution pipeline which can quickly indicate the status of problems and shift communications of problems to service desk staff versus interrupting resources working on the problem.

Figure 6.6-88. How Deloitte's Proposed ITIL Approach Can Improve the Process.

Metrics Determination, Collection and Quality Confirmation

IT service improvements rely on adequate metrics for ongoing management and continuous improvement. Deloitte leverages an IT metrics model that translates low level operational data into key performance indicators and critical success factors that can be used for actionable decision making to improve overall operations. This model, highlighted in Figure 6.6-89, guides DPW in the identification and collection of operational metrics that will feed the quality assurance process that leads to achieved business outcomes.



PA_DPW-1144

Figure 6.6-89. IT Service Improvement and Metrics Model.

Deloitte will work with DPW to establish, collect and report on metrics to drive continuous improvement in services provided to DPW.

Operational Metrics

The collection of operational metrics provides the raw data necessary to track, manage and quantify improvement. Metrics can be collected from automated as well as manual repositories for assimilation and comparison against KPI's and Tolerance Thresholds. The following provides a representative sample of operational metrics that could be collected across various domains. We work with you to create the exhaustive list for ongoing management.

Domain	Potential Operational Metric Collected	Deloitte's Source for Metric Collection
Configuration Management	Infrastructure Availability. Number of reboots, App Pool Recycles, IIS Resets performed	DPW Outage Report
	Deployment Accuracy. Number of deployment issues that require redeployment of configuration files, application code, etc. that impacts availability, performance or functional delivery	Deloitte Deployment Scorecard
	Response Time Reports. Reported instances of response time, availability or functional delivery issues that impact the end users ability to perform required work	Help Desk Tickets
Database Management	Infrastructure Availability. Number of reboots, Instance Recycles, etc.	DPW Outage Report
	Top 10 List. Number of queries that appear on the "Top 10" list that highlight performance tuning opportunities within the database	Deloitte/DPW DBA Staff
	Oracle Core Metrics. Specific Oracle metrics like buffer gets, hard parse percentage, logical/physical reads, I/O rates, etc.	Oracle Enterprise Manager AWR Reports
	Database Query Response Time. Response time metrics for database queries, packages and stored procedures	Oracle Enterprise Manager AWR Reports
Middleware Management	Infrastructure Availability. Number of service restarts, etc.	DPW Outage Report
	Middleware Package Response Time. Response time metrics for middleware packages	MyWebMethods Server
	Middleware Queue Lengths. Number of instances of transactions queues over a determined value	MyWebMethods Server

Domain	Potential Operational Metric Collected	Deloitte's Source for Metric Collection
Operations Management	Infrastructure Availability. Number of reboots, Instance Recycles, etc. that impacts batch processing	Deloitte/DPW DBA Staff
	Oracle Core Metrics. Specific Oracle metrics like buffer gets, hard parse percentage, logical/physical reads, I/O rates, etc.	Oracle Enterprise Manager AWR Reports
	Database Query Response Time. Response time metrics for database queries, packages and stored procedures	Oracle Enterprise Manager AWR Reports

Figure 6.6-90. Operational Metrics That Drive Service Quality Improvement.

Key Performance Indicators

Once operational metrics are defined and collected, the repeated assimilation of these metrics into the Key Performance Indicators (KPI's) is done to support performance quantification. The KPI's are compared against the Tolerance Thresholds to determine operational proficiency. Potential KPI's that could be used by DPW are summarized below, including:

ITIL Process	DPW Key Performance Indicator	Deloitte's Measuring KPI's Benefits DPW
Event Management	Customer Incident Impact Rate. Provides a ratio of the number of incidents that impacted customers versus total incident counts	Identifies percentage of incidents that occurred that were taken care of by DPW IT support staff before they could impact users.
	Customer Incident Notification Rate. Provides a ratio of the number of incidents identified by DPW customers and called into the service desk against all identified incidents	Indicates the level of effectiveness for monitoring and event capture systems by identifying how many incidents are recognized before customers see them.
	Service Target Adherence. Provides number of service level breaches for each delivered service	Indicates how well IT services are being delivered to DPW users and customers.
Incident Management	Number of Incidents. Provides a count of the absolute number of incidents that are handled by DPW within a specific period of time	Allows DPW to understand long term and cyclical trends in incidents.
	Average Incident Resolution Time. Average time incurred from incident open to incident resolution	Allows DPW to identify impact of service improvement efforts on service availability.
	Incident Re-Open Rate. Ratio of number of incidents closed that were re-opened against incidents closed	Allows DPW to identify effectiveness and capabilities for resolving incidents correctly the first time.

ITIL Process	DPW Key Performance Indicator	Deloitte's Measuring KPI's Benefits DPW
Problem Management	Incident Repeat Rate. Provides a count of incidents related to an underlying cause or issue	Allows DPW to understand the opportunities to reduce incidents related to their underlying causes.
	Problem Workaround Rate. Provides a ratio of existing problems (known errors) that have a workaround versus all known problems	Allows DPW to understand the effectiveness of their problem handling capabilities and identify the level of open problems and issues that are impacting DPW customers.
	Problem Resolution Rate. Provides a ratio of number of problems removed against the total number of problems in the pipeline	Identifies how well DPW is addressing IT problems and progressing on removing them from the infrastructure.

Figure 6.6-91. IT ITIL Based KPI Collection Facilitates Improved Service Delivery.

Key Measurement Criteria

Comparisons of KPI's against thresholds lead to the measurement of Critical Success Factors. These factors are the core metrics that define our joint operational success. Examples of Critical Success Factors include:

- **Application Target Availability.** Verify the applications available for business processing
- **Application Response Time.** Verify the application responsiveness aligned to target goals
- **Application Functional Processing.** Verify the application is meeting critical business needs
- **Business Partner Interface Success.** Verify external data exchanges and contracts are being supported
- **Client Benefit Distribution Success.** Verify client benefits are being delivered in accordance with business policy

Reports and Dashboard

The performance achieved against the critical success factors are then published via a report or dashboard for management action and direction. Challenges meeting critical success factors are managed through corrective action plans.

Corrective Action Plan

For problems identified requiring a software change, and where the severity of the problem is escalated to the appropriate level of severity, Deloitte will prepare a Corrective Action Plan (CAP) which will detail our understanding of the problem, and will contain either a diagnosis of the problem or a description of the activities being undertaken to diagnose the problem, and an estimated time to bring the issue to resolution.

The following template provides a summary of a CAP that could be used in the event of an issue:

Corrective Action Plan	
Item # 1: Develop a corrective action plan with an approach to address concerns about continuity and composition of the Deloitte/ELN team.	
Issue	Root Causes
Description	
Impediments/Challenges	
Accomplishments to Date	Remaining Team Actions
Expected Outcomes	

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Figure 6.6-92. Deloitte has Experience with the CAP Process to Manage Issues.

Testing Results

Deloitte will provide test results and status of the fix resolving the production issue. These results and status will be shared to determine the appropriate deployment time frame that could consist of both a short-term solution. Test results could include the listing of approved test scenarios, named approval for the release to go to production, infrastructure “before and after” results showing improved performance and/or screen shots that demonstrate the application is behaving as desired, etc.

Software Release Management

IV	Page IV-378	RFP Reference: 4.1 Applications/Systems Operations Support

- Software release management and emergency implementation

Deloitte supports software release management and emergency implementations across the in-scope systems.

Using ITIL centric processes, Deloitte approach to software release management is focused on repeatable, measurable and continually improved processes that support business needs. In order to demonstrate our understanding of and help you manage through both scheduled and emergency software releases activities, we offer the following approach to providing release management services to DPW. We will continue to work closely with DPW to address the following areas as outlined in the RFP:

- **Software Release Management.** Deloitte’s approach to Software Release Management at DPW covers a variety of activities, including release scheduling, creation and review of release playbooks, participation in production meetings, and communication of dates and activities to stakeholders.
- **Emergency Implementation Management.** In addition to standard releases, Deloitte recognizes that Emergency Implementation Management also includes processes for

identifying scope, obtaining signoff from DPW management stakeholders, and working with DPW to rapidly implement application changes.

Deloitte's approach to release management for DPW focuses on creating clear deployment plans, while minimizing unintended impact to the production operations at DPW. Our approach for managing releases aligns closely with the DPW software development methodology and also incorporates ITIL principles for Release and Deployment Management.

The various architectures used across the enterprise does present software release management challenges for the in-scope systems, including:

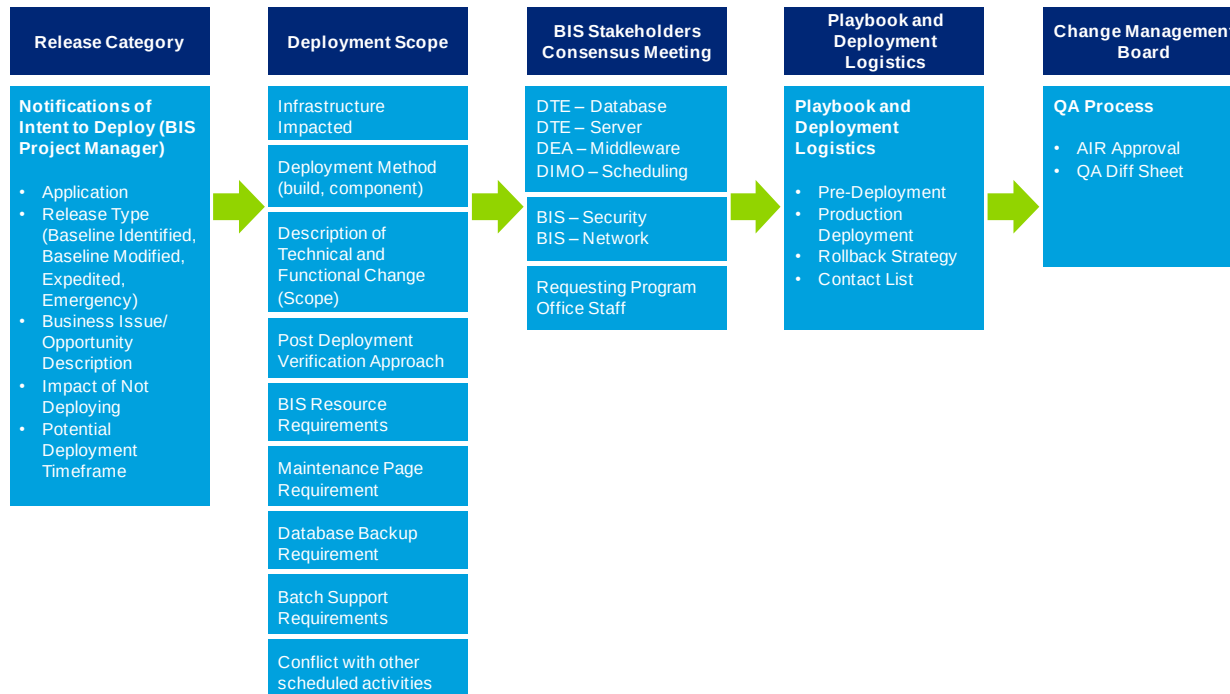
Application	Deloitte's Understanding of System Specifics for Release Management
i-CIS	• CIS, TPL and IEVS. During CIS releases, OpenOLTP interfaces must be recompiled and relinked in each environment • Ecis. The webAP solution must be deployed in unison with MCI.NET releases as they are tightly coupled • COMPASS. Prior to releases, resource caching of Flash SWF objects must be disabled in advance to allow clients to receive the new version once it is deployed
HCSIS	• Releases of the HCSIS application require additional coordination and management as the stakeholders are based in 6 different program offices within DPW
PACSES	• PACSES Mainframe. Changes to the support layer require a rebuild of the entire mainframe application which takes about 2 hours per environment • PACSES Open Systems. Components of the open system suite leverage OA's installation of Aqualogic and will require cross Department coordination to facilitate deployments
PELICAN	• PELICAN Provider Certification releases must be coordinated across the server based release and the software distributed to the remote tablets through SCCM
Child Welfare	• Child Welfare systems are deployed across a variety of infrastructure platforms, including desktop centric tools, and will require considerable coordination to verify users have the current version of software
Enterprise Services	• Web Service deployments require considerable coordination as they are, by definition, used by multiple applications

Figure 6.6-93. Deloitte Understands the Release Management Characteristics of the In-Scope Applications.

Software Release Management

Figure 6.6-94 depicts our general release management processes organized into five phases and is followed by detailed descriptions for each of those phases:

DPW Software Release Workflow



PA_DPW-686

Figure 6.6-94. Release Coordination and Communication Approach.

Deloitte implements tight controls and brings rigor to software release coordination and implementation for DPW.

Release Categorization

Early in the development life cycle, the scope of each release and requested deployment dates are shared with stakeholders within DPW's Change Management Board. Deloitte works with BIS to determine potential dates for deployment based on the identified DPW activities. Our team involves the necessary stakeholders, including program office and BIS personnel to review and negotiate the potential release dates.

We then work with BIS management to help confirm that the approved deployment dates are entered on and managed via the BIS Implementation Calendar. In addition, we maintain the CIO Runway calendar, which tracks the approved timelines for each SDLC phase of software release.

Deloitte follows DPW's methodology and applies relevant CMMI principles for verifying this alignment, when managing each release as it progresses through the various phases to its implementation date. During the preparation of a release, Deloitte collects the relevant information in order to finalize the deployment playbook and instructions, and communicates the implementation scope and logistics to the various stakeholders associated with the effort.

Release Category. Production releases at DPW are categorized into four types. Our team works with DPW to define the category for each release and based on the release type, the overall timeline of TFP and production deployment dates are. The table below summarizes the release categories and the impact each category has on its implementation timeline:

DPW Release Category	Deloitte's Approach to Implementing Releases in Production
Baseline Original	A release that has been discussed and verified with DPW as part of the annual planning process, reviewed with BIS and project team and resides on the CIO "runway". The release will meet the 8 day QA validation between TFP and production deployment. This release requires CIO approval of the baseline.
Baseline Modified	A release that has been discussed and verified with DPW and project teams in a more ad hoc fashion and meets the "8 days" requirements. The release was not originally scheduled through prioritization efforts and does not currently reside on the CIO runway. The release will meet the "8 day" QA validation between TFP and production deployment. The release requires CIO approval through CIO dashboard.
Expedited	An unscheduled release that does not meet the "8 day" QA validation criteria. This also includes scheduled releases that, due to some issue found late in the SDLC, causes the application team to not make the "8 day" criteria. This type of release requires CIO approval through the CIO dashboard. This release will require program office and DPW management approval.
Emergency	Releases that must go to production within 24 hours to address a critical bug or security breach. This category requires CIO notification after the event. This release will require program office and DPW management approval.

Figure 6.6-95. Deloitte's Approach to Implementing Releases in Production.

Deployment Scope

Each release requires the identification of deployment scope that outlines, among other things, the areas of the infrastructure that are affected and the types of software components being implemented. Based upon the types of software involved, our team coordinates with the DPW technical domains to determine resources and to assign ownership of each component within the deployment playbook. The table below summarizes typical components reviewed as part of a deployment, and also DPW stakeholders involved in deployment activities.

Deployment Component	Deloitte Coordinates with Impacted BIS Stakeholders
Network/Firewall Changes	BIS-DTE – Networking
Batch Schedule Changes	BIS-DIMO – Scheduling Unit
PACSES Mainframe Batch Schedule Changes	BIS/DPH – Operations
Database Schema Changes	BIS-DTE – Database Team
PACSES Mainframe Schema Changes	BIS/DPH – Operations
Database Package/Procedure Changes	BIS-DTE – Web Publishing Team

Deployment Component	Deloitte Coordinates with Impacted BIS Stakeholders
Web Application Code	BIS-DTE – Web Publishing Team
CIS Mainframe Code	BIS-IMO – Scheduling Unit
PACSES Mainframe Code	BIS/DPH – Operations
Middleware (OpenTI, webMethods, Informatica)	BIS-DEA – Middleware Services Unit
Security Changes	BIS-DTE – Security Team
Deployments to PCs or Tablets	BIS-DTE – Server Team or BIS – DIMO – Desktop Team

Figure 6.6-96. Deloitte Coordinates with Impacted BIS Stakeholders.

In addition to determining the components and stakeholders, during this phase any infrastructure dependencies are reviewed, as well as any conflicting activities that may be present on the Implementation Calendar, including infrastructure maintenance. Our team coordinates with the appropriate technical contacts within DPW to mitigate any situations where conflicts exist.

BIS Stakeholder Consensus Meetings

Deloitte coordinates meetings with the stakeholders of each technical domain to discuss the deployment scope and gain consensus on deployment dates and support needs for staff members affected. These discussions occur during the regularly scheduled coordination meetings between Deloitte each DPW technical domain point of contact. The stakeholders of Deloitte and the technical domains also attend the Deployment Logistics Meetings discussed in the next subsection.

Playbook and Deployment Logistics Meetings

Three weeks prior to implementation of a production release, Deloitte creates a playbook for the TFP and production environments. The playbook lists the steps and sequence of activities to be coordinated for the production deployment. A deployment playbook identifies the steps, dependencies, dates, anticipated duration, the DPW resource and Deloitte support contact for each step listed in the playbook. The TFP version can be considered the “dry run” and is modified, as necessary, to support any changes required for Production. The playbook is organized into the following sections:

Pre-Deployment

Pre-Deployment activities are the steps which can be executed prior to production deployment date. Our team will work DPW stakeholders to identify these steps. If some of the activities can be coordinated prior to production deployment it will decrease the number of steps and complexity on the production deployment date.



Production Deployment

Production deployment activities are the steps to be executed on the day of the production implementation. These typically include deployment activities for each application component, any validation or data conversion steps and Go/No-Go decision call. Some of the other components included in the production deployment playbook are:

- **Rollback Strategy.** We understand that in rare situations, there is a potential for a deployment rollback if issues arise that cannot be corrected during the deployment activities. As part of the deployment playbook setup, Deloitte coordinates with the appropriate DPW stakeholders to define and review potential rollback scenarios. Additionally, we also work with DPW to rehearse the rollback in a test environment so that stakeholders are comfortable that a rollback would be successful, if needed. The rollback scenarios and steps to be executed are detailed, along with their actual times identified during the rollback rehearsal.
- **Contact List.** One of the most critical factors that come into play on the day of deployment is time. If there are any deployment issues we may need to contact the appropriate domain personnel assigned to this implementation effort. The contact list in the playbook identifies the key stakeholders and the domain personnel assigned to this effort.

Deloitte also facilitates meetings with DPW and other stakeholders to review the playbook at least two weeks prior to its production implementation.

Change Management Board

Deloitte understands that DPW's Change Management Board (CMB) is the forum to *present the application release to the DPW's Quality Assurance group, as well as the vehicle to obtain a final go-ahead from key stakeholders. At the weekly CMB meeting, Deloitte presents an Application Implementation Request (AIR) form which contains information required by DPW prior to implementation. The AIR request and QA difference sheet is completed by Deloitte and forwarded to DPW stakeholders for their approval as well. The AIR details files and application objects that are included in the release. Once approved by DPW, the form is forwarded to the QA team for review and processing. For the CIS mainframe application releases, instead of an AIR, a program office approved element transfer request (ETR) is presented at the CMB meeting. The ETR is similar to the AIR in that it outlines the mainframe objects included in the release.

Emergency Implementation Management

In addition to our standard release management approach, we recognize that occasionally, releases may need to be implemented more rapidly than the normal process allows, in order to mitigate critical production issues, or to address quickly changing needs of the business. Many of the basic concepts outlined in the software release approach above are still followed in an emergency situation.

For example, even though a software fix requires an expedited implementation, it may still require a detailed playbook if the deployment processes are somewhat complex or cross over multiple domains.

Emergency implementation management really relates to how quickly a fix or change can be deployed in production versus a completely different implementation approach.

In Figure 6.6-97, we depict Deloitte's approach to Emergency Implementation Management for DPW followed by a description of those processes. It includes the following components:

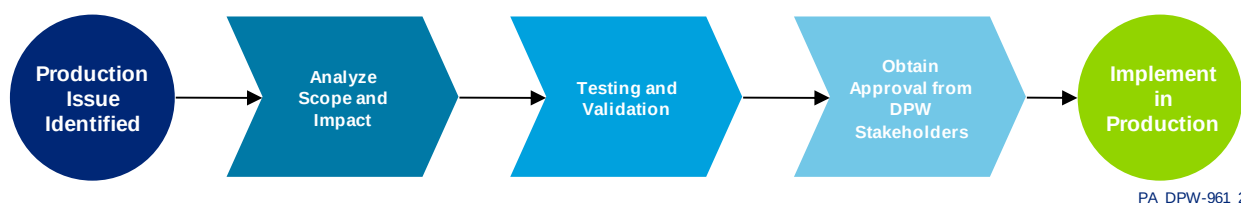


Figure 6.6-97. Emergency Implementation Management Process for DPW.

Deloitte's process for Emergency Implementation Management complements the Software Release Management approach, but allows for rapid introduction of released to quickly resolve defects or critical business changes.

Analyze Scope and Impact

Deloitte analyzes the reported issues/changes to determine the scope, the impact to the DPW applications, and the level of effort required to implement the fix or change. This step is very critical in that incorrectly understanding the root cause of an issue or the scope of the change can have broad ranging negative impacts to other parts of the an application. Deloitte has the depth and breadth of experience in your applications and this allows us to quickly determine what is the right fix or the proper change to make; we won't turn a bad situation into a worse situation. Once the scope and impact are analyzed, we quickly marshal the appropriate resources to work the problem.

Conduct Testing and Validation

Once the fix or change has been developed, Deloitte work with testing teams and DPW to validate the change, and to help confirm that no other unexpected affects have been introduced into the environment. The results of the testing are then prepared and provided to the appropriate DPW stakeholders for approval.

Obtain Approval from DPW Stakeholders

After the issue is resolved and testing confirms the fix and the results are provided to the key stakeholders within DPW and the testing results are approved, Deloitte then helps coordinate readying the software for deployment to production. This may include the creation of a playbook if multiple steps or stakeholders are required to successfully deploy the software.

Implementing Emergency Releases into Production

Once approvals have been received, Deloitte works with DPW to install the expedited release into production, and also supports DPW in verifying that the fix or change has been correctly deployed and is operating as intended. Although this is an expedited process, the software release is still deployed in each of the environments prior to the installation in production.

Deloitte understands that the coordination and collaboration steps presented in our approach for DPW Release Management are essential to help confirm that each release adheres to its implementation timelines and also validates that each touch point and dependency has been identified and is properly addressed.

Software Resource Monitoring and Forecasting

IV

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RFP Reference: 4.1 Applications/Systems Operations Support

- System resource monitoring and forecasting

Deloitte performs system resource monitoring and forecasting for the in-scope systems.

DPW's complex computing infrastructure is built upon multiple technical foundations, using numerous COTS solutions, consumed by a wide array of custom built solutions. We understand that because of the different characteristics of your platforms, infrastructure components and applications you require diligent system resource monitoring and an effective methodology for forecasting new system demand.

Figure 6.6-98 highlights some of the varied resource requirements that need to be analyzed as part of your capacity planning process.

Applications	Deloitte's Approach Meets the Resource Monitoring and Forecasting Requirement
iCIS	• Measure the impact of new iCIS Phase IV-B transactions that span across the mainframe and webMethods platforms • Assist DPW in developing a plan to support daily Client Notice Redesign capacity in addition to allocating dynamic capacity needs for generating up to 600,000 food stamp notices for mass rate changes • Analyze the network capacity impacts of imaging infrastructure increases for county offices
HCSIS	• Collaborate with DPW to estimating the user base and database increases of the EI statewide preschool rollout waves • Develop a methodology for estimating the database capacity implications of user configured solutions such as Enterprise Incident Management
PACSES	• Determine the infrastructure needs to support the evolution of PACSES to latest technologies • Team with DPW to develop a method for monitoring the system footprint of the new Adobe LiveCycle initiative
PELICAN	• Assess the database capacity implications of the user configurable ELN Program Expansion solution

Applications	Deloitte's Approach Meets the Resource Monitoring and Forecasting Requirement
	Project the resource consumption of the Cognos solution for increased data warehousing and enterprise reporting
Child Welfare	- Estimate the amount of database capacity needed to support conversion of legacy data - Provide to DPW an analysis of the capacity required to support centralization of currently distributed systems
Enterprise Services	- Build an enterprise service metrics dashboard to track daily utilization and historic trending - Monitor the growing usage of the production web services servers to determine when appropriate hardware upgrades become necessary

Figure 6.6-98. New Initiatives That Require Analysis for Determining Your Capacity Needs.

Performing these tasks allows DPW to right size its infrastructure to maximize its hardware investment while providing enough processing capacity for your end users to carry out their tasks with acceptable response times now and into the future.

Our approach to assisting DPW achieve this balance is derived from years of working closely to scale up your systems based on forecasted demand. No other vendor can offer that sort of insight.

Our team will continue to collaborate with you to identify areas for system improvement in two primary ways.

- First, we establish continuous automated monitoring of the current system infrastructure by leveraging tools like SightLine for overall system usage and Enterprise Manager for your databases.
- For proactive forecasting, we present system capacity plans for new initiatives during the Application Review Board II (ARB II) and Application Review Board IV (ARB IV) and at the beginning of each quarter.

Traditionally, the results of the resource monitoring and forecasting for the PACSES mainframe has not been presented in the Application Review Boards. The Deloitte application team at PACSES continuously monitors resource allocation, system usage and disk usage with tools like SightLine and UDSMON for the database. The metrics developed during these activities are reported to DPW PMO monthly and quarterly. We believe that this data should also be reviewed in the Application Review Board meetings.

Deloitte's System Resource Analysis Framework

Continuous evaluation of current infrastructure resource consumption is vital to providing your users with optimal performance levels. Our team works with you each day evaluate your infrastructure and the demands placed on it. This analysis allows us together to establish performance thresholds for the various application servers, databases, and mainframes. Once these thresholds are defined, we can incorporate

them into your SightLine tool, for example, to augment your automated system monitoring framework that is depicted in Figure 6.6-99.

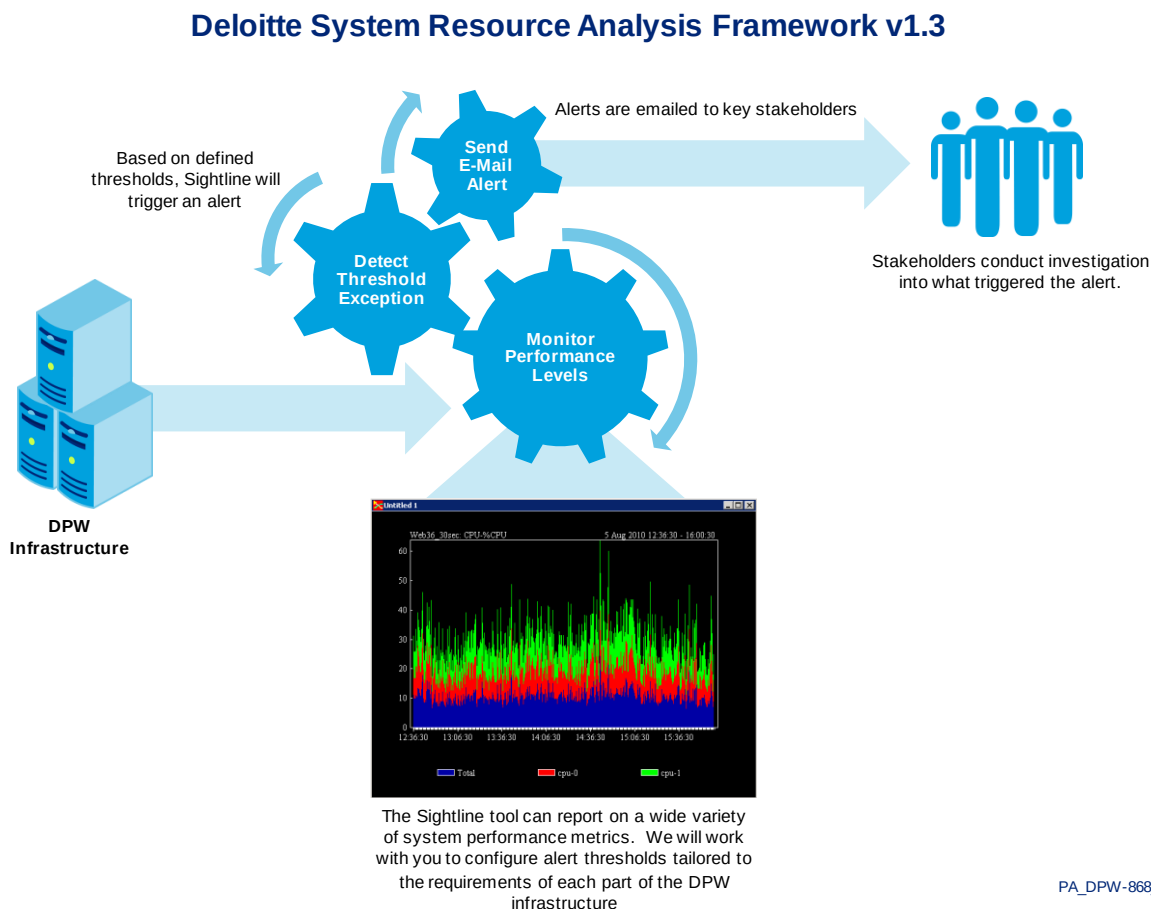


Figure 6.6-99. System Resource Analysis Framework v1.3.

Continuous, automated system resource monitoring allows for frequent evaluations of the current infrastructure's ability to effectively provide services to your end users.

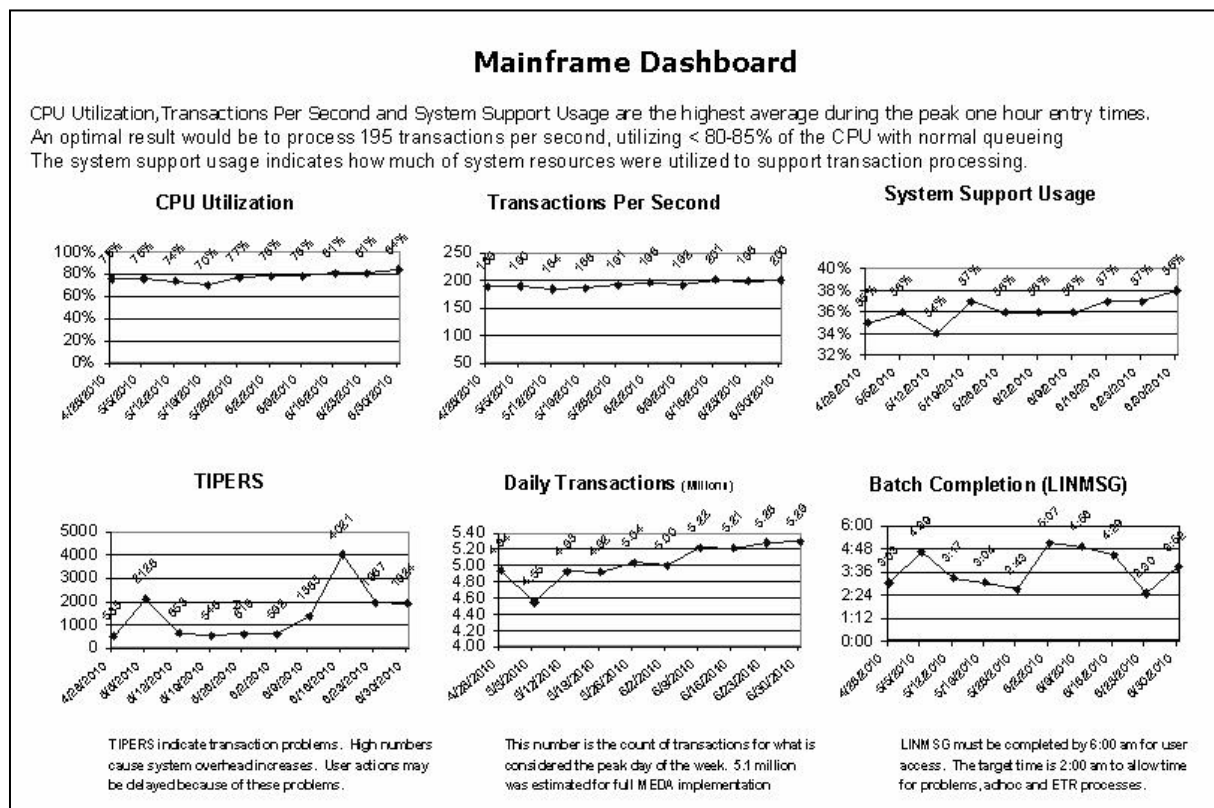
Using Tools like Sightline

Irrespective of whether it is the mainframe or open systems platform, our team will continue work with you to identify key systems that support each application and evaluate their business function and current levels of resource usage. These two factors help determine those performance metrics (e.g., CPU consumption, memory consumption, and network traffic) that are to be monitored and at what levels the end users will begin to experience performance issues.

After establishing these thresholds, the SightLine tool is programmed for continuous, automated monitoring of that system. Should a performance threshold exceed the predefined acceptable limit, an automated email is sent to key stakeholders to trigger an investigation. Repeated alerts from the same system can drive discussions around possible capacity increase needs.

The Mainframe Dashboard

With so many different business functions interfacing with the CIS and PACSES mainframes and also their respective usage patterns, Deloitte also recognizes the importance of monitoring their performance levels. To accomplish this, we compile raw data from SightLine and transform it into a simple to understand Mainframe Dashboard. The CIS Mainframe dashboard is depicted in Figure 6.6-100:



PA_DPW-963

Figure 6.6-100. CIS Mainframe Dashboard.

The Deloitte Mainframe Dashboard transforms raw mainframe performance data into trended data that allows for easy identification of performance degradation.

This dashboard displays critical mainframe performance indicators, such as transactions per second, I/O consumed, transaction aborts, and daily transaction volumes. Data is trended out over a two month span to provide historical context for current performance values. In this way, this dashboard can serve not only for system monitoring, but also provide value to the capacity planning process.

Other Tools Used for Monitoring System Resources

There are a variety of other tools used for monitoring system resources including UDSMON and SUDS on the mainframe and Enterprise Manager for the open systems.

UDSMON. used in monitoring run units (transactions) that are actively accessing the database. In Figure 6.6-101, we are showing a point-in-time view of Production database activity.

The screenshot shows the UDSMON Activity Screen with the following data:

Slot	Runid	Gen,Org	SOS	Time	From	Seq	Update	Locks	MsgId	Scrb	Status
<09:50:26> Tot Thrds = 174368039, 102/Sec, Actv/Avl = Txn: 6/29, Other: 0/25											
UDSc15R2 LocalAP 1, Steps:~5047814, RBs:545854, Local DL: 303, Time DL: 0											
I/O req/act= 7468505669/~7545787(Hit rate= 83%),Rcv(Retrn/Aud)=85424985/84877118											
Slot Runid Gen,Org SOS Time From Seq Update Locks MsgId Scrb Status											
		*1CPQL	PRCSUM	*09:50:24	1809	26		2		0	Logged OFF
*	3	*1CQ49	PRCINQ	*09:50:26	3424	18		1		0	SOS Complete
		*1CLXP	PRDEMO	*09:50:15	2082	9		1		0	Logged OFF
*	9	*1CQ4D	PRNOTE	*09:50:26	1326	17				3	SOS Complete
		*1CLVF	PRSORO	*09:50:15	2066	42				1	Logged OFF
		*1CP\$8	PRISRQ	*09:50:25	1700	22				0	Logged OFF
*	13	*1CQ4H	PRNOTE	*09:50:26	2666	18				3	SOS Complete
		*1CLWY	PRNHIS	*09:50:15	2128	18				3	Logged OFF
*	16	*1CQ2J	PRMCLR	*09:50:25	2432	36		2		1	SOS Complete
		*1CQ34	PRESTM	*09:50:25	1604	29				1	Logged OFF
		*1CPYT	PRESTD	*09:50:25	3465	25		1		0	Logged OFF
		*1CP5G	PRNOTE	*09:50:22	1545	18		1		3	Logged OFF
		*1CQ2W	PRLEMR	*09:50:25	1621	47		5	5	1	Logged OFF
*	25	*1CQ4J	PRCSUM	*09:50:26	1188	18		2		0	SOS Complete
		*1CLXJ	PRDOCK	*09:50:15	2054	35		1		1	Logged OFF
		*1CQ2Y	PRDEMO	*09:50:25	2005	17				0	Logged OFF
		*1CQ35	PRFSUM	*09:50:25	1896	29				0	Logged OFF
-----U-D-S-M-O-N---L-E-V-E-L---15R1/15R2-----											
< 200ms> <H,M,F,S,R,C,+,-> Func?>											

PA_DPW-1160

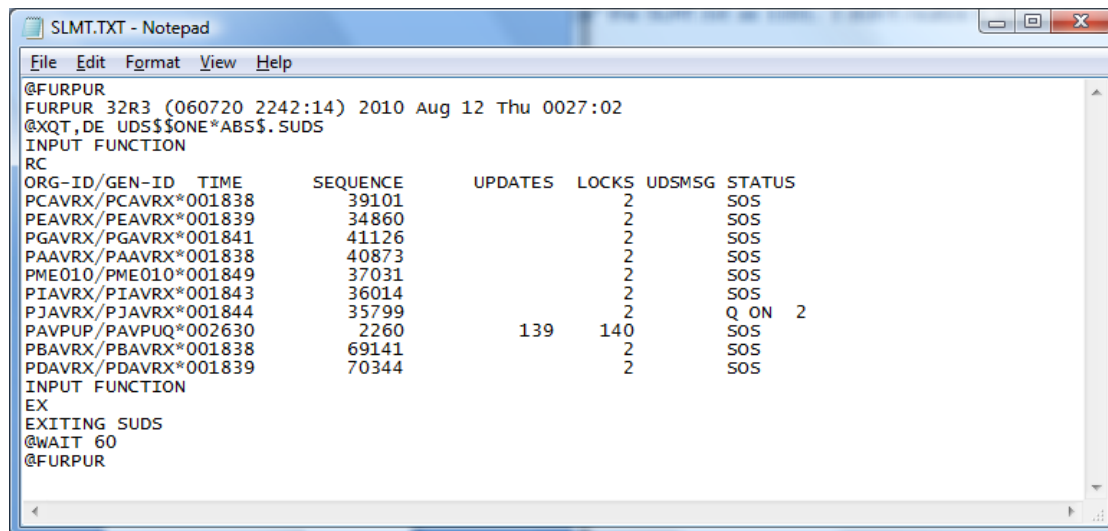
Figure 6.6-101. UDSMON Activity Screen.

With UDSMON Deloitte can analyze individual performance characteristics of the transactions in the online system.

In this particular case only TIP transactions were active when this snapshot was taken. The transaction ID is shown in the third column, the number of database commands executed is shown in the sixth column, the number of update I/Os is in the seventh column, and the run unit status is shown in the rightmost column. The key use of this screen is to identify items that are queuing (Status column) and run units that are performing large number of database commands which may lead to I/O performance issues. What typically happens is that the Deloitte DBA or console operator terminates that transaction. On screen "A" of UDSMON you can view run units in the application group. On the "J" screen you can view the run unit using a particular slot, which may be a batch/demand run or a transaction after transaction.

SUDS. for the batch environment, we typically use the Supervisory UDS tool (SUDS) that allows the us to interactively monitor and analyze UDS Control and we can examine schemas, check UDS Control's D-bank, and view the status of active threads. For the CIS and PACSES mainframes,

SUDS reports are generated nightly that can show, among other things, queuing that has occurred during batch execution. This typically results when either two jobs are attempting to update the same database page at the same time, as shown in Figure 6.6-102.



```

@FURPUR
FURPUR 32R3 (060720 2242:14) 2010 Aug 12 Thu 0027:02
@XQT,DE UDS$$ONE*ABS$.SUDS
INPUT FUNCTION
RC
ORG-ID/GEN-ID  TIME      SEQUENCE      UPDATES  LOCKS  UDSMSG  STATUS
PCAVRX/PCAVRX*001838      39101              2          2      SOS
PEAVRX/PEAVRX*001839      34860              2          2      SOS
PGAVRX/PGAVRX*001841      41126              2          2      SOS
PAAVRX/PAAVRX*001838      40873              2          2      SOS
PME010/PME010*001849      37031              2          2      SOS
PIAVRX/PIAVRX*001843      36014              2          2      SOS
PJAVRX/PJAVRX*001844      35799              2          2      Q ON  2
PAVPUP/PAVPUP*002630      2260             139         140      SOS
PBAVRX/PBAVRX*001838      69141              2          2      SOS
PDAVRX/PDAVRX*001839      70344              2          2      SOS
INPUT FUNCTION
EX
EXITING SUDS
@WAIT 60
@FURPUR

```

PA_DPW-1191

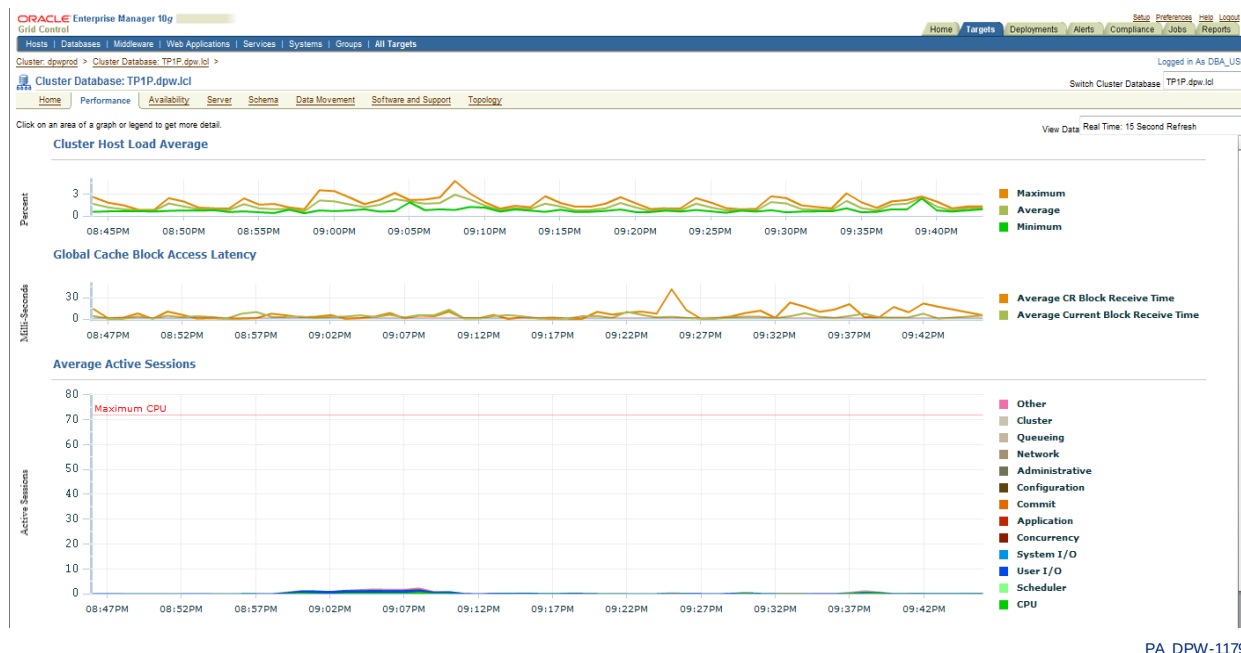
Figure 6.6-102. SUDS Report.

This report shows that one batch job deadlocked with another. This would lead us to changing the schedule of one of these jobs in OpCon.

With this data, we may alter the execution sequence of these jobs in batch or create a dependency within OpCon that precludes these jobs running at the same time. We can also view the entire batch cycle for other opportunities to improve throughput by altering execution.

Enterprise Manager. EM provides a centralized management capability for administering and overseeing multiple Oracle database instances. It is used by the BIS and Deloitte DBAs to help determine if there are performance related issues across an instance and allows for “drill down” capabilities on threads and/or queries that are suspected of causing these issues.

In Figure 6.6-103, we have depicted the main EM screen that provides the high-level overview of the health of a particular database instance – in this case, the production instance.



PA_DPW-1179

Figure 6.6-103. Enterprise Manager “Home” Screen.

With EM, the DBA can view the overall health of a particular database instance over a period of time.

The items shown for this particular instance on the main EM page includes:

- **Cluster Host Load Average.** Provides maximum, average, and minimum values for the available hosts for the previous hour
- **Global Cache Block Access Latency.** This is a summary chart in the Cluster Database Performance page showing the end-to-end elapsed time or latency for a block request. Long latencies can be caused by:
 - A high number of requests caused by SQL statements that are not tuned
 - A large number of processes in the run queue waiting for CPU or scheduling delays
 - Platform-specific operating system parameter settings that affect IPC buffering or process scheduling
- **Average Active Sessions.** This chart in the Cluster Database Performance page shows potential problems inside the database. Categories, called wait classes, show how much of the database is waiting for a resource, such as CPU or disk I/O. Comparing CPU time to wait time helps to determine how much of the response time is consumed with useful work rather than waiting for resources that are potentially held by other processes.

If issues are suspected or evident, the DBA can “drill down” to active threads and queries by using the Top Activity link (right bottom of the screen). Once that is selected, the screen shown in the next figure shown below is displayed:

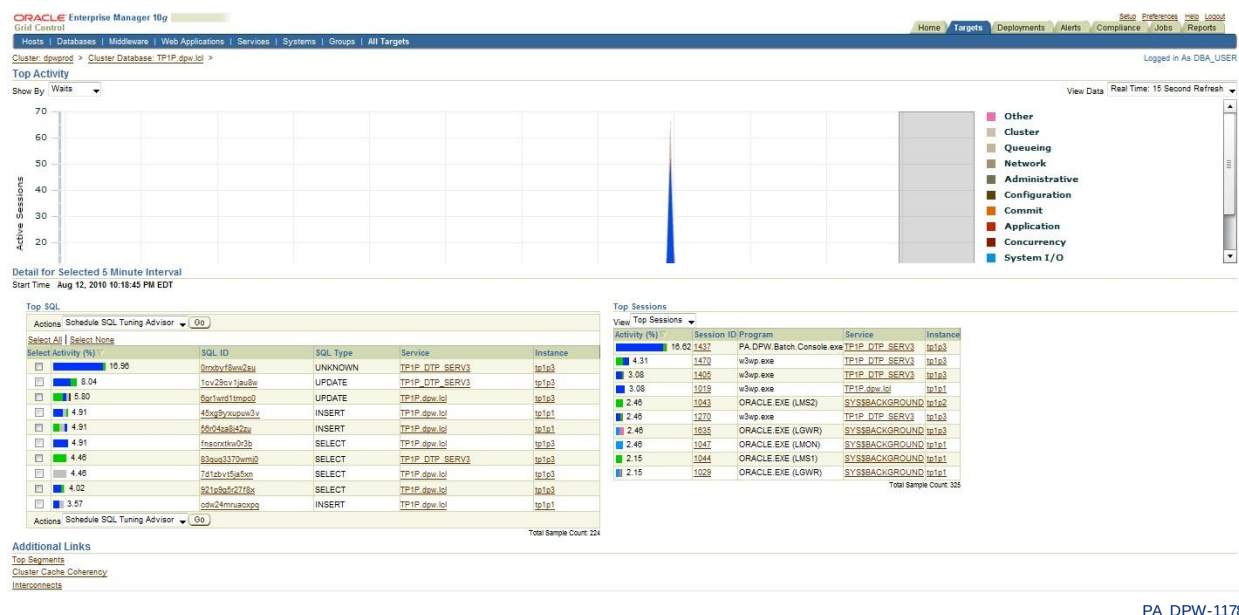


Figure 6.6-104. Enterprise Manager “Top Activity” Screen.

The “Top Activity” screen shows can view the overall health of a particular database instance over a period of time.

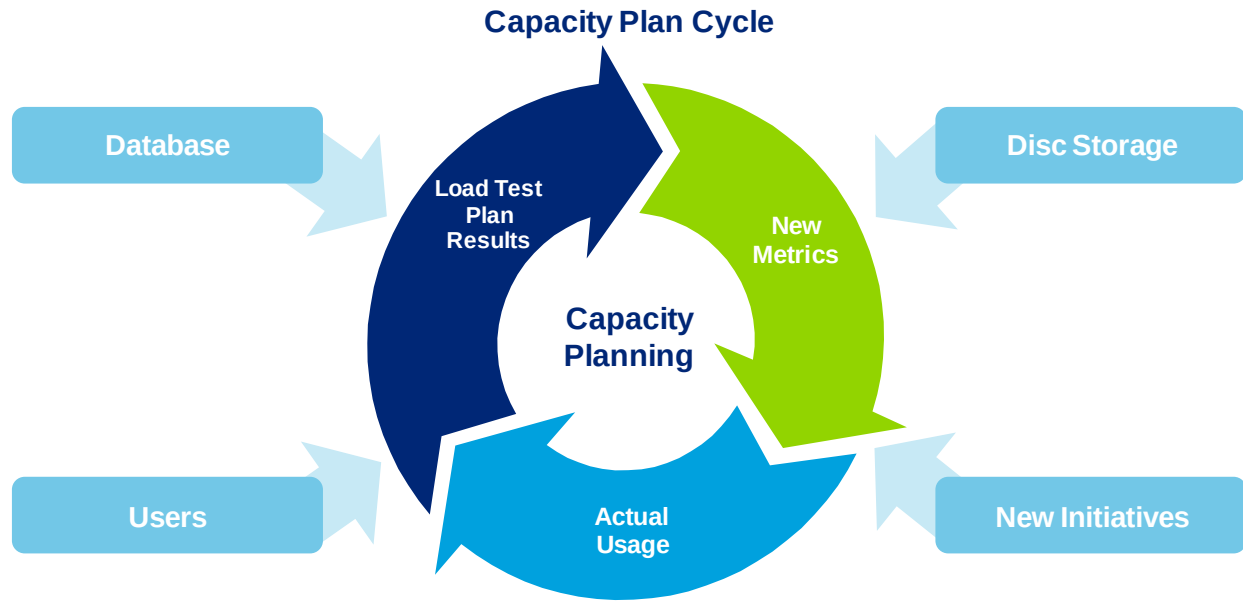
From this screen, the DBA can isolate the performance characteristics of a particular thread or query that is consuming an excessive amount of system resources or can determine if contention is occurring in the database. If excessive resources are being consumed, Deloitte may need to explore performance tuning opportunities. If a thread is causing contention issues, the BIS DBA may forcibly terminate or rollback/commit that thread or Oracle itself will take that action.

Capacity Forecasting

As the DPW technology platform continues to evolve and expand, scalability of system hardware is an important factor to consider. Lack of insight into the growth rate characteristics of your existing systems or a full understanding of the upcoming infrastructure requirements for new initiatives could have impacts on being able to accommodate future processing needs. Failure to conduct in-depth capacity planning can lead to increased efforts for modifications to your underlying infrastructure or application architectures.

Deloitte’s Capacity Planning Process

Our capacity planning processes, irrespective of platform, follows essentially the same methodology. In Figure 6.6-105, we have outlined the high level “inputs” associated with capacity planning followed by a high-level narrative of the processes associated with collecting that information.



PA_DPW-1006

Figure 6.6-105. Deloitte's Capacity Planning Process.

The Deloitte capacity planning process obtains the inputs and growth characteristics of the existing systems and user populations with projected resource requirements from new initiatives to determine infrastructure requirements

The capacity plan information is presented to DPW quarterly and also with each initiative to be implemented into the infrastructure. The process for capacity planning involves gathering and analyzing existing system data and usage, evaluating the impacts of new initiatives, and presenting the results.

Gathering Capacity Plan Data

The first step in the capacity planning process involves the collection and evaluation of data over time about existing infrastructure requirements. This data can come from a variety of sources and they include:

- **Database/File System Growth.** Obtaining this data is relatively straightforward and by calculating the increase over time, we can make appropriate growth projections
- **User Base Growth.** By examining how many users are added, changed, or deleted, we can determine the potential for impacts on the system resources
- **Actual System Usage.** Exporting data from tools like SightLine (for both the mainframe and open systems) and Torch (for the mainframe) into spreadsheets, we can see the growth patterns for both the online and batch environments. We can look at changes in the numbers of transactions, percentages of resources consumed, database hits, other I/O metrics, CPU usage, disc usage, etc. Evaluated together, they provide an overview of system resource usage and also potential areas of concern.
The evaluation of this data over time provides a good indication of growth patterns.



Evaluating Impacts of New Initiatives

Each year, DPW expands its infrastructure footprint through normal growth but also through the implementation of significant new initiatives.

As shown in the figure at the beginning of this section, each of these initiatives may have significant impacts on your infrastructure either through added processor load, more file and database storage space needed, more users, additional correspondences produced, etc.

Also, based on load testing results, we can obtain a set of processor usage metrics under various user load and activity scenarios. This can provide insights into the expected overall performance of the application within the production infrastructure.

Presenting Results

With the information related to actual usage and projected usage, we can provide DPW with a set of detailed estimates to assist in the forecasting process for future capacity requirements.

Deloitte provides the individual application teams' capacity plans to DPW each quarter. We also provide new initiative estimates to these stakeholders during the ARB II and ARB IV meetings.

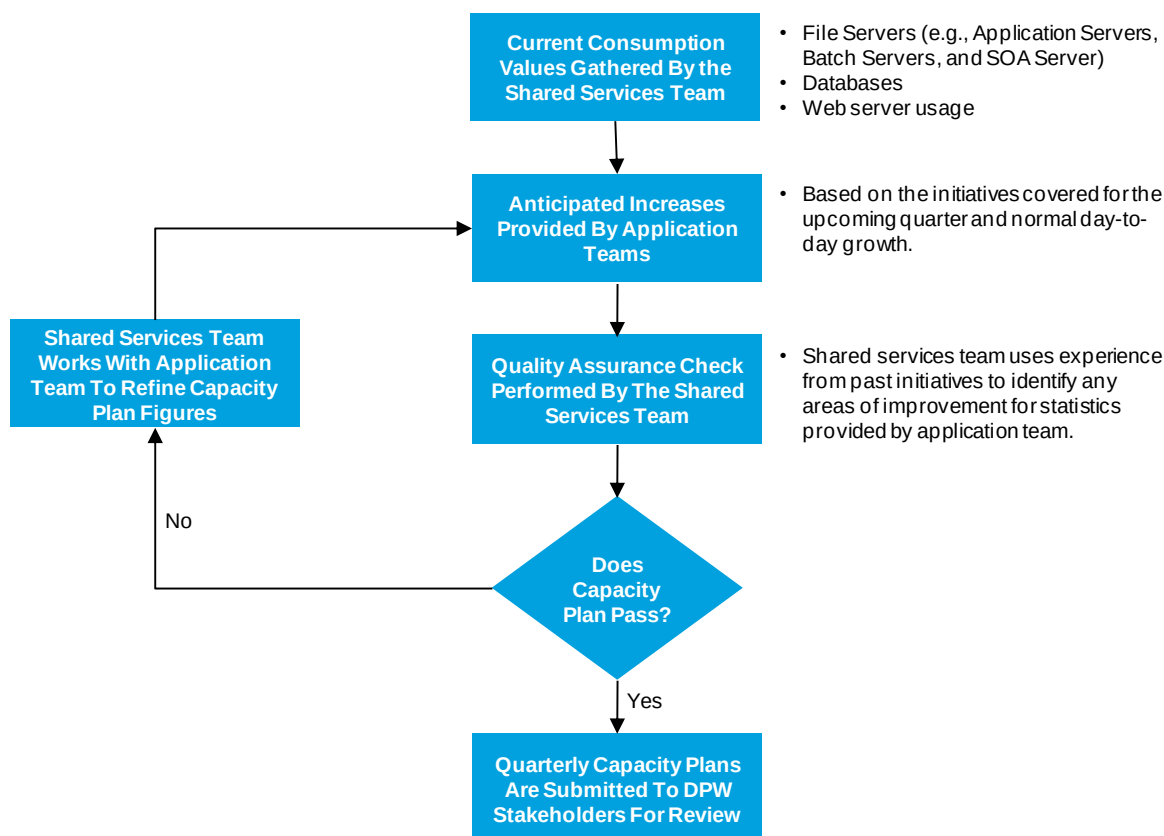
- The ARB II meeting is conducted during the Systems Development and Design phase of the SDLC. As such, the capacity plan Deloitte presents during this meeting contain initial estimates of system resource consumption. The effects of new technologies or any code changes being introduced with the initiative are analyzed. After this meeting, DPW has a high-level understanding of where the primary impacts to the infrastructure are expected.
- The ARB IV meeting takes place close to an initiative's go-live date. Deloitte uses this meeting to present revised capacity numbers from the ARB II meeting. These revisions would take into account any infrastructure impacts uncovered during the Systems Acceptance Testing and Load Testing phases of systems development.

Taken together, the quarterly capacity plans and the individual initiative capacity estimates allows DPW to proactively discuss and plan for any major anticipated increases ahead of go-live dates and also helps to facilitate planning for additional infrastructure procurements, if needed.

Capacity Plan Generation Process

The capacity plans undergo a thorough review by Deloitte prior to submission to DPW. Our proposed end-to-end process for open systems and mainframe capacity plan creation can be seen in Figure 6.6-106:

DPW Quarterly Capacity Plan Process



PA_DPW-687_2

Figure 6.6-106. Quarterly Capacity Plan Generating Process.

The Deloitte capacity planning process leverages our experience with implementing new initiatives to fine-tune forecasted capacity increases.

Collect Current System Consumption Values

As stated above, Deloitte's proposed team gathers current resource usage statistics to form the baseline for a capacity plan. Based on the requirements of the initiative(s) covered in the capacity plan, the application teams estimate increases in system needs and add that to the current baseline. The total of these two figures represent the expected increase in workload of your systems.

The draft capacity plan is reviewed by Deloitte's proposed team to evaluate the accuracy of forecasted increases. Our years of experience with past implementations and the changes in infrastructure requirements positions us better than any other vendor to make accurate assessments about future capacity needs.

When submitting capacity plans, Deloitte provides a standardized set of information, which includes the following:

- The scope of the initiative(s) being covered in the capacity plan
- Any anticipated increases to the application user base

- Any increases to resources usage and disk consumption of the database and file storage servers
- Any increases to network bandwidth consumption
- Any increases to enterprise service consumption

These figures will be presented in a standard layout across the applications and platforms, as seen in Figure 6.6-107:

File System Storage (All Environments)			
Server Type (Web, Utility, Report) (add or delete rows as required)		Current Size	Change Expected
<i>System Acceptance Test</i>			
Web Server	PWISSATWEB17	6.80 GB	Increase of 2.53 GB for eCIS Release 17.3
	PWISSATWEB18	2.55 GB	Increase of 1.55 GB for eCIS Release 17.3
	PWISSATWEB19	7.66 GB	Increase of 1.45 GB for Phase IV-B Initiative
	PWISSATWEB20	2.74 GB	Increase of 2.14 GB for Phase IV-B Initiative
	PWISSATWEB25	0.28 GB	Increase of 0.30 GB for Phase IV-B Initiative
	PWISSATWEB26	0.24 GB	Increase of 0.34 GB for Phase IV-B Initiative
	PWISSATWEB27	0.26 GB	Increase of 0.31 GB for Phase IV-B Initiative
	PWISSATWEB28	0.25 GB	Increase of 0.32 GB for Phase IV-B Initiative
Utility Server	PWISSATAPP21	46.8 GB	Increase of 4.45 GB for Release 17.3
	PWISSATAPP22	0.59 GB	Increase of 0.32 GB for Phase IV-B Initiative
Report Server	PWISSATRPT02	0.34 GB	No significant change anticipated.
	PWISSATSR525	5.00 MB	No significant change anticipated.
FSWS	PWISSATSOA20	19.4 GB	No significant change anticipated.
	PWISSATSOA21	7.42 GB	No significant change anticipated.
iRep	PWISSATWEB17	0.50 GB	No significant change anticipated.
	PWISSATWEB18	0.22 GB	No significant change anticipated.
	PWISSATWEB20	0.16 GB	No significant change anticipated.
	PWISSATWEB25	0.12 GB	No significant change anticipated.
	PWISSATWEB26	0.12 GB	No significant change anticipated.
	PWISSATWEB27	0.12 GB	No significant change anticipated.
	PWISSATWEB28	0.12 GB	No significant change anticipated.
Data Warehouse Servers	PWISHBGEKM12	27.9 GB	No significant change anticipated.
Web Services Servers	PWISSATSOA20	3.58 GB	Increase of 0.15 GB for eCIS Release 17.3
	PWISSATSOA21	2.26 GB	Increase of 0.12 GB for eCIS Release 17.3
<i>Test for Production</i>			
Web Server	PWISTFPWEB20	9.27 GB	Increase of 12.5 GB for Phase IV-B Initiative
Utility Server	PWISTFPAPP23	2.39 GB	Increase of 3.65 GB for Phase IV-B Initiative

PA-DPW-1223

Figure 6.6-107. Capacity Plan File System Storage Report.

Our capacity plan deliverables will clearly enumerate areas where additional system resources are needed to maintain acceptable levels of service delivery to the end users.



This sample previews how File System Storage usage looks in our capacity plans. Servers are broken down by environment, and then separated once again by type of server for easy reference. The current consumption of disk space and any change anticipated by the application teams drives decision making as to whether a particular server requires more hard disk capacity to properly support an initiative.

Collect New Initiative Data

Along with the existing consumption requirements, we also include any anticipated increases (or decreases) with new or soon to be implemented initiatives. For example, the iCIS Phase IV-B initiative changes in the way users interact with the CIS mainframe. That resource load is shifting away from the mainframe system into the open systems environment and therefore reduces the CIS mainframe capacity plan figures and increases the eCIS capacity plan figures and those changes are reflected in the capacity plan.

Perform QA Check and Refine the Plan

Deloitte completes a review of the draft capacity plan and finalizes any figures or percentages and readies the plan for delivery.

Submit Capacity Plan

After the capacity plans are reviewed and finalized, they are forwarded to DPW for their review and approval each quarter.

Response Time Monitoring and Problem Resolution

IV

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IV-378

RFP Reference: 4.1 Applications/Systems Operations Support

- Response time monitoring and problem resolution

Deloitte performs response time monitoring and problem resolution for the in-scope systems.

Effective response time monitoring supports the tenets of successful production operations - performance, availability and functional delivery. Proactively monitoring response time helps alert IT support staff of potential issues if levels exceed a certain threshold. This will provide crucial time to mitigate issues before they substantially impact the end user. Monitoring also helps provide factual data to confirm end user descriptions of application responsiveness and usability.

Open Systems Response Time Monitoring

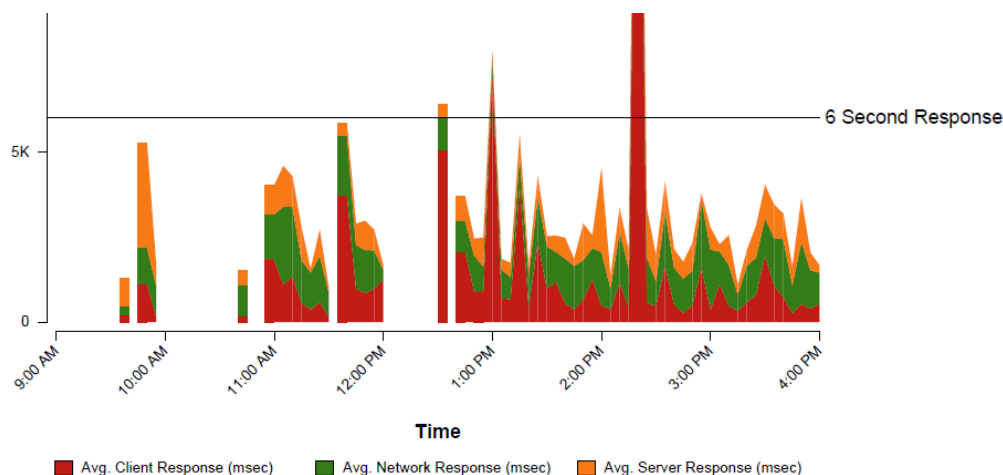
Deloitte collaborates with DPW to use the **Concord** tool for end to end application response time monitoring. Concord monitors user experience by measuring application response times in three distinct segments:

- Time allotted to client side rendering

- Time consumed during network transmission
- Time spent executing server side business transactions

DPW standards provide guidance toward Concord integration. Our team have vast experience supporting the Concord rule definition process, determination of agent machines and interrogation of supplied Concord reports to understand true end to end response time for the selected user community.

- **Concord Rule Definition.** We work with application teams to identify the web pages that deliver mission critical functionality to your end-users. The addresses for these pages are then created as a Concord rule. Rule definitions change whenever an existing web page's address is changed, or if a new web page is introduced with a release. Additionally, a formerly unmonitored webpage can have a definition created to assist in the problem resolution process. These web page addresses are identified by a transaction name in Concord for simple reporting.
- **Concord Agents Deployment.** After defining which web pages to monitor, Deloitte collaborates with BIS and the respective program offices to identify those end user machines that would provide material response time metrics. These systems are typically the servers which host the application and key County Assistance Office desktop machines. DPW will then install the Concord client onto those machines.
- **Report Generation.** Transaction response time reports are generated by the Concord software on a monthly basis. These reports provide insight into the number of times a URL was accessed by the user, with average response time by segment. Ad hoc reports can provide response time information on an as needed basis to support problem resolution efforts. Abnormal variances from normal application behavior will be escalated to the appropriate stakeholders for investigation. Figure 6.6-108 shows an example Concord transaction report:



PA_DPW-1001

Figure 6.6-108. Sample Concord Transaction Report.

The Concord transaction report shows end to end response times for an application including client, network, and server response times.

Mainframe Response Time Monitoring

Deloitte uses the DPW standard tool “OSAM” to monitor transaction response times. OSAM provides a real-time view of average response times as well as I/O usage and other core machine metrics that contribute to overall response times. The average number of I/Os used by each transaction is displayed on the right side of the screen, reflected in Figure 6.6-109. Our experience has shown this, coupled with core metrics such as CPU and memory utilization, queuing and resident transaction management (“sticking”) to be key performance indicators used in providing satisfactory response time.

