

# RFP Response Form

## Information Technology Support and Professional Services

### PROPOSER INFORMATION

Proposer Name: **Deloitte Consulting LLP**

Authorized Representative Name & Title: **Nagen Suriya, Managing Director**

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Legal Status:     For-Profit Corp.     Nonprofit Corp.     Sole Proprietor     Partnership

Date Incorporated: **1995**

### REQUIRED CONTACTS

|                             | Name              | Phone           | Email  |
|-----------------------------|-------------------|-----------------|--|
| Chief Executive Officer     | Janet Foutty      | +1.571.882.6700 | <a href="mailto:janetfouttyusconsultingceo@deloitte.com">janetfouttyusconsultingceo@deloitte.com</a> |
| Contract Processing Contact | Nagen Suriya      | +1.412.402.5265 | <a href="mailto:nsuriya@deloitte.com">nsuriya@deloitte.com</a>                                       |
| Chief Information Officer   | Candice Philbrick | +1.408.704.1073 | <a href="mailto:cphilbrick@deloitte.com">cphilbrick@deloitte.com</a>                                 |
| Chief Financial Officer     | Kristy Pipes      | +1.212.492.4000 | Click here to enter text.  |
| Administrative Contact      | Nagen Suriya      | +1.412.402.5265 | <a href="mailto:nsuriya@deloitte.com">nsuriya@deloitte.com</a>                                       |

### BOARD INFORMATION

Provide a list of your board members as an attachment or in the space below.

Deloitte Consulting is a partnership and as such, we have not included Board of Directors information

Board Chairperson Name & Title: Janet Foutty, CEO

Board Chairperson Address:

Board Chairperson Telephone:

Board Chairperson Email:

### REFERENCES

Provide the name, affiliation and contact information [include email address and telephone number] for three references who are able to address relevant experience with your organization.

*Please do not use employees of the Allegheny County Department of Human Services as references.*

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| Name  | Affiliation  | Contact Information |
|---|--|---------------------|
| <b>Name:</b> James A. Weaver<br><b>Role:</b> Chief Technology Officer | State of Pennsylvania<br>Office of Administration<br>Office for Information Technology<br>1 Technology Park<br>Harrisburg PA 17110 |                     |
| <b>Name:</b> Laurie Snow<br><b>Role:</b> Project Manager              | State of New Hampshire<br>Department of Health and Human Services<br>7 Eagle Sq. Suite 301<br>Concord, NH 03301                    |                     |
| <b>Name:</b> Linda Pung<br><b>Role:</b> General Manager               | State of Michigan<br>Department of Technology Management and Budget<br>235 South Grand Avenue,<br>Lansing, MI 48933                |                     |

### PROPOSAL INFORMATION

Date Submitted **2/24/2017**

Amount Requested: This is a unit rate proposal

Proposal Abstract:

*Please limit your response to 750 characters*

Deloitte is proposing IT Support and Professional Services for all 7 RFP Service Area categories to support DHS in your critical mission of human service delivery to residents of Allegheny County. We offer DHS a unique combination of national HHS and Allegheny County DHS specific experience, world-class technology expertise, and a track record of successful IT delivery to support DHS in meeting your programmatic objectives. Our proposal also describes additional process and technology enhancements we will bring to continue supporting DHS in your position as a national HHS leader, while efficiently delivering technology innovations, helping maximize return on investment, and supporting a reliable and secure technology infrastructure.

### CERTIFICATION

Please check the following before submitting your Proposal, as applicable:

My firm is registered with the Allegheny County Department of Minority, Women and Disadvantaged Business Enterprises.

I have read the standard County terms and conditions for County contracts and the requirements for DHS Cyber Security, EEOC/Non-Discrimination and HIPAA.

By submitting this proposal, I certify and represent to the County that all submitted materials are true and accurate, and that I have not offered, conferred or agreed to confer any pecuniary benefit or other thing of value for the receipt of special treatment, advantaged information, recipient's decision, opinion, recommendation, vote or any other exercise of discretion concerning this RFP.

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## *Information Technology Support and Professional Services*

### **ATTACHMENTS**

Please submit the following attachments with your Response Form. These can be found at <http://www.alleghenycounty.us/dhs/solicitations>.

- MWDBE Participation Statement or MWDBE Participation Statement and Waiver Statement
- Allegheny County Vendor Creation Form
- 3 years of audited financial reports
- W-9

### **REQUIREMENTS**

Please respond to the following. The maximum score a Proposal can receive depends on the service areas proposed. Please note the page limits for each numbered response item – responses exceeding these limits may be discarded.

**All Proposers must complete the Organizational Experience and Financial Management and Budget Sections. Please complete these sections only once, regardless of the number of service areas proposed.** The score from these sections will be added to the score for each service area proposed.

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## Information Technology Support and Professional Services

Organizational Experience (30 points) Your response to this section must not exceed 3 pages.

1. Describe your experience providing IT and/or Professional services to human services agencies and/or other public sector clients. (15 points)

Allegheny County Department of Human Services (DHS) seeks a professional services firm focused on its future providing the full spectrum of expertise and experience required in the RFP service area categories, along with deep knowledge of Health and Human Services (HHS) to enable its continued success. You also seek a partner that is committed to your long-term success, is not transactional, and is flexible in meeting mission requirements and demands of new legislation. Deloitte is that partner – we have demonstrated a track record of partnering with you for technology and program success, understanding your agency and its data systems, helping you maximize your return on investment in technology and software, successfully managing numerous projects with tight deadlines and attention to detail, being highly flexible, and bringing **exceptional overall value to DHS.**

Deloitte enables you to focus on your mission and objectives while leveraging rapidly evolving technologies. We will continue to provide cost effective IT and professional services and innovative future focused business and technical solutions across the seven RFP service area categories. We provide value to DHS through our scale and our unparalleled focus delivering talented resources. We evaluate current process and technology, monitor industry trends and assist DHS in emerging needs, technology products and platforms. We will partner with you to provision and deploy end to end solutions to drive value and achieve the business outcomes you desire.

### Our ability to deliver IT and/or Professional services to HHS clients

We bring program and IT transformation and delivery experience to HHS state and local clients throughout the nation, locally in **Pennsylvania** and right here in **Allegheny County**. Our services span a wide variety of technologies from legacy to cutting edge **digital, analytics** and **cloud** services. We possess a deep understanding of Allegheny County business issues and have executed over 1000 Public Sector engagements in HHS agencies across the US. We are active in national HHS conferences, driving policy, producing papers, and developing new view points and we are deeply committed to community. Along with our clients, our work has been recognized through national awards and recognition.

For example, we were recently recognized by Kennedy as “THE Leader in State and Local Government Consulting.” We are actively involved in influencing legislative and fiscal landscapes throughout the United States and understand the ongoing need for public sector organizations to operate leaner and optimize resources to the fullest while delivering high quality services to their constituents.



- Increased value through deep and broad understanding of DHS and national HHS eminence and experience
- We are intimately familiar with your systems and process, and have tailored our methods and approach to your specific needs
- Deloitte's relationships serving PA state government agencies benefit DHS
- Committed to DHS and the local community bringing latest ideas and experiences
- Increased quality and accelerated implementation due to eminence and experience in DHS technologies

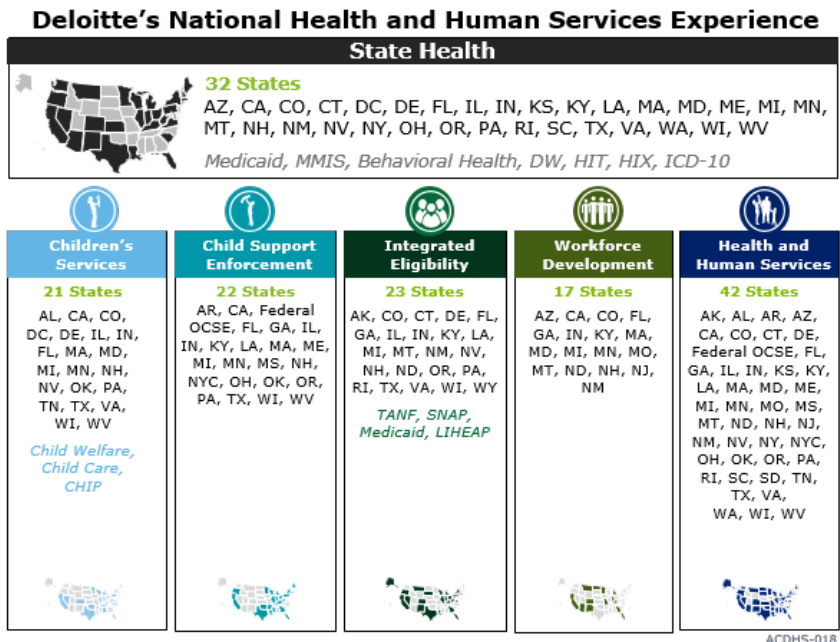


Figure 1. Deloitte's broad Health and Human Service Experience.

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## Information Technology Support and Professional Services

Our HHS practice has over 5,000 dedicated practitioners delivering successful Information Technology (IT) engagements throughout the nation. We have delivered more large-scale system implementation projects for HHS clients than any other vendor. These systems span the entire depth and breadth of HHS programs in state and local government and we bring this experience to DHS to support your culture of innovation.

To meet DHS' business and technology needs, we provide the right mix of practitioners with technical and industry experience. Our team includes highly motivated individuals who possess an unparalleled understanding of your organization, processes and applications. We bring a collaborative approach to solving your business challenges.

We are a full-service, multidisciplinary firm that provides a broad range of capabilities to DHS; as a result, we are prepared to address your needs today and into the future.

### Our Continued Service to DHS

We will draw largely from HHS focused resources based in our local Deloitte Pittsburgh office but will also augment from our PA, national and global practice to achieve DHS' goals and objectives across the seven categories of service: Project Management & Administration, Project Development, Reporting, Data Management and ETL Operations, Operations, System Maintenance & Support Functions, IT Procurement Support and Security and Privacy. We propose to deliver the current DHS team, which has over **300+ years of cumulative Allegheny County DHS experience**. The team provides significant experience and expertise in operations and systems maintenance with a focus on improving data quality and improving integrity. We bring tremendous value maintaining and enhancing existing applications, while simultaneously introducing innovation and new solutions. Our 15+ years of experience working with you helps us manage short-term risks and deliver long term value to you in the role of a trusted advisor. With deep technology capabilities, world-class human capital services, unparalleled security and privacy capabilities, proven methodologies and tools, we accelerate timelines and achieve quality of service for DHS, its provider network and its clients.

### 2. Describe your experience working closely with staff at customer host sites, including a description of your communication skills. (15 points)

We understand that DHS desires to find a **collaborative partner** that effectively communicates with DHS, keeps DHS informed of business and technology innovations and opportunities to improve current systems and processes, and alerts DHS project leads to risks and issues while working to avoid delays through proactive communication. With many challenges facing today's human services and IT organizations it is critical to find a vendor that has the ability to **co-locate staff**, working side by side with DHS staff to **drive value** and produce a results oriented set of services across all seven service area categories.

### Working at Customer Host Sites - Onsite, Offsite, Never Out of Sight

Just as at DHS, Deloitte projects nationwide typically include an onsite component, some entirely onsite while others employ a mix of onsite and offsite. Our onsite component brings our staff together with client staff to effect strong communication and collaboration, minimizing risks to all phases of the project. We integrate with our clients to deliver to their key business needs as we've done with you over the years. We embrace and

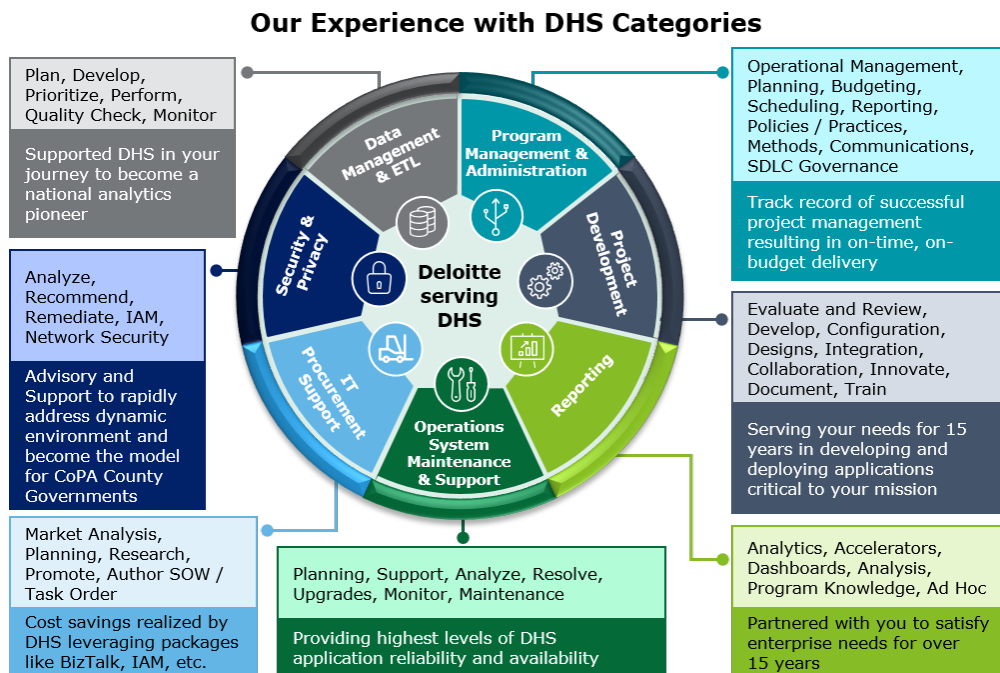


Figure 2. Our team has specific experience with all of DHS' IT service areas.

ACDHS-014

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employ communication approaches that bring transparency across all aspects of project planning and execution. Methods and best practices such as Agile, ITIL and PMP provide process, objectives, artifacts and communication milestones that give structure and improve clarity to complex initiatives and organizations. Tools, such as SharePoint, are leveraged to provide quick access to project documentation, coordinate meetings and testing sessions, and distribute information consistently to stakeholders.

Deloitte has delivered and continues to deliver numerous projects across the nation and globally with onsite presence similar to how we support DHS today, and what the RFP seeks going forward. Our team will work side by side with you in delivery of critical services and projects. The onsite, offsite and never out of sight model provides the greatest level of collaboration, communication, and innovation, while providing cost effective and high value solutions for you. Our team will continue to work onsite with DHS and leverage offsite capabilities and skills as appropriate, including 24x7 coverage for your critical business needs.



**Figure 3.** Our experienced team aligns with your organization to assist DHS in achieving your desired vision of integrated service delivery.

Deloitte is uniquely positioned to provide a DHS-experienced combined onsite and offsite team which is intimately familiar with your agency’s vision and culture. With this rare insight, our team partners with DHS to effectively manage IT projects to deliver high ROI IT solutions.

### Seamless Integration with Our Clients Enables Collaboration and Communication

Working with you at DHS develops a culture that promotes strong working relationships and drives innovation and value. Building on our current model, with our full-time team assigned to your organization, we consider business risks and IT challenges in advising DHS on the highest ROI IT solutions. We leverage learnings from our prior work that resulted in more effective and streamlined processes, a better prepared support team and a more productive and confident user group. Furthermore, we have collaborated to improve operations for the expanding DHS application footprint and support infrastructure and policy changes to provide a stable, secure and high performing environment. Many of these changes that are established continue to provide a foundation for DHS to utilize emerging technologies and innovative approaches to expedite further interoperability, performance and cost improvements with no interruption to service delivery. We work with our clients to develop a culture that fosters trust, collaboration, innovation and excellence. Our communication plans are based on rigorous methods and best practices which lead stakeholders into structured communications. The methods we use cross the 7 service area categories and connect the stakeholder communities across multiple program areas.

From DHS leadership to program and IT stakeholders, we inform and manage through status reports, monthly steering team meetings, formal and informal touchpoints, and Deloitte tools such as PMC, to ensure that project issues, risks, schedule and vision are known and discussed.

Deloitte and our public sector leaders take great pride in our firm’s collaboration with DHS. We bring a continued culture of transparency, open and honest relationships as our overall style and fabric of engagement to DHS – and we are focused on your future and your success.

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### Financial Management and Budget (60 points, not included in page count)

#### 1. Provide evidence of your organization’s financial health by attaching its most recent audit or other financial documentation. (10 points)

Deloitte LLP and its subsidiaries (the “U.S. Firms”) provide audit, advisory, tax, and consulting services through over 78,000 people in 94 U.S. cities. For the most recent fiscal year ended May 28, 2016, the U.S. Firms had revenue of U.S. \$17.5 billion. See more detailed information in the chart below. Since the U.S. Firms are privately owned partnerships, they do not have audited financial statements nor do they file other corporate financial information such as a 10- K. Should you have additional questions regarding the financial information, please contact John Peirson, Deputy Chief Financial Officer of Deloitte LLP, at (612) 397-4714 or Graham Cowie, U.S. Firms’ Controller of Deloitte Services LP, at (615) 882-7270.

Further, although the U.S. Firms do not have a rating from one of the nationally recognized credit rating agencies, their privately placed debt is assigned a designation by the National Association of Insurance Commissioners (“NAIC”). The U.S. Firms’ privately placed debt carries an NAIC 1 designation; NAIC’s highest designation, which is comparable to an A or better rating from one of the nationally recognized rating agencies.

Detailed information regarding Deloitte LLP in the U.S. is provided in the chart below:

| Deloitte LLP and Subsidiaries – By The Numbers  |         |         |         |
|---|---------|---------|---------|
| U.S. Firms<br>(\$ U.S. billions)                | 2016    | 2015    | 2014    |
| Offices (national and regional)                 | 113     | 108     | 107     |
| People  | 78,642  | 70,603  | 64,884  |
| Consolidated Revenues                           | \$ 17.5 | \$ 16.1 | \$ 14.9 |
| Current Assets                                  | \$ 4.6  | \$ 4.9  | \$ 4.1  |
| Other Assets                                    | 6.2     | 5.2     | 4.6     |
| Total Assets                                    | \$ 10.8 | \$ 10.1 | \$ 8.7  |
| Current Liabilities                             | \$ 2.6  | 2.5     | \$ 2.0  |
| Other Liabilities                               | 3.8     | 3.4     | 2.9     |
| Partnership Equity                              | 4.4     | 4.2     | 3.8     |
| Total Liabilities and Partnership Equity (US\$) | \$ 10.8 | \$ 10.1 | \$ 8.7  |
| Working Capital                                 | \$ 2.0  | \$ 2.4  | \$ 2.1  |
| Current Ration                                  | 1.8:1   | 2.0:1   | 2.0:1   |
| Audit and Enterprise Risk Services              | 29.3%   | 29.4%   | 29.4%   |
| Consulting                                      | 48.4%   | 48.4%   | 47.7%   |
| Financial Advisory Services                     | 4.7%    | 4.7%    | 5.0%    |
| Tax   | 17.6%   | 17.5%   | 17.9%   |

Source: Deloitte LLP, New York

The above financial information was prepared for internal purposes. This financial information has not been audited and does not present the financial position, results of operations, or other financial information in accordance with generally accepted accounting principles.

The use of this information is restricted to your consideration in providing you professional services. Any other use or circulation of this information is prohibited.

We have attached a copy of our latest Dun & Bradstreet financial report for Deloitte Consulting LLP to provide additional information regarding our financial health (See Attachment - Other Financial Documentation). Because Deloitte LLP is a privately-held organization, it does not disclose certain financial data. As such, the attached report may be based on incomplete information.

#### 2. Attach a detailed annualized budget that clearly supports the Contract Services and the implementation plan. (20 points)

Deloitte has carefully reviewed the 7 service areas per the RFP and developed the most cost effective price option for DHS. Using current and historical metrics of staffing deployed at DHS, type of work performed and the associated hours, and also using our experience with similar engagements at other HHS clients, we have proposed a set of roles that we believe may be required to complete tasks in each service area. As requested in the RFP Q&A (question 27, published on February 10, 2017), we have included below the individual rate tables for each service area. Furthermore, our rates are inclusive of associated expenses.



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Each role included in the rate tables has an hourly rate range associated with it. We took the following into consideration when determining the rate ranges.

