Texas HIE Interoperability Guidance

Enterprise Architecture Blueprint
Lifecycle Management Plan

August 19, 2011
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Evaluation and Assessment
This document contains information gathered during the development of the Texas Enterprise Architecture Blueprint (EAB) and the Technical Standards Report to identify the appropriate process for managing the lifecycle of the enterprise architecture, the interoperability between the local, regional and state level HIEs, and identified use cases to support the exchange of health information among organizations.

Document and Report
As a result of this research, this document presents the EAB Lifecycle Management Plan for the Texas HIEs.
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1 Purpose and Objectives

The purpose of the Enterprise Architecture Blueprint (EAB) Lifecycle Management Plan is to define the process for Texas Health Services Authority (THSA) and stakeholders to continue to develop the EAB through relevant updates to architecture, standards and context with the Texas Health Information Exchange (HIE) landscape.

Most organizations tackle business problems on an incremental basis versus looking holistically across the enterprise. Complex environments are impacted by underlying technology facing sub-optimal architectures, inefficient systems and high-cost structure. Complexity and duplication inhibits growth, destroys underlying IT scale and agility, impedes an organization from achieving their goals and objectives, and erodes value.

A well thought out Enterprise Architecture allows THSA to provide guidance for the local, regional and state level HIEs and enables providers to re-use and leverage capabilities.
2 Stakeholder Engagement Process

The drafting of this document has been an iterative process. The intent of this process has been to ensure THSA stakeholders are aware of the approach and content and to, at each step, allow an opportunity for stakeholders to ask questions and provide feedback. The following table contains a summary of the key THSA stakeholder engagements and specifies the stakeholder groups, engagement dates, and content reviewed.

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3 State Level HIE Interoperability Strategy and Timeline

The State-level HIE strategy requires the Texas Health Services Authority (THSA) and the Health and Human Services Commission (HHSC) to identify and implement state-level operations to enable the establishment and operations of HIE capacity statewide. First and foremost, this will require the continued administration of the THSA and the implementation of the governance structure developed in the planning process. This governance structure will be used to identify core HIE services, with an initial priority focus placed on electronic prescribing, electronic laboratory ordering and results delivery, and electronic exchange of clinical summaries. Over time, additional services may be pursued based on value and meaningful use requirements.

State-level operations will also include establishing and maintaining required policies and standards for local/regional HIEs. This includes establishing and maintaining interoperability and technical standards, financial and business practices, and a process for developing and maintaining privacy and security policies. State-level operations will also include legal services to support the development of HIE trust agreements and a universal consent form, and to provide ongoing analysis of the legal framework.

The THSA also plans to enhance the value of HIE by developing state-level shared services. These services will include a record locator service to connect local/regional HIEs and connectivity to the Nationwide Health Information Network (NwHIN) to facilitate nationwide interoperability and connectivity with the state’s federal partners.

3.1 National HIE Functionality

In terms of technical infrastructure, the top priority described by the Office of the National Coordinator (ONC) is to “develop or facilitate the creation of a statewide technical infrastructure that supports statewide HIE.” This goal is supported by the following core set of essential functionality described below, with an initial emphasis on electronic prescribing, electronic laboratory ordering and results delivery, and electronic exchange of clinical summaries:

- Electronic prescribing and refill requests
- Electronic clinical laboratory ordering and results delivery
- Electronic public health reporting (e.g., immunizations, notifiable laboratory results)
- Quality reporting
- Prescription fill status and/or medication fill history
- Clinical summary exchange for care coordination and patient engagement
- Electronic eligibility and claims transactions

3.1.1 Priority National HIE Functionality

Based on the Program Information Notice issued by ONC in July 2010, the Texas state-level HIE planning process will initially focus on enabling the following elements of HIE:

- Electronic prescribing and refill requests: Providing interoperability to enable electronic prescribing and refill requests will be accomplished through the use of industry-standard
protocols. It is anticipated that Surescripts, and other appropriate providers will participate in enabling this technology for the THSA HIE.

