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Section D

From Business Processes to Systems Requirements
“Defining system requirements is the most important step in developing or acquiring any information system. A well-conceived and planned health information system can help organizations understand the need to adjust tasks or processes to be more effective or proactive in protecting community health ...”
EHR-S: Public Health (PH) IS Features

- Clinical guidelines
  - Business processes
  - Patient-level and Clinic-level functions
- EHR-S
- PH IS
  - Population-level and Jurisdiction-level functions
  - Business processes
- Public health guidelines
EHR-S: Public Health (PH) IS Features

- Business processes
- System requirements
- System requirements
- Business processes

Clinical guidelines

EHR-S

Patient-level and Clinic-level functions

PH IS

Population-level and Jurisdiction-level functions

Public health guidelines
Use case scenarios were developed to guide vendors in demonstrating their products to ensure the most important features and functionality were viewed by the project team

- Use Case: Child Health
- Use Case: Family Planning
- Use Case: Maternal Care Coordination
- Use Case: Maternal Health
- Use Case: Sexually Transmitted Disease
- Use Case: Tuberculosis
Meaningful Use of Health IT Use Cases: 2011-2016

Goal:
This is part of an evolutionary path
There will be incremental growth
All journeys start with a few steps

2011-2012
Current CMS NPRM
- ePrescribing
- Lab results into EHRs
- Send clinical summary
to providers and patient
- Public health reporting
- Quality reporting (2012)

2013-2016
Future CMS rule
- Patient PHR access
- ePrescribing refills
- Electronic summary record
- Receive health alerts
- Immunization information

2015-2016
Future CMS rule
Stage 3
- Access comprehensive patient data
- Automated real-time surveillance

Public Health and Clinical Information Exchanges

NOTE: HITSP Interoperability Specifications apply across business boundaries. An associated business agreement defines the business boundaries of EHRs, other systems and HIEs. HITSP ISs apply to information exchanges indicated by the arrows in the figure.

Building a Consensus on Public Health High-Level Business Areas
Learning from CMS MITA

- Medicaid Information Technology Architecture (MITA)

- CMS believed that the majority of business processes in Medicaid were similar—i.e., paying claims was universal

- Business processes are intended to be processes and are not represented by programs or organizational structure

- Focus groups with multiple states developed eight common business areas and 79 common business processes

- If business processes are similar, then standard modules could be developed and implemented in each state and from state to state

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. [http://www.phdsc.org/about/annual-2010-presentations.asp#day2](http://www.phdsc.org/about/annual-2010-presentations.asp#day2)
Learning from CMS MITA

- A modular approach could allow states to upgrade incrementally and move away from the big black box approach to the Medicaid Management Information System (MMIS)

- A business process should describe most of the commonality among states, but states may have some modifications

- State modifications to each module would generally not be extensive

- All new requests for federal funding must demonstrate that it will improve the maturity, or capabilities, of these business processes

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. http://www.phdsc.org/about/annual-2010-presentations.asp#day2
MITA Business Areas

- Member management—8 BPs
- Provider management—7 BPs
- Operations management—26 BPs
- Program management—19 BPs
- Contractor management—9 BPs
- Program integrity management—2 BPs
- Care management—4 BPs
- Business relationship management—4 BPs

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. http://www.phdsc.org/about/annual-2010-presentations.asp#day2
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Member Management: Tasks

- Determine eligibility
- Enroll member
- Disenroll member
- Manage applicant and member communication
- Manage member grievance and appeal
- Manage member information
- Perform population and member outreach

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. http://www.phdsc.org/about/annual-2010-presentations.asp#day2
Learning from CMS MITA

- The MITA concept is included in HITECH Meaningful Use rules and is a focus for HHS
- Standardized data can be accumulated and analyzed more quickly to speed CMS activities
- Reduces silos; systems are expensive and resources are limited
- Facilitates interoperability of information systems within the agency and with other health care systems
- Facilitates cross state communications
- Standardized applications can be implemented more quickly, inexpensively, and in more locations

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. [http://www.phdsc.org/about/annual-2010-presentations.asp#day2](http://www.phdsc.org/about/annual-2010-presentations.asp#day2)
MITA Concepts and Public Health

- What large business areas are universal across local and state public health agencies and across public health programs?