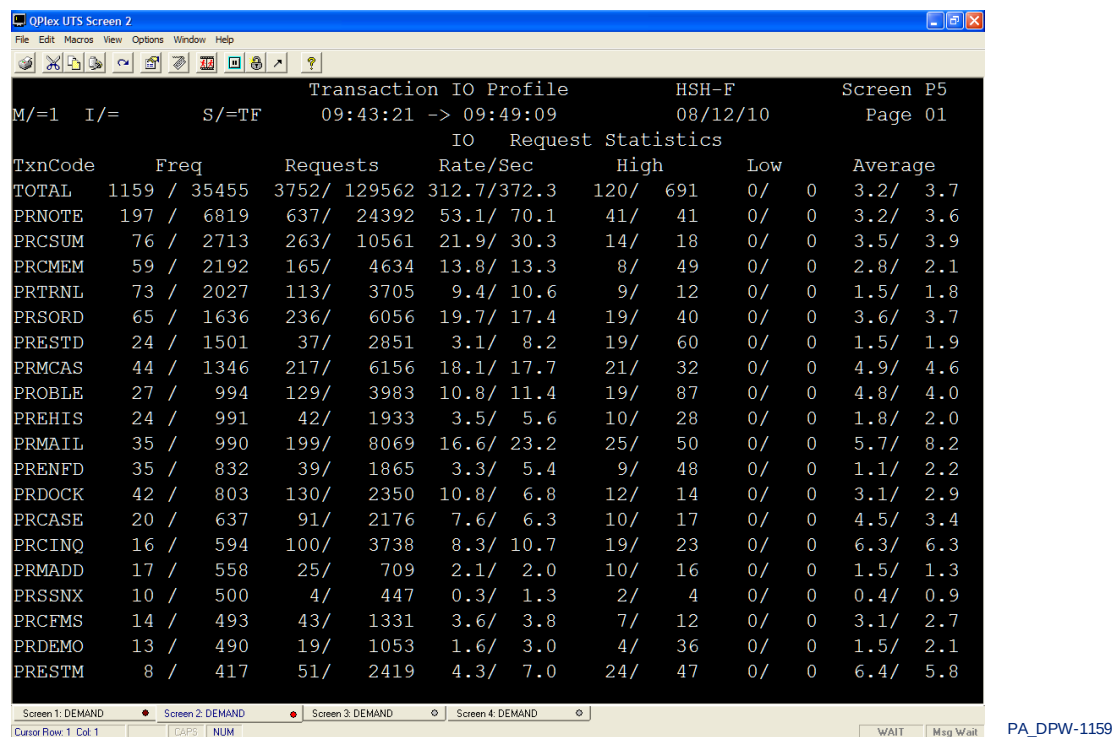


Figure 6.6-109. OSAM Monitoring of Production Transaction.

OSAM can provide real time transaction execution times and is useful for monitoring overall system response times.

One of the key mainframe performance metrics pertaining to average response time is “Avg SUPs”. SUPs (Standard Units of Processing) are a standardized Unisys accounting measure that reflects the time expended by the system while performing a type of process. If the SUPs average exceeds a threshold amount, we perform further analysis to determine the reason for the change in performance.

Figure 6.6-110 shows a sample report of current overall online transaction performance, including SUP’s, on the mainframe by day:

Daily TIP Stats									
Environment	Tran Date	Total Trans	Total SUPs	AVG SUPs	IO SUPs	IP SUPs	ES SUPs	CS SUPs	Total IOs
PR	1/1/2010	180	9.723701	0.054	6.9692	0.3835	4.7311	0.012	415
	1/4/2010	2914577	255205.3	0.0876	214215.6	9235.13	62373.88	3152.984	10912000
	1/5/2010	2771986	234849.7	0.0847	193931.8	8855.378	58995.25	3117.254	10013910
	1/6/2010	2651324	219572.7	0.0828	182437.8	8464.897	56334.48	2774.781	9526219
	1/7/2010	2510057	210669.4	0.0839	175376.7	8092.918	53398.05	2763.564	8958074
	1/8/2010	2205522	180320.6	0.0818	149334.8	7065.432	46910.22	2568.523	7655504
	1/11/2010	2696399	228522.5	0.0848	190487.3	8629.073	57732.8	2979.751	9732804
	1/12/2010	2586026	214378.6	0.0829	178035.8	8310.064	55016.32	2895.425	9108022
	1/13/2010	2526939	207040.1	0.0819	171346.1	8191.022	53879.7	3109.409	8799576
	1/14/2010	2356866	194405.4	0.0825	161191	7601.816	50207.88	2807.518	8269862
	1/15/2010	1981865	160998.8	0.0812	133025.5	6440.159	42217.35	2343.09	6820129
	1/18/2010	199980	13048.83	0.0653	10202.68	640.1775	4315.758	264.5743	535116
	1/19/2010	2802159	240850.8	0.086	201479.9	8937.487	59683.62	3266.161	10293050
	1/20/2010	2632652	217135.1	0.0825	180075.9	8483.813	56056.58	3019.658	9224476
	1/21/2010	2501569	208480	0.0833	173296.1	8051.096	53240.7	2828.205	8862322
	1/22/2010	2238537	185143.5	0.082	153378.5	7257.168	48084.94	2579.104	7854511
	1/25/2010	2734684	231547.5	0.0847	193827.9	8840.084	58662.93	3024.222	9855323
	1/26/2010	2668001	222635.5	0.0834	185125.5	8512.678	56859.42	3132.237	9477132
	1/27/2010	2518909	206246.8	0.0819	170761.4	8101.641	53680.81	2998.458	8746136
	1/28/2010	2400948	197122.5	0.0821	163380.6	7689.231	51110.45	2746.523	8361690
	1/29/2010	2244530	184778.1	0.0823	153087	7275.375	47850.67	2707.611	7832411
	Summary for Month	48161730	4012961.4	0.0833	3335002.8	154675.3	1026616.3	55059.1	170636682
PR	2/1/2010	2888550	252975.1	0.0876	212306.2	9359.353	61472.09	3164.222	10836550
	2/2/2010	2770201	237744.2	0.0858	198673.3	9033.968	58952.64	3082.809	10156890
	2/3/2010	2588587	213573.3	0.0825	176745.2	8375.995	55784.93	3089.401	9061419
	2/4/2010	2401393	199027.7	0.0829	165065.7	7834.643	51194.42	2925.734	8469838
	2/5/2010	1658366	137153.1	0.0827	113736.4	5447.923	35262.6	1862.735	5828247
	2/8/2010	2281127	186304	0.0817	154166.7	7296.706	48663.71	2807.029	7918233
Thursday, August 12, 2010									
									Page 1 of 13

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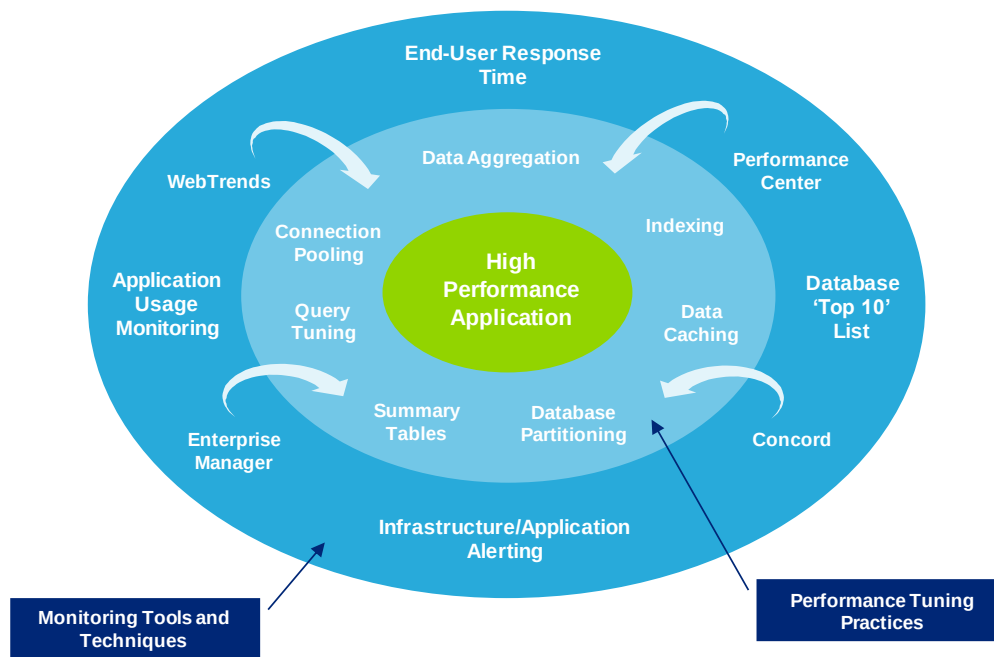
Figure 6.6-110. Report of Overall Production Transaction Performance and Response Times.

This report of transaction performance shows among other things average response times per transaction.

Response Time Related Problem Resolution

For this RFP response we consider Problem Resolution considerations with respect to response time monitoring/issues. Additional problem identification and notification steps were outlined in the RFP response titled “Problem Identification and Resolution” earlier in this section.

After being alerted to a response time issue (by means of automated threshold alerts or end user calls) our team works with BIS to monitor the infrastructure to see where problem conditions exist. Our team is well versed in BIS processes, standards and toolsets used to monitor the infrastructure. We use this knowledge to assist BIS to constantly examine the operation and execution of individual applications, as well as the overall environment, to identify and implement performance tuning initiatives. The following figure outlines our approach to system monitoring to identify response time or performance tuning opportunities. This proactive approach to system growth management has allowed us to support the implementation of new business functionality and support additional users while maintaining performance and availability service level objectives.



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Figure 6.6-111. Deloitte's System Monitoring Approach.

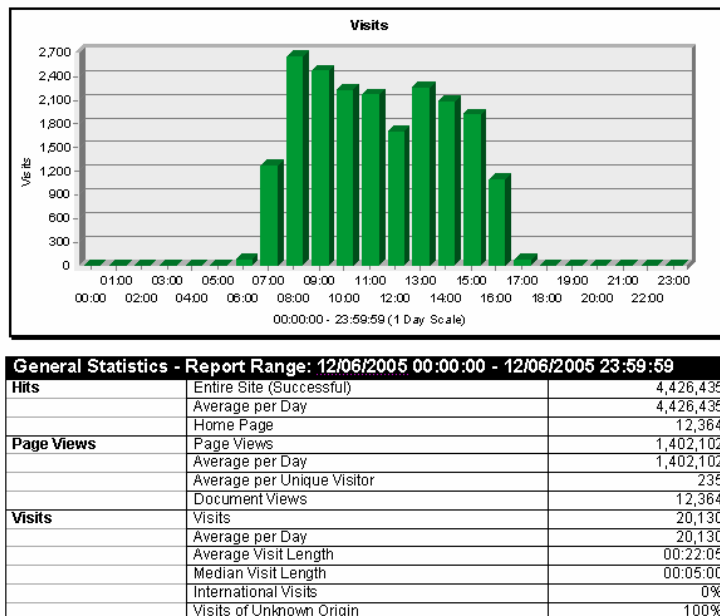
Our System Monitoring Approach is used to maintain high performance amongst in-scope applications.

To prevent system performance degradation and eventual system failure, this approach includes not only identifying long running processes, but also tracking historical performance of individual processes over time to identify those which are being impacted by the maturing of the system. This application maturation is characterized by increasing volume of data over time, added functionality through application releases, increases in the number of users with application roll-outs or hardware/software changes to the infrastructure. Through these proactive efforts, impacts to the system caused by external forces should be minimized if not fully absorbed. Our first step toward providing a well-performing application is through proactive monitoring. The following tasks are used by our team to proactively address potential performance issues:

- **Application Usage Monitoring.** Our team will continue to leverage BIS tools such as SightLine, WebTrends (or any potential replacement) and TIP transaction reports to provide a profile of how the application is accessed. The benefits of SightLine have been well documented in this section. WebTrends output, shown in the figure that follows, includes items such as the number of Web site hits per day, types of browsers that access your application, average duration of site visit, usage trends (peak business hour of the day, day of the week, etc.). This information allows you to better understand how the application is being used by the user community, thereby making better informed design decisions. Information from WebTrends is included within our daily Production Operational Summary report that is distributed to the project team on a daily basis.

General Statistics

The Visits graph displays the overall number of visits to your Web site. The General Statistics table provides an overview of the activity for your Web site during the specified time frame.

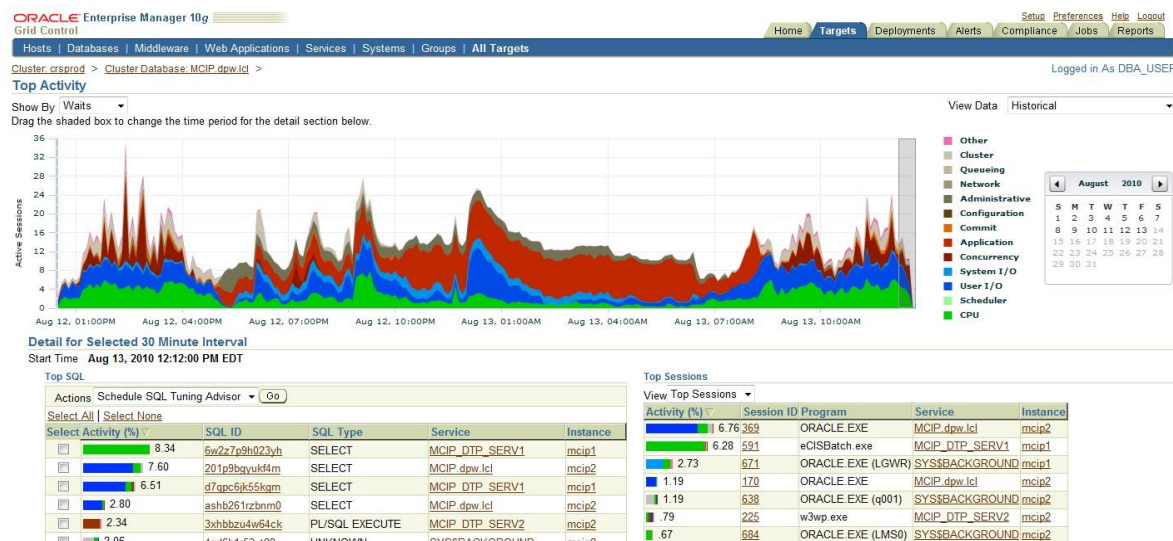


PA_DPW-546

Figure 6.6-112. WebTrends Report.

The WebTrends reports show activities against a "Web site" showing page views, hits, visits, etc.

- **Database "Top 10" List.** A list of the top "10" queries that consume the most database and open system resources including, for example, "buffer gets", high hard parsing ratios, high CPU cycle consumption, high I/O rates, extended execution time, etc. Our DBAs collect this information on a weekly basis via database analysis and share it with BIS during our weekly meetings. After initial review, DBAs will make the necessary recommendations to the application team to feed the PCR process. PCR's are then created, prioritized and tracked to their production deployment.
- **Infrastructure/Application Alerting.** Various tools are available that facilitate automated alerting when system/application thresholds are met. This could include server CPU or memory utilization, number of active processes, etc. This information will allow for timely action that may avoid performance issues or system outages. An example of a monitoring tool is Enterprise Manager for the Oracle database, shown in the figure that follows. This tool provides information on database memory, processor and disk utilization as well as query processing time and efficiency.



PA_DPW-1229

Figure 6.6-113 Database Monitoring Captures Performance and Utilization Statistics.

Oracle's Enterprise Manager allows the DBA to view overall health of the database environment and also to drill down into specific issues when they occur.

Mainframe Database Monitoring. UDSMON is used by the Deloitte DBAs to monitor Production database activity. The DBA can quickly identify when run units (TIP transactions, DEMAND runs and Batch runs) are queuing or are performing excessive database I/Os and thus the response time is degrading. UDSMON also provides overall statistics for the Production database environment. A pertinent statistic is the "Hit rate", which shows the percentage of time database I/O is fulfilled from data that is cached in memory instead of performing I/O to a disk. The goal is to keep the hit rate above 80 percent. Once it falls below that percentage, transaction response times also degrade.

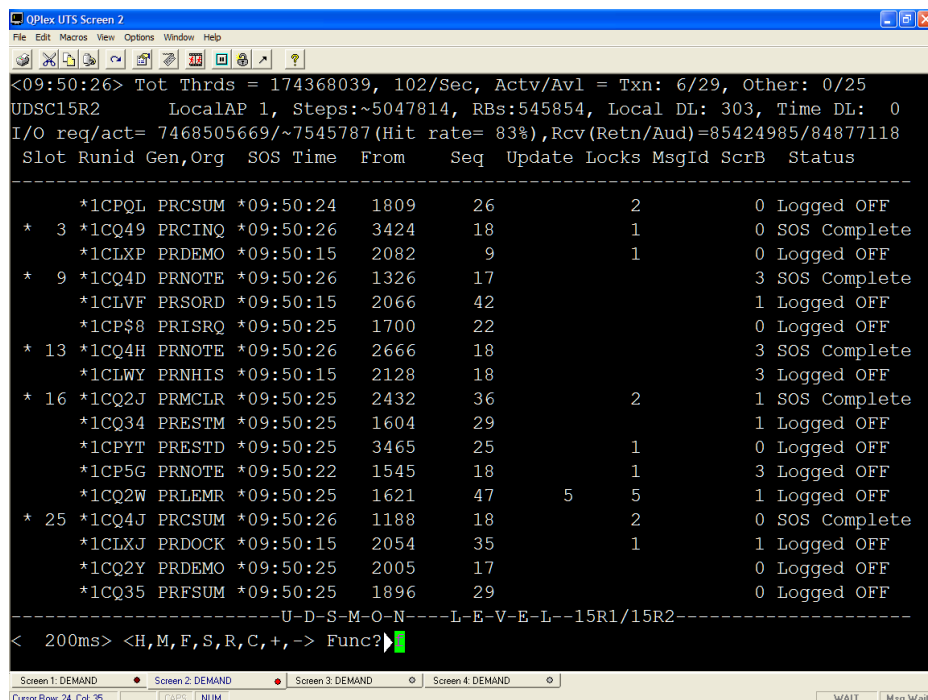


Figure 6.6-114. UDSC15R2 Monitoring of Mainframe CPU (IP) Rates and Transaction Response Times.
By evaluating the number of I/Os that at transaction is performing, the corresponding response times will begin to degrade.

The above graphic represents a point-in-time capture of run units accessing the Production database. In this case only TIP transactions were active. The transaction ID is shown in the third column, the number of database commands executed is shown in the sixth column, the number of update I/Os is in the seventh column, and the run unit status is shown in the rightmost column. The key use of this screen is to identify items that are queuing (Status column) and run units that are performing large number of database commands which may lead to I/O performance issues and extended transaction execution times.

Mainframe Transaction Monitoring. Teamquest Log Analyzer provides details on batch and transactions that are not available through SightLine. A timeline snapshot of execution statistics is taken and analyzed, similar to Oracle AWR reports. This utility is used during load and conversion tests to identify performance improvement areas and also can be executed in real time if a particular transaction's response time in production has degraded. The LA report is also used to monitor the overall performance of the given transactions and is used to also monitor changes in performance.

A sample Log Analyzer report showing overall performance data for two different mainframe transactions is shown in Figure 6.6-115.

GENERATED: 2010 AUG 12 THU			LOG ANALYZER			REPORT 1 PAGE 1		
START TIME 2010 AUG 11 17:00:00 EDT			TIP REPORT : DETAIL SECTION			END TIME 2010 AUG 11 18:00:00		
TRANSACTION	AVERAGE	TOTAL	AVERAGE	I/O GROUP	COUNT	%COUNT	I/O TIME	

LO2ECP	DISPATCHING PRIORITY: 45							
TOTAL SUPS	8061.832	.657	TRANSACTIONS	12275	1	1515236+11	100.0%	39396.161
IP SUPS	416.568	.034	5.2%	RESTART *	2	2.40%		
ES/CS SUPS	70.324	.006	.9%	I/O REQ	3	551552.0	44.32%	
I/O SUPS	7574.930	.617	94.0%	TRANS RATE	4	3.44/S		
MAX REAL	573.440				5			
MEM USAGE	412661.452	22.616			6			
AVG SIZE	305.734				7			
TIME PERIOD	2562.930				8			
INTERVAL	-1305.244	-.155	CONCURRENCY	1.551	9			
WAIT TIME	14.425	.001	ARRIVAL RATE	.290	10			
ACTIVE TIME	5528.535	.450	MAX ACTIVE	6.430				
WAIT/ACTIVE	.003		MEAN OPEN	1.536		TOTAL 1515236+11		
SF	.684		MEAN ACTIVE	1.532				
DISK I/O KWORDS	1477989.210	2.814	DISK I/O	525222.0	42.78%	RESECT WAIT		

LO2ECP	DISPATCHING PRIORITY: 45							
TOTAL SUPS	8201.012	.579	TRANSACTIONS	14229	1	1540901+11	100.0%	40062.448
IP SUPS	492.229	.034	5.9%	RESTART *	2	3.55%		
ES/CS SUPS	104.602	.007	1.3%	I/O REQ	3	549995.8	38.28%	
I/O SUPS	7702.181	.538	92.8%	TRANS RATE	4	4.02/S		
MAX REAL	700.416				5			
MEM USAGE	402509.940	28.160			6			
AVG SIZE	248.629				7			
TIME PERIOD	2567.862				8			
INTERVAL	-3010.742	-.210	CONCURRENCY	1.862	9			
WAIT TIME	120.700	.008	ARRIVAL RATE	.249	10			
ACTIVE TIME	6647.564	.464	MAX ACTIVE	7.150				
WAIT/ACTIVE	.018		MEAN OPEN	1.847		TOTAL 1540901+11		
SF	.786		MEAN ACTIVE	1.812				
DISK I/O KWORDS	1491322.262	2.647	DISK I/O	540784.8	37.74%	RESECT WAIT		

END LA: (0) ERRORS (0) WARNINGS 08/12/10 11:22:21								

PA_DPW-1161

Figure 6.6-115. Log Analyzer TIP Report.

The LA report shows individual transactions performance characteristics including response time.

Mainframe Performance and Response Time Reporting

Performance data gathered by SightLine is stored in log files. The data in these log files and from other source tools is collected daily and used to generate management reports on performance data can be displayed by many varying criteria. The reports are generally split between data representing the online transactions and data related to batch runs. The online data can be produced for a particular day, week or month, for a given transaction, or for all transactions. Batch data can also be produced for a particular day, week or month, for a given batch run, for a given batch cycle. The intent of the reporting is to identify changes in performance that affect the overall performance of the system.

Deloitte's proposed team works with BIS to address any response time issue that is impacting end user productivity. Our collective team has the experience to understand where pain points in the infrastructure may be emanating from and how to mitigate or rectify the problem in a timely manner.

Software and Technical Platform Migrations

IV

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IV-378

RFP Reference: 4.1 Applications/Systems Operations Support

- Software and technical platform migrations

Deloitte performs software and technical platform migrations for the in-scope systems.

We promote application software changes from development through the test environments and coordinate with DPW in implementing those changes into production. In addition, our team coordinates with DPW during the introduction of infrastructure and platform changes, and work with you to mitigate any adverse impacts of these changes while they are deployed through the environments.

Figure 6.6-116 highlights the software and technical platform migration requirements for the DPW applications. The complex IT topology of DPW, with various platforms, tools and standard design patterns present coordination and testing challenges when supporting large-scale platform migrations. Deloitte is the only vendor who can work effectively with you to manage such tasks.

Applications	Deloitte's Approach Meets Software and Technical Platform Migration Requirements
iCIS	CIS. Migrations for CIS are typically performed for online transactions during the batch window and during the weekend for batch transactions. This cyclic deployment structure allows minimal disruption to the user community. In 2009, the CIS mainframe application was moved from the Unisys ClearPath to the Dorado platform. This migration required a large amount of testing on the CIS test machine (HSH-D), even though it only housed the production environment. Additional coordination between Deloitte and BIS was required when we migrated the application to the production system (HSH-F) as the environments were included in that effort. COMPASS. Deployments for COMPASS depend on coordination with each system that processes application collected via the self-service portal. Often, COMPASS is deployed along with other applications to synchronize these requirements. eCIS. The eCIS application depends on coordination for a variety of interfaces, including real-time mainframe connectivity. Changes between CIS and eCIS must be performed at the same time to allow data to stay updated in both systems.
HCSIS	HCSIS deployments require additional planning and coordination for validation, as application functionality differs greatly based on a user's security context within the application. In FY 09/10, HCSIS was integrated into the Enterprise Provider Search service to allow searches of Long Term Living and Aging providers. The software migration and coordination efforts were significant.



Applications	Deloitte's Approach Meets Software and Technical Platform Migration Requirements
PACSES	Deployments for the PACSES suite of applications must be carefully timed and coordinated across the open systems and mainframe platforms. Nightly mainframe and open systems batch processing synchronizes information between these systems and must complete each day. In 2009, the PACSES mainframe application was moved from the Unisys ClearPath to the Dorado platform. This migration required extensive testing on the PACSES test machine (HSH-D), even though it only housed the production environment. Additional extensive coordination between Deloitte and BIS was required when we migrated the application to the production system (HSH-F) as the environments were included in that effort. In the early part of 2010, Deloitte coordinated with Lockheed through BIS to migrate the PACSES desktops to MS Office 2007. We are also currently in the process of migrating the PACSES e-mail addresses MS Exchange 2007. These activities required impact analyses and extensive regression testing. Additionally in 2010, the PACSES servers managed by Lockheed through BIS were virtualized. This, too, required regression testing of those applications that All PACSES servers managed by Lockheed through BIS were virtualized.
PELICAN	Deployments for the PPCS application involve coordinating users in the field with tablet PCs returning their machines to an office to obtain new versions of the software used to perform provider assessments in the field. This activity must be communicated and coordinated across the entire user base. In FY 09-10, the Pelican team completed COM+ to .NET conversion, created the ELN enterprise service and is developing an ODS strategy for DPW. Each of these initiatives required and will require extensive coordination of the stakeholders and significant software migrations.
Child Welfare	In addition to normal deployment coordination, ChildLine is a thick client application which requires deployment to desktop PCs. In addition, each workstation requires connectivity back to the ChildLine database, requiring additional coordination.
Enterprise Services	As enterprise services are often shared across multiple applications, deployments may require placing additional applications into maintenance mode or communicating unavailability of features to the user community. In FY 09/10, several new enterprise services and modifications to existing services occurred including: Enterprise Notifications, Enterprise Citizenship and Identity Verification, and Enterprise Correspondence Services. The Enterprise Notifications Service implementation affected eCIS, LIHEAP, CIS, and PELICAN and required extensive coordination with those teams and large-scale application deployment efforts. The Citizen Identity Service implementation required coordination with JNET, PennDOT, CIS, and eCIS. The changes to the Enterprise Correspondence Services are being coordinated as part of the Adobe Forms upgrade for the PACSES application. Significant changes were made to ECS to accommodate PACSES' requirements.
All	DPW virtualized the Development environments moving the applications from physical servers to logical servers running under VMWare. In order to support this effort, Deloitte was required to perform regression testing of those applications re-deployed to the virtual environment.

Figure 6.6-116. DPW Software Deployment and Technical Platform Migrations are Very Extensive.

Software Migration Processes

The process of compiling, and bundling software in development, promoting it through the various test environments, and finally installing the release into production requires a carefully planned and vetted approach. DPW's technology landscape is composed of a wide variety of systems and software products that support each application, including a mix of mainframe and open systems servers and operating systems, interfaces to external vendors, and configuration differences in both number and type of servers in each test environment. Our team knows that to be successful in supporting software and platform migrations, in addition to using a repeatable approach, we must also build DPW applications to be highly configurable to allow for these variances.

Deloitte's approach to software and technical platform migrations is composed of the following basic precepts:

- **Software Migration Management.** Processes and approaches to support the movement of application code from development to production. Software migrations is further divided into the following topics:
 - **Version Control and Solution Management.** During the development cycle, the changes and their history are tracked and versioned using DPW's source control management systems, Team Foundation Server (TFS) and Visual SourceSafe (VSS).
 - **Software Compilation and Bundle Management.** For open systems, software compilation is performed using a continuous integration approach. For the mainframe environment, compilations and system builds are performed using custom coded tools such as the Workbench (for CIS) and the Programmer's Workbench (for PACSES). Each compilation is bundled along with dependant components and configurations, and versioned in accordance with DPW standards.
 - **Deployment Management.** Open systems and mainframe software is promoted as a bundle to the needed testing environment using a reliable approach.
- **Technical Platform Migration Management.** As changes occur in the technical landscape, Deloitte works with DPW to mitigate impacts to the applications. This may include testing support, feasibility studies and other prioritized work. Technical platform migrations include operating systems upgrades as well as software product version changes.

Software Migration Management

Version Control and Solution Management.

For the open systems platform version control is managed with Microsoft's Visual Source Safe (VSS) and Team Foundation Server (TFS).

These tools allow developers and architects to collaboratively work on the various source code files which comprise the application. Developers can check out files to make changes, and check them back into the source code repository for persistence once changes are finished. Each component is



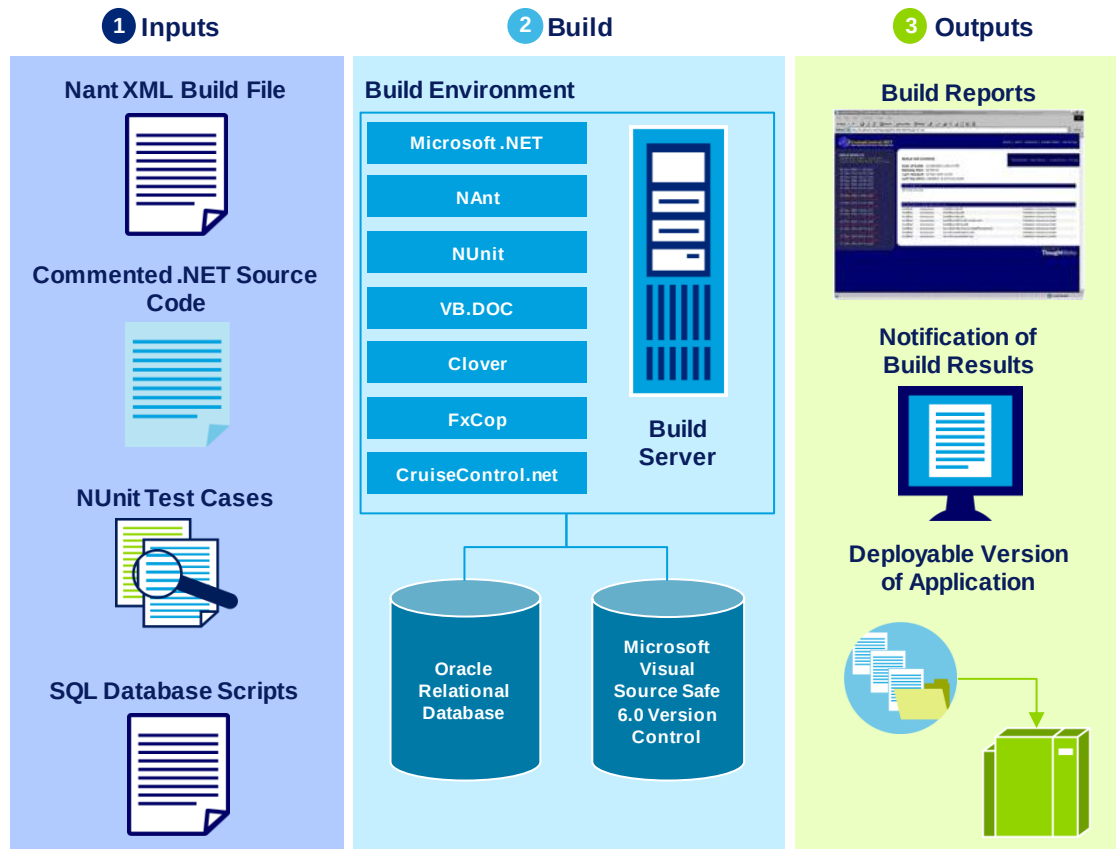
individually versioned, and history is preserved within the tool. Although very similar in concept, mainframe version control at DPW differs, as it utilizes custom-built solutions hosted on the mainframe, known as the Workbench (for CIS) and the Programmer's Workbench (for PACSE). Both of these custom built solutions integrate with DPW's mainframe software library and versioning system, and expose the same features as VSS or TFS.

Whether a project is using TFS, VSS, the Workbench or the Programmer's Workbench, the entire solution can be labeled, which tracks each software component within the solution, as well as the component's version at the moment the label was applied. A label represents a consistent, point-in-time state of the source code for a project. This labeled version of the code base can later be compiled and become a release candidate.

Software Compilation and Bundle Management. Once a labeled version of the source code has been created and stored in the appropriate repository, the platform-appropriate build process is initiated.



For open systems applications, Deloitte utilizes an automated build process. This process will compile any .NET assemblies, perform automated unit tests to verify critical sections of the code, and package the software for deployment. In addition to compiling the software, our automated process also packages reference table values, database stored procedures and configuration information. A visual representation of our automated build process for DPW is depicted in Figure 6.6-117.



PA_DPW-542

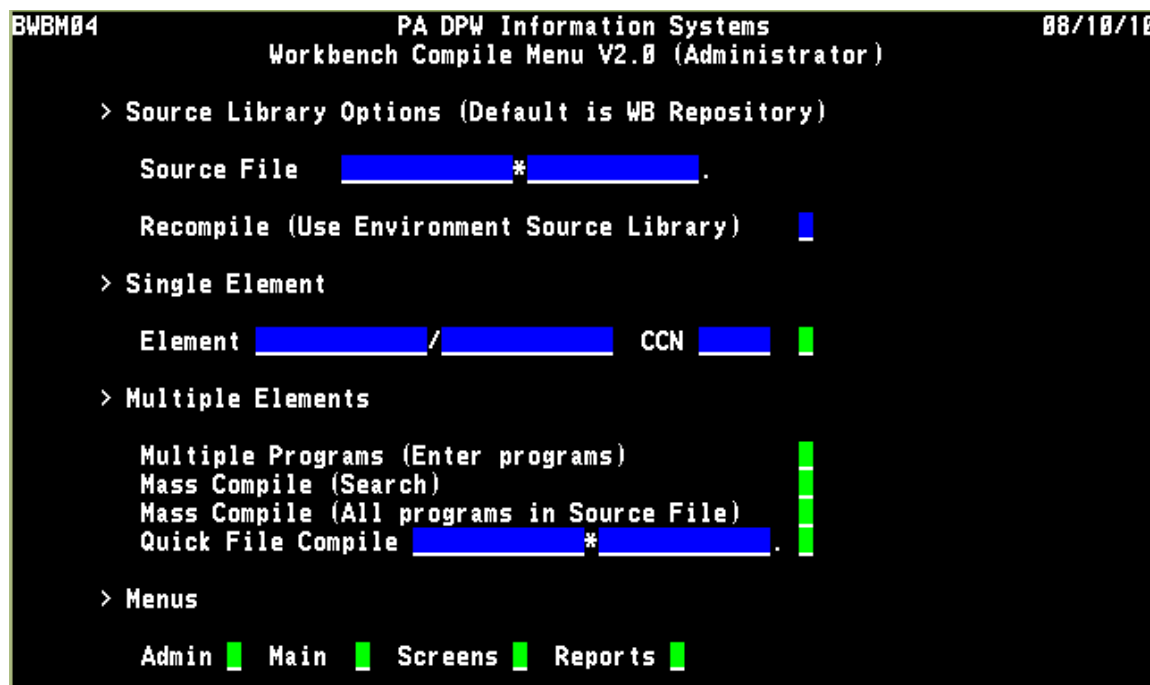
Figure 6.6-117. Automated Build and DPW Continuous Integration Process.

Deloitte's automated build and deployment approach for DPW provides a repeatable, reliable process of compiling and packaging software prior to installation.

Once the build process has completed, validation of the build report allows verification the unit tests have passed. At this point, packaging is finished, and a release candidate is now available for deployment.

For mainframe software, the compilation and "build" process is completed through utilities from the Workbench (for CIS) and the Programmer's Workbench (for PACSES). The significant difference between the open systems and the mainframe is that the build process is done one time in the development environment and then "copied" to the other environments. On the mainframe, the source code must be compiled into each target environment.

In Figure 6.6-118, the CIS Workbench allows both individual compiles and full application compiles of mainframe source code.



PA_DPW-1230

Figure 6.6-118 CIS Mainframe Software Migration Process “Workbench”.

The CIS Workbench allows for individual application program compiles and also mass compiles of the entire application.

In Figure 6.6-119, the PACSES Programmer’s Workbench provides an administrator’s menu that allows authorized personnel to perform a system build into a target environment. The system build is driven by metadata that is collected during the bundling process. The metadata defines the programs, COPY books, records, tables, etc. that are required for the individual programs to be compiled.

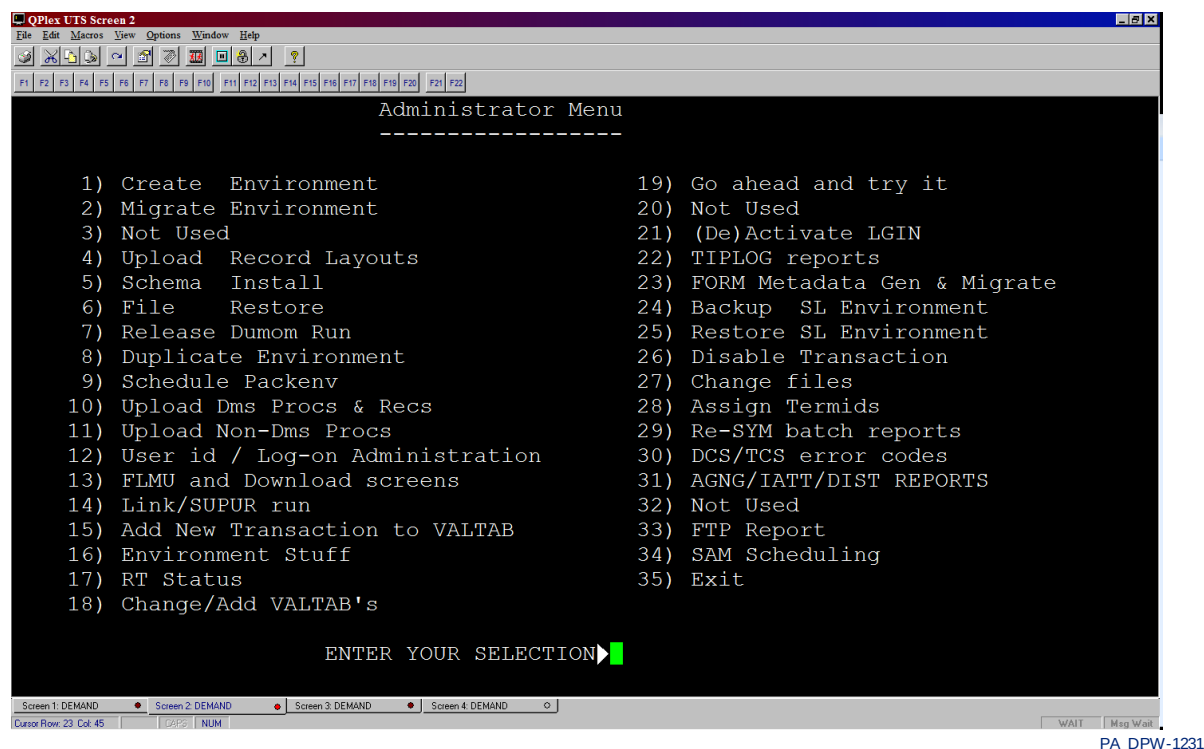


Figure 6.6-119. The PACSES Mainframe Software Migration Process “Programmer’s Workbench”.

The PACSES Programmer’s Workbench allows for individual application program compiles and also mass compiles of the entire application based on the metadata created during the bundling process.

Deployment Management. Deloitte’s deployment management approach includes coordination of deployment activities as well as Deloitte facilitating the migration of application code to integration and systems acceptance test environment. The migrations to lower environments are conducted during predefined weekday windows, which fall outside of times where the environment is used for testing, mitigating any impact to testing progress.

We assist DPW in performing the mainframe and open systems migrations to both the TFP and production environments. As described previously in the *Release Management* section of Tab 6.6, Deloitte prepares and provides deployment instructions, a deployment playbook outlining the activities and coordination touch points and assist DPW with the deployment activity and validation.

Technical Platform Migration Management

Technical platform and infrastructure changes are driven by a variety of sources, including upgrades to COTS products, upgrades and patches to the operating systems, or even hardware platform changes.

Although some changes may be transparent to the operations of your applications, our experience has shown us that the changes to underlying infrastructure require testing and validation to verify that the changes do not negatively impact the applications using that infrastructure.



As changes to the infrastructure are required, Deloitte works with you to prioritize those changes in conjunction with other application activities/releases. Additionally, non-functional PCRs are created for each of the application teams to perform impact assessments and develop regression testing scenarios. Once those PCRs are prioritized by DPW, the Deloitte application teams conduct their impact studies and scenario development.

If modifications to application software are required to support these infrastructure changes, our teams also perform appropriate bundling of that software into releases that are coincident with the timing of the infrastructure rollout.

Once application changes, if necessary, are made and testing commences or if issues are detected while regression testing, our team communicates those issues to the technical domains at DPW responsible for those infrastructure components. Additional non-functional PCRs are created and prioritized within the existing software bundle and addressed by the application teams.

Security Vulnerability Assessments and Resolution

IV

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RFP Reference: 4.1 Applications/Systems Operations Support

- Security vulnerability assessments and resolution

Deloitte performs security vulnerability assessments and resolves identified issues for the in-scope systems.

Security vulnerability testing is required as outlined in DPW's Security Vulnerability Scanning Policy (STD-ENSS020) as part of each application release. Testing occurs during the Integration test phase of SDLC with the identified issues resolved before the completion of acceptance testing. Any temporary deviation from this policy must be approved by the DPW CISO and accompanied with a mitigation plan and target approach for the long term solution.

The inherent functional differences between the enterprise suite of applications presents vulnerability scanning characteristics between the applications, including:

Applications	Deloitte's Approach Meets Security Vulnerability Assessment Needs
iCIS	CIS Mainframe is not covered by the DPW standards for performing security vulnerability assessments. eCIS a very large application built on an integrated access control model – application based Fine Grained Access and CA SiteMinder based Coarse Grained Access (Page Level/Role Based). The automated testing of this application has to be performed in synchronized parts based on the user role and number of pages. In addition, through our extensive experience of testing eCIS, HP WebInspect's manual crawl techniques provides better results compared to other automated scan techniques. eCIS also uses Microsoft WCF framework for its services which requires manual testing and analysis. HP WebInspect does not support testing of Microsoft WCF technology. COMPASS allows any public user to create, submit and access their benefits application. This exposure increases the possibility of attack from a potentially large user base, not managed through DPW IAM infrastructure. This also increases exponentially the possibilities of experienced attackers and cyber criminals attacking the exposed COMPASS infrastructure to obtain sensitive Citizen information. COMPASS requires extensive manual vulnerability testing to help identify vulnerabilities in both technological and the business process and mitigate before exploited by a potential attacker. COMPASS requires usage of HP SwfScan for testing Adobe Flash, in addition to HP WebInspect and manual techniques. COMPASS uses services extensively and exposes it for public users. These services require an in-depth analysis to identify vulnerabilities. Similarly, COMPASS data handling techniques when sharing information with external systems require a detailed analysis (data flow).
HCSIS	HCSIS application is developed using Oracle Fine Grained Access for user authorization across 230 application user roles. HCSIS requires manual testing, in addition to automated vulnerability assessment, to identify attacks such as user privilege escalations and unauthorized access to information to detect vulnerabilities in Oracle FGA user authorization In addition, HCSIS application leverages HTTP ONLY cookies to manage the state of the application which requires detailed analysis to identify if any of the parameters can be modified to escalate privilege or unauthorized access to data.
PACSES	PACSES Mainframe is not covered by the DPW standards for performing security vulnerability assessments. PACSES Forms uses Adobe Life cycle, a COTS product as the basis of the application. This requires additional manual testing on the COTS product, monitoring for new vulnerabilities from vendor announcements and security forums such as CERT.



Applications	Deloitte's Approach Meets Security Vulnerability Assessment Needs
PELICAN	PELICAN application consists of both legacy COM+ and Microsoft .NET framework. Microsoft COM+ technology uses hidden fields to transfer information and state from one page to another which can be manipulated using manual techniques to gain unauthorized access to data. In addition, the PELICAN Microsoft .NET based web applications leverage services extensively. Each service needs to be analyzed manually and understand the responses to multiple disparate requests – if unauthorized access to data can be obtained. ELN services exchange information to external systems. This requires an analysis of the data protection techniques employed.
Child Welfare	COMPASS allows any public user to create, submit and access their benefits application. This exposure increases the possibility of attack from a potentially large user base requiring automated and a detailed manual assessment.
Enterprise Services	Enterprise services are tested using SOAPUI (manual techniques) and HP WebInspect. Each of its end points requires to be analyzed for potential threats. For potential unauthorized access to services (in turn data) and data handling techniques when data is exchanged with external systems.

Figure 6.6-120. Deloitte's Approach Meets Security Vulnerability Assessments and Resolution Requirements.

Security Vulnerability Assessments

Our vulnerability testing approach is designed to meet the requirements of **DPW Security Vulnerability Scanning Standard (STD-ENSS020)** and Commonwealth Information Technology Bulletin (ITB), ITB-SEC005 – Commonwealth Application Certification and Accreditation, CA(2).

Each major and minor application release undergoes a security assessment during the integration testing phase. Our approach toward testing is summarized in Figure 121 and is supported by three primary phases:

- **Initiation.** During overall design, we work with the application stakeholders to understand the architecture, business logic/functionality, external dependencies, user roles and privileges within the application. The CA(2) security design document is then submitted for approval to verify the overall security approach. CA(2) policy validation assessment will be performed during the DSD phase of SDM for major application releases to measure the Compliance with OA/OIT policies, procedures and standards, data security level and security measures to address potential security risks.
- **Certification.** During development, security unit testing tools such as HP DevInspect are used by the development team to verify code aligns with industry and DPW security practices.
- **Accreditation.** During the Integration and SAT phase, continued manual and automated tests are performed with results reviewed and approved by DPW.

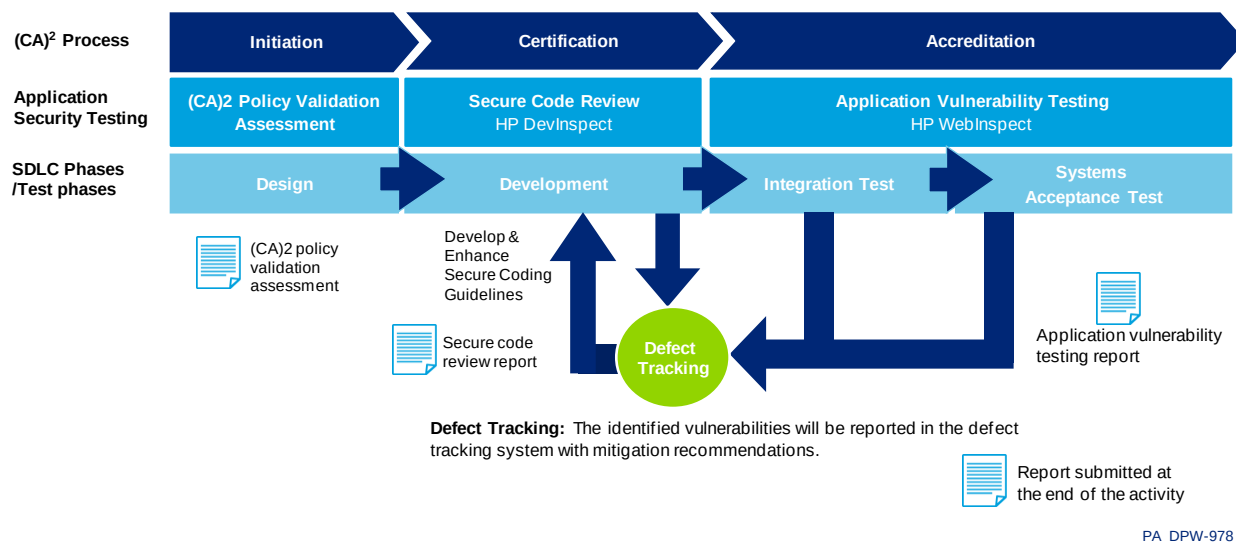


Figure 6.6-121. Our Approach to Security Vulnerability Assessment.

The Deloitte approach used the Departments preferred tools from HP to examine the security vulnerabilities of web applications.

During the Accreditation phase, an assessment is conducted consisting of automated tests simulating a user with nefarious intentions exploring the application to find potential penetration points. We leverage DPW's standard product, **HP WebInspect**, for automated vulnerability scanning.

Additionally, "Black Box" and "White Box" vulnerability assessments, using automated tools and manual techniques, are performed. Though automated testing provides a reasonable security baseline, our extensive experience has shown that complementary manual testing is also prudent to provide the level of assurance required to manage DPW's large-scale applications. Manual testing assists in resolving frequent "false positives" that may fail to identify security vulnerabilities within the business layer of the application. To that end, manual testing provides this additional level of assurance. The following summarizes the White Box, Black Box and manual testing performed to fully perform security testing due diligence:

Deloitte Vulnerability Assessment Techniques	Deloitte Approach Address DPW Security Vulnerability Requirements
Black Box Testing	- Testing is performed for a non-user perspective (in a potential external attacker's view) - Tester does not have privileged knowledge of the application
White Box Testing	- Testing is performed from a non-user and end-user perspective (potential external and internal attackers) - Tester does have privileged knowledge of the application (like user credentials of different roles) and/or access to the source code or supporting infrastructure

Deloitte Vulnerability Assessment Techniques	Deloitte Approach Address DPW Security Vulnerability Requirements
Manual Testing	• Correlates application actions/events and vulnerabilities to identify consequences on other pages and/or on the entire system through: - Insecure configuration Testing, to determine the security of the web server configuration - Manipulation testing, to attempt bypass the application controls through manipulation of the user interfaces/parameters and application states - Aggregation Testing, to determine if the application discloses information that assists to launch further advanced attacks on the application - Iteration Testing, to analyze if iterative, repetitive, or “brute force” techniques can be used for timing attacks or to bypass session/state management (e.g. Phishing attacks and Persistent Cross Site Scripting) • Explore potential new threats and develop potential new attack vector(s) - Forceful browsing - Unauthorized access to restricted records - Privilege escalation - Attacks on Session Management • Develop detailed understanding of the Business/Application Process

Figure 6.6-122. Security Vulnerability Assessment Techniques.

Security Vulnerability Reporting

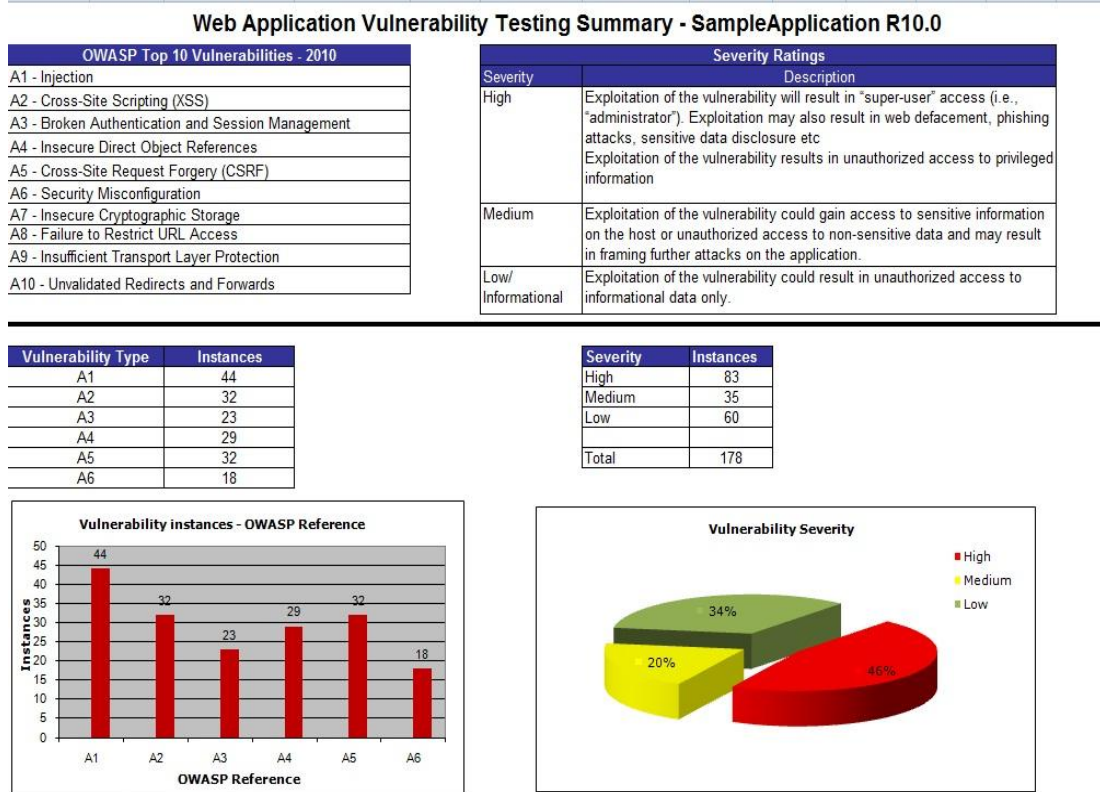
At the end of the testing activity in Integration environment, we assimilate the test logs to filter false positives. We document the results of the vulnerability assessment and submit as part of the vulnerability testing report to the DPW CISO.

The report is divided into three major sections as described in the following table:

Vulnerability Assessment Report Section	Deloitte Activities Address Reporting Needs	Stakeholder	Tools/Techniques
Security Vulnerability Report	• Provide the security vulnerability description, vulnerability location(s), number of instances where identified and vulnerability severity (high, medium and low) • Provide the suggested vulnerability mitigation upon analyzing the root cause • Map each vulnerability identified to a system specific vulnerability ID, to track root cause and reemergence of vulnerabilities • Benchmarks the vulnerabilities identified with Open Web Application Security Project (OWASP) Top Ten vulnerabilities in 2010	• Deloitte Vulnerability test specialist	• HP WebInspect • Manual Testing Techniques
Vulnerability Categorization/ Business Impact	• Describes the business criticality of the security vulnerabilities identified and user groups impacted	• DPW CISO, Business and technical Stakeholders	• Application Business Impact Analysis
Mitigation timeline	• Provides the PCRs recorded for each vulnerability identified to monitor for mitigation during SAT phase of SDM • Helps to track the mitigation status when submitted to the DPW CISO	• DPW CISO, Business and technical Stakeholders	• Automated Tracking System (ATS)

Figure 6.6-123 Security Vulnerability Assessment Report Sections.

Vulnerability Assessment Dashboard, illustrated in Figure 6.6-124, provides a graphical representation of the vulnerabilities identified within the application in terms of vulnerability severity (as High, Medium or Low) and corresponding benchmark with the OWASP Top 10 vulnerabilities – 2010. This dashboard is included as part of the vulnerability assessment report submitted to DPW CISO at the end of the testing activities.



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Figure 6.6-124. Sample Vulnerability Assessment Dashboard.

Deloitte provides a simple view of the vulnerability information.

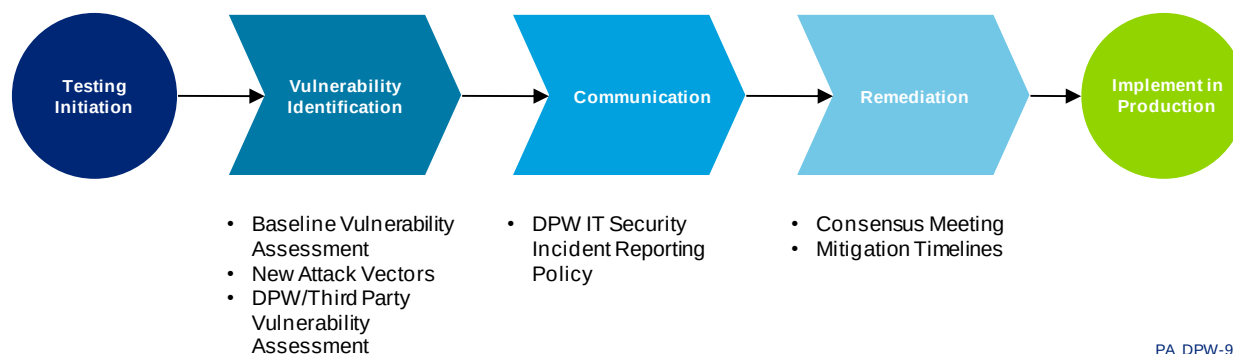
Security Vulnerability Resolution

We work with the application stakeholders to identify the root cause of the vulnerabilities identified and monitor the mitigation status for timely closure. Vulnerabilities that are categorized high severity are mitigated during the SAT test phase. Any exceptions are discussed with the DPW CISO along with the mitigation plan. For vulnerabilities categorized as Medium or Low severity, we facilitate a discussion between the Application Stakeholders and DPW CISO to provide a consensus on the mitigation plan.

Vulnerability Monitoring. The vulnerabilities that are not mitigated during the SAT phase are monitored for timely closure as described by the mitigation plan and recorded through Non-Functional PCRs in ATS.

Critical Vulnerabilities in Production

We follow a three step process for remediation of critical vulnerabilities in production environment as illustrated in Figure 6.6-125.



PA_DPW-959

Figure 6.6-125. Identification and Remediation of Critical Vulnerabilities in Production Environment.
Deloitte's approach to identifying, communicating, and correcting security vulnerabilities.

Vulnerability Identification. Though we perform vulnerability assessments and mitigate vulnerabilities during the development life cycle, critical vulnerabilities could be identified in the production environment due to the following conditions:

- **Baseline Vulnerability Assessment.** Initial vulnerability assessment performed on existing production web applications for the first time
- **New Attack Vectors.** Attack approaches released from definitive sources, such as the US-Computer Emergency Response Team (CERT), that highlight new attack protocols
- **DPW Conducted or Third-party Vulnerability Assessments.** Done as a proactive quality review to provide an impartial assessment of the operating environment

Vulnerabilities are deemed critical depending on the security severity, unauthorized disclosure of PII and/or potential business impact if the vulnerability is exploited.

Communication. When critical vulnerabilities are identified in application code present in the production environment, we quickly notify the application stakeholders and DPW CISO as required by the DPW IT Security Incident Reporting Policy (POL-ENSS002). Deloitte assists BIS and business stakeholders determine the business impact and user group affected by the vulnerability identified and mitigation alternatives.

Remediation. Deloitte and BIS facilitate an emergency consensus meeting between application stakeholders to confirm the mitigation and remediation approach and timeline. Once rectified in production, a final verification test is executed to confirm.

Support for DPW Vulnerability Testing and Third Party Testing

We support the periodic vulnerability scanning performed by the Department that may include third party penetration testing. Critical and High severity security vulnerabilities, as determined by DPW, are analyzed with the application stakeholders and mitigation plan submitted. We facilitate a consensus meeting between the DPW's CISO and the business stakeholders to obtain consensus for that mitigation plan.



Once a consensus has been reached between the application stakeholders and DPW's CISO on the mitigation plan, we will monitor if the vulnerability has been mitigated as per the timeline. We test the mitigation applied to identify if the vulnerability has been remediated.

Vulnerability Testing Coordination with DPW's Trusted Agent

We will continue to leverage the existing DPW license for HP DevInspect and HP WebInspect for this contract. The Web Application Vulnerability Testing will be carefully planned and controlled, and performed in close coordination with the Commonwealth personnel. The Commonwealth identifies at least one staff member to serve as a "trusted agent." The "trusted agent" will (1) make decisions to proceed with applicable testing, (2) participate in the testing activity and (3) identify the Commonwealth's and its affiliates' and third parties (if applicable) mission-critical systems. The "trusted agent" will not permit Deloitte to have access to such systems, and Deloitte shall have no responsibility with respect to such systems. The "trusted agent" will coordinate and authorize Deloitte access to the information technology components that have been identified by the Commonwealth for web application vulnerability testing. In order to avoid interruptions, we recommend running many of the assessment tasks during non-business hours. At your direction, we will execute as many of these tasks as practical during non-business hours.

Production Status Reporting

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RFP Reference: 4.1 Applications/Systems Operations Support

- Daily, weekly, and monthly production status reporting

Deloitte provides daily, weekly and monthly status reporting for the in-scope systems.

We communicate to appropriate stakeholders in a timely manner to help DPW deliver quality operational performance, availability and functional delivery. Our team works closely with DPW and the Unisys DPH, in the case of PACSES, to identify, analyze and communicate critical production metrics, project status and end user activity.

The tables below highlight the standard, repeatedly delivered reports that are distributed on a daily, weekly or monthly basis. It should be noted that status reporting via attendance at standard meetings is not included as this section focuses on the standard, formatted reporting that is delivered in support of project initiatives.

Daily

Business Metrics Report

A report that provides counts of key business metrics for each respective application from the past three days, a thirty day average, and a 52 week high. A trending graph for each metric is also provided so that usage patterns from the field can be visualized. The report is distributed to a substantial distribution across BIS, Program Offices and Deloitte's proposed team.

Daily	
Business Metrics Report	A report that would provide counts of key business metrics for each respective application from the past three days, a thirty day average, and a 52 week high. A trending graph for each metric would also be provided so that usage patterns from the field can be visualized.
Batch Exception Report	A report that would provide DPW management with a morning summary report of the business impacts of any batch failures or anomalies from the previous evening.
Batch Long Runtime Report	A report that would provide the names of any batches that have exceeded their average runtime from the past 60 days by more than one standard deviation.
Enterprise Services Metrics Report	A report that would provide counts of enterprise web service consumption. Examples of services tracked would include correspondences generated, files stored, or applications submitted or referred to DPW systems.
Daily Production Batch Review	This is a morning meeting held daily with representatives across all supported applications to review the outcome of batch from the previous night and determine how any issues need to be handled.
PACSES Daily Production Report	Report sent via e-mail to all PACSES stakeholders regarding batch completion status for PACSES Open Systems and Mainframe applications, current releases, future releases and other important activities.

PA_DPW-1145

Batch Exception Detail Report (Daily)

A report that provides Application Team staff with detailed metrics on failed batch jobs. This information is used in the daily morning batch checkpoint call and feeds the management summary report listed below.

Daily Production Batch Exceptions Detail Report					
Reporting on Production jobs not Finished OK for the 24-hour period ending 8/10/2010 6:00:00 AM					
Project / Job	Schedule Name / Description	Run Time	Start Time	End Time	Status
CCMIS	CCMISR4PRD				
CCWCSE001		- 58,176,065	8/10/2010 1:04:34 AM		Job Running
CCWPMT004		- 58,176,339	8/10/2010 5:38:48 AM		Job Running

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Daily

Daily Production Batch Exception Report (Daily)

A daily management summary distributed to BIS management and Deloitte project team staff that highlights the exceptions from the previous nights batch run. The report lists business impacts as well as mitigation steps to resolve.

Production Batch Exception Summary - ACTION REQUIRED			
Application	Job Name(s)	Impact/Issue	Next Steps
PELICAN	PELICAN001	This batch job processes case file information received from the mainframe. This job failed last evening due to incorrect data in the source file. Business impact is that all unprocessed updates from the mainframe will not be applied in PELICAN. Remaining records will be processed during this evening's batch run with no significant business impact.	The PELICAN team is conducting further analysis into the root cause of the data issue with the source file. Non-functional PCR 12345 has been opened to track and prioritize this issue.

PA_DPW-1170

Batch Long Runtime Report (Monthly)

A report that highlights batches that have exceeded their average runtime from the past 60 days by more than one standard deviation.

DPW Production Batch Runtime Analysis

Report generated for the OpCon schedules run on 7/16/2010 showing jobs exceeding 1 standard deviation(s) from the 60-day average runtime

HCSISPROD					
Job Name	Runtime	Average Runtime	Percent Change	σ from Avg	Standard Deviation
ET000005B	159	6	2,550 %	6.63	$\sigma = 23.09$
ET000005C	84	7	1,100 %	2.92	$\sigma = 26.34$
ET000009	106	11	864 %	3.43	$\sigma = 27.67$

PA_DPW-1189

PACES Daily Production Report (Daily)

Report sent via e-mail to the PACSES stakeholders regarding batch completion status for PACSES Open Systems and Mainframe applications, current releases, future releases and other important activities.

Figure 6.6-126. Standard, Repeatedly Delivered Reports that are Distributed on a Daily, Weekly or Monthly Basis.

The table below identifies weekly reports and meetings:

Weekly

FSWS Slot Allocation Report

This is an automated report that would provide the total number of used and available file storage slots by application.

Log File Disk Consumption Verification

This is an automated report that would measure the storage space consumed by the log, trace, exception, and temporary files generated during normal operation of the applications.

Risk/Issues Report

The Risk/Issue report is reviewed weekly with DPW management to effectively track and manage items impacting or potentially impacting operational activities.

HCSIS			
Issue/Risk	No.	Work Order	Description
CIO			
Issue	521	WO-0326-WO-0326 -Enterprise Incident Management	There is currently not official agreement from SAMS to participate in the GSD sessions. Deloitte is proceeding with GSD activities under the agreed upon direction outlined in the WO which assumes SAMS will integrate with USEC and provide a web service interface for EIM to obtain client, provider, and case information. Should these assumptions not hold true, SAMS is not able to make their changes according to the published timeline, there will need to be an assessment on impact on cost and/or schedule of this WO. As of 7/29, Deloitte has provided an estimate for the design of a contingency plan, as BIS believes it is likely that SAMS will not be able to fully adhere to the original design.

PA_DPW-1232

Figure 6.6-127. Weekly Reports That Support DPW Operational Processing.

Monthly

Monthly outage Report

This report would provide information pertaining to production outages that occurred on the Open System or Mainframe platforms.

Monthly Interruption Log - Production Web/App Servers - June 2010								
Date	Start Time	Duration	End Time	Description	Resolution	Domain Affected	Applications Affected	Business Impact
06/2/2010	10:00 AM	0:15	10:15 AM	Users of eCIS experienced slow response times while trying to access the application	BIS stopped and started the application website on the production web servers	Web Application	eCIS	eCIS was unavailable to users during the affected time
06/2/2007	10:50 AM	0:40	11:30 AM	PELICAN users were unable to view extracts	BIS restarted the a service on the utility server	Web Application	PELICAN	No discernable business impact

PA_DPW-1146

Monthly Project Report

Deloitte submits monthly report status highlighting activated accomplished for the previous and planned for the current month. Environment outage, technical support metrics (migrations, data model reviews, etc.) are also provided.