- Electronic clinical laboratory ordering and results delivery: Providing interoperability to enable clinical laboratory ordering and results delivery will be accomplished through the use of industry-standard protocols.
- Clinical summary exchange: Providing interoperability to enable clinical summary exchange will be accomplished through the use of industry-standard protocols.

3.1.2 Additional HIE Service Standards and Requirements Identified by THSA

In order to support the statewide HIE initiative and the ONC-defined core HIE functionality listed above, the THSA will develop the standards and requirements to be used to guarantee inter-HIE interoperability. The THSA Collaboration Council will ultimately finalize effective and efficient standards and requirements for the following HIE core services:

- Record locator services (RLS): If the patient is not located within the current region, the service must support federated queries to other regional HIEs to enable a statewide record locator search.
- Patient duplication reduction services: Patient records established in disparate providers’ systems that are later joined via HIE can result in redundant or fragmented records in multiple networks. Patient duplication reduction services are utilized to reduce redundancy of patients between networks and providers and provide a single holistic view of the patient’s records.
- Meaningful use analytics: Most of the meaningful use analytics criteria are the responsibility of the EHR software, which must include the ability to share or transport those records and verify, keep statistics, and perform analytics on these record transport services.
- Replication services: The definition of standard(s) and methods necessary to replicate patient identification numbers or records throughout the system for disaster recovery, redundancy, and/or performance purposes.

3.2 Statewide and Federal Interoperability

The ONC and THSA want to achieve the core services and also leverage existing and ongoing state and federal initiatives; they have defined the interoperability goals listed below. These initiatives, while still very important, will occur in parallel but will follow in priority the development of the core HIE services identified for meaningful use.

Federal interoperability opportunities:

- Nationwide Health Information Network (NwHIN) connectivity
- Veterans Health Administration (VHA) connectivity
- Department of Defense (DoD) Health Services connectivity
- Indian Health Services (IHS) connectivity
- Center for Disease Control (CDC) connectivity
- Medicare

Statewide interoperability opportunities:

- Syndromic surveillance
• Disease registries
• Notifiable laboratory results
• Immunization
• Community preparedness
• Biosurveillance
• Medicaid/Children’s Health Insurance Program (CHIP)
• Hospital-related data

3.3 Strategic Timeline

As the THSA begins to build and implement the state-level HIE and works to bring on early adopters to the network, a number of dependencies can affect the implementation timeline. The following diagram shows the anticipated timeline for completion of key HIE implementation tasks as well as key dependencies.

Figure 1. Health IT Timeline

While the preceding timeline provides an overview of the key activities and tasks, the list below outlines the key dependencies for the remainder of 2011 and through 2012.

• HL7 Balloting – As new standards or changes to existing standards are identified, the HL7 workgroups have a defined process for documenting the standards and working with the community on balloting the standards for approval. Drafts of the standards are published for review and comment and voted on during the balloting cycles (January, May and September of each year).
• Final Rule for Meaningful Use Stage 2 - The Health Information Technology Policy Committee (HITPC), which advises the Department of Health and Human Services, received public comments concerning Meaningful Use Stage 2 in February 2011 based on an initial set of proposed requirements. The Committee recently adopted the Meaningful Use Workgroup’s recommendation to delay the transition from Stage 1 to Stage 2 by one year (from 2013 to 2014) for providers that attest to Meaningful Use in 2011. Therefore, providers beginning the program later than 2011 will not be impacted. The HITPC recommendation is nonbinding and,
Centers for Medicare & Medicaid Services (CMS) will decide whether they will incorporate that suggestion into their final rule for Stage 2.

- NwHIN Exchange – NwHIN Exchange (formerly CONNECT) includes one or more open source applications for each of the components, plus some private vendor tools such as IBM/Initiate Systems' master patient index software. The Federal Health Architecture initiative, a collaboration of multiple federal departments and agencies, released CONNECT's source code as open source and began developing the open source community in April 2009. Releases are announced on a quarterly basis.