- Range of skills, experience, qualifications and certifications required
- The primary work location of each role (onsite or offsite)

Using these parameters, below are the proposed potential roles for each service area and rate ranges for the duration of the 3 year agreement. The actual rate within the range for each Deloitte team member staffed at DHS for a specific role will be based on the required skill level, experience, qualifications and resource location needed to deliver on the scope and requirements associated with a specific task order. Please note that several of the roles are marked as "Offsite Only", assuming that this role is generally not required to be staffed onsite. The remaining roles can be staffed either onsite or at our offsite Development Centers, as required to deliver the task order. As a reference point, our current DHS project team has an optimally balanced ratio of onsite staff to offsite staff, which is majority offsite. We continually seek to provide cost savings to DHS from offsite resources while retaining an optimal level of onsite presence to provide best overall value for DHS.

| Category 1 - Project Management and Administration |                                |
|--|--------------------------------|
| Role Name  | Fully Loaded Hourly Rate Range |
| Program Manager                                    | \$85 - \$195                   |
| PMO Analyst  | \$40 - \$110                   |
| PMO Tools (e.g. PMC) / Administrative Support      | \$20 - \$30                    |

| Category 2 - Project Development   |                                |
|------------------------------------|--------------------------------|
| Role Name                          | Fully Loaded Hourly Rate Range |
| Application Development Manager    | \$80 - \$225                   |
| Project Lead / Scrum Master        | \$55 - \$180                   |
| Technical Architect (Offsite Only) | \$45 - \$65                    |
| Functional Analyst                 | \$38 - \$130                   |
| Technical Analyst                  | \$39 - \$136                   |
| Application Developer              | \$30 - \$115                   |
| Middleware Developer               | \$37 - \$130                   |
| Reports / Dashboards Developer     | \$30 - \$120                   |
| Infrastructure Lead                | \$68 - \$145                   |
| Configuration/Build Analyst        | \$38 - \$108                   |
| DBA                                | \$40 - \$135                   |
| Software Product Administrator     | \$50 - \$120                   |
| Testing Lead (Offsite Only)        | \$40 - \$60                    |
| Tester (Offsite Only)              | \$27 - \$45                    |
| Technical Writer                   | \$30 - \$76                    |
| Mobile Developer                   | \$42 - \$140                   |
| User Experience Specialist         | \$50 - \$195                   |
| Administrative Support             | \$20 - \$30                    |

| Category 3 - Reporting         |                                |
|--------------------------------|--------------------------------|
| Role Name                      | Fully Loaded Hourly Rate Range |
| Reports / Dashboards Lead      | \$80 - \$190                   |
| Visual Designer                | \$60 - \$145                   |
| Reports / Dashboards Developer | \$30 - \$120                   |
| Tester (Offsite Only)          | \$27 - \$45                    |
| Technical Writer               | \$30 - \$76                    |



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| Category 4 - Data Management & ETL Operations |                                |
|---|--------------------------------|
| Role Name                                     | Fully Loaded Hourly Rate Range |
| Data Management and ETL Lead                  | \$70 - \$180                   |
| ETL Developer                                 | \$35 - \$115                   |
| Data Analyst                                  | \$50 - \$136                   |
| Tester (Offsite Only)                         | \$27 - \$45                    |
| Technical Writer                              | \$30 - \$76                    |

| Category 5 - Operations, System Maintenance and Support Functions |                                |
|---|--------------------------------|
| Role Name   | Fully Loaded Hourly Rate Range |
| Maintenance and Operations Manager                                | \$70 - \$210                   |
| Maintenance Application Lead                                      | \$40 - \$165                   |
| Functional Analyst  | \$38 - \$130                   |
| Technical Analyst   | \$39 - \$136                   |
| Application Developer   | \$30 - \$115                   |
| Middleware Developer  | \$37 - \$130                   |
| Reports / Dashboards Developer                                    | \$30 - \$120                   |
| Infrastructure Lead   | \$68 - \$145                   |
| Configuration/Build Analyst                                       | \$38 - \$108                   |
| DBA   | \$40 - \$135                   |
| Software Product Administrator                                    | \$50 - \$120                   |
| Testing Lead (Offsite Only)                                       | \$40 - \$60                    |
| Tester (Offsite Only)   | \$27 - \$45                    |
| Technical Writer  | \$30 - \$76                    |
| Mobile Developer  | \$42 - \$140                   |
| Network Specialist  | \$60 - \$160                   |
| Storage/Cloud Specialist  | \$55 - \$190                   |
| Batch Administrator   | \$42 - \$99                    |
| Administrative Support  | \$20 - \$30                    |

| Category 6 - IT Procurement Support |                                |
|-------------------------------------|--------------------------------|
| Role Name                           | Fully Loaded Hourly Rate Range |
| IT Procurement Lead                 | \$90 - \$190                   |
| IT Procurement Specialist           | \$80 - \$185                   |
| IT Procurement Analyst              | \$39 - \$136                   |
| Technical Writer                    | \$30 - \$76                    |

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| Category 7 - Security and Privacy  |                                |
|--|--------------------------------|
| Role Name  | Fully Loaded Hourly Rate Range |
| Cybersecurity and Privacy Manager  | \$137 - \$225                  |
| Cybersecurity and Privacy Architect  | \$118 - \$199                  |
| Security Specialist (e.g. Cloud, Mobile, Compliance, IAM, BCP/DR, Privacy) | \$111 - \$186                  |
| IAM Developer  | \$71 - \$127                   |
| Security Analyst   | \$49 - \$107                   |

Additionally, we would like to discuss the opportunity to provide DHS with a tiered volume discount structure based on annual spend on Deloitte services. We anticipate providing the volume discount via service credits for the subsequent year.

Furthermore, we acknowledge that proposers must be willing to comply with DHS' contracting terms in order to enter into an agreement with DHS. We are proud of our long history of serving DHS and are committed to working with DHS to reach agreement on the final contract terms and approach to the work. As part of that process, we will want to review and validate the contract terms and conditions as applied to the work as awarded, including for example, the addition of a mutually acceptable limitation of liability and other clarifications. We are committed to working in good faith to reach mutual agreement on the final contract terms and conditions and other requirements.

### 3. Provide a budget narrative that reflects a realistic estimate of the costs associated with implementing the Contract Services. (30 points)

Deloitte realizes that DHS has invested significant time and resources in advanced IT systems serving the Department, other County departments, numerous service providers, and clients in Allegheny County. We understand that DHS is seeking a partner(s) to cost effectively maintain what you have built and to enhance and extend your current IT systems by leveraging the organizational momentum you have gained as an innovative and highly technology savvy government agency.

We believe that Deloitte is well qualified and uniquely positioned to deliver required services at DHS, across all 7 RFP service areas. Below are some of the ways we enable this for DHS:

- Our team is productive day 1 of the contract / SOW / work order with no transition costs or loss of productivity and quality due to required transition.
- When staffing projects, working with DHS, we develop an optimal ratio of onsite to offsite that provides the benefit of lower offsite rates for DHS. We understand that there has to be a critical mass of staff onsite for strong communication and collaboration, risk minimization, and to support around the clock operational coverage. Through our experience working in this model with DHS over the past several years, we have optimized our methodology to balance onsite vs Deloitte development center presence in order to maximize delivery quality and cost efficiency to DHS.
- Working with DHS, over a period of time, we have now developed and implemented the most effective data connectivity, physical space and support infrastructure at our offsite development centers to optimize the onsite - offsite model for DHS, in order to provide you with high value, reliable, highly knowledgeable and dedicated staffing at very competitive rates.
- We use mature and proven estimation tools and methods coupled with our knowledge of DHS operations and organization to estimate the effort required to deliver a given initiative. We have a proven record of providing value outcomes for DHS on time and budget. We take great pride in staffing the DHS team with efficient resources who have appropriate knowledge of the business domain and the correct technical skills and experience, including those with specializations such as BizTalk development, cloud storage specialization, etc. Our staff have the necessary certifications in the multiple technologies required at DHS. These skills and experiences enable our team to deliver greater output, with higher certainty of achieving the business outcomes and objectives required by DHS. These efficiencies are further enhanced by the fact that our staff understand the DHS organizational structure and operational methods as well as your programs and practices.
- Our proposed rate card provides DHS with a comprehensive set of potential staff capabilities and levels of experience. We have included multiple potential roles for each service area and an associated rate range for each role, where the rate is to be determined by the required qualifications, skills, experience and location. The rate card provides DHS flexibility to staff effectively to perform various types of work within each service

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area, even when scope needs to be re-defined quickly, in order to accommodate DHS priorities that may change based on external and internal factors or the availability of the DHS resources working on the project.

- We staff our team primarily with Deloitte employees instead of subcontractors. Our team is well versed in Deloitte methods, tools, communities of practice, and project experience and continuously receive Deloitte mandated trainings on an annual basis to stay ahead of the HHS program and technology curve as consulting professionals. While we augment our team with a very limited number of subcontractors when necessary, a majority Deloitte team enables us to deliver personnel committed to longer term engagement at DHS and focused on best quality, low risk and high value to successfully deliver complex initiatives in a mature IT environment at DHS.
- Our offsite development center is CMMI Level 5 certified, which affords DHS additional confidence in Deloitte's delivery quality and efficiency.
- We provide DHS with an annual audit conducted by an independent auditor to review controls and verify the annual billings to DHS. The audit is conducted in accordance with the attestation standards for agreed-upon procedures engagements of the American Institute of Certified Public Accountants.

In addition to the above considerations, procuring Deloitte services across all 7 service areas enables a long-term commitment of our DHS business and technology knowledgeable key resources to your organization and would allow DHS to achieve further economies on initiatives that require staff roles from multiple service areas in order to cost effectively implement end to end solutions. Generally, sharing resources sourced from a single vendor like Deloitte, who has the proven skills and DHS specific experience, consequently minimizes the need for multi-vendor initiatives, reduces delivery risk, minimizes the burden on DHS to coordinate accountability across multiple vendors, and allows a single vendor to deliver at relatively lower cost to DHS by realizing economies of scale. Overall cost savings resulting from using Deloitte across all service areas would be derived from:

- Sharing experienced technology resources across service areas and initiatives
- Sharing Deloitte functional analysts and Subject Matter Experts across service areas and initiatives
- Sharing project management and support resources across projects/initiatives
- Reducing blended rates per initiative or service area through the higher proportion of resources offsite based on our optimized ratios for onsite and offsite, which are specifically tailored to DHS
- Avoiding costs for DHS in knowledge transfer activities, lost productivity and duplication of efforts between multiple vendors
- Reducing inefficiencies, rework and cost to DHS of increased coordination between maintenance, operations and development teams from different vendors in addition to Deloitte
- Eliminating costs associated with the duplication of effort and additional coordination of multiple methodologies and tools by utilizing Deloitte's integrated methods and tools across all 7 service areas and initiatives

### Budget Narrative by RFP Service Area Category

The following sections of the budget narrative describe the activities within each RFP service area which we used as the basis for determining the roles and rate ranges described in our proposed rate card, presented in question 2.

#### I. Project Management and Administration

To consistently deliver successful, concurrent and often complex IT projects, DHS requires strong program / project management and administration. Deloitte brings leading methodologies, expertise and best practices from our broad portfolio of projects where we perform these functions and in combination with our DHS experience, we are able to provide you effective and tailored services in this area. In response to question 2 above, we have defined a set of roles needed to deliver initiatives which achieve the goals you have laid out in the Project Management and Administration service area. Through a team which leverages these roles based on the requirements in the eventual scope for this RFP service area, we will support the below outlined activities, as described in the response to I. Project Management and Administration on page 17-21 of this response form.

| Activity                         | Description  |
|----------------------------------|--|
| Program Management Assistance    | Deliver project management services such as project planning, project tracking, budgeting, and scheduling across DHS IT projects. Our experienced team manages IT projects through a set of DHS-tailored methodologies, drawing upon our deep knowledge of your existing business and culture, as well as industry leading project management approaches.<br>Operate within a framework that guides which stakeholders to notify if deviations occur across a given project's schedule, budget, quality, or scope.<br>Assist with operational management and administrative support for IT operations.<br>Advise DHS as requested during business process and program management assessment activities. This may include modifying or developing policies and procedures to support DHS program management requirements. |
| Evaluation and Recommendation of | We bring a flexible, adaptive, and iterative approach to continually evaluate our current management approaches at DHS. For example, over the last year we've partnered with DHS on a journey to adopt a   |

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| Activity                                  | Description   |
|---|---|
| Management Approaches                     | <p>more agile development methodology and have recommended and implemented an agile approach to M&amp;O and enhancements.</p> <p>Assess current project management approaches, taking into consideration our understanding of DHS, experience from Deloitte's Public and Private sector projects, and advances in leading management frameworks. Preference is given to processes that foster adaptability and flexibility.</p> <p>Implement and maintain processes based upon management frameworks, such as traditional project management approaches (e.g., "waterfall"), agile methodologies, Information Technology Infrastructure Library (ITIL), Project Management Body of Knowledge (PMBOK), and Capability Maturity Model Integration (CMMI).</p> |
| Project Management Support Services       | <p>Provide various project management support services, such as business case analysis support, project communication planning and execution, stakeholder management, quality management, and scope management.</p> <p>Bring a unique blend of skills, administrative and program domain knowledge, and expertise in new strategic technologies, together with an understanding of DHS business and technical operations.</p>   |
| Software Development Lifecycle Management | <p>Establish governance throughout the software development lifecycle, as our experienced team strives to deliver additional value add management services throughout analysis, design, development, testing, hosting, and implementation of IT projects.</p> <p>Provide development planning management efficiencies as our team has extensive knowledge of your current IT environment and thus can best consider impacts to infrastructure capacity and efficiencies, such as coordination of secure SDLC implementation on interrelated IT components.</p>  |

### II. Project Development

DHS is passionate about delivering the highest quality human services to residents of Allegheny County and has a desire to stay current with technology trends, so as to benefit from the latest technical capabilities in the market to meet your business objectives. To achieve this goal, DHS requires a trusted partner who is experienced at surveying the vast technology landscape and providing cost-effective and value based IT development options, integrating a wide range of technical products, platforms, programming languages, existing DHS IT artifacts, and open source packages. Deloitte brings deep proficiency across various domains, such as IT product and infrastructure assessments, application development, technology integration and user experience and in our response to question 2 above, we have defined a set of roles needed to deliver initiatives which achieve the goals you have laid out in the Project Development service area.

Through a team which leverages these roles based on the requirements in the eventual scope for this RFP service area, we will support the below outlined activities, as described in our response to II. Project Development on page 22 – 26 of this response form.

| Activity                                       | Description  |
|--|--|
| Product and Technology Evaluation              | Evaluate the best holistic solution to achieve your business objectives using our deep knowledge and expertise across various technology package offerings. These solutions could be implemented through different approaches, from a pure product implementation, to a custom solution augmented by existing technology packages.                   |
| New Software Development & Product Integration | Assess products, packages, and different development languages and approaches to determine the best plan for implementing the most effective IT solutions at DHS.<br>Design, develop, test and implement solutions which leverage existing IT artifacts, include configurable components, and optimally integrate products and open source packages. |
| Knowledge Transfer Documentation               | Evaluate your specific knowledge transfer needs and develop relevant knowledge transfer documentation. This allows DHS to independently use IT solutions on an ongoing basis.  |
| Mobile Strategy and Implementation             | Evaluate the current mobile environment and develop an enterprise wide mobile IT roadmap. Guided by this strategy, our team delivers upon agreed upon milestones to help DHS realize the full potential of mobile solutions in delivering outstanding client service in "on-the-go" scenarios.   |
| Cloud Evaluation and Implementation            | Incorporate infrastructure and architecture evaluations as a standard aspect of project planning phases, to confirm that a given project's development plan considers what would deliver the most value to DHS with special consideration to cloud hosting services and available software as a service packages.                                    |

### III. Reporting

DHS has created a reporting environment that provides the ability to make insight driven decisions to answer an array of critical business questions with a focus on helping to improve human service delivery and outcomes for Allegheny County residents. Deloitte brings deep subject matter expertise in Health and Human Services (HHS), specific functional understanding of DHS, and deep technical skill sets in designing and developing reporting and analytics solutions. This combination of subject matter knowledge and technical expertise allows us to understand and translate your business questions into reporting solutions designed specifically for the user and provides the ability for DHS to make fact based decisions.

# RFP Response Form

## Information Technology Support and Professional Services

In our response to question 2 above, we have defined a set of roles needed to deliver effective application, ad hoc, and dashboard reporting. These roles are to be filled by practitioners with experience in the reporting and dashboard development tools in use at DHS and in the underlying data and systems, which increases efficiency and reduces risk for your reporting initiatives. We will support the below outlined activities, as described in our response to III. Reporting on page 27-29 of this response form.

| Activity              | Description   |
|-----------------------|---|
| Application Reporting | <p>Work with DHS to determine which type of reporting solution best meets business needs.</p> <p>Create new reports to meet DHS' business needs, such as when a new system or module is implemented.</p> <p>Update existing reports for required enhancements or issue resolution, as necessary.</p> <p>Conduct ongoing tuning and optimization of reports.</p> <p>Provide application reporting end user support, as required.</p> |
| Ad Hoc Reporting      | <p>Develop customized ad hoc reports to meet user needs utilizing one or multiple data sources such as the Data Warehouse, Analytics Cluster, or transactional systems. Prepare presentations and/or custom charts and maps as necessary. Collect and interpret data as requested.</p> <p>Develop solutions to provide DHS users with the ability to conduct their own ad hoc reporting and analyses.</p>                           |
| Dashboard Reporting   | <p>Create new dashboards to meet DHS' operational, fiscal, and program evaluation needs.</p> <p>Update existing dashboards for required enhancements or issue resolution, as necessary.</p> <p>Conduct ongoing tuning and optimization of dashboards.</p> <p>Provide additional dashboard end user support, as required.</p>  |

### IV. Data Management & Extract, Transform and Load (ETL) Operations

DHS has created a robust analytics environment that provides valuable insight and facilitates key management and programmatic decisions at various levels of the organization. Deloitte is best positioned to efficiently support, maintain, and grow this complex environment based on our qualifications, capabilities, and 17 years of direct experience. Equipped with these qualities, DHS benefits from high-impact data management and ETL solutions.

In our response to question 2 above, we have defined a set of roles needed to deliver initiatives which achieve the goals you have laid out in this service area. These roles are to be filled by practitioners with not only the right skill sets to deliver on the requested contract services, but who also have experience successfully delivering at DHS. This team is intimately familiar with your analytics environment, your overall IT architecture, and your business. Through a team which leverages these roles based on the requirements in the eventual scope for this RFP service area, we will support the below outlined activities, as described in our response to IV. Data Management & Extract, Transform and Load (ETL) Operations on page 30-35 of this response form.

| Activity                                 | Description  |
|--|--|
| Execute and Monitor ETL Processes        | <p>Execute and monitor daily, weekly, monthly, yearly, and other ad hoc load processes for the Data Warehouse, Analytics Cluster Data Layers, KIDS Data Mart, Tableau dashboards, and other similar analytics systems (e.g., Medical Examiner, Schools, and MPER Data Marts). Troubleshoot load process warnings or failures and resolve as necessary.</p>   |
| Maintain and Enhance ETL Processes       | <p>Resolve ETL process defects as necessary. Conduct ongoing tuning and optimization of ETL load processes, queries, and report/extract processes. Design and execute historical data fixes as necessary. Provide support for DARE or other DHS users by answering questions, providing clarifications, and/or researching potential issues related to IDM assets.</p> <p>Update ETL processes (and associated data structures) for required enhancements such as the addition of new source systems to the Data Warehouse, Analytics Cluster, or Data Marts.</p>  |
| Perform Regular Quality Assurance Checks | <p>Validate the DW load process by comparing client/service aggregate counts on a month-to-month basis per source system to identify potential issues. Research alerts, potentially working with the source owner, to determine if the alert is actually an issue that needs to be rectified or if it is a natural change in the source data. Perform validations for known data quality issues and rectify as necessary.</p> <p>Validate ETL load process results for the Analytics Cluster through a series of monitoring reports that compare the number of records in the source table to the target tables and flag potential issues for research.</p> <p>Work with DHS to define additional data quality checks. Activities include:</p> <ul style="list-style-type: none"> <li>• Perform Data Profiling and Discovery process to identify data anomalies and outliers</li> <li>• Design and develop quality rules to perform checks and balances between source and target warehouse system</li> <li>• Design and develop data quality monitoring plan (including reports and dashboards) to define personnel and frequency in which the reports will be reviewed</li> <li>• Define the process for taking remediation action in case of anomalies and data quality issues</li> </ul> |

# RFP Response Form

## Information Technology Support and Professional Services

| Activity   | Description  |
|--|--|
| Conduct Ongoing Impact Analysis                                | Work with internal and external source owners to identify planned changes to IDM source systems (e.g., enhancements to internal or external sources), or to the IDM infrastructure (e.g., Oracle database upgrade). Research these to determine if the change would have a technical or functional impact on IDM assets. Document confirmed impacts and resolve these by conducting appropriate enhancements and/or testing to IDM assets. |
| Evaluate Performance of Existing Systems, Make Recommendations | Utilize Deloitte's Value Scan Framework to complete a full or partial assessment of the performance and effectiveness of the Data Warehouse or other analytics solutions from a technology and a process perspective. Identify process maturity and improvement opportunities. Work with DHS to evaluate and implement these opportunities as appropriate.   |
| Maintain History/Audit Trail of Data                           | Continue to maintain a history of data changes in the client population through the use of "slowly changing" dimensions and maintaining snapshots in fact tables. Implement additional solutions to standardize the process of maintaining history of data changes, such as maintaining an implementation log and augmenting the existing fact and dimension tables to add metadata attributes.  |
| Communication and Collaboration                                | Conduct regular update meetings with DARE to review current status of in-process work items and discuss risks, issues, and schedules. Prioritize new work items based on DARE's business priorities. Additionally, communicate relevant IDM status updates to Executive Sponsor, Executive Steering Committee, and other DHS stakeholders as appropriate.  |

### V. Operations, Systems Maintenance and Support Functions

A stable, optimized, cost-efficient and secure production infrastructure and IT application and analytics environments are critical for DHS stakeholders to best serve the residents of Allegheny County. Deloitte brings expertise in operations, system maintenance and support functions at hundreds of organizations across the globe and specifically at DHS and other HHS agencies nationwide. This expertise combined with Deloitte's mature Maintenance and Operations methodologies which have been tailored for the DHS organizational environment, along with our staff who know your production applications and infrastructure both functionally and technically bring you the highest value option for Maintenance, Operations and Support. We are able to perform operations, maintenance and support functions with less resources, better quality, higher speed and reduced risk.

In our response to question 2 above, we have defined a set of roles needed to deliver effective and quality Operations, Maintenance and Support at DHS. Through a team which leverages these roles, we will support the below outlined activities.

| Activity                                     | Description   |
|--|---|
| Application and Data Warehouse Maintenance   | Application maintenance for the 16 production applications identified in RFP Appendix (RFP page 17-21), associated internal and external interfaces (e.g., CWIS, CPCMS, Orphan's Court, Provider Data Exchange, JDE, Onbase, etc.) and the Data Warehouse. Maintenance activities include: <ul style="list-style-type: none"> <li>• Incident/Task Analysis</li> <li>• Service Desk Support</li> <li>• End User Communications</li> <li>• SME Support</li> <li>• Data/Application Fixes</li> <li>• PRT and Ad-hoc Request</li> <li>• Training Support</li> <li>• Data Duplication for Training</li> <li>• Release Planning &amp; Scheduling</li> <li>• Release Regression Testing</li> <li>• Maintenance Release Notes</li> </ul>  |
| Infrastructure Support Services / Operations | Activities include: <ul style="list-style-type: none"> <li>• Configuration management and build support as applications transition between environments throughout Software Development Life Cycle phases and in the production environment</li> <li>• Database administration across production and lower environments</li> <li>• Administration of middleware and other software products in the DHS infrastructure including BizTalk, Cognos, Tableau, DataStage and multiple other software products (listed in RFP appendix - RFP page 17)</li> <li>• Support of maintenance monitoring and documentation of the above software products, including version control, licensing, developer advisories, training updates and license renewals</li> <li>• Batch schedule creation / optimization and ongoing batch operations and monitoring</li> <li>• Database tool installation / support for DHS analysts</li> <li>• Ongoing capacity planning</li> </ul> |

# RFP Response Form

## Information Technology Support and Professional Services

| Activity                    | Description  |
|-----------------------------|--|
|                             | <ul style="list-style-type: none"> <li>Analysis and resolution of outages, congestion and performance related issues</li> <li>Creation, ongoing updates to and implementation of infrastructure related documentation and procedures, such as system performance analysis reports, batch run book, troubleshooting procedures, and other documentation to support DHS IT operations</li> <li>Ongoing environment monitoring, performance tuning, and database optimization</li> <li>Consultation and support in other infrastructure related activities, as requested by DHS, such as network support, software and hardware infrastructure support, support with system upgrades/patches/ reconfigurations, and more</li> </ul> |
| Infrastructure Enhancements | Ongoing planning, consultation on, and implementation of infrastructure enhancement activities to keep DHS infrastructure aligned with DHS business needs and latest industry trends and best practices. For FY16-17, these activities include data storage / cloud options assessment, .Net framework upgrade across production applications, Microsoft SCOM installation / configuration, Mobile Device Management implementation support, transition and optimization of data feeds / loads to prevent negative impact on data warehouse performance, enterprise service alert mechanism, service account password management, and Tableau upgrade to version 10  |

For FY17-18, we have assumed that DHS may require support similar to FY16-17, in addition to the following:

- Enterprise Fiscal / Claims Management system with Program Funded and Fee for Service functionality, scheduled to go live June 2017
- Integrated Housing Portal, scheduled to go live June 2017
- Synergy expansion, including Family Support Centers and Behavioral Health Residential
- Expanded mobile environment
- Expanded analytics and reporting environment (e.g., additional data warehouse sources, data layers, dashboards, Tableau user base expansion, etc.).