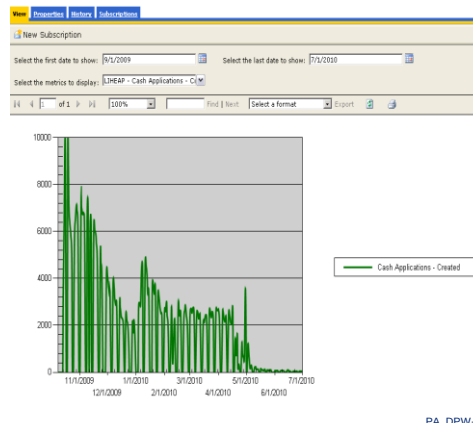
Figure 6.6-128. Monthly Reports That Support DPW Operational Processing.

In addition, Deloitte proposes enhancements to the reporting approach by offering the following suggestions:

Extending Reporting Functionality

Existing Solutions That Could Be Extended

Metrics reported on in the Daily Business Metrics Report are housed in a centralized repository for reporting purposes. Deloitte created a parameterized report that queries this information to provide usage trends. Metrics have been collected for over two years, which provides prospective users with powerful data mining capabilities. This has been shared with BIS management and is available for many others to consume. The repository is quite useful in understanding usage patterns and for historical comparisons. The report can be run for any metric on the daily business metrics summary and even allows for multi-select capabilities, where, for example, you could run a report of Compass applications and e-CIS imaging counts concurrently to see if there are common trends.



PA_DPW-1147

Future Reporting Possibilities

The reporting functionality can also be extended beyond business metrics to system metrics such as SOA service activity. For instance, the number of times the MCI clearance service is used per day, per month or longer.

Figure 6.6-129. Extending Reporting Functionality to Improve Business Service.

Technical Liaison with BIS

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RFP Reference: 4.1 Applications/Systems Operations Support

- Technical liaison with BIS

Deloitte acts as a technical liaison with BIS for the in-scope systems.

Through Deloitte's Information Technology Shared Services (ITSS) team, this liaison relationship results in a single point of contact into DPW while coordinating internally across the larger Deloitte team. We provide support to each BIS domain with vast technical experience, industry leading practices awareness, and knowledge of DPW architectural and business standards that are core to each supported area.

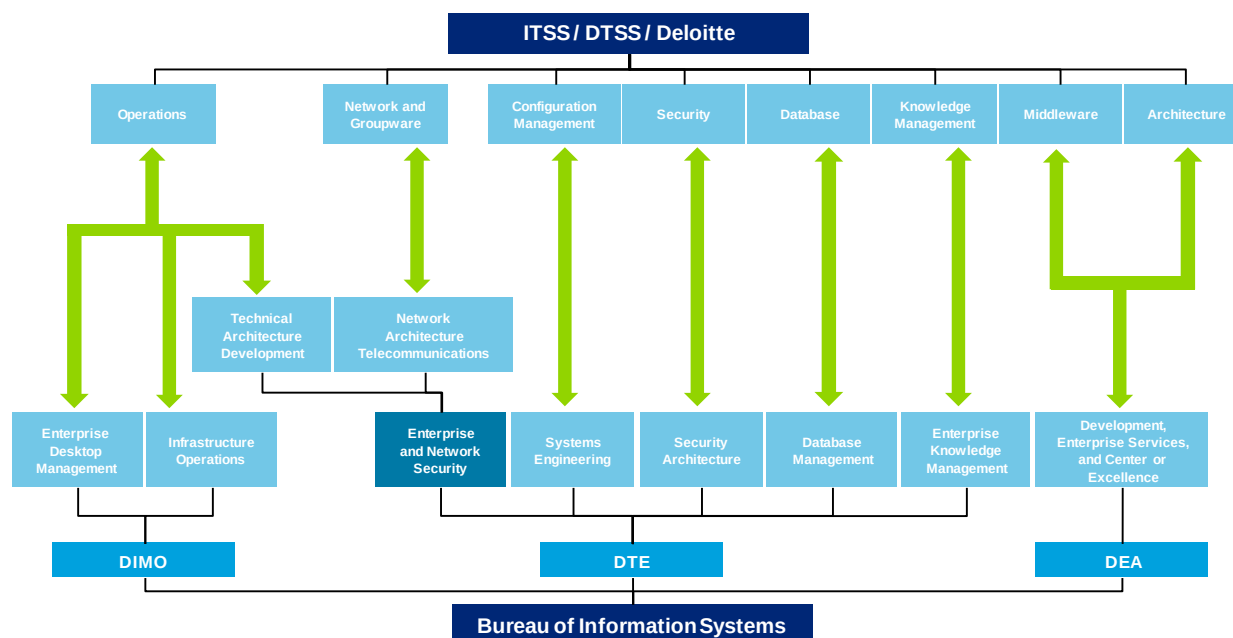
The ITSS commitment to BIS is to facilitate consistency across our larger team with regard to BIS standards compliance, technical direction and strategic vision. BIS can expect that **“telling one Deloitte tells all Deloitte”** as ITSS's role is to evangelize the direction across all BIS domains to the entire Deloitte team. BIS can also expect coordination services from ITSS to assist in planning and execution of maintenance activities. This includes coordinating downtime to execute emergency reboots, holding the batch schedules to support network maintenance or aligning maintenance release activities to provide regression testing of deployed patches and upgrades.

To effectively liaison between BIS and the project teams, ITSS must be organized efficiently to interact with both our project team and BIS customers. We have organized the team to mirror the BIS domain structure. This confirms that domain leads will have a direct, and singular, contact point to BIS and vice versa. Figure 6.6-130 highlight our organizational strategy to align with BIS.

Have you heard?

Terry Shuchart, the chief information officer for the Pennsylvania Department of Public Welfare and Insurance, recently accepted a NASCIO award. “Our IT Shared Services initiative has allowed us to improve service while saving taxpayer dollars through more efficient use of consolidated IT resources,” said Shuchart. “We are honored by this recognition from NASCIO and will continue our goal to provide superior service to the citizens of Pennsylvania.”

*Source: Press release
October 26, 2009,
“PA Earns National Technology
Award for Efficient Services”*



PA_DPW-761

Figure 6.6-130. Deloitte ITSS-BIS Domain Alignment.

Deloitte's ITSS team closely aligns with the structure of DPW's BIS group, providing each domain with a single point of contact to coordinate activities and to provide vision into both operational support and long-term strategic vision.

The included domains and primary operational responsibilities include:

- **Architecture.** Provide technical guidance to the Maintenance team that aligns with DPW strategic goals and direction. Perform impact assessments of new technologies, patches and upgrades to the existing system topology. Provide strategic recommendations to DPW management for future IT maturation.
- **Configuration Management.** Manage Maintenance team deployments and configuration activities. Assist in capacity planning metrics collection and report creation. Provide leadership and facilitation in managing production issues, outages and performance impacting incidents. Support BIS in the planning and execution of infrastructure upgrades, patches and maintenance activity testing.
- **Database.** Manage database object and structure creation and maintenance in the non Production /TFP environments. Manage creation and management of test data required to support operational testing. Perform proactive production performance tuning analysis to identify tuning opportunities. Assist in capacity planning metrics collection and report creation.
- **Knowledge Management.** Support data warehouse maintenance release planning and deployment by working closely with the EKMS team. Assist in capacity planning metrics collection and report creation.



- **Middleware.** Provide assistance to DEA to monitor and manage operational middleware services, provide facilitated coordination and communication to the middleware team to deliver sound specifications, complete requests coordinated with other service consumers. Assist in capacity planning metrics collection and report creation.
- **Network/Groupware.** Serve as an extension of the network services team to support CWOPA network management, as directed by BIS, at our project facility.
- **Operations.** Serve as an extension of DIMO to assist in the management of test and production batch schedules. Monitor and report on daily batch success and exceptions and facilitate immediate mitigation steps for critical batch failures. Work with DIMO to manage desktop hardware and software licenses at our project facility. Support operational reporting and required load testing of maintenance/operational activities.
- **Security.** Support the proactive vulnerability testing of maintenance releases. Manage user/role security configuration and management for operational releases with DTE. Assist in capacity planning metrics collection and report creation.

ITSS project management meets regularly with DTE, DEA and DIMO management to verify operational initiatives are making progress, risk/issues are effectively managed and clear and open escalation channels exist not only to ITSS, but through the ITSS/DTSS leads to each level in the larger Deloitte team.

Conversely, the ITSS/DTSS Lead and domain leads participate in numerous Maintenance team meetings to have a detailed awareness of upcoming functional changes and associated impacts to the infrastructure. ITSS leadership will use this opportunity to share information with the project teams as well as collect information that can be shared with DPW management at our previously discussed project team meetings.

Our ITSS team has a long and positive history with BIS and promotes effective two way communication to BIS and the larger Deloitte team. The singular point of contact and “telling one tells all” paradigm saves BIS countless hours in repetitive communication and coordination exercises.

Maintain Application Environments and Version Control

IV

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RFP Reference: 4.1 Applications/Systems Operations Support

- Maintain all application environments and version control

Deloitte maintains the application environments and version control for the in-scope systems.

Deloitte administers the application environments used to support development and testing, and performs planning, coordination and maintenance to manage environment usage. In addition, our team stores, maintains, and archives open systems software

code in DPW's software version control systems – Team Foundation Server and Visual SourceSafe. For the mainframe systems (CIS and PACSES), version control is maintained within the program libraries and file system on those mainframes.

The Figure 6.6-131 shows various challenges that face the respective application teams in maintaining the application environments and version control.

Applications	Deloitte's Approach Meets Ongoing Operations Requirements
iCIS	CIS. The mainframe test environments supporting CIS cannot be easily stood up to support multiple initiatives or parallel development efforts. CIS-dependant initiatives require significant planning to allow efforts to perform testing against a consistent version of the mainframe. CIS also does not have a corresponding test environment available COMPASS. Test environments to support COMPASS must also have current versions of eCIS, CIS, CAPS, HCSIS and PELICAN enabled and able to receive applications, renewals and status checks. eCIS. Development and testing for eCIS requires a synchronized CIS mainframe environment. Additional challenges include managing a large test data requirement that must be synchronized across both of these systems to allow for case processing and individual updates to be thoroughly tested for each release.
HCSIS	Testing the HCSIS application depends greatly upon user-based security to test features of the application that limit functionality based on security role, or to only show data that a user can access within the application.
PACSES	Test environments for PACSES open systems and mainframe applications are currently following a agreed-upon standard set of test phases, which differs from the DPW SDM. Additionally, the PACSES mainframe environment includes several testing environments over which source control is required to be maintained. Currently, PACSES maintains the six most recent versions of mainframe application software thereby allowing alternate paths so that production issues can be effectively migrated without affecting lower environment testing of those same programs.
PELICAN	In order to validate PELICAN functionality for fiscal-year rollover, budgeting and fiscal planning, an additional database environment, with the ability to change the system date to simulate business cycle cutoffs, is required.
Child Welfare	DPW's Child Welfare applications require the setup of additional software, open-source components, alternate database servers and desktop workstations to support development and testing.
Enterprise Services	Enterprise web services must be protected by CA's SOA Security Manager, which has a significant licensing expense. As a result, the web services are consolidated to only 2 test environments at DPW, even though the SDM requires development and testing to commence in at least 4 logical environments.

Figure 6.6-131. Challenges for Maintaining Version Control in the Various Applications.

As discussed in the previous table, environment management presents a set of very complex challenges that are distinctive to the nature of the applications at DPW. Two areas covered in our approach to environment and source control maintenance are:



- **Maintain Application Environments.** Deloitte administers the usage, availability, and application releases which are installed in non-production DPW environments. We also work with DPW to provide the same capabilities in production.
- **Manage Version Control.** Deloitte manages each open systems software asset using DPW's version control systems to store, version and catalog the changes. For the mainframe, we use the inherent file systems for managing and storing application source versions.

Maintain Application Environments

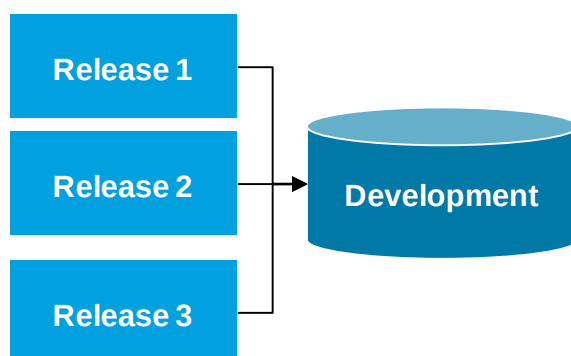
Deloitte's approach to environment maintenance begins with a strong foundation of working with you to maintain availability of the test environments, and to support the promotion of code from the development environments into other test regions. Our experience at DPW has shown that the management and ongoing maintenance of application environments requires significantly more than just migrating code and working with you to keep systems online.

The business of DPW, and specifically the support role that BIS plays by supporting the IT infrastructure, requires numerous changes to application code. These changes are driven by aggressive demand from the program areas to meet legislative requirements, to respond to critical events within the Commonwealth requiring rapid distribution of benefits, or to address changing policy. In addition, BIS is tasked with managing the expenditures associated with supporting the required software, hardware and overhead needed to implement releases and to meet this schedule. This combination leads to a variety of environment management coordination needs as pictured in the following figure.

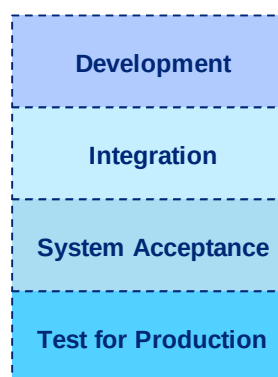
7 Releases, Sharing 1 Environment

		2009											
Project	WO #	Initiative	June	July	August	Sept	October	November					
iCIS	TBD	LIHEAP CRISIS Modifications			REQ/GSD	DSD	DEV	INT	SAT				
	186	Client Notice Redesign Phase I		DEV		INT							
	191	IEVS Targeting Phase I	GSD	DSD	DEV		INT		SAT				
	270	Workload Dashboard 2.0		REQ	GSD	DSD	DEV	INT	SAT				
	219	COMPASS Technology Upgrade to .NET	DSD	DEV			INT						
	267	CIS Maintenance - Managed Care, CWDS			DEV		INT		SAT				
	225	Early Intervention Preschool				REQ	GSD						
	240	*Attached Scanned Docs	REQ/GSD	DSD		DEV						INT	
	187	*Imaging Improvements			GSD		DSD						
	249	*CHIP Reauthorization Phase I	GSD	DSD	DEV			INT					
	173	Incremental Renewal Phase IV-B	DSD	DEV								INT	

3 Releases, Using 1 Development Database



1 Server, Supporting 4 Environments



PA_DPW-1237

Figure 6.6-132. Coordination Needs in DPW Environments.

Deloitte's approach drives environment management challenges through planned coordination.

In supporting DPW, our team understands the major components associated with Environment Management and include the following:

- **Maintaining Simultaneous Initiatives.** Supporting multiple independent releases of an application that are traversing the software development life cycle simultaneously
- **Infrastructure Sharing.** Managing expenses associated with infrastructure and operational overhead by working to minimize the number of utilized servers through effective sharing of resources

Maintaining Simultaneous Initiatives

In working to meet DPW's business objectives, application release timelines often overlap and in some cases even conflict. Deloitte effectively addresses these coordination challenges associated with multiple initiatives, including the need to coordinate the use of a development and test environments and the availability of COTS platforms and test schedules.

In some cases, the best solution may be to work with DPW to provision additional infrastructure. Our experience in working with DPW has shown that a variety of



options are available in the open systems environment, including provisioning additional physical or virtual servers or a temporary, of if needed, on a permanent basis. For the mainframe, this may mean increasing MIPS capacities on the test mainframe (HSH-D) to support large-scale or multiple competing initiatives.

Deloitte supports DPW by coordinating this setup, providing direction and guidance, and working with you during the annual planning process and through capacity planning to communicate these needs, and assists in performing the installation and configuration of the applications needed to bring new infrastructure into service.

For releases with a smaller scope, such as minor or patch releases, Deloitte may also work with you to identify and design approaches that compliment your development methodology, but may reduce the number of physical environments required.

For example, if release 2.0.0 is already undergoing Integration testing but has not yet begun Systems Acceptance Test, we can work with you to perform development of a patch release, such as 1.5.0, and then to migrate the release directly into the Systems Acceptance Test environment. This allows both integration and user acceptance testing to occur in a collocated environment.

In cases where this type of strategy is suggested, any deviations from the standard DPW SDM are communicated and approval requested through regular stakeholder communication and through the Architecture Review Board.



Infrastructure Sharing

Deloitte understands that in many cases it is not possible to have identical testing environments. In some cases, such as with the CIS and PACSES mainframes, it is not feasible to procure or configure additional environments due to either expense or complexity and resource commitments needed in managing those environments.

Additionally, many COTS software products require licensing based on each development or testing environment, which may discourage or prevent procurement for the phases of the development life cycle.

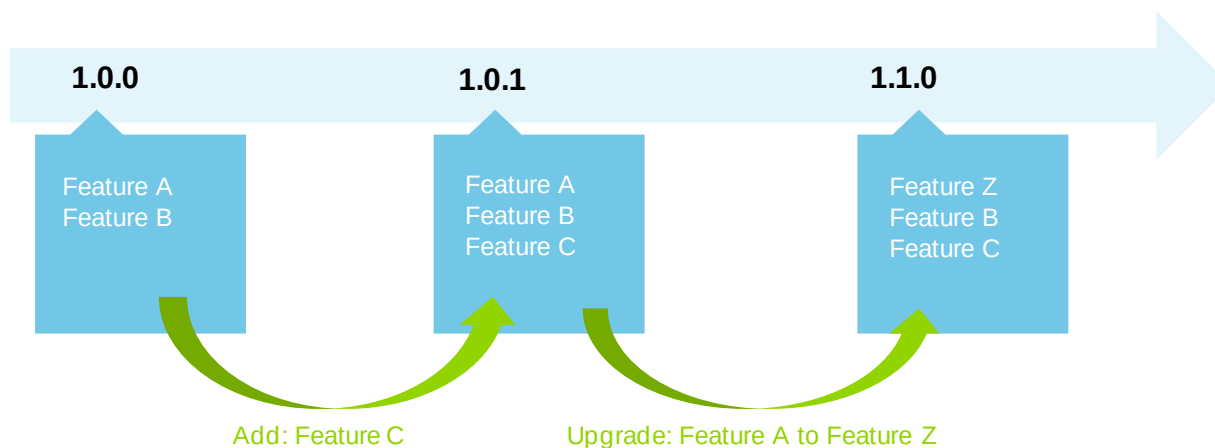
Deloitte's vast working knowledge of your technologies and your environments allows us to work with DPW to implement partitioning and sharing strategies for many of your software products. Examples of platforms at DPW that are able to effectively support multiple environments from a single server include IIS web servers, Oracle, SQL Server Informatica, BizTalk, webMethods, Adobe CentralPro, DocServer and LiveCycle. Deloitte's experience in these technologies and their use at DPW positions us to work with you to effectively manage the infrastructure capacity requirements, and to assist in implementing infrastructure sharing in cases where it is logical and technically feasible.

Manage Version Control

Deloitte recognizes that open systems software version control at DPW is performed using Microsoft's Visual Source Safe (VSS) and Team Foundation Server (TFS). These tools allow developers and architects to collaboratively work on the various source code files which comprise the application. Developers can check out files to make changes, and check them back into the source code repository for persistence once changes are complete. Each component is individually versioned, and history is preserved within the tool.

In the CIS and PACSES mainframe environments, custom built "workbench" utilities maintain the versioning of the application software and also provisions check out and check in of source code from the program libraries and file systems inherent in the mainframe architecture. Like the open systems, these tools allow the developers to simultaneously work on different application source code "elements" without concerning themselves with version control or creating collisions with other developers.

In the open systems environment, the deployed solution is periodically labeled with a release and build number using VSS or TFS, which records each file within the solution, as well as that component's version information at the moment the label was applied. As such, a label represents a consistent, point-in-time state of the source code for a project. The image below provides an overview of this form of basic open systems version control management:



PA_DPW-965

Figure 6.6-133. Version Control Process

Deloitte utilizes a consistent approach for tracking each software change and will use DPW's version control systems to manage the open systems software assets.

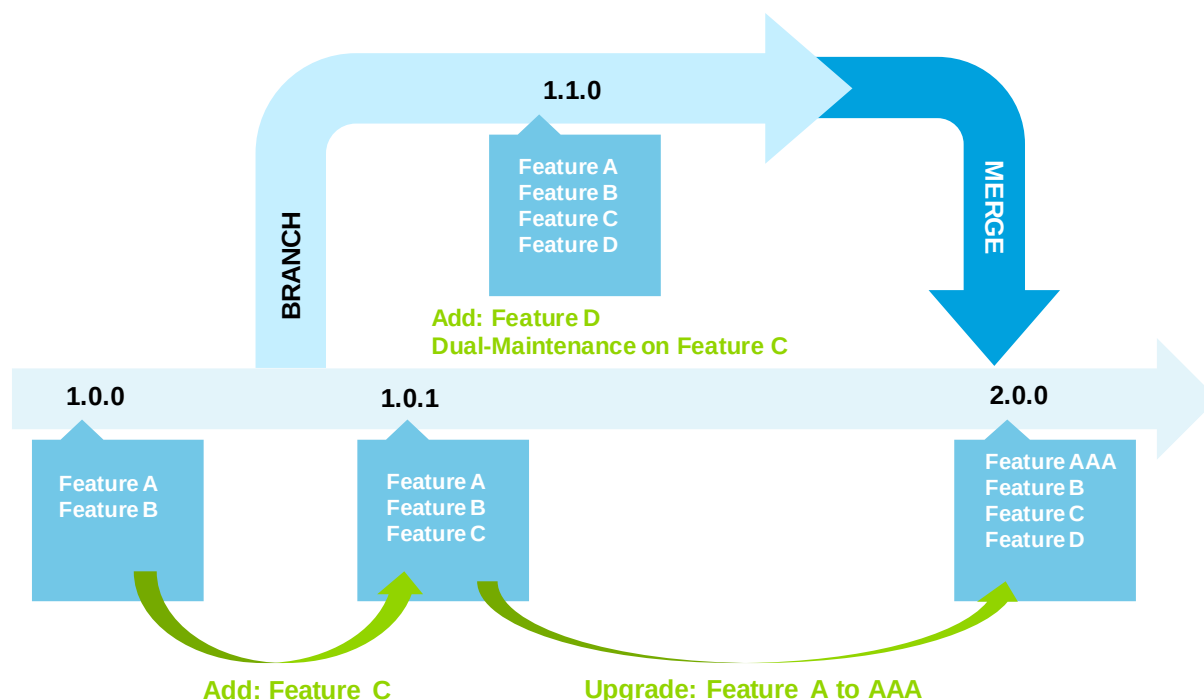
The image above describes a typical release cycle as an application moves through from an initial release (1.0.0) through adding a patch (1.0.1) to add a new feature ("C") and then finally depicts an upgrade of a component ("A" to "Z"). With a standard version control approach, each of these "features" would be checked out by a member of the development team, edited, and checked back in to the TFS or VSS repository.

For the mainframe environments, this type of deployment numbering is not possible as the application system consists of individual standalone programs versus one single solution. Deployment number in this case, is something that is provided in systems documentation rather than associated with those individual deployments.

Managing Multiple Versions of the Same Software Component

As discussed in the section on Maintaining Application Environments above, business priorities at DPW frequently drive multiple, parallel development projects to be undertaken concurrently on one application. Deloitte's version control approach is a key factor in delivering results in this environment. Each source code change for made on the same module is consolidated into a single version of the application code.

Open Systems. For the open systems, the figure that follows provides a conceptual image of this parallel process, known as branch and merge:



PA_DPW-966

Figure 6.6-134. Branch and Merge Version Control Management.

Deloitte manages multiple concurrent development initiatives through the use of branching and merging of software releases together to meet the needs of DPW.

This image depicts Deloitte’s Branch and Merge approach for managing complex parallel initiatives and reduce code duplication across the development environments.

In the sample shown above, after the initial (1.0.0) release of a software product, a branch is created to allow the addition of a new major feature to the application (“Feature D”). While this development is ongoing, a patch release (1.0.1) is implemented into the Production environment to address another priority of the business (“Feature C”) which also would be added to the branched version of the software, and maintained in both versions of the code. At the point at which the development of the 1.1.0 version of the application has completed, the changes are reconciled between the 1.1.0 version and other ongoing activities, such as other development is also performed to upgrade a feature (“A” to “AAA”). The final 2.0.0 release incorporates the changes made in 1.0.1, 1.1.0 and the new development for 2.0.0. Within the DPW applications, this type of branch and merge is a very detailed process when you take into account enterprise services and the interplay between application subsystems. It requires a detailed review of each changed piece of source code to verify that the correct balance of features and business decisions is maintained. A typical merge of the eCIS application, for example, could take the teams up to a week to complete.

Mainframe. Although similar in concept, the maintenance and reintegration of multiple versions of the same software component is somewhat less complex on the mainframe. The inherent nature of having separate programs that comprise the overall system allows for multiple versions of a single program to reside in different environments. The reintegration of the changes into a single source “element” requires coordination among the application team members and sometimes presents testing and regression testing overlaps.

Maintain Business Systems Blue Prints Documentation

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RFP Reference: 4.1 Applications/Systems Operations Support

- Maintain business systems blue prints documentation

Deloitte maintains business systems blue prints documentation for the in-scope systems to explain the relationships between systems, servers and applications which construct the backbone of DPW’s information technology platform. The blueprint is helpful in facilitating efficient discussions regarding the infrastructure, identifying issue root cause and defining application impacts of scheduled or emergency maintenance activities.

The wide array of technology platforms, COTS tools and application design patterns used make for a complex infrastructure blueprint with each enterprise application having special considerations and configurations to support. The following highlights considerations that are helpful when providing operational support to in-scope systems.

Applications	Deloitte’s Demonstrates System Specific Requirements for Blue Prints
iCIS	CIS. Mainframe processing relies heavily on open system transaction calls facilitated through OpenTI. OpenTI transactions are routed through a single server, highlighted on the blueprint, to support inquiry and “two phase commit” transactions. COMPASS. COMPASS consumes an “application broker” that supports the routing of applications to the appropriate application for processing. The highlighted interaction with web services and the Enterprise Service Bus brokering the distribution of applications is noted on the blueprint. eCIS. Workload Dashboard functionality includes a service call to the Commonwealth’s exchange server to provide calendaring information. This is reflected on the blueprint.
HCSIS	HCSIS web service calls to the Enterprise Rate Service as well as the clustered web server environment are listed on the blueprint.
PACSES	PACSES. Mainframe interfaces with Adobe LiveCycle services and subsequent distributed printing to county offices are highlighted on the blueprint. Adobe LiveCycle presents a substantial new addition to the blueprint by offering a document creation engine as well as an Internet accessible front end to support document management, workflows and retrieval. This is reflected on the blueprint.

Applications	Deloitte's Demonstrates System Specific Requirements for Blue Prints
PELICAN	PELICAN leverages web service calls to the Enterprise Correspondence solution that consumes SOA service security management solutions as well as web service integration brokering capabilities – which are included on the blueprint.
Child Welfare	Child Welfare centric systems will be added to the blueprint as part of this contracting solution. This would include integration with the Department's enterprise security solution, databases and web servers.
Enterprise Services	Enterprise services, including MCI .Net, MPI, Correspondence, FSWS, Enterprise Rate Service and the Enterprise Notification Service are reflected on the blueprint as consuming the Enterprise Service Bus/Integration Broker facilitated by WebMethods.

Figure 6.6-135. The Infrastructure Components at DPW are Documented in our Blueprints.

Deloitte's Approach to Blueprint Maintenance

As part of our design and development process, Deloitte maintains blueprint documentation, works with DPW to review and validate any changes, and finalizes and communicates the updated version to stakeholders through the Architecture Review Board process. Deloitte's process for maintaining system blueprint documentation is depicted in Figure 6.6-136.



PA_DPW-967

Figure 6.6-136. Systems Blueprint Maintenance Process.

Deloitte maintains Architecture and Infrastructure systems blueprints for the in-scope systems using our Systems Blueprint Maintenance Process, in alignment with DPW's Architecture Review Board.

During each release, Deloitte will maintain the systems blueprint using the following steps:

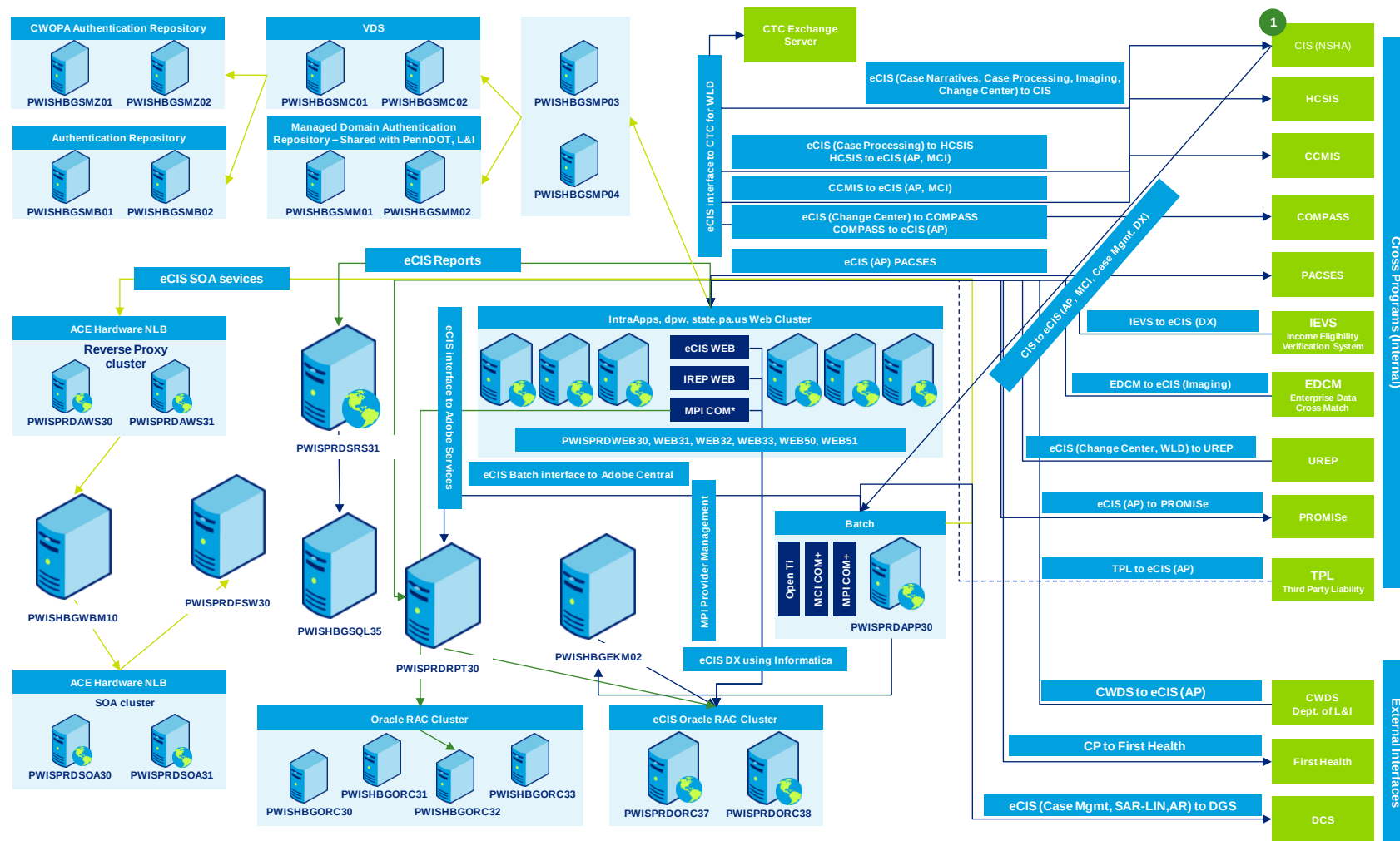
- **Identify Blueprint Changes.** During the detailed system design phase (DSD) of each release, our architects work with DPW to determine any required changes to application interfaces, external data sources, servers, mainframes, or network topology and include them in the design documentation. Additionally, any operational upgrade or maintenance release would be thoroughly reviewed to determine any impacts to the Blueprint. Changes to the Blueprint could include:
 - Addition/Alteration to intersystem connectivity or access on behalf of that application
 - Addition/Alteration to the physical hardware topology support the application
 - Addition/Alteration of COTS products and associated infrastructure consumed by the application



- Addition/Alteration of network topology changes, including new switches, routers, or load balancing devices
- Addition/Alteration of service and interface calls, including messaging, web services or significant file transfers
- **Update Architecture and Infrastructure Blueprints.** Once design details have been collected, Deloitte works with BIS to review the relevant blueprints and make any needed updates.
- **Review Blueprints at ARB2.** The draft blueprints are presented and reviewed during the ARB(s) during the Detailed System Design (DSD) phase of the release.
- **Present Final Blueprints at ARB4.** After incorporating any comments from the ARB(s), and finalizing and executing the approach to deliver the release, the final systems blueprints are presented as part of the ARB4 meeting with DPW. Final version of the Blueprint are stored in the Commonwealth's document repository – Docushare.

Figure 6.6-137 and Figure 6.6-138 that follow are samples of the Architecture blueprint documentation for the eCIS and PACSES mainframe applications.

DPW eCIS Application Technical Architecture



PA_DPW-771

Figure 6.6-137. Example eCIS Application Technical Architecture Blueprint.

During the ARB, the Architecture and Infrastructure blueprints are presented and reviewed in detail for each of the impacted applications. The raised highlight shows detail of a section which has changed as part of a production release.

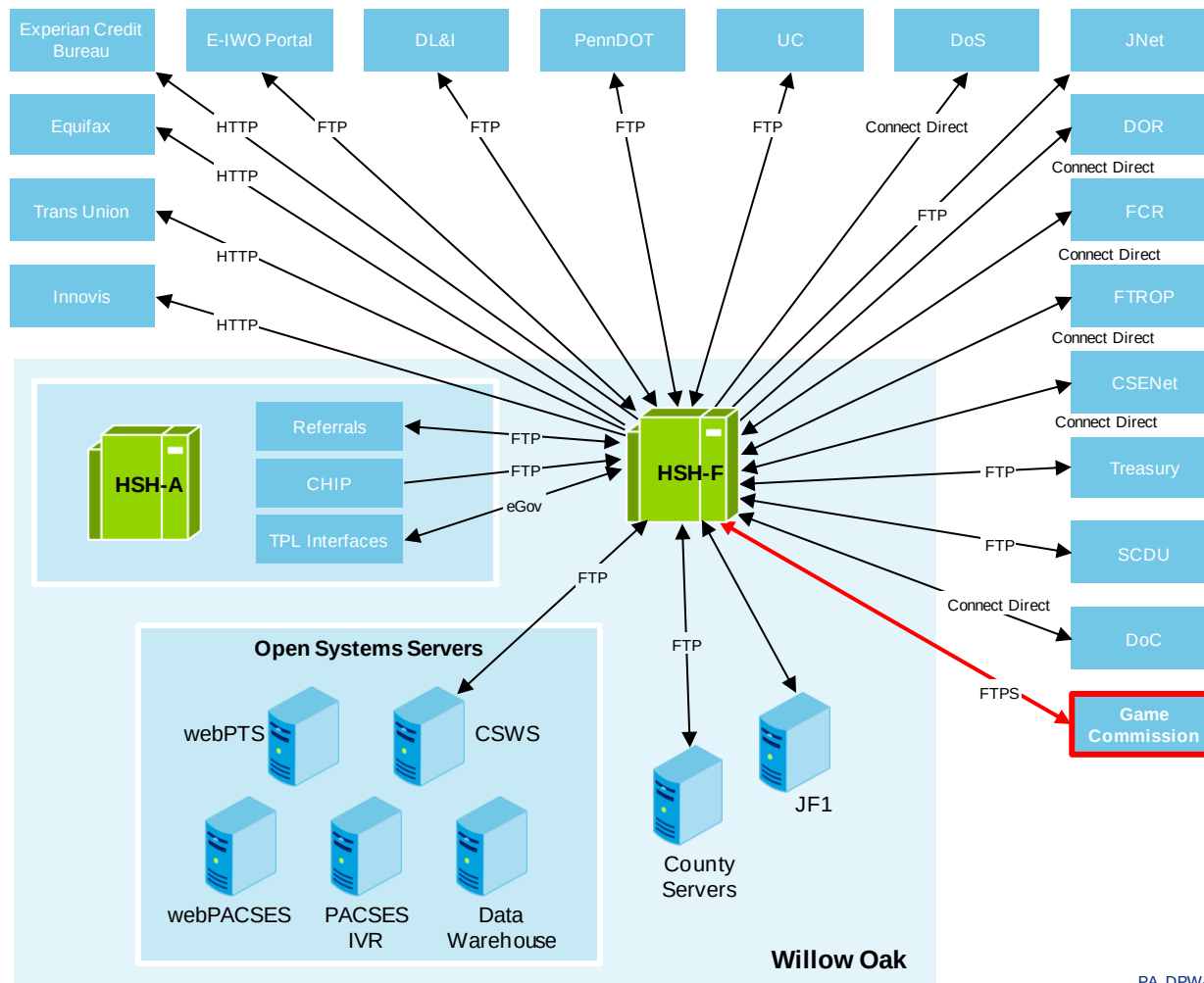


As shown in the callout within the previous image, red lines are used to highlight changes, in this case – new interfaces and service calls between the security, middleware and SOA servers – added as part of this release. During the ARB2 meeting, these proposed interfaces would be reviewed with DPW stakeholders and comments are accepted for inclusion during development and testing.

Deloitte's Mainframe Blueprint Processes

The Deloitte maintains extensive system and architecture blueprint documents for the mainframe applications. In Figure 6.6-138 that follows, we have presented a current mainframe architecture blueprint document for PACSES.

PACSES Mainframe Architecture Blueprint



PA_DPW-1228

Figure 6.6-138. PACSES Application Technical Architecture Blueprint.

The PACSES mainframe architecture blueprint document highlights the external and open systems interfaces for PACSES.

In the previous diagram, you can see a recent secure FTP interface to the Game Commission has been added and noted in red text on the document. We look forward to sharing mainframe initiatives and blueprint documentation with you going forward.

Load and Performance Testing and Monitoring

IV

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RFP Reference: 4.1 Applications/Systems Operations Support

- Load and performance testing and monitoring

Deloitte performs load and performance testing and monitoring for the in-scope systems.

Deloitte performs effective load and performance testing and monitoring to offer DPW crucial insight into performance and infrastructure tuning opportunities before an application goes live. We work with you to develop, manage, and maintain test scenarios that mimic the actions of end users. By closely emulating the expected user base of a system performing normal business activities for a sustained period, load tests instill confidence that an application is ready for the rigorous demands of your organization.

Our team understands the evolving nature of load testing for DPW. As applications and their underlying technology change, so too will the testing requirements. This section details our commitment to providing quality testing results and the confidence that your applications are ready for production by covering the following points:

- The load testing environment configuration
- Deloitte's load testing process
- Challenges with the existing load testing solution
- Continuous load testing improvements
- Load testing in the SAO landscape

Load Test Environment Configuration

Our team brings highly qualified staff with vast knowledge of the DPW open systems and CIS online mainframe load testing solution, HP LoadRunner 9.5, and the underlying infrastructure used to execute tests. Figure 6.6-139 depicts the load testing infrastructure at DPW:

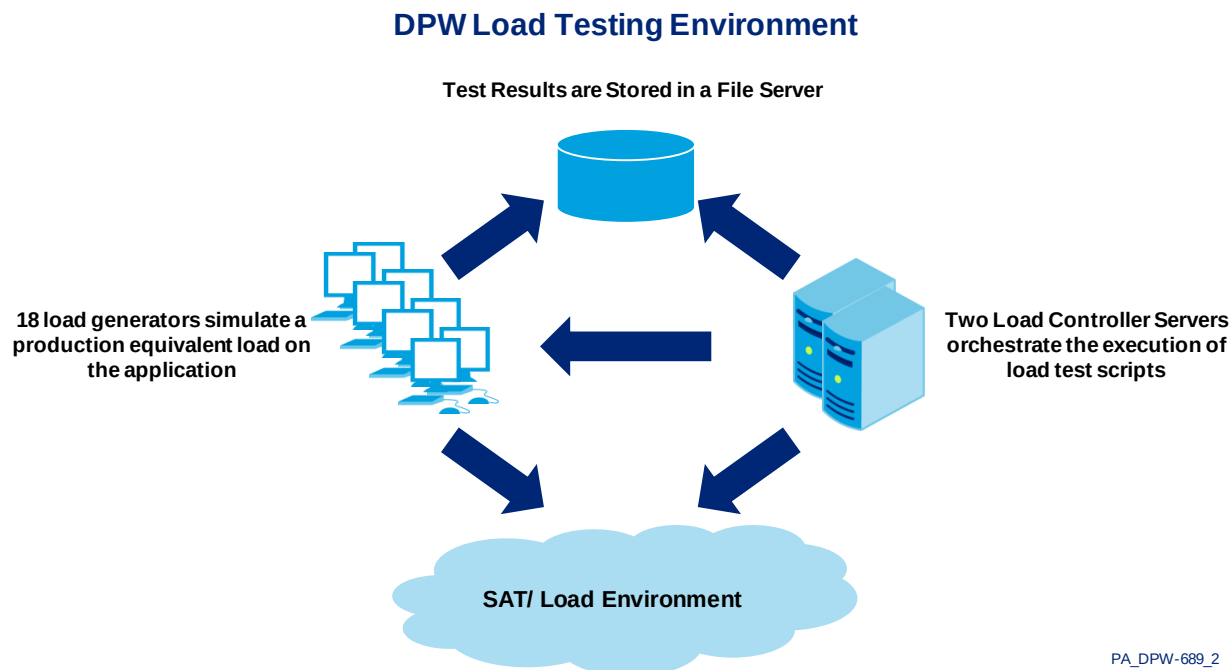


Figure 6.6-139. DPW Load Environment Overview.

Deloitte understands that the DPW Load Environment consists of three different components – load controller servers, load generator servers, and a test result repository.

There are a total of 21 systems that comprise the DPW Load Testing environment. Tests are controlled by two load controller servers, which perform a dual role of stressing the load environment and coordinating the activities of the 18 load generator servers. The sole job of the load generators is to execute test scripts that simulate the activities of human users at an expected production volume.

Each instance of a script is executed through a self-contained program called a vUser (virtual user). These servers communicate transaction response times, script execution statistics, and a wide variety of metrics back to the results repository for review at the conclusion of a test.

Deloitte's Load Testing Process

Maximizing the value of load testing requires a cross-domain effort driven by a standardized process. Our proposed load testing process for the open systems and CIS online mainframe environment comes from years of executing and delivering load testing results for DPW. We understand the infrastructure elements involved in a load test, the role each domain plays in successful execution, and how to present the results in a way that provides the most value to you. The key elements of our approach can be seen in Figure 6.6-140.

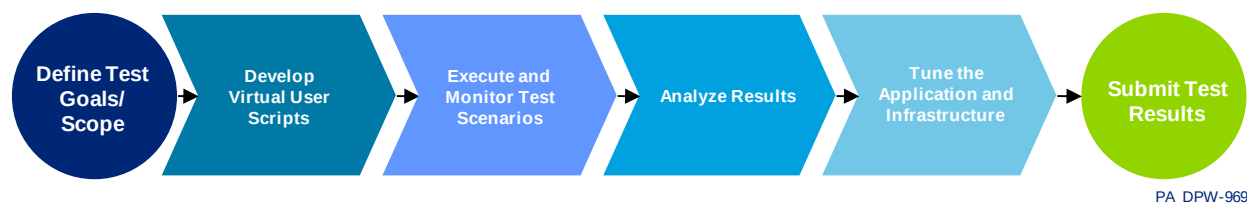


Figure 6.6-140. DPW Load Testing Process.

Deloitte establishes a standardized process for conducting a load test for each application to minimize the amount of preparation time needed.

Measurement. The scope and performance targets for the initiative are established prior to conducting any load testing. These requirements aim to derive the effects of new business functionality or changes to existing functionality on the overall system. With the requirements defined, we schedule the load tests and provide the dates and times to DPW for review on the load test calendar. The following table summarizes the tasks to be completed for each load test by domain:

Domain	Load Test Tasks
Database	• Perform data setup activities • Validate that a production worthy data set is available for testing • Analyze database schema and packages before a test begins • Analyze SQL query or mainframe transaction performance after a load test finishes
Configuration Management	• Deploy appropriate application code to the load test web servers
Security	• Provide appropriate credentials to test user accounts
Middleware	• Monitor webMethods queues for performance levels
Operations	• Build load test scenario in HP LoadRunner 9.5 according to application team specifications • Execute load test • Monitor for and troubleshoot any issues to keep the test running smoothly • Compile results and provide to application teams for analysis

Figure 6.6-141. What Specific Metrics are Checked and Monitored when Performing Load Tests.

Compiling Results. After a load test finishes, we leverage functionality in HP LoadRunner 9.5 to generate a detailed analysis of performance statistics. We understand that these raw results provide a seemingly overwhelming amount of information. To reduce this to a manageable level for your review, Deloitte employs an automated tool to extract the most salient information. Figure 6.6-142 depicts how this is accomplished.

The purpose of the two tests confirms the repeatability of results and provides a level of comfort that the tests have been properly configured and executed.

The application teams produce a standardized artifact that is submitted to DPW and details the application changes that were load tested and how these results compared to the load testing results of the prior release of that application software. At your request, we facilitate a meeting with key stakeholders to review the results and address any questions or concerns prior to moving the application to TFP.

Load Testing Challenges

As the DPW technology platform continues to grow and incorporate different technologies, your load testing solution needs to expand alongside it to accommodate technology being leveraged by new initiatives. The limitation of HP LoadRunner 9.5 to load test AJAX based applications indicates the need to reevaluate the current load testing platform. Without proper load testing, predicting how an application will behave in production, and determining if infrastructure improvements required, is a difficult task.

With our knowledge of your technology landscape, Deloitte can work with you to evaluate different load test solutions. Our collaborative efforts can determine the best option to test current applications. Also, we consider the future of DPW, and assist in finding the optimal solution for testing future initiatives that involve Rich Internet Applications (RIA), Windows Communication Foundation (WCF), and other enterprise service technologies.

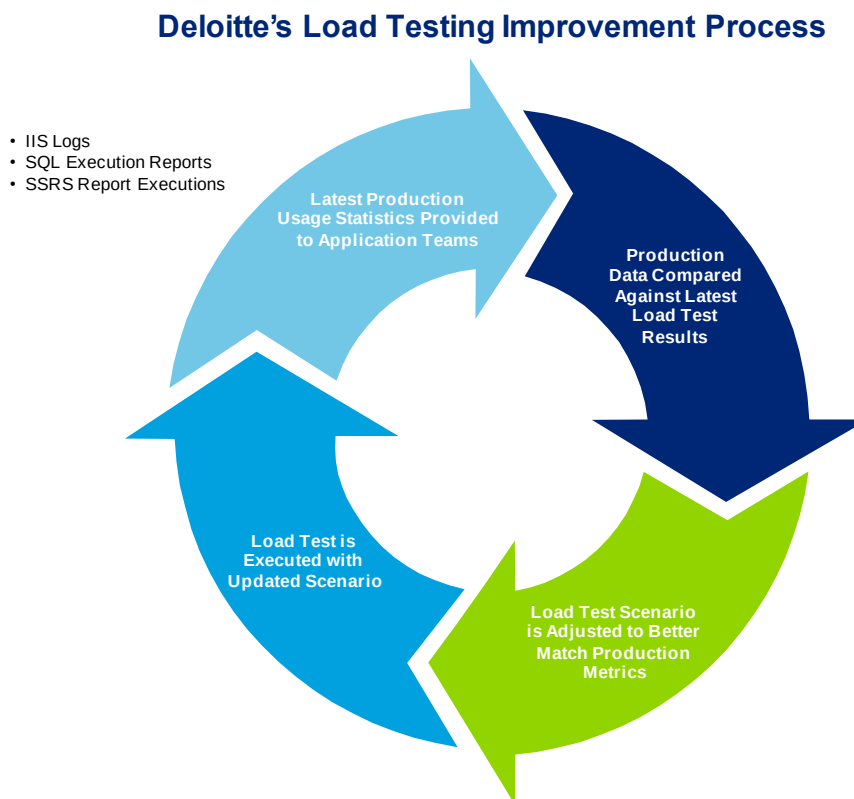
Additionally, non browser based applications cannot be load tested through the Performance Center tool. This is not a material concern for open system solutions and CIS, since CIS is accessible via Web TS. However, the PACSES mainframe application is not browser based and, as such, cannot leverage the Performance Center tool. PACSES load testing performed manually through the use of custom scripts, coordinated concurrent testers simulation load and batch volume load testing. As tests are running, results are observed and reviewed for appropriate results. Anomalies in performance are analyzed to determine corrective action steps be taken. This can result in database changes (for example, adding an index to a table) or application changes (for example, accessing the data in a different manner). The results of these load tests are documented and available for review by DPW.

Continuous Load Testing Improvement

We understand that DPW applications are continuously changing to better address the needs of your customers. This can include introducing new business functionality or changes in existing functionality to address changes in usage patterns. To derive the most value from loads testing, the strain placed on applications and their underlying infrastructure needs to closely resemble the expected behavior in the field. Creating an automated program to reproduce human behavior is an extremely challenging task, and our team leverages a variety of different data sources to gain insight into how your end users are interacting with your systems:

- Web server Internet Information Service (IIS) logs detail which functionality is accessed most by users
- Database AWR/ADDM reports display the most frequently executed queries and queries with the largest resource footprint
- SSRS Report Execution statistics show the types of reports users are requesting most

Deloitte consolidated information from these sources into an iterative process for improving load testing efforts. This process is outlined in Figure 6.5-143:



PA_DPW-692

Figure 6.6-143. Load Test Improvement Process.

By continuously adapting load test scenarios to better match actual user patterns, Deloitte can provide to you a more accurate representation of how an application will perform after going live.

Before each round of load testing begins, current IIS Logs, SQL execution reports, and SSRS subscription reports are analyzed to derive current usage patterns. These patterns are then compared against the load test scenario to identify any opportunities to better match actual user behavior. Load tests are then executed according to this updated scenario until satisfactory results are achieved. Once the next load testing cycle begins, the process starts again.

Improvements on the Mainframe Side. The mainframe environment provides its own set of challenges when considering improvement opportunities. Vendors like HP focus their attention for load test software improvements on the open system environment, not the mainframe. As such, load testing mainframe software continues

to required work around scenarios and sometimes compromises. The patterns of open systems applications usage tends to be very different than the mainframe where actions are more linear in nature and typically require more steps to complete a business process. They also do not really mirror the way an actual user would interact with a system as in the open systems environments. This makes capturing information about actual usage more cumbersome and requires a bit more “art” than science about how an application is performing. Yes, you can obtain several statistics about how an individual application component on the mainframe is performing. However, it is much more difficult to garner overall performance from load testing.

Load Testing in the SOA Landscape

As DPW better positions their organization to become SOA centric, a coordinated load testing strategy becomes a necessity. Properly testing enterprise services entails submitting a number of Simple Object Access Protocol (SOAP) requests to the hosted service. Deloitte has the experience with successfully testing enterprise wide service implementations such as the File Storage Web Service (FSWS) and Master Client Index (MCI) service. Building off those successes, we can help you determine the volume needed to properly test new or existing services.

Load testing enterprise services while considering the expected service consumption across the enterprise can provide you with the most insightful results. As DPW’s different applications become more integrated via SOA architecture, the old paradigm of silo testing may result in only minimal value. Integrated load tests become crucial as not only are services used across the enterprise, they are also deployed in shared server environments.

Security Implementation and Monitoring

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RFP Reference: 4.1 Applications/Systems Operations Support

- Security implementation and monitoring

Deloitte supports implementation and monitoring of security solutions within the in-scope applications. We work closely with DPW to protect the confidentiality, integrity and availability of sensitive DPW data.

Our security implementation and associated monitoring techniques have been designed to meet the requirements of applicable DPW security standards, Commonwealth Information Technology Bulletins (ITBs) and Federal and State regulations, including the recently published DPW Privacy Standard (as part of Addendum 4 in the RFP).

The following table highlights characteristics within a sample of the in-scope systems relating to security implementation and monitoring required by the business applications.



Applications	Deloitte's Understanding of System Specifics for Security Implementation and Monitoring
i-CIS	• CIS, TPL, IEVS requires an integrated user authentication for Unisys Mainframes systems with Commonwealth User Repository (Active Directory). CIS Mainframe requires data protection at the data level using Access Control Records and Transaction Session Security. CIS transaction logs require real-time monitoring and periodic reporting to detect and remediate compliance requirements for SSA. CIS transaction logs require integration with DPW SIEM tool to monitor violation, generate alerts and reports for maintaining compliance to SSA. • COMPASS requires effective managing more than 110,000 Citizen users, Community Partners (Business Partners) and Commonwealth users through CA SiteMinder. COMPASS requires Transparent Single Sign-On (SSO) between disparate technology platforms Adobe Flex and Microsoft .NET Framework – application and services. COMPASS requires community partner delegated administration, user self registration and password self-service managed through CA Identity Manager. • eCIS is built using both the Application based Fine Grained Access Controls (FGAC) and CA SiteMinder Coarse Grained Access Controls. This requires efficient synchronization between the application FGAC and the SiteMinder Policy Servers which leaves no room for error. In addition, the eCIS application user roles present in the SiteMinder policy server need to be aligned with the Office of Information Management (OIM). eCIS requires Desktop SSO for intranet users and Web-based SSO for Internet users. SSA requirements of eCIS is met by integrating eCIS application logs with SIEM tool, RSA enVision, to monitor violations to SSA.
HCSIS	• HCSIS application is built using Oracle Fine Grained Access (FGA) along with user authentication through CA SiteMinder to provide a “HCSIS Key” for authorization. In order to unify these disparate user access methods stored in two different systems – Database and Microsoft Active Directory (AD). • Each HCSIS user in the CWOPA, Managed and the PWMUser ADs should be appropriately synchronized with application users present in the Database (FGA) providing the HCSIS key for user authorization. • HCSIS application requires to manage more than 230 application user roles. Business partners require CA IdentityManager to perform delegated administration, user self-registration and password self-service. • HCSIS Help Desk provides user administration for consumers.

Applications	Deloitte's Understanding of System Specifics for Security Implementation and Monitoring
PACSES	- PACSES requires an integrated user authentication for Unisys Mainframes systems with Commonwealth/PACSES User Repository (Active Directory). Security requirements mandate compliance with the Internal Revenue Service (IRS) 1075 publication. The PACSES mainframe transaction logs requires integration with the DPW SIEM tool to monitor violation, generate alerts and reports for maintaining compliance to IRS 1075. - PACSES Home Page (PHP) application security is hosted on the servers provided by Office of Information Technology (OIT) on the BEA Aqualogic Platform. PHP requires SSO to be established and maintained with this externally (non-DPW environment) hosted Web site and perform user authentication/authorization based on CWOPA and PACSES domains. - Paternity Tracking System (PTS) security requires Desktop SSO solution for intranet based users and Web-based SSO for Internet users.
PELICAN	- PELICAN requires transparent SSO between its application suite – CCW, PPCS, PKC and ELN and between the Microsoft .NET platform and legacy COM+. PELICAN needs business partner user management by delegated administrators, user self-registration (Provider Self Service – PSS) and password self service through CA Identity Manager. - PPCS webservices for the SmartClient interface requires protection through a custom user authentication and authorization LDAP call to the Microsoft Active Directory.
Child Welfare	ChildLine application and services require integration with the DPW IAM security infrastructure. The application also needs to meet the security requirements of Federal regulations such as AFCARS.
Enterprise Services	Enterprise Services are protected using CA SOA Security Manager also integrated with WebMethods services. Secure SOA Implementation at DPW is the first such implementation in the State Government sector.

Figure 6.6-144. Characteristics of In-Scope Applications that Impact Security Implementation and Monitoring.

Security Implementation Approach

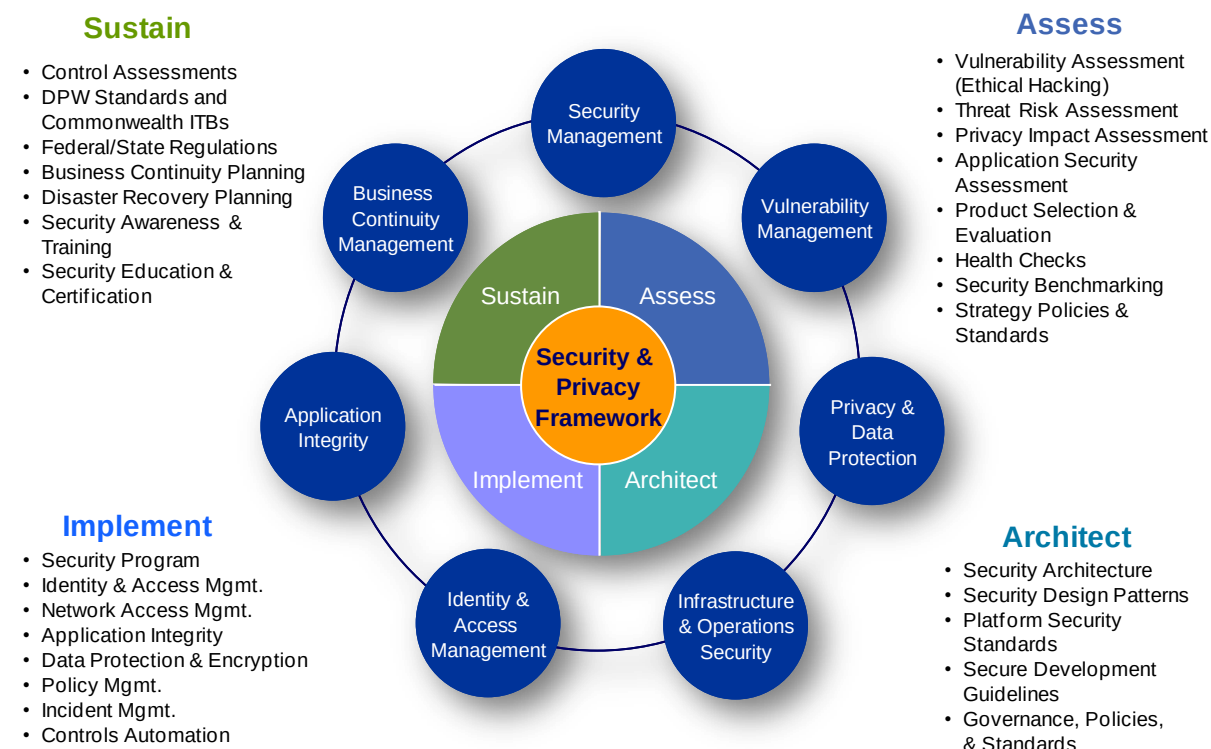
Deloitte has vast experience and knowledge of DPW's systems, security standards, processes and procedures. We continue to leverage our robust, structured and demonstrated security implementation framework along with our experience at DPW to architect and implement secure solutions.

Our security implementation framework is based on four core implementation phases, including:

- **Assess.** We identify technical, regulatory and business impacts of security risks to DPW's environment include those risk from DPW standards, Commonwealth ITBs, Federal and State regulatory requirements. This analysis helps us to develop an appropriate risk profile for DPW's operating environment.

- **Design.** Deloitte works with DPW to design and develop appropriate security solutions for effective integration of technology, processes, people and policies whilst understanding the business requirements. Our strong, practical experience at DPW in architecting flexible and sustainable end-to-end security solutions helps DPW to adopt to a rapidly changing technology environment.
- **Implement.** We help DPW to implement and integrate the robust security solutions using a consistent process with high effectiveness, addressing DPW standards, Commonwealth ITBs, Federal/State regulatory and business requirements.
- **Sustain.** We assist DPW to maintain consistent and measurable security controls. This helps DPW analyze the security implementation's operational, performance, compliance posture and trends over a period time, identifying improvement opportunities.

The framework phases will be applied to the seven ITIL based security services that make up or overall offering, and are outlined in Figure 6.6-145.



Our life cycle approach is designed to address DPW requirements

Figure 6.6-145. Deloitte's Security Approach is Ingrained in Our Operations Support Model.

Our security approach contains several components that are geared towards helping that your enterprise is fully secure.

PA_DPW-977

Security Implementation Execution

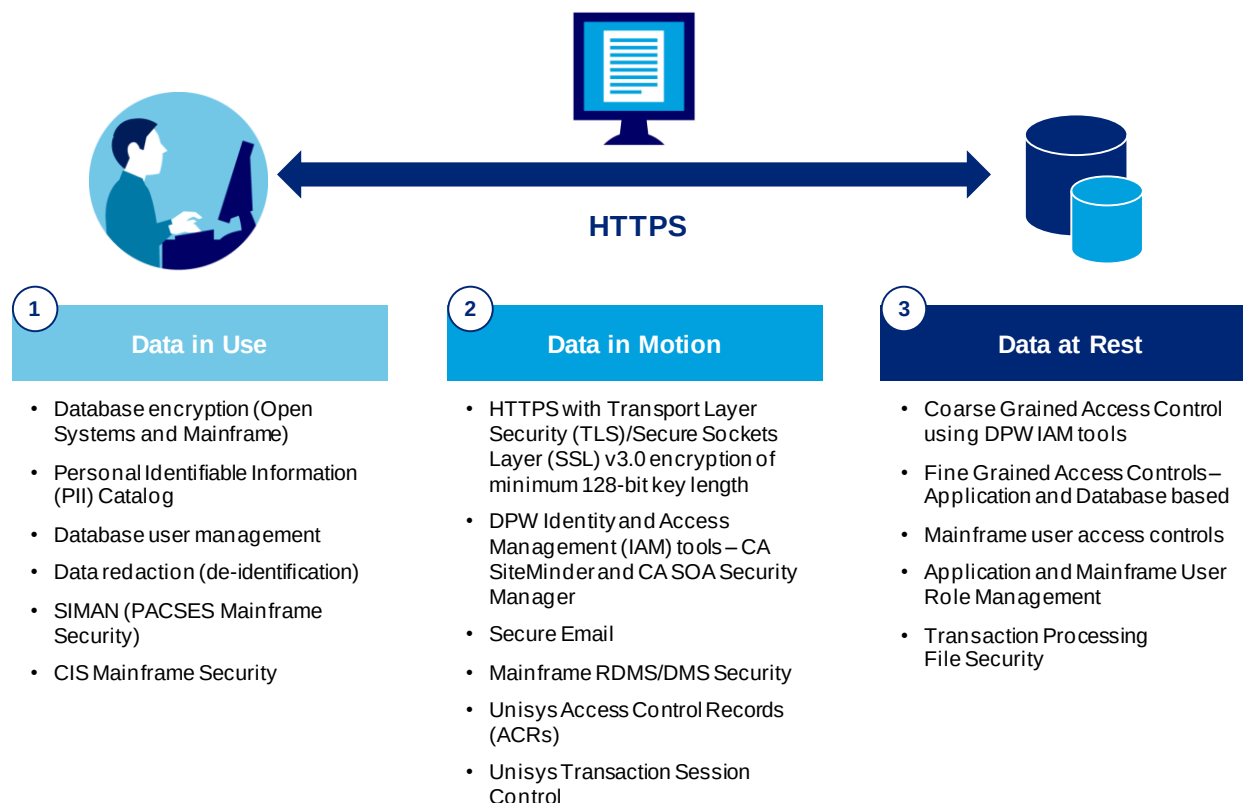
These security services provide the structure, scope and approach to deliver overall service performance, availability and functional delivery.

DPW Security Implementation Service	Deloitte Activities Meet DPW Needs	Standards and Tools Used to Deliver
1. Security Management	• Rationalized security requirements from DPW standards, Commonwealth ITBs, Federal and State regulations • Threat and Risk Assessment along with Risk Prioritization • Risk Management product Selection and Evaluation	• Security Design • DPW Security Risk Framework
2. Vulnerability Management	• Vulnerability Assessment (Ethical Hacking) • Application Security Assessment • Secure Development Life cycle – Secure Architecture, Secure Design, Secure Development Guidelines • Platform Security Standards • Security Incidents and Events Monitoring (SIEM) • Application security tools product selection and evaluation	• HP WebInspect • HP SwfScan • SOAPUI • ParosProxy • Manual Techniques • RSA enVision • ITB-SEC021, Security Information and Events Monitoring (SIEM) • DPW Application Security Vulnerability Scanning Standard (STD-ENSS020)
3. Privacy and Data Protection	• PII data classification and PII catalog • PII data flow mapping • Data Protection and Encryption • IT Security Incident Reporting • Privacy Policies and Standards • Data protection product selection and evaluation	• Security Design • DPW PII Catalog • Data Flow Mapping • DPW data protection and encryption tools/techniques • DPW Privacy Standard • DPW IT Security Incident Reporting Policy (POL-ENSS002) • DPW Data Encryption Standard
4. Infrastructure and Operations Security	• Infrastructure Vulnerability Assessment (Ethical Hacking) • Security Devices Configuration Review and Baseline standards • Security Infrastructure Architecture and Design • Network security devices product selection and evaluation	• DPW Security Testing Tools – Nessus, GFI LANGuard, Nmap, Nikto • Manual Techniques

DPW Security Implementation Service	Deloitte Activities Meet DPW Needs	Standards and Tools Used to Deliver
5. Identity and Access Management (IAM)	• User Authentication • User Authorization • Role Life cycle Management • User Provisioning • Password Self-Service • User Self-Registration • E-Signature • IAM tools product selection and evaluation	• CA SiteMinder – Coarse Grained Access Control • CA Identity Manager • CA SOA Security Manager • IBM Tivoli Identity Manager • RadiantLogic RadiantOne Virtual Directory Server • Microsoft Active Directory • IBM WebSphere • Application and Oracle Database based Fine Grained Access Controls • DPW Web Application Security (SiteMinder) Standard • DPW Unified Security Standard • DPW Role Life cycle Management
6. Application Integrity (ERP/Web)	• User Role Management • Segregation of Duties (SOD) • User role management and SOD production selection and evaluation	• Security Design • DPW Role Life cycle Management
7. Business Continuity Management	• Disaster Recovery Planning – Data Backup and Recovery • Data backup and recovery tools – product selection and evaluation	• DPW Disaster Recovery Procedures • DPW Data Backup and Recovery Tools/Procedures

Figure 6.6-146. Deloitte's Security Service Implementation Framework Delivers Business Value to DPW.

