

NHSIA Webinar Series

Overview

May 31, 2012

Slide 1 – NHSIA Overview

No notes.

Slide 2 - Webinars will be held Thursdays at 1 PM Eastern

This is the first in series of 5 webinars to introduce the National Human Services Interoperability Architecture (NHSIA, pronounced niss'-e-a).

This series is intended as an overview of the several hundred pages of NHSIA information being made available on the ACF web site. The time in the webinars is limited. But we hope that the webinars will provide sufficient information to allow you to explore the detailed documentation and examine the topics of most interest to you in more detail.

Slide 3 – Outline

This first webinar is intended to define the problem being addressed, provide an initial understanding of what NHSIA is, and indicate how NHSIA addresses the problem.

Slide 4 - What is the problem being addressed?

No notes.

Slide 5 – The Fundamental Problem: Silos

Currently, systems supporting ACF and other human services programs are often “siloes”, meaning they are vertically integrated to support delivery of a narrow range of services, and are not interfaced or well integrated with other systems that deliver related services to the same community. Siloes systems may provide excellent service within their scope. However, from the perspective of the whole environment, they may be characterized by redundant data entry, duplicate processing, inability to exchange information, susceptibility to duplicate and fraudulent payments, and unnecessarily complicated and expensive operations.

In other words, each human service program has its own siloes processes, applications, services, and information and may have duplicate servers, storage, and software. This results in:

- Lack of access to information
- Disconnected processes
- Redundant applications, services, data, and infrastructure
- No integrated picture across clients, programs, or jurisdictions

The desired state is to have an environment characterized by interoperability. Interoperable systems share information and processes to efficiently deliver integrated services to the client community. Interoperability can be achieved via the design and implementation of an overall National Human Services Interoperability Architecture, which defines the principles, standards, services, security, and interfaces to be followed by the component elements within the total system of systems.

Slide 6 - NHSIA Provides a *Framework and Roadmap To Achieve Common Goals*

NHSIA provides a framework or a blueprint for moving from today's (as-is) siloed situation to a future (to-be) state where some significant goals have been achieved.

The worst case As-Is situation today is characterized by ...

- Fragmented information across states, counties, and programs
- Duplication and waste in development, systems, and operations
- Aging, monolithic systems
- Limited performance information, fragmented by program and jurisdiction

In the envisioned To-Be environment, implementation of NHSIA provides...

- Common business processes (e.g., like MITA did for Medicaid)
- A context for NIEM. In order to define a NIEM exchange, you must have a context which NHSIA provides.
 - As an example, consider integrated eligibility: if you develop NIEM IEPDs without an understanding of the eligibility system functions, business processes and rules, you are likely to end up with very ad hoc NIEM IEPDs that may suit the purposes of one program or jurisdiction but not be general purpose.
 - Another example is establishment of the equivalent of an EHR for human services; who maintains it? How is it updated? Many issues beyond just defining a NIEM transaction to carry its content (although NIEM is an essential component)
 - How do you know the requirements on a NIEM transaction? You must understand how the endpoints work, what their functions are, and what data they need to carry out those functions.
- A shared infrastructure for information technology
- Support for comprehensive performance management

Implementing NHSIA should result in achieving several goals, including ...

- Improved processes, for example: integrated eligibility, integrated case management, performance management, provider management, ...
- Information will be available to be shared across systems, programs, and jurisdictions
- Technologies like electronic workflow and paperless processes will improve efficiency and effectiveness

Making better, comprehensive information available to analysts and decision makers will lead to better outcomes

Slide 7 – What is NHSIA?

No notes.

Slide 8 – NHSIA Is the Human Services Equivalent of the MITA Architecture Framework

Many of you are familiar with MITA, so it is helpful to compare MITA and NHSIA.

MITA is an evolving CMS initiative that fosters an integrated business, information and technological approach to building management systems that are client-based and capable of sharing information across organizational silos based upon nationally recognized standards.

MITA provides a common framework for all Medicaid stakeholders to focus on opportunities to build common and shared services by decoupling legacy systems and processes, and liberating data previously stored and contained in inaccessible silos. By providing such a framework for the Medicaid enterprise to plan, architect, engineer, and implement new and changing business requirements, the effort to modernize Medicaid Information Technology (IT) systems and processes becomes more stable, uniform, and lowers the risk of poor implementation. The MITA 3.0 Framework can be reviewed on CMS' Web site at <http://www.medicaid.gov/Medicaid-CHIP-Program-Information/By-Topics/Data-and-Systems/Medicaid-Information-Technology-Architecture-MITA.html> .

NHSIA builds upon MITA. It takes the MITA concepts and principles, and extends them beyond Medicaid to apply to human services in general. In particular, NHSIA makes extensive use of the MITA Business Architecture and uses it as the basis for NHSIA Business Viewpoint.

