



Extending MITA Across the Enterprise

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INTRODUCTION

Contending with federal enterprise architecture initiatives, modernizing Medicaid, and overhauling healthcare administration present a myriad of challenges to States. But these challenges also provide unprecedented opportunities to transform Information technology (IT). State Chief Information Officers (CIOs) have a choice: lead the charge or get left behind.

Healthcare isn't just a top priority for individuals; it's a major concern of government at all levels. As a result, States are being challenged to deal with multiple new directives surrounding health information technology (HIT) that affect both business processes and systems.

These directives all have the same fundamental theme: modernizing the administration of healthcare. To provide a better experience for citizens, improved healthcare outcomes with reduced errors, and more efficient cost-saving management for agencies, government is looking for solutions that will allow it to combine and integrate services provided by different agencies and programs. It is looking for flexibility in information architecture and the ability to decouple business functions from hardwired, monolithic legacy applications. In short, government is calling for enabling technology such as Service-Oriented Architecture (SOA).

Modernizing healthcare administration is a huge endeavor with increasing momentum, having a profound impact on IT. States can no longer operate in isolation and agencies need to be prepared to react.

The modernization of healthcare presents an incredible challenge and opportunity for State CIOs. States are required to comply, however they are not being directed specifically how to achieve compliance. Instead, frameworks and capability maturity models, such as those provided in the Medicaid IT Architecture (MITA) initiative, create a standard for measurement and a definition of the to-be state.

Therefore, the selection of the underlying enterprise infrastructure is a critical part of the solution that will affect initial and ongoing MITA initiatives as well as numerous other State agency projects. In particular, implementation of SOA in modernization efforts will impact State CIOs because SOA, to be truly effective, requires an overarching, enterprise view. Additionally, the more broadly SOA is deployed and business services are reused, the more value States will realize from SOA.

State CIOs are in a position to make key decisions before MITA and other agency initiatives dictate a State's architectural direction. Savvy State CIOs will also leverage the momentum—and funding—behind MITA and other initiatives to capitalize on infrastructure investments for the rest of the State IT Enterprise.

The purpose of this paper is to help State CIOs discover:

- How to leverage healthcare initiatives to drive Statewide IT modernization
- How a well-governed SOA is central to modernization success
- The essential components of a successful SOA strategy

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DRIVERS FOR CHANGE: A GROWING MOMENTUM

End-to-end processes of many typical transactions within government are complex, involving multiple systems, personnel, and agencies. Healthcare administration is no different. Whether it's Medicaid, State-run workers' compensation, or State-administered health insurance programs, obtaining service often requires going through many processes, and a separate agency may be responsible for each process or even each step of those processes.

Siloed systems, hardwired interfaces, and process logic locked in monolithic systems make the end-to-end experience disjointed and often frustrating. Today, there is momentum to streamline the healthcare system. In this section we discuss the main drivers for change.

Presidential mandates

Within the first months of his administration, President Obama made healthcare a priority by expanding the scope and eligibility of the State Children's Health Insurance Program (SCHIP). Calling it a "first step," Obama pledged that his administration is committed to "a much broader effort to finally bring our healthcare system into the twenty-first century."¹ The Obama administration is viewing Centers for Medicare and Medicaid Services (CMS) programs in two important ways – initially as a channel to pump funds into the economy and, more strategically, as a way to use some of the directed spending to enhance CMS and health IT systems for long-term service improvement and cost savings.

Funding

More funding than ever is available for modernization, including:

- Grants for HIT/Electronic Health Records (EHR) research and development programs
- Investment in the nationwide HIT infrastructure
- Funding for extension programs and regional centers to provide technical assistance with respect to adoption and use of HIT
- Grants to states and Native American tribes to provide funding to facilitate and expand the exchange of electronic health information
- Competitive grants to establish loan programs for healthcare providers to acquire and use EHR technology
- Grants for integrating information technology into clinical education
- Financial assistance to universities to establish or expand medical informatics programs

Overlapping and ongoing architectural initiatives

The Federal Enterprise Architecture (FEA) arose out of President Bush's "President's Management Agenda" for Expanded Electronic Government in 2002. In turn, MITA is built on the foundation laid by FEA. MITA is one of the largest federally initiated Medicaid reform efforts to affect State CIOs, requiring a level of standardization leading to data exchange and interoperability.