The seven security services provide approaches to holistically protect the enterprise computing infrastructure. As access to Department data is the end goal for those with nefarious intentions, the following section provides greater depth toward our approach to protect Department data throughout the various states of use. This approach highlights our strategy to protect data at rest, in motion and in use. To execute our approach, we use DPW approved protection tools and techniques for securing DPW data. Figure 6.6-147 illustrates highlights our approach and is followed by an itemized list of tools and activities used to support your security needs.



PA_DPW-2019

Figure 6.6-147. Our Approach to Data Protection.

Deloitte has demonstrated experience in defining and implementing solutions that protect data in use, motion and at rest.

Figure 6.6-148 provides the data protection tools and techniques that will be employed to secure DPW data.

DPW Data State	Tools and Approaches Used to Deliver Data Security	Deloitte Activities to meet Data Protection Requirements
Data at rest	• Database encryption (Open Systems and Mainframe) • Personal Identifiable Information (PII) Catalog • Database user management • Data redaction (de-identification) • SIMAN • Unisys Mainframe TSS	• Assist DPW to identify and select a suitable Database encryption tool • Identify, categorize and catalog PII present in the database based on DPW Privacy Standard • Identify database fields and corresponding tables containing PII that requires encryption • Apply encryption to the identified database fields in lower environments and Production environments, test and remediate gaps (if any)

DPW Data State	Tools and Approaches Used to Deliver Data Security	Deloitte Activities to meet Data Protection Requirements
	•	• Restrict access to the database (production and lower environments) based on “need-to-know” and approval from DPW • Perform data redaction to de-identify PII when production data is refreshed to lower environments
Data in motion	• HTTPS with Transport Layer Security (TLS)/Secure Sockets Layer (SSL) v3.0 encryption of minimum 128-bit key length • DPW Identity and Access Management (IAM) tools – CA SiteMinder and CA SOA Security Manager • Secure Email* • Mainframe RDMS/DMS Security • Unisys Access Control Records (ACRs) • Unisys Transaction Session Control	• Use at the minimum, 128-bit key encryption, through HTTPS using TLS/SSL technology. Using TLS/SSL to provide a secure connection between a client browser and the application server • Encryption of communication channels helps reduce attacks such as man-in the-middle • Leverage DPW IAM tools for user authentication and user authorization to applications and services • Leverage Secure Email for Communication with Business Partners
Data in use	• Coarse Grained Access Control using DPW IAM tools • Fine Grained Access Controls – Application and Database based • Mainframe user access controls • Application and Mainframe User Role Management • Transaction Processing File Security	• Design and implement user access to the identified sensitive data, based on the principle of least privilege on a need-to-know/need-to-use basis

Table 6.6-148. Data Protection Tools and Techniques Used to Secure DPW Data.

*** Secure Email Exchange.** Deloitte worked with DPW to establish a secure Transparent Layer Security (TLSv1) encrypted tunnel between Commonwealth Exchange Servers and Deloitte Exchange Servers. This provides a secure communication channel between two entities that does not exist with other vendors. The heightened security has reduced the need for some Deloitte staff to have a Commonwealth sponsored e-mail account – thereby reducing licensing expense associated Microsoft Exchange Email accounts.

Security Monitoring

We recognize that monitoring is essential to maintain the availability and measuring the effectiveness of the security solution. We continue to use DPW monitoring tools and procedures such as Concord, SightLine and Security Information and Event Monitoring (SIEM) to proactively monitor and maintain the availability of the security infrastructure. We have designed our security monitoring activities into four groups that includes:

- **Operations Monitoring.** Operational monitoring to verify availability and functional delivery of security services via health checks, automated verification tools, etc.
- **Performance Monitoring.** Standard infrastructure performance monitoring discussed in this section including server metrics tracking via Siteline, database performance monitoring and tuning, etc.
- **Security Exception Monitoring.** Leverage Security Information and Event Management (SIEM) solutions to effectively monitor and alert staff of security issues and anomalies
- **Trend Analysis and Monitoring.** Provide proactive reports that present security consumption summaries and analysis

The table below describes the tools and techniques used for the security monitoring.

Security Monitoring Techniques	Tools/Techniques employed	Deloitte Activities to Meet Data Monitoring Requirements	Reports
Operations Monitoring	• Periodic Health checks • SightLine • Concord • Custom developed SiteMinder Test Tool • Site Management Complex (SIMAN)	• Perform periodic Heath checks using custom scripts and Concord to identify the availability of the security IAM infrastructure services • Leverage SightLine to identify usage of system resources against set thresholds • Leverage custom developed SiteMinder Test Tool to identify if the IAM security policies are working as intended • Perform continuous monitoring of PACSES Mainframe and CIS Mainframe using tools such as SIMAN and custom developed CIS Security Tool respectively	• Monthly Outage Report • Monthly Security and Privacy Steering Team Deck

Security Monitoring Techniques	Tools/Techniques employed	Deloitte Activities to Meet Data Monitoring Requirements	Reports
Performance Monitoring	• SightLine • Key Service monitoring • Concord	• Monitor Security Response time monitoring and problem resolution • System resource monitoring and forecasting	• Monthly Performance Monitoring Report • Monthly Security and Privacy Steering Team Deck
Security Exception Monitoring	• SIEM	• Configure SIEM tool to generate and analyze exception logs providing alerts in real time and as periodic reports. Examples include • User Authorization (CA SiteMinder) Exception Report to identify users and number of attempts for unauthorized access • DB Access Exception Report to identify users and number of attempts for unauthorized access to data • Regulatory Compliance Exception Report to identify violations to DPW standards, Commonwealth ITBs and regulatory compliances such as HIPAA, SSA and IRS 1075. Example- Unauthorized access to SSA data	• Real time and Monthly Security Exception Report • Monthly Security and Privacy Steering Team Deck
Trend Analysis and Reporting	• SIEM • SightLine • Concord.	• Develop trends to analyze and detect patterns in security infrastructure operations, performance and security exceptions	• Monthly Trend Analysis Report • Monthly Security and Privacy Steering Team Deck

Figure 6.6-149. Security Monitoring Tools and Techniques to Provide Availability of the Security Solution.

Operations and Performance monitoring follow the standard processes outlined in this overall section and are summarized above. To reduce redundancy in our response, we will future detail Security Exception Monitoring and Trend Analysis and Reporting here.

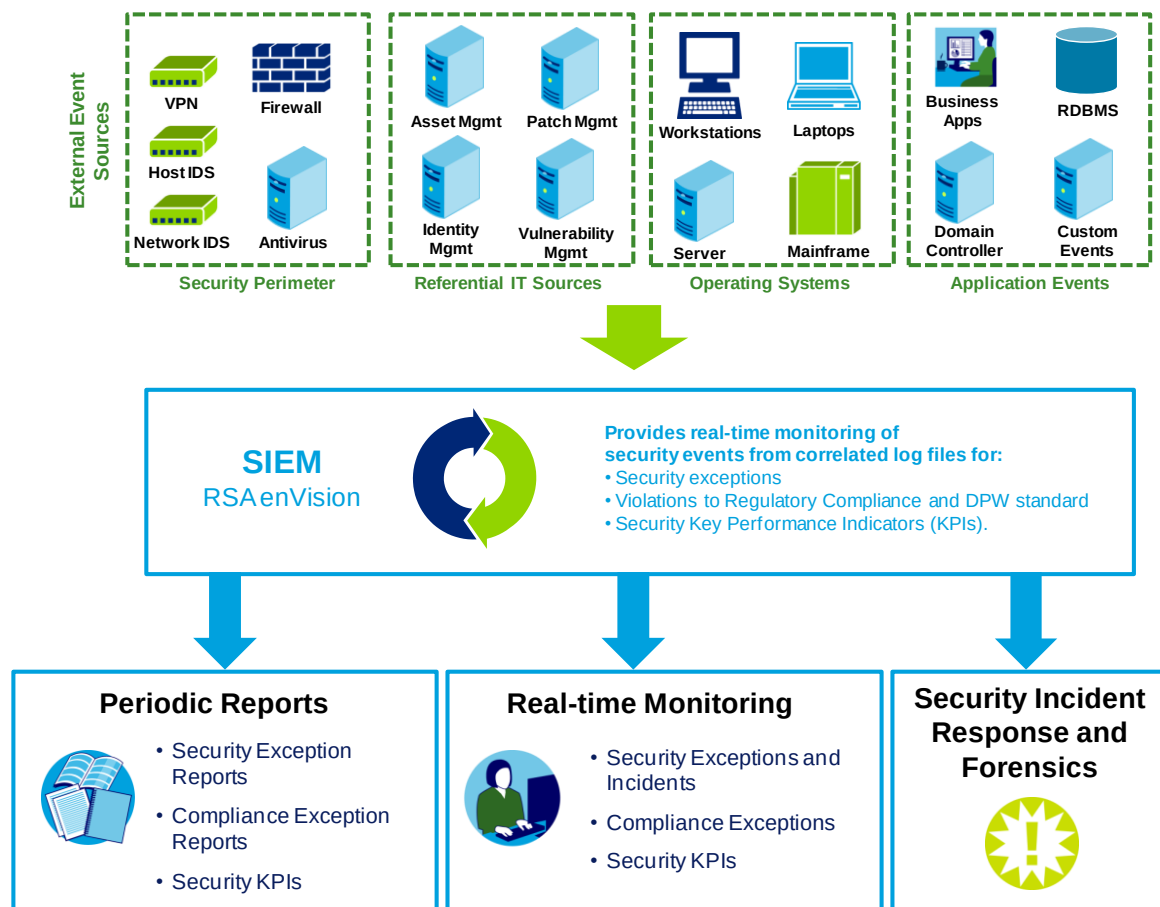
Security Exception Monitoring

Deloitte uses DPW's Security Information and Event Management (SIEM) tool, RSA envision, as the key component for security monitoring. The integration of SIEM into the enterprise is highlighted in Figure 6.6-150. We support DPW's vision of SIEM as a scalable distributed solution for aggregating data for central analysis and action that helps to:

- View real-time events, correlate events across device types
- Maintain digital chain of custody with unaltered log data for data retention, forensic requirements and incident management
- Monitor compliance violations with legal/regulatory requirements such as DPW Unified Security Standards, HIPAA, SSA and IRS 1075
- Monitor DPW defined security Key Performance Indicators (KPIs).

Have you  heard?

Deloitte helped DPW integrate CIS mainframe transaction logs with SIEM tool, RSA enVision to log user access to SSA information – addressing a key SSA Audit Finding.



PA_DPW-979

Figure 6.6-150. Integration of SIEM into the Enterprise is Supported by the RSAenVision Product.

Deloitte has demonstrated experience in the configuration and implementation of SIEM solutions and the operational experience to use it effectively to monitor the protection of Commonwealth assets.

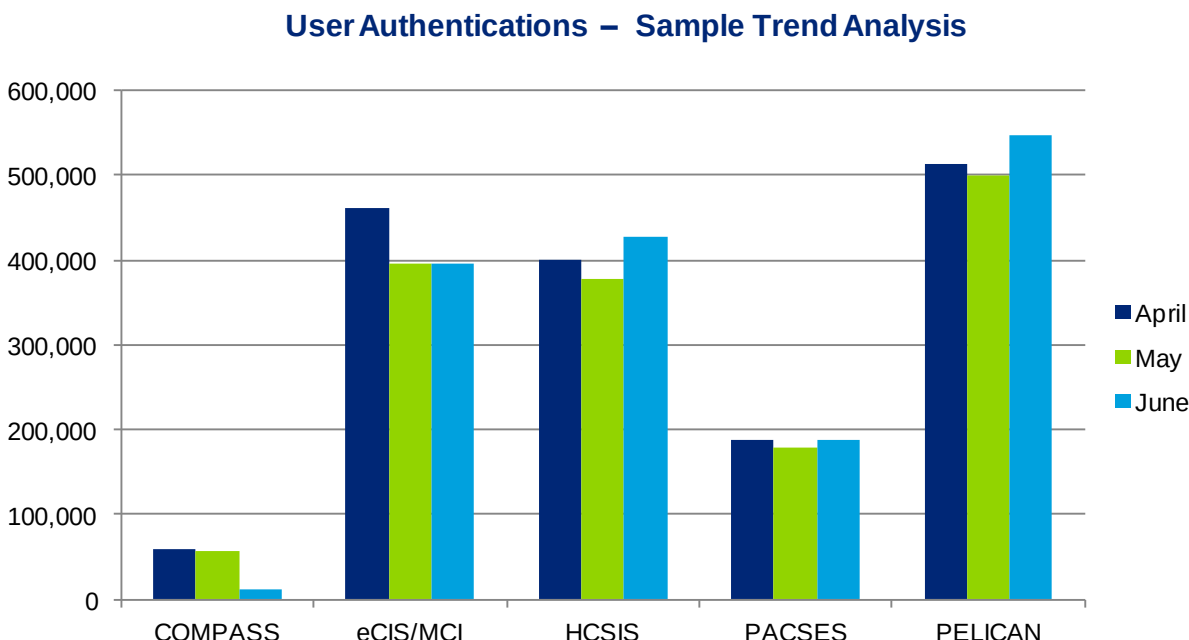
Deloitte helped DPW configure and implement the SIEM tool, RSA enVision which is capable of recording and correlating more than 15,000 security events/second from several disparate device logs including.

- **Application Audit Logs and FGA.** We provide integration of application audit logs with SIEM including the Application based FGA and Oracle FGA logs. We maintain an audit log management guideline that contains the minimum required to configure and integrate with SIEM
- **Mainframe Audit Logs and Transaction Logs.** We provide integration of the PACSES Mainframe and the CIS Mainframe audit logs to monitor violations to required regulatory compliances such as IRS 1075 and SSA (respectively). The violations to these compliance requirements are monitored in real-time to perform the appropriate corrective action

- **Identity and Access Management (IAM) Events.** We integrate the IAM tools such as CA SiteMinder, CA Identity Manager and CA SOA Security Manager with SIEM (RSA enVision). This integration provides DPW to measure the performance and security exceptions generated by the IAM tools such as failed user authorization attempts, number of account lockouts and number of user authentications per day for each application.

Trend Analysis and Reporting

We present the security KPIs as part of the DPW Monthly Security and Privacy Steering Team meeting. Figure 6.6-151 illustrates a sample KPI presented at the monthly meeting – Number of user authentications per application over a three month period. This trend helps understand the usage of the application and help in capacity forecasting.



PA_DPW-980

Figure 6.6-151. KPI Reporting Supports Trend Analysis and Capacity Planning.

Deloitte provides numerous KPI reports to the DPW Security Chief on a monthly basis to track and manage the effectiveness of the overall security solution.

Security Incident Reporting is another reporting responsibility our team supports. We are committed to notifying DPW CISO upon learning of security incidents such as a data breach or identification of new vulnerabilities in production environment during the project duration. Deloitte will work within the guidelines established by the **DPW IT Security Incident Reporting Policy (POL-ENSS002)** and provide timely notification of identity data breaches. We will continue to help DPW CISO to submit the Security Incident Report to Office of Information Technology (OIT) as part of Commonwealth's **Information Technology Bulletin, ITB-SEC024**.

Security Implementation and Monitoring Across Various Architectures

While following the same overall approach, the various architectures within DPW introduce small differences in the delivery of security monitoring and implementation. The following highlights the differences between the open systems and the PACSES and CIS mainframe solutions:

Open Systems

- Provide transparent Single Sign-On (SSO) to DPW applications integrated with multiple platforms such as Microsoft, Adobe and WebMethods
- Provide secure SOA services
- Integrate CA SiteMinder SSO with application based and Oracle Fine Grained Access (FGA) Controls
- Apply suitable data protection measures to secure the data at rest, in motion and in use:
 - Data at Rest using Oracle/SQL Server database encryption tools, Personal Identifiable Information (PII) catalog, database user management and data redaction (de-identification)
 - Data in Motion using HTTPS with TLSv1.0/SSL v3.0 encryption of minimum 128-bit key length and DPW IAM tools – CA SiteMinder and CA SOA Security Manager
 - Data in use using Coarse Grained Access Control using DPW IAM tools and Fine Grained Access Controls – application and Oracle based
- Monitor the security implementation using tools such as SIEM, SightLine, Concord and custom SiteMinder Test Tool
- Integrate Application audit logs including the FGA logs with SIEM tool, RSA enVision for centralized collection and correlation
- Configure SIEM to generate alerts and periodic reports to identify violations to regulatory requirements such as SSA and IRS 1075. Perform real-time monitoring and generate periodic reports
- Use SIEM to monitor key security violations such as user authentication and authorization violations including privilege access violations. Perform real-time monitoring and generate periodic reports
- Develop key trends periodically based on the data correlated through SIEM, performance monitoring tools such as SightLine and Concord
- Monitor through SIEM for violations to DPW standards, Commonwealth ITBs and regulations such as HIPAA, IRS 1075 and SSA

PACSES Mainframe

- Provide PACSES Mainframe authentication integrated with Commonwealth/PACSES user repository (Active Directory). PACSES Mainframe users can authenticate using Commonwealth username and password
- Apply suitable data protection measures to secure the data at rest, in motion and in use:
 - Data at Rest using Unisys RDMS/DMS database security and encryption tools, RDMS/DMS user management, data redaction (de-identification) and SIMAN
 - Data in Motion using CA SiteMinder for user authentication, Unisys Access Control Records (ACRs) and Unisys Transaction Session Control
 - Data in use using Unisys SIMAN and Transaction Processing File Security
- Integrate PACSES mainframe audit logs along with transaction logs with SIEM tool, RSA enVision to meet DPW's vision for aggregating data for central analysis
- Monitor through SIEM for violations to DPW standards, Commonwealth ITBs and regulations such as HIPAA, IRS 1075 and SSA

CIS Mainframe

- Provide CISMainframe authentication integrated with Commonwealth user repository (Active Directory). CIS Mainframe users can authenticate using Commonwealth username and password
- Apply suitable data protection measures to secure the data at rest, in motion and in use:
 - Data at Rest using Unisys RDMS/DMS database security and encryption tools, RDMS/DMS user management, data redaction (de-identification), CIS Security Tool and SIMAN
 - Data in Motion using CA SiteMinder for user authentication, Unisys Access Control Records (ACRs) and Unisys Transaction Session Control
 - Data in use using Unisys SIMAN, CIS Security Tool and Transaction Processing File Security
- Integrate CIS Mainframe audit logs along with transaction logs with SIEM tool, RSA enVision to meet DPW's vision for aggregating data for central analysis
- Monitor through SIEM for violations to DPW standards, Commonwealth ITBs and regulations such as HIPAA, IRS 1075 and SSA

Systems Operating Systems

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RFP Reference: 4.1 Applications/Systems Operations Support

- Systems operating systems

Deloitte will provide Systems operating systems support for DPW for the in-scope systems. Operating systems (O/S) provide the foundation platform that the computing systems reside. Maintaining current versions of the O/S is important to take advantage of the latest features, functionality and security gains in the industry.

Figure 6.6-152 highlights various components of your infrastructure that may be affected by future operating system upgrades.

Applications	Deloitte's Approach Meets Systems Operating Systems Requirements
iCIS	CIS – Upgrades to the Unisys mainframe operating system (version 12.1) will require a recompilation of the mainframe programs and significant regression testing of the CIS application. COMPASS – Additional testing will be required in the event of new browser versions on the client machines, to confirm that Adobe Flash remains operational. eCIS – Operating system upgrades for eCIS will require additional testing of the Imaging module and the AJAX functionality within the Workload Dashboard.
HCSIS	An upgrade to Windows 2008 Server allows the HCSIS application to use a more efficient web gardening approach to increase available capacity without increasing the number of servers.
PACSES	The PACSES PIM application will require additional testing and validation to confirm that the web service interface to the PACSES mainframe continues to function properly. Upgrades to the Unisys mainframe operating system (version 12.1) will require a recompilation of the PACSES Support Layer modules and a rebuild of the entire mainframe application. Extensive regression testing will be required to verify there are no impacts to the PACSES application.
PELICAN	PELICAN CCW utilizes a legacy rules engine which will require additional compatibility testing with new operating systems.
Child Welfare	The variety of open source and alternative database technologies present with the legacy Child Welfare suite of applications will require additional planning, coordination and validation.
Enterprise Services	Enterprise services, including MCI.Net and ELN will be able to take advantage of new technologies present in Windows Server 2008 R2 and IIS 7.5.

Figure 6.6-152. Upcoming Operating Systems Upgrades at DPW.

Our team recognizes that operating systems upgrades in some cases are transparent. In others, extensive planning, coordination, and testing are necessary. In some cases, even application software may require a change to support the new operating system.

As upgrades to the operating systems, regardless of platform are required, Deloitte works with you to prioritize those upgrades in conjunction with other application

activities/releases. Additionally, non-functional PCR's are created for each of the application teams to perform impact assessments and develop regression testing scenarios. Once those PCR's are prioritized by DPW, the Deloitte application teams conduct their impact studies and scenario development.

If modifications to application software are required to support these operating system upgrades, our teams also perform appropriate bundling of that software into releases that are coincident with the timing of those upgrade rollouts.

Once application changes, if necessary, are made and testing commences or if issues are detected while regression testing, our team communicates those issues to the technical domains at DPW responsible for the operating system upgrades. Additional non-functional PCR's are created and prioritized within the existing software bundle and addressed by the application teams.

In addition to upgrades, our team also supports the implementation of patches of those operating systems.

Open Systems Operating System Upgrades

Our understanding of DPW's open systems infrastructure is that the servers are currently running Windows Server 2003, except for a small subset that have already moved to Windows Server 2008.

We anticipate during the period of this contract, that an upgrade to Windows Server 2008 will be targeted. We also anticipate that DPW will investigate a transition from 32-bit servers to 64-bit architecture for servers where the hardware is able to support this configuration. A 64-bit server configuration allows .NET applications to use additional system memory to maximize the contribution that each server makes in supporting the workload of end-users.

Mainframe Operating System Upgrades

Within the past year, DPW has just completed the Dorado upgrade of their Unisys mainframe platform for both CIS and PACSES. In the latter part of this year, they are also planning on upgrading the Unisys mainframe operating system to its latest release – version 12.1. It is expected that both the PACSES and CIS mainframe applications will require a full compilation of the software and a full regression test will be required as well.

Some of the aspects of the PACSES application, specifically the Support Layer, may require some change with this new version of the operating system. Past experience with other operating system upgrades has caused issues for the Support Layer and has required significant code modifications to accommodate that upgrade. We anticipate that will be the case with this upgrade as well.

The sequence for implementing the upgrade will be to install 12.1 on the test mainframe (HSH-D) so that CIS and PACSES separately can test their applications. Once satisfied

with the results and any application (or Support Layer) fixes have been made, the operating system will be moved to HSH-C for CIS for further testing.

Once testing is completed, the operating system upgrade will be implemented in the PACSES production mainframe (HSH-F) and the CIS mainframe (HSH-A) at separate times. We anticipate a simple “kicking of the tires” here to validate that the corresponding systems are still operational.

Data and Information Life Cycle Management

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RFP Reference: 4.1 Applications/Systems Operations Support

- Facilitate solutions to support business systems data and information life cycle management requirements

Deloitte facilitates solutions to support business system data and information life cycle management requirements for the in-scope systems.

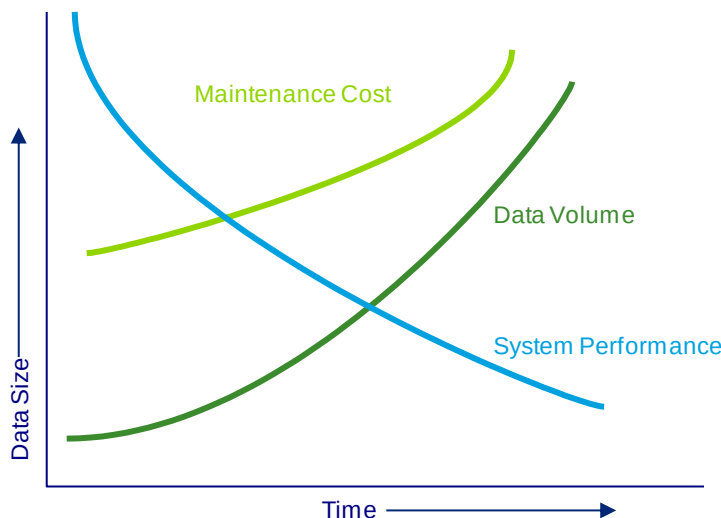
Information Life cycle Management (ILM) relates to systematic control of recorded information from the time information is created until its ultimate disposition. ILM implementations are typically categorized into three components- Data Archival, Retention and Purge.

- **Archival.** Archival processing supports the identified delineation and separation of data that is required for immediate online processing versus data that can be transitioned to less expensive media.
- **Retention.** Data retention relates to identifying rules that define how long archived data needs to be stored. Archives are typically kept for auditing, regulatory, analysis or reference purposes.
- **Purge.** Data purge identifies criteria to systematically and permanently remove aged data from the enterprise.

ILM Benefits to the Enterprise

The unmitigated collection and storage of the data is not sustainable over the course of long term enterprise operations. Figure 6.6-153 graphically represents the relationship between data growth, maintenance efforts and system performance. To manage data growth, it is essential to have a data Archival and Purge strategy in place. An absence of such a strategy would contribute to:

- Negative impacts to online response time
- Extended duration of, and increased risk to, system wide backup and recovery processes
- Negative impacts to the ability to effectively manage, maintain and tune the database/file system infrastructure



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Figure 6.6-153. Deloitte Recognizes Maintenance Cost and System Performance are Impacted by Data Volume Growth.

As data grows, so do the storage costs and causes performance impacts to the various applications that use that data.

Conversely, a solid ILM solution will benefit the enterprise by providing enhanced capability to:

- **Meet Performance SLA Standards.** Proper archival of data reduces the volume of data accessed through business queries. This has a substantial positive impact on response time of both batch and online transactions.
- **Protect Infrastructure Integrity.** Backup and Recovery processes would be substantially faster which would verify backups could complete before the start of the next business day and would also not impact batch processing.
- **Enhanced Maintenance.** Maintenance activities typically require a backup before initiation. Elongated backup times will impact the time available for maintenance activities.
- **Federal Compliance.** Archiving solutions verify Federal auditing mandates are supportable without impacting the online operations.

Archival Approach

The first step in executing an archival strategy is the clear determination and documentation of archival rules. Deloitte works with DPW to define the business rules necessary to support archiving. The following table is an excerpt from PELICAN's archive rule document highlighting the archival rules within the CASE subsystem:

Subsystem/ Logical Unit	Archiving Rule for PELICAN
Case	Any case that is not closed is considered an active case. An active case could be in open, reopen, or pending status. An active case record should remain available for online access as long as the case remains active. An inactive case is a closed case. An inactive case record should remain available for online access for a minimum of 3 years after the case close date. An active or inactive (closed) case should not be archived while any associated enrollments are active in the operational system. After remaining inactive (closed) for a minimum of 3 years, the entire case record should be archived. This should include current, end-dated and history components of that record along with clients and eligibility records associated with the case. This includes: • Household information • Case/Client relationships • Case/Status Mode • Case comments • Copay • Client records • Eligibility records

Figure 6.6-154. Deloitte Works with Program Offices to Define Archival Rules.

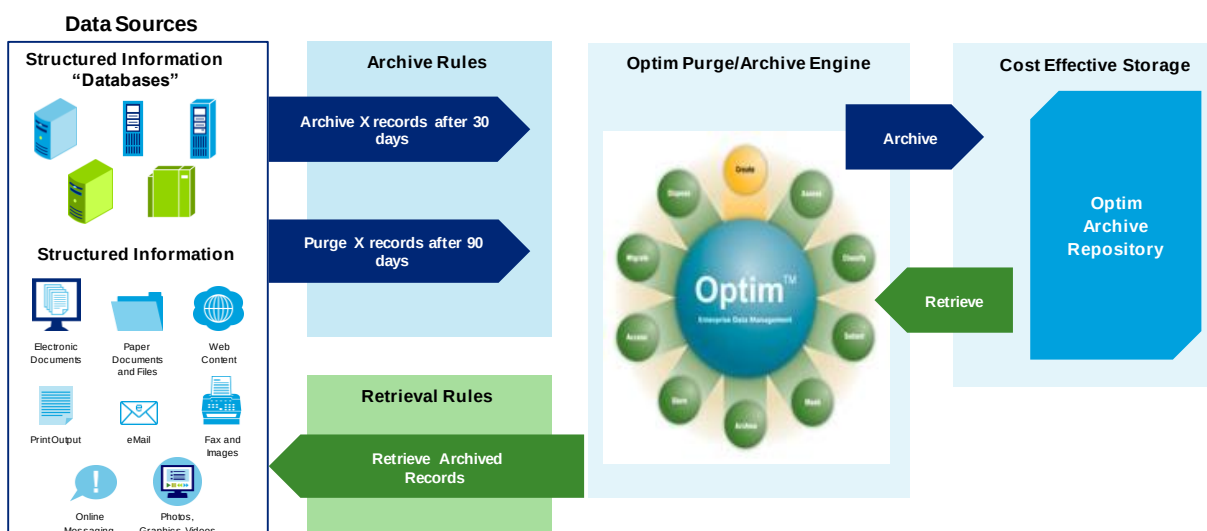
When prioritized, Deloitte creates detailed documentation across application subsystems detailing the archival requirements therein. The act of archiving data to separate data stores helps maintain performance efficiency within the application by transitioning seldom used data to separate physical repositories. Additionally, data archiving supports ancillary application functions such as management reporting, audit inquiry support and problem research analysis. There are various methods to archive data effectively within an OLTP environment, including:

Application	Our Approach to Manage ILM Archiving Requirements
iCIS	CIS. Prior to running benefit and case purge processes (described below), information is summarized and archived to a separate database area. This summary information is utilized by the fraud and benefit recovery units. This unit uses to historical data when a fraud or mispayment has been made to determine amounts that the client owes the state. COMPASS. COMPASS implemented archive of application data using history tables that house the previous state of data when updates are made. This allows for enhanced auditing, problem analysis and workflow management metrics collection. e-CIS. Images that meet the appropriate criteria are archived to a central repository via the Optim tool.
HCSIS	HCSIS application implements archive of application data using history tables. When the data get modified by online transactions a copy of main transaction table data moved to history tables by application program interface (APIs).

Application	Our Approach to Manage ILM Archiving Requirements
PACSES	PACSES. WebPacses serves as an archive of financial and diary information that is annually archived from the PACSES mainframe to the Oracle open system. This was necessary as the disk capacity of the PACSES mainframe was nearing maximum capacity. Archiving the data to the Open System gave the mainframe extended capacity, usability and improved performance.
PELICAN	PELICAN application also follow similar approach as other DPW applications to implements archive of application data using history tables.

Figure 6.6-155. Deloitte Works with Program Offices to Define Archival Rules.

DPW leverages the Optim tool to support structured and non structured data archival. As shown in Figure 6.6-156, the tool accepts and transacts archive rules to compress and store data in the Optim repository. The tool allows for application integration to retrieve and archived object, restore it to a temporary location and allow short term access to the artifact until it is again archived.



PA_DPW-768_3

Figure 6.6-156. Deloitte Works with Program Offices to Define Archival Rules.

By using tools like Optim, we are able to archive information to more effective storage.

Data Sources. Sources of archived data include operational databases (Oracle, SQL Server, Mainframe, etc.) data as well as flat files, images, correspondences, notices and reports.

Archive Rules. A clearly delineated rule set that specifically identifies the conditions under which data can be moved from readily accessible mediums to an archived solution. Archived solutions could be secondary database tables, tape or the Optim repository.

Optim Engine. The Optim tools collects the specified data through internal workflows and stores the data in a compressed format on lower tiered storage. Optim also serves as the gateway to retrieve the information for later viewing.

Cost-effective Storage. Archived and compressed data is stored on more cost-effective storage. DPW currently uses various EMC disk solutions (Claiiron and DMX) to provide storage over 100, 300 and 500Gb “platters”. Retrieval speeds on the larger platters are slightly slower than smaller platters; however the cost/Gb is much more attractive. To that end, data that may not require millisecond retrieval rates are housed on the larger platters that still offer very timely response.

Retrieval/Retention Rules. Optim facilitates the restoration of archived data to a temporary storage location. The data remains available for a finite period to time until it is removed. It remains in the archive until final purging occurs.

Purging Approach

Archiving provides a first step toward data “retirement”. Retiring data fully, by means of a physical purge, is required to realistically manage the tremendous influx of data managed by the enterprise suite of applications. Similar to data archiving, clear data purge requirements must be identified to support and successful purge strategy. Deloitte works with DPW to define clear purging rules which are then prioritized to be implemented.

The following highlights an example purge requirement contained in the PELICAN purge documentation:

Subsystem/ Logical Unit	Case Data Purge Rule
Case	Case records should be purged from the archive medium within a reasonable period after moving to the archive medium. Based on HIPAA requirements, we must keep these records for a minimum of 7 years. Additionally, based on federal financial reporting regulations, this period is 3 years after the submission of the final expenditure report. As part of this report, TANF cases have the potential to not be reported until 11 years after the case has been closed. Therefore, this period of time may be anywhere from 7 years up to 14 years after the case close date.

Figure 6.6-157. Deloitte Works with Program Offices to Define Purge Rules.

Our data purging processes are batch architected and are managed through our standard protocol described in this section. Batch purging will run systematically though the enterprise on a daily, weekly, monthly or annual basis.

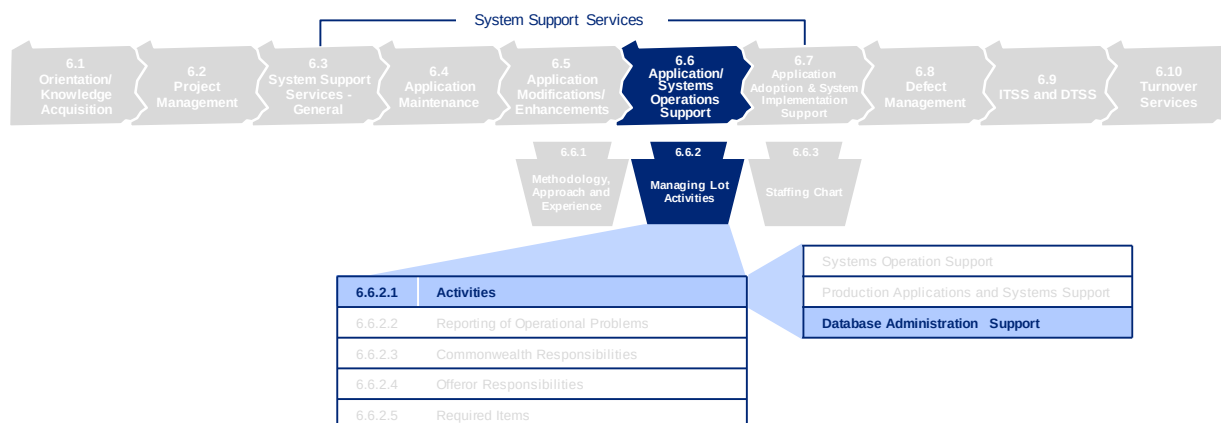
The following highlights some of the purge processes we manage today and will continue to manage going forward:

Application	Our Approach to manage ILM Purging requirements
iCIS	CIS. The benefit history data is kept in 3-6 month increments. Twice a year, a process executes to purge the oldest data. Case level purge removes closed case information. The recipient purge scans the database looking for recipients that are closed or detail records that no longer have meaning to eligibility and benefits. COMPASS. A daily batch process to purge the applications after 180 days. The same batch also takes care of purging any invalid application submitted. eCIS WLD. Employs six separate batch jobs to purge dashboard items such as activities, alerts, team configurations, characteristics and staff. eCIS Imaging. Imaging module use Optim tool to purge the databased on set business rules. CIS. Periodic purges such as the “Haircut” and Budget purge as well as the daily TSA purge.
HCSIS	HCSIS. Employs a process to purge provider qualification applications that are 120 days old as well as selected services and rate information older than one year.
PACSES	PACSES mainframe Financial and Diary data is physically purged after being archived to the open system platform. The annual process to archive Financial and Diary data to the open system is complemented with the physical purge of the two oldest years in the repository as well.
PELICAN	PELICAN applications retain most of their data without performing physical purges, but some data currently does undergo a purge process that is performed by various batch procedures. In each case, the retention period in days for the data is maintained in a system reference table, and the responsible cleanup batch retrieves that value and passes it to a stored procedure which physically deletes records older than that number of days. i.e. Purge notices and alerts over one year old.

Figure 6.6-158. Deloitte Works with Program Offices to Define Archival Rules.



6.6.2.1 Activities - Database Administration Support



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RFP Reference: 4.1 Applications/Systems Operations Support

The Offeror shall provide application level database administration support for the in-scope systems, in compliance with DPW and Commonwealth's IT standards.

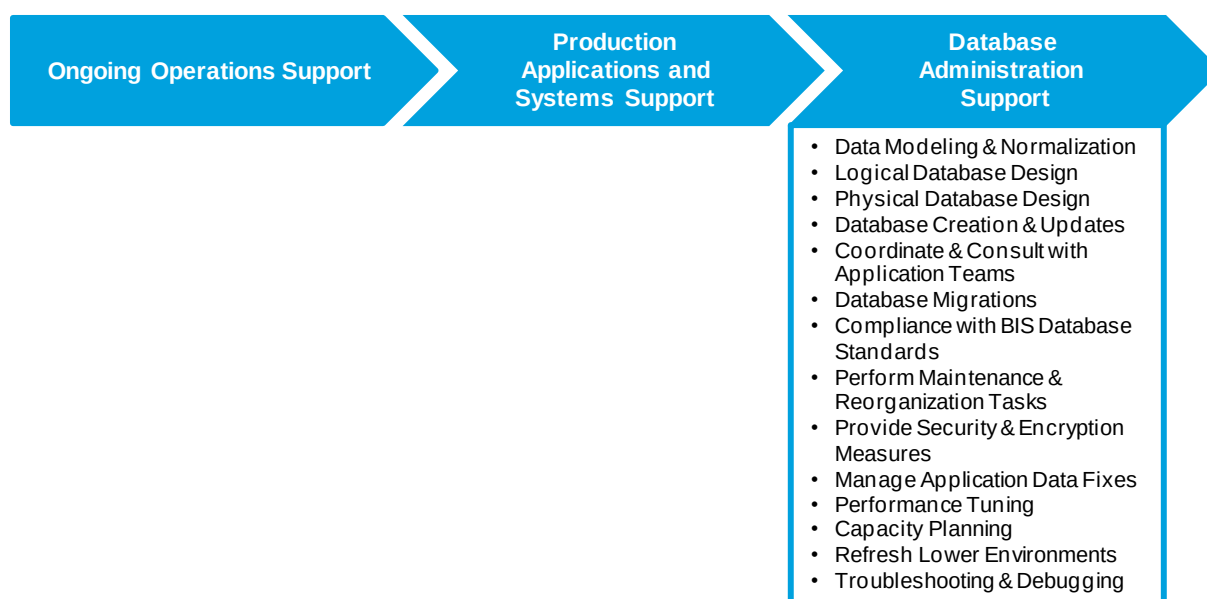
Deloitte provides application level database administration support across the in-scope systems, in compliance with the Commonwealth's IT standards. This support covers a variety of databases from mainframe network to relational used across different configurations, including OLTP and data warehouse support. We recognize that these databases store DPW's most critical IT asset: decades of critical client, provider, and service-related business data used to drive the delivery of services and management of DPW programs and we will continue to work with DPW to safeguard and optimize DPW system access to this data.

Our experience with the breadth of DPW databases and their configurations, along with our understanding of the business value of the data will enable us to continue to provide an unrivaled level of support to the Department's programs:

- **Experience with the Breadth of DPW Databases and Configurations.** We recognize that, to satisfy DPW's database administration support requirements, we need to understand much more than just relational databases. That is why we staffed our team with resources not just experienced in Oracle but with experience in a variety of database used throughout DPW, including Oracle, SQL Server, DMS, and RDMS.
- **Understanding of the Business Value of the Data.** Our team has a solid understanding of the DPW business domains and the data collected for these domains. To us it is not just two tables and a relationship – it is a client and her two children along with the benefits they are receiving. To us, it is not just high database CPU, it is a quarterly business trend tied to an expected COLA increase.

- **How the Data is Used.** As program expansion and complexity in business and data requirements have grown the need to support these systems with extensible scalable database solutions are needed. We understand that this demand has driven the need for new types of data storage: hierarchical, relational, reporting and data warehouse optimized structures along with the storage of semi-structured data such as XML and unstructured data such as binary images. We understand how DPW's data is stored and will continue to work with DPW to accommodate and optimize data structures to meet the needs of DPW's programs.

We are committed to leveraging our experience and understanding to continue our history of high-quality database administration support to DPW. The following sections highlight our commitment and approach to satisfying each of the database administration support requirements specified in the RFP.



PA_DPW-674

Figure 6.6-159. Database Administration Support Includes Those Activities that Keep your Databases Operational.

Data Modeling and Normalization

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- Data modeling and normalization for both OLTP and Data Warehouse initiatives

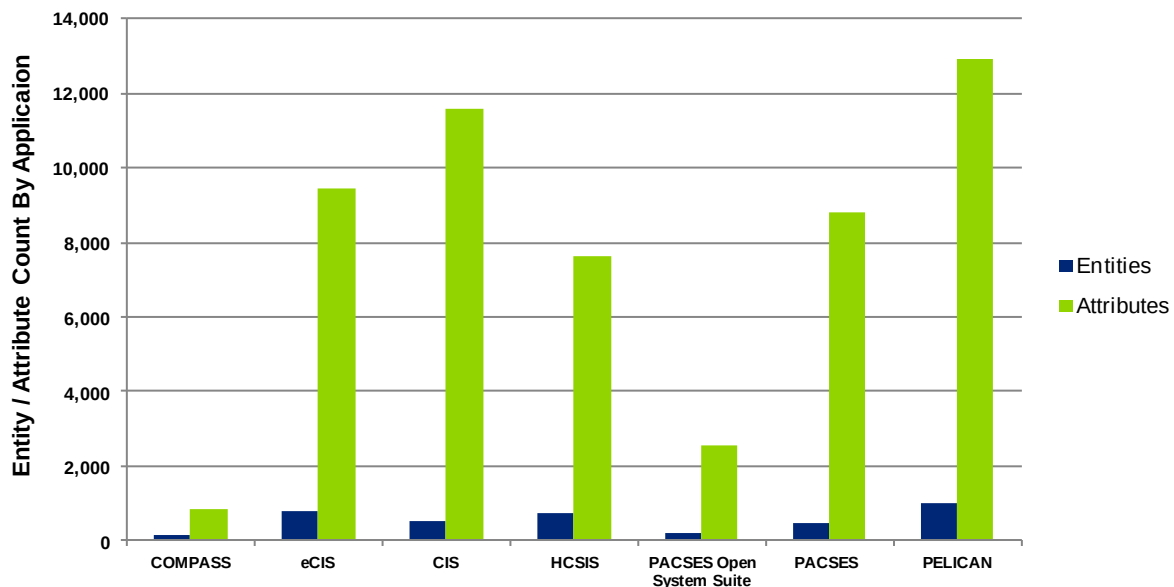
Deloitte performs data modeling and normalization for both OLTP and Data Warehousing initiatives for the in-scope systems. Deloitte performs effective data modeling and normalization that aligns with DPW standards and industry leading practices.

We will continue to work with you to develop, manage and maintain effective data models that are extendable, flexible and maintainable across both on line transactional processing (OLTP) systems as well as Data Warehouse initiatives.

A data model describes the physical relationships between various data objects. Data modeling helps provide a visual roadmap to define and navigate the various business entities, objects and attributes that make up the foundation of each business system. It is used to assist both business analysts as well as application developers consistently converse, design and build solutions that meet documented requirements.

DPW's systems are exceptionally large and complex. The management of the data models necessary to support the individual systems while working toward supporting the centralization and reuse of enterprise services (which access the underlying database) requires a thorough understanding of the business, technology and operational mechanics required to support Department initiatives. Deloitte is the only vendor who can support this activity.

Figure 6.6-160 summarizes the volume and complexity of data model attribute management across the enterprise. Pelican, with over 12,000 individual database attributes, that also require maintenance of associated business rules, attribute definitions and attribute characteristics, is the largest contributor to the over 53,000 attributes that we manage with the Commonwealth.



PA_DPW-698

Figure 6.6-160. Deloitte Works with Program Offices to Define Archival Rules.

The archival rules vary by application. Given the complexity and size of these database, archival should be a consideration in the design processes.

The following highlights our Approach to Modeling and Normalization.

- OLTP Data Modeling Approach
- Data Normalization Approach
- OLAP Dimensional Modeling Approach

OLTP Data Modeling Approach

ITSS centralizes data model management across our various application teams. This centralization helps verify a consistent approach, design and deliverable is delivered to BIS. Our approach to manage effective and efficient creation of data models, using sound data modeling techniques, is summarized below:

Data Modeling Objective	Deloitte Approach to Data modeling and normalization for both OLTP and Data Warehouse initiatives
Define Objects, Entities, Relationships and Characteristics	• Identify the data objects required for the business captured completely and accurately • Identify the relationship between each object • Document the characteristics of each entities and attributes
Create a Roadmap to Navigate Business Entities	• Logical data model – Logical grouping of entities used by business analysts to verify the design and operational processes governing the application • Physical data model – Physical representation of the structure as it will exist in the database. This is consumed by DBA's as well as application developers to code, manage and maintain the application
Manage and Maintain the Data Model	• Review data models with BIS for approval and compliance with standards • Submit complementary artifacts such as the data dictionary and schema configuration summary • Engage the existing change management process to review and confirm data model changes as they are identified • Verify that the changes have been verified before physical creation beyond the development environment

Figure 6.6-161. Deloitte Approach to Data Modeling and Normalization for Both OLTP and Data Warehouse Initiatives.

Data Normalization Approach

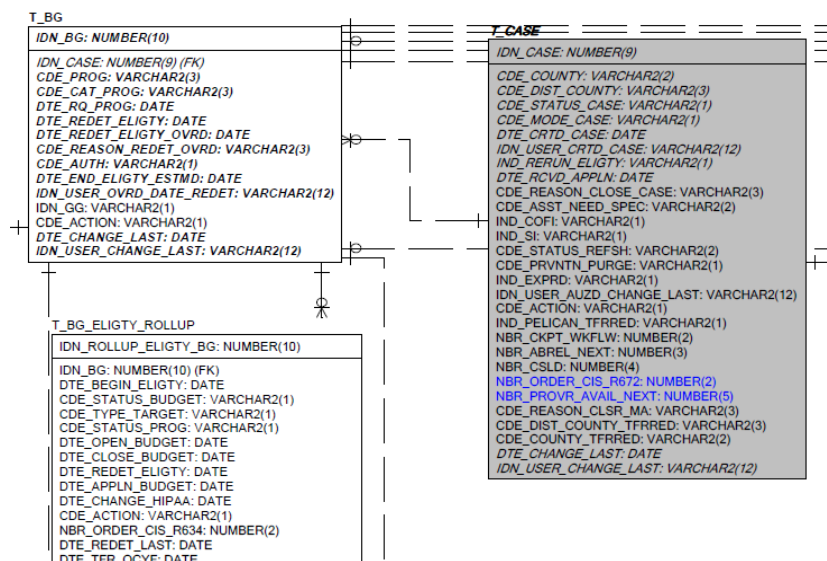
Normalization is the process of effectively and efficiently structuring data attributes within a database. The degree of normalization within a database structure is defined by its "Normal Form".

The following highlights the characteristics of the various normal forms:

Normal Form	Deloitte Understands Normalization Rules and Applies Them to DPW Models
First Normal Form	• Rid duplicative columns from the same table • Create separate tables for each group of related data and identify each row with a unique column or set of columns. • Example – A table called “Employee Salary” with columns “January Salary”, “February Salary”, “March Salary”, etc. would be in violation of first normal form rules
Second Normal Form	• Meet the requirements of the first normal form. • Remove columns that are not inherently linked to the primary function of the table to a separate repository. These extraneous attributes are typically redundantly stored in the database taking up valuable space. • Create relationships between these new tables and their predecessors through the use of foreign keys. • Example – Consider a table called “Employee Skills”, keyed by Employee Id and Skill Id, with a row for each skill the employee has. Adding a column called “Employee Location” would violate second normal form rules as that data element is not uniquely tied to the Employee Id/Skill Id combination. It would be replicated on each row with that Employee Id – and that is normalization “no no”.
Third Normal Form	• Meet the requirements of the second normal form. • Remove columns that are not dependent upon the primary key • Example – An example of a database modeled in third normal form is included below in this RFP response.

Figure 6.6-162. Deloitte Approach to Data Modeling and Normalization for Both OLTP and Data Warehouse Initiatives.

While databases can be normalized beyond 3rd normal form, industry standard practices have shown that third normal form represents an appropriate balance between purist design principles combined with the reality of database access and performance management.



PA_DPW-1234

Figure 6.6-163. Deloitte Works with Program Offices to Define Archival Rules.

An example of a database in 3rd normal form to represent a good balance between design principles and access performance.

For OLTP processing, we default database design to third normal form. However, there are times where it is prudent to “de-normalize” structures to gain performance efficiencies. This is typically done to satisfy reporting or dashboard functionality that needs quick access to summarized and aggregated data. We will continue to work with the BIS DBA team to present, review and justify any deviation from third normal form design.

Dimensional Modeling Approach

Dimensional modeling is the name of a logical design technique often used in creating and managing Data Warehousing solutions. It seeks to present the data in a standard, intuitive framework that allows for high-performance access. Dimension modeling characterizes data as “Facts” or “Dimensions” and physically manifests the structures in, typically, “Star” or “Snowflake” schemas. Some characteristics of dimensional modeling include:

Dimensional Modeling Characteristic

Deloitte Understands Dimensional Modeling Rules and Applies Them to DPW Models

Data Delineation

Facts. Fact tables form the core of the data warehouse physical model. These tables are typically contain keys or codes (as opposed to text) as well as business metrics/measures. These tables will store the trended information that is the focus of most DW queries and reports.

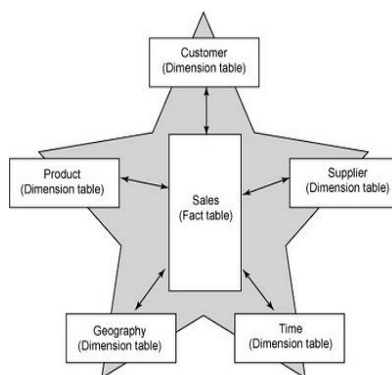
Dimensions. Dimension tables complement the fact tables by storing the text descriptions for the codes and keys. These tables would contain the business language that is presented to end users for information such as client demographics or service details.

Dimensional Modeling Characteristic

Deloitte Understands Dimensional Modeling Rules and Applies Them to DPW Models

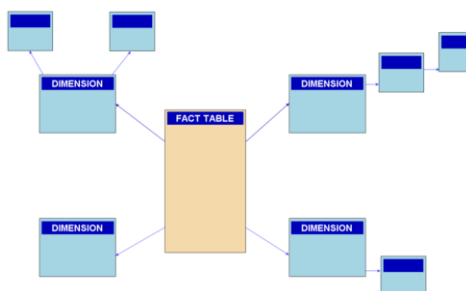
Modeling Strategy

Star Schema. The star schema is the most straight forward design of data warehouse data models. The star schema consists of fact tables referencing any number of dimension tables. When visually represented, the relationships for a star pattern.



PA_DPW-1235

Snowflake. Closely related to the star schema, the snowflake schema is represented by centralized fact tables which are connected to multiple dimensions. In the snowflake schema, however, dimensions are normalized into multiple related tables whereas the star schema's dimensions are denormalized with each dimension being represented by a single table.



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Figure 6.6-164. Dimensional Modeling Characteristic.

The types of data models for the data warehouse environment focus on localization of the data entities.

Through this design methodology we work with you to create data models that are designed under the appropriate paradigm – normalized or dimensional - for the intended use. No other vendor, regardless of any transition period, can undertake the design, management, and maintenance support tasks for the enterprise model while also driving toward your vision of extending the SOA architecture to create enterprise class reusable solutions.

Logical Database Design

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RFP Reference: 4.1 Applications/Systems Operations Support

- Logical database design

Lot 6 vendor performs logical database design as part of the GSD process for the in-scope systems. A logical data model (LDM) graphically represents the relationships between business entities supporting an application. The document is created by the technology team to effectively communicate with the business analysts regarding the high level data requirements needed to support business processing.

In our role as the Lot 7 vendor we will support the Lot 6 vendor to understand the LDM.

Physical Database Design

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RFP Reference: 4.1 Applications/Systems Operations Support

- Physical database design

Deloitte performs physical database design and modeling as part of the Detail System Design (DSD) process for the in-scope systems.

A physical data model (PDM) is created to provide a graphical representation of the quantifiable structures that comprise the database. Those structures include tables, columns and the relationships between the tables including the foreign key relationships. The PDM is created by the technology team to effectively communicate to application developers the detail level database specifications needed to support the application coding process.

It is important to note that, while logical design is generic across various technology platforms, physical design is quite different depending on the database architecture. DPW leverages various database engines including Oracle and SQL Server for open system applications, and the Unisys DMS/RDMS architecture for the CIS and PACSES mainframe systems. Oracle, SQL Server and RDMS are relational databases and have a traditional “normalized” design, while DMS is a network database structure and its construct and is substantially different. Deloitte is well versed in both schools of database design and understands how to work closely with you to present flexible, scalable and extensible designs that support the strategic direction of the Department. The following highlights some of the design characteristics for DPW’s enterprise applications:

Applications	Deloitte's Approach Meets the Database Support Requirements
ICIS	The COMPASS application was the first to leverage XML types within the database on a large-scale level. This involves storing XML in a singular database column as opposed to many unique columns in a database. While this provides tremendous flexibility, decreased level of effort and quicker time to deployment, our team will continue to work closely with you to manage the governance of how these structures are used throughout the application.
HCSIS	The HCSIS application leverages Oracle's Fine Grained Access capability to manage what data users are allowed to see. We have a proven approach to effectively managing the Oracle policies that support this specific architecture.
PACSES	The PACSES suite of applications makes use of large-scale data transformations from the mainframe to the Oracle database in support of Web-based application design and development. We are anxious to work with you on an approach that provides access to the mainframe database without coding COBOL routines that serve as an intermediary bridge. This approach allows for native SQL to be written in the open systems applications that perform access via web services to the DMS/RDMS databases on the mainframe. This approach allows for more timely code delivery and testing while leveraging staff resources that are familiar with current technologies.
PELICAN	PELICAN Provider Certification leverages disconnected processing via Tablet PC's. The PC's use a local SQL Server database on the machine to support disconnected data storage, retrieval and upload to the central enterprise server. Our team understands the processes required to manage such architectures effectively and will continue to work with you to support the upgrade of these repositories to the latest version.
Enterprise Services	Numerous enterprise services, including MCI, MPI, Correspondence and the Notification Service, leverage the Oracle database natively within the custom service as well as via the WebMethods tool that serves as the integration broker. As these services support the entire enterprise, there are a number of "two phase commit" scenarios that must be effectively managed. This is also very important in an Oracle RAC (clustered) environment where transaction oriented and "singleton" services must be considered.

Figure 6.6-165. Database Support Requirements By Applications

The majority of this section is focused on open system relational database design as that is DPW strategic architectural direction. Additionally, BIS DBA owns the modeling, design and creation of the CIS mainframe objects. We do include a summary of PACSES mainframe specific information at the end of this RFP response as the team has mainframe database support responsibilities.

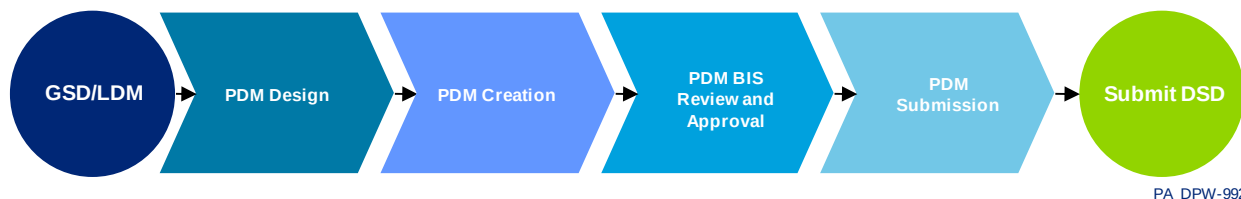
Physical Database Design Approach

As stated earlier, the primary artifact of physical database design is the physical data model. The objectives in creating and maintaining a PDM include:

Physical Data Modeling Objective	Deloitte Approach Physical Database Design Requirements
Common Understanding of Data Entities/Attributes	- Deloitte works to define, document and distribute the logical data model to stakeholders through the development effort. This is reviewed to verify that a mutual agreement exists between the business and technical team regarding key data entities, attributes and relationships between same. - Deloitte also reviews and discusses this model with BIS database design staff for adherence to standards and design practices.
Foundation for Physical Design	- Once approved, the LDM serves as the foundation to build the physical data model. The model is reviewed with BIS staff for directional consistency and standards compliance. - The LDM is stored, managed and maintained in the ErWin tool repository. This common repository facilitates straightforward transformation from logical to physical design.
Initial Introduction of Database Normalization	- The logical model includes both entities and attributes. Although not potentially reflected in the LDM, the review of the model will highlight what entities need to be altered to accommodate normalization. - Entities defined to be used for reporting or that are identified to be accessed at high volumes will be candidates for denormalization
Facilitates Enterprise Design Singularity and Consistency	The LDM, created as part of the GSD, provides the first glimpse of database design for an initiative. The LDM provides the foundational information to support integration with the larger enterprise database vision. Our awareness of the LDM's across the various projects will help mature DPW's singular vision for a truly singular, integrated design.

Figure 6.6-166. Physical Data Modeling Objectives.

The Deloitte database administration (DBA) team owns the creation, management and maintenance of the PDM. We work closely with the application teams, program offices and BIS staff to create a model that supports initiative requirements. The following highlights the process used to support the creation of the PDM:



PA_DPW-992

Figure 6.6-167. Physical Database Design Submission Process.

Deloitte's process for creating and submitting the PDM is based upon a proven approach and our experience with DPW.

Physical Data Model Design

The physical data model design phase involves DBAs working closely with system architects to translate the logical structure into a physical manifestation that adheres to DPW and industry standards (i.e. Normalization) while delivering the performance, scalability and maintainability needed in actual production. The translation from logical to physical includes:

Physical Design Characteristics	Deloitte Implementation Approach for PDM
Standards Compliance	Normalization. Logical entities are translated into physical objects that are in a normalized state. This includes creation of child tables to support repetitive attribute needs, primary keys (either composite or artificial) then used to create foreign key constraints and intersection tables to resolve many to many relationships. Security. Sensitive columns that house personally identifiable information would be considered for encryption or masking. Please refer to the Database Security and Encryption Measures in this section for further details.
Performance	Physical design constructs that support high performance includes the creation of indexes, partitions, denormalized structures, etc.
Scalable Design	DPW leverages database clustering to support scalability. The database design must incorporate the requirements of clustering, such as transaction support configurations and failover management.
Maintainability	Included with the physical design is the data dictionary. This document highlights and describes each entity and attribute, including business description, business rules, physical characteristics (data type, length, etc.) as well as valid values. Audit columns, such as created by, last updated by and last updated timestamp are also included in the design to assist in application analysis, audit reporting and productivity management. Additionally, our design patterns align with DPW's strategic SOA vision that stresses the importance of reusable enterprise services. These services reduce the need for redundant database objects and processes, thereby making maintainability more straightforward.

Figure 6.6-168. Physical Database Design Characteristics.

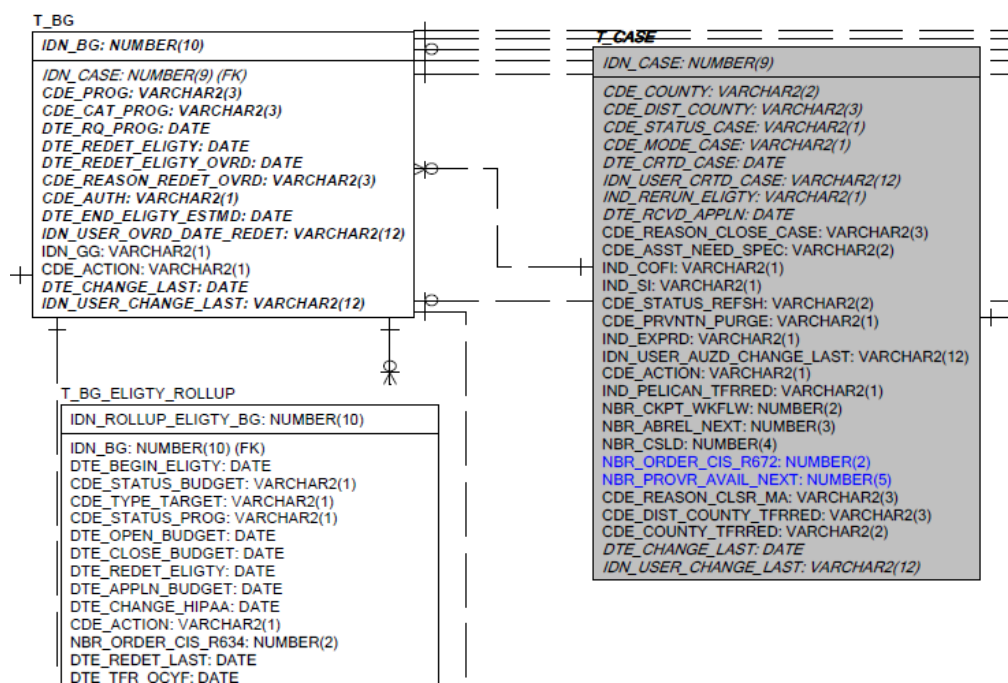
Deloitte DBA's conduct design review sessions with the entire DBA team when creating and updating PDMs. The purpose of this peer review is to validate the overall design and to confirm a smooth and consistent integration with the other functional areas of the enterprise. Our DBA team uses its extensive understanding of the existing application architecture, and the BIS standards and strategic vision toward SOA based services, to create physical models that align with DPW's business and technical objectives.

Physical Data Model Creation

Based upon the requirements gathered and logical model constructs, the Deloitte DBAs create the PDM using the industry standard and BIS approved tool Erwin. The model reflects the tables, columns and foreign key relationships between the objects to create a clear, consolidated database “roadmap”. Upon completion, the physical model is reviewed with the applications team to confirm it fulfills the requirements.

In addition to the PDM, other critical database metrics are shared, such as capacity expectations, archive/purge approaches in accordance with ILM strategies, schema centric configurations, such as transaction management, schema names, partitioning strategies, and suggested placement of the database structures on the disc subsystems.

Figure 6.6-169 shows sample physical data model documented in ErWin.



PA_DPW-993

Figure 6.6-169. Sample Physical Model Documented in ErWin.

ErWin is the industry standard data modeling tool and is used extensively at DPW.

Physical Data Model Review and Approval

Following the final review and confirmation with the application team, and sufficiently before the submission of the DSD deliverable, the Deloitte DBA team schedules a PDM review meeting with BIS to review the model, share critical knowledge about the upcoming initiative and to gain preliminary concurrence on the models adherence to BIS standards. Relevant changes or improvement opportunities identified in the review meeting are incorporated into the model in time for submission with the DSD deliverable.

Physical Data Model Submission

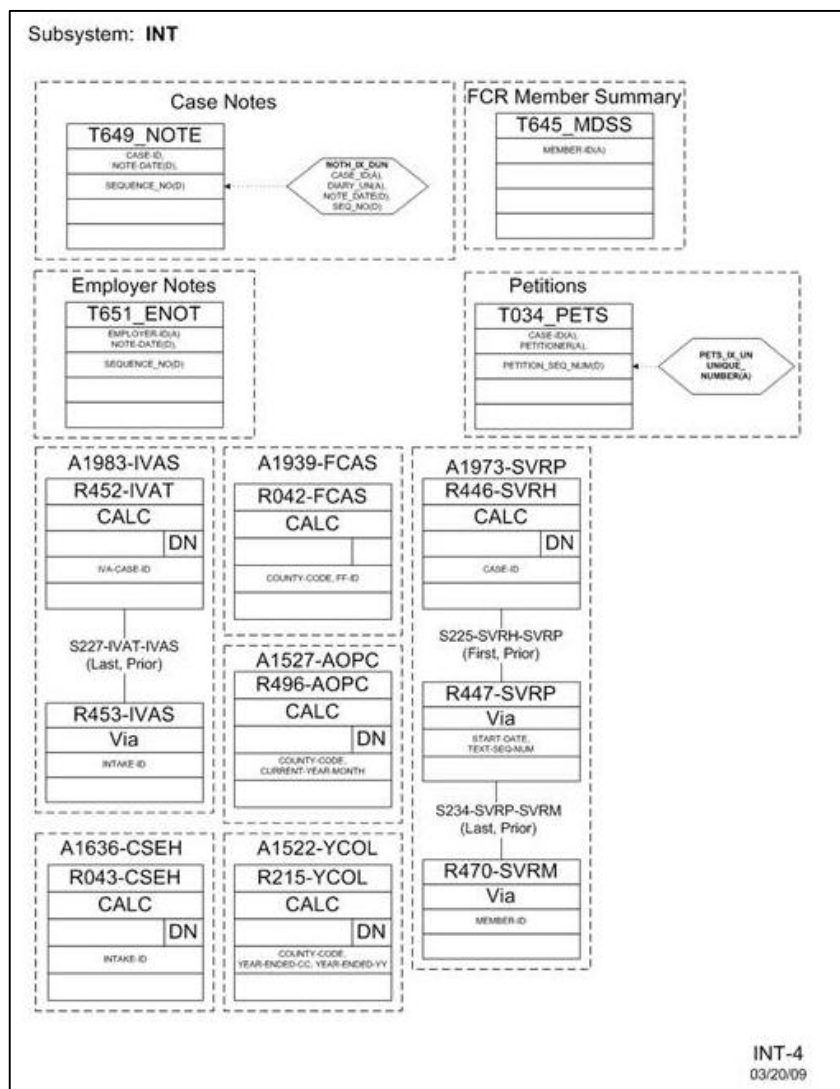
Following design review and approval, the Deloitte DBA team provides the final version of the PDM in both ErWin and .pdf format for submission with the DSD deliverables. The physical design is considered officially approved with the overall approval of the DSD.