Slide 9 - What is NHSIA?

An **architecture** is a description of the components, structure, and unifying characteristics of a system.

An **enterprise architecture** is a rigorous, comprehensive description of an enterprise, including mission and goals; organizational structures, functions, and processes; and information technology including software, hardware, networks, and external interfaces.

NHSIA is an enterprise architecture, the **enterprise being the provision of human services across the nation**. This national enterprise is large, and comprises many lower level enterprises. Therefore, NHSIA can be thought of as a **multi-enterprise or community architecture**.

NHSIA will be part of a very roughly hierarchical set of related architectures as illustrated in the slide. The scope, level of detail, and content of these architectures often do not dovetail in a simple, structured way. Nevertheless, NHSIA should be developed with an understanding of these related architectures to ensure interoperability and avoid duplication. The architectures are federated; each level has a scope and purpose and is defined to an appropriate level-of-detail as summarized in the slide.

NHSIA focuses on very high-level guidance to enable sharing of information and IT services across enterprises. It addresses problems that an individual enterprise, e.g., a county or state, can't address on its own.

Note: The figure adapted from FEA Practice Guidance, Federal Enterprise Architecture Program Management Office, OMB, November 2007.

Slide 10 - The NHSIA Architecture Framework

An architectural framework is a structure for describing an architecture. A framework must be carefully chosen to suit the objectives of each specific architecture to be developed. Numerous generic frameworks have been defined by governments, private consultants, and systems integrators. These generic frameworks are intended to be tailored to specific applications. The proposed approach adapts the frameworks defined by the Federal Enterprise Architecture (FEA) and the DoD Architectural Framework (DoDAF). We also analyzed the Medicaid IT Architecture (MITA) Framework and are adapting its applicable features and incorporating it into NHSIA.

A brief description of each viewpoint is:

- **Overview:** Overarching aspects of architecture context that relate to all views, e.g. key concepts
- **Capability:** Required high-level operational capabilities described in terms easily understood by decision makers and used to communicate a strategic vision. Includes a NHSIA scorecard and performance reference model.
- **Business:** Business processes and operational scenarios
- **Systems:** New and legacy systems, including software applications and services: their context, components, functions, and interfaces.
- **Infrastructure:** The IT environment including networks, computing facilities, servers, and enterprise services
- **Information:** A conceptual data model (including high-level data classes, associations, attributes) and standards for data exchanges
- **Project :** Strategies and projects planned or required to implement the capabilities defined by the architecture

Slide 11 – NHSIA Incorporates Best Features and Lessons Learned from a Range of Activities

The NHSIA architecture framework is useful in organizing and analyzing the as-is situation in the human services domain. As one of the early steps in the development of NHSIA, we conducted a survey of existing initiatives and projects undertaken by thought leaders and early adopters. The framework provided a way to collect lessons learned (good and bad) and best practices.

Four initiatives that were most heavily leveraged as a result of this were MITA, NIEM, GRA, and GFIPM. But elements of many other projects were also included. Many of these are shown here, and a more complete list is documented in the NHSIA “As-Is Report”.

Slide 12 – Security Aspects Are Addressed Across the Viewpoints

Information security is an overarching concern for NHSIA. A fundamental NHSIA goal is to enable information sharing. However, it is equally important to preserve information security. This means that sensitive information is protected. Only properly authorized individuals can access sensitive information. The information is protected from accidental or deliberate unauthorized change or loss.

We don't have a separate security viewpoint. These security requirements are reflected in each of the NHSIA architectural viewpoints. For example, the capability viewpoint specifies that the client should be able to determine rules for who can access their information. The Infrastructure viewpoint needs to include the technical means to implement this capability.

Slide 13 - How Does NHSIA Address the Problem?

No notes.

Slide 14 - How Does NHSIA Address the Problem?

We began this presentation by describing the problem as one of fragmented (or siloed) processes, systems, information, and services.

We then described a high level overview of NHSIA and its features. These features are summarized above.

So how does NHSIA address the problem? The next few slides provide some illustrations.

Note that if the wording in the box above seems familiar, it is paraphrased from the MITA statement (shown on slide 8) with "NHSIA" substituted for "MITA".

Slide 15 - NHSIA Provides A Framework for Shared Business Processes

NHSIA provides a framework for shared business processes. With NHSIA

- Stakeholders have a framework for understanding processes common across programs;
- They can identify capabilities and processes that can be shared or re-used across programs;
- Stakeholders can work towards establishing shared services that will enable these capabilities and processes; and
- Federal and state partners can work towards a cost allocation strategy that encourages and supports smart deployment of capabilities.

Slide 16 - Key Stakeholders Will Share Information

NHSIA provides a framework for sharing information. This will allow various types of properly authorized stakeholders to gain access to information they need to support making better decisions.