Additional Drivers

The executive and legislative branches of the States all have differing mandates and standards for service delivery, each of which might exceed the minimum requirements dictated by the federal government. In some States, there has been a concerted effort to unify IT systems to achieve cost benefits and reduce complexity.

In short, there is a seemingly unstoppable momentum behind the desire to modernize and streamline healthcare administration. CIOs can leverage this momentum for positive change and lead the wave, or they can let themselves be carried along by it.

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¹ President Obama, East Room remarks after SCHIP Bill signing, February 4, 2009.

MITA GOALS AND OBJECTIVES

Among all the different information architecture and modernization efforts is a set of common recurring objectives. These various goals are clearly highlighted by the stated purpose of the MITA initiative, which is to:

- Develop integrated systems that effectively communicate, achieving common goals through interoperability and standards that are compliant with, but not limited to, Medicaid
- Support process improvement, including achieving interoperability between State organizations and a beneficiary-centric focus not constrained by organizational barriers
- Cut costs and promote reusability through modularity
- Promote an environment that supports flexibility, adaptability, and rapid response to changes in programs and technology
- Promote an enterprise view that supports enabling technologies aligned with Medicaid business processes and technologies
- Improve information sharing and provide data that is timely, accurate, usable, and easily accessible to support analysis and decision making for healthcare management and program administration
- Promote secure data exchange²

According to the CMS, working toward these goals will “change the way States design and build, change, or modify their systems and the manner in which States perform IT investment planning.”³ States must ensure that their business goals and objectives meet the MITA goals and objectives, and they must plan Medicaid Management Information Systems (MMIS) investments within the MITA Framework.

Working toward these goals will “change the way States design and build, change, or modify their systems and the manner in which States perform IT investment planning.”³



² Center for Medicare and Medicaid Services, “What Is MITA? An Overview,” 2008
³ Center for Medicare and Medicaid Services, “Overview of the MITA Initiative,” 2006

MITA COMPONENTS

The information in this section is obtained from The Centers for Medicare & Medicaid Services.

The MITA Framework

The MITA Framework is not an instruction manual; it is a guide for what a modernized agency environment will look like. To implement the framework, States will choose the components that best meet their strategic and tactical IT goals and objectives. The MITA Framework is flexible, allowing an implementation path best suited to each State's strategic and tactical goals and objectives as well as its unique needs.

Therefore, achieving the goals requires an architecture that is also flexible, and SOA has been accepted as the enterprise architecture standard.⁴ According to ZapThink:

SOA views flexibility and responsiveness as the fundamental business requirements; instead of dealing with rigidly defined, concrete requirements from business, loosely coupled services provide the ability for applications to respond to changing requirements, because of the layer of abstraction that SOA provides between the Services and the underlying technology. The movement to SOA is actually a movement to create Services that embody business process capabilities that people can efficiently assemble to meet the specific requirements of a business. What gives SOA those capabilities are its loose coupling, composability, and a high degree of reusability in an environment of heterogeneity.⁵

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SOA enables IT to leverage and reuse assets for faster project delivery and adaptation to changing business requirements. SOA's focus on standards-based development and open integration makes it naturally suited to MITA's focus on improving interoperability and overall processes, on fostering collaboration and consolidation, and on solving data sharing problems among agencies.

The MITA Framework consists of three parts:

Business Architecture

The MITA Business Architecture provides the foundation for defining a 10-year vision for improvements in the Medicaid program operations that result in better outcomes for all stakeholders. The Business Architecture contains models of typical Medicaid business processes and describes how these processes can improve over time. A maturity model is used to show how business capabilities can evolve. States will use the Business Architecture to assess their own current business capabilities and determine future targets for improvement.

Information Architecture

The MITA Information Architecture is a companion of the Business Architecture. Business processes and capabilities are mapped to a conceptual data model and a logical data model. The information requirements of the Medicaid organization can impose change on the business model, and new business process requirements can require new information. It is a two-way street. The Information Architecture also includes a data management strategy and data standards.