PACSES Physical Data Model Management

PACSES Mainframe database design is managed similarly to open system databases. The primary difference is that Deloitte PACSES staff physically executes the creation and management of the database structures in each of the environments. The Deloitte DBAs that support the PACSES legacy system running on the Unisys mainframe are also responsible for maintaining the accompanying design documentation. The PACSES PDM is maintained as a Bachman Chart, which is created, managed and housed using Microsoft Visio. The structural changes are documented and reflected in the Bachman Chart shown in Figure 6.6-170.

The PACSES Bachman Chart depicts both DMS and RDMS structures. The DMS structures depicted in the diagram include area, record and set representations, along with key data items and set orders. The cardinality of each set is also depicted. The RDMS structures are shown with their table names, primary key definitions, and when present, their secondary key definitions. The key definitions include the key order for both DMS and RDMS structures.

The illustration shows sample DMS and RDMS structures as depicted in the PACSES PDM.



PA_DPW-1242

Figure 6.6-170. Sample PACSES Physical Data Model Diagram.

This Bachman diagram is how the network database structures for the PACSES mainframe are documented.

Database Creation and Update

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RFP Reference: 4.1 Applications/Systems Operations Support

- Database creation and update

Deloitte performs database creation and updating through the non-production environments in support of project initiatives for the in-scope systems. Database creation and update involves adding/updating the database objects in the database to facilitate the development of an application.

Database Creation and Update Approach

BIS DBA owns the physical installation and management of the open system and CIS mainframe database software. They are also responsible for the creation of the database “shell” that houses the physical tables, columns, indexes, etc. Similarly, BIS owns the database alterations to any peripheral SQL Server databases that support tools such as BizTalk, Enterprise Architect, etc. The BIS DBA team also owns the alterations to the CIS mainframe including the DMS/RDMS structures in each of the environments. Deloitte’s primary responsibility is to provide DBA support to BIS for the database creation and update tasks.

The PACSES DBA team is responsible for operational database creation and update tasks within PACSES. The strategies, designs and tasks performed are approved by DPW before implementation.

As the vast majority of changes to the DPW infrastructure moving forward will reside within the open system platform, we will focus the remainder of this discussion on tasks and strategies supporting those activities. However, a brief overview of the processes used on the PACSES mainframe system is also included at the end of the section.

The Deloitte DBA team works closely with BIS to review and gain concurrence on the logical and physical data design as part of the GSD/DSD process. The physical design is then manifested into an operational database by using the forward engineering functionality within the ErWin tool. Alterations to the data model brought forth after the DSD submission are still reviewed and approved by BIS, with the associated LDM’s, PDM’s and data dictionaries updated.

Database Creation and Update Execution

The creation of the physical data model marks the end the database design phase. Before the onset of database creation and update, there are a few key activities that our DBA’s must coordinate with BIS and gain their approval. Those activities include:

- Review of the physical data model
- Review of proactive performance design considerations (i.e. table partitioning, index organized table etc.)
- Computation and review of the database capacity plan
- Creation of appropriate tablespaces
- Creation/update and review of the data dictionary
- Review of the schema layout
- Review of the plan to populate seed data in case of a new application, or to refresh the database in case of column updates

DPW’s enterprise class infrastructure leverages many database servers supporting numerous development/production environments across a variety of applications. Our Deloitte DBA team works closely with BIS to manage the dynamic use of these

environments to support concurrent parallel initiative development. This requires careful orchestration of the use of these environments, effective version control and specialist level test data management. The following highlights the Oracle database/environment topology used within the enterprise:

DPW Oracle Database Environments

Project	Development		Integration		SAT		Load		Training		TFP		PROD	
	Instance	Server	Instance	Server	Instance	Server	Instance	Server	Instance	Server	Instance	Server	Instance	Server
HCSIS														
PELICAN	DPWD		DPWI		DPWA1, DPWA2 DPWA3		DPWL1, DPWL2 DPWL3				DPWT1, DPWT2 DPWT3		DPWP1, DPWP2 DPWP3	
MPI														
COMPASS									DPWR					
PACES Open System Suite	TP1D		TP1I		TP1A1, TP1A2, TP1A3		TP1L1, TP1L2, TP1L3				TP1T1, TP1T2, TP1T3		TP1P1, TP1P2, TP1P3	
ATS														
eCIS/MCI	MCID MCIU CAPI E4BD		MCI E4BI R17JI		MCI A1, MCI A2		MCI L1, MCI L2		MCI R		MCI T		MCI P1, MCI P2, MCI P3	ORC37, ORC38

PA_DPW-994

Figure 6.6-171. The Oracle Database Environments at DPW.

This diagram shows the various Oracle database environments at DPW that are managed by BIS.

Deloitte DBA's are an extension of the BIS DBA team, and are responsible for implementing the actual changes in the Development, Integration, SAT, Load and Training environments. When supporting TFP and Production deployments, we create the necessary scripts and instructions used by BIS to support deployments in those environments. This is also discussed further in this section under *Provide Database Centric Deployment Scripts and Playbooks*.

The migration of structure changes and database code to Development, Integration, Systems Acceptance Test, Training and Load Test environments using version controls is a two step process. The application migration request is initiated by the application team and tracked into the Request Tracker application. For each release, the scripts necessary to alter the structures as required for the release are consolidated and maintained by the Deloitte DBAs for execution in the next subsequent environment, eventually leading to Production. The BIS database team is responsible for the production migration. The Deloitte DBA packages the database deployment scripts along with the instructions and hands it over to configuration management team that owns the overall release instructions for production. The duration and the sequence of database scripts are defined in the release playbook that is rehearsed in the TFP environment and finally used for production deployment.

The database code for the open systems is comprised of a database package, stored procedures, and functions, which are integral parts of the build. The database code is checked into the version control system VSS/TFS. The build server uses the code that

is checked into VSS/TFS to create a new application build comprising of application as well as database code. There are designated windows for the build and deployment of the builds to higher environments. The application deployment consists of a modular design with a flag that controls application/database or both deployments.

PACSES Database Updates

Because the PACSES legacy application is stable, changes occur very infrequently and are often driven by program and system modifications. However, when changes do occur Deloitte follows a very tried-and-true process that has served it well for over 13 years. The following paragraphs provide an overview of that process.

Database Change Quality Control. Database change requests are submitted to the DBA using a Record Layout Change Form (RLCF). The application designer that submits the RLCF must first have the request reviewed and approved by the designer's team lead. The DBA will then review the form and check that PACSES and DPW naming standards have been maintained. New data item requests are also checked to make sure the designer normalized the new item with the existing collection of PACSES data items. The request is also reviewed to confirm that requirements included in the RLCF were identified during earlier technical walkthroughs. The RLCF is returned to the requestor if any anomalies are found.

A final technical discussion of the change request is also conducted. The discussion is limited to the DBA, the application designer and the designer's team leader. This discussion is used to finalize timing issues, conversion dependencies and other migration issues.

Dictionary/Schema Alteration. After the RLCF is approved by the DBA, the DBA implements the database changes in the PACSES data dictionary. If the request modifies the database structure, the accompanying Data Model document (maintained using ERWIN) and the database Bachman Chart (maintained using MS Visio) are also updated. The DBA uses the Data Dictionary to generate the new database record definitions and then uploads the new definitions to the Unisys mainframe. The database changes are then implemented in the Development environment as DMS schema changes and/or RDMS table changes.

The DBA also is required to modify the Database I/O Complex of the Support Layer (DBIO) metadata if needed. DMS structure changes require a change to the DBIO metadata. This metadata drives the regeneration of the DBIO portion of the PACSES Support Layer.

Implementation Coordination and Execution. The DBA is responsible for coordinating with the Migration Team to install the database changes in the Development environment. In order for the database changes to be used by the application, the migration team regenerates the Support Layer in Development using the new database and metadata definitions. The Migration Team informs the Application Developers when the changes are available.

Final Documentation. Following the successful implementation of the database changes in the Development Environment, the DBA copies the updated data dictionary, data model and Bachman chart to a read-only folder that is available to the entire Application Development Team and a notification e-mail is distributed to that team.

Coordinate and Consult with Application Teams

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RFP Reference: 4.1 Applications/Systems Operations Support

- Coordinate and consult with applications software and testing teams for database centric activities

Deloitte coordinates and consults with application software and testing teams for database centric activities for the in-scope systems.

Our team coordinates and consults with the application teams throughout the SDLC, providing critical experience on database-centric activities and driving compliance to standards. The database administration (DBA) staff also coordinates with application teams across multiple initiatives to plan and optimize the use of shared DPW resources and environments. The following highlights some of the coordination and consulting opportunities with the Application Teams through the SDLC.

SDLC Phase	Deloitte Activities to Coordinate SDLC Specific Tasks
System Requirements	• Work with the Lot 6 Vendor to review and understand system requirements • Verify that understanding permeates to the entire Maintenance Team
GSD	• Work with the Lot 6 Vendor to review and understand any General System Design created for a Maintenance Release • Verify that understanding permeates to the entire Maintenance Team • Accept the Logical Data Model from the Lot 6 Vendor if applicable
DSD	• Consult with the Application Team to define the physical data model, data dictionary and inherent database design changes needed to support the Operational release • Present said model to BIS for review and communicate identified alterations/enhancements back to the Application Team • Work with the Application Team to collect metrics to support Initial Capacity Planning

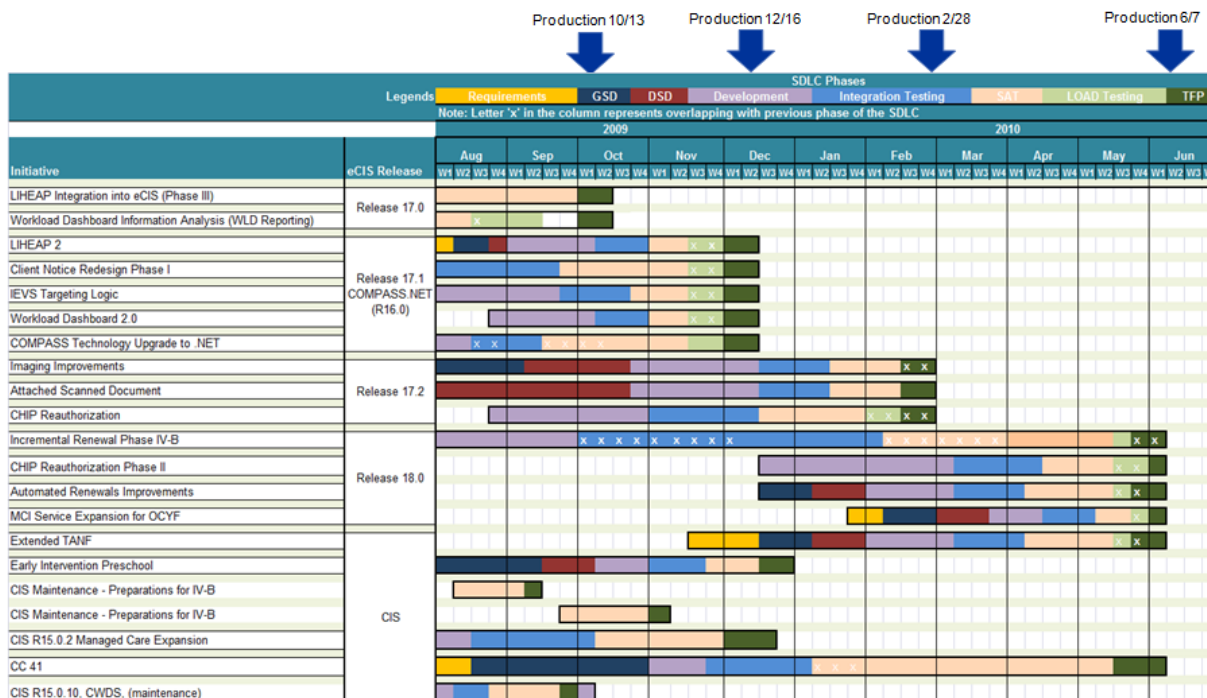
SDLC Phase	Deloitte Activities to Coordinate SDLC Specific Tasks
Development – Deployment	• Collaborate with the Application Team to create the necessary database structures, accounts and data necessary to support the development effort • Provide specialist level database coding support and guidance to maintain acceptable performance levels • Perform periodic Quality Control checks of database centric code and communicate results back to the Application Team • Consult with the Application team to create the necessary deployment scripts, processes and instructions to facilitate a smooth deployment • Perform proactive performance reviews during the testing phase to identify performance tuning opportunities before being migrated to Production • Coordinate development environment usage with both BIS and the Application Team to level set usage expectations
Post Deployment	• Report performance tuning opportunities to the application teams via non-functional PCR's • Coordinate requests for emergency maintenance with the Application Team to support BIS operational support needs • Coordinate regression testing with the Application Team for database centric patching and upgrades

Figure 6.6-172. Deloitte DBA's Coordination/Consultation with Application Teams.

DPW Program Office management work to maximize the contributions from BIS and the application teams by frequently managing parallel development initiatives to get new functionality to production in a timelier manner. This presents database environment challenges as distinct development and testing environments are required to support various flavors of the code base.

Our DBA team works closely with the Application Team and BIS to devise an environment usage roadmap that maximizes the infrastructure investment by using existing environments to the fullest capacity. This, however, requires a tremendous amount of planning and coordination across developer, testing, DBA and BIS teams.

The attached document is a representative sample of a roadmap to plan environment usage over the iCIS project suite. It allowed the DBA team to effectively manage expectation with both the Application Team and BIS and provided a quick reference guide to what each environment was used for during the overall initiative timeline.



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Figure 6.6-173 Example of DBA Team's Recommended Roadmap.

The DBA team coordinates the creation of a roadmap that optimizes Application Team and DBA DPW resource requirements across initiatives.

Test and Migration of Database Code and Structure Changes

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RFP Reference: 4.1 Applications/Systems Operations Support

- Test and migration of database code and structure changes to Development, Integration, Systems Acceptance Test, Training and Load Test environments using version controls

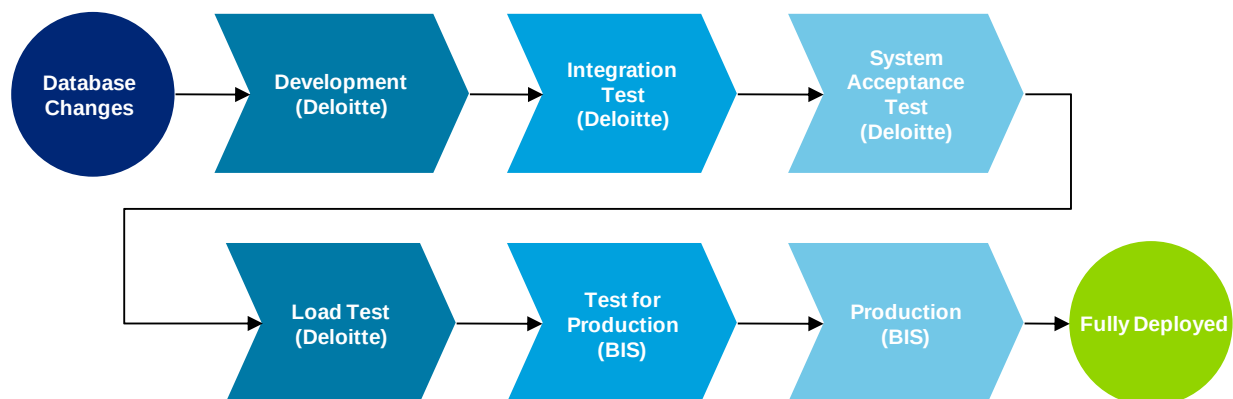
Deloitte performs the testing and migration of database code and structure changes to the Development, Integration, Systems Acceptance Test, Training and the Load Test environments using industry standard version control techniques for the in-scope systems.

Database Code Migration

The testing and migration of database code and structure changes is a multi-phased endeavor jointly owned by both Deloitte and BIS staff. Deloitte, after gaining structure approval from BIS, owns the migration of code and structure changes through the development environments up to and including SAT. Deloitte staff then works closely with BIS to plan the deployment to TFP, including the delivery of required playbooks, rollback procedures and contact staff. BIS then executes the deployment to TFP and production.

Open system database structure changes are documented in the physical data model, which is stored and managed in the ErWin tool. The structure changes comprised of table and column changes will be formally reviewed and approved by the BIS database

team. On approval of the physical data model, the Deloitte DBA will submit the data dictionary for approval. Figure 6.6-174 depicts the migration path for database changes and which party is responsible for the deployment in the environment.



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Figure 6.6-174. Database Change Deployment Path and Responsibilities.

This graphic represents the paths that the typical database deployments take through the DPW environments.

The migration of structure changes and database code to Development, Integration, Systems Acceptance Test, Training and Load Test environments using version controls is a two step process. The application migration request is initiated by the application team and tracked into the Request Tracker application. For each release, the scripts necessary to alter the structures as required for the release are consolidated and maintained by the Deloitte DBA's for execution in the next subsequent environment, eventually leading to Production. The Deloitte DBA's packages the database deployment scripts along with the instructions and submits them to the configuration management team that owns the overall release instructions for production. The duration and the sequence of database scripts are defined in the release playbook that is rehearsed in the TFP environment and finally used for production deployment.

The database code for the open systems is comprised of a database package, stored procedures, and functions, which are integral parts of the build. The database code is checked into the version control system VSS/TFS. The build server uses the code that is checked into VSS/TFS to create a new application build comprising of application as well as database code. There are designated windows for the build and deployment of the builds to higher environments. The application deployment consists of a modular design with a flag that controls application/database or both deployments.

Please refer to RFP Responses *Software and Technical Platform Migrations* and *Software Release Management* earlier in this section for additional information.

Database Testing

The database code goes through the exhaustive testing during the SDLC and is tested directly and indirectly via the application testing i.e. unit testing, regression testing, integration testing, System Acceptance testing, User Acceptance testing and performance testing. The application team prepares a unit test checklist for the database code. The Deloitte DBA's proactively monitor non-production databases to identify any expensive queries.

Testing by the Application Teams. Business logic supported by the database code is directly tested by the Deloitte testing teams that are in place within each of the DPW projects. The testing teams focus on exercising the functional aspects of the application via the use of documented testing scripts. Each script is developed with specific expected outcomes. The primary environment used by the testing teams is Integration Test.

Testing scripts that fail to meet the expected outcomes are documented by the testing teams in ATS, where a PCR is opened for each script failure. The PCRs are generally reassigned to the application development team for resolution, but for incidents related directly to the database, the PCRs are assigned to the DBA team. After the defect is corrected in Development, the code is again migrated to the testing environment where the same testing scenarios that caused the error are rerun. This cycle continues until the test script achieves the expected outcomes.

Load and Performance Testing. The most significant testing of database code and structure changes occurs during this phase of the SDLC. Deloitte performs effective load and performance testing and monitoring of the database to offer DPW crucial insight into performance and infrastructure tuning opportunities before an application goes live. We work with you to develop, manage, and maintain test scenarios that accurately mimic the actions of end users. By closely emulating the expected user base of a system performing normal business activities for a sustained period, load tests instill confidence that an application is ready for the rigorous demands of your organization. Please refer to the previous section titled *Load and Performance Testing and Monitoring* for a more detailed description of Deloitte's approach to this key SDLC phase.

Mainframe Based Deployment and Testing Processes

Testing of changes and modifications to the mainframe system are subject to the same rigorous testing as are the other DPW systems. Application testing is exercised through the project's testing team who also uses ATS PCRs to track incidents identified during the testing phase. Issues related to the database are assigned to the project (PACSES) or BIS (CIS) DBA team for resolution.

CIS application and database code is load tested via Performance Center as the Web TS tool provides for browser based access to the application. PACSES does not have this option and, as such, supports load testing through custom scripts or coordinated manual testing efforts. Batch volume testing is done for both applications using test

infrastructure and data volumes allowable. As the test is running, we are observing the results in real time on UDSMON. OSAM also captures the results that are reviewed later by members of the application team. Anomalies in performance are further analyzed to determine if corrective action is to be taken. This can result in database changes (for example, adding an index to a table) or application changes (for example, accessing the data in a different manner). The results of these load tests are documented and available for review by DPW.

Provide Database Centric Deployment Scripts and Playbooks

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RFP Reference: 4.1 Applications/Systems Operations Support

- Provide database centric deployment scripts and playbooks for TFP and Production migrations

Deloitte provides database centric deployment scripts and playbooks for TFP and Production migrations for the in-scope systems.

Database Centric Deployment Approach

Deloitte's approach to managing database centric deployments are to provide BIS with detailed playbook instructions that have been well rehearsed and reused from previous deployments. This provides a tried and tested approach for consistent deployment executions. Additionally, experienced Deloitte staff is on-site to support the releases to both TFP and Production. The following highlights our approach to script and playbook development and submission across both open system and mainframe solutions.

Database Update Scripts

Database scripts are used to automate the implementation of changes within the database for a particular release. Scripts are executed to perform a number of functions, including:

- **Database Structure Changes.** These scripts execute the data definition language to physically create/alter table, index, partition, etc. structure.
- **Database Code Deployment.** Deployment, compilation and verification of the database code including PL/SQL packages and stored procedures. These scripts verify the code is compiled in the correct order so as to confirm functional integrity of called submodules (i.e. Making sure the submodules are indeed the right version when compiled).
- **Day Zero Data Management.** The inclusion of the required reference table data that drives the behavior of the application. This could include the functional rollout of software, the specific configuration by count office, etc.
- **Conversion Implementation.** Functional releases often require the conversion of legacy data to the new functional paradigm. Our conversion scripts are tested against copies of production data for accuracy and performance optimization.

- **Database Rollback.** In the event of an aborted deployment, the database must be returned to its previous condition.
- **Temporary Backups.** Although major releases typically start with a full database backup, there are times when temporary, single table backups are prudent. When directed and approved by DPW, our team creates scripts to create copies of tables for quick and easy access, recover and deletion when completed.

Our collective developer and DBA teams collaborate to create the required scripts to execute in the various test, TFP and production environments. Once completed, our DBA's do a final quality assurance test to verify scripts are designed and execute in accordance with DPW standards, including the verification that final structure creation aligns with the approved data model. The test of these scripts also feed into the playbook process by documenting execution durations to provide for more accurate deployment planning. Scripts are saved in the version control library for future reference.

Database Deployment Playbooks

After completing the rehearsal with TFP deployment activities, a detailed listing of the pre-deployment and post-deployment activities is compiled into a production playbook. A database specific example can be seen in Figure 6.6-175.

Check if Complete	Step	Migration Task	Migration Thread	Servers Impacted	Comments	Dependencies	Date	Duration	Begin Time	End Time	DPW Owner (s)	Deloitte Support
	1	Perform eCIS Application Database Backup	eCIS				7/31/2010	2:00	5:00 AM	7:00 AM	DTE-Data Team	Deloitte Database Team
	2	Perform eCIS DB portion [Pre-Deployment steps] 1. Disable dashboard queue	eCIS	DPWROC37 DPWROC38			7/31/2010	0:15	7:00 AM	7:15 AM	DTE-Data Team	Deloitte Database Team
	3	Perform eCIS DB portion [Post-Deployment steps] 1. Verify if there are any INVALID DB objects eCIS 2. Enable dashboard queue 3. Preform Pre-Validation Database backup	eCIS	DPWROC37 DPWROC38			7/31/2010	2:00	10:00 AM	12:00 PM	DTE-Data Team	Deloitte Database Team
	4	Perform eCIS data clean up activities 1. Database scripts to be run to clean up after validations	eCIS				7/31/2010	0:30	3:00 PM	3:30 PM	DTE-Data Team	Deloitte Database Team
	5	Run Data fixes 1. Data fix to change the weekend cutoff date 2. Data fix to run only Group 3 Supplemental Payment portion of LIHEAP batch	eCIS				7/31/2010	0:15	5:00 PM	5:15 PM	DTE-Web Team	Deloitte Database Team

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Figure 6.6-175. Example of Database Specific Production Playbook Steps.

This is a representative sample of a deployment playbook that shows steps, responsible parties, durations, etc.

In addition to other activities, the playbooks also cover any database rollback scenarios that may potentially occur. The Deloitte database team provides the instructions for rollbacks and approximate timings as part of the above playbook.

In order to address any DPW questions or concerns regarding the database deployment process, Deloitte provides scripts and playbooks in advance of any planned activities:

- TFP scripts and instructions 48 hours prior to deployment

- Production scripts and instructions 24 hours prior to deployment
- Playbook reviews starting three weeks prior to production deployment

If needed, the weekly data integrity team meeting is also used as a vehicle for a deep dive into the technical details of a deployment. Deloitte provides the details necessary for a detailed validation and verification for each deployment.

Provide Support for Production Migrations

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RFP Reference: 4.1 Applications/Systems Operations Support

- Provide support for Production migrations should issues be encountered

Deloitte provides support for production migrations should issues be encountered for the in-scope systems.

When production database migration issues occur, they often require detailed trouble shooting and impact assessments in order to determine the root cause given the complexity of the in-scope systems.

These database migration issues can have impacts on system availability, application code, configuration items, deployment parameters or unidentified differences in the infrastructure between the test environments and production. Our team utilizes our extensive understanding of the DPW infrastructure, our knowledge of historic issues as well as a thorough insight into DPW business processes to quickly diagnose root causes and/or determine an appropriate work around to reestablish production availability.

Deloitte's Support Processes Leverage ITIL and CMMI Leading Practices

Deloitte leverages ITIL centric leading practices that were discussed earlier in this section, to manage post deployment issues – whether they relate to application code or database structure changes. These procedures include immediate escalation of the issue to appropriate stakeholders, identification of potential solutions or mitigation steps, and the confirmation that the corrective action taken has successfully resolved the issue. Additionally, these leading practices dictate subsequent root cause discussions that may help to reduce or discard the occurrence of similar issues in future database migrations.

Additionally, our alignment with CMMI principles includes disciplined, proactive identification of potential risks and mitigation steps. Risks and issues are tracked and managed through our CMMI Level 3 compliant processes – through using tools like Deloitte’s Project Management Center (PMC) tool. For more information about these CMMI tools and principles, please refer to *Section 6.2, Project Management* of this proposal.

Database Standards Identification and Compliance Monitoring

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RFP Reference: 4.1 Applications/Systems Operations Support

- Provide input into database standards identification and perform compliance monitoring

Deloitte provides input into database standards identification and performs compliance monitoring for the in-scope systems.

Our team has a thorough understanding of the DPW standards that govern the design and consumption of database centric services. We have played a key role in the development of these standards since the H-Net project that started in 2000. Since then we have contributed and worked with DPW to mature the standards into what they are today.

The following is a tabular representation of the **actual DPW database standards** found on the BIS Web site. The table contains the subject areas within each standard and our demonstrated approach toward compliance. We are the only vendor that can say, day one, we are aware of and have a proven history of standards compliance.

Key Staff Spotlight

Joe Berkstresser

ITSS/DTSS Team Lead



“DPW Database standards have greatly matured over the years. I am proud to have contributed to the foundational creation of open systems standards 10 years ago during the H-Net project and look forward to incorporating new technologies, processes and methodologies into the standards library in the future.”

BIS Defined Database Standard	Standard Subject	Deloitte's Intimate Understanding of DPW Standards Increases Compliance Capabilities
Data Modeling	Naming Standards	Data model naming compliance is confirmed during the review of both the logical and physical data model (PDM) review. Additionally, checks are made upon submission of the data dictionary with the PDM.
	PL/SQL Structure	PL/SQL Structure compliance is managed by completion of unit test checklists and developer peer review processes.
	Error Handling	Error Handling compliance is managed by completion of unit test checklists and developer peer review processes.
	Naming Standards	Naming Standards compliance is managed by completion of unit test checklists and developer peer review processes.
	Comments	Comment compliance is managed by completion of unit test checklists and developer peer review processes. Additionally, the ITSS team is working to automate the verification that comment quantity has increased with each subsequent release of a package/stored procedure. Objects that do not have an increase of comments will be flagged and reviewed with the developer community prior to going to SAT.
Enterprise Database Coding	10g Features	New features compliance is managed by thorough discussion, justification and approval from BIS DBA leadership before being introduced to the Integration environment.
	Indexes	Index standards compliance is confirmed with the review of the physical data model and periodic checkpoints through the development process.
	Primary/Foreign Keys	Primary/Foreign Key standards compliance is confirmed with the approval of the PDM and the DSD.
	Sequences	Sequence usage standards compliance is confirmed with the approval of the PDM and the DSD.
	Table Design	Table Design standards compliance is confirmed with the approval of the PDM and the DSD.
	Triggers/Sequences	Triggers/Sequence standards compliance is confirmed with the approval of the PDM and the DSD.
Enterprise Physical Implementation	Views	View standards compliance is confirmed with the approval of the PDM and the DSD.

BIS Defined Database Standard	Standard Subject	Deloitte's Intimate Understanding of DPW Standards Increases Compliance Capabilities
Information Life Cycle Management	Optim Configuration	Optim standards compliance is confirmed with the approval of the DSD.
	Naming Standards	Optim Naming standards compliance is confirmed with the approval of the DSD.
	Archiving	Optim Archiving standards compliance is confirmed with the approval of the DSD.
	Security	Optim Security standards compliance is confirmed with the approval of the DSD.
Microsoft SQL Coding	SQL Structure	SQL Structure compliance is managed by completion of unit test checklists and developer peer review processes.
Oracle Physical Implementation	N/A	Oracle Physical Implementation Standards, while well known by our DBA team, is not a responsibility/task of our team. BIS is the sole owner of the physical implementation of the Oracle database.
SQL Server Physical Implementation	N/A	Oracle Physical Implementation Standards, while well known by our DBA team, is not a responsibility/task of our team. BIS is the sole owner of the physical implementation of the Oracle database.

Figure 6.6-176. Deloitte Approach to Complying with DPW Standards.

Deloitte has collaborated with you to mature the existing standards including PL/SQL coding and the newly introduced database privacy standards. Standards identification is discussed in the weekly project database governance meeting attended by ITSS DBA's and BIS DBA leadership. During these sessions, relevant topics are discussed, direction reviewed and assignments to document given. We look forward to working with the BIS DBA group to continue the maturation of their standards, including standards to govern SOA centric solutions, COTS product integration and enhanced ILM strategies to manage archive/purging of a wider array of business data.

Develop Database Maintenance, Reorganization Scripts

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- Develop database maintenance, reorganization scripts

Deloitte assists DPW in performing database maintenance and creating reorganization scripts for in-scope systems. Deloitte recognizes that BIS DBA monitors and manages the production infrastructure. This includes the relevant database maintenance (tuning, patching, upgrades, etc.) as well as infrastructure management (disk reorganization, file allocations, striping, etc.).

Deloitte will assist DPW in managing the database infrastructure by identifying maintenance and reorganization opportunities in the non production environments. After review and approval from BIS, Deloitte DBA's will perform the necessary activities in the lower environments to operationally support the projects through the SDLC. For more insights as to how we monitor each of these environments, we refer you to the *Database Administration and Performance Tuning* section earlier in this proposal.

Our Open Systems Activities

Deloitte works closely with the BIS database administration team to monitor, analyze and recommend database configuration and tuning changes that could improve the open systems responsiveness. These recommendations are primarily application centric such as indexing, partitioning and database related code improvements.

In addition to these activities, we also monitor disk file contention, space allocation and fragmentation, etc. This can lead to recommendations to the BIS Database team to perform database reorganizations on the tables encountering this contention or fragmentation. The strong working relationship we have enjoyed over the last 10 years has caused BIS Database management to view our Deloitte DBA team as a logical extension of the BIS team, jointly working together to advance the performance, availability and functional delivery capabilities offered.

Some of the specific maintenance and reorganization scripts that Deloitte performs is shown in Figure 6.6-177 below:

Activity	Deloitte Incorporated Database Activities
Gather Database Statistics	- Database tools, such as Enterprise Manager, highlight database opportunities that can be addressed with database reorganization or maintenance. The statistics gathered identify items such as excessive row chaining, logical/physical reads, etc. that are indicative of reorganizational activities. - We have automated utility/scripts scheduled to repeatedly gather database statistics.
Reorganizing Tables	- Typically, the data on OLTP databases is changing frequently due to transaction activity against that database. As a result, the underlying database segment begins to fragment and response time tends to degrade; the data in the physical storage becomes scattered and requires Oracle to perform more I/Os to that storage resulting in the performance degradation. - Execute scripts to identify the tables that need to be reorganized. These table reorganizations help restore the data in physical order, and reclaims space from free blocks. The result is an improvement in performance.

Activity	Deloitte Incorporated Database Activities
Rebuilding Indices	• Use of appropriate indices is very important for any SQL query to retrieve data quickly as well as perform data manipulation during a transaction. To keep the indices up to date and get optimal performance for queries, especially on OLTP systems, we perform the following maintenance activities: - Schedule and run scripts to coalesce the indices to confirm the indices are appropriate and not corrupted. If index corruption occurs we can observe considerable performance degradation. - For those tables where the data manipulation transactions are very frequent, i.e. high volume of inserts, updates and deletes, we perform rebuild of indices to reclaim the space as well as keep the indices appropriate.
Moving Tables to Less Expensive Storage	• Business requirement may dictate that data is to be retained in the OLTP database for inquiry purposes for several years. Depending on how often that data is viewed, some of that data can be moved into different storage tiers. For example, data that is more than 5 years old that gets viewed only occasionally may be moved to “tier-3” storage which is less expensive. • We perform periodic maintenance activities to move this “aged” data.
Backup Archive Logs/Trace Logs	• Backup and recovery is one of the most important activities associated with protecting the valuable data assets. It is crucial to be able to restore the database to a point prior to a hardware or software error or database corruption. To help confirm there is no data loss, the production databases run in “ARCHVELOG” mode. This keeps a copy of the transactions that have acted on the database. Due to high volume of transactions occurring in the OLTP environment, the archive logs that Oracle generates voluminous. We have utility/scripts to backup the archive logs and free up the disk space. • Oracle generates trace logs to report any issues or warnings identified in the database. The event may be an increase in tablespace, transaction dead locks, shutdown/startup for maintenance, etc. This helps a DBA analyze any error conditions and take necessary actions. We have automated utility/scripts scheduled to backup the alert and trace logs and free up and maintain disk space.
Import/Export Data	• The periodic export of table structures as well as the export of configuration data is performed to support the application team during their various releases. We have developed automated scripts that export data directly from production into the test for production environment. • We also perform ad hoc refreshes of production data to lower environments to help confirm that the application teams have a sufficient volume of data against which they can perform load testing. This helps reduce the number of performance issues that are deployed to production.
Post Production Deployment Cleanup	• Prior to production deployments, DBAs take backups of tables to support rollback if needed. The same procedure is used when mass conversion activities are required. To help confirm that we retain only required database objects and cleanup unwanted tables, we run utility scripts that check and report back up tables.

Figure 6.6-177. Specific Maintenance Activities that Deloitte Performs.

Our PACSES Mainframe Activities

Deloitte performs the database maintenance activities across each of the environments for the PACSES mainframe. On a daily basis, the DBA executes batch jobs that extract information from the Torch log and mainframe system log using Log Analyzer. Monthly, the Deloitte DBA at PACSES produces PAGE-USAGE and record count statistics using the Database Editor (DBE) tool. The DBA also executes ad hoc batch jobs that perform a database size analysis. The information obtained from these reports assists the DBA in making determinations about the overall health of the database and whether maintenance activities are required – such as database reorganizations.

Throughout the year, the PACSES DBA performs a significant number of database maintenance, archive, and purge activities, some of which are highlighted in Figure 6.6-178 below:

Frequency	PACSES Database Maintenance Activity
Quarterly	• Quarterly purge of Welfare Transactions (DSBH, DSBL) • Quarterly purge and reorganization of Table XSCD
Semi-Annually	• Semi-Annual reorganization of NOTE RDMS Table • Semi-Annual rebuild of Member Name SSA Name-3 RDMS Tables PDMAS and PDET
Annually	• Annual archive/purge of Financial Tables (TRNL, ADJH, ADJL, ACCL, RCTH, RCTP, RCTL, DSBH, DSBL, IVAL) • Annual archive/purge of Case Diary Tables (CASD, ESTD, ENFD, ISAD, CSTD, NADT) • Annual purge of Financial Tables (BHIS, BATI, BATH) • Annual purge of Locate Tables (LDY1, LDY2) • Annual purge of miscellaneous tables (CFMS, CFMD, STOL, DISR, EHIS, IATT, EMPU, ESAD, EMPD) • Annual reorganization of the other RDMS Tables • Annual purge/reorganization of BATI/BATC/BATH Tables to add BATI entries for upcoming year

Figure 6.6-178. PACSES Database Maintenance Activities that Occur During the Year.

When these types of activities are performed, typically a significant amount of database space is freed for reuse. In order to make that space again available and the overall access to the database more efficient, the PACSES DBA typically performs a database reorganization of the areas or segments by these activities. The DBA has a “canned” set of reorganization scripts for the PACSES database structures and simply executes the appropriate scripts during a time when the PACSES user is not actively accessing the system. The archive/purge/reorganization activities are coordinated with the DPW through the DPH.

Database Security and Encryption Measures

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- Provide and implement database security and encryption measures

Deloitte provides and implements database security and encryption measures for the in-scope systems.

Deloitte provides and helps DPW implement suitable database security and encryption measures to protect the confidentiality, integrity and availability of DPW's data.

Deloitte has demonstrated a thorough, consistent approach toward database level security that has matured through the course of time. We look forward to working with you to continually mature the security solutions employed to provide the appropriate security and protection to DPW open systems, PACSES Mainframe and CIS Mainframe databases.

Have you
heard?

“Data Protection is Crucial for DPW” – 20 percent of data breaches in the United States have been reported from the State Government Agencies, in the period between Jul '09 and Jun '10.

Applications	Deloitte's Approach Meets Data Security and Encryption Measures Requirements
iCIS	• CIS, TPL and IEVS mainframe data is protected by “access control keys” for retrieval and update. Access control keys work similarly to a user password by requiring the actual application process to “authenticate” to the database. This verifies that only accredited applications/processes can access the database. • eCIS requires regular synchronization with information for 13 different Data Exchanges present in the CIS Mainframe. eCIS performs Citizen identify and citizenship validation with SSA. Information received from SSA requires data protection measures in accordance with SSA security requirements. • COMPASS application data is stored in its native XML format within the Oracle database. Accessing this data natively through database querying tools requires a high level awareness of Oracle database technologies and structures. This provides extended security protection to unauthorized users inappropriate perusing the database. Moving forward, physical encryption of key database columns will be introduced.
HCSIS	• HCSIS capitalizes on Oracle's Virtual Private Database (Fine Grained Access) to provide extended data protection. VPD applies policies to each authenticated user to only retrieves data they are authorized to access, regardless of the method used to access the database. Because of the numerous program offices served, vast amounts of registered users and complexity of the Waiver Management business, the management of the VPD policies used within the HCSIS solution requires a specialist level understanding of the application, architecture and business.



Applications	Deloitte's Approach Meets Data Security and Encryption Measures Requirements
PACSES	• PACSES Mainframe uses multiple tools to control database security. Each mainframe user's system access is controlled by SIMAN, where users are given authorization to access only the environments that are necessary to their job function. Access to DMS databases is controlled using internally-developed database procedures, while RDMS access is controlled using database views and table-level security. PACSES Mainframe interfaces with IRS 1075. The Federal Taxpayer Information (FTI) data received from IRS requires protection in accordance with the IRS 1075 data protection requirements • PACSES Child Support Web Site is manages its access control through user id's and passwords stored in the operational database. The password data is stored in an encrypted column with the database and decrypted automatically upon access.
PELICAN	• PELICAN Provider Certification leverages disconnected application technology via application and database deployments on tablet PC's. The file structures supporting these databases are encrypted and secured via Safeboot technology. We will work with DPW to support the anticipated database upgrades and potential architectural shifts to Microsoft Silverlight technology over the coming year.
Child Welfare	• Child Welfare database contains sensitive PII such as Child Abuse and Child Neglect that requires appropriate data protection measures to avoid inadvertent data loss. Child welfare also requires to meet the security requirements of Federal Adoption and Foster Care Analysis and Reporting System (AFCARS).

Figure 6.6-179. Deloitte's Approach Meets the Data Security and Encryption Measures Requirements.

Deloitte will continue working with you to further strengthen the security of the database infrastructure, regardless of architecture type, to support the needs of DPW. We will use Deloitte's demonstrated Data Protection Framework, illustrated in Figure 6.6-180 to improve DPW's ongoing efforts for database security and encryption.

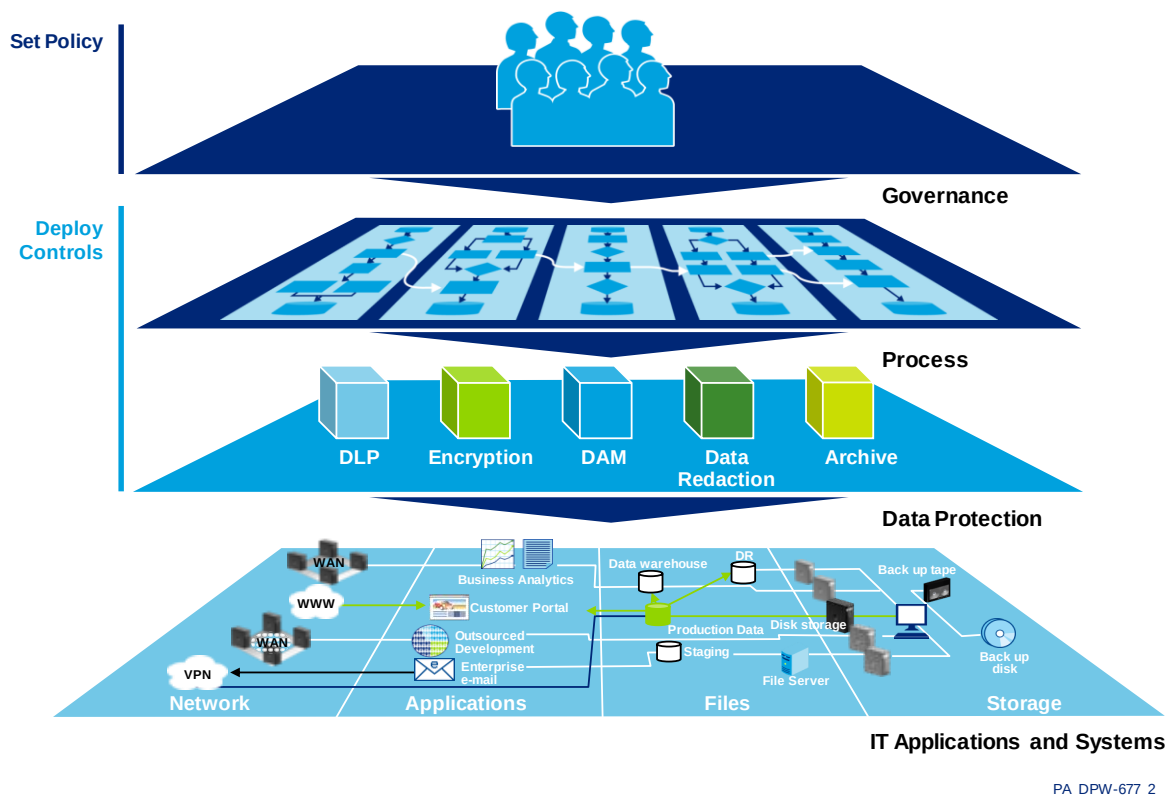


Figure 6.6-180. Deloitte's Data Protection Framework Support Strength Our Approach to Security Vulnerability Assessment.

Deloitte's vulnerability assessment approach focuses on the key assets of your enterprise and helps them remain secure.

We recognize the importance of data protection and understand the data protection challenges faced by DPW in the current infrastructure. One such challenge is the effective synchronization that is required between the CIS Mainframe data and the eCIS data. In order to effectively perform data redaction between eCIS and CIS in lower environments, the same data redaction techniques should be performed on the disparate databases to maintain the synchronization.

Even a small change to one element in any of the two databases will result in a data conversion and synchronization error.

We support DPW's ongoing efforts to data masking/redaction, data archiving and data encryption. As illustrated in Figure 6.6-180, we will leverage the three key components from our data protection framework to help secure DPW's databases – Governance, Process and Data Protection Tools and Techniques.

Governance

As per DPW's established Domain Governance model, we will look to DPW to provide guidance from Database and Security Domain leaders for review and approve database security and encryption standards. Deloitte will work with DPW to provide input and content to enterprise database standards and to assist in the periodic review of deployed solutions.

- **Standards.** As part of our continued efforts to improve the DPW database security, we will work with DPW to develop and establish standards for implementing a consistent database security and encryption solution across DPW databases (open systems and Mainframe). These standards will be developed in accordance with the security requirements from Federal and State regulations such as HIPAA, IRS 1075, SSA and AFCARS.
- **Periodic Review.** In addition, we will keep DPW Database and Security Domain leaders abreast on the current data protection challenges that may impact DPW along with the emerging database vulnerability threats/vulnerabilities. We will work with DPW Database Domain and Security Domain leaders to periodically review the database security and encryption standards. This periodic review will include identification of new tools and techniques that may be leveraged to meet the growing challenges. The database security and encryption standards will leverage the DPW Data Privacy Standards and will provide at a minimum, the guidance to:
 - Classify Personal Identifiable Information (PII) that requires data protection (based on the PII classification from DPW Data Privacy Standards)
 - Level of data protection that needs to be provided to the identified PII classification

Process

Standards indicate the data that requires protection and the level of protection that has to be offered. At present, we work with DPW to maintain and follow the current processes towards database security such as data redaction and database user management. We will work with DPW Database and Security Domain leaders to establish a consistent process/approach for implementing the appropriate data protection measures. Each data protection process will discuss at a minimum

- Benefit of the process
- When the data protection process has to be performed/conducted
- Which DPW environment the process has be performed
- What are the data protection tools and techniques to support the data protection process

In addition, we will work with DPW to identify and select the data protection tools to support the data protection measures and processes identified.

Data Protection Tools and Techniques

Figure 6.6-181 describes Deloitte’s data protection techniques that may be leveraged to protect and secure DPW data.

Data Protection Technique	Deloitte’s Understanding of DPW Characteristics	Deloitte Incorporates Deployment Coordination
Data Loss Prevention (DLP)	• “Data Leakage” refers to the movement of a data asset (such as Citizen Health Benefits Application) from an intended state to an unintended, inappropriate or unauthorized state, representing a risk or a potentially negative impact to the organization • DLP solutions are designed to prevent the inadvertent loss of data leading to a data breach, within an enterprise. There are two types of DLP solutions – Network based and Host-based DLP • DLP solution helps to identify, monitor and protect data in use, data in motion and data at rest through broad packet inspection, analyze the context of the transaction with a centralized management framework. • DLP solutions can be configured to detect and prevent the unauthorized use and transmission of confidential information. • DLP is usually coupled with another data protection solution – Information Rights Management (IRM) to provide appropriate data protection measures to information present in downloadable documents • Example: Business partners download various citizen centric reports that contain sensitive information. These reports are present on the business partners systems in unencrypted form and can be transferred to an external source leading to data loss. By using IRM solution, these reports can be encrypted for use only by the business partner and can be made to self-destruct (expire) after a certain time period .	• Identify business requirements for data leakage prevention/information rights management • Conduct a Proof of Concept to help DPW evaluate and select an appropriate DLP and/or IRM solution in accordance with the DPW standard for Product Evaluation, to support both open systems and mainframe databases • Leverage the PII classification described by the DPW data privacy standard to identify the PII that needs to be monitored through DLP solution • Identify the infrastructure elements within the DPW enterprise that requires to be monitored and protected for flow of sensitive information • Configure and implement the DLP/IRM solution



Data Protection Technique	Deloitte's Understanding of DPW Characteristics	Deloitte Incorporates Deployment Coordination
Data Encryption	• Data encryption refers to a method of modifying data so that it is meaningless and unreadable in its encrypted form. It also must be reasonably secure (must not be easily decrypted without the proper key). • Enterprise database management systems, such as Oracle, provide for encryption at the column level, through Oracle Transparent Data Encryption (TDE) tool. • Encryption helps protect a limited amount of data while allowing for more traditional access for non-sensitive elements. • Encrypting at the column level would require obvious decryption programmatically upon retrieval and subsequent display to the screen. This does impose a slight overhead to the transaction and will need to be taken into account when performance planning. • In addition to column level encryption, database backup encryption will encrypt the actual file that is copied and stored off site. By encrypted data backup, data is still protected even if the tape is mounted and a restore attempted.	• Conduct a Proof of Concept to help DPW evaluate and select an appropriate data encryption solution in accordance with the DPW standard for Product Evaluation • Leverage the PII classification described by the DPW data privacy standard to identify the appropriate PII that requires to be encrypted • Identify the columns and data fields that contain the identified PII data • Configure and implement the data encryption solution • Integrate the database audit logs to SIEM solution and monitor for exceptions. Report violations observed to DPW on ad hoc and periodic basis.



Data Protection Technique	Deloitte's Understanding of DPW Characteristics	Deloitte Incorporates Deployment Coordination
Data Activity Monitoring	• Database activity monitoring (DAM) solution monitors and analyzes database activity independently of the database systems and does not rely on native database auditing • DAM provides privileged user and application access monitoring that is independent of native database logging and audit functions • DAM functions as a compensating control for privileged user separation-of-duties issues by monitoring administrator activity • DAM solution helps improve database security by detecting unusual database read and update activity from the application layer. Database event aggregation, correlation and reporting provide a database audit capability without the need to enable native database audit functions. • As an example, DPW leverages encrypted service account credentials within application .ini files so as to not publicly display the user id/password of very powerful database access credentials. Additionally, only the system DBA's have access to powerful database management "super" user id's required to perform database maintenance activities. This activity is required to be monitored using DAM as a preventive and reactive control.	• Identify business requirements for Data Activity Monitoring (DAM) solution • Conduct a Proof of Concept to help DPW evaluate and select an appropriate DAM solution in accordance with the DPW standard for Product Evaluation, to support both open systems and mainframe databases • Identify the database events that require monitoring through DAM solution • Configure and implement the DAM solution • Monitor in real-time, the violations alerted by the DAM solution and report to DPW for corrective actions.

Data Protection Technique	Deloitte's Understanding of DPW Characteristics	Deloitte Incorporates Deployment Coordination
Data Redaction	• Data Redaction refers to any number of methods used to “scramble” data within the database so as to not display or provide actual PII to an unauthorized user. This is commonly used when creating test data from a production database. Deloitte currently employs many of these strategies when managing test databases in support of project initiatives. Some other methods of data “scrambling” include: • Data Obfuscation is data that is rendered unusable by some means, but is not considered a serious form of encryption (obfuscating the data with a simple substitution cipher is not considered encryption). Techniques include substitution, randomization, shuffling, nullifying and skewing • Data Masking is a method of hiding sensitive data in a way that the clear text cannot be reconstructed from the displayed data. This is useful in situations where it is only necessary to display a portion of the data such as a social security number (XXX-XX-1234). • Data Generation is a method of creating fictional data following certain patterns to replace the original data set with the intent of being fully displayed.	• Identify dependency of each data element between the various application databases and the mainframe databases • Define and establish a consistent process for data redaction such as data scrambling or data obfuscation • Apply data redaction when performing database refresh from production environment to lower environment including open systems and mainframe databases.
Data Archival	• Data Archiving is used to transport aged data from a primary active database to a storage structure in another physical location and, possibly, format • Archived data is usually stored on less expensive and slightly slower storage devices to maximize the financial investment.	• Leverage DPW's established process for data archiving, using IBM Optim solution.

Figure 6.6-181. Deloitte's Data Protection Techniques.

We leverage existing data protection tools such as custom data redaction methods to de-identify production DPW data when refreshed into the lower environments. Similarly, we leverage DPW standard tool, IBM Optim for data archiving. In addition, we will assist DPW identify and select data protection solution such as database encryption and data leakage prevention for improving the security posture of the DPW databases.

We will also assist DPW in design, configuration and implementation of the data protection solutions.

In summary, we understand the importance of database level security and protection. We have implemented similar data protection solutions that helps secure the data and meet DPW expectations.

Database Security and Encryption Types to Meet DPW Requirements

Open Systems

- Work with DPW to improve existing standards and develop new standards for open systems database security and encryption
- Support DPW to identify and select appropriate open systems database security and encryption solutions – DLP/IRM, database encryption, data redaction, DAM and data archiving
- Perform Proof of Concept (POC) for the data security and encryption solutions to identify constraints and mitigation controls before deploying in production environment
- Classify PII data present in the open systems database as per the guidelines defined by DPW Data Privacy Standards
- Design, configure and implement data security and encryption solutions
- Monitor exceptions and submit periodic and ad hoc reports to DPW database stakeholders and CISO

PACSES Mainframe

- Work with DPW to improve existing standards and develop new standards for PACSES Unisys Mainframe database (RDMS/DMS) security and encryption
- Support DPW to identify and select appropriate PACSES Unisys Mainframe database (RDMS/DMS) security and encryption solutions – DLP/IRM, database encryption, data redaction, DAM and data archiving
- Perform Proof of Concept (POC) for the data security and encryption solutions to identify constraints and mitigation controls before deploying in PACSES production mainframe
- Classify PII data present in the PACSES Unisys Mainframe database (RDMS/DMS) as per the guidelines defined by DPW Data Privacy Standards
- Design, configure and implement data security and encryption solutions
- Monitor exceptions and submit periodic and ad hoc reports to DPW PACSES Unisys Mainframe database (RDMS/DMS) stakeholders and CISO

CIS Mainframe

- Work with DPW to improve existing standards and develop new standards for CIS Unisys Mainframe database (RDMS/DMS) security and encryption

- Support DPW to identify and select appropriate CIS Unisys Mainframe database (RDMS/DMS) security and encryption solutions – DLP/IRM, database encryption, data redaction, DAM and data archiving
- Perform Proof of Concept (POC) for the data security and encryption solutions to identify constraints and mitigation controls before deploying in CIS production mainframe
- Classify PII data present in the CIS Unisys Mainframe database (RDMS/DMS) as per the guidelines defined by DPW Data Privacy Standards
- Design, configure and implement data security and encryption solutions
- Monitor exceptions and submit periodic and ad hoc reports to DPW CIS Unisys Mainframe database (RDMS/DMS) stakeholders and CISO

Develop Application Related Data Fixes

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- Develop application related data fixes

Deloitte supports application related data fixes in each of the environments for the in-scope systems. Data fixes are executed for a number of reasons, including:

Develop Application Related Data Fixes activities	Deloitte's approach to Develop Application Related Data Fixes
Application Configuration	• Reference table data to drive application drop down values, reference table code/description combinations, business rules, rates or criteria ranges used to make business decisions. • “Day Zero” or seed data that is required to allow the application to function properly. This could be altering data in structures that house screen prompts that are used to dynamically generate web pages.
Data Corrections	Periodically, application issues, end user data entry errors or incorrect business decisions need to be rectified by natively altering the data in the database.
Functionality Activation	Application “driver” tables are used to determine if a user should be presented with certain functionality. This is typically used during a phased rollout in order to limit new functionality to a finite user community. Alterations to values in the table would support the rollout of functionality to additional users.

Figure 6.6-182. Deloitte's approach to Develop Application Related Data Fixes.

While online functionality mitigates the need for data fix execution, it is sometimes preferable to progress application configuration and functionality activation changes through a more manual, methodical, visible approach.

To support this, Deloitte DBA's worked closely with BIS to make operational an efficient, repeatable data fix execution process.

The need for a data fix, whether open system, CIS or PACSES mainframe based, is tracked and managed through the PSR process.

Open System Data Fixes

Data fix scripts are discussed between the application developers and DBA's to verify no unintended consequences arise from the subsequent execution. The fix is exercised against a copy of the production database in the TFP or similar environment to verify the business issue has been resolved. System resource consumption, expected record counts, duration and rollback procedure information is shared with the BIS database team upon delivery of the request. Data fix requests are coordinated and scheduled with the BIS database team and executed. Upon execution, the application team will verify expected results are reflected in the production environment.

The execution of the data fix can be supported in one of three ways. For mission critical or highly complex data fix executions, on site, dedicated resources from both the BIS and ITSS DBA teams will be available to physically execute and monitoring the execution prior to the beginning of the business day. Application team members will also be mobilized to test the system shortly after execution. Once completed, maintenance pages, if required, would be lifted and normal access to the application would resume.

For less complex fix requests, Deloitte DBA's would submit the scripts to BIS to be placed in the batch "data fix queue". BIS DBA's, who own the system credentials to the production database, would alter the scripts to be able to access the production database for unattended execution. Log files from the execution are shared with the Deloitte prior to the beginning of the business day for verification.

CIS Data Fixes

Additionally, straightforward CIS data fix requests are reviewed and approved through change management and submitted as special processing requests (SPR's) to scheduling for execution. Post execution follow up is provided by the requestor to close the PCR.

PACSES Data Fixes

PACSES coordinators in the county DRS offices communicate the need for a data fix to the Help Desk in Lot 5. After logging a PSR, the Help Desk forwards the request to our SME team who either rejects the request, or validates the request and forwards the request on to the respective Application Maintenance Team.

Each team has designated developers that fulfill data fix requests. A library of tested, parameterized data fix programs, written in COBOL, is maintained by the developers. The data fix programs update the data element and insert audit records within the system for the purpose of tracking.

One-time data fix requests, or requests that require an advanced level of technical understanding, are assigned to the PACSES DBA who creates Interactive Query Utility (IQU) programs to fulfill the requests.

Review Database Query Performance and Make Recommendations

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RFP Reference: 4.1 Applications/Systems Operations Support

- Review database query performance and make recommendations for improvement

Deloitte reviews database query performance and makes recommendations for improvement for the in-scope systems.

Deloitte monitors database performance on an ongoing basis in production as well as non-production environments with the primary goal to proactively identify tuning opportunities before they impact the end user experience. The increased business offerings of DPW will require an expansive data foundation that will grow substantially over the coming years. With that perspective and with our knowledge of your databases, we have made performance tuning a proactive priority rather than a reactive measure to fix the issues after they occur.

Deloitte's Open Systems Query Monitoring Approach

Performance tuning starts early in the design and development phase of the application life cycle. The Deloitte DBA's are involved in assessing the performance of queries when the application teams develop new code or modify existing code. Our DBAs mentor the developers about how to ascertain the performance of a query by using predictive tools such as the Oracle "Explain Plan". Our developers with the help of the DBAs regularly run the "Explain Plan" to verify that the queries do not result into expensive table scans and Cartesian joins which can degrade the performance of other processes.

The ITSS DBA team's approach to monitoring queries in production as well as non-production environments will include the following activities:

- Proactively monitor top 10 queries
- Identify queries with performance issues
- Perform analysis to determine solution
- Communicate performance tuning efforts to the BIS
- Implement the fix in production environment

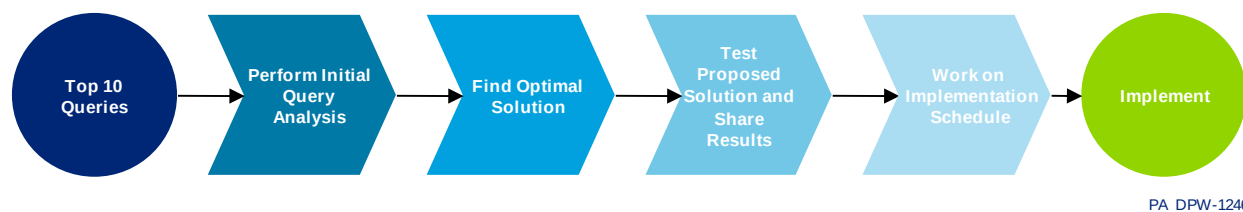


Figure 6.6-183. Deloitte's Query Monitoring Process.

The Deloitte approach is to create a top 10 list of worst performing queries and concentrate on fixing those first.

Proactively Monitor Top 10 Queries

As a proactive measure to avoid performance issues in production system, the ITSS DBAs has developed a utility to capture the “top 10 worst performing” queries by run time and by resource consumption. DBAs maintain a log of these queries and share it with the BIS DA team on a weekly basis. During the weekly database administration team meeting, these queries are prioritized for changes. Once they are prioritized, the Deloitte DBAs work with the application teams to resolve the performance issues.

In addition to the “Explain Plan” tool, DBA's leverage additional tools from Oracle to support proactive query monitoring, including:

Oracle Tools That Support Performance Monitoring	Deloitte Activity Supporting Performance Monitoring
OEM (Oracle Enterprise Manager)	Oracle Enterprise Manager is a graphical user interface (GUI) that provides integrated solution for managing the aspects of the Oracle Grid and the applications running on it. It provides centralized management functionality for the Oracle IT infrastructure for administering and managing multiple database instances. Using OEM a DBA can perform the administration and management activities like create and manage users, roles, tablespaces, data files, jobs, alerts, etc. OEM also provides monitoring, performance tuning functionality and tools to monitor the database. OEM utilizes oracle provided utilities Automatic Workload Repository (AWR) and Automatic Database Diagnostic Monitor (ADDM) for performance tuning.
Automatic Workload Repository (AWR)	Automatic Workload Repository (AWR) is an Oracle provided tool that automatically collects performance statistics from database real-time. The data collected is store in a repository as a snap shot for analysis. AWR also provides utility/scripts that can generate detailed reports from the data stored in the repository through which DBAs can address performance issues. AWR is also a source of information for several other Oracle features including, Automatic Database Diagnostic Monitor (ADDM), SQL Tuning Advisor etc. AWR can be accessed either via command line interface or through the Oracle Enterprise Manager (OEM).

Oracle Tools That Support Performance Monitoring	Deloitte Activity Supporting Performance Monitoring
Automatic Database Diagnostic Monitor (ADDM)	Automatic Database Diagnostic Monitor (ADDM) is an Oracle provided tool that provides vital performance improvement recommendations. The report generated using ADDM provides root cause analysis of top "n" performance bottleneck observed in the database as well as recommendations to rectify that issue. ADDM report identifies and provides resolution to key performance bottlenecks like excessive disk read (I/O), high CPU utilization by a process, session locks , contention issues and issues specific to Oracle Real Application Cluster. ADDM use the data collected by AWR. ADDM can be accessed either via command line interface or through the Oracle Enterprise Manager (OEM).
SQL Trace with TKPROF (Transient Kernel Profiler)	SQL Trace and TKPROF is an Oracle provided command utilities that provides extensive report that helps a DBA to debug and identify performance bottlenecks at the operating system level. Even though most of the performance related issues can be identified by AWR/ADDM utilities, it is hard identify issues at a session or application level. Using SQL Trace utility, a DBA can trace the activities at the session or database level. The information collected by SQL trace are extremely verbose and cryptic. TKPROF is a command line utility that reads and reformats the cryptic trace file into a human readable form. Report generated via TKPROF are extremely useful in the application tuning process. The report provides detailed information about each SQL and Procedural SQL executed during entire session and how much CPU, Memory and Disk I/O consumed. Trace enabled at system level creates multiple trace files for each session. Normally SQL trace is not performed in production environments unless there is a critical issue that cannot be reproduced in lower environment because use of SQL trace may cause very high overhead to the database.

Figure 6.5-184. Tools Leveraged By Deloitte's To Support Proactive Tuning.

Perform Initial Query Analysis

The Deloitte DBA's monitor the production databases on an ongoing basis to identify queries that may potentially have a performance issue. Queries with unusually long run times are potential candidates for performance improvements. Similarly, queries that consume exceptionally high amount of resources or queries that are executed at an unusually high frequency are the typical candidates for monitoring and potential improvements. When such queries are confirmed to have a performance issue, the Deloitte DBAs keep the BIS DA team informed about the issue and they work with the application team to resolve the issue.

Find Optimal Solution

The Deloitte DBAs use their in-depth functional knowledge as well as broad technical experience and analyze the queries to ascertain the potential issue that may cause a performance bottleneck. Once the issue is identified, a solution is developed and tested

in the lower environments. Since the code fix could affect multiple aspects of functionality, a thorough testing is carried out in the lower environments by the application teams to validate that the performance fix does not adversely impact other functionality.

Test Proposed Solution and Share Results

Throughout the process of fixing the performance issue the Deloitte DBAs keep the BIS DA team informed about the progress being made. Upon validating that the performance issues have been resolved by the code fix, a “before” and “after” output of “Explain Plan” is collected and shared with the BIS DA team. Figure 6.6-185 shows how these results are shared with BIS.

DB	Application	Sub-System	SQL ID	BEFORE tuning			AFTER tuning		
				Buffer Gets	Disk Reads	Elapsed Time/Sec per Exec	Buffer Gets	Disk Reads	Elapsed Time/Sec per Exec
XXX	XXX	XXX	XXX	1889	1886	1.62	4	4	0.04

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Figure 6.6-185. Deloitte’s Query Before and After Report.

This report is provide to the BIS DA team after a performance fix has been introduced showing the results of the tuning.

Implement the Solution and Monitor Results

Once the testing concludes in a satisfactory manner and the BIS DA team approves, the code fix is deployed to the production environment as part of a regular scheduled release. There may be times when an emergency fix may need to be carried out to keep the systems operationally functional. In such circumstances, the Deloitte DBAs work with DPW and the application team to acquire necessary business justification notes and approvals so that the fix can be deployed to the production system with BIS DA team’s assistance and supervision.

Monitoring the Load Tests

One of the important events that the Deloitte DBAs monitor for potential performance issues occurs during the application teams load testing efforts. The load testing is designed to exercise the standard user business functions in a controlled environment simulating production usage of the application. After the load test concludes, the Deloitte DBAs:

- Generate the AWR (Advanced Workload Repository) and ADDM (Automated Database Diagnostic Monitor) reports to identify queries that consumed unusually high number of resources
- Analyze the log files to identify if any queries resulted into a deadlock, indicating resource contention
- Generate the business metrics to validate if the load test performed similar level of business activity in a given amount of time

These reports and statistics indicate if a business process runs longer than usual and if it needs to be looked at closely from a performance standpoint. Once a performance issue is identified the Deloitte DBAs work with the application teams to resolve the issue before the code is deployed to the production environment.

Deloitte's Mainframe Query Monitoring Approach

Although the tools used to support mainframe performance monitoring may be different, the underlying methodology to support proactive tuning is quite similar.

For the mainframe environment, transactions are monitored for performance through the usage of tools like OSAM, UDSMON, SightLine, and Log Analyzer. These tools show individual transaction performance, overall database performance, and total system resource usage.

From the analysis of the data that these tools provide, Deloitte evaluates whether the programs or database or some other system parameter may require tuning. For more details on mainframe performance monitoring, please refer to the *Response Time Monitoring and Problem Resolution* and the *Database Administration and Performance Tuning* sections earlier in this proposal.

Perform Database Related Capacity Planning

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RFP Reference: 4.1 Applications/Systems Operations Support

- Perform database related capacity planning

Deloitte performs database related capacity planning for the in-scope systems.