At the same time as DHS end user support needs expand, we are committed to continue maximizing operational efficiency in order to control costs, as we have done in the past and continue to do today. As described in our response to V. Operations, System Maintenance and Support Functions, we will continue to take every possible step to this end, such as:

- Getting to the next DevOps maturity level
- Increasing automation in testing and deployments
- Leveraging new tools and technologies (e.g., OpInsights) to maximize operational efficiencies
- Bringing the latest and greatest industry thinking in Maintenance and Operations to DHS
- Continuing to increase self-service functions for Service Desk to perform independent issue resolution
- Looking for additional opportunities for preventative maintenance

### VI. IT Procurement Support

DHS needs proven methods to help drive efficiency in the IT Procurement process, including market analysis, planning support, opportunity identification, SOW and task order creation support and effective criteria and tools for evaluation. The process has to be smooth, involving necessary stakeholders while delivering efficiently to deliver business objectives. Deloitte will leverage our methodologies, expertise and premier relationships with product vendors and collaborate with DHS to develop successful IT procurement strategies and execute those strategies.

In our response to question 2 above, we have defined a set of roles needed to deliver initiatives which achieve the goals you have laid out in the IT Procurement Support service area. Through a team which leverages these roles based on the requirements in the eventual scope for this RFP service area, we will support the below outlined activities, as described in our response to VI. IT Procurement Support on page 42-43 of this response form.

| Activity | Description   |
|----------|---|
| Prepare  | <ul style="list-style-type: none"> <li>Drive industry &amp; vendor research</li> <li>Bring to DHS technology innovation and Tech Trends</li> <li>Conduct stakeholder interviews</li> </ul>  |
| Discover | <ul style="list-style-type: none"> <li>Conduct current state assessment</li> <li>Define technology &amp; operations drivers</li> <li>Document selection criteria and evaluation tool aligned with DHS needs</li> </ul>                                    |
| Analyze  | <ul style="list-style-type: none"> <li>Complete product assessment and comparison using selection criteria</li> <li>Assist DHS in making product selection based on assessment results</li> <li>Provide an implementation roadmap and playbook</li> </ul> |



# RFP Response Form

## Information Technology Support and Professional Services

| Activity | Description  |
|----------|--|
| Procure  | <ul style="list-style-type: none"> <li>• Assist in preparing RFP or task orders</li> <li>• Document comparisons for DHS to objectively evaluate vendors</li> <li>• Assist in creating Statement of Work (SOW)</li> <li>• Coordinate or provide support for Product demo for DHS, as required</li> <li>• Assist with Product Proof of Concept, as required</li> <li>• Support in instantiating product for consumption</li> <li>• Assist in developing standards and guidelines (SAG) for consistency in use</li> </ul> |

### VII. Security and Privacy

DHS manages a large amount of sensitive information (PII/PHI) for its clients and effectively managing security and privacy is critical across the Agency. This includes analyzing IT systems for security considerations, providing recommendations to comply with HIPAA requirements, enhancing the DHS infrastructure by leveraging Identity and Access Management capabilities of Commonwealth of Pennsylvania and protecting DHS communications. Deloitte brings to DHS the expertise and track record of success to serve as your strategic advisor and support you in this business critical area.

In our response to question 2 above, we have defined a set of roles needed to deliver initiatives which achieve the goals you have laid out in the Security and Privacy service area. Through a team which leverages these roles based on the requirements in the eventual scope for this RFP service area, we will support the below outlined activities, as described in our response to VII. Security and Privacy on page 44-48 of this response form.

| Activity  | Description   |
|---|---|
| Information Technology and Systems Security Analysis and Recommendation | <p>Analyze and provide recommendations on the design for information technology and systems security. A sample list of tasks to analyze system enhancement options required to accomplish compliance requirements in alignment with industry standards includes:</p> <ul style="list-style-type: none"> <li>• Develop Disaster Recovery and Business Continuity Plans</li> <li>• Review security of infrastructure and applications</li> <li>• Identify gaps and recommend remediation plans</li> <li>• Implement secure SDLC processes</li> <li>• Coordinate and conduct annual disaster recovery test</li> </ul>  |
| Security Remediation Support  | <p>Assist with security remediation efforts, including Health Insurance Portability and Accountability Act (HIPAA) security. A sample list of the implementation tasks to support HIPAA security remediation and compliance are listed below:</p> <ul style="list-style-type: none"> <li>• Implement Enterprise Governance, Risk and Compliance (eGRC) Solution to manage risk and exceptions</li> <li>• Implement data encryption for laptop and smartphone devices</li> <li>• Implement Data Loss Prevention (DLP) solution and Security Information and Event Management (SIEM) solution</li> <li>• Conduct annual internal and third party risk assessments.</li> </ul>   |
| IAM Integration   | <p>Implement Identity Access Management (IAM) integration. A sample list of tasks to integrate Commonwealth of Pennsylvania IAM are listed below:</p> <ul style="list-style-type: none"> <li>• Implement provider self-service registration, employee and contractor provisioning, privileged user management for administrators and risk-based authentication</li> <li>• Onboard DHS applications to single sign-on, web access management, privileged user management and access certification campaigns for periodic review of application and infrastructure access</li> </ul>  |
| Communications Security Support   | <p>Provide support to protect communications to ensure the integrity, availability and confidentiality of communications. A sample list of tasks to meet the objective of integrity, availability and confidentiality of communication and to protect communications are listed below:</p> <ul style="list-style-type: none"> <li>• Development of processes and systems to protect communication within DHS, within the county, with state agencies and external third parties</li> <li>• Network configuration enhancements, IPS/IDS implementation, wireless network security and branch office communication security and performing maintenance and operation of IT Network Security and Vulnerability Management</li> </ul> |

**For the items below, complete only the sections for the service areas you wish to propose. Service areas not included in your proposal may be left blank.**

# RFP Response Form

## Information Technology Support and Professional Services

### I. Project Management and Administration (50 points) Your response to this section must not exceed 5 pages.

#### 1. Describe your plan to provide program management assistance, including project planning, tracking, budgeting, scheduling and quality management. (10 points)

DHS continues to improve critical human service delivery to Allegheny county residents through technology innovation and you require a collaborative and detail-oriented partner to successfully manage numerous projects. Deloitte relies on a proven set of project management methods and tools, and leverages these, along with our knowledge of your organization and business, to implement a tailored DHS project management framework. This reduces risk to DHS as proven processes are defined to govern across project planning, issues, communication, dependencies, scheduling, and quality domains.

Deloitte draws upon various industry leading frameworks to apply best-of-breed project management methodologies to DHS' unique environment. For example, we have facilitated your adoption of agile methodologies by implementing a hybrid agile approach. This results in DHS benefiting from many of Agile's advantages, such as improved transparency in regards to tracking and development planning, while being mindful of your organization's existing culture.

Along with providing governance to the various projects and threads within the program, we work with you to structure project communication mechanisms, manage overall program risk, and coordinate between various stakeholders. Utilizing proven tools, including the Project Management Center (PMC) tool which we bring to you at no cost, Deloitte facilitates the best possible results for DHS across multiple work streams. Communication, encouraging continuous feedback, and transparency supports the best results and manages toward on time and on budget delivery. Using proven project management methods Deloitte focuses on maximizing your rate of return, meeting your business needs, and achieving your business outcomes. Below are examples of how we provide program management assistance to DHS, including proposed future enhancements to current processes.



- Our team continuously benefits from industry certifications and applies these frameworks through our lens of DHS expertise
- DHS benefits from the full breadth of Deloitte's capabilities, continuously improving processes to achieve better outcomes
- Comprehensive communication planning provides full transparency and enables DHS to provide input through various touchpoints



Alex Mezhinsky








Sunil Yadav

# RFP Response Form

## Information Technology Support and Professional Services

### Deloitte's Approach to Project Management at DHS

|  | How We Assist DHS in Project Management   | How We Plan to Enhance Project Management Capabilities  |
|--|---|---|
|  <p><b>Project Planning</b></p>   | <ul style="list-style-type: none"> <li>Detailed project plans and deadlines that meet DHS needs</li> <li>Clear delineation of scope keeps all stakeholders informed and enables collaboration around changes</li> <li>Shared resources (e.g., DBA, build, infrastructure, and more) are optimally allocated between development initiatives and application and IDM operations</li> </ul> | <p>We have recently adopted using SharePoint to provide greater accessibility to project documentation to all stakeholders. We plan to leverage SharePoint's other features to better improve our planning capabilities (e.g., using a shared calendar to coordinate various UAT sessions).</p> |
|  <p><b>Tracking</b></p>           | <ul style="list-style-type: none"> <li>Detailed time tracking and critical path monitoring hold teams accountable to task effort and completion</li> <li>Provides tracking at the task level for effort in hours and percentage complete</li> </ul>   | <p>Leverage tools such as iRise to enhance tracking capabilities across Agile projects</p>  |
|  <p><b>Budget</b></p>             | <ul style="list-style-type: none"> <li>Reporting by resource and work thread gives insight into any budgeting concerns</li> <li>Regular meetings review budget, discuss any needed remediation, and enable re-prioritization based on priorities</li> </ul>   | <p>Provide access to prioritization frameworks which serve as an additional insight during project ROI analysis, used in planning statements of work.</p>   |
|  <p><b>Scheduling</b></p>         | <ul style="list-style-type: none"> <li>Extensive schedule in PMC enables stakeholders to understand deadlines and resources required to meet them</li> <li>Adjustments to timelines, resources on deck, and team objectives can be easily made</li> </ul>   | <p>Continue collaborating with DHS on your journey adopting agile methodologies which allows you to deploy functionality to production in a more flexible manner.</p>   |
|  <p><b>Quality Management</b></p> | <ul style="list-style-type: none"> <li>The PMC tool provides collaborative identification, tracking, and oversight of issues and risk</li> <li>Quality management processes are reviewed and adjusted as needed on a regular basis</li> </ul>   | <p>As automated testing increases at DHS, we plan to provide an Application Health Dashboard, displaying stats on test scenarios across various test environments, increasing transparency.</p>   |

ACDHS-005

Figure 4. Deloitte provides DHS with effective program management assistance.

## 2. Describe your plan for evaluating current process management approaches and recommending and implementing flexible, adaptive, iterative approaches to development. (15 points)

DHS vision and program goals shape the processes employed at DHS; working toward these goals requires an understanding of the present state. Our plan is to work alongside DHS staff on a continuous basis to review current project management, business, and development processes. We leverage our knowledge of your current systems and processes, mapping and correlating them to project goals, while recommending and implementing cost-effective, flexible, adaptive and iterative agile approaches to development. We bring our breadth of knowledge and experience in best practices and methodologies, as well as our understanding of the DHS culture and environment, to aid in the assessment, recommendation, documentation and implementation of agreed upon method changes.

We have a proven track record both nationally and at DHS in adapting development methods and process over time to reduce cost, increase quality and improve outcomes. Research shows that flexible, adaptive, and iterative approaches create the most valuable features, delivered at the earliest possible moment in a ready-to-use state. In the recent past, we have worked collaboratively with DHS to move from a waterfall lifecycle to a hybrid Agile based lifecycle and moving forward, we will focus on continuing to mature our agile processes. The agile approach centers on a sprint structure which allows for the Product Owner to select which features are built and reviewed every 2-3 weeks, shortening the feedback loop between the team and the Product Owner/Stakeholders.

As DHS has transitioned to a hybrid agile development approach, we have leveraged our expertise and worked with you to develop an agile methodology most suited to your organization. Deloitte has a practice focused on Delivery Methods and Tools, and one of the specializations in that practice is Agile. When DHS was in its early phases of Agile transition, we brought to you a method coach from the Methods and Tools practice, who is solely focused on helping Public and Private Sector organizations to tailor Agile approaches specific to their unique characteristics. By partnering our Agile certified DHS practitioners with this dedicated expert, we worked with DHS to refine the method for DHS and then train your project stakeholders. As Agile maturity grew across DHS, we brought you additional recommendations for enhancing the Agile process and applying it to new areas, such as application maintenance and enhancements. The results have been positive. Flexibility has increased as requirements have become a starting point that can shift based on user needs. Additionally, transparency and feedback have

# RFP Response Form

## Information Technology Support and Professional Services

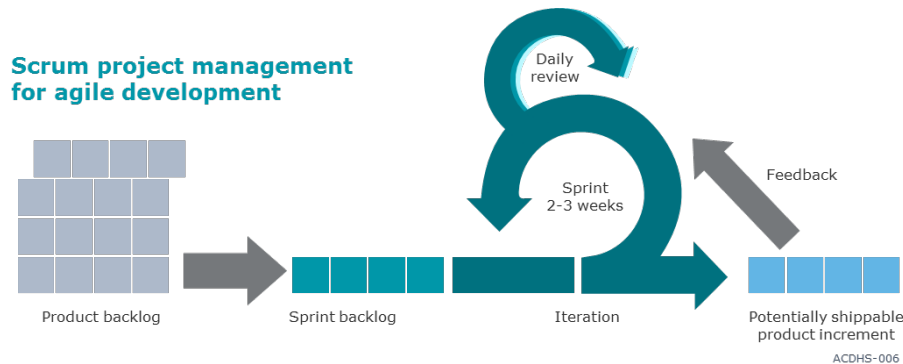


Figure 5. Scrum Project Management for Agile Development employed at DHS.

increased throughout the project development process. At the same time, we have continued refining the hybrid Agile method used at DHS based on an ongoing assessment of what's working well and what can be improved.

As DHS continues to expand on the use of hybrid agile project management methodologies, Deloitte will continue to support you in this endeavor - finding ways to pull in the best of the agile process which fosters

innovation, encourages collaboration, and enables quality along with speed to market. The goal is to create value-based, leaner, high quality products and the best project management approach which helps govern the delivery of these products.

On an ongoing basis, we will continue assessing the effectiveness of the Agile development method in use today and recommend and implement ongoing enhancements. During this journey, you will have at your disposal our Agile practice and the practitioners on the DHS Deloitte team who are Certified Scrum Masters and Certified Product Owners. We also provide extensive Agile training to our practitioners through a Deloitte Agile Method Boot Camp. In addition, Deloitte can provide a customized Agile Method Boot Camp and additional Agile training to DHS staff.

Furthermore, we will explore other opportunities to implement flexible and adaptive approaches throughout your organization, such as extreme programming, test driven development or pair programming. In an effort to continuously improve, we take the same agile principles and apply them to project management processes and business process reengineering. We hold periodic retrospectives, identify areas of improvement, and implement those improvements immediately. Through subsequent retrospectives, we measure the effectiveness of improvements and adjust accordingly, always continuously improving. As another recent example of this continuous improvement cycle, we have brought to DHS ideas and recommendations to continue making your Maintenance and Operations processes more agile, flexible and efficient.

While Agile is today's most flexible and adaptive methodology, we know that continuous improvement is critical to DHS and drives the IT industry. As new methods and tools emerge, Deloitte will assist DHS to adopt the next generation of methods and tools, just as we have with agile. We are the partner for DHS that has the breadth and depth of IT innovators that can take you to that next generation.

### 3. Describe your ability to provide effective consultation and efficient project management support services, including ongoing communication with the user community and development team throughout a project's life cycle. (15 points)

Deloitte brings a team with deep expertise in consultation and project management support services. Our practitioners have industry certifications, such as PMP and ITIL, and they are trained on and experienced in Deloitte project management methods and tools, which have been developed over thousands of successful project implementations. Our DHS project leadership team has over 50 years of combined experience consulting on and providing efficient project management support services in Human Services organizations. We combine our methods, HHS expertise and DHS experience to bring you consultation services that will provide best value specifically in your environment.

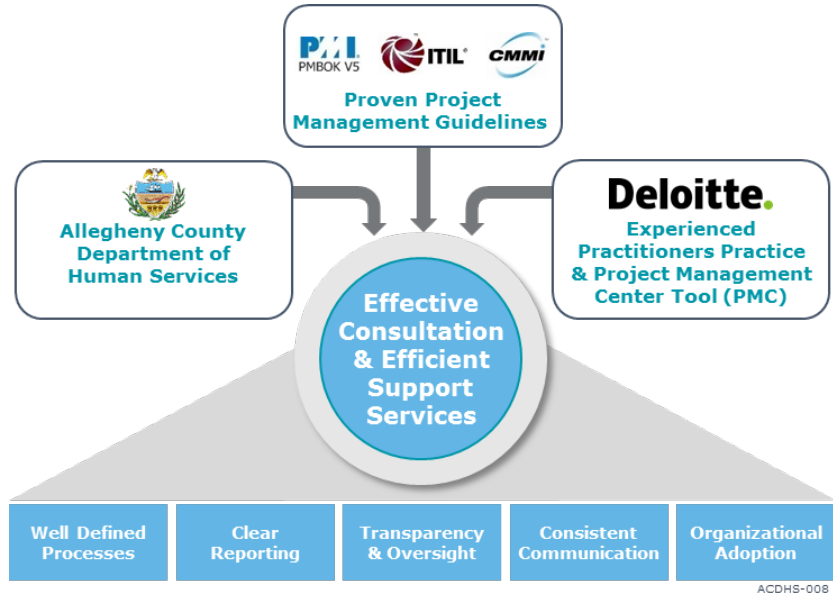
Our approach in this area enables successful systems development and maintenance of new technologies and operating models at low risk to DHS. We infuse rigor and discipline consistently throughout project task groups in the form of structured controls to manage risk, monitor quality, measure performance, and maintain schedules. Management controls also provide visibility into our processes, which allows us to apply continuous process improvements. We leverage our knowledge and experience from DHS and HHS projects nationwide to:

- Support DHS' long term vision and goals
- Maximize the effective use of IT by embracing and driving efficiency across DHS
- Meet the needs of the program offices

# RFP Response Form

## Information Technology Support and Professional Services

Deloitte brings to DHS a unique blend of skills, administrative and program domain knowledge and expertise in new strategic technologies (such as mobile applications, cloud computing, and real time analytics), together with an understanding of DHS business and technical operations. We have experience putting together teams that incorporate a variety of skill sets based on the needs throughout a project lifecycle. Our joint team is likely to include a mixture of people at peak points across the multitude of projects, to work together to achieve the desired outcomes. Coordinating this large number of team members across projects, programs and offices, confirming that everyone understands their role and deadlines, and using the same consistent approach to manage the project requires an over-arching program and portfolio management approach and methodology. We bring this structure which helps everyone understand their key responsibilities and in what order critical project tasks and initiatives must be accomplished. In addition we have the ability to support you in performing business case analysis for any planned projects and help you prioritize across your initiatives.



**Figure 6.** Deloitte practitioners with previous Human Services experience, working knowledge of DHS, and industry-leading management frameworks result in a team that provides efficient and cost-effective management support services and communication to your organization.

### Ongoing Communication

Stakeholder groups are critical to the success of DHS projects. A full analysis of who those stakeholders are, how to best communicate with them, when to best engage them, and what kinds of messages they need to encourage the greatest collaboration and process adoption are critical and increase buy in as well as improve the end product. A detailed communication plan, which defines when tailored messaging needs to be delivered to different stakeholders, supports the goals of DHS by fostering a sense of control and camaraderie as the team works to improve systems for the user community. Messages are carefully tailored to be inclusive and useful for the stakeholders involved. Guidelines are defined to clearly indicate what type of communications are required and which DHS stakeholders should receive these communications. This approach brings order to a potentially chaotic situation, given the sheer number of key DHS stakeholders involved in a given project. We have a demonstrated track record supporting DHS project leads in conducting such communication analyses and creating effective stakeholder communication plans. As an example, we have recently worked with DHS on a provider engagement and communication strategy for the Enterprise Fiscal project. This project impacts all DHS contracted providers, and effective engagement and communication is critical to a successful rollout. We have partnered with DHS to define and execute a communication strategy, keeping the providers informed and engaged throughout the project lifecycle.

In addition to having an effective communication plan, another way our approach promotes transparency and strong cross-stakeholder communication is the way we organize our teams. Each project is organized to meet the needs of the specific project goals and objectives taking into consideration the tasks, activities, resources and staff required. To do this, we adopt a consistent project team approach that includes IT as well as Program staff from Deloitte and DHS. The DHS Product Owner helps set the goals, objectives, requirements and general direction of project activities. This approach promotes transparency and communication throughout the project team at every point in the project to continuously track, monitor, report progress and take corrective action when necessary. In the Agile method, communication is further enhanced directly with the development team through daily stand-up calls. Furthermore, our approach makes effective use of the fact that our team's key resources have long-standing relationships at Allegheny County in addition to understanding your administrative and management structure.

Our management team, which is responsible for project management and contract management will perform at an overall Program Management Office (PMO) level as well as at the individual project level for projects in scope. The management team is able to assess overall project operations to make critical business decisions to enable service delivery that is in line with the project goals. The project team is then split into domain teams, providing the ability

# RFP Response Form

## Information Technology Support and Professional Services

to effectively match resources by skill level and expertise to the areas where those resources can add the most value. Such an approach removes overhead, increases transparency, and provides for a consistent and responsive management team that understands your organization.