⁴ NASCIO, "The MITA Touch: State CIOs and Medicaid IT Transformation," 2008. MITA is an enterprise architecture that employs SOA.

⁵ ZapThink, "Integrating Federal Agencies Through SOA and the FEA: Achieving Citizen-Centric Services," 2007.

Technical Architecture

The MITA Technical Architecture includes business, technical, and data access services; an application architecture; and technology standards. Collectively, these elements define a set of services and standards that States can use to plan and specify their future systems.

The MITA Maturity Model

The Maturity Model is used in contemporary methodologies to establish goals for achieving and measuring progress. Maturity models typically focus on individual enterprises; e.g., a single state Medicaid program. However, MITA has to accommodate 51 individual Medicaid enterprises. We need a Maturity Model useful to all state Medicaid agencies, adaptable to any state at any level of maturity, and able to show different levels of maturity for different business processes within a single state. Such a model did not exist. The MITA team has adapted industry standards for maturity models to the needs of the multistate Medicaid enterprise.

The MITA Maturity Model incorporates five levels of maturity over a 10+ year timeline for the following reasons:

- The Medicaid enterprise is complex; there are many moving parts. We need a maturity model that adequately encompasses the breadth and depth of Medicaid business processes
- A 10-year vision is the right target given our current understanding of technology, policy, and stakeholder drivers
- We want to show a reasonable progression; ten steps over 10 years are too many; two steps are too few; five intervals allow for differentiations, targets for progress that we can understand and implement.

The MITA Maturity Model incorporates five levels of maturity over a 10+ year timeline.

THE FIVE LEVELS OF MATURITY ARE:

Level 1

Focused on meeting compliance thresholds dictated by State and federal regulations.

Level 2

Focused on cost management and improving quality of and access to care.

Level 3

Focused on coordination with other agencies and collaboration in adopting national standards and developing shared business services to improve cost effectiveness of healthcare service delivery.

Level 4

Widespread and secure access to clinical data, enabling the Medicaid enterprise to improve healthcare outcomes, empower beneficiary and provider stakeholders, measure quantitative objectives, and focus on program improvement.

Level 5

National (and international) interoperability, allowing the Medicaid enterprise to focus on fine-tuning and optimizing program management, planning, and evaluation.

PROBLEMS AND PITFALLS

SOA is the traditional architectural standard for healthcare modernization; however it requires strong leadership and it must be well governed to achieve its benefits. The CIO is in a natural position to be the champion of both SOA development and governance, and to lead the way toward true IT and organizational transformation.

CIOs must realize that progress toward compliance will proceed with or without their leadership. State departments, by necessity, will deal with modernization directives. Each State also builds its own MITA solution and has its own choices to make. In the absence of CIO leadership, poorly designed or poorly governed SOA can create a myriad of new problems, which are discussed in this section.

Added Complexity and Inflexibility

Bottom-up development of SOA is a reality for government. Agencies will develop new services to comply with new mandates. As the number of available services increases, the number of cross-agency applications that rely on those services will grow considerably.⁶

With a bottom-up approach and without proper control, SOA can become unmanageable because of the dramatic increase in the number of interdependent moving parts in the systems environment. An increase in the number of parts is accompanied by exponential growth in the number and complexity of interdependencies.

Uncontrolled SOA allows services to be developed, invoked, and orchestrated at any time. Rather than creating a platform for effective reuse and responding to operational goals, uncontrolled SOA leads to redundancy in development and unmanageable implementations.

Inability to reach the objective of Cross-agency Data Exchange

Streamlining healthcare administration provides a benefit to citizens who are frustrated with having to file paperwork with different agencies, and to different agencies that lack the ability to access common information. However, without standards-based development within an SOA governance strategy that is grounded in the MITA framework, this benefit will be difficult to achieve.

Increased Costs due to System Redundancy and lack of Reuse

Two of the chief value propositions of SOA are the reuse of existing services in new processes, and the ability to orchestrate loosely coupled, existing services into composite applications. However, if State CIOs are not engaged in the business process to enforce SOA development in line with the MITA Framework, agencies will not consider reuse when creating services.