- NwHIN Direct - NwHIN Direct is not developing connectivity software, but the tools to guide development. These include descriptions of standards, services and policies to enable secure health data transmission over the Internet.
4 Standards and Specifications

The EAB Lifecycle Management Plan will focus on interoperability standards and promoting interoperability and consistency in health information exchange locally, regionally, statewide, interstate and nationally. The plan will also include standards for technology and semantics and will have at its core, standards provided by the ONC and CMS.

In order to promote statewide interoperability, the THSA is defining a set of standards that are based on national standards (NwHIN, HITSP) and compatible with HHSC and HITECH guidelines but are specified by the state to reduce technical and semantic ambiguity. By laying down these global interoperability standards, the THSA will promote a comprehensive strategic vision to meet national, statewide, and local community goals while trying to reduce any impediments to adoption and adherence. These standards will support the most sophisticated hospital networks as well the least sophisticated communities.
5 Lifecycle Process

The Lifecycle Management process establishes lifecycle controls for the enterprise architecture blueprint and the technical standards. This process ensures the accuracy of captured information and enables relationships to be established between the current blueprint and standards and potential additions. As HIE implementation begins and the EAB matures, the continuous management of the architecture will allow for the evaluation and introduction of new capabilities, functionality and technical standards.

The lifecycle management process focuses on understanding the changes to the EAB by identifying which areas within the architecture have impact and what the impact is to the overall blueprint. The assessment looks at which way the various stakeholder groups are impacted and identifies needs to mitigate the identified impacts.

The relationship of each stage to the others can be roughly described as a waterfall, where the outputs from a specific stage serve as the initial inputs for the following stage. During each stage, additional information is gathered or developed, combined with the inputs, and used to produce the stage deliverables. It is important to note that the additional information is not restricted in scope; “new ideas” that would take the project in directions not anticipated by the initial blueprint are incorporated into the project.

![Diagram of Enterprise Architecture Lifecycle Management Plan](image)

*Figure 2. Enterprise Architecture Lifecycle Management Plan*
5.1 Planning Stage – Change Identified

The planning stage establishes a bird's eye view of the intended change identified, and uses this to establish the basic structure, evaluate feasibility and initial risks associated with the EAB, and describe appropriate management and technical approaches.

The most critical section of the planning is a listing of high-level functional capabilities and services, or end state goals of the change identified. The minimum information for each goal consists of a title and textual description, although additional information and references to external documents may be included.

During this stage it is also important to conduct a high-level current capability assessment of the organization to determine the following:

- What capabilities are currently available?
- What software and other technical infrastructure is currently in play to support the change identified?

The outputs of the planning stage are the detailed change request and a high-level timeline plan.

5.2 Impact Assessment

The purpose of the Impact Assessment is to understand the target state of the EAB and the impact to the stakeholder. This is crucial input for the assessment as it facilitates the identification of the gaps between the current and future state. The EAB should document the current and future business drivers and how capabilities and services can support these drivers.

An Impact Assessment involves interviews with key stakeholders (business users and subject matter experts, including project team members) to define and document the essential changes between the current and to-be state. Interviews will identify the impacts of these changes on each key stakeholder group. Impacts of the changes to specific organizations and stakeholder groups are discussed and documented during these sessions.

The guiding principles for completing an Impact Assessments are to:

- Involve key stakeholders from each impacted area
- Ensure a comprehensive scan of existing capabilities and services that may affect this change effort
- Tailor the assessment to the audience’s requirements

A suggested approach to completing the Impact Assessments:

- Schedule meetings with key stakeholder representatives, process leads, and subject matter experts
- Review scope documents and the Enterprise Architecture Blueprint
- During interviews, identify the current structure, processes, workflows, and communication each stakeholder group impacted by the change
• Identify the associated impact in each of the areas mentioned above as a result of the anticipated target capabilities and services
• Collect information/documentation related to each impact area
• Ask individuals their concerns related to the change and other barriers that might impact adoption of the change
• Summarize whether the impact is high, medium, or low for each impact area along with risks and issues
• Report results to each stakeholder group impacted by the change

There are a few key considerations to think about before completing the Impact Assessment.