- What smaller business processes would also be similar across such agencies and programs?

- Could enough commonality be found or agreed upon that would enable modular system components that could proceed toward meaningful use requirements?

- What would it take to get public health agencies to participate to create such a concept?

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. [http://www.phdsc.org/about/annual-2010-presentations.asp#day2](http://www.phdsc.org/about/annual-2010-presentations.asp#day2)
Learning from CMS MITA

- It is difficult to arrive at a consensus among 50+ states/territories and about 3,000 local agencies

- Implementation of such processes can take years

- CDC and other funders need to get behind the process and provide leadership

- Categorical funding is still a major challenge

- It has to be done well to be effective and enable creation of applications or modules

- “But we have always done it this way” and “But we’re different” are probably the largest roadblocks

Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. [http://www.phdsc.org/about/annual-2010-presentations.asp#day2](http://www.phdsc.org/about/annual-2010-presentations.asp#day2)
Resources for MITA Information


Source: Klein S. and Hohner V. (Nov.4, 2010.) MITA Lessons. Presentation. 2010 PHDSC Annual Business Meeting, Hyattsville MD. [http://www.phdsc.org/about/annual-2010-presentations.asp#day2](http://www.phdsc.org/about/annual-2010-presentations.asp#day2)
Building a Consensus on Public Health High-Level Business Areas

A New Project
EHR-S: Public Health (PH) IS Features

- Business processes
- System requirements
- Clinical guidelines
- EHR-S
  - Use cases
  - Patient-level and Clinic-level functions
- PH IS
  - Use cases
  - Population-level and Jurisdiction-level functions
- System requirements
- Public health guidelines
- Business processes
Working with Vendors: a New Project

- Public health case reporting integration profile
  - A new profile at the Integrating the Healthcare Enterprise (IHE) to standardize information exchanges between clinical and public health information systems, and public health information systems within and across public health agencies to support public health business processes
Working with Vendors: a New Project

- Public health high-level business areas
  1. *Enable vital registration* (births and deaths) in the jurisdiction—to know population to serve
  2. *Enable licensure of health care providers in the jurisdiction*—to know health care capacities to serve the population
  3. *Enable protection of the public* in the jurisdiction from diseases/conditions and from exposure to biohazards, environmental agents, and natural disasters—to prevent and control possible public health threat exposure to the served population
  4. *Promote wellness of the population* in the jurisdiction
  5. *Enable access to care* for underserved population and people with special needs—to assure health care delivery for the population in need
  6. *Agency operation*
Public health high-level business areas

1. **Enable vital registration** (births and deaths) in the jurisdiction—to know population to serve

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4. **Promote wellness of the population** in the jurisdiction

5. **Enable access to care** for underserved population and people with special needs—to assure health care delivery for the population in need

6. **Agency operation**
Selected public health high-level business areas

3. **Enable protection of the public** in the jurisdiction from diseases/conditions and from exposure to biohazards, environmental agents, and natural disasters—to prevent and control possible public health threat exposure to the served population
   - Program operation
   - Program integrity management
   - Contractor management

5. **Enable access to care** for underserved population and people with special needs—to assure health care delivery for the population in need
   - Care delivery
   - Care management
   - Care coordination
Working with Vendors: a New Project

Selected public health high-level business areas

3. Enable protection of the public in the jurisdiction from diseases/conditions and from exposure to biohazards, environmental agents, and natural disasters—to prevent and control possible public health threat exposure to the served population
   - Program operation
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5. Enable access to care for underserved population and people with special needs—to assure health care delivery for the population in need
   - Care delivery
   - Care management
   - Care coordination
Working with Vendors: a New Project

- Selected public health high-level business areas

- Program operation
  - Case identification
  - Case management/care coordination/patient-based assessment
  - Outbreak management/population-based assessment
  - Case management/outbreak management evaluation - quality measures
  - Prevention/mitigation
Working with Vendors: a New Project

- Selected public health high-level business areas

- Program operation
  - Case identification
  - Case management/care coordination/patient-based assessment
  - Outbreak management/population-based assessment
  - Case management/outbreak management evaluation - quality measures
  - Prevention/mitigation
Working with Vendors: a New Project