Inability to make Progress in Maturity Models

Without leadership coordinating the development of SOA, State agencies risk developing services in a relative vacuum. Rather than working toward the optimal to-be state of national interoperability, they remain focused on the narrow objective of meeting compliance thresholds.

Perhaps most important, without State CIO engagement, States may achieve short-term gains but will end up being poorly positioned to meet the long-term goals of healthcare modernization and citizen-centric program administration.

SOA requires strong leadership and must be well governed to achieve its benefits.



⁶ Ibid.

SOLUTION - THE WELL-GOVERNED SOA

MITA is one of the largest federally initiated Medicaid reform efforts to affect State CIOs, requiring a level of standardization that will ultimately lead to effective data exchange and system interoperability. SOA is specifically stated as a solution that underlies the MITA initiative, and it must be designed to reflect and support the MITA reference framework.

To meet the challenges posed by delivering cross-agency services, agencies will need sophisticated tools to govern these services. The tools must provide the capability to identify all of the available services, the specific business value that each provides, and the applications that rely on each service – all particularly important in minimizing the risks inherent in a cross-agency computing environment.

Such capabilities represent the foundation of SOA governance, which is simply the process of ensuring and validating that services and other assets within the SOA continually meet established expectations for performance, quality, and reliability. SOA governance begins with creating standards for designs and processes that are then applied to assets as they are created, used, and changed.

A well-governed SOA is also essential because of the bottom-up approach that government has taken to SOA, as well as the complexity of legacy environments and number of different workgroups involved in development. Incremental, bottom-up development is possible—if done within a well-governed framework. SOA development does not have to be a big-bang, rip-and-replace approach, and can include the service-enablement of existing legacy applications. In fact, as noted by the NASCIO, “Incremental progress is the name of the game,” and MITA will require a “slow and steady” approach to planning and development.⁷

A well-governed SOA will enable agencies to achieve the key benefits of healthcare modernization. The benefits of a well-governed SOA are discussed below.

Better Interoperability, Integration, and Information Sharing

One of the key objectives of healthcare modernization initiatives, including MITA, is to connect the silos that exist between State agencies. Interoperability between systems within and among agencies that service the same beneficiaries will provide far-reaching benefits. Additionally, when agencies’ core business functions are exposed as services, they can be integrated with other agencies’ services and combined as composite applications.

To automate the exchange of information among different agencies and between agencies and beneficiaries, States need SOA solutions that differ from Electronic Data Interchange (EDI) strategies of the past. Fundamental SOA technologies, such as an Enterprise Service Bus (ESB), and robust integration platforms enable agencies to integrate new and existing applications within a Service-Oriented Architecture and with external business partners. With a foundation for SOA in place, agencies can also develop integrated systems that effectively communicate, achieving common goals through interoperability and standards that are compliant with, but not limited to, the MITA initiative.

Although one of the benefits of SOA is easier integration, the sheer number of new services being developed from the ground up and SOA enablement of existing legacy systems make a well-governed SOA a priority for government. States should look for an integration platform that combines SOA governance with application integration, application modernization, and high-speed messaging.

A well-governed SOA will enable agencies to achieve the key benefits of healthcare modernization.

⁷ NASCIO, “The MITA Touch: State CIOs and Medicaid IT Transformation,” 2008. MITA is an enterprise architecture that employs SOA.

SOA also enables States to provide timely access to accurate information for better healthcare administration. The standards-based development of SOA improves information sharing and lets States work toward the beneficiary-focused federal directive by enabling multi-platform information delivery.

Process Improvement

Traditional approaches to medical information management require users to contend with multiple systems and/or interfaces to perform a single process. A lack of integration means that manual interruptions break up processes into disconnected steps.

Agencies need SOA solutions that can automate processes and simplify execution of single tasks, support integration across functional and technical boundaries through the use of standards, and promote information sharing and reuse.