As referenced in the RFP response *Software Resource Monitoring and Forecasting* earlier in this section, we perform capacity planning across the enterprise, for both mainframe and open systems centric applications. Our team works to support quarterly operational capacity planning as well as initiative based capacity plans. Deloitte's proficiency in assisting DPW capacity planning comes from years of experience monitoring the production infrastructure of both the mainframe and open system environments while concurrently supporting the design and implementation readiness planning of various initiatives. The following highlights how capacity planning is managed operationally and throughout the SDLC:

Capacity Plan Input	Deloitte Approach Supports Database Related Capacity Planning
Initiative Based	• Database capacity plans for initiatives will continue to be presented during the Application Review Board sessions II and IV. • The Deloitte database team will provide an in-depth analysis of project database increases and behavioral changes during the Physical Data Model review that would potentially impact database capacity, topology or configuration.

Capacity Plan Input	Deloitte Approach Supports Database Related Capacity Planning
Quarterly	- On a quarterly basis, Deloitte will leverage tools created and maintained through the years to collect, collate and present the relevant data that allows us to present capacity planning metrics. This includes expected increases in disk consumption, connection volumes, CPU and memory utilization, etc. - BIS assimilates this data and, working collaboratively with Unisys, creates the overall enterprise server capacity solution.

Figure 6.6-186. DPW Database Capacity Planning Types.

Initiative Based Capacity Planning

Capacity planning occurs consistently through various phases of DPW strategic planning process. Annual planning sessions provide the strategic vision DPW uses to guide its business and technical strategy. Initiatives prioritized during these sessions initiate high level planning for increased capacity including database hardware and software needs. As the planning stage progresses, prioritized initiatives are further scoped to more granular levels of detail and finally presented in a “High Level Estimate” deliverable. This estimate is used to confirm existing capacity will meet initiative needs or if procurements are indeed required.

As each initiative progress through the SDLC, capacity plan information continues to be collected, reviewed and refined. Deloitte presents capacity information during the ARB II and ARB IV sessions for database related processing.

The ARB II meeting is conducted during the General System Design phase. This is the first quantifiable capacity plan delivered for the initiative and contains initial estimates of database size, connection and transaction increases.

The ARB IV meeting takes place during the latter portions of the Systems Acceptance Testing phase and before the initiative’s go-live date. Deloitte uses this meeting to present a revised capacity plan from the ARB II meeting. These revisions take into account the results of Systems Acceptance Testing and Load Testing.

Quarterly Capacity Planning

In addition to the ARB II and ARB IV capacity plans, Deloitte provides DPW management an enterprise-wide capacity plan at the beginning of each quarter for each application. This capacity plan summarizes database growth from both day-to-day usage and growth due to new initiatives from the upcoming quarter. This allows for proactive discussion and planning for any major anticipated increases on an on-going basis.

For more information on capacity planning, please refer to our *Software Resource Monitoring and Forecasting* section earlier in this proposal.

Develop Scripts and/or Utilities for Refreshing Lower Environments

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RFP Reference: 4.1 Applications/Systems Operations Support

- Develop scripts and/or utilities along with accompanying documentation for refreshing lower environments

Deloitte develops scripts and/or utilities along with accompanying documentation for refreshing lower environments.

Operationally, it is advantageous to have a copy of production data in a secured, non transactional repository to support production change readiness activities. To that end, Deloitte works with DPW to execute a schedule refresh of the production database to the TFP environment. The TFP environment is used for various purposes, including:

- **Data Fix Rehearsal.** Data fixes are executed against TFP to verify operational accuracy and performance.
- **Deployment Rehearsal.** Application releases are rehearsed and validated in the TFP environment one to two weeks prior to production go live. The use of a copy of production data provides a reliable verification, functionally as well as technically, that the release will be successful.
- **Issue Analysis.** Issues found in the production database are investigated in TFP to reproduce the issue and verify the accuracy of a subsequent fix.

Additionally, Deloitte DBA's work closely with DPW to periodically copy the production database or sample cases to lower environments to support functional testing, load testing and unit performance testing.

Data Refresh Approach

Data refresh in lower environments is a highly coordinated event which typically involves a request for data refresh from the project team to Deloitte's DBA's. The DBA's then work closely with other development teams to coordinate the refresh as it may include shared repositories such as MCI, MPI and other enterprise service repositories.

Data refreshes for the Integration, SAT, Load Test and the TFP environments require automated scripts and batch jobs to carry out the tasks with little manual intervention. On the open systems platform, these scripts and batch jobs are scheduled and executed via automated schedulers while on the mainframe, they are executed via ECL commands invoking tools like Louis II and IQU.

The following highlights examples of data refreshes that take place in your mainframe environments.



- **Data Refreshes on PACSES.** The databases that support the PACSES mainframe lower environments are required to be initialized and rebuilt on a bi-annual basis. In doing so, we do not copy data from production to the lower environments. Instead, we require the creation of that data through application software and therefore no actual production data is used.
- **Data Refreshes on CIS.** Deloitte has developed a series of “case copy” utilities that copy individual cases or large quantities of data from the production to non-production environments.

Deloitte’s Approach for Protecting PII Data

Deloitte knows that the DPW databases contain sensitive information about Commonwealth residents including Personally Identifiable Information (PII). Deloitte values the privacy of this data and we make it our priority to safe-guard the PII from any inadvertent exposure to malicious activity.

Protecting the PII is especially important when data refreshes are carried out in lower environments. Our Deloitte DBA team has developed intelligent scripts that know where the PII resides in the database, which tables and columns need to be scanned and scrubbed-off so that sensitive information is protected. Typical data elements that are scrubbed off in this exercise include, but are not limited to, date of birth, social security number, tax IDs and address details.

DPW and Deloitte have also investigated the COTS product Optim to perform the actual data scrubbing of PII data. This tool makes it easier and more reliable to mask out or scramble sensitive data on database structures once that data is loaded onto the target database.

Deloitte Documents the Data Refresh Processes

Refreshing any database environment for systems as complex as those at DPW, requires attention to detail and well documented approaches. The Deloitte DBA team maintains documentation similar to a deployment playbook that outlines the processes associated with performing these data refreshes.

As database changes are implemented in the applications, the refresh processes and documentation must also be changed. Deloitte maintains separate documents for each environment and each application. These documents contain the following information at a minimum:

- The refresh process for the particular application and/or subsystem
- Batch jobs, manual procedures, or automated scheduler scripts that are required to affect a database refresh. Each of these “tasks” is documented with respect to purpose and sequence as part of the refresh process
- Processes the file locations for source and target databases
- Notification and escalation procedures in the event of successful or failed completion

Assist in Troubleshooting and Debugging Database Centric Issues

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RFP Reference: 4.1 Applications/Systems Operations Support

- Assist in troubleshooting and debugging database centric issues

Deloitte assists in troubleshooting and debugging database centric issues for the in scope systems.

Deloitte understands that our DBA team is responsible for addressing functional issues within the application and its consumption of the database resources. That is covered in more depth in various other sections earlier in this proposal such as: *Review Database Query Performance and Make Recommendations, Database Administration and Performance Tuning, Load and Performance Testing*, etc.

This RFP response addresses how we assist DPW in troubleshooting and debugging issues with the actual database engine for the open systems and those of the Unisys mainframe.

For the purposes of clarification, we have identified our understanding of the definition of database centric issues. These include, but are not limited to:

- Issues that require the installation of patches or configuration changes to the database engine
- Issues that require the installation and configuration of database peripheral software such as the database client, data provider, etc.
- Issues that impact the availability, performance and functional delivery of the database – which in some cases, may require restarts, reboots, failovers, etc.
- Issues with the behavior of the database that is inconsistent with the RDBMS Vendor (Unisys, Oracle, Microsoft) documentation – which may require the submission of a Technical Assistance Request (TAR) or equivalent with a third party vendor

Open Systems/Mainframe Database Centric Issue Management

Our team works jointly with DPW and third party vendors through a methodical process to resolve database centric issues. The following highlights the steps initiated to support issue analysis:

- **Determine Root Cause.** We work with BIS to form a SWAT team in an effort to expeditiously determine the root cause of the database centric issues. Deloitte will work with DPW and the third party vendor to create scenarios that repeatedly create the issue to assist in analysis. We provide our insight from an application business process standpoint as well as our vast knowledge of the database architecture to suggest a possible root cause.
- **Coordinate with Stakeholders.** Deloitte works very closely with DPW stakeholders to communicate the impacts of database issues so as to minimize operational business

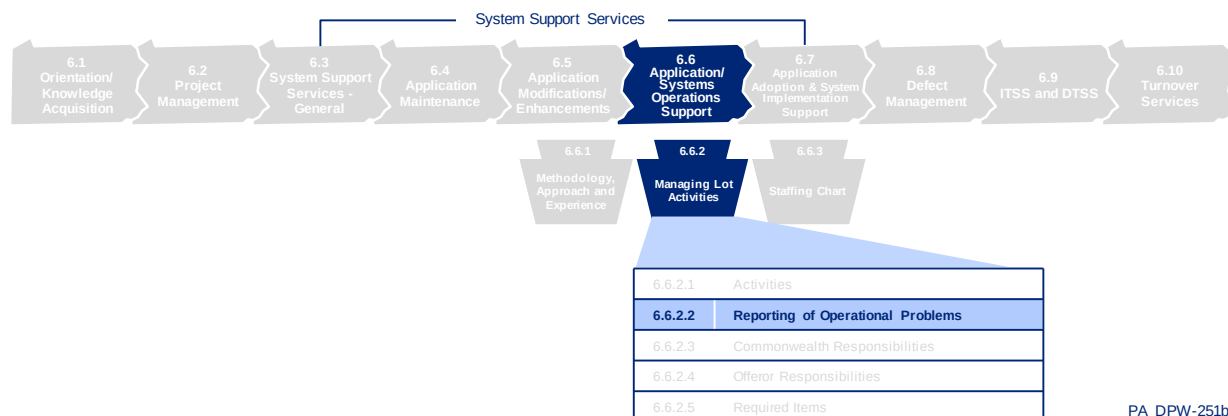


impacts. We work collaboratively with DPW to identify, communicate and implement alternative solutions that mitigates the issue in the short term while a long term strategy is pursued.

- **Verify Solutions.** Once a solution is identified, we work with DPW and the third party vendor to verify the application functions normally after the fix is applied. If necessary, we coordinate the testing of the solution under load to verify scalability.
- **Final Implementation.** We work with DPW to coordinate the implementation of the fix and final post deployment verification once completed. Once verified, Deloitte coordinates and communicates with application stakeholders to confirm the long term solution has been applied.
- **Proactively Monitor.** After final installation, Deloitte will monitor the production environment for repeat occurrences to truly confirm the issue has been resolved. Any issue found will quickly be escalated to BIS management.

Deloitte has a broad understanding of your infrastructure, the databases, and the applications that consume those databases. We are well-positioned to help you proactively prevent issues from occurring or rectifying these issues if they do happen – better than any other vendor.

6.6.2.2 Reporting of Operational Problems



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RFP Reference: 4.1.1 Reporting of Operational Problems

Upon the selected Offeror's discovery of any problem that may **jeopardize timely completion of its required tasks and obligations** under this contract, the selected Offeror of Lot #7 must notify the DPW Contract Administrator verbally and by e-mail. The notifications must be delivered as soon as possible but no later than at the close of business of the day the problem is identified if the problem occurs prior to the normal close of business. If the problem occurs after close of business, notification must be delivered no later than 9:00 A.M. Eastern Time the following business day. Daily status (via E-mail) of operational problems must be provided. Full written documentation that includes a Corrective Action Plan, that describes how the problem will be prevented from occurring again, must be delivered within five (5) business days. Where the operational problem results in delays in report distribution or problems in online access during the business day, the selected Offeror shall notify the DPW Contract Administrator or delegate within fifteen (15) minutes of discovery of the problem, in order for DPW work activities to be rescheduled. The selected Offeror will respond to events detected by DPW tools and monitoring processes.

Deloitte will effectively communicate, notify and escalate any problem that may jeopardize timely completion of required tasks and obligations.

Deloitte provides timely notifications, status and updates for operational issues that impact the completion of required tasks. We provide prompt escalation and resolution of production issues to minimize impacts on system availability, performance or functional delivery.

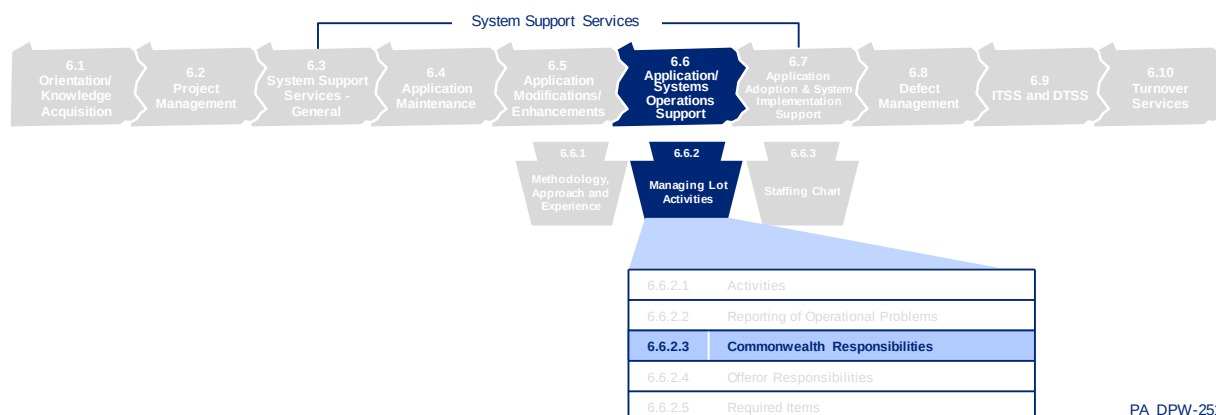
The following highlights our understanding and confirmation of RFP requirements:

RFP Requirement	Method/Timing
Notification of DPW Contract Administrator	Verbal and email
Notification of delivery problems identified during normal business hours	CTO Dashboard by close of business of the same day
Notification of delivery problems identified after normal business hours	CTO Dashboard by 9:00am Eastern Time the following business day
Notification of problems resulting in report distribution delays during business hours	Verbal and email within 15 minutes

RFP Requirement	Method/Timing
Notification of problems in online access during business hours	Verbal and email within 15 minutes
Daily status of operational problems	CTO Dashboard updated at least once per day
Full documentation of Corrective Action Plan and preventative measures	Report within 5 business days
Automated method for monitoring in-scope systems	Automated Health Checks 24 x 7

Figure 6.6-187. Full Support for Reporting of Operational Problems.

6.6.2.3 Commonwealth Responsibilities



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RFP Reference: 4.1.2 Commonwealth Responsibilities

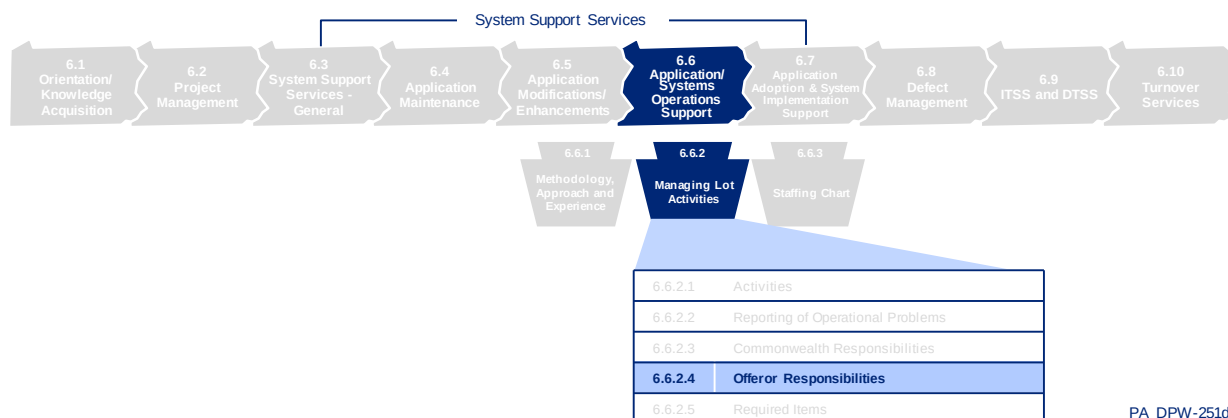
Commonwealth Responsibilities: Application/Systems Operations Support DPW's responsibilities include:

Deloitte acknowledges that for DPW to achieve its core missions and improve citizen services in a multi-vendor project environment, it requires well-defined responsibilities. We understand that both DPW as the client, and ourselves, as the vendor, have distinct responsibilities and will perform them in close coordination to achieve project success.

We will help facilitate activities that will allow the Commonwealth to meet the responsibilities specified in the RFP in a timely fashion.

Through our current contract at DPW, we have had the opportunity to understand and operate in your existing services model and have established working relationships with DPW stakeholders. We understand your new operating model and plan on leveraging these relationships to help effectively support your responsibilities in concert with ours.

6.6.2.4 Offeror Responsibilities



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RFP Reference: 4.1.3, Offeror of Lot #7 Responsibilities

The selected Offeror's responsibilities include:

- Perform routine system maintenance of in-scope systems at no additional charge including resolving defects and processing change requests. A listing of all current Change Requests, by system, is included as **Appendix TT iCIS Change Request List; Appendix UU PELICAN Change Request List; Appendix VV HCSIS Change Request List; Appendix WW PACSES Change Request**, and **Appendix XX Child Welfare Change Request List**.

Deloitte has carefully reviewed the RFP for requirements relating to routine maintenance of in – scope systems. We will adhere to the maintenance and operations processes consistent with DPW's established methodologies, and the approach to defect management to resolve defects and processing change requests through system maintenance efforts.

In addition, we also have reviewed **Appendix TT (iCIS Change Requests), Appendix UU (PELICAN Change Requests), Appendix VV (HCSIS Change Requests), Appendix WW (PACSES Change Request) and Appendix XX (Child Welfare Change Request)** in the context of providing system maintenance work. We understand the full list of outstanding defects and recognize a mix of functional and operational change requests.

We will work with you to prioritize these defects and come up with an appropriate release schedule that factors DPW's runway schedules, and availability of environments and production deployment needs. Consistent with the communication processes, we will escalate within the contract office on any potential changes to the release schedules.

The following table is a list of activities that we will carry out as a part of routine maintenance, and a brief description of how the task will be completed.



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Immediately notify DPW of any problems that could jeopardize timely completion of scheduled tasks.	Our communication approach formalized with DTE, DEA and DIMO results in escalation of operational issues to DPW for activities that could jeopardize timely completion. Depending on the task that caused a timeliness issue, our approach escalates to the appropriate stakeholders. A few examples are listed below: • Batch issues are escalated to DIMO, and to the appropriate system owners and program offices that may be impacted • Online system availability related issues are coordinated with DTE, DIMO and communicated to the appropriate program areas and user groups impacted • System Performance related items are coordinated closely with the areas of systems performance (server, database, network, security etc) and subsequently with the program area and user based impacted
Provide a maintenance team to operate and maintain the in-scope systems including the resources necessary to support the functions necessary for fulfilling the requirements of this contract and meet the performance criteria.	Deloitte is the only vendor who brings a maintenance team that is versed with the DPW in scope systems (6 applications, 27 systems, 25+ enterprise services, 200+ subsystems), your methodologies, processes, tools, and procedures to support the DPW enterprise. We supported your SLA and performance criteria in the prior contract and are well-positioned to transition to the new performance model in the new contract. A few highlights of our team includes: • Staff with more than 2,000 years of combined DPW service • Skilled in the 50+ technical platforms and products required in this RFP • Vast experience and knowledge of handling the mission critical operational needs such as SNAP COLA Mass changes, LIHEAP annual cutover and payments, TANF monthly issuances, Medicaid card processing, SSI payment issuances thereby saving 30M in annual state expenditures in processing, HCSIS provider payment annual cut over, payment streams to PROMISE for claims processing, PELICAN annual rollover, Child support disbursements and employer integration, child welfare child line etc.
Retain sufficient resources from initial knowledge transition as needed to support ongoing operation and maintenance of the in-scope applications and meet performance requirements.	Deloitte proposes the same team that is well versed with your in scope systems. With more than 400 staff versed with your systems, DPW retains the sufficient resource base needed to support ongoing operation and maintenance of the in scope applications and meets performance requirements. Deloitte is able to continue supporting the SLA requirements starting Day 1 of the contract. Deloitte retains experienced child welfare resources through its teaming relationships to allow smooth transition of that contract.

Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Correct emergency defects within twenty-four (24) hours and provide a root-cause analysis within five (5) days. The actual reconciliation must occur within thirty (30) working days, unless otherwise directed by the Department or unless the DPW Contract Administrator or delegate has granted an extension of the period of time necessary to cure the deficiency.	Deloitte corrects in-scope application related emergency defects consistent with RFP requirements. Our approach to emergency defects will provide DPW with the satisfaction of our responsiveness to the production issue, coupled with the rigor of detailed impact analysis needed for making sure that the production fix addresses the cause of the issue. Our approach includes the following features: • Identify and get a concurrence on emergency defects by facilitating communication between the respective program offices and BIS • Perform a root cause analysis and provide you the details within 5 days using our lessons learned document that also lists associated action items • Resolve defects within 30 days based on a deployment and bundling approach agreed to with DPW, and/or based on approval from DPW Contract Administrator
For nonemergency defects, provide DPW with a CAP within two (2) working days for approval.	Deloitte corrects in-scope application related non-emergency defects consistent with RFP requirements. Our approach to non-emergency defects will provide DPW with the flexibility of integrating these changes as part of planned maintenance releases along with streamlining the runway for DTE for overall deployment support. Non emergency fixes will be handled through our defect management approach that assesses the overall impact of the defect on the enterprise deployment schedules, availability of technical environments, and DTE's calendar for overall software deployment. Our approach includes the following features: • Deloitte provides a Corrective Action Plan (CAP) within 2 days for approval in the form of a PCR response description for approach • Our approach will be to document the CAP in the PCR using DPW's change request tool so that the information pertaining to the defect and its resolution is readily available • Facilitate communication with DPW to discuss the CAP and come up with an agreeable release schedule that is based on DTE's overall implementation runway
Correct all nonemergency defects within five (5) working days from CAP approval unless otherwise agreed, including a plan for the reconciliation of under payments, overpayments, and data that are a result of the defect. The actual reconciliation must occur within thirty (30) working days, unless otherwise directed by the DPW Contract Administrator or delegate has granted an extension of the period of time necessary to cure the deficiency.	Deloitte corrects in-scope application related non-emergency defects consistent with RFP requirements. Our approach to non-emergency defect correction schedule will be based on alignment of the defect with overall release bundles, availability of environments, and alignment with the DTE implementation runway for release. Our approach includes the following features: • Once the CAP that is documented within a PCR is approved and respective program office(s) and BIS reach an agreement over the release schedule we will resolve the nonemergency defects • Resolve defects within 30 days consistent with the established bundle and release schedules • Resolve defects within 30 days based on a deployment and bundling approach agreed to with DPW, and/or based on approval from DPW Contract Administrator



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
For all other defects, provide DPW with a CAP within five (5) working days for approval.	Deloitte corrects in-scope application related other defects consistent with RFP requirements. Our approach to these defects will provide DPW with the flexibility of integrating these changes as part of planned maintenance releases along with streamlining the runway for DTE for overall deployment support. They will be handled through our defect management approach that assesses the overall impact of the defect on the enterprise deployment schedules, availability of technical environments, and DTE's calendar for overall software deployment. Our approach includes the following features: • For other defects (such as cosmetic fixes) we will provide a CAP through a PCR description within 5 days to resolve the issues • We will document the CAP in the PCR along with the issue and the root cause analysis
Correct all other defects within thirty (30) days of CAP approval unless otherwise agreed, including a plan for the reconciliation of data that are a result of the defect. The actual reconciliation must occur within sixty (60) working days, unless otherwise directed by the Department.	Deloitte corrects other in-scope application related defects consistent with RFP requirements. Our approach to the other defects schedules will be based on alignment of the defect with overall release bundles, availability of environments, and alignment with the DTE implementation runway for release. Our approach includes the following features: • Finalize an approach to correct all other defects within 30 days of CAP approval based on an agreed upon bundle release calendar and schedule • Work with DPW to schedule a maintenance release • In case of cosmetic defects we agree to work with DPW to reconcile any data issues that are a direct result of cosmetic defect, within 60 working days of CAP approval consistent with the bundle release schedules
Process all priority change requests in the next applicable processing cycle or specially scheduled cycle as applicable.	Deloitte works to address the approach to priority change requests in the next applicable cycle or specially schedule cycle as applicable. Our approach to scheduling work will be based on available release windows, available environments and the alignment needed with existing release calendars and schedules to incorporate the change requests. Our approach includes the following features: • Follow process of reviewing change request needs with you for inclusion in maintenance releases, and assess whether it is a maintenance need versus a modification • Work with DPW to organize change requests and defect fixes into appropriate releases, or align with existing maintenance window releases • We will work with program offices and BIS to understand migrating processing cycle, schedule and plan maintenance release • We will communicate these dates to BIS through the use of the BIS implementation calendar to keep the stakeholders in the loop
Process all routine change requests within seven (7) calendar days.	Deloitte works to review and triage change requests as required in the RFP. We will conduct weekly sessions with DPW and address the requests and categorize them into maintenance or modification requests for processing.



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Submit a system test plan and the system test results and obtain approval when required by the Department for test specific defect fixes; note that specific defect fixes for which the Department requires test plans and test results cannot be implemented without DPW approval.	Deloitte submits system test plans, results and obtain approval for test specific defects. Consistent with DPW processes, we recognize that the test plans need DPW approval prior to implementation. Our approach to test planning involves close coordination with BIS, impacted program offices and end users to finalize a thorough testing approach that involves testing across the various components. Our approach includes the following features: • Sharing test results with you before migrating the code fix to the production environment so that you can review the test results • Correction of critical errors found during review, and obtaining your approval prior to migration to production
Verify the results of all maintenance performed on the system and take appropriate action for any problems encountered.	Deloitte works to address maintenance issues and use the Department's defect management and maintenance processes to take action on problems encountered. Our approach to maintenance prioritization includes prioritization, triage, communication, and follow through on production and maintenance related issues. Our approach includes the following features: • Post deployment in the production environment we will validate and verify that the fix was successfully deployed to the production application • While validation, we will work with you to immediately resolve the issues or fix the issues via the normal defect resolution process
Attend regularly scheduled status meetings with the appropriate DPW staff to monitor current operations and to monitor progress on maintenance activities and provide status on open defects.	Deloitte attends regularly scheduled meetings to monitor ongoing operations and support, review progress, and provide status on open defects. Our approach to client communication integrates formal governance meetings, informal meetings, electronic communication formats and other established processes for defect management. Our approach includes the following features: • Regularly participate in scheduled status meetings with appropriate DPW stakeholders to monitor the current operations • Report status and progress of defect fixes and provide updates with respect to scheduled change requests in the upcoming releases
Provide summary logs and detailed reports on all defects and change requests in format acceptable to DPW; maintain most current version of these logs and reports online and provide updates and statistics at the status meetings.	Deloitte works to review summary logs, defects, and change requests in DPW acceptable format. We maintain the current version of the logs and reports online through updates and statistics. Our approach to reporting is consistent with the defect management components, reporting needs for consistency across the DPW enterprise. Our approach includes the following features: • Provide summary and detailed logs on all defects and change requests in a format acceptable to DPW • Submitted at a frequency required by DPW and will be made available online • On a periodic basis, provide updates and relevant statistics



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Provide consultation to DPW or other vendors performing work on behalf of the Department in the development of maintenance requests as requested.	Deloitte works in coordination with DPW and other vendors as applicable in the development of maintenance requests. Our approach includes the following features: • Work with DPW and/or vendors working on behalf of DPW and provide consultation with respect to performing maintenance work • Work collaboratively to prioritize requests, assign requests to a release, design the technical details to support the request, develop or update the necessary components, conduct acceptance testing, migrate the release and perform production validation • Provide input on business requirements, provide valuable insights about the impact on other areas of the system and provide any other general guidance that may help you perform maintenance work efficiently
Use and maintain automated system for tracking and reporting of maintenance projects, and provide regular reports to the Commonwealth.	Deloitte works closely with DPW to incorporate the right set of automation to provide the details of tracking and reporting and maintenance projects. Our approach includes the following features: • Deloitte's change control process utilizes an automated system to track and report maintenance requests and to maintain the status of these requests to provide ongoing status reports to DPW • Opportunity to assess defect tracking system(s) in future, and migrate the maintenance tracking to the newly selected tool • Deloitte provides detailed data on defect tracking which will include but not limited to creation date, change request details, initiator of the request, individual assigned to make the change, request status (for e.g., in-process, completed), date completed, environment and target release date
Perform work assignments according to priorities set by the Commonwealth.	Deloitte works closely with change control boards, maintenance priority review sessions and during annual scoping to address work items. Our approach includes the following features: • Work with you to identify priorities for requests and to perform work assignments according to the priorities. • Work with you to prioritize what needs to be delivered at a priority basis and document these priorities in the request tracking tool for future references



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Correct all errors and discrepancies found in the operational system at no additional charge for computer resources or personnel needed to maintain or correct the system.	Deloitte works to address errors and discrepancies consistent with our overall maintenance and defect management approach. Our approach follows the prioritization and the bundling processes consistent with DPW's established SDLC and production deployment processes. Our approach includes the following features: • Correct new errors and discrepancies found in the operational system adhering to the established defect management processes • Consistent with the established defect and maintenance processes, corrections will be made within the timeframes required in the RFP and will include the maintenance and corrections activities beginning at the start of the contract period. These corrections and maintenance activities will work to maintaining the day-to-day business operations of the system.
Responsible for packaging applications for deployment at a designated DPW disaster recovery facility. This would include a build and deployment script customized for that environment as well as post deployment testing to determine that the applications are functioning properly.	Deloitte packages applications for deployment for disaster recovery use, and also testing. The deployment packages will include scripts for installing the application to bring up at times of needs. Our approach includes the following features: • Deployment approach utilizes automated scripts to deploy applications in any environment, which includes production system facilities as well as environments designated as disaster recovery facilities • Deloitte utilizes test scripts to confirm that the deployment was successful and the respective application is functioning properly
Participate in Commonwealth discussions and planning related to disaster recovery and business continuity.	Deloitte participates with Commonwealth discussions and planning relating to disaster recovery and business continuity. Our approach includes the following features: • Actively participate and engage ourselves in your discussions and planning process related to disaster recovery and business continuity • Provide industry leading practices recommendations and insights from our internal research of newer approaches (such as Cloud Computing) with respect to building an effective Disaster Recovery facility to provide business continuity
Provide monthly reports detailing the activities of the maintenance staff, including a burn rate report, to DPW.	Deloitte provides monthly reports detailing activities of maintenance staff including regular burn rate reports. Our approach includes the following features: • A report about the ongoing maintenance activities from a resources and consumption perspective • Distributed on a monthly basis or whenever requested by you and will include details of staffing and burn rate



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Participate in brainstorming discussions of DPW initiatives.	Deloitte provides broad subject matter and DPW experience based support to participate in brainstorming of DPW initiatives. Our approach includes the following features: • Bring to the brainstorming discussions many years of experience working with government clients, rich knowledge of advanced technologies and insights about newer approaches to build information systems and make meaningful contributions to these discussions • Maintain a vast repository of knowledge which includes technology white papers, point of view documents and case studies that provide us the guidance on various matters related to building enterprise systems and technology solutions. We will leverage this knowledge to provide you actionable recommendations.
Participate in planning and testing the disaster recovery program, per the agreed schedule.	Deloitte participates in testing and planning of disaster recovery programs based on schedules agreed during annual scoping sessions.
Manage, maintain, and monitor the various databases that support the in-scope systems.	Deloitte provides database support across the in-scope systems with broad subject matter experience, understanding of the DPW systems, data structures, information architecture, and data direction.
Manage, maintain, and monitor application components.	Following our proposed maintenance methodology, and defect management approach, we maintain and monitor the application components of the in-scope systems covered under this RFP
Provide assistance to all interested or appropriate parties for changes or problem resolutions.	Consistent with our established triage processes, communication protocols and governance needed for maintenance, Deloitte collaborates with DPW to provide assistance to impacted parties (program office, BIS agencies, field agencies) in the resolution of production issues.
Provide assistance for hardware and software based upgrades, as requested.	Deloitte recognizes that DPW procures hardware and software through its product vendors and/or through DPH. To the extent the products impact the inherent applications, we provide assistance for hardware and software upgrades as requested. These are prioritized as part of maintenance where code changes are not involved, and our support includes any application regression testing that may be involved with upgrades. We will also use our operations team to assess any impacts that may result from these upgrades from a technology perspective.
Package applications for deployment to the Test for Production, Production, and Disaster Recovery environments in accordance with timelines established by DPW.	Deloitte works closely with DTE and DIMO to follow the DPW process for deployment and migration of software across various DPW environments consistent with established deployment schedules and baselines. In addition, we will use our approach of using automation scripts for application deployments through these environments.



Deloitte Responsibilities	Deloitte Approach to Meeting RFP Requirements
Participate in host environment and Storage Area Network technology refreshes as requested by DPW.	Deloitte, especially its operations team members participate in the discussions and other activities with respect to refreshing the host environments and Storage Area Network technologies. These are required to support any ongoing impacts these may have on application blue print, performance and access by end users.
Identify and communicate changes to the application that could potentially impact DPW's network environment.	Deloitte works closely with DPW to identify and communicate changes to the application that could potentially impact the network environment. Ongoing operational changes caused by increased workers, work patterns, increased client and caseloads can have impacts increases in network traffic. Deloitte will work with DPW and as part of quarterly capacity plans and identify the potential for network impacts.
Participate in an annual architectural review that comprises all components of the system in order to achieve performance and cost efficiencies. This will initially occur within six (6) months of the start of operations and annually thereafter. This review will include recommendations on how to improve application performance.	Deloitte works closely with DTE, DIMO and DEA as part of annual architecture reviews to identify ongoing performance and cost efficiencies. We understand and support the initial review within 6 months of contract start, and then align with the annual planning process for ongoing architectural changes. Areas of focus could include operating system performance, operational tools, database capabilities, server configurations, middleware architectures, knowledge management loads, security infrastructures and COTS product configurations to identify potential impacts to application performance. As part of annual scoping, we will work with BIS to prioritize these changes from a overall workload standpoint, and also assess overall impact to maintenance and modification related work loads.
Participate in defining or identifying required upgrades or system changes in order to support upcoming modifications or enhancements related to increases in the workload or user base or other application changes that affect the existing architecture plan or performance level. This should occur during the annual review and on an as needed basis as determined by DPW.	Consistent with the modifications related scope, and based on annual scoping schedules, Deloitte works closely with DPW to define and identify technology upgrades required in tandem with the modifications. Based on results from annual scoping, business modifications could result in significant changes to technologies such as SOA, enterprise services and new COTS products that are critical to the ongoing upkeep of the DPW technology platform. In addition, business changes could also add additional program areas, or business units and users, and result in growth of system use. Using the annual planning process, Deloitte works closely with BIS to communicate the changes needed to the operating platform for ongoing support.

Figure 6.6-188. Deloitte Approach to Meeting RFP Responsibility Requirements.



Suitable Resources to Support the Application Support Services

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RFP Reference: 4.1.3, Offeror of Lot #7 Responsibilities

DPW requires that the selected **Lot # 7** Offeror have suitable qualified personnel resources, facilities, and supplies necessary to support the application support services (relevant services as required), shared and direct technical services outlined in this RFP. The Offeror will be required to align resource capacity to meet demands and to successfully support multiple engagements and business priorities independent of specific program, business function, and/or in-scope systems. Reference the Required Work Skills provided in Section D1 of the RFP.

Deloitte has the ability to exclusively deliver hundreds of highly skilled individuals, with current DPW experience, to provide information technology services to DPW.

Deloitte realizes that unplanned situations occur, where immediate action is required to fill positions. This is not an unusual situation for our firm; as our client's business needs have evolved, we have had to deal with this issue many times. Our response to these situations has been to exercise a rapid deployment strategy. This strategy effectively increases the overall population for resources by broadening the subcontractor pool. When coupled with our internal network and existing contractor base, this reduces the overall time to market of potential candidates.

For example, using this strategy, we recently helped stand up a technology solution to support Pennsylvania Fair Care by quickly pulling together a cross-functional team and deploying within three weeks of the project start. At the same time, we led an effort with the federal government to establish a technology solution for the high risk pool; that effort involved forming a 50 person team in two weeks and deploying in less than three months. We intend to leverage our rapid deployment strategy as part of the staffing strategy approach for DPW. As a result, we have the ability to scale up and scale down rapidly to address changes in DPW's information technology needs.

The ability to allocate the right resources is fundamental to the success of any business. The right resources often are those that have specific skills which are in high demand and sometimes difficult to locate. Deloitte's services are routinely categorized as those in high demand, and we are proficient at the locating and allocating of these specialized resources. When a skill is identified as being something that will be in strong demand for our clients, we label this as a "hot" skill and execute a campaign to focus on the attracting and hiring of those skill sets through our internal recruiting and staffing network of over 200 practitioners. Alternatively, we can also turn to our supplier network to provide those skills for us. It is a credit to our firm that because of the types of services and projects we perform, Deloitte attracts individuals with critical skills, even when market competition is difficult.



We understand that demands for staff needs can vary throughout the life-cycle of projects and also at times can place great demands on the ability of providers to allocate sufficient resources. Through our own qualified internal resource pool, internal recruiting capabilities and an extensive subcontractor network, Deloitte is well suited to meet the resource needs of the Commonwealth, particularly to meet peak demand periods.

Collaboration with Other Selected Offerors

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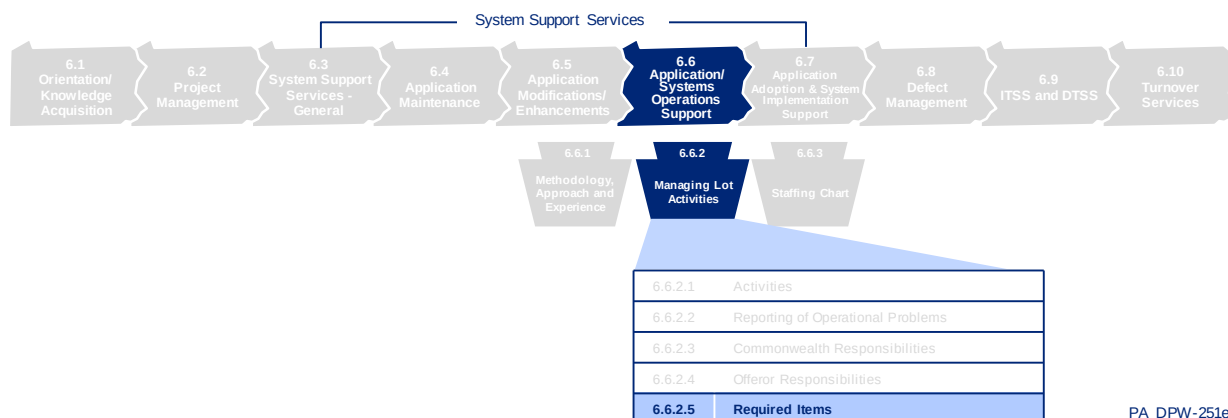
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RFP Reference: 4.1.3, Offeror of Lot #7 Responsibilities

NOTE: The selected Offeror must work collaboratively in the assessment and implementation of any application support services activities. The selected Offeror agrees to cooperate with any other selected Offerors, and shall not commit or permit any act that may interfere with the performance of work by any other Contractor.

Deloitte has been a trusted advisor of DPW's for over 30 years. We will work collaboratively to assess and implement application support services activities and cooperate amongst other selected Offerors to form one cohesive team.

6.6.2.5 Required Items



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Our approach to the Operations Support activities uses a structured, repeatable set of processes that extends the DPW IT Methodology and is based on ITIL and CMMI frameworks. Our team brings detailed knowledge and in-depth experience of DPW technical domains and production environments for efficient, uninterrupted support to DPW stakeholders and citizens.

Over the last 10 years we have provided reliable Operations Support for the DPW suite of applications as the applications and systems environment have grown in size and complexity. Today, the DPW IT environments include a diverse mix of 6 applications, over 27 enterprise services, new and old technologies, batch and online, and COTS and custom systems using more than 50 technology products. Our team has shown an ability to adapt to the requirements and provide the quality of services expected by the Department.

- Demonstrated team that meets SLAs
- System availability in excess of 99%
- Team is ITIL v.3 Foundation Certified

Our approach focuses on the needs of these application-specific domains and environments. We use ITIL-based approaches to evolve DPW production operations to the next level of maturity, as depicted in Figure 6.6-189.

Features	Benefits
Seasoned team that understands the intricacies and requirements of the strategic business and operating environments	• Speeds delivery of value with minimal learning curves • Enhanced system stability and availability during transition period and beyond • Lowers risk to DPW and citizens

Features	Benefits
Applies ITIL and CMMI frameworks that extend DPW IT Methodology: - Detailed processes, procedures, reports, and tools - Compliant with Commonwealth and DPW standards, methodology, and guidelines - Continuous improvement activities consistent with ITIL	- Enhanced system stability and availability - Enables cost effective delivery - Increases confidence in meeting and exceeding SLAs - Lowers DPW and program risk
Provides early and consistent cooperation and communication with DPW BIS, program offices, and other stakeholders, as well as other Lot vendors	- Better service to DPW stakeholders and citizens - Reduces transition and on-going risk

Figure 6.6-189. Key Features and Benefits of Our Approach to Required Items.

Required Resources

IV	Page IV-383	RFP Reference: Applications/Systems Operations Support Required Items
1) The resources required to support Application/Systems Operations Support tasks including skill sets and experience, and		

The resources required to support Application Systems Operations are provided in the following section: Staffing Chart. Skill sets and experience are listed by role in *Section 8.4, Staffing Narrative*.

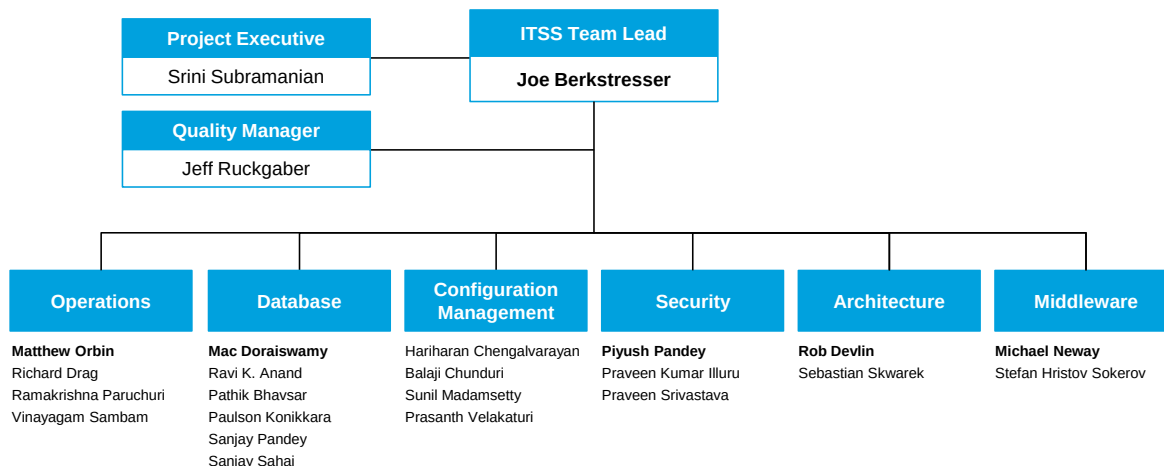
The resources required to support Application Systems Operations are listed in the staffing chart at the end of this section.

Organizational Chart

IV	Page IV-383	RFP Reference: Applications/Systems Operations Support Required Items
2) The associated organizational chart		

The team supporting Application/Systems Operations, called Information Technology Shared Services (ITSS), is organized into an Operations team and then five teams group by technology domain.

Application/Systems Operations Support Team



BOLD - Lead

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Figure 6.6-190. Organization Chart for ITSS.

The Organization Chart includes for ITSS includes teams focused on Operations and Technology Domains.

Coordinate and Work with Designated DPW Stakeholders, Third Party Vendors, and Other Selected Offerors

IV

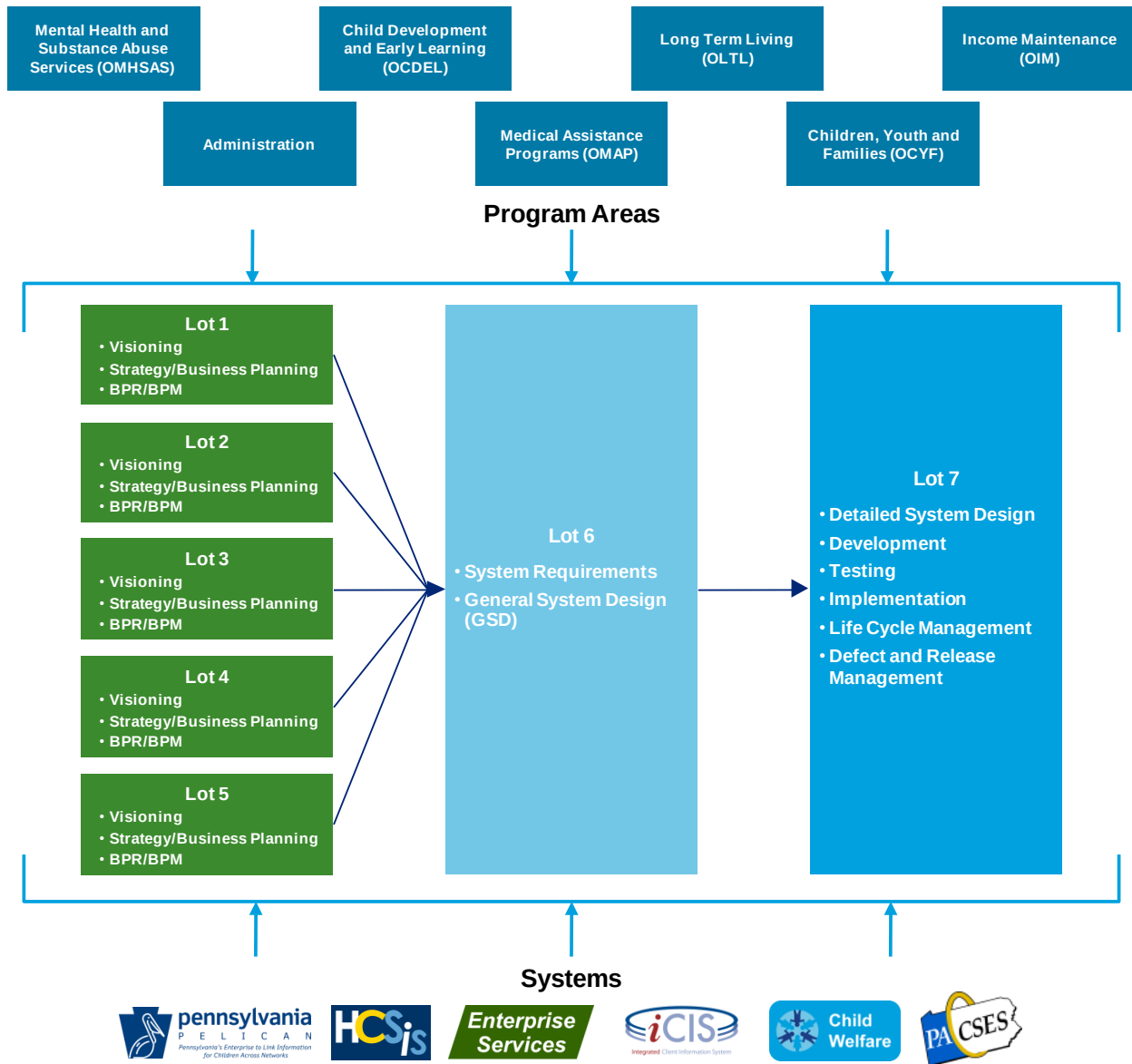
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RFP Reference: Applications/Systems Operations Support Required Items

The Selected Offeror of **Lot #7** must provide a detailed description of how they will effectively coordinate and work with designated DPW stakeholders, third party vendors, and other selected Offerors (if applicable) to:

- 1) Maintain ongoing operational support of the in-scope applications and associated systems throughout their useful life in live production environments,
- 2) Ensure systems integrity and availability when performing periodic upgrades, technology migrations, and platform consolidations as directed by the Department,
- 3) Assist in problem resolutions,
- 4) Prevent and mitigate systems security threats and vulnerabilities,
- 5) Improve systems performance, and cost efficiencies

Deloitte coordinates and works closely with DPW stakeholders and third party vendors. Today, we look forward to working with the other selected Offerors as defined by the RFP, as depicted in Figure 6.6-191.



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Figure 6.6-191. Effective Coordination Across Multiple Stakeholder, Program and System Needs.
Deloitte provides an effective model to enable coordination across lot vendors and with DPW stakeholders.

The following figure provides a general overview of our approach to effective coordination and working relationships between the various stakeholders.

RFP Overall Coordination Needs	Deloitte Activities Address DPW's Overall RFP Coordination Needs
Maintain Ongoing Operational Support	• Verify key business metrics such as availability, performance and processing measures are communicated on a daily basis • Verify that the functional operational processes are effectively managed, including batch processing, annual fiscal year processing, etc. • Provide relevant information and insight to assist DPW in the effective planning of infrastructure support activities, such as capacity planning, upgrade management and performance tuning • Assume a leadership role in the coordination and resolution of application centric issues, including required communication of status to appropriate stakeholders in a timely manner • Provide critical insight, guidance and advice for infrastructure related issues, including timely analysis of application behavior to assist in root cause determination
Confirm System Integrity and Availability	• Provide tasks and services necessary to support the overall maintenance of the in-scope applications with regard to performance, availability and functionality • Collaborate with stakeholders to support and manage the required infrastructure upgrades and patches required to maintain appropriate support levels • Perform required testing to help verify the application scales to estimated capacity needs • Perform various health checks and data validity verifications to identify any potential data integrity issue
Assist in Problem Resolutions	• Follow the existing DPW Problem Notification protocol to quickly notify appropriate stakeholders of a system issue • Assume a leadership role in the resolution of application centric issues by chairing required calls, providing insightful analysis of application behavior to identify a root cause and to determine mitigation or final solution options to DPW for approval • Provide specialist level counsel for infrastructure or business challenges that impact the consumption of system resources or expected use of the application. Use our thorough understanding of the enterprise application suite to provide quality recommendations and go forward strategies
Prevent/Mitigate Security Threats and Vulnerabilities	• Leverage our understanding of the standards, processes and tools to proactively test and avoid security centric threats and vulnerabilities • Quickly notify appropriate stakeholders of critical issues found for timely mitigation

RFP Overall Coordination Needs	Deloitte Activities Address DPW's Overall RFP Coordination Needs
Improve System Performance and Cost Efficiencies	• Leverage our understanding of business requirements to identify cost saving alternatives • Demonstrate the breadth of our technical competence by identifying solutions that extend the life of existing hardware, increase overall system performance and provide enhanced service to DPW's customer base • Collaborate with various stakeholders to understand the future direction of the Department and vendor products to develop a cohesive strategy that integrates both

Figure 6.6-192. Deloitte Activities Address DPW's Overall RFP Coordination Needs.

Our response highlights the complexity of the DPW systems and the diverse operating environments across mainframe, open systems, and middleware platforms. Efficient communication, coordination and collaboration across many different stakeholders is required to verify the needs of the business, and the citizenry, are met.

These stakeholders include:

- **Program Offices.** Business functional groups within and outside DPW, which include Aging, Insurance, Education, Labor and Industry, DGS and Treasury among others
- **BIS.** Technology support teams within DPW including DTE, DEA and DIMO as well as integration with the PMO and the DPW Project Managers
- **Third Party Vendors.** External technology service providers such as Oracle, Microsoft, Adobe, Corticon and many other COTS product vendors, as listed in this section
- **Other Lot Vendors.** In a multi-lot vendor model, multiple entities play a complementary role in support of Department initiatives. Substantial communication and coordination will be required across the lots to maintain initiative momentum

The following highlights the characteristics and working needs that reside with each of the DPW applications and its systems. Deloitte is the only vendor with the required DPW specific knowledge, and prior experiences that can successfully manage these complexities across such a wide array of stakeholders and still meet the timeliness, quality and strategic vision of DPW's business goals.

System	Stakeholder	Deloitte's Understanding of System Specifics for Coordination and Working Needs
I-CIS	Program Office	I-CIS systems support more than 6,500 CAO workers across 67 counties, including numerous offices in Philadelphia and Allegheny county, over 20 distinct data sharing relationships with business partners, critical interfaces with SSA and other Federal agencies as well as constant coordination with Treasury to manage the disbursement of over \$8,400,000,000 in funds annually. In addition, the ICIS suite of applications also support registering more than 4M clients supported by DPW, PID, PDA and PDE, and form the consumer portal (COMPASS) front end for a number of clients and providers. Impacts to any of these processes may result in a direct benefit to more than 1/15 th of people of the Commonwealth.
	BIS	I-CIS systems span the full spectrum of BIS technologies, including the Unisys mainframe, open systems, middleware platforms, .Net, Adobe Flex, Corticon, Adobe Document Management, Imaging solutions, Enterprise Services (MCI), etc. The I-CIS suite is the backbone of DPW system processing and requires extreme coordination and close working arrangements to verify the needs of the business are met – an example is the close coordination with business partners and citizens to support the local installation as the desktop liaison to the web services that support COMPASS.
	Third Party Vendors	As described previously, I-CIS solutions consume a diverse of technology solutions. Working through BIS and through our own Deloitte alliances, we engage the respective vendors such as Adobe, Oracle, IBM, and Corticon to gain access to the latest product strategies and insights and overall direction. To progress imaging initiatives, for example, close coordination with SRC Solutions is required. Deloitte has the history and relationship with the product vendors that provide support to DPW and bring this experience to DPW.
	Other Lot Vendors	I-CIS centric requirements are extremely dynamic and complex. Deloitte works closely with the lot vendors to finalize the requirements for upcoming LIHEAP processing, federal mandates emanating from Health Insurance Reform and any associated legislative directions that may impact system processing.
HCSIS	Program Office	HCSIS supports automated solutions for ODP, OLTL, OMHSAS, PDA, OCDEL, OCYF and DOH. This requires extreme coordination to drive a singular solution across such disparate business entities
	BIS	HCSIS has the most defined users, roles and organization entities of all DPW's enterprise systems. Additionally, HCSIS uses Oracle's FGA as the basis of its' security foundation. This requires substantial coordination with the security team, database and server team to manage.
	Third Party Vendors	HCSIS leverages complex technical offerings from Oracle (FGA), Microsoft (Web Gardening) and shortly Corticon to support business processing. This requires extensive coordination and collaboration via BIS to support.
	Other Lot Vendors	HCSIS requires input from the lot vendors to manage the wide array of services supported including collaboration across program lots, and interfaces with PDA, OLTL, and OMAP. Expanding requirements collection and rationalization from one vendor to potentially five requires skilled coordination and collaboration.

System	Stakeholder	Deloitte's Understanding of System Specifics for Coordination and Working Needs
PACSES	Program Office	PACSES supports over 3,000 child support workers across the 67 county Domestic Relations Sections, more than 450,000 users of the PA Child Support Web site, over 25 critical interfaces with outside business partners and stakeholders including CIS, SSA, IRS, UC, STROP, New Hire, FIDM, PA SDU, confirming establishment, enforcement and collections of more than \$1 billion dollars annually in child support for children and families. Changes to these processes would not only impact PA families, but other state agencies and requires extensive coordination with and by DPW.
	BIS	The PACSES main line of business application is centered on the Unisys Dorado 380 mainframe which supports 3,500 users that administer the Child Support program for the Commonwealth. Additionally, there are other large-scale application components that use .NET, Oracle, webMethods, and the Adobe suite of products. PACSES also includes a large Data Warehouse that supports the annual creation of federally mandated statistical reports and provides business intelligence reporting for the Bureau of Child Support Enforcement management team. Extensive coordination with BIS is required to support business processing over such a wide array of technologies.
	Third Party Vendors	The third party products used by PACSES include software from KMSystems, Identity Systems, Pitney Bowes, Unicon, Adobe, Informatica, Oracle, and Microsoft among others. Deloitte has extensive firm alliances with some of these vendors that enable direct contact to review, discuss upcoming software changes, new features and functionalities as well as access to their knowledge library to adhere to software leading practices. Additionally, we work through the DPW support contract to supply third party vendors with appropriate data to support production operations and infrastructure support issues.
	Other Lot Vendors	PACSES support team coordinate with child support lot vendor as they gather requirements for upcoming PACSES mainframe and open systems initiatives.
PELICAN	Program Office	PELICAN supports more than 1000 child care workers, and more than 1000 other providers and workers supporting the other programs within the PELICAN suite of applications. PELICAN offers distinct business solutions that must be managed across various program offices and bureaus as well as PDE. Pelican CCW, Pre K Counts, Provider Certification as well as ELN introduce complex coordination needs as business process integration and consistency is typically driven in parallel with system modifications.
	BIS	PELICAN leverages mobile technologies to support on site provider certification analysis. The distribution of software to these machines requires complex orchestration with various groups within BIS to concurrently support server and tablet software deployments. Additionally, the networking configuration of the CCIS's requires the awareness and collaboration with individual sites to verify appropriate access is provided.
	Third Party Vendors	Deloitte works closely with the Pearson vendor to support the certification of teachers and assessments of children in PELICAN programs. Intimate coordination is required to support changes to the assessment and the interfaces required to supply Pearson required data.

System	Stakeholder	Deloitte's Understanding of System Specifics for Coordination and Working Needs
	Other Lot Vendors	PELICAN requires assimilation of requirements from various lot vendors to support business needs while verifying external entities needs are met, such as the Department of Education.
Child Welfare	Program Office	Child welfare suite of applications provide mission critical support, and is used by the counties, citizens and providers within the Commonwealth. The Child Welfare team will work closely with DPW to verify the Child Line solution is meeting business needs. Child Welfare programs are complex in nature and extremely sensitive, which requires very thorough and extensive coordination across the enterprise.
	BIS	Child Line is currently not entirely aligned with the DPW standard architecture. The solution will require coordination with BIS to support desktop centric installations, the unique database construct as well as the true 24x7 availability requirement.
	Third Party Vendors	As Child Line evolves to more current technologies, substantial third party vendor interaction will be required.
	Other Lot Vendors	The Child Welfare team will work closely with lot vendors to mature the strategic nature of the Child Welfare offering within DPW. This includes consuming enterprise services, common functionality and centralized IT services. This assimilation into the larger DPW environment mandates close coordination across all lot vendors to pursue the singular business and technical vision of the Department.

Figure 6.6-193. Coordination and Working Needs.

As described thus far, Deloitte is an experienced steward of the DPW applications and we are committed to providing the necessary coordination and communication in support of DPW business objectives.

The following addresses the requirement to effectively coordinate efforts from a stakeholder point of view.

Maintain Ongoing Operational Support

Deloitte effectively coordinates and communicates with numerous stakeholders to manage ongoing operational support tasks across the enterprise of in-scope applications.

Our understanding of DPW's future direction allows us to coordinate across the stakeholders over the useful life of the application in production. The following highlights our approach to maintain ongoing operations for the in-scope applications.

DPW Stakeholders	Deloitte's Approach Provides Ongoing Operational Support
Program Office	• Work with BIS to maintain and enhance daily automated operational reporting of key business metrics • Verify timely notification to appropriate stakeholders is provided in the event of a system issue that would impact availability, performance or functionality • Provide timely and insightful information to appropriate stakeholders that would drive the resolution of system issues • For application centric issues, assume the leadership role in coordinating required discussions, root causes analysis results, mitigation approaches and long term solutions • Coordinate with DPW to support testing required by application maintenance or infrastructure upgrade efforts
BIS	• Communicate the timelines of the initiative at the executive level through the CIO runway documentation • Work with the BIS Architecture Review Board to identify scope of change and system requirement to support eventual implementation and ongoing support • Use the BIS Application Life cycle Management tool to drive design to meet BIS technology standards for a better alignment of the initiative with existing in scope production technologies • Update and distribute the Production Architecture diagram to the appropriate stakeholders after hardware changes • Develop capacity documentation to predict the resource demands that maintenance activities and continued usage impose on the production environment to minimize operational impacts, system integrity and availability issues
Third Party Vendors	• Leverage our firm alliances with vendors such as Adobe, Corticon, Cognos, SoftwareAg, etc. to gain early insight into their product direction and integration strategies • Provide detailed information regarding the intricacies of the application to support vendors via BIS and associated service contracts
Other Lot Vendors	• Provide relevant status with regard to operational impacts, application changes and capabilities to the various Lot vendors

Figure 6.6-194. Deloitte Approach to Coordination and Work for Maintaining Ongoing Operational Support.

Confirm Systems Integrity and Availability

Deloitte works with DPW to help confirm systems integrity and availability while performing periodic upgrades, technology migrations and platform consolidations as directed by the Department.

We recognize the importance of maintaining current levels of a technology foundation to support business processing. A few examples of this foundation management include:

- **Upgrades.** Periodic upgrades to system software including Oracle, Microsoft .Net libraries, operating systems and other COTS products that are integral to the DPW operational environments.

- **Technical Migrations.** Transitioning to a new software foundation to support business processing is a complex task and one that requires detailed planning and careful coordination across DPW environment platforms. This may include a wide array of transformations including transfer of business rule processing to Corticon, transition to Adobe Life cycle for forms and workflow, adoption of Integrated Voice Response (IVR) solutions. This also applies to hardware migrations such as from single server to server clusters or from a physical server to virtual or cloud technologies.
- **Platform Consolidation.** Changes from one host system software or platform to another such as from mainframe technologies to open system platforms or from disparate legacy code to Microsoft .NET Framework. This also incorporates consolidation of the middleware platforms and transforming the mainframe based Open TI to a open system based WebMethods platforms.

The following presents our approach to systems integrity and availability when supporting upgrades, technical migrations and platform consolidations:

Confirm Systems Integrity

Stakeholders	Deloitte Approach to Enable Systems Integrity for DPW
Program Office	• Verify the creation of sound test scenarios and data configurations to adequately reflect real world situations. Though the testing process, we gain mutual signoff application functionality accuracy and overall application integrity.
BIS	• As infrastructure testing progresses, we work with BIS to verify that system resources are consumed in a manner aligned with processing expectations. We jointly verify results. • Identify operational support plans after the task is complete in terms of tactical actions and communication.
Third Party Vendors	• Collaborate with third party vendors to describe the methodology to integrate their products into the overall DPW solution. • Leverage our broad understanding of application construction and configuration to assist DPW in issue management by providing detailed and relevant information to appropriately integrate vendor tools.
Other Lot Vendors	• Collaborate with other lot vendors, via BIS, to proactively communicate integrity enhancement opportunities so as to verify requirements are sufficiently defined and minimize downstream integrity issues.

Figure 6.6-195. Deloitte Approach to Coordination and Work for Providing Systems Integrity.

Confirm Systems Availability

Stakeholders	Deloitte Approach to Provide Systems Availability
Program Office	- Coordinate system outages with Program Office activities for infrastructure maintenance planned by BIS - Plan and communicate application down times during software migrations to stakeholders - Use a standard Playbook to set defined timeframes and actions during processing and response approach if issues occur
BIS	- Communicate to specific stakeholders when unplanned outages occur and when the system availability is restored - Update health check documentation as a standard process prior to implementing software changes for an application to check new functionality - Perform manual validations of system availability after software implementations as a standard practice - Review daily, weekly and monthly operational report on system availability to review outage reasons to identify areas of improvement - Maintain an automated notification system and email distribution list to report production availability occurrences
Third Party Vendors	Leverage our broad understanding of application construction and configuration to assist DPW in issue management by providing detailed and relevant information to appropriately integrate vendor tools
Other Lot Vendors	Coordinate and collaborate with other lot vendors as outlined in our response above.

Figure 6.6-196. Deloitte Approach to Coordination and Work for Supporting Systems Availability.

Assist in Problem Resolution

Deloitte assists in problem resolution by coordinating and working closely with stakeholders to manage and mitigate system problems across the in-scope systems. As presented earlier in this section, Deloitte follows an ITIL-based problem management paradigm to support the resolution of system issues in the maintenance and operations area.

The ITIL-based approach provides for streamlined communication, issue management, root cause analysis and mitigation. The following highlights our approach to coordinate and work with defined stakeholders when assisting in problem resolution:

Stakeholders	Deloitte Approach Enable Problem Resolution
Program Office	- Quickly communicate problem information, scope, impact and potential duration to Program Office stakeholders - Collaborate with Program Office staff to identify business behavioral changes that may lead to potential problems - Work with DPW to determine mitigation alternatives to problems that allow the business to continue to meet the needs of the citizenry - Coordinate with DPW on any communication to the CAO's or other field staff



Stakeholders	Deloitte Approach Enable Problem Resolution
BIS	• Participate or lead SWAT team conferences to identify, diagnose and resolve problems • Provide detailed application information regarding system logs, error messages, system resource usage patterns, etc. that may identify a problem • Leverage our vast understanding of the operating system, database, application server components or other third party software to provide insight and guidance to BIS staff • Liaison to DPW any required notification of extended down time, system restarts, etc. that need to be coordinated
Third Party Vendors	• Leverage our broad understanding of application construction and configuration to assist DPW in problem management by providing detailed and relevant information to appropriately integrate vendor tools • Capitalize on our vendor channels and alliances to obtain detailed level data pertaining to COTS tools used by DPW that are integrated within our applications
Other Lot Vendors	• Coordinate and collaborate with other lot vendors as outlined in our response above

Figure 6.6-197. Deloitte Approach to Coordination and Work for Assisting in Problem Resolution.