• Determine the level of detail according to the scope of the change identified. An organization-wide change could involve multiple stakeholders and will require an Impact Assessment at a high-level. It would focus on impacts related to organizational functions and strategies. A local or regional level change involving personnel within one area would be conducted at a lower level of detail.
• Include the appropriate individuals in situations where there may be issues regarding data privacy, union impacts, legal restrictions, etc.

5.3 Report and Document EAB Updates

The next step is to capture the results of the impact assessment and document the updates to the EAB. Accurately capturing and documenting the update ensures changes are performed, controlled, and tracked systematically and in an rigorous manner.

The report and documentation should include:

• Overview of the changes and how they fit into the overall vision of the EAB
  o Purpose and Objective
  o Timelines and key dates
  o A summary of high-level impacts (from the Impact Assessment)
  o Issues/challenges to consider and mitigate
  o Assumptions
• Roles and responsibilities for the change effort
• Additional information that is relevant to the change

5.4 Implementation Guide

An Implementation Guide will be developed to serve as a technical reference for HIE implementation of the new capabilities and services. It will include the required as well as additional implementation guidelines, including IHE profiles, HITSP implementation specifications and other emerging interoperability standards. The Implementation Guide will also include the specifications for the statewide interoperability standards including terminology/vocabulary and data type needed to exchange data.

The Implementation Guide will be publicly available for the local HIEs, but managed and maintained by THSA technical architects and key stakeholders. The THSA will also provide implementation
specification consulting on the new services and capabilities on an as-needed basis for local and regional HIEs that need help interpreting, understanding, or implementing the guidelines.
6  Regional HIE Certification Process

Certification of Health IT will provide assurance to purchasers and other users that the Health IT system, or other relevant technology, offers the necessary technological capability, functionality, and security to help them meet the meaningful use criteria established for a given phase. Providers and patients must also be confident that the electronic health IT products and systems they use are secure, can maintain data confidentially, and can work with other systems to share information.

For THSA, a clear model for governance, standards and the onboarding process will provide local and regional HIEs a strategic approach to certification, ensuring that they are suitably prepared for the requirements involved. Across the state, a number of local and regional HIEs are underway to enable HIE capabilities, however, some participants may need additional integration (architecture and assistance) options for integration into the state level HIE.

The THSA can leverage a multi-pronged approach to meet near-term objectives while local and regional HIEs prepare for certification. The approach is similar to other statewide HIEs that have clearly defined processes that allow stakeholders to participate in the HIE based on the participant’s ability to comply with the fundamental system architecture and governance designated by the HIE. The first step in this process is to establish a sound technical design that will allow each of the stakeholders to join the state level HIE based upon their unique requirements. Prior to connecting to the Texas State HIE backbone, Local HIEs must demonstrate the following:

- Conformance with security standards (i.e. Certificates)
- Conformance to a common security framework
- Conformance with messaging standards
- Conformance with terminology standards
- Ability to meet SLAs (i.e. Clinical Summary Queries)
- Execution of trust agreement with THSA

**Figure 3. High-level HIE Certification Process**
7 Roles and Responsibilities

Successful execution of the Enterprise Architecture Blueprint management plan requires input from a number of key stakeholders. The table below outlines responsibilities for the management of the EAB across the various stakeholders identified.

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<tr>
<th>THSA</th>
<th>Data Standards</th>
<th>Technical Architecture</th>
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<th>Consumer Engagement</th>
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R = Responsible  A = Approver  S = Supportive  I = Informative

Figure 4. Outlined responsibilities by stakeholder