### 4. Describe your plan for performing software requirements elicitation and analysis, design, development, testing, hosting and implementation tasks. (10 points)

Deloitte brings to DHS an extensive track record of working with complicated data systems. Our firm has depth of experience in capturing requirements that meet the user needs and using disciplined software lifecycle and process to implement those requirements. We leverage our hybrid agile process, infused with industry best practices and Deloitte expertise, to successfully manage projects through requirements, design, development, testing, hosting and implementation tasks. The following table describes some of the key activities in each task.

| Task                                  | Description of Project Activities  | Deloitte Delivers Outcomes   |
|---------------------------------------|--|--|
| Requirements Elicitation and Analysis | <ul style="list-style-type: none"> <li>Requirements are gathered in a collaborative manner with DHS Product Owner and other stakeholders throughout the lifecycle of the project.</li> <li>Whenever possible, we bring to you already available business process and IT assets as inputs into the IT requirements process.</li> <li>Gathered requirements are analyzed for completeness and fit into the DHS environment, including Security and Infrastructure considerations.</li> </ul>   | Create and/or update requirements documentation throughout the project, providing DHS with increased flexibility to manage change in scope   |
| Design                                | <ul style="list-style-type: none"> <li>Design focuses on meeting requirements through best value technology solution and optimal use of DHS enterprise assets, reducing implementation risk and effort</li> <li>Functional and technical designs are formulated during development sprints. These include application design, data model, data definitions, technical specifications, technical architecture, business logic diagrams, screen flows, screen mockups, business roles, and interface designs.</li> </ul>   | Leverage existing DHS enterprise artifacts greatly reducing IT solution development effort   |
| Development                           | <ul style="list-style-type: none"> <li>Developed Code follows generally accepted coding practices and DHS standards following a 3 week agile development life cycle while meeting quality management standards</li> <li>Allow for and incorporate frequent feedback from DHS Product Owner throughout development process, including sprint planning, daily standup calls and sprint demos</li> <li>Follow Security standards incorporated into Secure Software Development Lifecycle (SSDLC)</li> </ul>   | DHS benefits from complete transparency to our development activities through our hybrid agile approach and gains confidence that security vulnerabilities are being automatically identified and resolved |
| Testing                               | <ul style="list-style-type: none"> <li>Develop test case scenarios and update existing test scripts that will be reviewed and validated; look for opportunities to create automated test scripts</li> <li>Plan and execute the following: System Integration Testing, Performance Testing, Security Testing, Regression Testing, and when applicable, Conversion Testing</li> <li>Plan and assist with User Acceptance Testing</li> </ul>  | With our extensive knowledge of your existing IT solutions and business, unique scenarios are identified and tested, improving overall quality   |
| Hosting                               | <ul style="list-style-type: none"> <li>Conduct capacity planning activities early in the development process</li> <li>Work with DHS to determine the software hosting plan</li> <li>Work with the DHS infrastructure team to make available necessary hardware and other infrastructure components and perform any other infrastructure activities such as providing connectivity with external partners</li> <li>Develop code migration plan that includes migration tasks and activities to lower and production environments</li> <li>Execute plan and host the solution</li> </ul> | Capacity plans include innovative options, such as hosting on cost-effective cloud platforms   |
| Implementation                        | <ul style="list-style-type: none"> <li>Develop implementation plan to include schedules, dependencies, resources, and contingency plan for production implementation; look for opportunities for rolling deployments to allow for increased uptime</li> <li>Support DHS training activities, as required, including environment preparation and Subject Matter Expertise</li> <li>Conduct Knowledge Transfer activities and provide post go-live end user support</li> </ul>   | Solution implementations are successfully planned for, monitored, and supported to provide seamless software deployments   |

**Figure 7.** Deloitte delivers key activities in requirements elicitation and analysis, design, development, testing, hosting and implementation tasks.



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II. Project Development (50 points) Your response to this section must not exceed 5 pages.

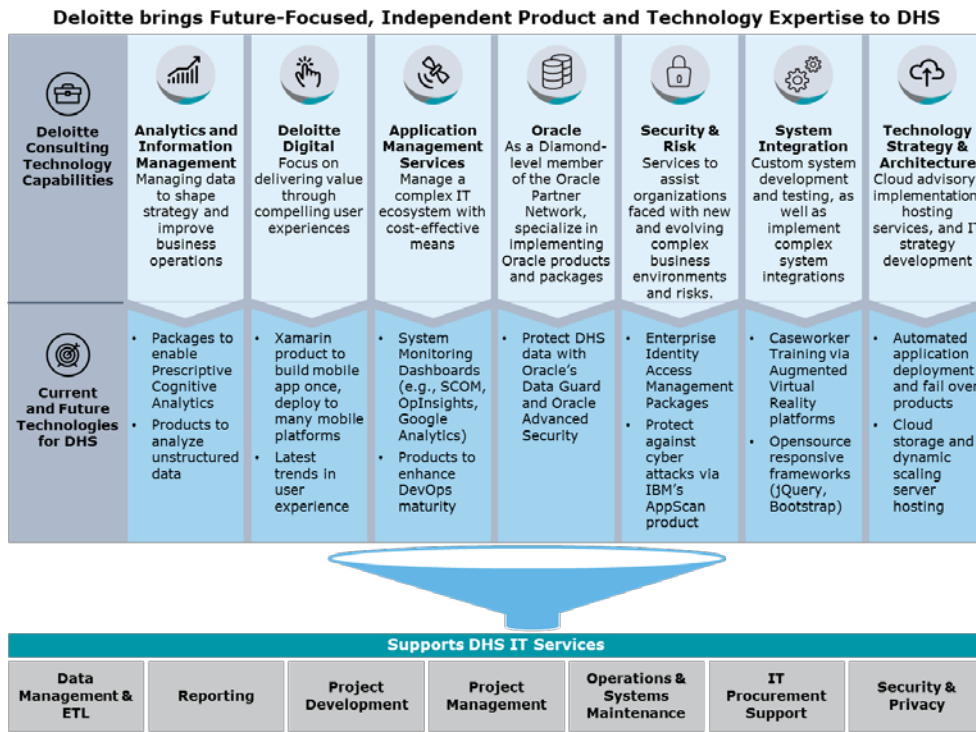
1. Describe your ability to evaluate new software products and technologies and provide recommendations for enhancing existing systems or building new systems. (20 points)

DHS seeks to continuously evaluate and identify efficient and innovative IT solutions in order to support the delivery of quality, comprehensive and integrated human services to its clients. DHS' strategy is to leverage best of breed products and technologies that enable DHS to remain flexible, to maximize IT investments, and minimize total cost of ownership of your IT solutions and infrastructure. Deloitte understands that this strategy is crucial to ensure that DHS benefits from the rapid advancement in technology, packages, and products.

DHS' complex IT needs require a partner with a successful track record as an integrator of various types of solutions, such as COTS, SaaS, existing DHS IT artifacts, and transfer solutions from public sector agencies across the nation. We bring our diverse technology practices to focus on your most challenging business issues in order to deliver the utmost value to DHS. As part of our partnership, DHS can engage our various product practitioners across technology capabilities, as depicted in Figure 8, who can help



- Best positioned to assess greatest ROI solutions for DHS, given our experience of your existing enterprise IT footprint
- The breadth of Deloitte's expertise, across both the public sector industry and unmatched technical capabilities, are at DHS' disposal
- Proven capabilities in integrating and maintaining solutions comprised of both custom and product components

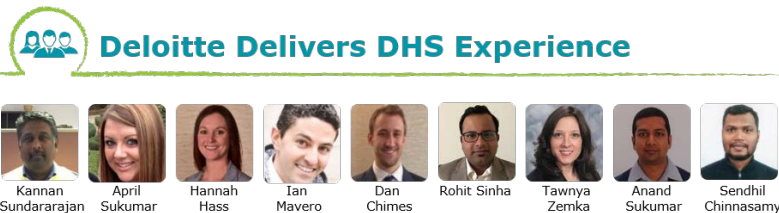


inform how DHS could leverage specific products or services across business scenarios.

We evaluate different technical solutions to achieve a given business case objective utilizing our Product and Technology Evaluation Framework. This proven methodology prescribes specific tasks to consistently weigh various factors in determining the best technical solution to achieve specific business objectives. The framework requires a Total Cost of Ownership (TCO) to be calculated per IT solution option to consider not only the effort required to implement an IT

Figure 8. Deloitte supports DHS using our diverse technology capabilities.

solution, but also the relative effort required to maintain, scale, and enhance the solution as DHS needs grow.





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The framework includes numerous technical approaches and options, such as software-as-a-service, open source development packages, existing DHS IT enterprise components, products, and others. In collaboration with DHS, we analyze these options across various functional and non-functional domains, such as functional requirements, user experience, security, performance, disaster recovery, TCO, and infrastructure needs. We make value based recommendations after the various options have been vetted and compared against one another.

Based upon these evaluations, we consider the total cost of ownership of a given solution and work with you to determine the best way forward, whether that be to integrate a package, implement a product, or to incrementally migrate from custom developed platforms. When presenting options, we consider emerging technologies, and how new products could ultimately translate into a greater flexibility for DHS and a high rate of return on your IT investments.

We have worked with you on multiple occasions to help you make the right, DHS-focused decisions, from conducting a middleware platform evaluation and working with you to select BizTalk, to supporting you in the selection of the CoPA IAM platform, to leveraging DHS custom enterprise components to support various program needs while reducing development effort, to bringing you ideas around utilizing Nudging concepts to solve your business challenges. We believe that we are best positioned to evaluate and guide the most impactful integrated solutions to DHS moving forward, combining our global technology and Public Sector capabilities and expertise and our DHS knowledge and experience, and we are committed to working with you to make the best decisions for DHS.

2. Describe your plan for developing new software solutions utilizing a wide range of programming languages. Development plan must include opportunities for DHS to provide feedback on in-process plans. (5 points)

Deloitte acknowledges that DHS seeks to have flexibility in its technology and programming choices and the opportunity to provide feedback. In addition, DHS' partner must have the capability to develop solutions across the technical spectrum, from legacy, to web, to mobile, to analytics, as well as have the ability to integrate and capitalize on near-future technologies such as virtual reality, internet of things, and robotics.

### Our Plan to Develop New Software and Incorporate DHS Feedback

We create a development plan which outlines the basic technical platform, approach, technical products, and program languages that are leveraged to deliver the IT solution. Figure 9 summarizes how we build a Development Plan.

With our development process, we assess new development opportunities to support DHS' business objectives with a mind towards utilizing the most effective COTS, tools, and languages. We find opportunities to develop solutions that are enabled and accelerated by various programming languages, frameworks, and technical products – across both products and open source offerings.

Aligned with our belief that continual collaboration is a necessity for software development efficiency, we facilitate multiple checkpoints with DHS to gather timely feedback, which is ultimately incorporated into the development plan. This is especially evident in the hybrid agile development approach, which we now utilize for the majority of our software development projects, as DHS is able to provide feedback at various points. In this manner, DHS feedback can be immediately incorporated, regardless of project phase.

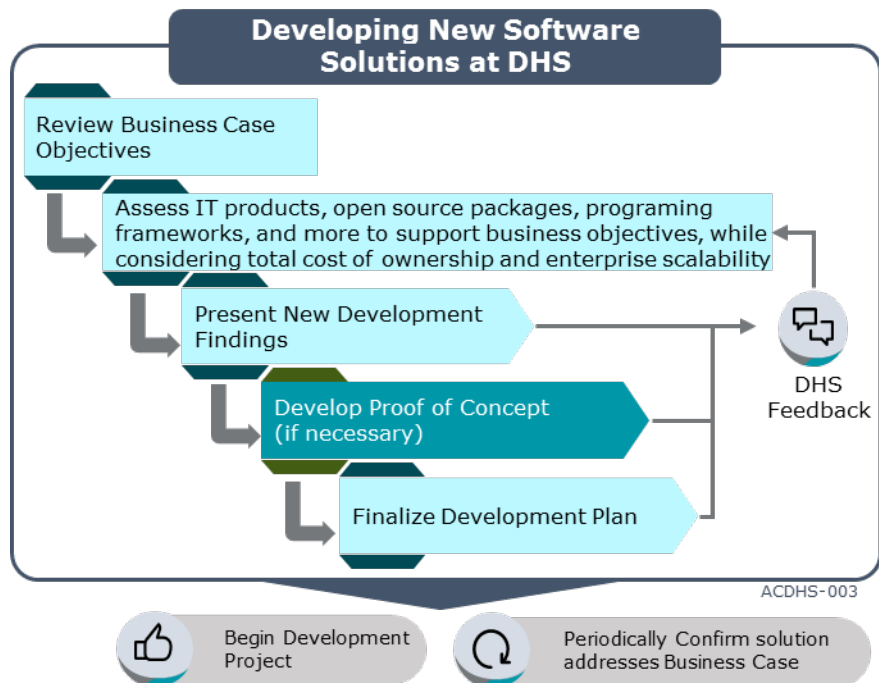


Figure 9. Developing New Software Solutions at DHS.

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The table below summarizes just some of the wide variety of development languages and tools Deloitte has leveraged and continues to leverage at DHS:

| Development Approach                   | Examples of Languages & Tools Utilized   | Benefits to DHS  |
|--|--|--|
| COTS Based Development                 | <ul style="list-style-type: none"> <li>BizTalk, PostMan, Data Integrator, Group1, IBM Security AppScan, Cognos, Tableau</li> </ul>   | <ul style="list-style-type: none"> <li>Reduces implementation risk and development effort for functions where products are available on the market</li> <li>DHS' external interfaces are implemented via a common approach, using tools which provide critical capabilities, such as queuing, error handling and HIPAA transaction support</li> <li>Other business critical functions, such as security scanning and address validation are available in COTS</li> </ul>   |
| Leverage Existing Enterprise Artifacts | <ul style="list-style-type: none"> <li>MVC, XML, XAML, VB.NET, Microsoft Web API 2.0, Visual Studio 2015</li> </ul>  | <ul style="list-style-type: none"> <li>Leveraging existing enterprise IT artifacts provides for streamlined solutions and common data storage, supporting DHS' overall agency objective of providing integrated services to their clients</li> <li>Overall development effort is reduced when standardized enterprise modules, like MCI or DHS Assessment Tool, are integrated</li> </ul>  |
| Custom Development                     | <ul style="list-style-type: none"> <li>ASP.NET, C#, JavaScript, JSON, jQuery, Bootstrap, CSS3, Xamarin, Xcode, Swift, vis.js, PL/SQL, HTML5, Oracle tools, Visual Studio 2015, TestFlight, iTunes</li> </ul> | <ul style="list-style-type: none"> <li>Existing, industry-supported frameworks leveraged to accelerate development</li> <li>Utilizing proven frameworks translates into reducing overall risk, effort, and maintenance costs to DHS</li> <li>When appropriate, solutions are developed with end user configuration capability which reduces reliance on IT and empowers the business (e.g. ClientView Admin Module, Predictive Analytics Configuration Tool, Build-a-Tile in KIDS, workflows in Synergy, self-service functions for Service Desk, etc.)</li> </ul> |

**Figure 10.** The Deloitte team has broad experience at DHS across numerous programming languages and IT tools.

Another important aspect of our value proposition is that each of our staff are experienced in multiple technologies utilized at DHS. This means that each team member can effectively play multiple roles within a development initiative or can be deployed across multiple initiatives, resulting in increased speed of delivery and reduced cost to DHS. Further, our DHS team has deep experience with the various development technologies utilized in your development initiatives (listed in RFP Appendix *Applications and Systems Currently Used by DHS*). Deloitte has proven to have the skills to be your system integrator, with the ability to integrate between existing systems, new systems, IT products, and open source packages.

### 3. Describe your plan for creating and maintaining appropriate documentation to facilitate effective knowledge transfer so that DHS can fully use any solutions developed by Successful Proposer(s). (10 points)

Deloitte understands that creating and maintaining appropriate documentation is crucial so that DHS may fully utilize any IT solution. Documentation supports DHS in numerous ways, such as facilitating effective knowledge transfer and confirming that various roles and specialists have the necessary tools to support effective training. We leverage our proven Knowledge Transfer (KT) Playbook to support DHS' objective in fostering a collaborative environment where anyone can benefit from, or improve, DHS' IT solutions.

#### Creating Knowledge Transfer Documentation

Deloitte's Knowledge Transfer Playbook prescribes a specific KT Plan Development Methodology, as summarized in Figure 11. Based upon the KT Plan, knowledge transfer documentation is created and shared with DHS stakeholders through the most effective channels, based upon the assessed DHS staff needs. Involving DHS throughout a project's lifecycle has proven to be one of the most effective means to achieve knowledge transfer. Based upon this, our Knowledge Transfer Playbook suggests that DHS stakeholders be involved throughout the project lifecycle.

Below is a summary of the formal and informal KT Documentation approaches that could be used to spread knowledge to various DHS stakeholders.

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## Information Technology Support and Professional Services

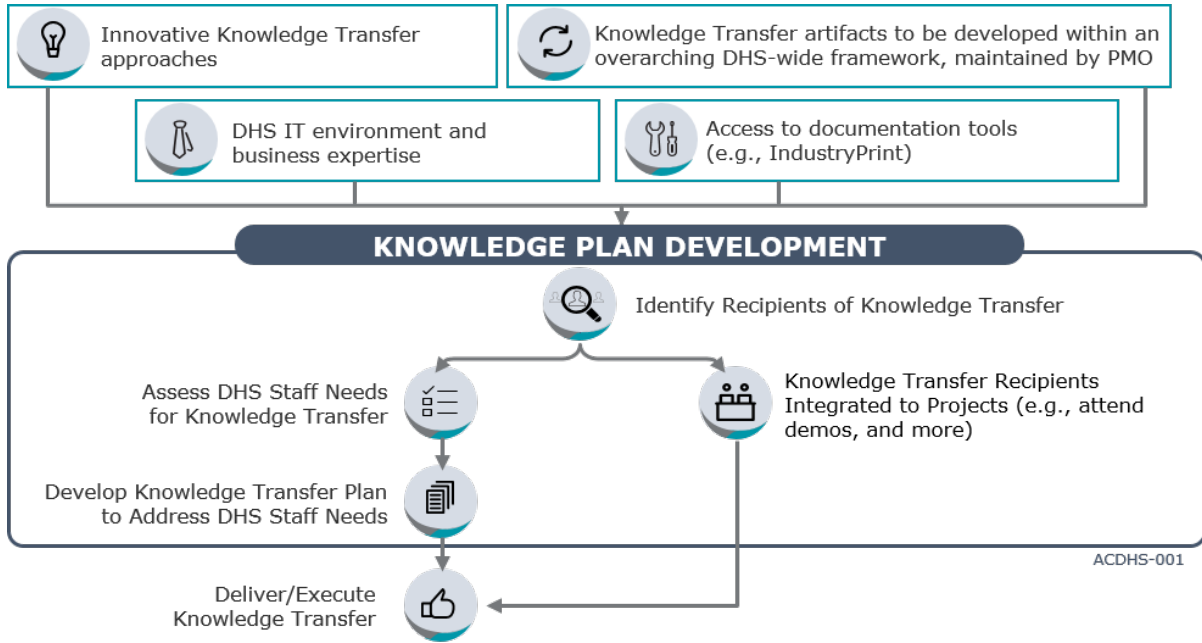


Figure 11. Knowledge Transfer Plan Development Process.

| Knowledge Transfer Documentation       | How Our Knowledge Transfer Approach Benefits DHS  |
|--|---|
| System Documentation                   | <p>Different system documentation artifacts are developed to help support different DHS stakeholder needs:</p> <ul style="list-style-type: none"> <li>• <b>Technical User Manual:</b> Provides information that would enable DHS staff to maintain and enhance the IT solution components. Serves as a resource in the ongoing maintenance, support, and enhancements</li> <li>• <b>System Operations Manual:</b> Provide the operations staff details about IT solutions, its components and dependencies so they can support the application from an infrastructure and system administration stand point</li> <li>• <b>System Standard Manual:</b> Comprehensive guide containing development and coding standards, database conventions and data dictionary guidelines for application developers (e.g., error handling standards, etc.)</li> <li>• <b>Requirement Documents:</b> Includes both functional and non-functional requirement artifacts, as well as test scenarios, so that comprehensive system documentation can be referred to by end users at any time</li> </ul> |
| Technical Code Walkthroughs            | Targeted to technical staff, developers provide a live demo and review of the developed code and associated unit testing. This is a key transfer activity as DHS ultimately owns any developed source code.   |
| Functional Knowledge Transfer Sessions | Targeted to functional staff, the solution is demonstrated to end users so that they can best utilize the application to realize benefits. From these sessions end user training materials could be developed.  |
| Mentorship / Shadowing                 | One or more mentors are identified and available to provide support either onsite or on an as needed basis. Further, mentors could provide on the job shadowing if additional high-touch support is determined to be beneficial.  |
| Lunch & Learns                         | Informal knowledge sharing sessions, where basic concepts and functions are presented and demonstrated (e.g., application data structures, Non-Placement Referral functionality, etc.)  |

Figure 12. A wide variety of Knowledge Transfer activities to meet DHS' specific needs.

### Maintaining Knowledge Transfer Documentation

A repository of system documentation is most valuable when care is taken to keep the documentation maintained. Our KT Playbook prescribes that as part of any project development initiative, we take time to analyze existing system documentation, share the documents that require updates, and update where necessary.

Maintaining system documentation is less likely to become an afterthought and greatly increases DHS' ability to realize maximum potential from your IT investments.

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### 4. Describe your ability to provide support services to enhance mobile and wireless technology use as well as use of cloud solution(s). (15 points)

DHS wishes to continue exploring the latest technologies to discover innovative and cost-effective tools that increase your operational efficiency and improve client service. Deloitte is committed to use our expertise in mobile, wireless, cloud and other emerging technologies guiding DHS to make investments in technologies that pay dividends for years to come.

#### Our Ability to Enhance Mobile and Wireless Technologies

Deloitte has the required experience to further define your enterprise-wide mobile computing plan and then execute on that plan. Our Deloitte Digital practice specializes in various digital technologies, including mobile and wireless. With expertise implementing mobile solutions for both public and private sector clients, Deloitte has a wide range of capabilities and expertise in mobile, from strategy services around overall agency mobile plans, to user experience, to mobile application development using a variety of technologies such as Xamarin, to mobile infrastructure support. For example, when the US Department of State's Information Resource Management agency needed a platform to provide IT services to globally deployed diplomats, they partnered with Deloitte to develop a mobile roadmap. With this strategy in hand, Deloitte assisted in implementing mobile and remote access to technology services, ultimately enabling diplomats to share critical information in a timely manner.

DHS has already benefited from these capabilities through DHS QuikCase, a cross program case management mobile app that has been well received by your on-the-go workforce. Deloitte proactively identified two functions widely used throughout DHS which could greatly benefit from a mobile technology approach – contacts and photos – and we then made an internal investment to develop and roll out this mobile application. Further, DHS benefited from our specialists in Mobile Device Management, who assisted DHS by drawing on their experiences rolling out a suite of apps to thousands of employees distributed across the globe. We would build upon this momentum as we collaborate with DHS to develop an enterprise-wide mobile computing plan and continue expanding your mobile and wireless footprint.

