

State of Alaska

Department of Health and Social Services

Enterprise Roadmap Phase II Executive Summary

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1.0 EXECUTIVE SUMMARY

1.1 Vision

The Department of Health and Social Services (DHSS) is evolving from a traditional model of program-centric administration based on division-level technology needs, to a Department-level, enterprise-wide architecture based on the leveraging of shared technology and business components. The result for DHSS is a modular, flexible Health Information Technology (HIT) architecture, designed to allow the Department to meet current and future business needs, with a focus on lower cost, increased efficiency, and improved service.

In the current model, each Division acts independently to procure, implement, and operate the technology necessary to support day-to-day operations. The unintended results, over time, are multiple siloed systems with redundant technical components, business capabilities, and duplicate data storage. These siloed systems present a barrier to interoperability and efficiency across the Department while increasing redundancy and cost.

The envisioned To Be model for Alaska, as outlined in the Alaska Roadmap Phase I document, is a gradual transition to a Shared Services model, built on an enterprise-level service-oriented architecture (SOA). The initial Roadmap document provides a high-level conceptual architecture of the shared services environment, as well as discussion of the policies and applicable federal and state Information Technology (IT) standards that support the implementation and growth of a shared services model.

To support the implementation of the SOA-based technical infrastructure, Alaska must undergo a corresponding business process and cultural change to support the transition to a modular, shared service environment. Division business and technology leaders will need to embrace sweeping changes, ranging from changes in how technology is procured, to alignment of business processes and process model flows, to testing and change management.

The result for Alaska is the transition from a Division-centric IT approach to one that aligns with the technical and business needs across the Department, supporting the implementation and sharing of common components across Divisions. The full implementation of the Roadmap establishes the following guiding principles and strategies:

- Maximize use of Department HIT expenditures through reuse of shared technology and business services, allowing functionality and services to be exposed for reuse
- Alignment of business needs and business processes across Divisions
- Migration to a DHSS-enterprise, consumer-centric focus, moving away from siloed, program-specific perspectives
- Migration toward an enterprise SOA consistent with Medicaid Information Technology Architecture (MITA) and the Centers for Medicare and Medicaid Services (CMS) Seven Conditions and Standards

1.1.1 Roadmap Phase I

1.1.1.1 Identification of the Current State or As Is

Cognosante completed the Enterprise Roadmap Phase I in September 2012, which documents the Department's current state or As Is model. This analysis also describes DHSS's extensive portfolio of more than 100 health-related applications and registries and more than 40 health projects. These systems are built on a variety of technology platforms, each in response to a specified set of business processes and mission-specific requirements. Each of these systems potentially includes a full set of functionality that, in many cases, is duplicative of the functionality contained in other systems. Examples of this



include data warehouses, case management, document management, and rules engines. Each solution is different, requiring separate technology infrastructure to support these solutions, as well as additional product maintenance staff, license costs, and technical support staff.

Analysis of the ability to exchange data between systems revealed that most of the applications are stand-alone. In fact, about 70 percent of the applications and registries have no integration or interfaces with other systems, which eliminates the ability to share data between systems and users of those systems. Of the 30 percent of systems that include an interface, less than half have more than one interface and many of those are to external systems.

Some of the major systems, including Vital Records; the Women, Infants, and Children (WIC) system; and the legacy Medicaid Management Information System (MMIS) and Eligibility Information System (EIS) are obsolete mainframe-based systems that were implemented in the 1980s and are difficult and expensive to operate and maintain. These systems are either in the process of being replaced or have been targeted for replacement. In addition, there are a number of other systems that are candidates for upgrades or replacement, such as the Resource and Patient Management System (RPMS); Services Tracking Analysis and Reporting System (STARS); Online Resource for the Children of Alaska (ORCA); and Alaska Pioneer Homes medical records program (ACCU-CARE).

1.1.1.2 Identification of the Department's Vision and Goals or the To Be

The envisioned To Be for Alaska, as outlined in the Alaska Roadmap Phase I document, is a gradual transition to a Shared Services model, built on an enterprise-level SOA. The initial Roadmap document provides a high-level, conceptual architecture of the shared services environment, as well as discussion of the policies and applicable federal and state IT standards that support the implementation and growth of shared services model.

The Roadmap Phase II details changes to the current technology infrastructure that are needed to establish the HIT architecture and the transition to an SOA environment. SOA is a general term for a flexible set of design principles used during system design and development to integrate disparate software and system components. Using SOA, components, often referred to as common functions, are exposed as services that can be utilized by multiple applications across the Alaska DHSS Enterprise. Components are then available, as a service, to be utilized and evoked by other programs connected to the network. Thus, a strong SOA is based on common business and technical support components that comprise an integration framework. It is this integration framework that provides the fabric through which functional components interact and gain access to common business and technical support components.