As an example, a case worker will be able to electronically access a complete view of all the human services that a client is receiving and any other relevant information in one step. This contrasts to the current situation where the case worker may need to access multiple systems or use e-mails and phone calls to collect all the information necessary for making a good decision.

Slide 17 - Reusable, Shared IT Services and Applications Will Support Multiple Programs, Jurisdictions, and Functions

NHSIA addresses the interoperability problem by breaking down the barriers of siloed systems.

Its use results in a tool-kit of shared services that allow finding and using critical classes of data such as person, case, provider, or human services program. For example, several services enable a worker or a system to locate a person's records, verify information about the person, and access contact information, among other things.

NHSIA also promotes sharing applications across multiple human services programs. This includes developing more functionally oriented programs (e.g., Integrated Eligibility) vs. program oriented applications (e.g., TANF eligibility). It also includes sharing supporting applications (e.g., document management) among multiple human services programs.

Slide 18 - Shared IT Infrastructure Will Support Multiple Users, Systems, and Datasets

The previous two slides addressed sharing information and applications. It is also possible to share the underlying computing and networking infrastructure across human services programs. In the past, large human services systems were often acquired and designed as a single, monolithic package of hardware and software bundled together in a closed system. Today, technologies such as service-oriented architectures, consolidated data centers, cloud computing, and virtualization make it possible to share the underlying hardware, networks, and systems software across multiple human services programs, breaking down another set of silos.

The goal is to build capabilities once and share them across many programs.

Slide 19 - Metrics Will Be Collected During Routine Operations for Fraud Detection and Performance Assessment

A cross cutting feature of NHSIA is a comprehensive approach to fraud detection and performance assessment.

The underlying concept is that we should "instrument human services". Data extraction points should be built into applications so that detailed information about clients, providers, services, events and transactions is extracted and recorded for analysis purposes. This should be an automated by-product of normal operations, not an extra data entry step to be done after the fact.

NHSIA envisions that this information will be collected in a set of integrated performance information repositories (PIRs). The term integrated refers to the idea that PIRs will house data collected from multiple human services programs and store them in an integrated repository that permits analytic and reporting software to access all the data.

The data can be used in near real time to assist in fraud detection by cross checking information and looking for inconsistencies and correlations. It can be used to support performance assessment and longitudinal research studies.

Slide 20 - Identity Management and Access Control Will Ensure Privacy and Confidentiality

And finally, we have mentioned that information security is an overarching concern for NHSIA.

Partnering organizations will establish agreements to define rules of behavior.

Single sign-on technology will allow a user to be authenticated once and then to access all the systems and information for which they are authorized.

Attribute-based access control technology will grant access rights to specifically defined data under specifically defined criteria that take into account such things as who the user is, what role they are performing, what the data is, and more.

Finally, the client will have control of granting release authorization for their sensitive information.

Slide 21 - Summary

No notes.

Slide 22 - Summary of NHSIA Features

NHSIA is based on extensive analysis and documented in several hundred pages of text and diagrams. However, this relatively short list of features captures its essence.

Slide 23 - NHSIA and MITA Are Closely Aligned

In April 2011, the Centers for Medicare & Medicaid Services (CMS) issued new standards and conditions that must be met by the states in order for Medicaid technology investments (including traditional claims processing systems, as well as eligibility systems) to be eligible for the enhanced match funding. These are summarized in the table.

NHSIA is in complete alignment with each of these. It attempts to apply these conditions and standards beyond Medicaid to the full range of human services.

Looking at the last condition in particular, this is the primary goal of NHSIA.

Slide 24 - Questions and Next Steps

No notes.

Slide 25 - Webinars will be held Thursdays at 1 PM Eastern

The next webinar in this series is scheduled for two weeks from today.

Slide 26 - Questions?

Please submit any questions you have now via the chat window. Time permitting, we will answer them now. Otherwise we will respond with answers on the ACF web site.

Questions that occur after we are finished today can be submitted to Joe Bodmer using the contact information provided above.

Slide 27 - NHSIA Documents Related To This Webinar

These documents (available on the ACF website) are the ones most relevant to today's presentation.

Start with the README file. It provides a brief summary of each available document and will help you to navigate among the documents.

Slide 28 - Next webinar: Key Concepts

This is the planned topic for next time.

Slide 29 - Thank you for participating and see you next time!

No notes.

Slide 30 - Reference Material: Summary of Each Viewpoint

No notes.