#### Our Ability to Leverage Cloud Solutions for DHS

DHS has been a pioneer in driving the vision of cloud enablement in their technology landscape, even ahead of the Commonwealth and many other agencies. A recent cloud assessment completed for DHS provides a realistic roadmap in driving the Hybrid Cloud vision forward while lowering the implementation risk and operating cost. The assessment shows 17 specific domains where DHS can effectively leverage the cloud and save over 25% in operations cost over time. Deloitte provides a migration methodology and accelerators tailored to DHS' workload and existing datacenter construction with defined template migration methods for effective VtoAWS and VtoAzure adoptions. These are critical for DHS as it helps drive the cloud migration quicker with reduced cost footprint and increase in application agility, infrastructure and capacity flexibility. While there are benefits of moving to the cloud, Deloitte also understands DHS' landscape to highlight areas of risk like constrained exit strategy and storing of sensitive data containing PII, PHI or FTI data. To address these risks, Deloitte provides options to move to a private secure cloud instance or collaborate with the State leveraging their highly scaled, optimized and cost effective Datacenter. In this and other examples, Deloitte's expertise in cloud solutions, including the unique challenges faced by government agencies in this space, combined with our cloud vendor relationships and understanding of DHS makes us uniquely positioned to be your strategic partner on your cloud adoption journey.

#### Beyond Mobile and Cloud

DHS is an innovator among human service agencies, in part because of a wide array of technologies used to support delivery of mission critical and holistic human services. In addition to mobile and cloud, additional opportunities exist today to use emerging technologies at DHS with the goal of improving client service and increasing organizational efficiency. Examples include augmented reality environments for caseworker training, unstructured data analysis and prescriptive analytics for making best fit service suggestions, and Everything-as-a-service (XaaS) for driving more cost efficiencies. Utilizing our breadth of emerging technology expertise, Deloitte stands ready to help you continue identifying the right opportunities to utilize innovative technology solutions that allow you to meet your program objectives and to remain at the forefront of leading change in the marketplace.



Deloitte has received the following accolades from ALM Intelligence (formerly Kennedy):

- "Global Leader in Digital Innovation", 2016
- "Global Leader in Cloud Consulting", 2016
- "Global Leader in Mobility IT Strategy", 2014

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## Information Technology Support and Professional Services

### III. Reporting (30 points) Your response to this section must not exceed 3 pages.

#### 1. Application Reporting: Describe your ability to conduct analyses using a series of concise, interactive long-term reporting solutions. (10 points)

Clear and concise application reporting positions DHS with the requisite information to analyze operational and strategic business decisions. In addition, it provides DHS with the ability to make insight driven decisions to answer an array of critical business questions with a focus on helping to improve human service delivery and outcomes for Allegheny County residents. Deloitte brings expertise in Health and Human Services (HHS), specific functional understanding of DHS, and deep technical skill sets in designing and developing reporting and analytics solutions. This combination of subject matter knowledge and technical expertise allows us to understand and translate your business questions into reporting solutions designed specifically for the users in order to support the intended level of analysis and provide the ability for DHS to make fact based decisions.

Deloitte is well positioned to continue to be your application reporting partner. Our team is staffed from our world-class Analytics and Information Management (AIM) practice which includes more than 1,100 consultants, many with public sector experience, who specialize in techniques and technologies relevant to DHS. Through our AIM practice our staff stay up to date on the latest reporting trends and technologies utilizing industry alliances with major reporting vendors such as IBM Cognos and Tableau.

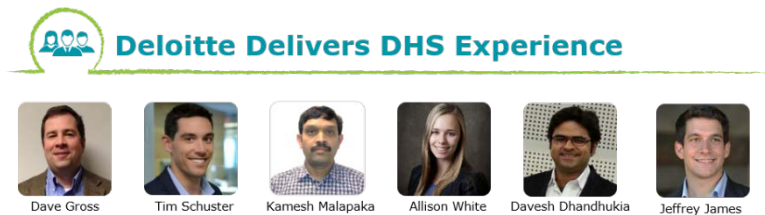
Our DHS reporting team has significant expertise in the reporting tools in use at DHS and in the underlying data, which increases efficiency and reduces risk for your application reporting initiatives. We have collaborated with DHS over the past 15+ years to deliver a myriad of application reporting solutions to support a multitude of DHS program areas. A few of the recent reports we have delivered for DHS and their business impact are highlighted in the table below.

| Report  | Description   | Business Value to DHS   |
|---|---|---|
| KIDS Supervisor Log                           | The Supervisor Log is a dynamic report that quickly identifies any compliance risk areas for a given CYF case.  | Supervisors now have a better pulse on the quality of their staff's service delivery and can more efficiently monitor their unit. This report has become the cornerstone of supervisor and case worker compliance meetings.                                 |
| Allegheny Link Contact Summary Report         | The Allegheny Link Contact Summary Report provides a view of the most recent contacts made with a consumer and the details of the contact.  | Workers are able to quickly view contacts that have been made with a consumer to help understand the consumer's situation and the best way to contact them. This expedites their business process and ability to reach clients who are in need of services. |
| Transition Plan for Independent Living Report | Transition Planners, Education Liaisons, and 412 Youth Zone workers are responsible for creating Transition Plans for youths involved with Independent Living. The Transition Plan report was implemented for DHS that summarizes a youth's accomplishments, strengths, goals and action steps. | Workers are able to share a physical version of a youth's Transition Plan that is presented in an intuitive and easy to understand format. This allows the youth to more easily understand their plan and work towards achieving their goals.               |

**Figure 13.** Recent application reports created for DHS.

For conducting analyses Deloitte brings a proven framework which consists of five phases: Define, Gather, Explore, Analyze and Deliver. This framework is depicted in Figure 14.

In addition to our analysis framework, Deloitte can also help DHS accelerate future application reporting through our proprietary HHS reporting and analytics solution, HHS Interactive. HHS Interactive is a full scale, enterprise reporting platform that provides stakeholders with a myriad of out-of-the-box reporting and analytic capabilities ranging from application reporting, cubes, and ad hoc to interactive dashboards, GIS, and predictive analytics.



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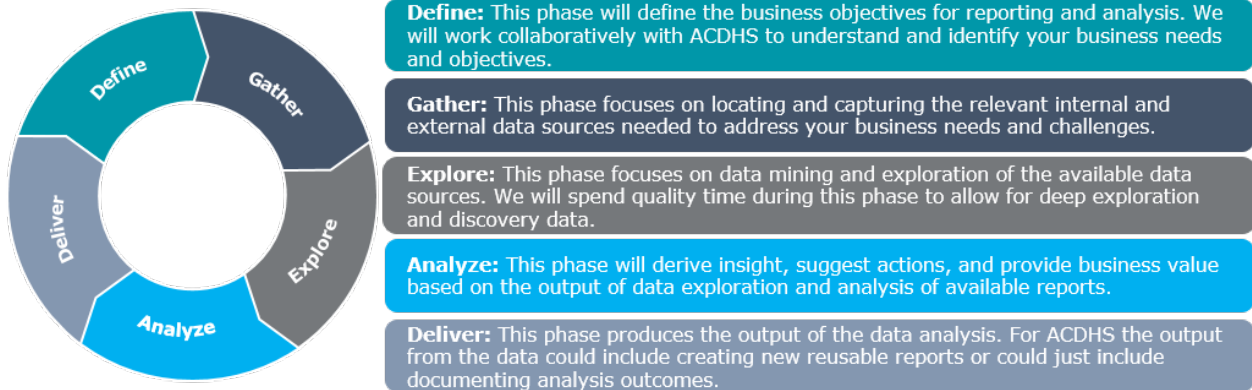


Figure 14. Deloitte's Data Analysis Framework.

### 2. Ad hoc Reporting: Describe your ability to prepare customized ad hoc reports, presentations, custom charts and maps, as well as data collection and interpretation upon request. (5 points)

Ad Hoc reporting is critical to providing DHS with the flexibility to expediently respond to on-demand requests. In addition, ad hoc reporting helps empower business users to understand, analyze, and mine their own data. Deloitte brings extensive experience and knowledge implementing ad hoc reporting solutions for HHS clients. These solutions provide intuitive, concise, easy to use ad hoc packages for data analysis and reporting. We have partnered with numerous HHS organizations to deliver ad hoc solutions which provide users with the ability to create and run business queries. This empowers users with the ability to create, run, and reuse their own queries as new business questions arise.

At DHS we have created data analytics layers, Cognos cubes, and Query Studio frameworks to allow for DHS to perform self-service ad hoc reporting without reliance on IT. We have also provided queries and packages for DHS to build upon to answer business questions. In addition to the ad hoc self-service solutions, we work collaboratively with DHS to create custom ad hoc reports, presentations, charts and maps, data collection, and data interpretation. We leverage our extensive expertise in DHS IT applications and analytics environment to produce accurate ad hoc reports in an efficient and expedient manner. In the past year alone, we have delivered over 100 ad-hoc reports for DHS. The table below presents a few examples of our recent experience working with DHS.

| Requirements                                    | Deloitte's Experience Working Collaboratively with DHS  |
|---|---|
| Prepare customized ad hoc reports               | Deloitte often prepares customized ad hoc reports from the Data Warehouse or the other application databases. For example, each year DHS publishes statistics regarding clients served and services provided across Allegheny County communities. Deloitte assisted DHS by compiling data from the Data Warehouse using reusable and fully documented scripts.  |
| Presentations                                   | Deloitte creates presentations by exporting existing reports or ad hoc query results into PowerPoint. For instance, as part of the process to import four new Courts-related source systems into the Data Warehouse, we recently prepared presentations that included a summary of data quality of demographic fields related to each source.   |
| Custom charts and maps                          | Deloitte has delivered numerous charts and maps to DHS as part of several dashboards. For example, the recently implemented Dragonfly Dashboard includes several line charts, bar charts, and other innovative visualizations (including maps) that provide the manager with at-a-glance insights into the program.   |
| Data collection and interpretation upon request | Deloitte works with DHS to collect data across systems and assist in analysis and interpretation as needed. We recently assisted DHS in preparing an analysis of homeless recidivism for a meeting with external stakeholders. We worked together to define detailed logic to identify and measure recidivism considering the time between homeless episodes, if the case was actively managed by a Homeless Service Coordinator, the type of housing the client had previously exited from, and the household size and type. |

Figure 15. Examples of Deloitte's ability to create ad hoc reports, presentations, charts, maps, and analyses.

In addition to delivering the above reporting capabilities to DHS, Deloitte can help enhance ad hoc functionality by leveraging the innovative capabilities currently available in HHS Interactive. HHS Interactive provides users with the ability to quickly and efficiently design and develop their own reports by dragging and dropping a series of data elements. Once the data elements are selected, HHS Interactive has an in-built data exploration tool which automatically recommends graphs and chart type options based on the user selected data. Using data exploration users can compare and contrast data in various different graph formats ranging from bar charts and line charts to maps, scatter plots, and tree maps. This helps to ensure that the developed ad hoc report provides end users with an impactful and intuitive visualization.



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### 3. Dashboard Reporting: Describe your ability to develop and maintain existing dashboards using Tableau and Cognos reporting tools to support operational, fiscal, evaluation and other reporting needs. (15 points)

Dashboard reporting capabilities are critical to drive informed decision making at DHS. Having the ability to view the right data at the right time can help DHS stakeholders make decisions to proactively manage and improve program operations. Deloitte provides DHS with extensive expertise in developing and maintaining intuitive dashboard solutions using both Tableau and Cognos for program administrators and supervisors. Deloitte has built hundreds of dashboards to support a myriad of HHS business needs. From improving staff allocations to identifying abuse/neglect, we bring multiple dashboard visualization examples which can help serve as accelerators when building dashboards for DHS.

We understand that Tableau is the DHS dashboard platform of the future. Deloitte is Tableau's largest customer. Deloitte and Tableau have developed a partnership that has embedded Tableau skills throughout our organization. Over 5,000 of our practitioners use Tableau to deliver data based decisions and visualizations. We bring to you our Insight Studio team for dashboard development and support, which specializes in user-centered dashboard reporting. Our approach is based on user-centered design, rapid and collaborative prototyping, and co-creation of solutions to facilitate actionable insights. We are able to create a vision and develop wireframes of the prototype early in the process, which drives collaborative, iterative development of a project. This provides proactive time management, risk mitigation, and tracking of functionality and data incorporation into our prototypes, ultimately resulting in reduced cost and timelines to deliver dashboards solutions. In addition to bringing the right approach to design, develop, and maintain dashboards, we also have the ability to make our solutions interactive. By applying a series of custom measures, dimensions, filters, and calculations into dashboards, users are given enhanced interaction with data. Through dynamic filtering users can view both aggregate cross-program metrics and drill-downs to view client or case level details. Our dashboards incorporate a series of innovative APIs which allows us to embed predictive analytics, advanced geospatial tracking, and text / sentiment analysis directly into the visualization. Whether leveraging dashboards to understand the past, analyze the present, or predict the future, DHS will be positioned with the right insights to improve the lives of Allegheny County residents.



- **Enhance data driven decisions** by visualizing data in an intuitive and easy to understand format
- **Enhance collaboration** by leveraging dashboard sharing to send custom snapshots to other users in your organization
- **Improve operations** by near real-time monitoring to track critical operations and identify bottlenecks
- **Increase transparency** by consolidating, aggregating, and standardizing data to continuously monitor cross-program metrics



ACDHS-037

**Figure 16.** Deloitte has developed and maintained hundreds of dashboards at HHS agencies across the country both in Tableau and Cognos.



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### IV. Data Management & Extract, Transform and Load (ETL) Operations (60 points) Your response to this section must not exceed 6 pages

#### Planning/Design

#### 1. Describe your ability to develop ETL process for new source systems, including conducting regular update meetings. (10 points)

Reporting and analytics capabilities are critical for DHS to drive informed decision making. Over the past 15+ years

DHS has established a nationally leading human services information platform with the Data Warehouse at the foundation. This platform has been continuously expanded with new source systems and architectural enhancements, such as the Analytics Cluster. ETL processes are a critical component of the information platform, as they integrate various source data into your information platform helping the Department achieve your reporting objectives. Given the criticality of this data platform to achieving your mission, DHS needs an experienced vendor to develop ETL processes. Through our extensive national and DHS specific experience, Deloitte is well positioned to develop new ETL processes while working collaboratively with DHS to ensure effective delivery through regular update meetings.

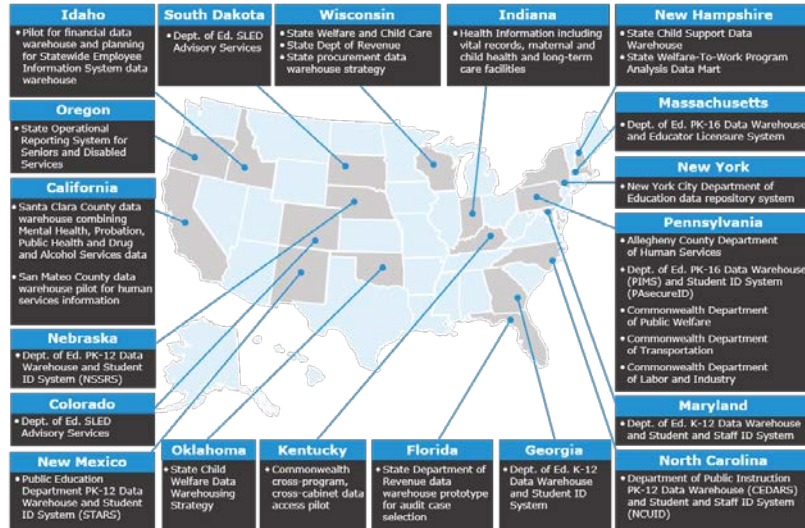


Figure 17. Public Sector Data Management and ETL Experience.

Deloitte's team of ETL specialists at DHS is staffed from our Analytics and Information Management (AIM) practice. Our AIM practice includes more than 1,100 consultants, many with public sector experience, who specialize in techniques and technologies relevant to DHS. This includes general data warehouse design and management, ETL technologies such as IBM DataStage, and reporting technologies such as Cognos. We have demonstrated the benefits of this deep bench over the course of our long term partnership with DHS to define, develop, and optimize the ETL. We continue to support the development of new ETL processes that integrate additional data sources to the current environment.

As highlighted in Figure 17, Deloitte has more than 35 years of experience delivering Information Management and Analytics solutions to an array of government agencies. We design, develop, and implement integrated data management, data warehousing, and reporting solutions that allow our clients to derive insight from their information. This experience positions Deloitte with the knowledge, scale, scope, and capabilities to help DHS expand their information platform through the development and enhancement of ETL processes.

#### Our ability to develop and maintain ETL process for new source systems

Our ability to develop and maintain ETL processes for new source systems is proven by our extensive experience delivering data warehouse solutions for a wide array of clients, including DHS. For more than 15 years we have assisted DHS in creating a comprehensive and robust Data Warehouse to support reporting and analysis needs. During this time, the Data Warehouse has expanded to include 24 active source systems that represent 37 different human service program areas or school districts as listed in Figure 18. In addition, since 2015 Deloitte has designed and developed fourteen Analytics Cluster Data Layers for DHS to support an environment for data exploration, ad hoc reporting, and dashboards. Other analytics solutions such as the KIDS, Schools, Medical Examiner, and MPER Data Marts have also been created. We have designed and developed hundreds of ETL processes using PL/SQL and IBM DataStage to load source details into the Data Warehouse and other analytics solutions.



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Together these analytics solutions provide DHS with the tools to analyze client and service utilization data within and across programs. Insights from analyses inform policy and day-to-day program management. The platform also provides DHS with the infrastructure necessary for advanced analytics solutions such as child welfare predictive analytics risk scoring model.

Deloitte utilizes our in-depth understanding of the environment as well as our established and proven Enterprise Value Delivery for Information Management (EVD for Analytics) methodology to integrate new source data into the DHS Data

Warehouse (and other analytics solutions). New sources are efficiently added to the Data Warehouse by leveraging custom created accelerators and the reuse of common ETL components, resulting in lower implementation risk and cost savings to DHS. In the past six months Deloitte has added two new sources to the Data Warehouse: Birth Certificates and HealthChoices Eligibility, and completed a major redesign of the Schools Data Mart. The team is also currently working on adding four new Courts-related sources to the Data Warehouse. We recognize that DHS desires to continue expanding the Data Warehouse's analytical capabilities by adding more programs. The table below includes a few of these additional program areas. Deloitte brings added value to integrating these program areas due to our understanding of these programs through our work with DHS as well as with the Pennsylvania Departments of Human Services and Labor and Industry, along with other state agencies.

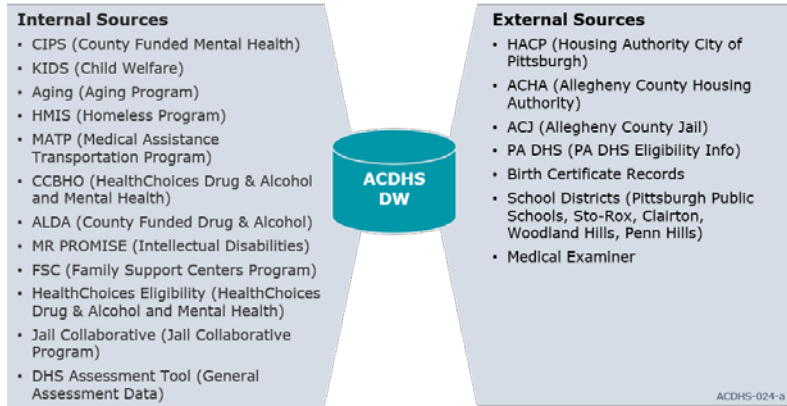


Figure 18. Current Data Warehouse Source System Integration.

| Program Area            | Relevant Data Sets  |
|-------------------------|---|
| Additional DHS Programs | Synergy (case management system) and IRES (emergency services) data |
| Workforce               | State or local level Workforce data                                 |
| Medicaid                | Physical Health Medicaid data                                       |

Figure 19. Potential new source data that can be integrated into the Data Warehouse.

### Our ability to conduct regular update meetings with stakeholders

DHS and Deloitte together have developed a process that is working well to provide regular updates. Every two weeks the Deloitte team conducts a status meeting with DARE Data Leads and Analysts. This meeting is to provide updates on in-process strategic and operational work items (or "tickets") as well as other maintenance and operations activities. In addition to status, issues and risks are discussed, as well as the schedule. Course corrections are noted and subsequently implemented. The agenda also includes identifying new tickets that should be added to the product backlog and a prioritization discussion. Prioritization is conducted in this group setting to ensure that the Deloitte team is working on the strategic enhancements and operational activities with high priority and business value. In addition to this meeting, there is also a meeting with the Executive Sponsor and subsequent reports to the Executive Steering Committee. These meetings provide transparency, clear communication, and collaborative prioritization across multiple stakeholder needs. To further enhance this process, Deloitte will develop a dashboard that provides up-to-date status on the work items and requests to various DHS stakeholders.

## 2. Describe your ability to evaluate performance of existing systems and make recommendations for enhancements and corrective actions. (10 points)

Robust data management capabilities are critical to drive informed decisions at DHS. Having the ability to leverage the right data at the right time helps DHS leadership and stakeholders to achieve desired outcomes. As the information platform continues to expand, it is critical to continuously evaluate the current state and implement enhancements and/or corrections that maximize the value of your investment while maintaining data accuracy and integrity. Additionally, due to DHS' maturity level it is important to work with a partner like Deloitte that brings information management and analytics thought leadership and significant expertise. Deloitte will leverage our proven methodologies and framework to evaluate the performance of the existing systems and provide tailored recommendations to DHS.

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### Our approach and ability to evaluate the performance of existing systems

Our overall approach to evaluate performance of existing systems for DHS will be governed by Deloitte’s Value Scan Framework (Figure 20) - our proprietary current state and future state data gathering and assessment toolkit and questionnaire specific to assessing the performance and effectiveness of data platforms from both a technology and process perspective. As part of the framework, existing technology and processes related to data collection, data analysis, and other data management areas are assessed against benchmarks to identify process maturity and improvement opportunities.