The basis of this integration framework, or the backbone of the technical infrastructure for the SOA architecture, is the implementation of the Enterprise Service Bus (ESB), Business Rules Engine (BRE), and workflow engine, all utilizing a common security infrastructure. The Roadmap Phase II focuses on the necessary changes needed to the current BizTalk environment to support true ESB functionality, which is key to the establishment of the SOA architecture.

In summary, the current DHSS IT environment provides great opportunities for increased efficiency by creating the infrastructure necessary to support shared functionality, transition to use of modular services and components that can be leveraged for reuse, and moving away from siloed systems to enterprise architecture.

1.1.2 Roadmap Phase II

The Enterprise Roadmap Phase II focuses on refining recommendations provided in the following documents including:



- Interviews with senior DHSS executives in July 2010
- A technical assessment conducted in October 2010
- The State Medicaid Health Plan (SMHP) containing the Health Information Technology (HIT) Roadmap in November 2010
- The Alaska Logical Architecture that noted the State HIT systems connecting to the Health Information Exchange (HIE) in August 2011
- The MITA Self-Assessment (SS-A) gap analysis and Eligibility Information System (EIS) analysis conducted during 2012
- DHSS Enterprise Roadmap Phase I completed in September 2012
- Master Client Index (MCI) Architectural Review completed in March 2013

The recommendations in this Roadmap capitalize on the prior efforts listed above and suggest additional steps and initiatives for continuing the transformation over the next 5 to 6 years. Additional topics include:

- Creating the Infrastructure
 - BizTalk ESB
 - MultiVue Master Client Index (MCI)
 - Shared Services
- Cultural and process changes
- Expected outcomes
- Evaluating results
- Recommendations for next steps and leveraging the Roadmap

1.2 Creating the Infrastructure to Meet Evolving Business Needs

The traditional approach included creating separate projects, procurements, and products to meet the similar business needs of individual Divisions and programs. Implementing an enterprise-level, MITA- and SOA-compliant infrastructure will enable DHSS to coordinate HIT spending across Divisions to reduce redundancy, encourage reuse, and leverage components and services to meet evolving business needs efficiently. By analyzing the business needs of each Division, the Project and Portfolio Management Review (PPMR) team will identify the need for enterprise-wide solutions.

1.2.1 Alignment with MITA and CMS Seven Conditions and Standards

The CMS Seven Conditions and Standards and Medicaid Information Technology Architecture (MITA) support the Roadmap recommendations to move forward with the implementation of an enterprise architecture based on SOA and increasing modularity.

Additionally, CMS has made it clear that MITA, while developed specifically for the Medicaid enterprise, contains the vision for SOA-based interoperability and the blueprint for modularity. As such, the



principles of MITA are applied to the development of enterprise architectures and the integration of modular components using a common process and conformance to MITA and national standards.

These standards include developing systems, applications, and services using smaller, modular components. By breaking functionality into smaller components, common functionality can be shared or reused in different Divisions or Sections of the Department. This reusability allows DHSS to procure a service once, rather than including that functionality in every Request for Proposal (RFP). This reduces costs and redundancy and allows new functionality to be available for use sooner.

Section 1561 of the Affordable Care Act (ACA) supports the separation of Business Rules from Business logic within the application architecture. To support this architecture, the BRE is accessed via an ESB through common services or customized Web Services interfaces.

1.3 Successful Process Change Requires Cultural Change

The traditional, program-centric approach, as well as the inflexibility of legacy applications, required resource-intensive processes tailored to meet the specific needs of individual programs. Business processes and procedures had to be designed within the constraints of existing technologies. As the Department moves toward enterprise architecture consistent with MITA and SOA, changes to business processes, procedures, and paradigms will be as significant as the changes in technology. Mental models for determining when a project is needed will shift from analysis of program or Division business needs, resources, and funding, to analysis and alignment of business services across the Department.

Cultural change to align with the Department's vision includes developing RFPs that require vendors to reuse existing services rather than procuring redundant functionality as part of each new system or application. RFPs will need to be reviewed to ensure they require vendors to address and comply with licensing considerations, interface control definitions, and enterprise-wide standards.

The level of effort traditionally required to share information and coordinate services across Divisions has made the resulting return on investment (ROI) minimal. The benefits of improved access to information about client participation across Department programs are not always readily apparent. It will take effort to think differently and recognize the advantages this new, more collaborative model provides. The value resulting from sharing services, functionality, and information will produce an ROI that outweighs the discomfort that accompanies change.

1.4 Expected Outcomes

Given the complexity and volume of federal mandates, budget constraints, and anticipation of future uncertainty because of the ACA, states need to have IT architectures that are more responsive, flexible, and adaptable to change.