System Security Threats and Vulnerabilities

Deloitte works to prevent and mitigate systems security threats and vulnerabilities using DPW supplied tools and infrastructure features. The Internet age has established the critical need for security threat and vulnerability management. Our team has and will continue to work closely with DPW to identify protocols, standards and tools necessary to protect against nefarious access, and work closely with DPW for its ongoing incorporation into the DPW operating environments. The following highlights our approach toward addressing security threats and vulnerabilities for DPW:

Stakeholders	Deloitte Approach to Enable to Address Security Threats and Vulnerabilities
Program Office	• Conduct an annual security awareness session to DPW system stakeholders that helps identify what vulnerabilities and threats exist, what various functionality requirements may introduce threats and what functional leading practices exist to mitigate vulnerabilities • Assist Program Office system stakeholders to determine the business impact, business criticality and user groups affected for each vulnerability/threat identified. This helps Program Office understand the importance of prevention of vulnerabilities early during SDLC • Facilitate consensus meeting between application stakeholders, Program Office stakeholders and BIS (DPW CISO) to discuss the mitigation plan for vulnerabilities identified as part of the security vulnerability assessment • Facilitate emergency consensus meeting between application stakeholders, program office stakeholders and BIS (DPW CISO) to identify the business impact for vulnerabilities in production • Prepare reporting packages and escalate to key stakeholders along with the identified threats and their risk magnitude/business impact



Stakeholders	Deloitte Approach to Enable to Address Security Threats and Vulnerabilities
BIS	• Work with BIS to identify suitable data protection and encryption tools/techniques to secure data at rest, in motion and in use • Assist BIS to leverage applicable components of Deloitte's Secure Development Life cycle (SDL) to help identify and prevent security threats early during the development process • Provides Risk identification and measurement methods for software security vulnerabilities by integrating the process into the Security Risk Framework approach and methodology • Conduct weekly meetings with DPW CISO to provide the list of threats and vulnerabilities identified in lower environments for upcoming releases and their mitigation status • Communicate emergence of new attack vectors and evolving system threats that may impact the DPW systems on a periodic basis • Work with BIS to identify new tools to support threat and vulnerability assessment on new technology platforms • Present security vulnerability assessment report for each application release • Update and/or assist BIS create policies and standards to provide guidelines to identify new threats/vulnerabilities such as secure coding guidelines • Proactively monitor for emergence of threats and vulnerabilities impacting COTS products through the SIEM solution, vendor vulnerability announcements and notifications from security forums such as CERT and National Vulnerability Database (NVD), with respect to impact of the DPW systems • Work with COTS product vendors to identify workarounds, patches and hot fixes to mitigate the threat/vulnerability identified • Work with third party system development teams to help remediate threats and vulnerabilities present in third party systems (such as those of the business providers) that impact the DPW systems
Third Party Vendors	• Report threats/vulnerabilities in COTS products that is used as part of forthcoming solution to the appropriate third party vendor via BIS communication protocols • Work with third party system development teams to help remediate threats and vulnerabilities present in third party systems (such as those of the business providers) that impact the DPW systems • Work with Third party COTS solution providers such as Microsoft and Adobe to identify security mitigation alternatives that can be leveraged until the vendor determines a final solution
Other Lot Vendors	• Coordinate and collaborate with other lot vendors as outlined in our response above.

Figure 6.6-198. Deloitte Approach to Coordination and Work for Assisting in Problem Resolution.

Improve System Performance and Cost Efficiencies

Deloitte works to improve system performance and cost efficiencies across the suite of in-scope applications. System performance and efficiencies are key in an operating model where the state is able to continuously improve the delivery and environment models.

We will continue to work to improve system performance and incorporate cost efficiencies where opportunities become available and align with DPW technology standards and Program Office business needs. The following highlights our approach toward improving system performance and cost-efficiencies.

Improve System Performance

Stakeholders	Deloitte Approach to Enable DPW to Improve System Performance
Program Office	• Work with DPW to effectively design applications that are cognizant of system performance, including keyed reads, limited screen payload per page, background processing for complex transactions that do not prevent the user from performing other activities, etc. • Expand the use of RIA technology that provides for a rich user experience and leverages the processing power of the desktop to support application processing • Proactively coordinate with DPW to notify other stakeholders of impending increases in system resource consumption. This includes the coordination of annual events such as LIHEAP processing, PELICAN Fiscal Year Rollover, etc.
BIS	• Work with BIS to invest in expanded caching solutions that can dramatically increase responsiveness for perusal of static data • Collaborate with BIS to expand the use of RIA technology to reduce the application footprint on the sever, reduce network consumption, maximize the resources available on the desktop while increasing the overall lifespan of existing infrastructure capacity
Third Party Vendors	• Leverage our broad understanding of application construction and configuration to assist DPW in performance tuning by providing detailed and relevant information to appropriately integrate vendor tools • Capitalize on our vendor channels and alliances to obtain performance tuning leading practices pertaining to COTS tools used by DPW that are integrated within our applications
Other Lot Vendors	• Coordinate and collaborate with other Lot vendors as outlined in our response above

Figure 6.6-199. Deloitte Approach to Coordination and Work for Assisting in Problem Resolution.

Improve System Cost Efficiencies

The following highlights our approach to improving system cost-efficiencies.

Stakeholders	Deloitte Approach to Enable System Cost-effectiveness
Program Office	- Collaborate with DPW to implement systemic solutions that could reduce costs, such as centralized mailing, advanced bar coding, electronic forms replacement of paper forms, expanded use of imaging technologies, etc. - Work with DPW to coordinate the testing and configuration support necessary for field hardware replacements that could reduce costs, such as dedicated scanners, thin client desktop configurations, enhanced IVR solutions, etc. - Leverage COTS tools or configuration solutions (such as Corticon or Enterprise Incident Management) that allows for system changes to be made by Program Office staff and not application developers
BIS	- Integrate application solutions with exchange to support mass e-mailing in lieu of sending paper forms, thereby reducing printing and mailing costs - Continue the maturation of the SOA paradigm to integrate reusable services into applications that reduce design, development, testing and overall support costs - Continue efforts to migrate application architectures to a singular .Net platform. This reduces the support costs necessary to manage disparate technologies - Work with DPW to fully use the offsite capabilities of the Selinsgrove location, including the possible role of a disaster recovery site
Third Party Vendors	Work with Third Party Vendors, via BIS, to establish licensing structures that meet the Department's need in the most cost-effective way possible
Other Lot Vendors	Coordinate and collaborate with other Lot vendors as outlined in our response above

Figure 6.6-200. Deloitte Approach to Coordination and Work for Improving System Cost-effectiveness.

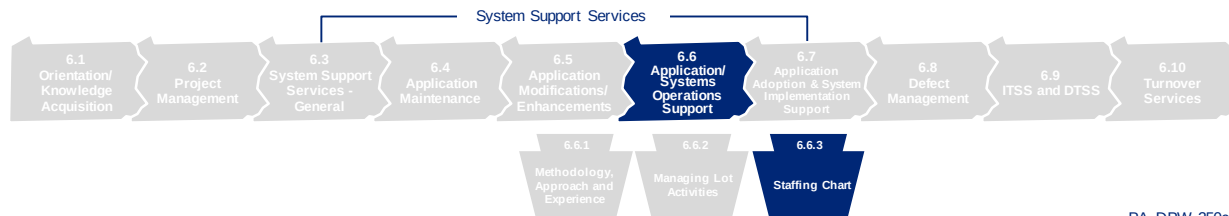
Collaborative Impact Analysis

IV	Page IV-384	RFP Reference: Applications/Systems Operations Support Required Items

NOTE: The selected Offeror will assist in assessing the impact on other applications for any modifications to the in-scope systems. Should there be multiple vendors involved in the support of other applications; the selected Offeror must work collaboratively in the assessment and implementation of any application changes that impact other applications. The selected Offeror agrees to cooperate with any other selected Offerors, and shall not commit or permit any act that may interfere with the performance of work by any other Contractor.

Deloitte has been a trusted advisor of DPW's for over 30 years. We will work collaboratively to assess the impact on other applications for any modifications to the in-scope systems and facilitate coordination amongst other selected Offerors to form one cohesive team.

6.6.3 Staffing Chart



PA_DPW-250c_4

II

Page
II-4

RFP Reference: II-3. Work Plan

Provide staffing charts for the ongoing operational Activities and Tasks that show the proposed staff by labor category and job function.

Provide a role/description table for the Offeror's proposed staffing roles for all Activities and Tasks to support the requirements of the RFP. A description of the duties and functions to be performed by the staffing role must be indicated.

The resources identified for Information Technology Shared Services are listed in the following figure. More information about each one of these individuals, including resumes and responsibilities by role can be found in *Tab 8.0*.

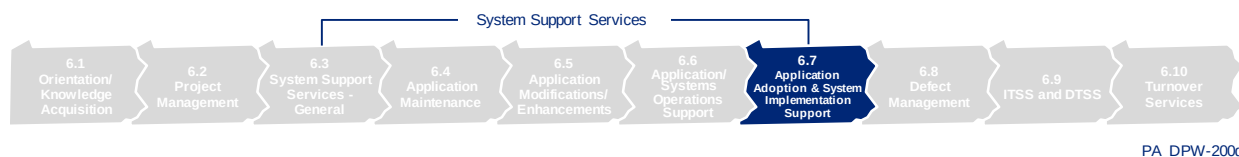
Proposed Staff	Labor Category/Job Function
Subramanian, Srinivasan R	Project Executive
Berkstresser, Joe L	Shared Services Manager
Devlin, Rob	Software Quality Assurance Specialist
Skwarek, Sebastian	Systems Architects
Chengalvarayan , Hariharan	Systems Configuration Specialists
Orbin, Matthew Douglas	Systems Configuration Specialists
Illuru, Praveen Kumar	Security Specialist
Srivastava, Praveen	Security Specialist
Pasha, Sunnah	Sr. Application Developers
Doraiswamy, Mukundan	Chief Database Architect
Pandey, Piyush	Chief Security Architect
Pandey, Sanjay	Database Administrators
Neway, Michael R.	ESB/Middleware Architect
Anand, Ravi K.	ITSS and DTSS Team Member
Bhavsar , Pathik	ITSS and DTSS Team Member
Chunduri , Balaji	ITSS and DTSS Team Member
Drag , Richard	ITSS and DTSS Team Member
Konikkara , Paulson	ITSS and DTSS Team Member
Madamsetty, Sunil	ITSS and DTSS Team Member
Paruchuri , Ramakrishna	ITSS and DTSS Team Member



Proposed Staff	Labor Category/Job Function
Sahai, Sanjay	ITSS and DTSS Team Member
Sambam , Vinayagam	ITSS and DTSS Team Member
Sokerov, Stefan Hristov	ITSS and DTSS Team Member
Velakaturi, Prasanth	ITSS and DTSS Team Member

Figure 6.6-201. Information Technology Shared Services Resources.

6.7 Application Adoption and System Implementation Support



II	Page II-2	RFP Reference: II-3. Work Plan

Describe in narrative form your technical plan for accomplishing the work. Use the task descriptions in **Part IV** of this RFP as your reference point.

IV	Page IV-299	RFP Reference: Systems Architecture Lot #6 and Technical Support Services Lot #7

System Support Services – The selected Offerors for **Lot #6** and **Lot #7** will be responsible for providing the following services for all the in-scope systems identified in this RFP.

iii. Application/Systems Adoption and Operational Support: Assist in the deployment and adoption of business solutions and to maintain ongoing operational support of the in-scope applications and associated systems throughout their useful life in live production environments.

Additional RFP Reference: 4.2 Application Adoption and System Implementation Support, Page IV-384

Deloitte assists program offices and end users with an application adoption and system implementation approach that is grounded in profound system knowledge, strong understanding of end user needs, and a perspective built on experience to support the end users' business operations. Our approach, using DPW's SDM methodology and our user education and implementation leading practices, allows DPW to enhance the end user experience and improve adoption of their IT solutions.

Introduction

We provide the experience and staff necessary to support DPW and its end users to enable the successful adoption and implementation of the technology initiatives completed under the Lot #7 scope of work. In order to effectively support the end users across the wide spectrum of systems, DPW needs a HHS systems integrator that brings real experience in implementing IT solutions. This experience should be similar to the size, scale, and complexity of Pennsylvania, and also include firm and staff experience in handling IT initiatives with diverse stakeholders, including county and regional perspectives.

We believe that for a technology initiative to achieve the desired business outcomes, the end users must fully adopt the new technology and understand its impact on their daily operations.

Deloitte, a **premier HHS systems integrator**, brings a broad range of experience across the systems development life-cycle phases to DPW to support the end user acceptance of the business solutions. Possessing the broadest, most inclusive, end-to-end delivery capabilities of any firm, Deloitte understands the entire system implementation life cycle. More than knowing the theory, we have qualified practitioners with skills in not only application development and technology integration, but also project management, operations support, change management, application adoption and implementation support, and the other core skill-sets required for DPW. The non-technology areas of the implementation are not secondary within our business or “after thoughts” we must “figure out”. These skills are central to our overall service offering. Our experience is simply not just from our bid team, but also from our organizations assets and methodologies.

For the complexities inherent to the Department’s applications and diverse end user base, implementation activities must be coordinated to a high degree of precision. This allows the Department to focus on the vision and service excellence objectives including reducing the risk of business disruption, and enabling the State, County and local users to realize the value of the Department’s applications as quickly as possible. Our broad experience working across program offices positions us uniquely to support our technology counterparts and reduce the risk to each implementation.

We draw on our experience working side by side with DPW, as well as over 35 years of Health and Human Services across 40 States, to provide application adoption services and make each implementation successful. Figure 6.7-1 highlights the key features and benefits of our approach.

Unique and *Distinguishing* Factors



- Brings the end user to the forefront throughout a project’s lifecycle by proposing staff that understand DPW’s large and diverse user groups
- Delivers a structured implementation process including procedures for operational readiness and pre-implementation activities to extend the DPW SDM methodology
- Only Deloitte can tap into a pool of resources of more than 2,500 practitioners skilled in the implementation of new technologies
- Allows for effective use of our shared resources based on our proposed staff’s knowledge across program areas



Features	Benefits
Brings experience from the premier HHS systems integrator, including the assets and methodologies successfully utilized across Deloitte implementations Our team leverages Deloitte's tools and methodologies to bring lessons learned and knowledge gained from work in more than 40 States	- Improves the quality of the approach and brings industry knowledge to the project - Continues to evolve the team's thinking and approach for each implementation - Allows the Department to reduce risk and increase user adoption by learning from other States what worked
Brings staff that understand DPW's business and the specific needs of program offices and users - Our team brings the knowledge, skills and capabilities to support the diverse user base that is impacted by the applications supported under Lot #7 - BIS and Program Office staff work side by side with our application adoption team and do not need to teach staff the intricacies of the policies and procedures that are specific to each functional area	- Improves the quality of the solution delivered to PA constituents - Improves user adoption and confidence in DPW systems - Lowers implementation risk and reduces the number of changes required after implementation
Extends DPW's SDM methodology with assets, leading practices and lessons learned gained from more than 35 years of successful implementations of large, complex HHS technology solutions - Tailors the methodology for a multi-vendor, multi-system operating model across SDLC phases - Data and input supports continuous improvement initiative	- Better service to DPW in evolving systems implementation practice - Improves our delivery quality and user adoption of the DPW systems
Flexible approach that aligns with the Department's needs for each system implementation - We understand that not every technology effort requires the same level of application adoption support and have worked with the Department to provide the right level of services in the past - Our team understands the nuances of DPW's user base and uses established estimating factors to identify the right size team for the job	- Better supports DPW in the new contract operating model - Provides economies of scale through sharing of resources across DPW systems and program offices - Aligns resource capacity to meet project demands - Allows the team to successfully support multiple engagements and business priorities
Facilitates early and consistent communication and collaboration with DPW program offices, stakeholders and other vendors Allows for different perspectives and maximizes the breadth of considerations when working across stakeholders	- Maximizes engagement and buy in from multiple stakeholders - Improves user adoption and implementation process by engaging end users directly

Figure 6.7-1. Key Features and Benefits of Deloitte's Application Adoption and System Implementation Approach.

The residents of Pennsylvania live in one of the most dynamic and diverse geographies in the country, made up of a blend of large cities, small towns, and rural areas. Likewise, DPW operates in a large and complex environment, involving millions of

clients, dozens of spoken languages, numerous external partners, and hundreds of locations. As a result, the Department's applications must support thousands of diverse users in a large and complex environment – in fact, the services provided in Lot 7 represent critical business functions that provide assistance to the people of Pennsylvania at an astounding size and scale:

- More than 4,000 registered users of PACSES spread across 73 different locations that include 67 county judicial offices
- More than 1.7 million people who rely on SNAP, TANF, LIHEAP and Medical Assistance for their daily livelihood
- More than 1.3 million people who apply or renew their benefits through the COMPASS application, making it easier for them to get the help they need to get back or continue to work as they move to self-sufficiency
- More than 250,000 children who receive high quality early education programs, supported by the PELICAN application suite
- More than 15,000 HCSIS users who promote and provide Home and Community Based Services to assist individuals with disabilities and their families that require individualized support services in the home, in a community-based setting or early education program
- 67 County Children and Youth agencies, committed to confirming that children and youth served in our public systems are safe; to promote, improve and sustain a higher quality of life while enhancing their well-being; and have permanent and stable family lives

With this significant scope and complexity, the proposed team is focused on not only designing and developing technology solutions to meet the functional and technical needs of the Department, but also leading the deployment of the systems in a way that allows DPW to maintain and enhance its vision for service delivery. We are particularly attuned to the Department's strong emphasis on achieving the needed customer service standards, operating seamlessly and with a high degree of flexibility, measuring performance and being held accountable for results, and generally "making it easy" for stakeholders to interact with the Department.

"With all of the PELICAN frenzy occurring across the State, I wanted to share with you some of Chester County's activities. Although our "go-live" date was the end of April, the Service Coordinators began gearing up for PELICAN in February. We established a great Core Team of staff within the Department to organize activities and to prepare for the "go-live" events. With the excellent support of Cheryl Ranck, the PELICAN trainers, and our "go-live" team, our staff was fully prepared to enter the new PELICAN system. We presented the "go-live" events to our staff as a celebration and new beginning within Early Intervention, and although the 2 days were busy, it was a celebration ... We continue to grow and fly positively in PELICAN."

Michelle J. Davis
Early Intervention Service Coordinator
Manager, Chester County

These objectives can be achieved through a well structured approach to each implementation. Large-scale changes involve a period of transition as the business processes are modified, management and staff learn the new ways of doing business, and operational changes are refined. The Deloitte approach to each implementation focuses in the short-run on minimizing the disruption to the operations of the local offices and to the various effected stakeholders. In the long run, the implementation approach supports the overall goals for enhanced service delivery and customer service excellence.

Deloitte Addresses Implementation Challenges from the Project Start – During System Requirements and General System Design

- **A sound implementation approach that follows the DPW’s SDM methodology**, which emphasizes planning, communication, and field readiness during system requirements and general system design
- **Broad software development life cycle (SDLC) and Implementation documentation standards**, combined with existing field and operational procedures and practices to help minimize risks of implementation
- **A proactive communication approach** that focuses on State, County and Local workers, Providers, Community Partners, and stakeholder communication
- **A collaborative approach to implementation planning** and building strong “go to” team from the beginning that can be the proponents of the system at local offices
- The **experience and understanding** to translate system requirements and detailed system design into tangible business changes that impact the end users

Figure 6.7-2. Deloitte Employs a Proactive Implementation Approach.

Beyond a sound approach, having confidence in an implementation also requires a track record of success on similar implementations. More than any other firm, we have had the opportunity to implement systems across the spectrum of Health and Human Services throughout the United States similar in size and scale to Pennsylvania and deliver the required services outlined in the RFP, for example:

State	Square Miles	Number of People Served	Systems Adoption Assistance	Triage to Resolve Operational Issues	Report and Resolve Anomalies
Pennsylvania	46,058	1.7 million	✓	✓	✓
California Counties	163,707	2.9 million	✓	✓	✓
Michigan	96,810	1.4 million	✓	✓	✓
Texas	268,601	2.6 million	✓	✓	✓
Wisconsin	65,503	.94 million	✓	✓	✓
Colorado	104,100	.70 million	✓	✓	✓

Figure 6.7-3. Deloitte’s Breadth of Experience.

The benefit of the Deloitte approach to the Department is that it is based on actual lessons learned from similar system implementations in the eligibility, provider management, case management, child welfare, child support and HHS domain in both Pennsylvania and across the Country. This provides specific knowledge in the effort and complexities that it takes to implement these kinds of systems. Deloitte has the benefit of having already seen what works, and what does not work, for offices, staff, and customers in similar situations and build the lessons learned into each successive implementation. With this in mind, we draw on a number of areas to bring the leading team to the Department. This includes experience gained from our history of HHS projects, including our successful history with the Department, over 2,500 practitioners who focus on application adoption and a detailed repository of tools and assets for project delivery.

To achieve DPW's goals, Deloitte brings the benefit of the most current thinking and applied experience. We are the only systems integrator who brings this experience to the table and can provide the same level of coverage, lessons learned and leading practices across the end user population. This type of experience directly impacts the people of Pennsylvania who receive the critical services that the Department's end users provide.

Key Staff Spotlight

Libby Bacon

Application Adoption and System
Implementation Manager



Doing More with Less

"DPW is consistently asked to do more with less in a very challenging work environment. I look forward to continuing to team with the Department to identify opportunities to take on this challenge. I will provide your end users with the tools and knowledge they need to be successful."

What Differentiates Deloitte's Application Adoption and Systems Implementation Experience from Other Vendors

- ✓ A continuous presence in the **HHS market since 1978**
- ✓ Actively engaged in HHS-related work with **25+ states**
- ✓ Over **2,500 staff in our Technology Adoption practice** dedicated to providing application adoption and system implementation support
- ✓ **Broad footprint across HHS** – Integrated Eligibility, Child Care, Child Welfare, Child Support Enforcement, Aging and Disability Services, HIT, Health Insurance Exchange, Home and Community Based Services
- ✓ **Detailed knowledge in program, policy, operations, service delivery, and implementation support**
- ✓ States consistently expand our scope of services to include application adoption and system implementation, knowing we are the **premier vendor in this space**
- ✓ **Quarterly HHS client sharing network** across our portfolio of clients: Wisconsin, Montana, Kentucky, Connecticut, Georgia, Illinois, Nevada, Minnesota, Virginia, New Mexico, West Virginia, Colorado, Massachusetts, New Hampshire, Delaware, New York, Indiana, Michigan, Florida,

What Differentiates Deloitte's Application Adoption and Systems Implementation Experience from Other Vendors

- ✓ Synergy between our **commercial, federal and public sector work** that focuses on change management and the people dimension of transformation, brought together by Deloitte
- ✓ Application adoption and system implementation support services for **more than 100,000 end users across the Country**
- ✓ The technology that we support processes **billions of dollars** and results in the delivery of services to **more than 25 million people**
- ✓ Our staff has over **200 years of implementation support experience** across eligibility, case management, provider management, child welfare, and child support

Figure 6.7-4. Deloitte's Differentiating Factors for Application Adoption and System Implementation.

A coordinated implementation approach is critical to end user adoption and achieving the business outcomes for the maintenance and modifications implemented through the new contract. Within the Lot #7 response, DPW has chosen three critical tasks to support that include:

- **Assistance for systems adoption and implementation support**
- **Triage to resolve operational issues**
- **Report and resolve anomalies discovered during implementation and adoption activities**

These are critical tasks to include within the Lot #7 team, as this is the team positioned most effectively to provide the coordinated services to help the end users accept the technologies and adapt to the change. Through Deloitte, DPW is positioned to select a premier team that has:

- Experience, knowledge and depth of resources to provide these services across each of the functional lots and across a range of services
- Strong understanding of each program area and its intricacies
- Work effectively with BIS and the respective program offices, without spending time learning the program and policy behind each initiative

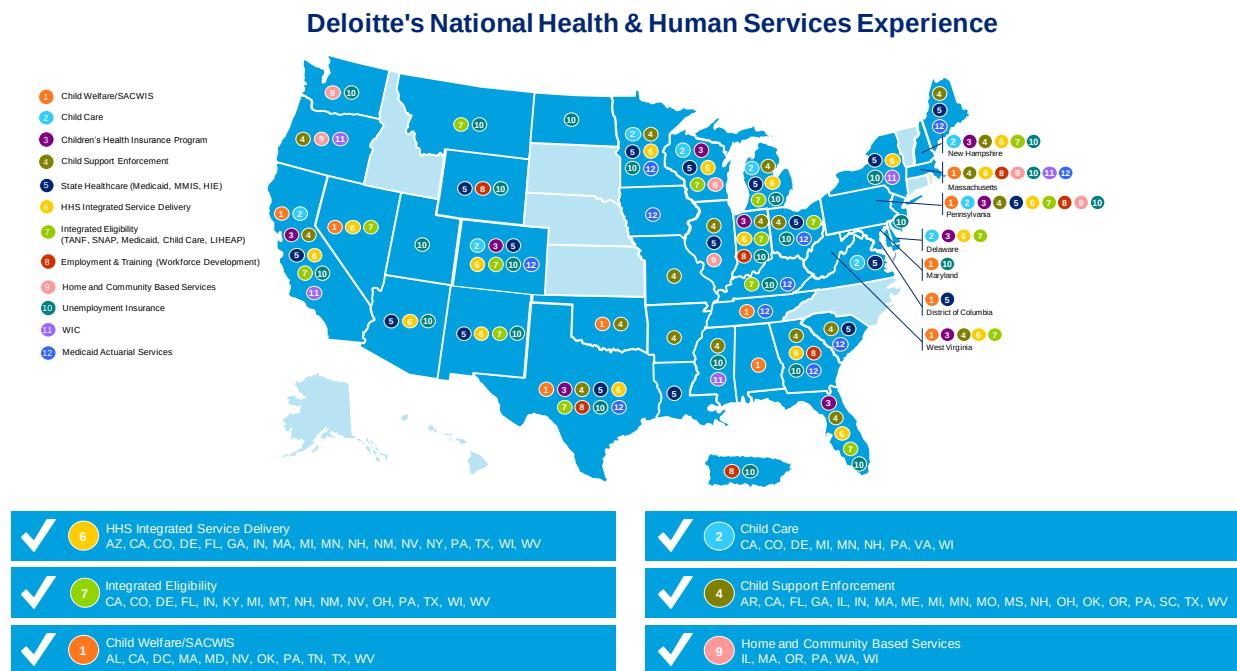
We are confident in our ability to deliver a team that provides application adoption and system implementation support to meet the Department's needs because we have done so numerous times before for the Department and other States. That experience is unmatched in the marketplace and we pride ourselves on the knowledge we have gained from our long heritage of working in Health and Human Services.

Have you heard?

The implementation of Michigan BRIDGES marked the largest integrated eligibility implementation in the last 10 years.

- Deloitte was responsible for application adoption and system implementation across 9,000 users in 83 counties
- Deloitte played the key role in leading the implementation effort, from planning to execution

The following figure further represents our national experience implementing HHS solutions relevant to DPW:



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Figure 6.7-5. Deloitte's National Health and Human Services Experience.

Deloitte brings unmatched experience from across the Country supporting the implementation of HHS systems.

Each of these States represents industrial strength HHS applications with complex needs similar to the Commonwealth of Pennsylvania that require program and policy knowledge to assist in the end user adoption. We employed an approach to each implementation that successfully supported the end users and allowed them to adapt to new business processes and new system functionality to improve their business performance. No single implementation was the same and each project included a diverse set of end users that required different levels of user support. Our team's success was in part due to our ability to tailor to these needs and identify the right implementation structure early in the process. Figure 6.7-6 further demonstrates Deloitte's success providing application adoption and implementation support services and the value delivered in a sample of implementations across the Country.



Client Name	National Experience Similar to DPW Needs	Value Delivered through Deloitte's Approach Similar to DPW
California - CalWIN	• User education support to prepare users for the transition from legacy systems to CalWIN • As-Is and To-Be business process analysis to help counties standardize and modify their business processes • Developed and delivered instructor-led user education and Web-based user education • On-site support for local offices before and after the go-live date to provide data conversion, business process adoption, and end user support • Supplemental user education documents to support ongoing learning of CalWIN • Help desk specialists for daily user support	• Eased staff through the potentially disruptive implementation period • Minimized resistance to change by preparing staff for changes required to implement CalWIN well before classroom training began • Standardized and streamlined business processes across 18 county locations
Michigan – BRIDGES	• As-Is and To-Be business process analysis to help counties standardize and modify their business processes • User education support to prepare users for the transition from legacy systems to BRIDGES • Direct instructor-led user education for approximately 9,000 end users • On-site support for local offices one month before and one month after the go-live date to provide data conversion, business process adoption, and end user support • Supplemental user education documents to support ongoing learning of BRIDGES • Help desk specialists for daily user support	• Minimized resistance to change by preparing staff for changes required to implement BRIDGES well before classroom training began • Standardized and streamlined business processes across 83 county locations • Eased staff through the potentially disruptive implementation period by providing ongoing user education, onsite support, and several layers of user support

Client Name	National Experience Similar to DPW Needs	Value Delivered through Deloitte's Approach Similar to DPW
Texas – TIERS	- Conducted focused intervention user education and field support activities to improve user accuracy and productivity, reduce the number of help desk calls, improve end user efficiency on disposing cases, and improve end user attitude toward TIERS - Assisted in developing a Transition and Change Leadership (TCL) Plan describing the Change Management Support activities essential in preparing end users and field office operations for implementation of the TIERS system - Collaborated with leadership in the establishment of effective project governance methods and support project management needs	- Increase the quality of and client access to services provided through the programs - Implement more proficient business processes to reduce processing times for applications for program benefits and reduce staff workloads - Implement simplified application and enrollment processes - Enhance the integrity of and reduce fraud in the programs as well as confirm compliance
California - Department of Industrial Relations, Division of Workers' Compensation - EAMS	- Change management support to prepare end-users for the transition from legacy systems to EAMS, with significant focus on communications and user education - Redesigned business processes to align with new technology, changes in personnel responsibilities in order to increase efficiency and effectiveness - Performed user education strategy and developed user education materials (Instructor and User Reference Guides, and CBT's) based on various modules - Implementation support included Go-Live Simulations/Pilot in the 24 District Offices and deployment execution and Go-Live support	- Efficiencies were established with the use of multiple COTS (COTS) applications, including Cúram, FileNET, Cognos and Cybersource that manage the end to end process - Standardized business processes amongst and increased visibility to different units - Increased end-user/stakeholder buy-in through inclusive practices such as creating advisory groups, performing statewide roadshows, system demonstrations, having up-to-date Web site content, disseminating frequent publications, and keeping an inclusive project tone

Figure 6.7-6. Value Delivered through Deloitte's Application Adoption and System Implementation.

Based on the breadth of systems and services requested, Pennsylvania requires a similar level of support and tailoring given the large user population supported by DPW. The following graphic demonstrates the diversity of end users that must be supported through the application adoption and implementation activities provided by BIS, program office and vendor staff for successful implementations. This means that DPW needs to have flexibility with implementation approaches across each implementation to successfully support the end users. DPW needs a HHS systems integrator who is familiar with the specific characteristics of the business IT applications that will be deployed, as well as the end user groups that will adopt them.

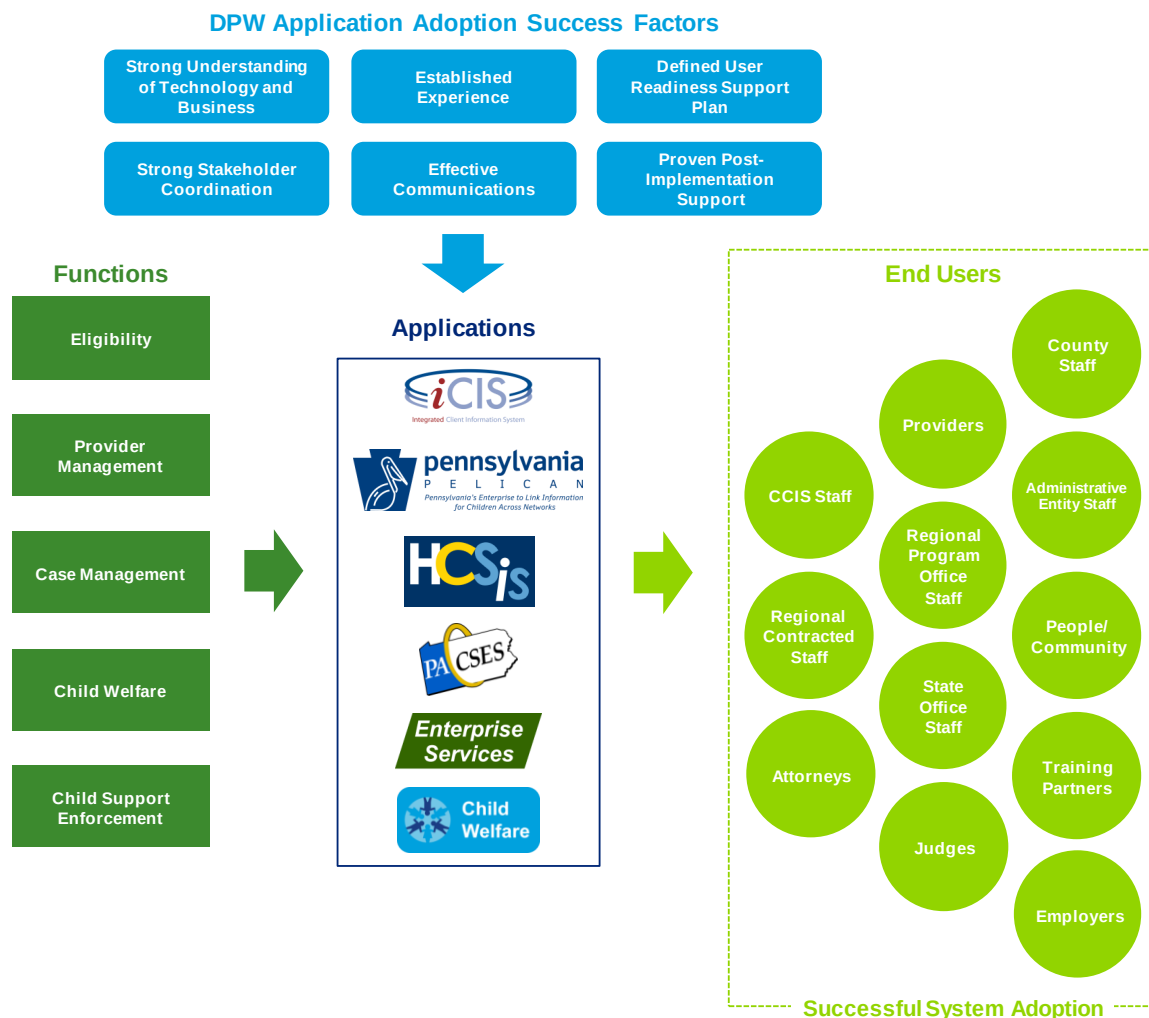


Figure 6.7-7. Application Adoption Success Factors.

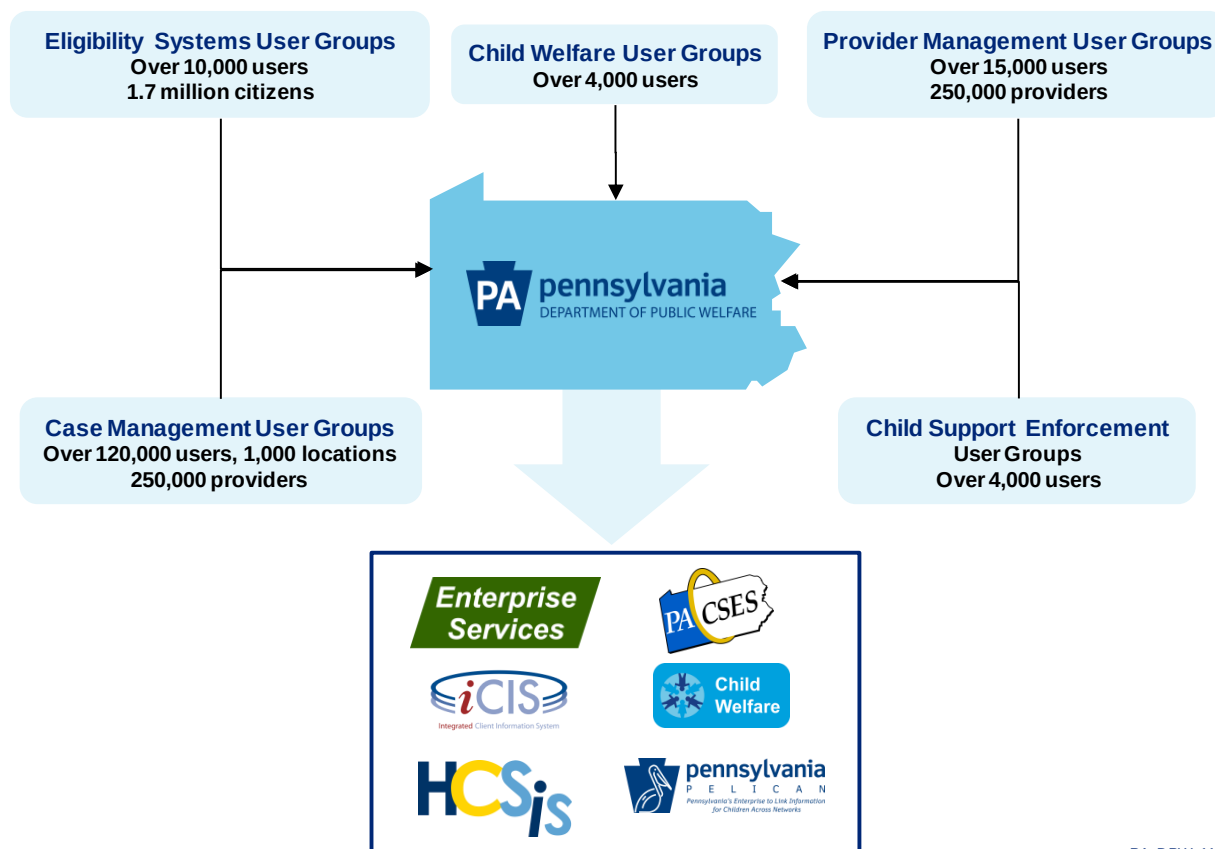
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DPW's end users are comprised of a diverse population across a number of applications that span the functions supported by the Program Offices. Deloitte brings the key needs for successful application adoption; hands on experience, disciplined structure, program knowledge, and strong coordination.

By being responsible for the support of deployment and implementation activities for application maintenance and modification changes across the Department's end user groups, the Lot #7 vendor takes on an incredible amount of responsibility with Commonwealth staff. With end users numbering well over 20,000 (not including citizens accessing self-service applications), the group is vast in nature, highly diversified, and spread across a large geographic area. Under the current contract, the proposed team successfully provides support to each of these user groups.

"You are amazing! Thank you for the excellent follow-up and service. I will try it all out when I get into the office. I do appreciate your patience with we little ol' country folk. We have no IT dept. and figure things out by trial and error. Well, perhaps more error than others, but eventually we get it. Thanks again. And it was very nice to meet you as well. You have done Tunkhannock proud!"

Lisa K. Wilcox
Sullivan County, Children & Youth Services



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Figure 6.7-8. A Large and Diverse End User Population.

Deloitte brings unmatched experience managing the implementation of technology across the Department's diverse end user population.

For example, to be successful supporting the Office of Income Maintenance's County Assistance Offices, Deloitte brings a strong understanding of both mainframe and open systems technology. Supporting and helping end users adapt to the green screen CIS mainframe to perform case transactions and application processing is very different from the open systems environment that is used to process LIHEAP applications. It is important for DPW to choose a broad HHS systems integrator that can tap a knowledgeable pool of resources who understand these subtleties and have successfully employed support structures to combat these differences.

Equally important is a team that understands the diversity of end user experience and perspective as they define and employ an implementation approach. During the implementation of the PELICAN Early Learning Network (ELN), Deloitte's application support team worked with the Department to tailor the implementation activities to meet the needs of a user group that accesses PELICAN as a percentage of their overall work effort.

The approach focused on building understanding of ELN in as short a period as possible, while keeping in mind this was not the providers' full time job. This resulted in a very different approach than the implementation strategy employed for the Child Care Information Services (CCIS) agencies that use PELICAN Child Care Works (CCW).



CCIS staff uses CCW to perform the vast majority of their day to day activities. It is an integral part of their daily operation and it is critical that they build a detailed level of understanding of any change to support their business processes. In each of these instances, we successfully worked with the Department to refine our implementation approach to meet the needs of the end user group impacted by the changes in technology.

The following figure outlines the user groups and corresponding organizations impacted by technology implementations within DPW. The user characteristics represent key insights that the team incorporates as part of each implementation planning effort. When considering the support that each user group needs, it is important to assess across two dimensions. First, there is a level of diversity and uniqueness within each lot to promote successful system adoption. Second, and perhaps more important, there is also a level of overlap across the table to promote consistency across the Department. To accomplish the second level of support, the Lot 7 vendor must have the breadth of knowledge and understanding to identify these insights and employ a structure to reap the benefits of coordination.

User Group	Organizations	Deloitte Understands End User Adoption Characteristics for DPW Systems
State Office Staff	OCDEL ODP OMHSAS OIM OLTL BIS OCYF BCSE DCSES	• Resource constraints limit staff availability for training • Require specialized/tailored training due to specialized job functions and responsibilities • May require more intensive or longer post-implementation support for new processes because of their span of control • Varying business processes across programs within a single office
Regional Program Office Staff	OCYF ODP OCDEL Certification Staff	• Business needs focus on reporting and reviewing • May require more intensive or longer post-implementation support for new processes because of their span of control
Regional Contracted Staff	ODP HCU's Regional Key Staff	• May have different geographical locations from users with interrelated processes



User Group	Organizations	Deloitte Understands End User Adoption Characteristics for DPW Systems
County/Local Staff	AAA's CCIS Staff ODP Administrative Entities County Juvenile Probation Office Staff County Children and Youth Agency Office County Domestic Relations Office	• Different local and internal processes • All counties have different schedules (different days for office closings) • May have different geographical locations from users with interrelated processes (e.g. Supports Coordinators) • Varying levels of information technology sophistication • Conflicting priorities with state level policy • Diverse technology standards and platforms
MR State Center Staff	MR State Centers	• Varying levels of PC competency
Supports Coordination Staff	OLTL SC Providers OLTL Intake Broker ODP SC Entities EI SC Entities Intermediate Units Preschool Programs	• SC entities have different internal and local business processes and requirements • SC entities have different hours and days of operation • May have different geographical locations from users with interrelated processes (e.g. County staff) • Multiple agencies within a county with disparate geographical locations • Varying business processes overlap across multiple user groups and programs • Diverse technology standards and platforms • Training must be customized for individuals with disabilities
Training Partners	EITA ODP Consulting PASCETI	• Require in-depth system and functionality training • Require training details to assist with end-user support • Limited availability • Require access to training environment to support implementation

User Group	Organizations	Deloitte Understands End User Adoption Characteristics for DPW Systems
Providers	Providers of services for MR, Autism, C&Y, Aging, Long Term Living, Mental Health and Substance Abuse Preschool programs Intermediate Units Child care providers	• Large end user group • Core job functions do not include data entry – staff is focused on providing services to people • Requires a broad and varied communications strategy to reach each provider • Varying levels of information technology sophistication • Varying business processes • May require intensive and/or detailed support for new processes • Provider organizations vary from small proprietary organizations to large corporations • Diverse technology standards and platforms
Citizens	N/A	• Diverse population • Varying levels of PC competency • Access systems when they need information; user interfaces must be simple with easy navigation

Figure 6.7-9. User groups and corresponding organizations impacted by technology implementations within DPW.

Our past and current successes provide DPW with a firm that demonstrates repeatable, positive results for our clients. We feel this evidence is paramount when considering an HHS solutions integrator for a project of this size and complexity. To demonstrate our direct and relevant project experience, we feel there is no better voice than you hearing from our clients. On the following page, we are pleased to present DPW with a letter of reference from one of your peers demonstrating our capabilities and character in delivering successful and tangible results in the Health and Human Services programs and IT.



JIM GIBBONS
Governor

STATE OF NEVADA
DEPARTMENT OF HEALTH AND HUMAN SERVICES
DIVISION OF WELFARE AND SUPPORTIVE SERVICES

1470 College Parkway
Carson City, Nevada 89706-7924
(775) 684-0500 • Fax (775) 684-0680

MICHAEL J. WILLDEN
Director

ROMAINE GILLILAND
Administrator

August 10, 2010

To Whom It May Concern:

Deloitte has been a consultant for the State of Nevada Division of Welfare and Supportive Services (DWSS) for the past 6 months. In December 2009, the State of Nevada contracted with Deloitte Consulting to develop the Application Modernization and Productivity Services (AMPS) system with a project start date of February 1. Deloitte Consulting was chosen for this contract because of their vast experience managing large Public Sector modernization projects specifically projects dealing with the Department of Health and Human Services. The AMPs system consists of 4 major components:

The first component is the Portal, which will provide a common look and feel entry point for our workers. Workers will be given access to a portlet for processing applications that have been submitted electronically or manually by our clients. (Scalable very easy to add additional portlets to a users portal page)

The second component is Workflow - To process an application from start to finish requires many steps, therefore a workflow process has been designed to move the application from one type of worker to another electronically based on the status of the application. (The workflow is flexible and can change as business processes change)

The third component is Document Imaging - Document types received in our offices that must be returned to our clients will be scanned, indexed and stored from the front counter. All other documents will be mailed to one of two central processing units to be scanned, indexed and stored. Documents will then be accessed via the application portlet described above.

The final component is Integration with our mainframe eligibility system - Once the application reaches a certain status in the workflow process the web application will integrate with our mainframe eligibility application through web services. Final eligibility will be determined by our mainframe eligibility application.

As of August 10th we have completed the Planning Phase, Design Phase, and are currently working on the Build Phase. The Deloitte Consulting team has been wonderful to work with and have been early or right on schedule when it comes to their deliverable due dates. Both the Deloitte and State team have deliverables that they are responsible for, and the integration between the two teams has been very smooth. I look forward to working with the Deloitte team until the end of this project and hopefully into the future.

If you have any additional questions regarding AMPs, our programs, or the role of Deloitte in supporting DWSS, please feel free to reach me at 775-684-0549 or email me at shfisher@dwss.nv.gov.

Sincerely,

Steve Fisher
Project Manager DWSS

Working for the Welfare of ALL Nevadans

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Unique Characteristics for Eligibility Systems End Users

We understand the importance of program knowledge for the eligibility systems and translate our team's knowledge into effective implementation approaches that meet the needs of the diverse end users. For example, in Philadelphia and Allegheny counties, there are dedicated offices with workers who support the majority of LIHEAP applications. As a result, any technology changes for LIHEAP must factor this business model into the planning process. Our team knows the specifics of your business and is therefore able to anticipate, plan, coordinate and effectively support the Department's needs. We are proud of our history connecting the technology to the end users, while working side by side with the Operations Project Managers, the Division of Automation Planning and Support, and Staff Development, and we understand the significance of the eligibility suite of systems from both a business and system perspective.

Unique Characteristics for Provider Management End Users

Pennsylvania continues to be at the forefront of early education by expanding the technology services that automate and support the Commonwealth's early learning and education programs. Being at the forefront is not an easy task as it requires a broad group of stakeholders to buy into this change and adopt new technology in roles that are traditionally not technology based. We have successfully worked with the Department to overcome these challenges and provide application adoption services that help move the broader community from paper based processing to automation over the last 10 years.

The key to each of these implementations was not just the technology solution we architected and deployed, more importantly was the implementation services we provided to keep the diverse stakeholder population on board and ready to advance with the Department.

Key Staff Spotlight

Diana Halenz

Application Adoption



Using Data to Improve Outcomes

"DPW systems provide a rich source of data for the Department to monitor and manage service delivery. The next frontier is to further develop in-house experience to analyze the data to identify at-risk individuals. The Program Offices have a solid direction; they need the experience and support to continue to get there. My deep understanding of the programs served by HCSIS puts me in a unique position to act as an advisor to help think through how their investment in information systems can be used to further their ultimate programmatic goals. This has been and will continue to be the most rewarding aspect of working with DPW's programs."

Whether it was the formation of User Education forums to elicit direct end user support, provider and citizen focus groups to gather feedback, or structured implementation planning efforts that included written communications, conference calls, web meetings and direct end user training, our team has learned and grown with the Department to establish successful approaches for each end user group.

Unique Characteristics for Case Management End Users

Case management has been implemented across five program offices with widely differing operational models, and as a result has a very disparate group of stakeholders and end users. Within programs, there are local pressures leading to variations in business process and varying emphasis on adherence to centralized policy. We have worked with the Department to develop an approach for application adoption, change management and implementation to maximize success for the significant transformational initiatives that have been deployed statewide.

Our experience with county-based programs has led to incorporation of lessons learned on how to engage and manage this large and diverse end user group, and how to work with other vendors and business partners toward a common goal. With over 15,000 users at over 1,000 locations including the 48 county MH/MR offices, Early Intervention offices, Child and Youth facilities, and Long Term Living providers, the case management end users are spread throughout the Commonwealth across difference work environments. The proposed team brings this understanding to the application adoption services and continues to build on its record of success. This includes the more recent successful implementations of ODP's centralized Payment through Treasury and the ongoing implementation of the Preschool program for Early Intervention. These are examples of complex transformational statewide deployments that involved coordination and significant application adoption across the case management user groups.

Unique Characteristics for Child Welfare End Users

OCYF is at an important juncture as it progresses with its strategic plan to move forward with its long-term solution for Child Welfare. As a state supervised/county administered program, the Department must partner with the 67 County Child and Youth Agencies to fulfill its mission. Our recent work supporting the implementation of MCI.NET provides our team the knowledge and experience of working with each of these counties and supporting them in their implementation of new technology. In addition, our work at the county level with

“My experience with Deloitte within the context of child support has been extremely positive. As a consultant, they were highly focused on client needs and nimble in their efforts to meet those needs. Their knowledge of the child support program, federal child support regulations, and knowledge of our particular state program was impressive. They were an invaluable resource in promoting necessary change and urging positive buy-in from our workforce.”

Wendy Yerkes
Former IV-D Director of Indiana

Allegheny County provides hands on experience and further knowledge of the county operating environment. The County Children and Youth Agencies represent a diverse stakeholder group with various levels of support need. Our experience providing implementation support for OCYF, as well as our heavy experience in Child Welfare, provides the Department a low risk solution to manage this diversity.

Unique Characteristics for Child Support Enforcement End Users

With Federal funding directly tied to performance, it is critical that the Lot 7 vendor has the knowledge and understanding and a track record of success, to coordinate and provide application adoption services across the child support enforcement end user groups. DPW needs confidence in the team's ability to react to new legislation (like the Deficit Reduction Act), respond appropriately to data reliability audits, and apply a solid understanding of the Financial Distribution Test Deck so that even with planned enhancements, PACSES remains a certifiable Child Support Enforcement solution.

Imagine the reaction of the more than 100 PACSES Administrators across the Commonwealth, representing more than 4,000 end users, if familiar faces and reassuring voices are no longer there to answer their questions or help them address complex case issues while they are serving your clients. They deserve continuity of service and reliable results.

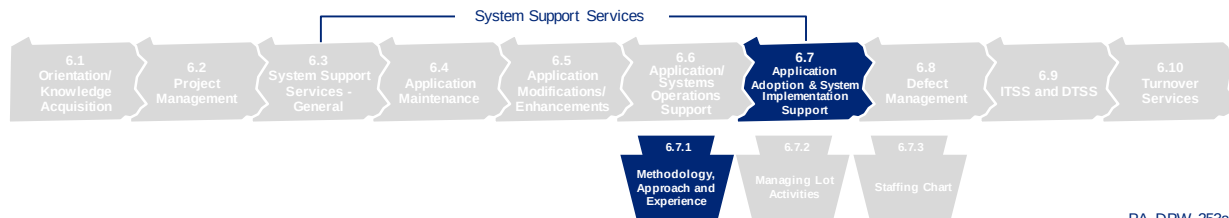
Key Staff Spotlight Cherie Groff



Implementation Specialist

"I began my work in Child Support in the county managing cases and now I am able to support counties as a subject matter expert to help them improve performance, conduct daily operations, and resolve their questions. I look forward to continued county assistance in implementation of DPW's critical application adoption."

6.7.1 Methodology, Approach and Experience



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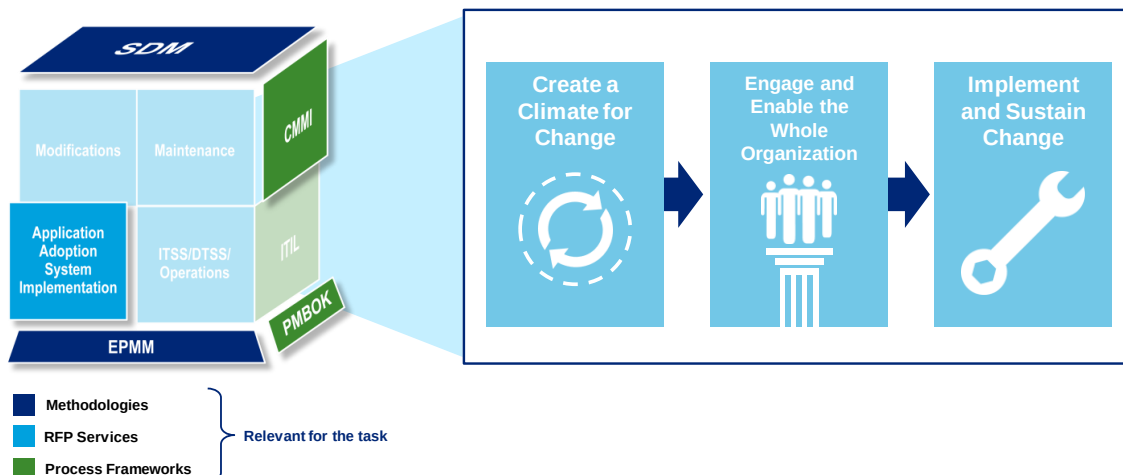
II	Page II-3	RFP Reference: II-3. Work Plan

Where possible, the Offeror should provide specific examples of methodologies or approaches that will be used to fulfill the various requirements, how these methodologies will be adapted for this contract and implemented, and examples of the Offeror's similar experience and approach on comparable projects. This discussion should include a description of Offeror's experience with Service Oriented Architecture (SOA) methodologies, Enterprise Architecture (EA) methodologies, large-scale, complex system takeovers, implementations, maintenance and operations, and turnovers, as appropriate. This discussion should also include a description of the Offeror's experience and methodologies associated with strategy and planning, application support services, and, systems architecture services, technical services when relevant to the proposed Lot(s).

Methodology

An effective application adoption and system implementation methodology is critical to the success of DPW's systems and operational improvement initiatives. Over the last 10 years, Deloitte has worked with DPW project managers and staff to customize this methodology as a component of the Department's System Development Methodology. Given the support activities outlined in the RFP, we anticipate further expanding this methodology to align with the tasks and activities performed by the Commonwealth, as well as the Lots #1-5 vendors, to promote successful system adoption. This methodology is broad in that it covers the wide range of activities for application adoption and flexible in that each activity is a self-contained set of recommended tasks that can be carried out as needed. It also continues to move the Department forward in your application adoption and system implementation evolution, bringing leading practices and vast experience to the team to fine tune an already strong methodology to be even more effective.

Working with the Department, Deloitte supported the Commonwealth in the successful implementation of over 200 IT initiatives across Eligibility, Provider Management, Case Management, Child Welfare and Child Support Enforcement, that impacted well over 20,000 end users in the last year.



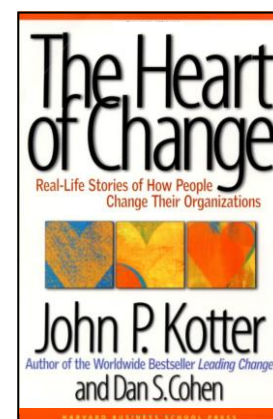
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Figure 6.7-10. Application Adoption and System Implementation Methodology.

Our methodology is tailored to DPW's needs and supports the Department's vision of continuing to enhance your approach to technology implementations and providing application adoption support

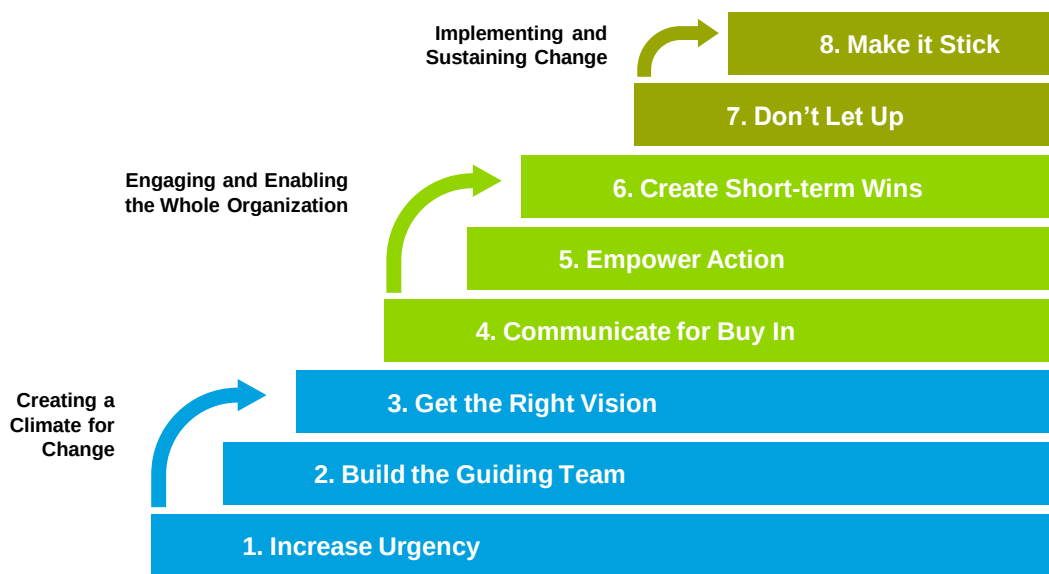
With the Department's SDM and EPMM methodologies as the basis for each implementation, we employ an approach that builds on this foundation with application adoption and system implementation experience. Within Deloitte's organizational change management discipline, there are a series of tasks and activities that help prepare end users to implement and sustain new technology. These tasks include identify the stakeholders, establish the vision, outline an implementation plan, and carry through to the deployment of new technology. Our services encompass an integrated approach to communications, stakeholder engagement and preparation, user education and organizational alignment and transition. Each of these components helps address the system adoption and implementation barriers that are often faced on large technology initiatives. Underpinning each of these activities is the discipline and structured processes that align with CMMI and PMBOK. Our application adoption activities maintain the same level of CMMI compliance and follow the structure and rigor of PMBOK to deliver repeatable results through each implementation.

Our overall approach builds on the concepts and principles outlined in *The Heart of Change*, co-authored by Dr. John P. Kotter (Harvard Business School) and Dan S. Cohen (Principal, Deloitte Consulting LLP). Organized around an eight-step change process, these principles and concepts focus on success factors aligned with creating a climate for change, engaging and enabling the organization, and implementing and sustaining the change. Deloitte believes that a project's success depends substantially on the quality and experience of the people involved. In our view- imperative to the organization is the staffing of personnel who possess the proper knowledge, experience, and capabilities for their assigned roles.



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The Heart of Change: Eight Steps to Successful Change in Application Adoption



Kotter, John P. and Cohen, Dan S., *The Heart of Change*. Boston: Harvard Business School Press

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Figure 6.7-11. The Heart of Change.

Deloitte proposes an industry standard change process as part of our methodology for application adoption and system implementation.

Phase I: Create a Climate for Change

A key element of our approach is the alignment of influential leaders within the project teams and stakeholders. This will be particularly important given the operating model under the new contract for the projects. The project steering committees that have been established in the existing governance model are a valuable sounding board for matters of strategic guidance, institutional knowledge, and relationship management at the executive level. We have also found that discussions with the leadership team to be particularly informative, not only with regard to the initial strategy, but also in supporting a continuous feedback process. These are both elements that DPW has used successfully to create the climate for changes and drive change through the organization. Finally, stakeholder engagement and support is critical for projects that DPW has undertaken to surface areas of strong resistance and to manage risks. We understand that these activities need to occur across project stakeholders and we work with DPW to support these tasks as necessary.

Phase II: Engage and Enable the Whole Organization

As the project moves to subsequent phases, the team shifts to focus not only on promoting stakeholder engagement, but also engaging the targeted end user population. This is especially critical in DPW projects where the end users are frequently from varied organizations, with objectives and priorities that may not always align to DPW's long term vision. Our approach includes deploying ongoing and milestone-based end user communications, creating and implementing detailed user

education plans, and gradually increasing the distribution of project information to prepare stakeholders for system launch dates. Working with DPW, we have created a structured process to manage this communication and implementation process and help build support for technology changes as they progress through development. This continues to be an important component of application adoption and must occur throughout the project life-cycle.

Phase III: Implement and Sustain Change

During deployment and implementation, the project needs to confirm that its solutions have staying power. System launch dates cannot be viewed as one-time events that require short-term attention. Rather, these changes transform the way end users perform their jobs, view information, and manage using data to support decisions. This includes working with the Department to monitor implementation success post deployment and using consistent tools to track overall progress and feedback from the field. Conveying the importance, depth, and lasting nature of these changes is a critical factor in each implementation.

Approach

An important success factor to the overall success of the implementation of maintenance and modifications activities is the integration and alignment across project stakeholders for each deployment. Implementation is where it comes together and a strong coordinated effort is necessary to integrate the multiple “moving parts” of the project (infrastructure, people, process, operations and application) into a cohesive and coordinated effort.

Based on Deloitte’s breadth of knowledge and experience, our approach addresses the five primary categories that a successful implementation requires:

- **Application.** From an implementation perspective, this area focuses on the activities required to prepare and deploy the application for use in production – from both a business perspective and a technology perspective. For example, implementation plans must take into account such areas as user set-up, data readiness, cut-over planning, conversion planning, and the preparation of required documentation. Plans for the deployment of the production environment and subsequent releases must also be defined, communicated, and executed.
- **Infrastructure.** For each release, the supporting systems and networks must be prepared to support the production go-live. Each area must understand the implementation plans and timeframes. The changes required in facilities, hardware, or other equipment must be planned for, tested, and in place prior to implementation. This includes confirming that disaster recovery/business continuity plans are ready and tested for implementation.
- **People.** This addresses validating that stakeholders have the information they require to understand the impacts and prepare for the implementation and that they have the training and support required to lead to a smooth transition. Critical to successful

“people” planning within an implementation is understanding the impacts on different kinds of individuals based on department, location, level, or job function performed.

- **Process.** Includes assessing the business process and operational workflow changes that are required due to the system implementation, and supporting management and staff through the transition from “As-Is” processes to the “To-Be” processes. This includes confirming that “interim” processes are in place as end users transition to the new state.
- **Operations.** Beyond changes in the system and even business processes, our experience has demonstrated that there are numerous elements that can be easily overlooked that affect operations. For example, each implementation may result in changes to:
 - Roles and responsibilities within local offices and across departments
 - Administrative policies and procedures
 - The types and numbers of forms and how they are used and filed
 - Print center, mailroom, and report distribution processes
 - Directions and guidelines provided to customers

To successfully execute the implementation of each initiative across the Department, activities across each of these five dimensions must be carefully planned and properly sequenced, taking into account the Commonwealth’s inherent intricacies and the interdependencies across such areas. Therefore, implementation planning begins at the onset of the project and continues to be updated and reviewed through post implementation support.

It is critical that the application adoption and system implementation activities are in close coordination with the final tasks associated with system deployment and go-live. During this period, final decisions are made that may impact end users and need to be communicated as part of the go-live messaging. Under the new operating model, there are a series of activities conducted by the Lots #1-5 vendors that need to be in close concert with the Lot #7 vendor. As User Acceptance Testing occurs and system training is rolled out, system changes are identified that can impact the end user group. Having an application adoption team that is coordinating this effort and aligned with the Lot #7 management team provides cohesion for the project.

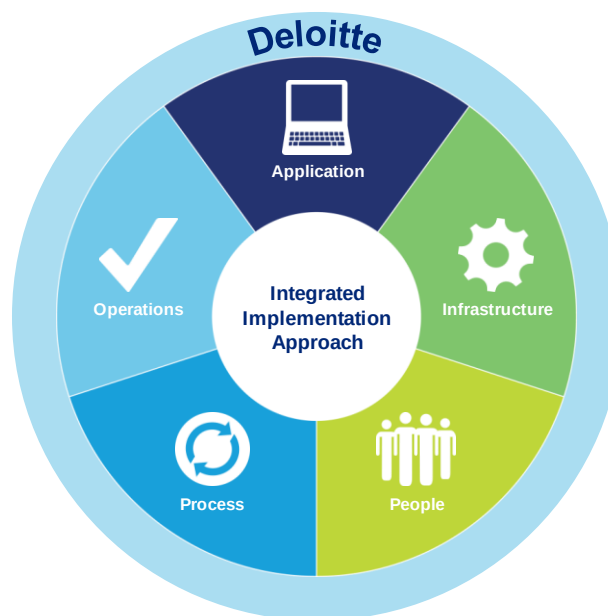


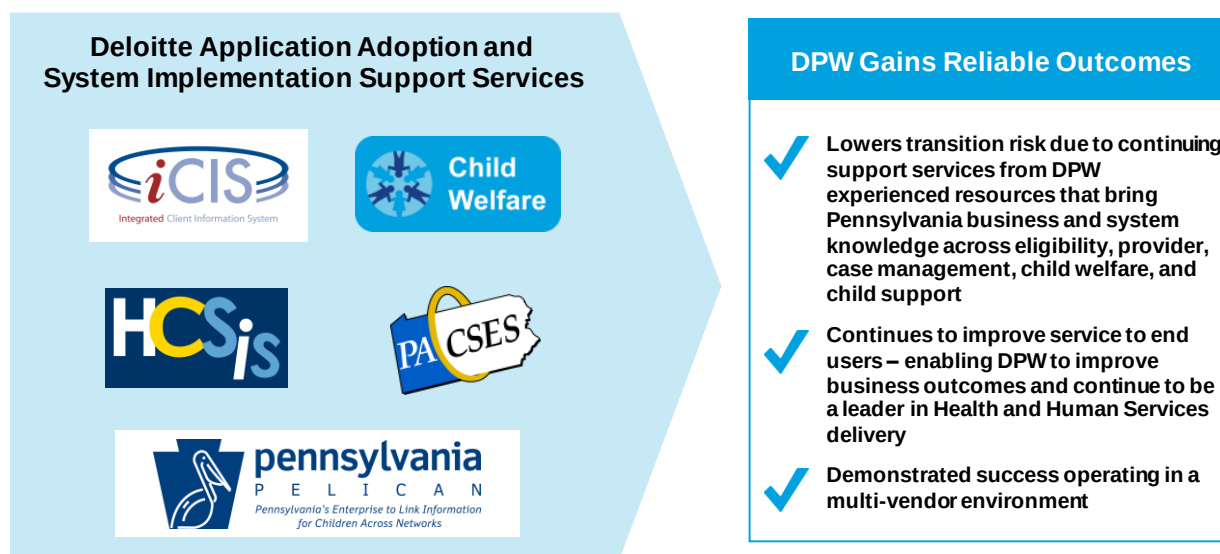
Figure 6.7-12. Integrated Implementation Approach.
Deloitte applies an integrated implementation approach that includes application, infrastructure, people, process and operations so that each of the pieces of the puzzle comes together at the critical juncture of go-live.