- Selected public health high-level business areas

- Program operation
  - **Case identification**
    - *Surveillance* aimed to case identification (syndromic surveillance, risk factor surveillance, biosurveillance, case reporting)
    - *Screening* aimed to case identification (e.g., hearing screening, blood lead screening, TB screening, cancer screening, and others)
    - *Diagnostic testing* aimed to confirm suspected diagnosis and to establish the case
Public Health Case Reporting Integration Profile

- Project timeline
  - May 2011: profile development
  - July 2011: public review
  - August 2011: profile completion
  - September 2011: vendors recruitment for profile testing
  - January 2012: profile testing at IHE connect-a-thon—2012
Connecting Business Processes, Functional Requirements, and IT Solutions
“Top down”
User driven
(Requirements driven)
“Top down”
User driven
(Requirements driven)
Connecting Processes, Requirements, and Solutions

“Top down”
User driven
(Requirements driven)
Connecting Processes, Requirements, and Solutions

“Top down”
User driven
(Requirements driven)
Connecting Processes, Requirements, and Solutions

“Top down”
User driven
(Requirements driven)

Business

Business processes

Use case
Use case
Use case

Functional requirements/Capabilities
Functional requirements/Capabilities
Functional requirements/Capabilities
Connecting Processes, Requirements, and Solutions

“Top down” User driven (Requirements driven)

Business

Business processes

Use case

Use case

Use case

Functional requirements/ Capabilities

Functional requirements/ Capabilities

Functional requirements/ Capabilities

Working with developers at the Integrating the Healthcare Enterprise (IHE)
Syste

m

Portable Media Topology

System

Network

System to System Topology

System

HIE

System to HIE Topology

System

HIE

HIE to HIE Topology

System

NOTE: HITSP Interoperability Specifications apply across business boundaries. An associated business agreement defines the business boundaries of EHRs, other systems and HIEs.

Connecting Processes, Requirements, and Solutions

IHE technical frameworks

Integration profile

Actor

Content profile

Actor

Transaction

Transaction

Transaction

PIX, PDQ, RFD, XDS

“Bottom-up” Health IT solution driven
Connecting Processes, Requirements, and Solutions

“Top down”
User driven
(Requirements driven)

IHE technical frameworks

“Bottom-up”
Health IT solution driven

PIX, PDQ, RFD, XDS
Service-Oriented Architecture (SOA)

- **Service-oriented architecture (SOA):** a building block approach to systems design that allows discreet functions to be accessed by any authorized system
Service-Oriented Architecture (SOA)

Service Layers

- Task service layer
- Entity service layer
- Utility service layer
Example of Service Layers/Integration Profile Mapping

Task services

Entity services

Utility services / IHE integration profiles

GetPatientLHR

Identity

Document

PIX Mgr PDQ Mgr Registry Repository Audit
Connecting Processes, Requirements, and Solutions

“Top down”  
User driven  
(Requirements driven)

IHE technical frameworks

Integration profile

PIX, PDQ, RFD, XDS

“Bottom-up”  
Health IT  
solution driven
EHR-S: Public Health (PH) IS Features

- **Business processes** → **System requirements** → **Use cases**
- **Clinical guidelines** → **EHR-S** → **PH IS** → **Public health guidelines**

**EHR-S**:
- Patient-level and Clinic-level functions

**PH IS**:
- Population-level and Jurisdiction-level functions
“Defining system requirements is the most important step in developing or acquiring any information system. A well-conceived and planned health information system can help organizations understand the need to adjust tasks or processes to be more effective or proactive in protecting community health ...”
Standardizing Business Processes: Resources

- **OASIS WS-BPEL Standard**
  - [http://docs.oasis-open.org/wsbpel/2.0/OS/wsbpel-v2.0-OS.pdf](http://docs.oasis-open.org/wsbpel/2.0/OS/wsbpel-v2.0-OS.pdf)

- **A Service-Oriented Architecture (SOA) View of IHE Profiles—White Paper at the Integrating the Healthcare Enterprise (IHE)**
Coming up Next ...