For Alaska DHSS, the Roadmap represents an opportunity for change that will modernize the State's technology infrastructure, standardize business processes, streamline functions, and reduce or eliminate redundancy. This will allow DHSS to meet evolving business needs, respond to increasing demand for services, and comply with federal mandates through use of a modular, agile, and flexible infrastructure.

Implementation of the recommendations above will provide the following benefits:

- Strong oversight and governance of IT acquisition projects
- Improved IT service model
- Strengthened security oversight and measures
- Standardized business services, available and accessible through shared services
- Consolidation of systems



- Elimination of duplicate storage and unnecessary collection of data
- Creation of a statewide master shared services and data management strategy
- Standardized technology platform, available and accessible through multiple access channels
- Greater access by citizens and providers to health care information and services
- Higher level of shared knowledge
- Lower overall system acquisition and maintenance costs
- Ability to leverage enhanced Medicaid funding

1.5 Evaluation and Measurement

The success of implementing the Roadmap can be measured in terms of the savings in systems implementations. As a result of leveraging shared services and functions, as described in this document, DHSS should align and standardize business processes across Divisions. The level of success DHSS attains in achieving the HIT vision and goals can be measured by evaluating the reuse of services within the architecture.

It should be noted that some of these measurements and processes are already being put into practice by the PPMR team. As part of the new procurement process, Divisions must complete the IT Alignment Framework Template and define business needs prior to moving forward.

The key metrics for evaluation include:

- Count of shared services and functions with the Department
- Count of Divisions leveraging a specific service or functions
- Implementation costs per service (costs should decrease with repeated implementations of a shared service due to reuse of code, testing processes, and procedures)
- Reduced procurement costs

1.6 Recommendations and Leveraging the Roadmap

1.6.1 *Establish Necessary Governance and Blueprint for Department Architecture*

- Include SOA Governance as a responsibility of PPMR
- Create a SOA Governance Plan
- Develop a blueprint for the Department's overall architecture
- Develop conceptual, logical, and technical models of the To Be architecture
- Develop and maintain a list of shared services and components
- Require Interface Control Documents for each shared service

1.6.2 *Make Necessary Changes to the Procurement Process to Support the Migration to Shared Services and Architecture*

- Require that each new RFP enforce the use of Shared Services
 - Use the IT Framework Alignment process to identify shared services
 - Ensure all new procurements utilize existing or planned share services
 - Publish Interface Control Documents for shared services that are expected to be leveraged within a procurement as an RFP Appendix
 - Require vendors to leverage existing shared services and documented interfaces
 - Ensure that vendors are not including licenses, products, or hardware costs for existing shared services



1.6.3 *Develop the Technical Infrastructure to Support the Implementation of a Service Oriented Architecture*

- Update/upgrade the current hosting infrastructure for BizTalk
- Enable and implement all required components for the BizTalk ESB
- Prioritize recommended shared functionality/services implementation
- Identify hosting, life cycles, and required parameters for each existing and priority service
- Create measurable success criteria for all new applications and shared services
- Utilize the ESB to expose existing and future shared functionality/services
- Ensure all future applications and services are strictly following SOA standards
- Evaluate the proficiency and knowledge of DHSS IT staff for the BizTalk ESB and MultiVue MCI and determine if additional training is needed
- Determine if additional DHSS IT staff should be hired, or a vendor secured to implement and maintain enhanced functionality within BizTalk ESB and MultiVue MCI

1.6.4 *Recommendations for Shared Services Implementation*

Cognosante researched shared services commonly deployed by health and human services agencies to increase efficiency and productivity, while reducing costs. Cognosante identified areas of focus that the Department may want to consider when determining the highest priorities for shared functionality/services. Factors considered included:

- The number of DHSS Divisions or applications that would benefit from the shared service
- How well implementation of the service supports DHSS next steps for the BizTalk ESB and MultiVue MCI
- The potential of each service to provide a “quick win” for the Department
- The level of increased efficiency, time and cost savings
- Ability of the service to increase productivity
- Potential reduction in manual tasks

As existing systems are prioritized for replacement and system maintenance contracts renegotiated, there may be additional shared services that DHSS should consider implementing. The following services are not exhaustive but describe services that have been successfully implemented in other health and human services agencies that may provide opportunities as DHSS continues to move forward with a shared services model.

1.6.4.1 *Person Look-Up Service*

A Person Look-Up Service consists of person demographic information that provides a high degree of accuracy when querying MCI data and identifying matching records. These data elements are typically included when creating the golden record.

1.6.4.2 *Address Validation Service*

An Address Validation Service checks the address the user enters against a national database of valid addresses such as the United States Postal Service (USPS).

1.6.4.3 *Address Look-Up Service*

An Address Look-Up Service checks the address the user enters against the existing address information for that individual in a database, such as the MCI. It is also used to validate address information against golden record data.