Federal architectural initiatives will ultimately cause composite applications (including mash-ups, Web 2.0, RIA, and others), with functionality delivered by many agencies, to become the norm, forcing greater process collaboration among agencies on many levels.⁸ NASCIO projects that MITA itself will span Medicaid programs nationwide and beyond into multiple program areas, such as behavioral health, and drive process standardization across the enterprise.⁹

Therefore, it is essential that government employ a platform for SOA development that can support process improvement in this environment. This includes achieving interoperability between State agencies and creating a “beneficiary-centric” focus. States need a platform that combines process management, monitoring, and composite applications with SOA to provide new levels of visibility and flexibility within the infrastructure. The platform must allow States to unlock valuable services from existing systems and expose them through business processes that are quick and efficient to change.

The solution should be designed to deploy the MITA Business Process Models in a State’s unique environment, integrate them with existing applications and databases using web services, and have them drive continuous process improvement in key areas of their MMIS operations.

Cost Control and Application Reusability

With about 20% of healthcare dollars going into the Medicaid program, States are justifiably concerned with understanding and controlling costs. Cost control is one of the goals of implementing MITA and developing an SOA-based, interoperable network that enables reuse of services.

Deploying an SOA involves service enablement, orchestration, mediation, and governance. To establish all of these SOA capabilities, enterprises require a solution that will work with their existing infrastructure, eliminating the cost and extreme risk of wholesale, rip-and-replace approaches. Once established, SOA enables IT to leverage its assets for faster project delivery, adapt to changing business requirements more quickly, and foster IT-enabled competitive advantage.

⁸ ZapThink, “Integrating Federal Agencies Through SOA and the FEA: Achieving Citizen-Centric Services,” 2007.

⁹ NASCIO, “The MITA Touch: State CIOs and Medicaid IT Transformation,” 2008. MITA is an enterprise architecture that employs SOA.



A well-governed SOA provides visibility into SOA assets and where dollars are being spent. MITA offers States much more than a technical architecture or business process—it also offers the potential to reduce costs and improve the quality of care.¹⁰

Agility and Visibility

SOA-based MITA initiatives are designed to provide an environment that supports flexibility, adaptability, and rapid response to changes in programs and technology. By creating reusable connections and components, SOA also positions States to respond to evolving mandates quickly. Therefore, States should seek an SOA solution that enables them to effectively “unbundle” custom solutions and hard-coded business logic, replacing them with open, reusable services and the ability to easily consume commercial software solutions.

The unbundling of applications, combined with the business-process focus of SOA, provides better visibility into agencies’ activities. With the right governance and business activity monitoring tools, States can obtain and evaluate metrics along the entire spectrum of process performance. Individual services can be measured for performance and adherence to Service Level Agreements (SLAs). The tracking of data through services, including who has accessed the data, helps agencies contend with privacy requirements.

As services are combined into composite applications, gaining visibility is essential to gauge the entire impact of changes made to those services and ensure that unintentional disruptions do not occur. Additionally, this level of governance is important to a bottom-up approach to SOA development by providing vital insight into service availability and use. To gain this visibility, States need a consolidated SOA governance and lifecycle management platform that gives IT the optimal balance between agility and control for their SOA throughout all stages of service development and consumption—at design-time, run-time, and change-time. The platform should be easy to use in heterogeneous environments and automate end-to-end lifecycle governance.

CONCLUSION

Modernizing the administration of healthcare involves orchestrating people, processes, and technology. SOA is a proven solution for providing that orchestration, and new tools will be brought in with the development of SOA.

Rather than combining a set of disparate tools, a State’s SOA solution should be a unified platform that enables business and IT to collaborate on the development of services and the creation of new, automated business processes. It must also provide strong governance throughout the lifecycle, from design-time to run-time to change-time, so that at any stage, either business or IT can see how processes are being built, simulate new processes and assess the impact of changes, and monitor and manage existing processes.

SOA development does not happen in a vacuum, and thus requires leadership. Although mandates help provide the momentum for agencies to change, the natural resistance of staff to change can present a powerful counteracting force. Just as healthcare is about people, the modernization of healthcare administration must involve people.

State CIOs have an unprecedented opportunity to take a leadership role in this change and to lead the SOA charge. In doing so, it is imperative that they choose tools and partner with solution providers who have established subject knowledge and the proven track record to service the enterprise-wide infrastructure needs of State governments.

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¹⁰ Ibid.

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