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As the Department continues to focus on enterprise services and collaboration across program offices, the importance of a single integrator to manage coordination also increases. Through Lot 7, a pool of resources can be drawn upon with subject matter experience in each functional area that map to Lot 1-5 in order to provide meaningful support to the field.

Deloitte's application support services team currently provides this diverse range of skills which allows us to be successful across Program Office implementations. Our team's knowledge and understanding of the business means that we do not spend additional hours getting up to speed on an implementation that impacts multiple user groups; we just identify the right resources to support that effort up front. In addition, we also employ innovative ideas from our other projects to help the Department promote the hard work and success of the staff, such as the DPW IT report. Working with the Portfolio Managers, we have successfully delivered both the Mid Year and Annual IT report for DPW that highlight the accomplishments and tremendous effort of the Department. We are proud of these reports not only because we had a part in working with DPW to deliver the incredible outcomes each year, but also because our application support team has the depth of knowledge and diversity to pull this report together across the functional areas.

The resources within the application adoption team play the important role of partnering with the respective program office and BIS staff to identify changes that must be communicated, coordinate those communications, and closely monitor the impact of the system implementation after go-live. These resources are part of the bigger team that is accountable for the overall success of the deployment.



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Figure 6.7-13. Application Adoption and System Implementation Support Services.

Our approach to application adoption and system implementation services leads to reliable outcomes for the Department for each technology initiative.



The importance of application adoption and system implementation comes down to making sure each technology initiative achieves the business outcomes that were identified at the onset of the initiative. Without an effective approach that is aligned with the system development activities, an initiative risks failure if the end users are not brought on board early and engaged throughout the development process. As the Lots 1-5 vendors hand off the business requirements to Lot 6, and then the Lot 6 vendor hands the system requirements and general system designs to Lot 7, their focus could revert to internal processes instead of the end user. Having a strong team in place within the Lot 7 vendor that continues to focus on the end users reduces this risk and provides a level of support and established processes for implementation activities that positions DPW to achieve the identified business outcomes.

Key Activities for Application Adoption and Systems Implementation

Key Activities	Deloitte Approach Addresses RFP Activities
Provide assistance for systems adoption and implementation support	• Application adoption and system implementation methodology focuses on creating the right climate for change • Focus of our application adoption team is to create the right level of system support so the end users feel comfortable using the new technology and empowered to embrace the new way of doing business • Key features of our approach include vast experience delivering these services to DPW's diverse set of end users and tailoring the approach to the various systems supported by the Lot #7 vendor
Triage to resolve operational issues	• Application adoption and system implementation approach includes a structured reporting process, leveraging tools that have proven successful in DPW's operating environment • Application adoption team focuses on establishing a process that is structured enough to support the diversity of end user groups, but also consistent to provide a similar set of tracking and reporting mechanisms for project executives • Support approach is flexible to the demands of the overall project and can be sized up or down depending on the size and scale of the modifications being implemented

Key Activities	Deloitte Approach Addresses RFP Activities
Report and resolve anomalies discovered during implementation or adoption activities	- Processes that are CMMI level 3 are in place to support consistent tracking and reporting of information from the field - Subject matter experience across program areas allows Deloitte to understand and diagnose the anomaly more quickly and identify the root cause of the issue - Experienced staff understand how to escalate critical items for quick resolution and provide answers to the end users to reduce frustration and increase system adoption

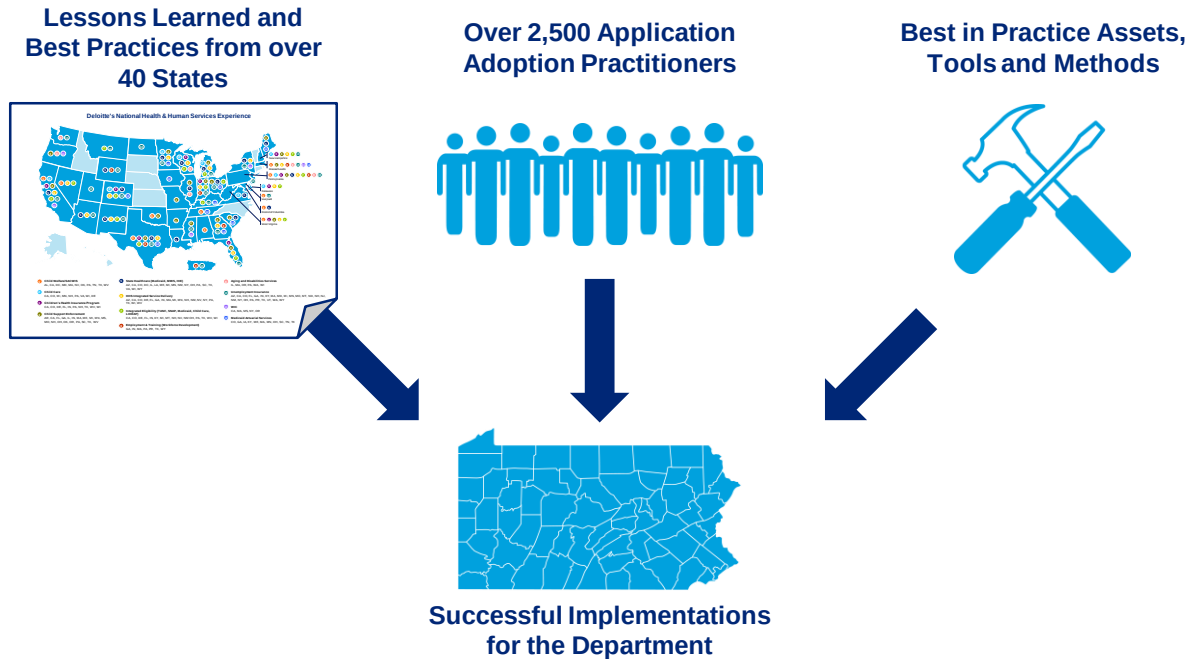
Figure 6.7-14. Key Activities for Application Adoption.

Experience and Examples

Our team brings unmatched experience serving Health and Human Services clients across the country, with a specific focus on application adoption and system implementation support. With over 2,500 individuals in the firm providing technology adoption services within our Human Capital practice, Deloitte is one of the largest professional services firm with this type of experience needed for DPW. Our Human Capital practice focuses on providing highly modified strategies for enhancing people and organizational performance and productivity. Due to our size and full-service capabilities our practitioners have access to several subject matter experts for implementation advisory services. As an example, Nick van Dam, the global Chief Learning Officer (CLO) for Deloitte has recently released The e-Learning Fieldbook published by McGraw Hill.

In addition to our subject matter experts, we have a vast repository of knowledge and staff that can be deployed against the project as needed to support your changing resource needs. Within our technology adoption practice, we have an established community of practice that includes forums, knowledge sharing opportunities, and a library of resources that help our team bring a breadth of services and tools to each of our projects.

Complementing our technology adoption practice is 30 years of experience working in Health and Human Services across each of the functional areas identified by DPW in this RFP. This history provides our team real life experiences doing the work supporting technology adoption implementations and delivering successful project outcomes. It also means we can offer the Department time-tested, specialized experience, plus the depth of experience in emerging e-Government initiatives that can make the difference for future success. We have been, and will continue to be, a consulting firm (not an outsourcing firm) with a passion for assisting our clients and helping them solve their most difficult business challenges.



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Figure 6.7-15. Premier Human Capital Experience.

We bring a combination of HHS experience, application adoption specialty, and Deloitte's tools, assets and methods to the Department.

The following table provides a sample of our application adoption and system implementation services in Pennsylvania.

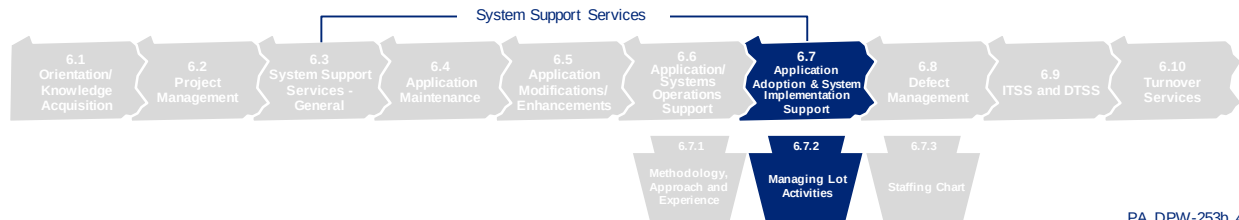
Deloitte's Experience Providing Application Adoption Services in Pennsylvania

Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
	Pennsylvania Department of Public Welfare	iCIS • Provide communication and implementation support for over 5,500 end users, located across 67 counties • Most recently supported the implementation of multiple large technology initiatives to diverse end user groups, including LIHEAP integration with eCIS (CAOs), COMPASS.net (citizens), Client Notice Redesign (CAOs), and Management Reporting (CAOs) • Demonstrated experience coordinating the effective implementation of user education and implementation activities across stakeholder groups that includes OIM Operations, Staff Development, Division of Automated Planning, and field staff HCSIS • Support more than 15,000 users who rely on HCSIS to perform critical business activities • Coordinated user education and implementation activities for two major infant Toddler pilot and statewide implementations across 48 county/joiners, Early Intervention providers and supports coordination entities in collaboration with a training vendor and coordination with HP Services for system functionality • Coordinated implementation for the Enterprise Rate Service, which is functionality developed jointly between HCSIS and PROMISe • Provided implementation support for ODP's Payment through Treasury initiative, supporting Mercer for rate setting, HP Services for cross-system processing requirements and design, and ODP Consulting for training and communications activities PACSES • Support more than 4,000 users, responsible for 480,000 cases • Provide communication, implementation, and SME support for Domestic Relations Staff across 67 counties • Most recently supported the implementation of multiple large technology initiatives to diverse end user groups • Coordinated the implementation of Performance Improvement Module to 1,200 users PELICAN • Provide application support services to PELICAN user groups that includes 2,500 workers and the potential for 250,000 providers across a diverse group that includes Child Care Information Services (CCIS) staff, Certification staff, Regional Keys, Pre-K Counts Providers, and Early Learning Network Providers

Deloitte Experience Footprint	Example	Deloitte Role in Providing Services Similar to DPW Requirements
		- Activities include implementation planning and readiness tracking in preparation for upcoming implementation Child Welfare - Support OCYF by providing implementation support activities for the implementation of MCI.NET to the 67 county offices - Activities include implementation planning and readiness tracking in preparation for upcoming implementation
	Pennsylvania – Comprehensive Workforce Development System	- Created a Business Staff Impact Plan to identify how the new business processes and an integrated system would impact 66 business staff job classifications and 124 position descriptions across the three agencies - Worked closely with 180 local office coordinators to facilitate two-way communications with more than 5,000 local office staff using email, phone, conference calls, newsletters, and webinars - Developed a blended user education approach using Computer-Based Training, 18 Instructor Led courses, and Self-Directed Learning exercises - Provided implementation support consisting of a centralized Help Desk and more than 200 on-site visits to field offices across the Commonwealth
	Pennsylvania – National Electronic Disease Surveillance System	- Integrated over 2,700 disease reporters and investigators through regional user education initiatives and outreach with counties, districts, municipalities, hospitals, clinics, laboratories, and relevant professional organizations - Continued user education through Web-based delivery, including lectures and demonstrations - User Guide maintenance and “Info Byte” documentation of system enhancements for field staff - Help Desk specialists for daily user support

Figure 6.7-16. A Sample of Deloitte’s Application Adoption Experience in Pennsylvania.

6.7.2 Managing Lot Activities



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II

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RFP Reference: II-3. Work Plan

Provide a description of the Offeror's plan and approach for managing the Lot's Required Activities and Tasks

Deloitte believes that managing the multiple threads involved in the complex implementations undertaken by DPW is key to continuing the successes the Department has experienced in the past. Our approach to supporting the lots preserves the proven management structure that has been used successfully in the past and builds on our collaborative culture to include different considerations for the coordination that will be required going forward. We bring demonstrated tools to the table to facilitate communication, coordination, and to minimize the risk to DPW.

Program Issues, Risks and Proposed Solutions

II

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II-3

RFP Reference: II-3. Work Plan

During this discussion, the Offeror should identify potential issues/risks and proposed solutions.

Deloitte is uniquely positioned to fully comprehend the issues and risks associated with providing Technical Support Services for DPW's strategic business systems. During our more than 10 years of active project management on these projects, we have jointly established the current project management methodology that includes the processes, procedures, artifacts, templates and tools to effectively manage DPW projects within a framework of continuous improvement. Further, this relationship provides us with an understanding of DPW's vision of an integrated human services delivery model that includes multiple vendors and shared services within a service oriented environment.

Based on this understanding, as well as the lessons learned from our national HHS client and project base that includes those of similar size, scope and complexity to DPW, we provide a list of the most critical issues and risks regarding application adoption and systems implementation on this new contract.

The Deloitte Team used an Early Intervention (EI) Financial Management (FM) Statewide Implementation Scorecard to show EI program staff the status of children's plan, claim billing and payment progress, and potential claim payment issues. The graphical format allowed the project team to focus support where it was needed and monitor the readiness progress against schedule expectations.

More importantly, we propose solutions that reduce or avoid these issues and risks and have incorporated them into our project management approach. We provide a full list of issues, risks and proposed solutions in our *Tab 4, Section 4.3, Issues and Risks*, narrative response.

Application Adoption Issues/Risks and Deloitte's Solution

Issue/Risk	Deloitte's Mitigation Strategies
Increased level of effort for application adoption and system implementation effort - Significant resources will be required to first learn the application, the business of DPW end users, and what it means to provide implementation support - As issues are identified in the field, it will take significantly longer for end users to get answers and additional resources to research answers.	Deloitte has worked closely with DPW to build a team that understands the business and provides support to a wide and diverse end user group. We will continue to build on these efforts.
Lack of DPW Program, Policy and Operational Experience Under the new lot structure, a significant variation in the vendor's levels of business process experience will reduce the current level of system adoption support capability across the SDLC	- Our subject matter experts and our operations support personnel in many instances have come from the various field offices for whom you serve. - Given this background, we understand the impacts of new functionality and know how to improve the existing business processes.

Figure 6.7-17. Application Adoption and System Implementation Services Issue/Risks and Mitigation Strategies. Deloitte is the only Lot 7 vendor with the depth of experience in systems adoption to maintain the current level of adoption support expected by DPW end users.

Processes, Tools and Reports

II	Page II-3	RFP Reference: II-3. Work Plan

For each of the Lot's Required Activities and Tasks, describe the processes that will be followed and tools that will be used; describe the reports that will be used to track, monitor work, and measure performance.

To measure implementation progress we use a variety of data driven reports and scorecards tailored to the specific functionality being implemented and stakeholder groups impacted. Leveraging our repository of Deloitte tools, these dashboards and scorecards give stakeholders the information they need at their fingertips to keep a pulse on the status of each implementation. The tools and reports reflect industry leading practices tested across our application adoption services and have been refined over the last 10 years of working with the Department. They allow DPW to monitor and communicate the current status of the implementation, identify any potential trouble areas and help the program offices to focus their limited support resources on any stakeholders that are having difficulty. This approach has been used successfully over many implementations.

For each implementation, the team begins with a structured process to facilitate tracking and tailors those processes to support the specific implementation. Potential trouble areas are identified in the planning process, and metrics to measure readiness or implementation are identified and monitored using point-in-time or trended data. This close monitoring allows the implementation team to focus their efforts and not expend scarce resources, leading to successful implementations.

Activity 1: Provide assistance for Systems Adoption and Implementation Support

This activity includes the support required to identify user impacts to provide implementation and user education considerations and readiness tracking.

Process	Tools
Implementation readiness Go-Live readiness	Implementation Scorecard
Daily, weekly, and monthly production status reporting	Metrics Dashboard DPW Problem Status Reporting Inbox
Post implementation	Post Implementation Dashboard

Figure 6.7-18. Systems Adoption and Implementation Support Processes and Tools.

Implementation Scorecard – DPW’s Go-Live Tool

The scorecard represents a dashboard of the information the Department needs to monitor readiness for go-live. It includes the status of activities and metrics identified during implementation planning. Distributed to a wide array of stakeholders to coordinate implementation status, the tool is critical to the team’s success to monitor and track the progress of critical, high, medium, and low preparation activities.

As each go-live nears, the scorecard is **the place** for stakeholders to go to understand the status of the many activities associated with a successful deployment. As the Department’s go-live tool for success, it provides visibility across teams, including testing, conversion, application deployment, user readiness and technical infrastructure.

Key		Enterprise Incident Management Implementation Support			
Not on-track to meet deadline	R	PELICAN EI is scheduled to be implemented on 00/00/0000.			
Concern that deadline may be missed	Y				
On-track to meet deadline	G				
Complete	X				
Mission	Rating	Responsible Party	Original Due Date	Revised Due Date	Comments
Train Users					
Create training materials	G	Vendor A	6/30/2011		
Schedule training and locations	Y	Vendor A	7/31/2011		Coordination with regional sites underway, not finalized
Conduct Training sessions	G	Vendor A	9/30/2011		
Establish Day Zero Data					
Coordinate data collection for provider profile setup	Y	Vendor A	6/30/2011		Responses received from 25% of providers
Perform role mapping for users by rollout wave	Y	Vendor A	7/31/2011		
Set up system access for users	Y	Vendor B	8/15/2011		Dependency on Role Mapping activity
Conduct Post-Implementation Support					
Establish first response center	Y	Vendor A	10/1/2011		Outstanding schedule coordination issues
Track and coordinate issue resolution	G	Vendor A	Ongoing		
Monitor user adoption	G	Vendor A	Ongoing		

PA_DPW-025_3

Figure 6.7-19. Example Scorecard for Cross-Vendor Implementation Tracking.

Deloitte's implementation tracking scorecard provides a snapshot of key activities and helps the DPW team manage across the moving parts of an implementation.

Readiness Summary Report – A Detailed View of Each Implementation Location

This report is a snapshot of the implementation scorecard and provides a view of site readiness activities against predefined criteria prior to implementation. Using an established framework to measure progress, the readiness report examines each location's status and also rolls up to provide a summary view for the Department. The report is used as the final preparation step prior to a deployment and is shared across stakeholders impacted by the initiative.

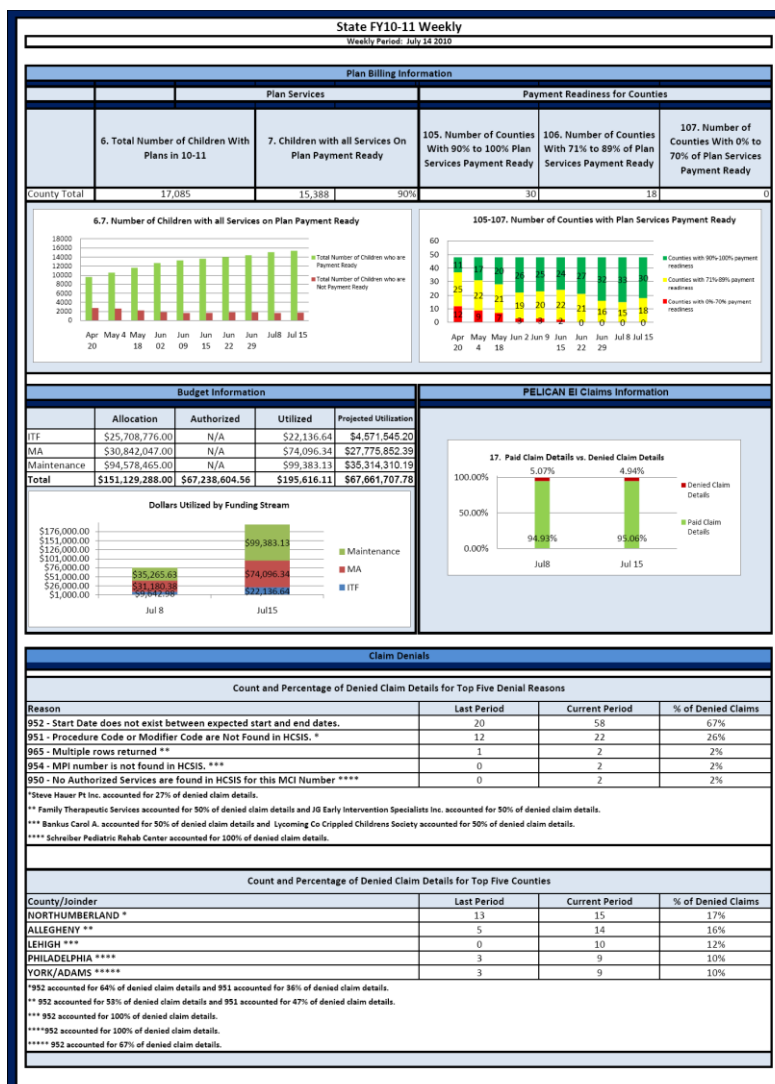
Daily Business Metrics Report – Measuring Success One Day at a Time

Providing the key details that Department stakeholders need to gauge system and user performance, this report provides counts of key business metrics. With data from the Department's major applications for the past three days, a 30 day average, and a 52 week high, the report shows key performance metrics and trends. A trending graph for each metric helps stakeholders identify usage patterns and any anomalies in data over a period of time.

The Daily Business Metrics report has become the key pulse check for Department stakeholders to understand what work is being accomplished. Distributed early each morning, it provides a snapshot of the work of the more than 20,000 end users, as well as citizen applications and renewals through COMPASS. This critical information helps the Department understand the volume of transactions that the Department's technology applications support each day.

Post Implementation Dashboard

Bringing together the information the Department needs to understand the impact of a new technology initiative, the post implementation dashboard provides information to track the status of an implementation after go-live. With key performance indicators and business metrics, the report helps DPW identify successful outcomes, as well as any trouble spots that need further support. Key business metrics associated with the release are included to monitor system usage and adoption.



PA_DPW-306

Figure 6.7-20. Example Implementation Tracker.

Color coding makes at-a-glance analysis of the status easy, and aids in pinpointing "red" areas to focus resources' efforts.

Activity 2: Triage to Resolve Operational Issues

This activity entails the process and tasks associated with tracking operational issues identified during and after deployment. Once identified, it also includes a defined approach to prioritize and communicate those issues and determine the leading approach for each issue.

Process	Tools
Track Operational Issues	Issue Tracker

Figure 6.7-21. Operational Issues Processes and Tools.

Issue Tracker Report – Providing Visibility to Operational Issues

Using a framework successfully established by the Department and Deloitte, this report provides a consolidated view of the questions and issues identified by the field following a deployment. The team follows a structured approach to identify items for the report, review the items with the respective program offices, and disseminate information to the field as appropriate. Items from this report may be categorized as PCRs, at which point they are entered in ATS.

Activity 3: Report and Resolve Anomalies Discovered during Implementation or Adoption Activities

This activity supports the implementation and user education activities to track and resolve anomalies identified during implementation and after deployment.

Process	Tools
Track and Resolve Anomalies	Issue Tracker ATS

Figure 6.7-22. Processes and Tools to Report and Resolve Anomalies.
Issue Tracker Report – Providing Visibility to Anomalies in the Field

Using a framework successfully established by the Department and Deloitte, this report provides a consolidated view of the questions and issues identified by the field following a deployment. The team follows a structured approach to identify items for the report, review the items with the respective program offices, and disseminate information to the field as appropriate. Items from this report may be categorized as PCRs, at which point they are entered in ATS.

Management Controls, Communication, and Evaluation

II

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II-3

RFP Reference: II-3. Work Plan

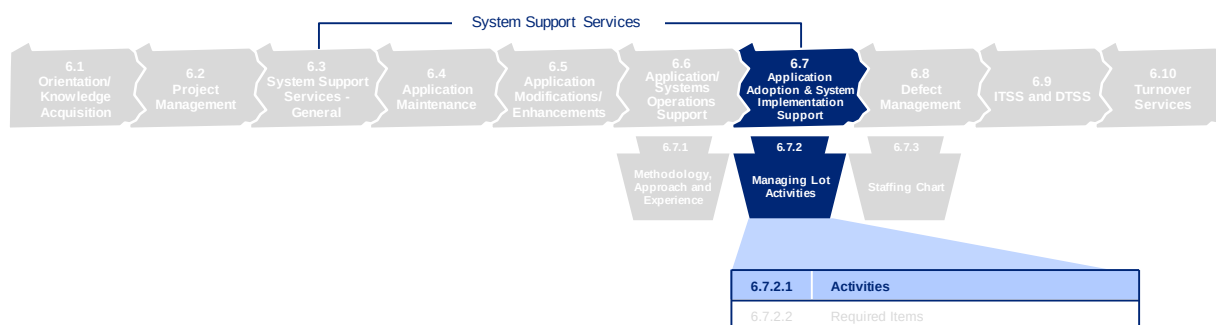
Describe the management controls that will be used to identify and manage risk, maintain project schedules, ensure the quality of the work, and meet all of the performance expectations. Based on its experience, the Offeror should include a discussion of its formal and informal communication processes within a project of this nature. The Offeror should also address its approach to internally monitoring and evaluating its effectiveness in meeting the RFP requirements for the Lot throughout the course of the contract.

Management controls, formal and informal communications processes, and monitoring and evaluating of effectiveness are managerial functions that we use to identify and monitor potential errors from which we perform the necessary corrective actions. These functions on a project of this nature include planning, organization, staffing and directing of work to minimize deviation from standards and to achieve the stated goals of the organization. We establish controls by setting standards and based on these internal controls, measure and evaluate actual performance to these against these goals. Communication processes, internal and external to the project organization, are the means for facilitating these control mechanisms and the resulting corrective actions.

Application Adoption Process	Deloitte Approach
Plan	• Coordinate with BIS, Program Office and Lot # 1 – 5 vendor to determine the level of change for end users • Identify resource needs • Understand timeline against end user priorities
Organize	• Define application adoption needs • Allocate work to teams • Define roles and responsibilities
Staff	• Acquire resources from shared services pool • Identify implementation lead • Coordinate level of effort for implementation support activities
Direct	• Conduct weekly team meetings • Review status of tasks and activities • Take corrective action as required
Communicate	• Attend implementation meetings • Engage program offices through governance meetings • Facilitate user/stakeholder communication
Evaluate	• Review actual vs. estimated • Evaluate and adjust resource plan • Assess and refine SLAs

Figure 6.7-23. Application Adoption and System Implementation Processes.

6.7.2.1 Activities



PA_DPW-254a_4

Assistance in Systems Deployments

IV	Page IV-384	RFP Reference: 4.2 Application Adoption and System Implementation Support

The selected Offeror of **Lot #7** will be required to assist the program office and the selected Offeror(s) for **Lots #1-5** with the technology adoption process and implementation support activities. Examples of Application Adoption and System Implementation Support include, but not limited to:

- Provide assistance in the systems (application and technology) deployments

Successful system deployments require a carefully orchestrated plan that identifies each step in the process and the corresponding roles and responsibilities of each player. We have worked with the Department over the last 10 years to fine tune an approach so that each system deployment results in a series of predictable steps, results, and repeatable processes. Our team has been tremendously successful in this approach and the result has been more than 75 production releases and more than 2,500 software deployments each year. The table below provides a summary of the fiscal year 2009-2010 deployments.

Demonstrating Significant Changes Supported by Deloitte

Application	Migrations Performed			
	INT	SAT	TFP	PRD
PELICAN	586	446	45	25
HCSIS	219	152	24	16
PACSES	120	146	37	21
iCIS	534	377	39	25
Total	1459	1121	145	87

Figure 6.7-24. 2009-2010 System Deployments.

Our role as the Lot #7 vendor is to continue to work with BIS and the Program Offices to enhance this approach and coordinate both the application and technology activities into a series of regimented steps that leave no room for mistakes. Our deployment playbook provides an hour by hour breakdown of the activities that are required and the personnel responsible for each activity. We include regular checkpoint calls throughout

the process to keep the parties informed and aware of each progressive step in the deployment. For additional details on the deployment playbook, refer to *Section 6.9, Configuration Management – Deployment Planning*.

Pelican-CCW 8.0.5, PPCS 3.0.1, Pelican-ELN 2.2.0, Pelican PKC 4.1.0, UREP 3.0.1 Production Implementation Playbook												
Check if Complete	Step	Migration Task	Migration Thread	Servers Impacted	Comments	Dependencies	Date	Duration	Begin Time	End Time	DPW Owner (s)	DC Support
Production Deployment Playbook: Saturday, 06/12/2010												
	1	Confirm PELICAN/MCINET Batches are complete	PELICAN				6/12/2010	0:05	5:00 AM	5:05 AM	DIMO - Scheduling	Balaji C/Santosh
	2	Place PELICAN, eCIS in Maintenance mode	PELICAN				6/12/2010	0:05	5:00 AM	5:05 AM	DIMO - Scheduling	Balaji C/Santosh
	3	Confirm PELICAN, eCIS in Maintenance mode	PELICAN				6/12/2010	0:05	5:05 AM	5:10 AM	DIMO - Scheduling	Balaji C/Santosh
	4	Terminate all connections (Active and In-active)	PELICAN				6/12/2010	0:20	6:10 AM	6:30 AM	DTE-Data Team	Pathik Bhavsar
	5	CAPS team to disable CAPS MCI clearance pages	CAPS				6/12/2010	0:20	6:10 AM	6:30 AM	NA	Michael Neway
	6	USEC to disable the HCSIS Clearance pages	PELICAN				6/12/2010	0:20	6:10 AM	6:30 AM	Security Team	Akshay \ Praveen
	7	Perform Partial backup CCW Application Database and selective backup of MCI Database	PELICAN				6/12/2010	0:30	6:30 AM	7:00 AM	DTE-Data Team	Pathik Bhavsar
	8	Pelican CCW, PKC, ELN, PPCS, UREP Kick-off call Dial: 888.998.2663 Participant Code: 673828	PELICAN				6/12/2010	0:15	7:00 AM	7:15 AM		Balaji C/Santosh

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Figure 6.7-25. DPW Deployment Playbook.

Our Operations Playbook provides a minute by minute account of the activities required to coordinate and implement a successful release.

Providing Assistance to System Users – Features and Functions

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RFP Reference: 4.2 Application Adoption and System Implementation Support

- Providing assistance to the system users in understanding the features and functions of the technology

For system users to understand the features and functions of new technology and applications, they must be fully prepared prior to the system implementation so they can embrace the change instead of being focused on the basic tasks and activities. The ability to get the users beyond system basics and make them aware of how the technology can improve their processes and they can benefit from new features is a difficult component of systems implementation. Too often, end users are too focused on how the system used to work, or what they used to do to complete a task, to open their eyes to the capabilities of the new technology. We have vast experience working with end users to get them past the initial fear and desire to do things the same, helping raise awareness to the possibilities that a new way of doing business supports.

We work with the Lots #1-5 vendors and the business application and technology team to identify, highlight and document key user concepts and functionality from an end user perspective. This information is organized and distributed to the field in a series of communications and user education materials that highlight the features of the software and explain the functions in the context of the end user business process. Expansive program and system knowledge are critical to this step in the process so that the information conveyed to the field is not just what button to click, but how each action leads to more proficient processes. The table below provides examples of implementation success stories, the steps that were taken to assist system users in understanding the features and functions of new processes and technology, the impact to them, and anticipated changes and benefits.

Key Staff Spotlight

Lindsay Hough

Application Adoption



Helping End Users through Change

"I have always been passionate about helping end users understand how technology improves their ability to do their job. I look forward to working with DPW to help end users understand the features of new technology, making end users' jobs easier in a challenging work environment."



DPW Implementation Event	Deloitte Approach to System Implementation Helps DPW
OIM's implementation of Management Reporting to the County Assistance Offices	- Supported the implementation by providing implementation and user education support to OIM's staff development and operations project managers - Did not view the implementation as simply teaching staff how to use the new reports created for Management Reporting - Worked closely with Staff Development and Operations to evaluate the features of management reporting and identify how the new reports replaced existing reports and could be used more effectively to manage day to day operations - Continued to work with the field to make sure they were comfortable accessing the new reports and used the tool to change their way of doing business, resulting in Managers and Supervisors who now use the management reporting information to reassign tasks, balance workloads, and keep a better eye on their staff's progress
OCDEL's implementation of PELICAN Early Intervention	- BEIS, EITA, and Deloitte created a combined user education approach for the Pilot and Statewide Infant Toddler implementation that focused on getting the end users up to speed on the new technology, and also provided the support and time for them to explore beyond the system basics - Employed a structured implementation and issue tracking process so that any questions or issues were resolved in a timely manner and allowed end users to continue the learning process and focus on the benefits of the new functionality - Coordinated an implementation approach that provided at least 1 EITA staff member to be present at each county or SC entity to provide support - Provided go-live support through conference calls for each county of SC to collect issues and concerns and continue to build support for the system
ODP's implementation of centralized provider payment through Treasury	- Conducted job-specific, one on one user education for central office users until their comfort level with the powerful functionality allowed them to work with confidence - Conducted weekly calls with fiscal officers to resolve rate and contract issues in HCSIS and PROMISe to avoid interruptions in cash flow to the providers - Conducted weekly calls with regional capacity managers to provide support as they used new functionality and reporting to support new processes for managing waiver enrollment centrally - Established a first response team to identify, track and resolve issues as they were reported by providers, administrative entities, and state office users. Coordinated resolution between HCSIS and PROMISe and closed issues directly with users or via global communications, as appropriate

DPW Implementation Event	Deloitte Approach to System Implementation Helps DPW
PACSES implementation of Performance Improvement Module (PIM)	• Provided preview of PIM to Pennsylvania Child Support Enforcement Training Institute (PACSETI) instructors to allow them to become familiar with the functionality of the application as well as allow them to begin developing training materials • Provided on-site support to PACSETI during their initial classroom sessions for DRS workers to address their questions, comments and concerns raised by the attendees • Provided demonstration of PIM to DRS Directors during their semi-annual meeting to allow them to become familiar with the functionality and to incorporate the use of PIM in their daily business processes • Employed a structured implementation and issue tracking process so that any questions or issues were resolved in a timely manner and provided continual support to users within each wave • Developed survey for Wave 1 users to gather feedback and leading practices so that they could be documented and shared statewide • Provided continued support through outreach efforts via conference calls, WebX meetings and conducted group and individual user education sessions for line staff at various County Domestic Relations Section offices

Figure 6.7-26. DPW's Implementation Success Stories.

Providing Assistance to System Users to Use the System

IV	Page IV-384	RFP Reference: 4.2 Application Adoption and System Implementation Support
• Providing assistance in getting users to use the system		

Deloitte is a leader in helping government agencies prepare for business, organizational and operational changes; we know how to help users understand and accept system changes, and the benefits of those changes. We know that in the industry, the rate of failure is quite high when organizations do not pay attention to people and user adoption of the solution. This has not been the case with DPW, because we understand that it is critical to develop a change management and communications program to build a firm foundation for changes, proactively manage complex organization and people issues, and create actionable steps to sustain the change.

We use a consistent and repeatable approach to help end users learn and eventually master new technology and have successfully tailored this approach for DPW. The strategy has been used to prepare over 20,000 end users for adoption of DPW applications, including HCSIS, iCIS, PELICAN, Child Welfare and PACSES. Through detailed planning surveys, broad pilot programs, and adaptive statewide rollouts, end users have consistently been prepared to transition to new and enhanced systems to perform daily business activities.

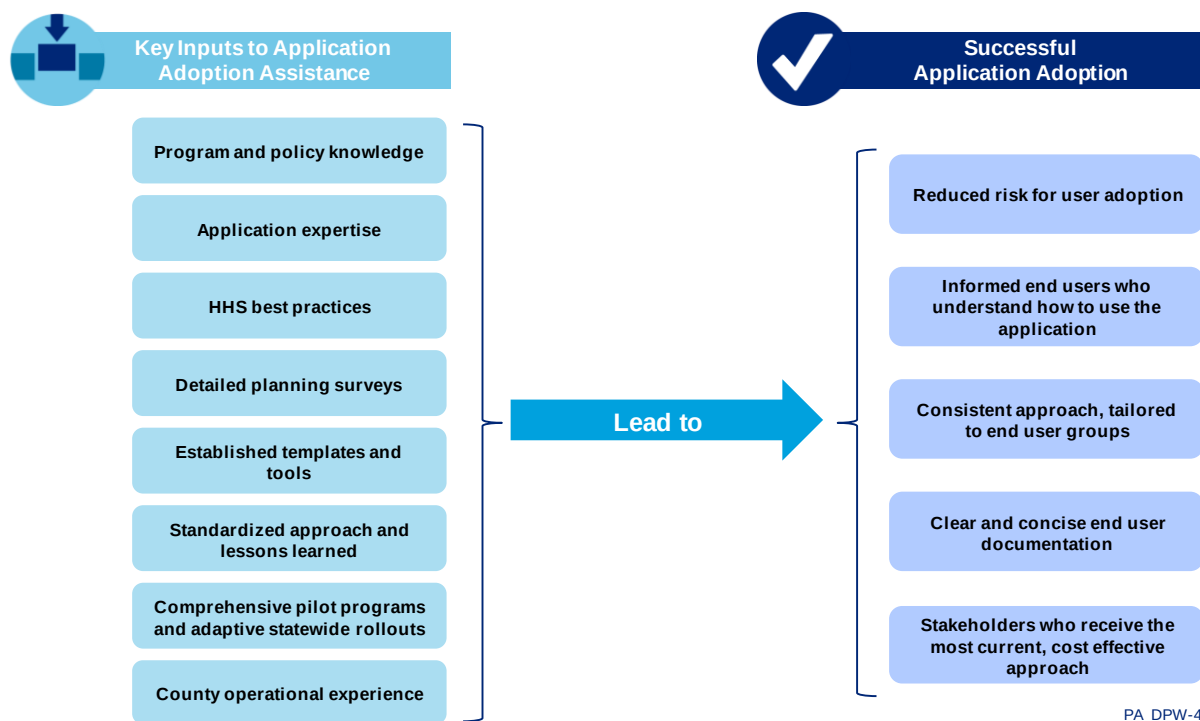
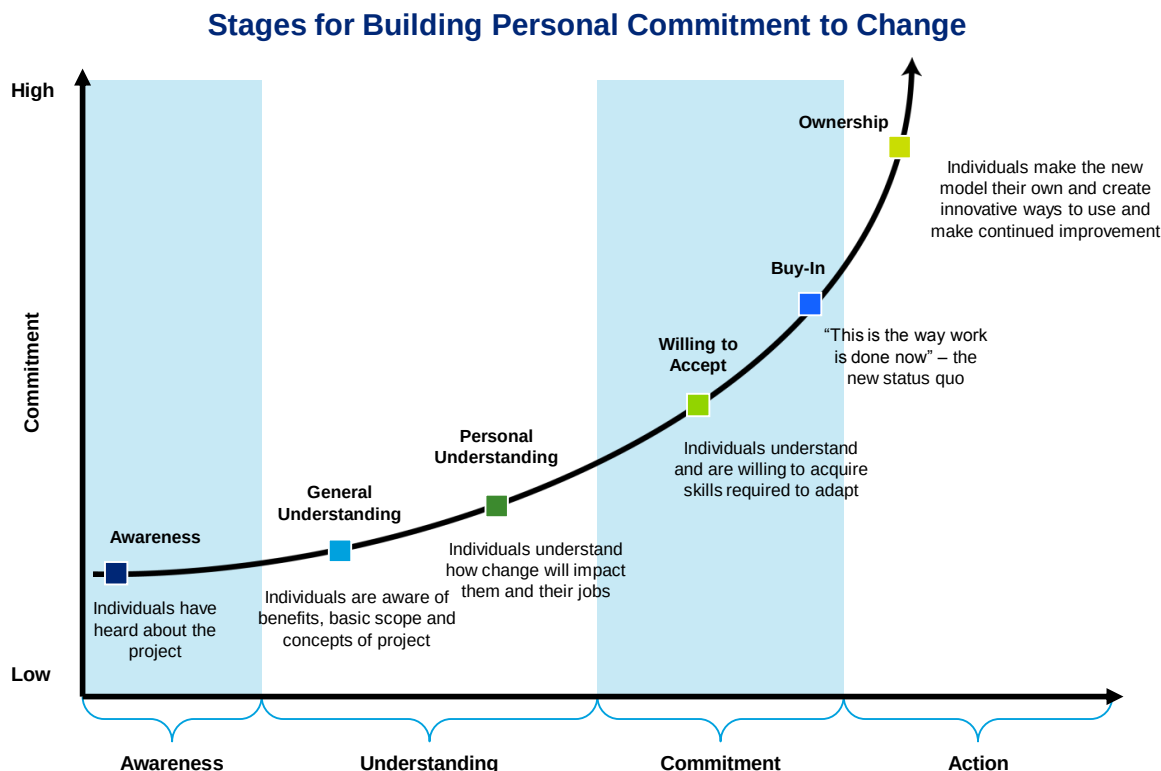


Figure 6.7-27. Our Approach for DPW Users.

Our approach to getting DPW users to effectively use the system is based on over 10 years of experience supporting DPW applications and enhanced by leading practices learned from over 35 years of Health and Human Services experience.

One of the key success factors to getting users to use the new system is a well structured approach to readiness activities. Past implementations have included pre-implementation surveys to collect data around local program processes. In addition, readiness conference calls and webinars assist end users in learning system functionality and preparing their business for potential changes in business processes. These readiness meetings also communicate the short and long term benefits of adopting the system and clearly map “As-Is” and “To-Be” processes. In the past, these readiness meetings have led to targeted outreach to address end-user questions, identify areas of risk for local organizations, and lower the business risk and enhance the comfort level of staff members who will use the information system in their daily business tasks. This process has had the result of preparing end users ranging from Supervisors to Secretarial staff for a positive and smooth transition to build a commitment to the new technology. This principle is highlighted in the change commitment curve depicted in the following figure.



PA_DPW-033

Figure 6.7-28. Stages for Building Personal Commitment to Change.

Deloitte brings a sound implementation approach to move end users along the change commitment curve, we have implemented a series of readiness activities that engage end users and move them from awareness to action.

Beyond leveraging tailored tools and established processes to increase end user comfort with system implementation, our intimate knowledge of information systems and dedication to learning end user business processes allows us to drive successful implementations. Our expansive knowledge of DPW's applications builds confidence in end users, encourages them to ask questions during readiness and implementation activities, and demonstrates the time and dedication involved during system design and development. This confidence helps to foster a positive culture around change and modified business processes. In working closely with system stakeholders, our team integrates implementation activities with application design and development. Through this collaboration, end users become more trusting to voice concerns and risks, thus giving the team the opportunity to work with the Commonwealth and address these issues prior to go-live. In the past, we have provided a number of different types of support to end users that have helped promote overall system adoption. We anticipate working with the Commonwealth and Lots #1-5 vendors to prioritize a similar set of activities under the new operating model for system implementations. The following table provides a list of the sample support strategies and the benefits of each strategy to DPW's end users.

Sample Support Strategies	Deloitte Benefits to DPW End Users
Site Visits	• Hands on support to help end users build comfort and confidence with the system • Helps strengthen the communication channels with the field • Provides additional level of support for detailed troubleshooting and/or complex process changes
Pre-Implementation Calls	• Helps staff prepare for the impending change and focuses on key business processes prior to training so that training can focus on learning the new functionality • Builds awareness and allows end users to get their questions answered prior to go-live • Enables team to respond to questions/concerns and identify additional pre implementation activities for the implementation
Go-Live Calls	• Provides an opportunity for end users to voice feedback and get immediate answers to questions impacting their operations • Direct line of communication with the project team helps strengthen communication and awareness of field activities
Post Implementation Calls	• Provides end users a forum to continue to escalate questions or issues as they adjust to a new way of doing business • Often used to track status of activities and conduct pulse checks to validate successful implementation
Conferences	• Builds support of applications in the field and helps raise awareness of system capabilities • End users get an opportunity to hear system updates and interact with project team outside of the normal setting • Provides additional forum with computer labs to get hands on experience or follow-up on detailed questions

Figure 6.7-29. User Support through Proven Examples.

User Education

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RFP Reference: 4.2 Application Adoption and System Implementation Support

- Participating in user education on the benefits of the system in terms of technology and how it can be used to make their jobs easier

User education is a critical piece of the application adoption processes. Through formal and informal means, input collected from end users during these sessions helps the team continuously determine where employees are on the Change Commitment Curve and develop strategies to identify additional communication and/or support needs. While the Lots #1-5 vendors have training responsibilities, it is equally critical for the Lot #7 vendor to support these activities as information from user education meetings must pass directly to the development team. During maintenance activities, user education meetings serve as a forum to gather field input and begin the prioritization of changes for program office staff. During deployment, the user education meetings provide an opportunity to review the benefits of the new technology. Our experience leading these sessions and our profound understanding of the applications and end users positions us

to successfully participate in these meetings. In addition, our team brings a sound understanding that is required to effectively support each end user group across program offices.

The following table highlights our success in implementing user education meetings that provided a forum for end users to bring information back to the project team, as well as pass information to end users on the benefits of the new technology and how it improves their business processes to make their jobs easier. In each instance, this information helped inform the project team and create a more effective environment to support end user adoption.

Program Office/User Education Forum	# of Participants	Deloitte Brings Proven Practices in User Support to DPW
OCDEL		
• Child Care Works	38	• Working with OCDEL, established a forum for subject matter experts from the field to provide input to system design changes and enhancements
• Certification	45	
• PA Pre-K Counts	38	• User Education discussions lead to improved end user adoption and identify opportunities to communicate to the field how new technology makes their job easier
• Keys to Quality	35	
• Early Learning Network	45	
iCIS User Ed	45	• Provide dedicated time to exchange information among Executive Directors and Headquarters Staff • Identify and improve existing processes per feedback from the group and communicate technology improvements that increase business efficiency • Confirm that pain points for users are addressed in a timely manner to improve technology
PIM Outreach	25	• Build system champions/support staff for end users • Identify and suggest business process change enhancements • Solicit suggestions and feedback from users for potential future system enhancements
PAC Meetings	18	
PACSES Advisory Committee		• Participate in advisory meetings providing updates on system enhancement schedules • Conduct demonstrations of current functionality to build awareness about technology features and functions and create excitement for improved business processes • Conduct Walk-thru of Requirements and Design for upcoming system enhancements

Program Office/User Education Forum	# of Participants	Deloitte Brings Proven Practices in User Support to DPW
Annual DRAP Training Conference Sessions and Domestic Relations Association Directors Conference	30	- Conduct demonstrations of upcoming system enhancements for users to help staff understand the benefits of the change and create process efficiencies - Prepare presentations and conduct breakout user education sessions on current and new system functionality providing users with application tips, business process change suggestions and requesting feedback on implemented changes
ODP/OMHSAS/OLTL/OCDEL HCSIS User Group	40	Working with BIS, supported a forum for power user feedback to identify and discuss usability improvements and to enhance system adoption
ODP ODP Field Support	12	- Established a structure of frequent users from the field to identify, discuss and prioritize system enhancements and to provide support for county-based and provider end users - Leveraged this group to facilitate communications to the diverse MR user community to help large stakeholder group understand how technology makes their job easier
ODP HCSIS CAAC Workgroup	15	- At the direction of the ODP Deputy Secretary, supported the County Administrators Advisory Committee workgroup of county administrators to identify administrative entity process changes and corresponding HCSIS modifications and/or enhancements to support operational needs - The HCSIS CAAC workgroup reported to the larger CAAC on recommendations, progress, and HCSIS modifications to build support across the ODP Administrative Entities statewide

Figure 6.7-30. Successful Results through User Education.

In addition to the user education forums Deloitte has supported, we have also provided a number of user education sessions to the staff who are ultimately responsible for training the end users. This includes training sessions for PACSETI for child support, EITA for provider and case management, Staff Development for eligibility, and most recently, a series of user education sessions with County Children and Youth super users who were responsible for delivering the information to county end users. In each of these situations, we take a detailed and methodical approach to design and deliver user education sessions for these groups so they are positioned to successfully deliver the end user training as required.

Ongoing Support and Maintenance for Users

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RFP Reference: 4.2 Application Adoption and System Implementation Support

- Ongoing support and maintenance for users, as required.

Deloitte understands that effective implementation support encompasses a wide range of activities; planning key pre- and post-implementation actions, getting both central and local offices ready for the implementation, planning and executing a pilot, performing cutover to the new system, and establishing effective support mechanisms after the go-live. Our approach to implementation begins with strong planning and carries through post-implementation to transition to the new technology. We also understand that there may be differences in support, depending on the impacted users.

Throughout our implementation activities, Deloitte's primary goal is an on-time and on-track implementation that assesses and addresses the impact of the system on service delivery and minimizes disruption to current business operations.

Under the new lot structure, we understand that some of these services are provided by the vendors awarded Lots #1-5. The Application Adoption team is in a position to support this effort using a shared team structure across the applications. This provides the Department a knowledgeable pool of resources that can be prioritized to deliver these services based upon the modifications that are targeted for implementation. Our experience providing these services in the past is unparalleled and we look forward to supporting these efforts under the new contract structure.

Key Staff Spotlight

Kristen Seich

Application Adoption



Helping Families and Children

"I am most looking forward to continuing to work with DPW to make a difference in the lives of families and children. This includes working with OCDEL and your end users who input critical data elements to help OCDEL track, trend, monitor, and address the needs of those families and children."



Technical Operational Support Training

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RFP Reference: 4.2 Application Adoption and System Implementation Support

- Provide technical operational support training to DPW technical staff

As the Department continues to innovate and focus on developing services based solutions that are enterprise wide, staff within BIS need adequate training and support. We are proud of our relationships in the past and our record of delivering technical training across DPW technical staff. Now more than ever, budgets are tight and finding the dollars to support technical training efforts continues to be a struggle. We recognize that this limitation may make it difficult for BIS leadership to find the time and resources to send staff to training.

We continue to work with DPW to develop and prioritize a technical training plan for staff that is based on DPW's needs and engages DEA, DTE and DIMO staff. Our plan focuses on a structured training process, providing staff with the knowledge, skills and abilities they need to achieve competency and high performance across three components; 1. Core operations to manage DPW's applications, 2. Basic tools and technologies, and 3. Additional HHS and program knowledge.

To cover the core operations, we implement knowledge transfer activities throughout the project. These activities include meetings and discussion forums, tool demonstrations, walkthroughs, shadowing, classroom training and mentoring. Mentoring is a key aspect of the technical operations support training as training must often occur on the job and in a one to one setting. We identify the appropriate mentors within the proposed team based on their project role and relevant knowledge and skills. Each mentor is responsible for providing skill coaching to DPW technical staff within their specific project role. Mentors focus on providing assistance and coaching with day-to-day skills needed to complete project tasks and are actively involved during system and infrastructure development and documentation.

The mentor/mentee relationship leads to a process of on-the-job training. The project provides a collaborative environment for DPW staff and the Deloitte project team. Deloitte resources actively work side-by-side with Department team members to successfully accomplish operations support activities. This approach provides DPW technical staff an opportunity to learn and practice completing the same project tasks, applying the same methodologies, and using the same tools as the Deloitte resources.

Operational support for the Department includes supporting the 6 applications, 27 business systems, 25+ enterprise services, and the 200+ subsystems, services and COTS products that are currently in scope for the DPW IT services effort. The following table illustrates the technologies based on the current DPW technology domain; these technology knowledge areas will continue to evolve over the course of the project and represent the key areas for DPW technical staff to build their knowledge and capabilities for operational support.



Business Area	Application/Service	Key Technologies for Operational Support
Eligibility	• Client Information System (CIS) • Web-based Client Information System (eCIS) • Third Party Liability (TPL) • Income Eligibility Verification System (IEVS) • State Supplemental Issuance (SSI) • COMPASS	• Unisys 2200 • COBOL 74/85 • Unisys DMS-2200/RDMS-2200 • Oracle 10g/11g, PL/SQL, Golden 3.2 (Toad) • .NET Framework and Application Architecture, Active Server Pages, COM + • Windows Communication Foundation (WCF) • IQ-U PLUS-1 • DocuShare • Corticon Rules Engine • Team Foundation Server • Unisys Open TI • Adobe Forms, Adobe Suite • DPS Web TS • webMethods • SQL Server 2005 and 2008 ,SQL Server Reporting Services • BizTalk • Cognos 8.3, Informatica Power Center 8.6.1
Provider Management	• PELICAN Application suite • PELICAN Data Warehouse	• .NET Application Architecture, session management, error management • Oracle Fine Grained Authorization • webMethods (SOAP 1.2, WSDL 2.0, SSL 128-bit encrypted, SOA Security Manager protected, MSMQ Plug-in) • Enterprise Library 4.1 and Testing Tools • Team Foundation Server (TFS: project repository, build-server, work products) • Internet Information Server (IIS), Component Services (COM+) • SQL Server Reporting Services • Microsoft Visual J# .NET Redistributable Package 1.1 • Corticon Rules Engine • Oracle 10g/11g, PL/SQL, Golden 3.2 (Toad) • Mainframe Integration category (JCA, OpenTI) • Adobe Doc Server • Unified Security/Netegrity/Siteminder • OpCon Scheduler • Innovative Geo-Online – Client • FileNet • Cognos 8.3, Informatica Power Center 8.6.1



Business Area	Application/Service	Key Technologies for Operational Support
Case Management	• HCSIS Application suite • Managing for Quality (M4Q) • Incident Management • HCSIS Data Warehouse	• Oracle 10g/11g, Oracle Fine Grained Access, PL/SQL, Golden 3.2 (Toad) • .NET Framework and Application Architecture • Windows Communication Foundation (WCF) • FileNet • ReportNet • OpCon Scheduler • Cognos 8.3, Informatica Power Center 8.6.1 • Docushare CPX 6.0 • SQL Server Reporting Service (SSRS) • Adobe Doc Server, Adobe Live Cycle • Unisys ES 3700 • Windows 2003 Data Center • Team Foundation Server (TFS: project repository, build-server, work products) • Biztalk
Child Welfare	• Child Welfare Legacy Applications	• .NET Framework and Application Architecture, session management, error management • Windows Communication Foundation (WCF) • CA-SiteMinder Application Security and SSO access controls • webMethods (SOAP 1.2, WSDL 2.0, SSL 128-bit encrypted, SOA Security Manager protected, MSMQ Plug-in) • Enterprise Library 4.1 and New Testing Tools: • Internet Information Server (IIS), Component Services (COM+) • Microsoft Visual J# .NET Redistributable Package 1.1 • Corticon Rules Engine • Oracle 10g/11g, PL/SQL, Golden 3.2 (Toad) • Mainframe Integration category (JCA, OpenTI) • Adobe Doc Server, Adobe Live Cycle • SQL Server Reporting Services • OpCon Scheduler • FileNet • Informatica Power Center 8.6.1 • Team Foundation Server (TFS: project repository, build-server, work products) • Oracle APEX



Business Area	Application/Service	Key Technologies for Operational Support
Child Support	• Pennsylvania Child Support Enforcement System (PACSES) • Child Support Web Site (CSWS) • Performance Improvement Module • Paternity Tracking System • Director's Dashboard • PACSES Home Page (PHP) • PACSES Data Warehouse • Data Management Applications (DIT, DPSR) • Central Data Operations Applications (Administrator Module) • Query Interstate for Kids (QUICK) • Web PACSES	• .NET Framework and Application Architecture • Windows Communication Foundation (WCF) • Unisys 2200 • COBOL 74/85 • Unisys DMS-2200/RDMS-2200 • Oracle 10g/11g, PL/SQL, Golden 3.2 (Toad) • IQ-U PLUS-1 • Mainframe Integration category (JCA, OpenTI) • DocuShare • Corticon Rules Engine • Team Foundation Server (TFS: project repository, build-server, work products) • Adobe Doc Server, Adobe Live Cycle • webMethods • SQL Server Reporting Services, SQL Server 2005 and 2008 • ASMX Services • Biz Talk • Cognos 8.3, Informatica Power Center 8.6.1

Business Area	Application/Service	Key Technologies for Operational Support
Enterprise Services	• Master Client Index (MCI) • Master Provider Index (MPI) • Early Learning Client Data Services • Imaging Repository (iREP) • Enterprise Correspondence Service (ECS) • Enterprise Incident Management (EIM) • Enterprise Provider Search • Enterprise Notification Service • Enterprise Rate Service • Provider Certification Services • Submit Application Service • COMPASS Application Submission Services • File Storage Web Services (FSWS) • SOA Security Manager Services • Address Validation and Geocoding • SQL Server Reporting Services • Adobe Document Creation Services • Correspondence Direct Print Service • DocuShare Document Storage Services • Corticon Decision Services • Fine Grained Access Control • MCI Management Interface • Scheduling • Self Registration • User Repository (UREP)	• Other tools for testing and development support: - Visual Studio Suite - Unisys Clearpath - DPS Web TS - HP Functional Tester (QuickTestPro 9.5) - Innovative Geo-Online – Client - RouteMap – Client - Erwin Data Modeler - Enterprise Architect - Microsoft Office Suite and Project - Knowledge of accessible Web site design according to the Commonwealth standard - CA-SiteMinder Application Security and SSO access controls - Software Vulnerability Tools (Web, Dev, and QA Inspect)

Figure 6.10-31. Key Technologies for Operational Support.

Representation of the technologies that DPW technical staff support across the project.

The second component, basic tools and technologies provides DPW technical staff with realistic examples and hands-on training that equips them with the necessary skills to adapt to changing circumstances and challenges. The table below includes examples of technical training we have supported and/or provided in the past to DPW.

Tool/Skill	Deloitte Training Approach Helps DPW Staff Evolve their Technical Knowledge
Introduction to .NET middleware approach	• Overview of the .NET middleware approach along with supporting code and process documentation • Review of the differences between .NET middleware and current approach to discuss concepts such as reliability, reusability and scope control
Knowledge Transfer	Use of code generation tools based on COBOL Proc file to generate .NET assemblies. • Describe the expectations of the generation tool with respect to its capabilities, and role within the process • Outline of the generated business objects and how they contain and enable transition of data between the mainframe and a web application • Describe the underlying architecture of the generation tool, along with the object-oriented practices such as inheritance and encapsulation, as well as regular expressions Team Foundation Server • Overview of how to use TFS as part of the SDLC to improve quality and consistency of development and deployment .NET 3.5 Concepts • Overview .NET project and solution, the differences between them and conditions under which each one should be utilized • Outline the features in .NET 3.5 that enable object-oriented design practices XML and .NET Framework • The use of the .NET Framework capabilities to convert between data containers and storage formats such as XML through serialization • Describe the different approaches of storing data in XML (DataContract/XML serialization) and the conditions under each one should be considered
Automated Unit Testing	• Outline how automated unit testing confirms reliability through development. Explain what a unit test is and how to identify functionality that needs to be unit tested. Describe how to use NUnit as .NET unit testing framework and how it ties with the development process • Explain the concepts of test-driven development (TDD)
Build and Deployment	• Review automated build leading practices using TFS to improve quality and efficiency • Overview automated deployment practices using TFS • Review automated unit testing as an integrated part of the build process within TFS • Assist in developing an automated build, deploy, and source control and packaging methodology appropriate for the DEA Middleware team

Tool/Skill	Deloitte Training Approach Helps DPW Staff Evolve their Technical Knowledge
Introduction to .NET 3.5	.NET 3.5 Concepts - Overview .NET project and solution, the differences between them and conditions under which each one needs to be utilized - Outline the features in .NET 3.5 that enable object-oriented design leading practices and provide examples - XML and .NET Framework - The use of the .NET Framework capabilities to convert between data and storage formats such as generating XML through serialization
Corticon Rules Engine	- Review basics of Corticon, so the Department is positioned to use Corticon to focus on capturing, analyzing, testing and executing rules for automated decision making - Build experience within the Department so rules based logic can be implemented across Program Offices
File Storage Web Services (FSWS)	- Provide overview of FSWS for BIS staff to understand the capabilities - Builds on service oriented architecture approach and positions the Department to build experience in this important growth area
SQL Server Reporting Services (SSRS)	- Build knowledge and understanding of SSRS tool so the Department has the knowledge and capabilities to create and manage custom reports within DPW's applications - Understand the basics of FSWS and get hands on experience manipulating reports

Figure 6.7-32. A History of Technical Training for the Department.

Given our success at providing technical training in the past, we are focused on continuing this effort to help DPW staff continue to evolve their technical skills and enhance the Department's ability to provide leading edge technology solutions. The following table includes a sample of the technical training we propose to conduct in the future if prioritized by DPW and resources are available. The training is focused on both operations support activities, as well as new technologies that continue to build staffs core competencies in technology.

Technology	Training Subjects Help DPW Staff Build Technical Operational Knowledge
.NET 3.5	.NET 3.5 OOP Concepts XML Serialization - XML and the .NET Framework
Windows Communication Foundation	- WCF Fundamentals - Technical skills review for WCF (OOP, XML, SOAP, Serialization, Addresses, Binding, Contracts)
Enterprise Correspondence Services	- What is ECS? - How to consume ECS
Adobe LiveCycle	- What is LiveCycle? - Overview of LiveCycle's Features and Components - When to use Adobe LiveCycle

Technology	Training Subjects Help DPW Staff Build Technical Operational Knowledge
.NET Middleware	• New .NET Middleware approach
Automated Unit Testing	• N Unit testing framework • Automated build and unit testing overview
Data Mining and Predictive Analytics	• Use of data mining tools and evolving technologies • Tools and techniques for predictive analytics

Figure 6.7-33. Technical Training Opportunities for the Department.

The final component of training focuses on additional HHS and program knowledge that Deloitte can provide to DPW technical staff to build functional knowledge of the applications the Department supports. We offer the opportunity to leverage a vast array of Health and Human services training that is currently used by our staff. Our Public Sector practice has devoted a substantial number of resources to develop industry training courses that our staff completes as preparation for our projects. We believe that it is critical for staff to start on a project with a profound understanding of that industry which is gained through project experience and structured training programs. We work with the Department to provide your staff the opportunity to complete these courses as desired as part of our project work.



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Figure 6.7-34. Deloitte Leverages a Vast Array of Health and Human Services Training.

Training Courses	Training Objectives Help DPW Gain HHS Knowledge
HHS 101: Introduction to United States Health and Human Services	Designed for anyone with an interest in advancing their knowledge and familiarity with HHS-related programs. This course provides a broad overview of State HHS programs and how they receive federal funding.
HHS 201: Introduction to Health and Human Services Programs	Provides an overview of the specific services provided in the key areas of HHS including: Integrated Eligibility, Child Support, Child Welfare, State Health and State Labor.
HHS301: Health and Human Services Integrated Eligibility Overview	Provides an understanding of what integrated eligibility is, the business of eligibility, and the current technologies that support integrated eligibility.
HHS302: Health and Human Services Child Support Enforcement Overview	Provides an understanding of what Child Support Enforcement is, the business of Child Support and the current technologies that support child support enforcement.
HHS303: Health and Human Services Child Welfare Overview	Provides an understanding of Child Welfare, the business of Child Welfare and the current technologies that support integrated eligibility.

Figure 6.7-35. Deloitte's Health and Human Services Training Courses.

Onsite Support for Implementations

IV

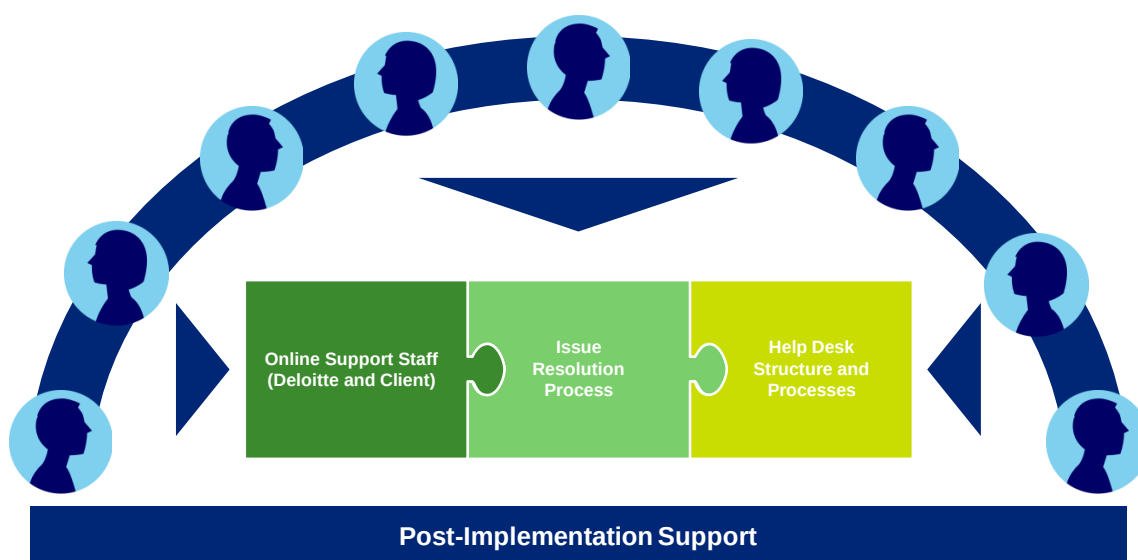
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RFP Reference: 4.2 Application Adoption and System Implementation Support

- Onsite support for implementations, as applicable

To support the use of a new application after go-live, Deloitte recognizes that it is important to provide on-site support to users and establish an issue resolution process in certain situations. We have a long history of working with DPW on implementation activities and we have a good understanding of when on-site support is required and when it is not. We use a variety of tools to assist us with implementation planning, which allow us to effectively staff resources to support implementation activities.

On-site project team members in local offices can significantly improve two-way communication, provide a first level of issue resolution, and support local office management and staff in adopting the new system while minimizing business disruption.



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Figure 6.7-36. Approach to On-Site Support for DPW.

Deloitte brings an established post implementation support structure that includes on-site support helps identify issues and provides end users with the support they need to be successful.

During the period after go-live, the on-site support team documents and troubleshoots issues, conducts ad hoc training, and serves as the central hub of communications between the project and the local office. Having dedicated full-time on-site resource(s) significantly alleviates the burden on office staff, while still incorporating their critical input for issue escalation and decision-making. Specifically, on-site resources engage in the following tasks:

- Troubleshoot issues and assist with issue resolution