1.6.4.4 Person Add/Update Service

A Person Add/Update Service can add new person records and update existing client demographic data.

1.6.4.5 Person Record Locator Service

This service identifies where records are located based on client demographic data, allows the appropriate staff to update record location information, and includes the following functionality:

- Retrieves record locations with information associated with a specific person
- Locates context-sensitive information based on data matching requirements
- Provides information about the types of information or topics stored in a given location
- Identifies the topics that will message a given location
- Determines requirements for storing person data and record locations

1.6.4.6 Identity Management Service

Automates security related maintenance tasks such as creating unique user identification (ID), complex password, and resetting user passwords when needed. Because a large percentage of help-desk calls are password-related, a service that allows users to reset their own passwords can save significant IT resource time and expense.

1.6.4.7 Provider Directory Service

Provider directories not only store a listing of providers, but they include associated provider information such as the National Provider Identifier (NPI) and medical specialty.

1.6.4.8 Identity Proofing Service

This service verifies that the individual creating a user account is the same person whose identifying information is being provided. In addition to demographic information, life history events or financial transaction data available from public and private data sources is used to validate the identity of the person attempting to create a user account.

1.6.4.9 Payment Processing Service

Payment Processing Services allow funds to be received from an individual's credit card or checking account, process payments, and deposit funds into the appropriate state account.

1.6.4.10 Hardcopy Notice Sending Service

The Hardcopy Notice Sending Service can be used by any agency or Division that is required to send paper notices to clients. To use this service, each Division submits their notice jobs and provides all necessary information to the Shared Service. That information is sent to a centralized unit or vendor that prints, processes, and mails the notices.

1.6.4.11 Softcopy Correspondence Generation Service

The Softcopy Correspondence Generation Service is used to send correspondence via email, text message, or Interactive Voice Response (IVR). Because the ACA encourages use of these additional communication methods, many health and human services agencies are exploring Softcopy Correspondence Generation Services. By implementing this functionality as a Shared Service, costs and redundancy can be reduced. However, Softcopy Correspondence Generation Services often require a large number of technical resources to maintain. Because of the relatively small number of DHSS clients, this service may provide a lower return on investment than in larger states.



1.6.5 Case Management as a Shared Service

DHSS has already procured some of these services which can be exposed for reuse. Additional services should be prioritized for implementation. Multiple DHSS systems contain case management functionality. By separating case management into smaller, more modular capabilities, the Department could leverage common functionalities as shared services.

For example, DHSS may want to consider leveraging services such as:

- Grievance and appeals service
- Fraud, waste, and abuse tracking service
- Incident tracking

By leveraging these case management functionalities as shared services, the Department could increase consistency, improve data quality and transparency, and reduce the amount of time required for staff to complete case management tasks. This would reduce costs and allow current staffing levels to meet increasing service demands.

1.6.6 Electronic Document Management System as a Shared Service

Each Division within the Department is required to collect, process, manage, store, retrieve, maintain, and provide search capability for documents as an integral part of day-to-day operations. Documents for a given individual are stored in separate repositories, requiring different access technologies, separate storage, maintenance, and product licensing costs, as well as different business processes, retrieval, and search procedures. The end result for DHSS is duplicate costs across Divisions, lack of standardization of business processes, and difficulty in sharing or retrieving documents for the same individual across different systems.

Differences in each Division's business processes and storage needs make this one of the more challenging functions to implement as a shared service. Challenges include differences in the business processes, document types, workflow, storage requirements, and access needs of each Division.

Implementing EDMS as a shared service will require more than selecting the right technology component. Each Division's requirements will need to be documented in order to develop EDMS as a shared service and to ensure understanding of the current documentation needs. However, the evolution of EDMS to a shared function offers the following potential benefits to Alaska:

- Total lower cost of ownership: elimination of multiple technology and consolidation of current document storage reduces product license and maintenance costs, and allows DHSS to leverage economy of scale for storage of larger documents
- Reduced Duplication of Documents: a single repository also minimizes the potential duplication of documents across different Division level repositories
- Improved Access: leveraging shared services standardizes storage and access routines across the Department, allowing multiple Divisions the capability to securely search for and access documents appropriately
- Standardized Business Processes: document workflow and processes can be automated and standardized across the Department, improving the ability of different Divisions to access documentation. Workflow can be automated across Divisions for documentation notification, eliminating the need to electronically or physically pass documentation from one Division to another. Alerts and notifications can be automated as part of the centralized workflow
- Centralized Security: with a shared repository, document security is centralized, which reduces the security risks incurred with multiple repository environments



Cognosante recommends DHSS proceed with establishing EDMS as a shared service. Work will be required to identify common storage and retrieval requirements across Divisions and implement these as the initial services for the EDMS shared service. The Department will also need to gather statistics for current and future data storage requirements to accurately price the solution and procure the necessary storage.