The opportunities identified using the Value Scan Framework assessment lay the foundation for the business and technical architecture and key use case design. These use cases are then validated against the modern analytics capabilities and Deloitte’s industry proven Reference Analytics Architecture Framework (Figure 21) to identify

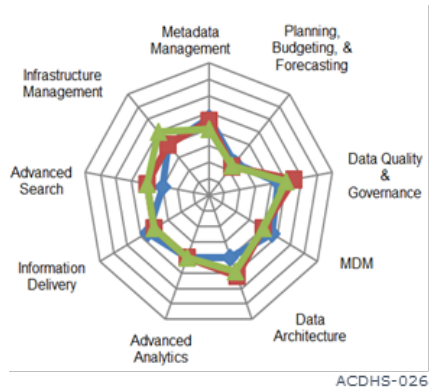


Figure 20. Value Scan Framework.

potential gaps. Based on the gap analysis, Deloitte will work closely with DHS to identify and evaluate opportunities to enhance different aspects of DHS existing systems such as infrastructure, data quality management, and level of data integration across systems.

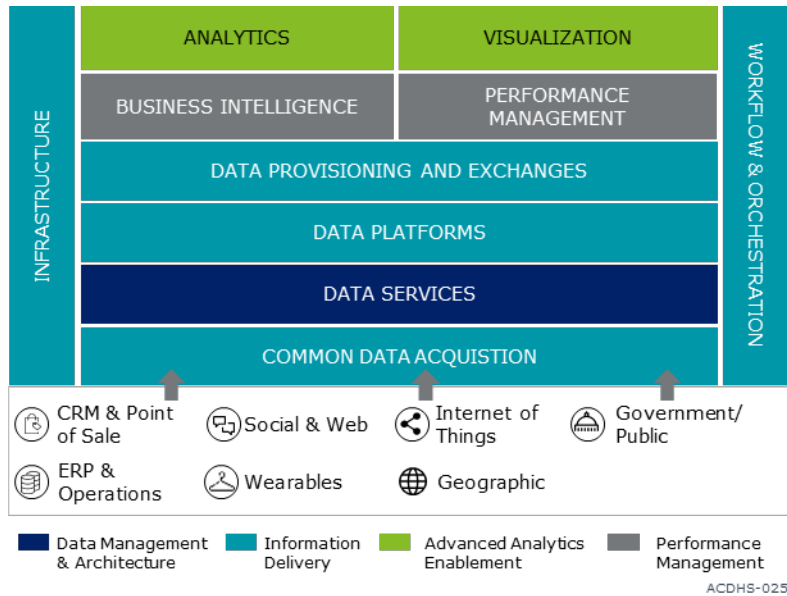


Figure 21. Reference Analytics Architecture.

### Recommendations for enhancements and corrective actions

At any time we can leverage the Value Scan Framework and Reference Analytics Architecture to either conduct a comprehensive data platform assessment or to do a mini-evaluation in a specific area within the analytics architecture. These tools and frameworks are very important to our ability to conduct strong evaluations, but the “Secret Sauce” lies not just in the tools but also in our experienced practitioners in Analytics and Information Management who are well versed in DHS business objectives and information technologies and who can apply Deloitte’s tools in a manner that brings maximum value to DHS.

Deloitte has identified several potential opportunities to modernize and enhance the current environment.

| Data Warehouse Recommendation         | Details  |
|---------------------------------------|--|
| Data Integration Hub                  | Establish a centralized, and unified data repository that can support publishing and subscription of data across stakeholders to support their data analysis.  |
| Data Governance                       | Establish overall policies and procedures for data management including data storage, collection, integrity, process, quality, manipulation, security, publish, and retire.                                |
| Unstructured Data Integration         | Leverage Big Data technologies to process both structured and unstructured data (e.g., case comments, service notes, assessment details etc.) into the analytics environment for additional data analysis. |
| Additional Automation in ETL          | Automate the ETL testing and data quality validation process to speed up test case implementation and improve data integrity.  |
| Maximize parallelism and partitioning | Maximize the ETL and database parallel execution and partition options for data-intensive ETL processes to reduce response time.   |

Figure 22. Potential opportunities to enhance the current Data Warehouse Environment.

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### Operations and Maintenance

3. Describe your ability to perform ETL functions for scheduled refresh from source systems, including maintaining a history and audit trail of all changes to data. (20 points)

We understand the importance of keeping the Data Warehouse and analytics solutions up-to-date with current, accurate data from the respective source systems for timely reporting. Deloitte has supported DHS and numerous other HHS agencies to achieve this goal and has provided support to maintain audit trail information of data changes by leveraging our proven, mature data management processes and solutions.

### Our ability to support ETL for DHS

Through our analytics operations capabilities and DHS experience, Deloitte is best positioned to effectively perform your ETL functions. As part of supporting DHS, Deloitte is currently loading millions of records into hundreds of staging, dimension, and fact tables each month. Through these ETL processes disconnected raw data are cleansed, transformed, and unified to populate the Data Warehouse and other analytics assets.

Deloitte has continuously maintained and enhanced the analytics environment and associated ETL processes for the last 17 years to meet DHS' maturing needs. The below graphic and table (Figure 23 and 24) provide a summary of the Data Warehouse and overall DHS analytics environment.

We have a detailed understanding of the complexities and interdependencies of the Data Warehouse, Analytics Cluster Data Layers, Data Marts, Dashboards, and relevant Reports, as well as their relationships to the source systems. For example, we understand:

- How to accurately update the Data Warehouse to account for a source extract file that was provided after the monthly load process was completed
- How to process an extract provided by a source with historical data fixes to be applied to the Data Warehouse
- When an ETL process, if interrupted, can be safely rerun versus when data must first be deleted or altered in staging tables (potentially in multiple analytics solutions) prior to rerunning the process. Additionally, we know what downstream processes must also be rerun
- Which ETL processes can be safely run during business hours because they don't impact system performance or data that DARE analysts may be accessing versus what processes must be executed and monitored overnight
- How to utilize our accelerators and reusable ETL components to efficiently integrate new source systems into the Data Warehouse



On a monthly basis, Deloitte executes and monitors more than 750 ETL processes that perform thousands of individual operations to efficiently load data from over 30 source systems into the DHS Analytics environment.

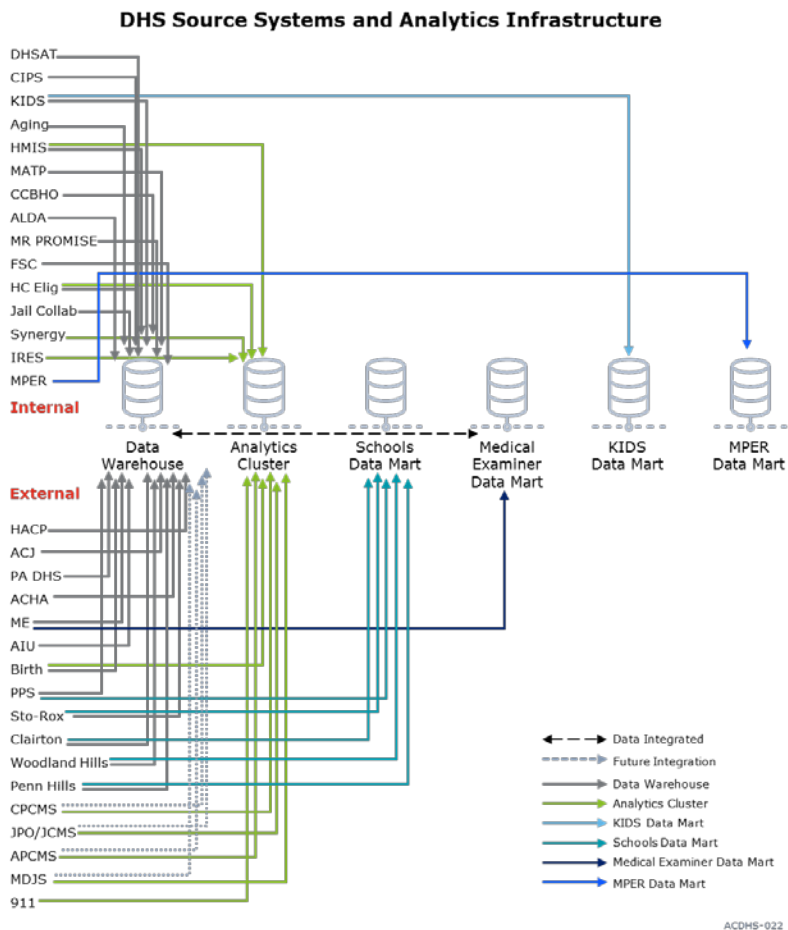


Figure 23. DHS Analytics Environment Overview.



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This significant experience and understanding allows Deloitte to provide DHS with a stable environment with high quality data.

| Data Warehouse Metric                                    | Metrics Count   |
|--|---|
| Number of DW Active Source Systems                       | 24  |
| Years of Historical Data                                 | 17  |
| Number of Staging Tables                                 | More than 450   |
| Number of Warehouse Tables                               | More than 180   |
| Number of Unique Clients                                 | 1.5 million   |
| Number of Monthly Duplicated Client "Snapshot" records   | 243 million total records<br>2 million records loaded per month |
| Number of Monthly Unduplicated Client "Snapshot" records | 116 million total records<br>1 million records loaded per month |
| Number of Service Records                                | 54 million total records<br>270,000 records loaded per month    |

Figure 24. Data Warehouse Profile.

### Our ability to maintain a history and audit trail of changes to data

As part of supporting DHS, Deloitte is currently maintaining a history of data changes within the Data Warehouse environment through the use of "slowly changing" dimension techniques as well as maintaining snapshots of data in Fact tables. This design allows DHS to review data changes that have occurred within the client population over time and provides the ability to analyze this data as needed. In addition to the current implementation, Deloitte recommends a Data Audit Framework solution (Figure 25) to standardize the process of maintaining the history and audit trail of changes to data in the Data Warehouse environment. The following are the key activities that will benefit DHS:

- Maintain the implementation log information as part of metadata management including data source additions, data fixes, and other enhancements that have been implemented in the Analytics environment.
- Create a common data model across the service program areas to capture and store audit trail information of the batch jobs, manual processes, and other routines that could update key dimensions and facts.
- Define a historical retention policy and purging strategy for major objects in the DHS data warehouse in adherence with compliance and regulatory requirements.
- Augment the existing facts and dimensions to add metadata attributes that capture audit trail information.

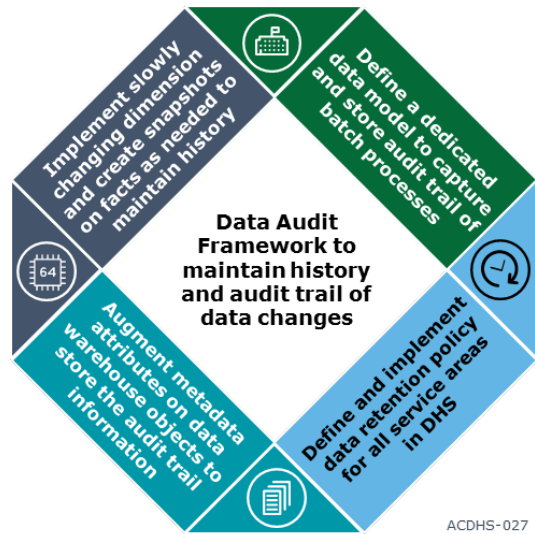


Figure 25. Data Audit Framework.

4. Describe your plan for performing regular quality assurance checks and conducting ongoing impact analysis, as well as continuously monitoring existing processes to prevent and address anomalies, aberrations and inconsistencies. (20 points)

We understand the importance of quality assurance checks on data to maintain the integrity and accuracy of the DHS analytics environment. A process should be defined to continuously monitor data after any solution is implemented or an ETL process is completed to prevent and address anomalies, aberrations, and inconsistencies. This involves defining the data quality rules, data quality dashboards, designating a team of individuals who will review the results of data quality reports, and a process for taking remedial action.

### ETL Quality Assurance and Monitoring at DHS Today

Deloitte monitors the daily, weekly, monthly, yearly, and other ad hoc load processes related to the Data Warehouse, Analytics Cluster Data Layers, and the various Data Marts. The team is alerted to any failures through the ad tempus batch scheduling tool or through the IBM DataStage ETL or Oracle PL/SQL process itself. The team works diligently to research and resolve issues. This may require implementing fixes to ETL code or working with

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the source owner to resolve data quality issues, invalid extract files, access to data structures, etc. After the code, data, or other fix has been implemented the process is then rerun and validated. Any related downstream processes (e.g., Tableau extracts) are also rerun. The team keeps the appropriate DHS stakeholders informed throughout this process.

To identify any data quality anomalies within the Data Warehouse, Deloitte conducts a series of validations after the monthly load is complete. Client and service aggregate counts are compared on a month-to-month basis. Differences above a certain threshold are flagged as an “alert”. Alerts are researched, potentially working with the source owner, to determine if the alert is actually an issue that needs to be rectified or if it is a natural change in the source data. If an alert is confirmed as a data quality issue, it is then resolved. The solution may be a simple tweak to a job or it could be more involved, such as in the case of requiring the historical restatement of monthly snapshot data. As part of this process, validations are also run for prior known data quality issues and corrected if necessary. The alerts, alert resolutions, and other validations are documented in a Monthly Data Warehouse Load Report that is published to DHS.

### Our approach and plan for performing additional quality assurance checks and monitoring

Deloitte will work with DHS to define a robust data quality process to improve the quality of data and thereby the decision making. This process incorporates a comprehensive approach to data cleansing and broader data quality management. This approach is based on our proven Data Quality Framework that assesses the data risks and health, analyzes and provides insights into the root causes, and provides appropriate remediation to enhance data standardization activities.

The framework customized for DHS takes into consideration the requisite tasks and deliverables required to meet the overall objectives, including aligning to and promoting data migration requirements and standards and structures that aid in consistent reporting at an organization level. The high level process flow for implementing the quality assurance checks and monitoring along with the key steps have been illustrated in Figure 26.

The following are the key steps for implementing data quality assurance and monitoring process:

- Perform Data Profiling and Discovery process to identify data anomalies and outliers
- Design and develop quality rules to perform checks and balances between source and target warehouse system
- Design and develop data quality monitoring plan (including reports and dashboards) to define personnel and the frequency in which the reports will be reviewed
- Define the process for taking remediation action in case of anomalies and data quality issues

### Conducting ongoing impact analysis

Deloitte has implemented a robust process to identify and remediate technical and functional source application changes that impact the Data Warehouse, Analytics Cluster Data Layers, Data Marts, Dashboards, and Reports. This is a streamlined process which is taken care of internally within the Deloitte team, as

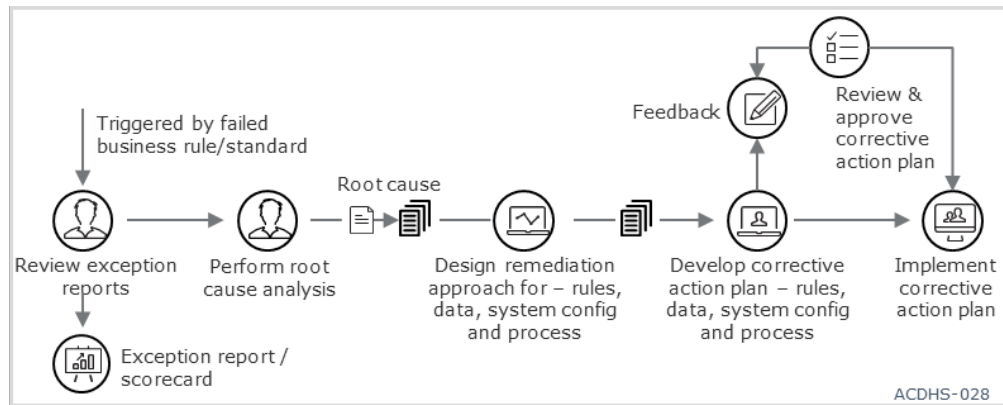


Figure 26. Process for the Data quality assurance and monitoring.

Deloitte also performs the majority of DHS’ application development. Any required changes in any of the data assets are typically addressed at the same time the application change is implemented. For example, if a source is undergoing data structure changes that would impact the load process of the related data layer, this process is typically updated at the same time as a maintenance and operations activity. A monthly report of the application changes and IDM impact/remediation is produced and shared with DHS.

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V. Operations, System Maintenance and Support Functions (60 points) Your response to this section must not exceed 6 pages

### 1. Infrastructure (40 points)

Describe your plan for performing all of the following functions:

- Ongoing evaluation of infrastructure to ensure that infrastructure aligns with business practices; recommendations for optimization and support for implementation of recommendations where appropriate
- Ongoing network planning and support; hardware and software infrastructure support, including troubleshooting, analysis and resolution of outages, congestion and other problems
- Database administration including creating backup procedures, managing integrity, logging and managing recovery procedures
- Maintenance and support for existing applications, application transitions, and Data Warehouse

Ongoing operations, system maintenance, and support for an enterprise, business critical DHS IT environment must focus on maintaining system stability, maximizing reliability and minimizing downtime, while allowing DHS to reduce system support efforts over time. Achieving this takes more than a vendor who understands how to provide Maintenance and Operations (M&O) and infrastructure services; it takes a vendor who also has the breadth and depth of knowledge of your critical business functions and your specific infrastructure environment.

Our approach to operations, system maintenance and support leverages the rigor and discipline of our Enterprise Value Delivery (EVD) for Maintenance and Operations (M&O) methodology and combines it with our expertise in developing, maintaining and supporting the operations of the DHS systems and infrastructure as well as similar systems/infrastructure throughout the country. We build upon the effective IT maintenance and operations processes that DHS has already established while also leveraging industry-standard mechanisms and processes that Deloitte has developed and proven across our successful large application development and M&O projects.

We bring new ideas, best practices, and proven approaches to enhance the existing methodology within DHS. Our overall approach to this area has been and will continue to be governed by Deloitte's EVD for M&O methodology which provides industry leading processes that consistently



Our approach, differentiated by our unique blend of infrastructure expertise between DHS and Public and Commercial agencies in the US and globally, allows DHS to:

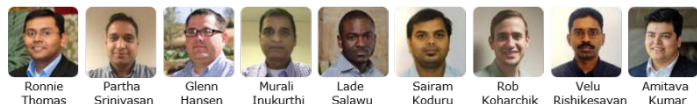
- Reduce overall application support effort over the life of the project
- Incorporate ITIL-based maintenance and operations best practices
- Achieve more transparency and flexibility in responding to business-critical issues
- Leverage industry-leading tools and technologies to keep your infrastructure stable and current with latest technology
- Make the best value decisions specific to the DHS environment and needs

deliver value on our M&O engagements. Our EVD for M&O approach for DHS is further enhanced by several industry leading methods and tools, as shown in Figure 27.



**Figure 27.** Deloitte pulls the best of breed from various industry best practice methodologies and tailor approaches for DHS' unique environment.

unparalleled combination of expertise in Operations, Maintenance and Support in Human Services agencies nationwide, as well as DHS specifically. Our people know your core infrastructure, application landscape, and processes, are certified on your core tools and





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technologies and are experienced with DHS and the human services program areas. Furthermore, we bring to you infrastructure support staff not only dedicated to DHS but also staff who support multiple other State and Local Government agencies. This combination of methodology and expertise has allowed us to successfully support your mission critical technology infrastructure which is relied upon by nearly 10,000 production application users within DHS, other County departments and provider agencies to deliver critical services to County residents.

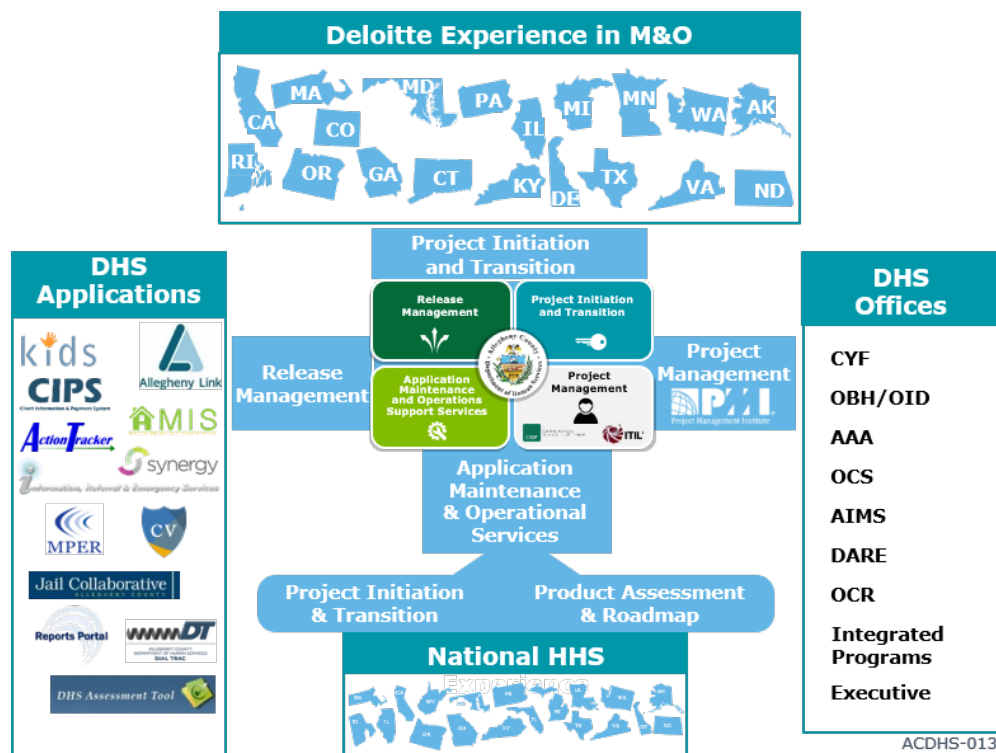


Figure 28. Deloitte Demonstrates Our Capability to Deliver RFP Tasks.

At the same time, we are committed to continue supporting you to stay on the cutting edge of technology innovation while maximizing your operational efficiency and stability. Below is our plan for doing just that in each of the areas you've requested.