Slide 31 - The Capability Viewpoint Describes the Envisioned Future (the “To-Be State”)

- This next series of 5 slides provides some highlights of 5 of the NHSIA viewpoints: Capability, Business, Systems, Infrastructure, and Information.
- The **Capability Viewpoint** provides a high-level, yet specific description of what new or improved capabilities would result from the implementation of the NHSIA.
- One audience for this viewpoint is the developers of the other NHSIA viewpoints. This viewpoint provides the cornerstone for the development of the architecture. It sets the scope and provides criteria to determine what is inside and what is outside the boundaries of NHSIA. Any business process, system, service, or technology must tie back to some capability in order to be in the NHSIA scope.
- A second audience for the Capability Viewpoint is those who are charged with developing strategies and plans for state, local, and private provider architectures and systems. The capabilities provide a basis for evaluating the impact and value of alternative solution architectures implementation approaches.
- The Capability Viewpoint describes the capabilities provided by human services system of systems that implement NHSIA. As we use the term, **a capability is the ability to achieve a desired objective in the human services domain under specified standards and conditions.** Capabilities are defined independently of specific technology implementation approaches to the extent possible. The Capability Viewpoint defines the new operational capabilities in high-level, user-oriented terms. Capabilities have been grouped into the eight major as shown in the slide. Each of these categories has 5 – 10 detailed capabilities defined for it. An example of a detailed capability is shown.
- It is not the intent of NHSIA to define a comprehensive set of all capabilities required to provide human services. NHSIA is focused on only those capabilities, which require an interoperable environment where data and services are effectively shared.

Slide 32 - The Business Viewpoint Describes the Processes to Be Supported

The Business Viewpoint provides a model of human services business operations. The NHSIA business model is based on the MITA 3.0 (Medicaid Information Technology Architecture) business model.

- The Business Viewpoint provides a functional, technology-independent model of the human services “business”.
- NHISA started with MITA 2.0 and included some ideas from a preliminary version of MITA 3.0.
- Each Business Area includes multiple business processes.
- The business processes provide a basis for defining the information and systems viewpoints.
- The MITA business areas and business processes were adapted to support human services in general, not just Medicaid.
- Some examples of business area adaptation:
 - What NHSIA calls Client Management, MITA calls Member Management
 - What NHSIA calls Service Management, MITA calls Care Management
 - What NHSIA calls Program Management, MITA calls Plan Management

Slide 33 - The Information Viewpoint Describes the Information to Be Shared

The Information Viewpoint describes the business information requirements for the NHSIA architecture. The Information Viewpoint leverages existing data standards and ongoing standardization efforts in the area of Health and Human Services. The National Information Exchange Model (NIEM), as defined and governed by a group of government and private agencies, is the primary standard used in building this architecture viewpoint.

The Information Viewpoint includes a conceptual data model (CDM) which was derived by analyzing the information needs of the business processes defined by the Business Viewpoint. The CDM provided a vocabulary to be used in the other viewpoints. This vocabulary is useful in defining business processes, shared services, and requirements for information exchanges.

The CDM vocabulary is useful at this stage in the evolution of NHSIA and associated NIEM standards. Ultimately, as the NIEM Human Services Domain is developed, NIEM will provide the vocabulary needed to support definition of information exchange standards.

Slide 34 - The Systems Viewpoint Describes the “To-Be” IT Systems

The Systems Viewpoint describes the new and legacy system components included in each of the layers of the to-be architecture. The Systems Viewpoint is organized into a four-layer systems reference model as shown in the figure.

Access Layer

The access layer includes components for presenting human services information to people, information technology (IT) services for people, and traditional (non-automated) interactions with people. Examples include kiosks, browsers, call centers, and forms.

Applications Layer

The applications layer includes high-level applications that normally support multiple human services domains, agencies, and programs. In this context an “application” is application software - a computer

program designed for end users to accomplish specific tasks. Examples of components in the applications layer include: eligibility determination, case management, partner management, performance monitoring, rules engines, workflow systems, document management systems, analytics packages, etc.

Shared IT Services Layer

The shared services layer includes components that deliver functionally-oriented IT services and information (application services and data services) that are unique to the human services domains. Examples of shared services include updating information about a person or verifying credentials for a service provider. The information and information structures shared by multiple applications (e.g., master person index) also appear in this layer. “Wrappers” to enable legacy systems to discover and use shared services are in the shared services layer.

Infrastructure Layer

This layer includes IT services, systems, and data not unique to human services domains. The Infrastructure Viewpoint discusses this layer and architecture patterns applicable to NHSIA.

Slide 35 - The Infrastructure Viewpoint Describes a Recommended Technical Foundation

The infrastructure layer includes IT services, systems, and data not unique to human services domains. This layer includes the tools for applications to discover and use the shared services. The elements in this layer include the enterprise service bus. Basic capabilities include mediation, routing, and data and protocol transformation. The layer includes a service registry and service broker functions. Elements in this layer include the commercial off-the-shelf IT services, hardware, and software that support all the upper layers. Examples of components in the infrastructure layer include adapters, application servers, and data integration servers.