### Ongoing Infrastructure Evaluation and Implementation

We understand and acknowledge the importance of ongoing evaluation of infrastructure, and the need to continually look for opportunities to optimize assets, in order to minimize costs and take advantage of the latest technology and industry best practices. In these trying economic times, HHS agencies across the nation are looking for opportunities to rationalize their IT spends, reduce waste and focus on what's truly essential. We will work side by side with the DHS infrastructure team and executive leadership to evaluate the infrastructure on an ongoing basis to ensure alignment with business needs, make recommendations for optimization and provide support for implementation. Below is our current approach to this task, along with recent examples, and approach enhancements for the future.

| Area                                     | Current Approach  | Looking to the Future  |
|--|---|--|
| Annual / Ongoing Infrastructure Planning | As we plan each Statement of Work, we evaluate DHS' current infrastructure and bring to you infrastructure enhancement mandates and opportunities, based on latest technology trends, technology product support timelines, and your current and future business needs. We work with DHS to prioritize and plan the enhancements for the year and then revisit and reprioritize the plan throughout the year in order to optimize the infrastructure components and ensure business needs are supported. We also periodically make DHS aware of any opportunities to use Commonwealth assets to meet your business needs. This approach provides for the infrastructure to consistently meet the business needs, while making sure DHS realizes maximum return on investment. | In addition to this ongoing planning and evaluation process, we propose a quarterly "Technology Trends" workshop. This would be an additional ongoing opportunity for DHS to be aware of relevant new technology trends, using best practices from private and public sector projects across the world. The workshop can be focused around any relevant topic of interest to DHS or it can be a general trends overview. |

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| Area                                   | Current Approach   | Looking to the Future   |
|--|--|---|
| Capacity Planning                      | We work with DHS to perform capacity planning at the beginning of the year and then on a quarterly basis, as well as prior to go live of large initiatives and enhancements. We help DHS plan for capacity not just for Deloitte projects but also other projects throughout DHS. This allows DHS to plan for adequate infrastructure availability to support all projects.                                    | As an enhancer to the capacity planning process, we are proposing our innovative OpInsights tool as an additional value add for DHS. This tool will allow DHS to be more proactive and aware of your capacity needs and overall infrastructure health, therefore increasing efficiency for ongoing infrastructure maintenance.      |
| Optimization Through DevOps            | We have been working side by side with DHS to optimize the infrastructure on an ongoing basis. One of the ways to do that has been through increased automation throughout the infrastructure processes, which is a key tenet of DevOps, and ultimately drives efficiency. A recent workshop conducted with DHS stakeholders assessed current DevOps maturity levels and identified improvement opportunities. | By providing increased automation in testing and build/deployment, we will reduce build and deployment time, increase test resiliency and increase overall infrastructure efficiency. We will further work with DHS to optimize through emerging technology trends in infrastructure, such as leveraging additional cloud services. |
| Ad-Hoc Infrastructure Planning Support | From time to time, DHS has had critical planning needs which have come up on short notice. We have always been able to leverage our vast pool of expertise both on the DHS team and our broader practice to support mission critical needs to make the best decisions.   | Leveraging new tools, such as Google Analytics and OpInsights, additional predictive indicators can be identified and monitored, which would assist DHS in identifying infrastructure risks and resolving them before issues impact end users.  |

Figure 29. Current Approach and Looking to the Future.

### Ongoing Network, Hardware and Software Infrastructure Planning & Support

We understand that DHS is supported by a complex architecture of hardware, software, and network components which forms the backbone of DHS' sizable IT footprint. Our team has a deep understanding and appreciation of the critical business processing, customer usage, system management, and infrastructure administration that is required to support the day to day operations of DHS staff and its partners.

Deloitte brings the right balance of DHS specific and national experience, expertise, and methods to support in the areas of network, hardware / software infrastructure, as well as troubleshooting, analysis and outage resolution. Using our deep, experienced pool of resources in these areas, we support DHS in effectively aligning network impacts and upgrade needs to DHS initiatives and we have a demonstrated track record of effectively supporting DHS to analyze and resolve hardware and software issues anytime they occur. Furthermore, we have staffed our production support team in a way as to be able to support DHS around the clock, with the understanding that many DHS program areas rely on DHS IT applications and infrastructure 24x7. The team has expertise not just in effective production issue resolution support but it also has irreplaceable expertise in DHS specific production applications and environment, which allows them to resolve issues faster and more effectively. In fact, many of our production support staff were involved in the initial development and configuration of your production assets (applications and COTS) and this allows them to support those assets in production more effectively, with lower risk to DHS.

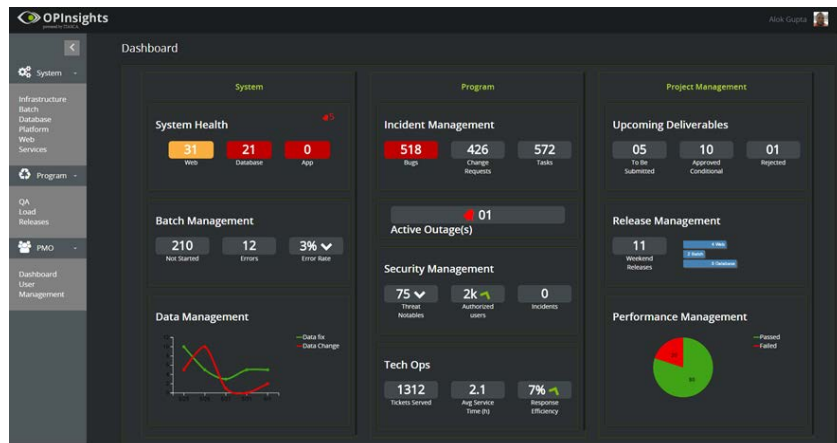


Figure 30. Example of OpInsights Performance Dashboard.

While we understand that issues will inevitably occur in a large, complex IT infrastructure such as DHS, and we have both the expertise and support staff in place to perform corrective actions, it is also critical to put in proactive measures to identify issues before they impact production users and we have also done that across the board. For example, we have set up multiple proactive monitoring mechanisms including service alerts, production application availability monitoring and multiple other methods. We have consistently looked at ways to improve these methods and we are proposing to further enhance your proactive monitoring capabilities through Deloitte's innovative OpInsights tool, which is currently being used at the Commonwealth of PA and which we include as part of our proposed M&O services for DHS.

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OpInsights is a comprehensive suite of IT operations monitoring capabilities, tailorable to DHS' own technical infrastructure, to deliver a data-driven, analytics-infused platform for Infrastructure, System and Application operational intelligence. OpInsights will enhance DHS' ability to monitor your critical infrastructure assets and identify proactive improvement and optimization measures.

We recognize the value in operational data not only for reviewing historical events but also for predicting and quickly responding to outages and congestion issues and being able to anticipate future issues. OpInsights features analytical data modeling that not only provides early warning alerts for outages and congestion but can predict the probability of future system behavior.

For example, OpInsights can be used to continually monitor an application server and provide alerts if the CPU usage exceeds a certain threshold. In addition, it can use the rates of data for a given batch job, and the processing duration of that job to predict the future point at which the allotted batch cycle time is no longer sufficient for the batch process to run to completion without impacting the online schedule. This type of insight allows DHS to transition from reacting to system and application events, to proactively addressing them before they happen.

### Database Administration

DHS collects significant amounts of data about its consumers, providers, services and outcomes; data that is vital for delivering high quality and targeted services to your clients. Deloitte brings the expertise to administer an optimized, reliable and secure database environment where this data is housed, which is critical for a successful operation of DHS business applications and analytics. We bring to DHS the experienced staff and reliable methods and we have demonstrated our significant capabilities in this area by setting up and maintaining an DHS database environment which was referred to by an Oracle evaluation team as **"possibly the best setup virtualized environment"** examined by the team.

Over the past several years, we have created and executed plans to streamline key database administration tasks such as creating backup procedures based on the criticality of the system, managing data integrity by creating strict controls on the data that is stored in the tables, and developing comprehensive recovery procedures including monitoring, logging, and based on data analysis, storage, data manipulation and archiving. We have also kept your databases up to date with the latest versions, allowing DHS to take advantage of latest database features while maintaining and improving application stability. By continuing to introduce a number of improvements in database operations, like additional automation and putting targeted DevOps best practices into action, our team is poised to take your database operations to the next level.

We will continue assessing DHS' database environment across various domains and capabilities, such as seeking out opportunities to make existing backup procedures more efficient, supporting the existing solution framework to ensure only applications or approved database administrators have access to update sensitive client data, and periodically validating recovery procedures. Based upon these assessment findings, further plans will be developed in coordination with DHS to improve existing database administration processes or to mitigate potential risks.

### Application Maintenance and Support

Deloitte's approach to maintenance and support builds upon the effective IT Maintenance and Operations (M&O) processes that DHS has already established while also leveraging industry-standard mechanisms and processes that Deloitte has developed and proven across our successful large M&O projects. These industry best practices and key principles are encompassed in Deloitte's Enterprise Value Delivery (EVD) for M&O methodology, which is our framework for consistently delivering value on M&O engagements. EVD for M&O provides a scalable approach to deliver M&O engagements that includes a set of step-by-step repeatable tasks using industry-leading tools, standardized practices, and process insights to provide Deloitte's clients with effective and efficient support of business-critical technology assets. Figure 32 describes the 6 domains in EVD for M&O. Guided by this framework, our approach to maintenance and support is collaborative, repeatable, and customized for DHS based on lessons learned and best practices derived from public sector projects across the nation.

We understand that application and data warehouse maintenance is critical to enabling DHS and its partners to serve your most vulnerable citizens. Timely resolution of application problems, through secure SDLC processes, serves as the foundation of maintenance activity, and is supplemented by performance tuning, monitoring, and the addition, deletion, or change of data elements within application code or reference tables. Furthermore, we seek to perform preventative maintenance as much as possible, putting in measures for problems to be identified before they occur and creating self-service tools and features for end users and/or Service Desk to resolve issues on their own without IT involvement. In addition, the Deloitte team that would be executing maintenance plans is

| DHS DB Stats            | Metric      |
|-------------------------|-------------|
| Databases               | 86          |
| Replicated databases    | 12          |
| Unique schemas          | 175         |
| Tables                  | 13,998      |
| Unique rows             | 6.3 billion |
| Transactions per minute | 300         |
| Batches                 | 150         |

Figure 31. DHS Database Environment.

# RFP Response Form

## Information Technology Support and Professional Services

comprised of experienced and skilled resources that have years of experience maintaining DHS' applications, infrastructure, and data warehouse.

### EVD for M&O – Discipline overview

|   | Plan & Define  | Transition | Stabilize | Optimize / Innovate |
|---|--|------------|-----------|---------------------|
| <b>IT Service Management</b>            | Focuses on executing and optimizing the governance, processes, organization and technology needed for world-class application management.  |            |           |                     |
| <b>Value</b>                            | Prioritizes and quantify business value improvements, including establishing KPI's, planning and executing improvements, and measuring results.  |            |           |                     |
| <b>Project Management</b>               | Provides approaches and assets for effective project management and planning. It aligns with the Project Management Institute's Project Management Body of Knowledge (PMBOK) and embeds best practices and standards.    |            |           |                     |
| <b>Quality Management</b>               | Defines tasks to plan and monitor quality, control and confirm work products, and assess processes and standards.  |            |           |                     |
| <b>Organizational Change Management</b> | Addresses adoption and sustainability of the change initiatives. It encompasses an integrated approach to communications, stakeholder engagement and preparation, training, and organizational alignment and transition. |            |           |                     |
| <b>Technology</b>                       | Defines the approach to design, develop, test, and operate the infrastructure and software components required for the system applications.  |            |           |                     |

ACDHS-011

**Figure 32.** As a multidisciplinary service organization, we have incorporated our wealth of experience and knowledge into our EVD for M&O method to address the various components of Operations, Maintenance and Support

Our approach to transitioning application ownership to DHS is informed by our Knowledge Transfer Plan. This plan is developed considering the specific needs and objectives of DHS, with the overall goal to enable DHS to autonomously maintain, support and enhance your own applications. Based upon the assessment of needs, some artifacts that the Knowledge Transfer Plan might prescribe could be system documentation, code and database walkthroughs, mentoring, and Lunch & Learn sessions.

### 2. Planning (20 points)

Describe your plan for performing the following functions:

- Assessment of current data storage needs and recommendation for cloud storage technology
- Scheduling of data feeds/loads to minimize negative impact on Data Warehouse performance

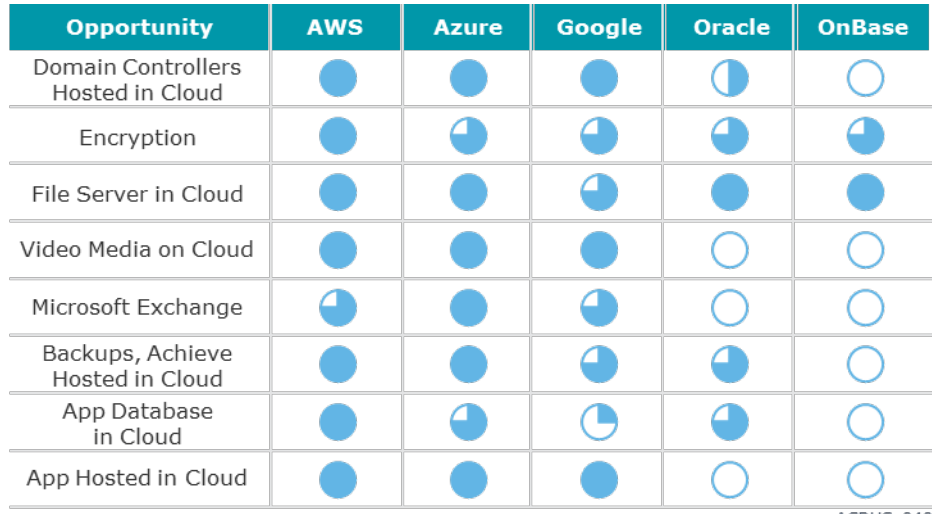
As DHS continues on its path to becoming a fully digitized agency, keeping DHS data storage reliable, cost effective and secure is a significant challenge and a business-critical priority. Another business critical challenge for DHS is to optimize Data Warehouse performance, as it is a key asset for the Department to make data driven decisions and is also relied upon by multiple systems and processes. We have extensive experience in conducting cloud storage assessments and optimizing data warehouse performance for organizations with similar challenges and we are poised to support DHS in developing and implementing effective plans to resolve these challenges.

Our approach to managing data storage includes monitoring the ongoing capacity growth rate, monitoring the growth introduced by new initiatives implemented during system releases, and sharing this information with DHS stakeholders for the final capacity outcome.

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We realize that in these pressing times agencies all over the country are looking for ways to reduce costs and increase the effectiveness of their IT spend. Adopting a cloud storage technology is one such strategy but needs a careful and measured approach to fully analyze the cost benefits and flexibility of the technology. Deloitte uses our proven Product and Technology Evaluation Framework to conduct a data storage assessment and provide cloud recommendations. The graphic to the right shows a sample of the in-progress cloud storage assessment we're currently conducting for DHS.



ACDHS-040

Figure 33. Sample of Cloud Assessment Platform Comparison.

In addition to the assessment, our ongoing approach to planning data storage includes monitoring the ongoing capacity growth rate, monitoring the growth introduced by new initiatives implemented during system releases, and sharing this information with DHS stakeholders for the final capacity outcome.

| Activities  | Details  |
|---|--|
| Quarterly Data Storage Growth                     | The DHS infrastructure landscape is monitored and assessed for growth every quarter in areas such as data storage, server disk space, system and infrastructure logs, and network bandwidth usage  |
| Data Storage Demand Growth Due to New Initiatives | As part of our development plan, new functionality introduced with each initiative is assessed to consider data storage capacity impacts. Changes in system user base, new data storage requirements, and other similar areas are closely reviewed to address data storage capacity impacts  |
| Communicating the Impact                          | Our team will meet with DHS stakeholders on a regular basis to review Data Storage needs, both existing as well as projected. We will use our team's expertise and experience to come up with reasonable estimates on the Data Storage Capacity that would be required, and work with DHS on acquiring the required capacity in the most cost effective way possible |

Figure 34. Data Storage Planning Activities.

Delivering high levels of overall system availability requires more than reliable facilities, infrastructure, and applications – it also requires a proactive approach for measuring, reporting on, and improving system performance. The Deloitte team's methodology for managing data storage delivers such an approach.

The DHS Data warehouse is a critical asset used by multiple stakeholders to obtain meaningful and authoritative insight into the clients served and the services provided by DHS and its providers. The Deloitte team is aware of the negative impact that large data feeds and loads have on Data Warehouse performance. To resolve this issue, our team works with DHS to implement and constantly improve a plan which prevents negative performance impact.

This plan includes using Active Data Guard to replicate a fully synchronized environment that would allow users to run Data Warehouse based utilities in one instance, while the second instance is used for regular data load. Other options include multiple optimization strategies that can be deployed to improve the performance of the data load scripts, thereby shortening the duration of any performance impact. In combination with these measures, our team collaborates with DHS to schedule data loads at a time when anticipated usage of the data warehouse is at its lowest, which is made possible through our around the clock support model. We also keep open lines of communication to keep users informed of any demands on data warehouse resources.

We understand that technology is a key component of DHS' established position as a national Human Services leader. We expect for DHS to continue digitizing your Agency while implementing additional innovation in self-service, analytics, mobile, social and other digital technologies, with the goal of more quality, integrated and efficient human service delivery. We are committed to continue supporting a stable and reliable production environment in which to operate these technologies, while continuing to increase efficiency and control support costs.



# RFP Response Form

## Information Technology Support and Professional Services

### VI. IT Procurement Support (20 points) Your response to this section must not exceed 2 pages

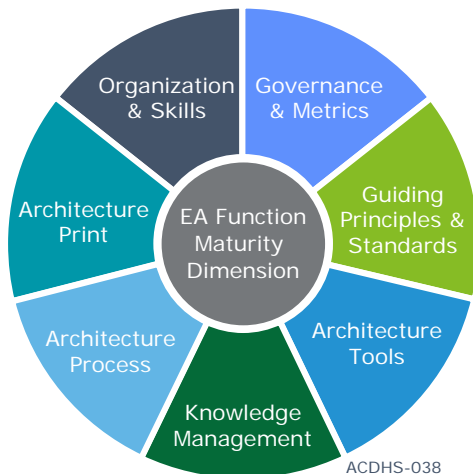
1. Describe your ability to assist with market analysis, planning and acquisitions, including systems research to identify opportunities to meet the requirements of the Enterprise Architecture for the long- and short-term, while maintaining operational efficiency. (10 points)

IT Procurement is an important function for DHS that drives the next generation infrastructure to support the delivery of comprehensive human service capabilities to Allegheny County residents. Deep understanding of the infrastructure and software topology at DHS combined with our experience in IT assessments and procurements, provides you with the ability to drive successful product implementations and stay ahead of the market technology trends to support business needs. Deloitte collaborates with DHS to develop **successful IT strategies and implement systems** that drive human service capabilities in a high performing infrastructure. We leverage our proven tools and methods for conducting market analysis, planning and acquisitions. We lead with a team that has a clear understanding of DHS infrastructure landscape and an ability to leverage our **premier relationships with product vendors**. **Together we** drive comprehensive product lifecycle management required for maintaining a functional, scalable and compliant system.

Our onsite team is supported by a team of product specialists from across our firm and through our product alliance partners. As an example, Deloitte Digital assists in market analysis for all things digital whether that be user experience, portal design and development, mobile or cloud solutions. We stay current on emerging technologies and leading products in the market. Our team provides the right depth in market analysis and design, and aids the overall procurement process using our robust Product and Technology Evaluation Framework which provides DHS with the ability to analyze market trends, develop technology roadmaps, drive product vendor relationships, and mature a next generation enterprise architecture.



- Deep **understanding of DHS business and IT infrastructure** so the assessment and procurements can be appropriately tailored to meet your specific needs
- A team of **technology specialists** that understand market trends and product capabilities to help develop a continued roadmap for DHS
- Complete **understanding of an end-to-end procurement process** from product assessment to procurement and finally the instantiation process



Deloitte's Enterprise Architecture (EA) framework provides a starting point for DHS to assess the current state of its EA initiatives. It leverages industry leading practices to perform a holistic assessment of EA within the organization. DHS receives the following from the EA tool:

- Leading industry practices from around the globe
- A standard, objective means to assess the maturity and suggest appropriate measure to your desired investment
- Alignment with your EA and strategic and tactical business goals
- Increased value and reduced operating costs as opportunities are identified
- Low risk, low cost assessment with a tangible deliverable
- A reusable tool and dataset for future evaluations within DHS



**Figure 35.** A framework grounded on market analysis, planning, system research, acquisition and next generation Enterprise Architecture.



# RFP Response Form

## Information Technology Support and Professional Services

2. Describe your ability to develop criteria and tools to ensure efficient and effective source selection, as well as developing statements of work, descriptions, task orders and supporting specifications and standards. (10 points)

A Next Generation infrastructure and system capability must be optimized, high performing, scalable, maintainable and cost-efficient. We understand that DHS seeks a partner capable of developing evaluation criteria coupled with evaluation accelerators and tools to drive source selection. To deliver an infrastructure and system environment that continues to drive high performance applications, it is essential for DHS to maintain a current product stack that's not only aligned to the enterprise vision, but is also efficiently procured using established frameworks and leverages best practices.

### Ability to drive a cost effective procurement process

Deloitte brings to DHS a proven process for product selection that helps objectively assess different products in the market and align them against key criteria driven by DHS business and technology needs. We have already applied this process at DHS on several occasions, including the Cloud Infrastructure Assessment and Identity Access Management platform evaluation.

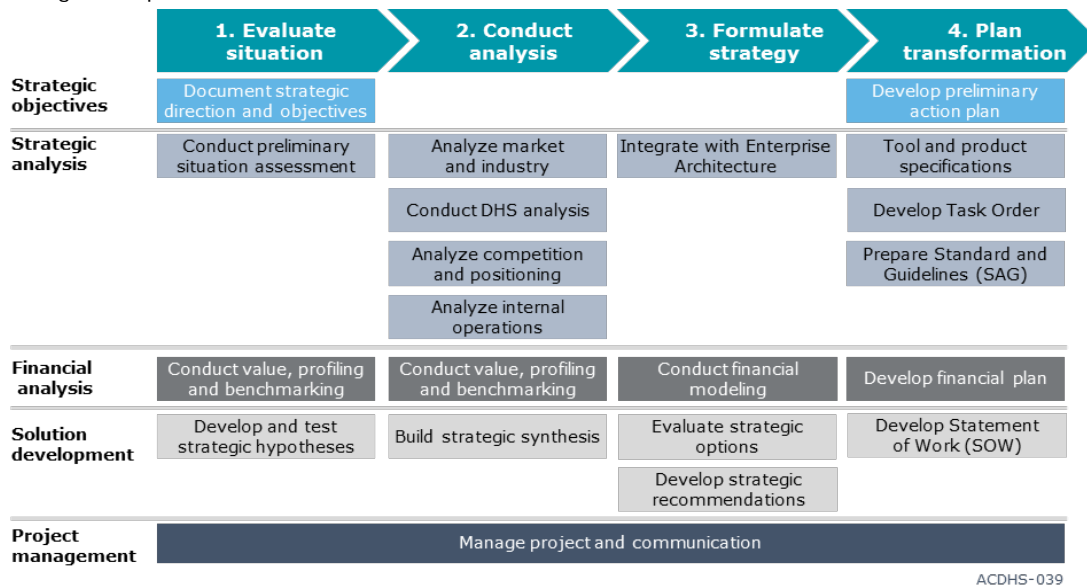


Figure 36. Deloitte's Product and Technology Evaluation Framework.

We leverage Deloitte's Product and Technology Evaluation Framework to accelerate and bring structure to your procurement process. Figure 36 outlines the four phases of the evaluation framework, from evaluating the current state (Evaluate situation) through product deployment and instantiation (Plan transformation). The activities include conducting market analysis, planning the process flow in product and vendor selection, systems research to make sure the product aligns with needs, opportunities for enablement and driving emerging methods to keep DHS ahead of market curve. The framework brings process and structure to the assessment ending in developed SOWs/Task Orders and supports creation of specification and standard. It allows us to drive an objective assessment based on facts and DHS needs and also keeps an eye on the Technology Trends in the market which are important as products are evaluated and considered by DHS.

### Recent examples of assessment done in the Commonwealth of Pennsylvania and Allegheny County

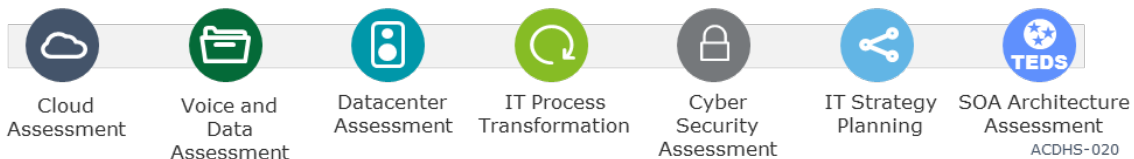


Figure 37. A proven Product and Technology Evaluation Framework for cost effective procurement process.

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## Information Technology Support and Professional Services

### VII. Security and Privacy (50 points) Your response to this section must not exceed 5 pages

1. Describe your ability to analyze and provide recommendations on the design for IT and systems security, as well as assist with security remediation efforts; this includes ensuring compliance with HIPAA security regulations.

Today's interconnected IT infrastructure exists in an environment that is under increasing threat of unauthorized access or disclosure of sensitive data and attacks originating from cyber-criminal groups and hackers. DHS is progressing towards a future of internet-hosted applications to conduct government business and continues to grow electronic repositories of valuable citizen data. Hence, it becomes imperative to integrate security as part of IT system design and compliance to security regulations such as HIPAA, HITECH, etc in order to protect DHS' digital assets. In general, the government sector has experienced a steady increase in the volume of records exposed, and a number of data breach incidents over the years due to increasingly sophisticated methods involving rapidly evolving technologies to target government IT assets. Deloitte has the demonstrated capabilities to assist DHS in analysis, recommendation, design, remediation and reduction of potential security risk exposure and compliance with HIPAA security regulations.

Deloitte Cyber Risk Services is an established practice with over 25 years of experience and has the largest concentration of certified security professionals in the US. Our track record in the security and privacy domain demonstrates our ability to provide DHS with leading security and privacy recommendations and implementations. Furthermore, Deloitte understands DHS' specific environment and supports it across a wide spectrum of security and privacy services. Our leadership in the cybersecurity market combined with our technical capabilities and deep DHS experience make us the right choice to assist you in safeguarding DHS data. Deloitte has the right people, relevant experience and a rigorous technical approach focused on DHS. Those characteristics are clear differentiators to be your teaming partner in this important DHS initiative. Qualifications that demonstrate our leadership and ability to deliver this project include:

- **The right team and commitment.** We bring a strong team of certified security professionals well versed in state and local government cybersecurity and data protection programs.
- **Consistent track record working with DHS.** We have successfully executed multiple cyber risk projects for DHS including developing and executing a HIPAA remediation roadmap, implementing a formal Secure Software Development Lifecycle (SSDLC), and integrating with the Commonwealth Identity Access Management (IAM) platform. Our team's knowledge of the DHS environment will help us "hit the ground running".
- **Market-leading Cyber Risk Services practice.** Our practice is considered a leader in Security and Risk Consulting by several leading industry analyst organizations, including Gartner, Kennedy Consulting and Forrester Research. With the largest pool of certified information security resources, complemented by sector focused leaders, we are poised to provide high quality professionals tasked with supporting DHS' cybersecurity needs.
- **Our leadership in public sector cyber security.** Deloitte is a leader in providing cybersecurity assessment and consulting services to the public sector including federal, state, and local agencies for more than 25 years. In the United States, Deloitte serves 47 of the 50 US states as well as the District of Columbia.
- **Knowledge of how government agencies work.** We are the only security consulting firm with a dedicated state and local security practice. Our practice has demonstrated state and local government knowledge through the publication of the biennial Deloitte National Association of State Chief Information Officers (NASCIO) Cybersecurity Study publications - highlighting the challenges states and localities face and approaches for overcoming them. We also recently collaborated with the National Institute of Standards and Technology (NIST) to develop their new Framework for Improving Critical Infrastructure Cybersecurity.



### Focused on Your Future

- Increased value through deep expertise with Federal, State and County security policies and procedures
- Largest pool of certified professionals with more than 2,000 CISAs, CISSPs, and CISM
- Improved efficiency with the breadth, depth, and insight to help DHS become secure, vigilant, and resilient
- Extensive track record of delivering over 1000 cybersecurity projects in the US just in the past year
- Brings leading industry trends through strong partnerships with industry forums including NGA and NASCIO



### Deloitte Delivers DHS Experience



Piyush Pandey



Bharane Balasubramanian



Nari Narayanan



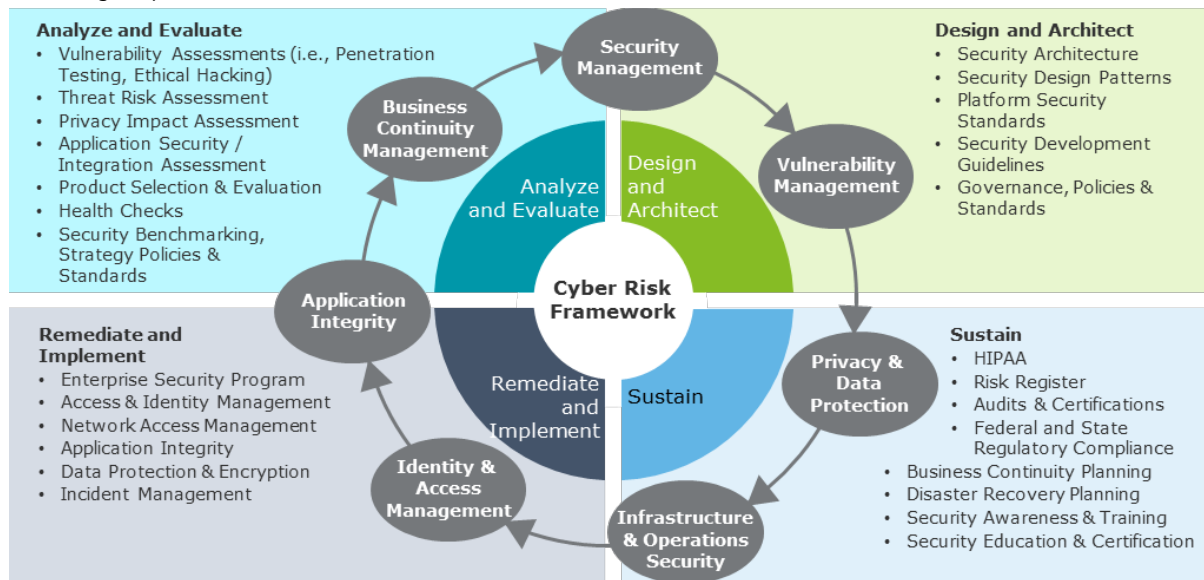
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## Information Technology Support and Professional Services

### Analyze and provide recommendations on the design for information technology and systems security

Deloitte brings its Cyber Risk framework which encompasses a four part process of Analysis and Evaluate, Design and Architect, Remediate and Implement, and Sustain to analyze and provide recommendations on the design for information technology and system security. Using our framework, we bring to DHS our demonstrated, robust methodologies and accelerators to provide recommendations on the design of information technology and system security. In addition, we bring experienced and knowledgeable specialists in each of these areas to help DHS accomplish its wide range of security needs. Our approach for effective security is to make it transparent to the end user. At the same time, we understand the importance of integrating and implementing a broad security framework into the system development life cycle in support of DHS' business application solutions. Our security design approach incorporates DHS security and privacy standards, Commonwealth of Pennsylvania security and privacy ITBs, and Security requirements from Federal/State regulations, such as HIPAA, IRS 1075, and SSA. Our approach is to infuse secure design principles throughout the application development cycle to proactively identify and mitigate potential threats.



ACDHS-030

Figure 38. Deloitte's Cyber Risk Framework.

We "build in" security from the early stages of the application development lifecycle rather than retrofit security capabilities in downstream software development processes. We define and catalog Personally Identifiable Information (PII) and Personal Health Information (PHI), map the flow of sensitive data and design appropriate technical security controls to prevent inadvertent exposure of DHS' PII and PHI. Figure 39 illustrates a sample list of activities to analyze and recommend design of DHS applications and IT systems.

| Deloitte's Activities Meet DHS Future Analyze and Recommend Needs  | Benefits for DHS  |
|--|---|
| <ul style="list-style-type: none"> <li>Analyze security objectives, regulatory requirements and goals for the critical DHS application components.</li> <li>Analyze use cases, critical components, user roles to access them, trust boundaries for information domain and related use case scenarios.</li> <li>Analyze potential vulnerabilities that may impact the DHS applications.</li> <li>Analyze threats related to recognized vulnerabilities based on damage potential, ability to reproduce the attack, ability to exploit affected user(s), and ability to discover the vulnerability.</li> <li>Recommend application security controls based on DHS standards and applicable Federal/State regulations.</li> <li>Collaborate with the application stakeholders to analyze and recommend user roles and page level permission levels.</li> <li>Recommend Identity and Access Management controls including authentication, authorization, and user management.</li> <li>Analyze applicable DHS standards and Federal/State regulatory requirements including HIPAA.</li> </ul> | <ul style="list-style-type: none"> <li>Enhances efficient design process by proactively identifying security threats early in the SDLC process for "built in" security.</li> <li>Simplifies and introduces a business centric approach to access management.</li> <li>Provides a secure solution that meets the applicable Federal, State, and DHS legal/regulatory security requirements.</li> </ul> |

Figure 39. Key Security Design Threads and Activities.

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### Assist with security remediation efforts, including Health Insurance Portability and Accountability Act (HIPAA) security.

Deloitte has substantial knowledge and experience in assisting our clients with addressing applicable federal and state regulations including HIPAA privacy and security requirements from both a business and technical standpoint. We bring to DHS our extensive experience in providing security remediation assistance including integration of security testing as part of application software development life cycle. Deloitte brings broad experience in using vulnerability scanning techniques with application security assessments. In fact, in the past year, Deloitte has performed application security assessments for more than 18 public sector clients that included security controls and regulatory compliance assessments. Additionally, Deloitte has a team of cybersecurity professionals that not only specialize in performing these complex scans but also bring in-depth experience with application dynamic and secure code analysis, false positive analysis, contextual interpretation of findings, identifying recommendations to address vulnerabilities and working with the developers to remediate the applications to address the findings and revalidate them to check the resolution. The following table illustrates additional sample activities to assist DHS with security remediation efforts including HIPAA security:

| Deloitte's Approach to perform Security Testing and Interface Security Testing |  |
|--|--|
| <b>Code Review</b>   | <ul style="list-style-type: none"> <li>Perform code scanning and analysis during development phase</li> </ul>  |
| <b>Black Box Testing</b>   | <ul style="list-style-type: none"> <li>Perform vulnerability tests for a non-user perspective (in a potential external attacker's view).</li> </ul>  |
| <b>Dynamic Testing</b>   | <ul style="list-style-type: none"> <li>Perform vulnerability tests from a non-user and end-user perspective (potential external and internal attackers).</li> </ul>  |
| <b>Manual Testing</b>  | <ul style="list-style-type: none"> <li>Correlate application actions/events and vulnerabilities to identify consequences on other pages and/or on the system with the following methodology:                             <ul style="list-style-type: none"> <li><b>Insecure configuration Testing:</b> To determine the security of the web server configuration</li> <li><b>Manipulation testing:</b> To attempt bypassing the application controls through manipulation of the user interfaces/parameters and application states</li> <li><b>Aggregation Testing:</b> To determine if the application discloses information that assists to launch further advanced attacks on the application</li> <li><b>Iteration Testing:</b> To analyze if iterative, repetitive, or "brute force" techniques can be used for timing attacks or to bypass session/state management                                     <ul style="list-style-type: none"> <li>E.g. Phishing attacks and Persistent Cross Site Scripting.</li> <li>Explore potential new threats &amp; develop potential new attack vector(s):</li> <li>Forceful browsing</li> <li>Unauthorized access to restricted records</li> <li>Privilege escalation</li> <li>Attacks on Session Management</li> </ul> </li> </ul> </li> </ul> |

Figure 40. Deloitte's approach to security and interface security testing.

| Deloitte's Activities Meet DHS Remediation Future Needs  | Benefits for DHS   |
|--|--|
| <ul style="list-style-type: none"> <li>Assisting with security remediation efforts to enhance policies, standards, and procedures</li> <li>Remediate by developing and delivering HIPAA privacy and security training content</li> <li>Assisting in selecting and implementing technical and procedural solutions to address applicable federal and state regulations including HIPAA privacy and security requirements</li> <li>Remediate by enhancing incident response procedures and implementation of monitoring technologies</li> <li>Design and Remediate application audit logs including application-level fine grained access control logs to record user access to sensitive PII.</li> <li>Remediate by integrating the COPA IAM Access Controls into the DHS Application Security Integration Architecture.</li> </ul> | <ul style="list-style-type: none"> <li>Enhances design compliance with applicable security compliance including HIPAA.</li> <li>Provides periodic reports and alerts to track violations to Federal and State legal/regulatory requirements.</li> <li>Enhances security by preventing users from unauthorized access to citizen information.</li> <li>Provides centralized management of user roles and user permissions.</li> <li>Provides a secure solution that meets the applicable Federal, State, and DHS legal/regulatory security requirements.</li> </ul> |

Figure 41. Sample activities to remediate security efforts.

### Implement Identity and Access Management Integration

The DHS systems and IT resources contain sensitive PII and PHI data which is accessed by DHS employees, contractors, providers, and clients (constituents or citizens). It is essential to have strong Identity and Access Management (IAM) processes and systems to govern the access in accordance with HIPAA and other applicable security requirements. DHS benefits from Deloitte's experience to implement Identity and Access Management (IAM) integration with the Commonwealth of Pennsylvania (CoPA) IAM solution. As the original architect and implementer of the CoPA IAM solution, we bring hands-on knowledge coupled with our deep understanding of IAM processes, Commercial of The Shelf (COTS) technologies, industry demonstrated methodology, tools and accelerators to achieve the desired objectives of integration with the CoPA IAM. Recently we have integrated the DHS Client View application with the CoPA IAM solution to provide DHS clients direct access to view their service history. To meet DHS future needs, we propose to integrate Business Partner IAM, Access Recertification, Privileged User Management and Services security with the DHS Information Technology environment. The following diagram illustrates a conceptual integration design of the DHS environment with the CoPA IAM solution:

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## Information Technology Support and Professional Services

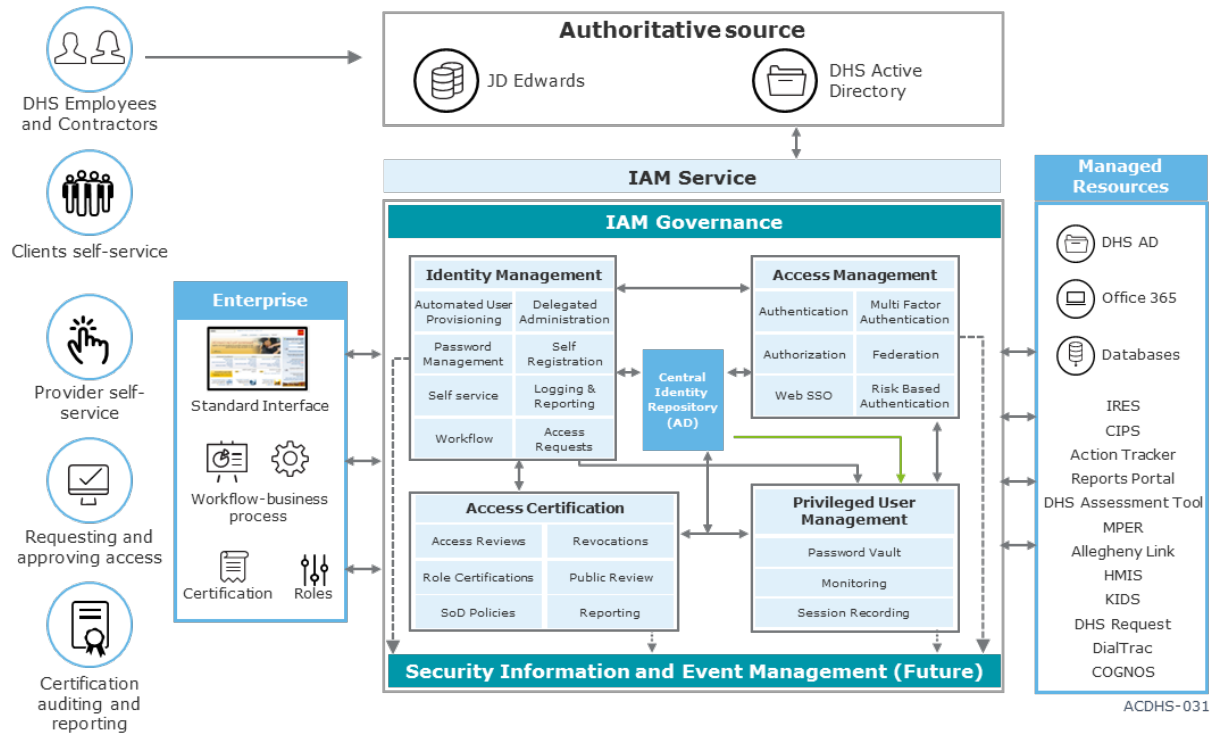


Figure 42. Identity and Access Management Architecture.

### 2. Describe your ability to support DHS in protecting communications to ensure their integrity, availability and confidentiality.

Deloitte understands that protecting communications to ensure confidentiality, integrity and availability of DHS data is required for DHS to meet regulatory compliance requirements and for information protection. Our approach is to integrate applicable security requirements into a centralized and rationalized program to help DHS minimize the risk of data loss while also driving the necessary compliance activities. We build upon our expertise with applicable Federal, State, and County regulatory policies, standards, and guidelines combined with extensive experience providing security and privacy services to DHS and other Public Sector agencies.

The approach focuses on data protection controls including data at rest, data in motion, data in use and data redaction, limiting data collected to that which is required, PII Inventory and control, web service security, field level security and message security to name a few. The following table illustrates a sample list of activities to support DHS in protecting communications to ensure confidentiality, integrity and availability of DHS data.

| Deloitte's Activities Meet DHS Future Needs  | Benefits for DHS  |
|--|---|
| <ul style="list-style-type: none"> <li>Design and implement data protection controls to secure:                             <ul style="list-style-type: none"> <li><b>Data at Rest</b> using database encryption, Database user roles and configure native user activity monitoring and logging.</li> <li><b>Data in Motion</b> using at the minimum, 128-bit key encryption through HTTPS with TLSv1/SSLv3 technology and IPsec</li> <li><b>Data in Use</b> using coarse grained and fine grained access controls, user role management and segregation of duties and user activity monitoring to log user access to sensitive data</li> <li><b>Data redaction (data de-identification)</b> to restrict replication of production data in lower environments (during production refresh)</li> <li><b>Data destruction</b> to secure the data no longer needed including archiving, data purging and media sanitization</li> </ul> </li> </ul> | <ul style="list-style-type: none"> <li>Prevent unauthorized access to data by encryption of sensitive database fields.</li> <li>Helps reduce attacks on communication channels.</li> <li>Helps prevent malicious users from retrieving PII data from browser cache through masking techniques on web pages and documents.</li> <li>Helps protect data through use of data scrambling techniques in lower environments.</li> <li>Prevents sensitive data from being disclosed</li> </ul> |

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| Deloitte's Activities Meet DHS Future Needs   | Benefits for DHS  |
|---|---|
| <ul style="list-style-type: none"><li>• Perform data handling analysis to <b>limit the collection</b> and <b>identify the flow of PII</b> through the proposed business processes.</li><li>• Create a <b>PII inventory</b> to categorize and catalog PII</li><li>• Design and develop suitable <b>technical and process controls</b> to safeguard PII data.</li><li>• Assist DHS to identify, evaluate and select suitable <b>data privacy tools</b> such as Data Leakage Prevention and Information Rights Management solutions to secure citizen information.</li></ul> | <ul style="list-style-type: none"><li>• Enhances efficiency of design by identifying and addressing data privacy risks early in the DHS application development process.</li><li>• Provides data flow mapping that represents the flow of PII across the data life cycle – collection, storage, use, sharing and destruction.</li></ul> |
| <ul style="list-style-type: none"><li>• Enable <b>web service</b> authentication, authorization, monitoring and audit services along with functionality for XML validation, conversion and threat scanning.</li><li>• Implement <b>message confidentiality</b> using SSL, authentication &amp; authorization using COPA IAM solution, field-level security, data validation and message security.</li></ul>   | <ul style="list-style-type: none"><li>• Helps design privacy technical and processing early in DHS application development process.</li><li>• Enhances security of communication and data exchanges between county and state systems.</li></ul>   |
| <ul style="list-style-type: none"><li>• Develop and update policies, standards, guidelines, procedures and training materials covering protection of communication channels such as email, fax, paper, scanners and multi-function devices.</li></ul>   |   |

**Figure 43.** Deloitte supports DHS in protecting communications.

By using the above approach, Deloitte can help protect and secure the communications and data not just within DHS but also with other county and state agencies, third party providers and partners and DHS clients.

DHS benefits from Deloitte's experience to accomplish the security of DHS IT infrastructure and applications. Our hands-on knowledge coupled with deep industry experience across various County, State and Federal government agencies qualifies us to bring leading practices and emerging trends to provide security, regulatory compliance, and process efficiencies while reducing the overall security risk of DHS.