

Health Information Technology Exchange of Connecticut

Health Technology Workgroup

11-10-2011

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Interim CEO HITE-CT

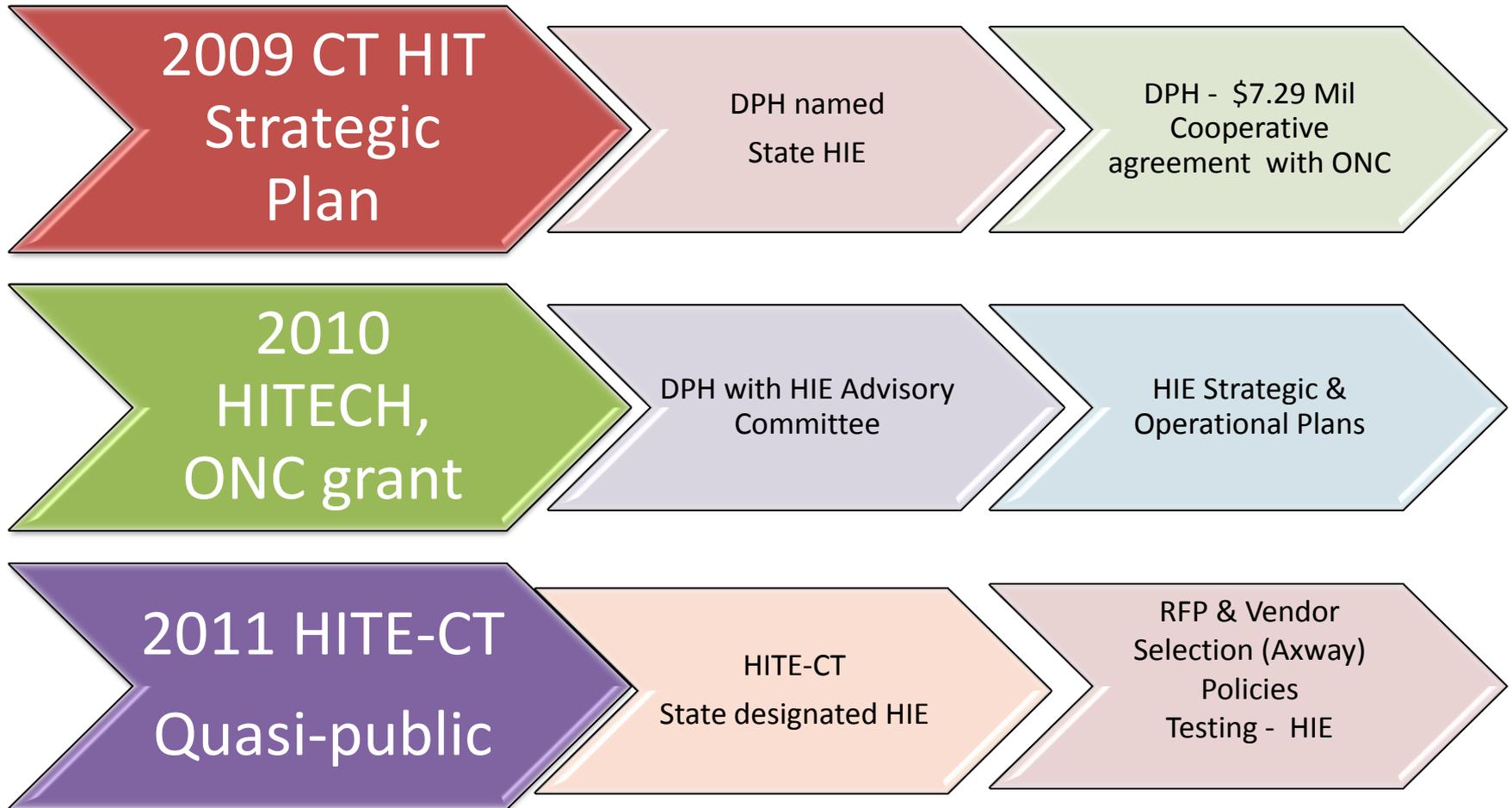


How does the ONC define a Health Information Exchange?

The electronic movement of health-related information among organizations according to nationally recognized standards.

- Requires national Standards
 - Regional health data exchange can occur without standards (many examples within state)
- Data can be from/to EHR's, Personal Health Records, Hospital Information systems, Labs, Pharmacies, Public Health databases, Research organizations

CT - HIE Background



Public and Open Process throughout

CT - HIE Goals

The State of Connecticut plans to transform its health care system by HITE-CT to improve the quality, efficiency and accountability of health care in Connecticut.

HITE-CT will establish & manage a statewide health information exchange to attain substantial & measurable improvements in several key areas including but not limited to:

- Patient access to health care and their medical records
- Continuity and coordination of care
- Quality of care, medical outcomes and patient experience
- Effectiveness and efficiency of health care delivery
- Public health outcomes

HITE-CT Strategies



- Establish a standards based (XDS) document sharing infrastructure
- Enable Direct secure-messaging for point to point sharing (NwHIN compliant)
- Hosted Service-based environment (Faster establish, easier maintain)
- Phased Implementation (Both organization & types of information)
 - Publish/Retrieval of medical summaries (Discharge Summaries, Transformed Text/PDF), lab results, immunization
- Grow to include
 - A wide range of services including interfaces to existing provider systems & edge systems
 - Other clinical content (Personal Health Records, Quality)

HITE-CT Collaboration with eHealthConnecticut (REC)

- Development of HITE-CT Operational Core
 - Contributions through committee
- Alignment with REC Meaningful Use Support
 - Exchange of Clinical Summaries
 - Exchange of Laboratory Results
 - Public Health Related Exchanges through HIE
- REC has Key Role for HITE-CT
 - Strategic Development
 - Deployment planning
 - Education
 - Pilots
 - Implementation

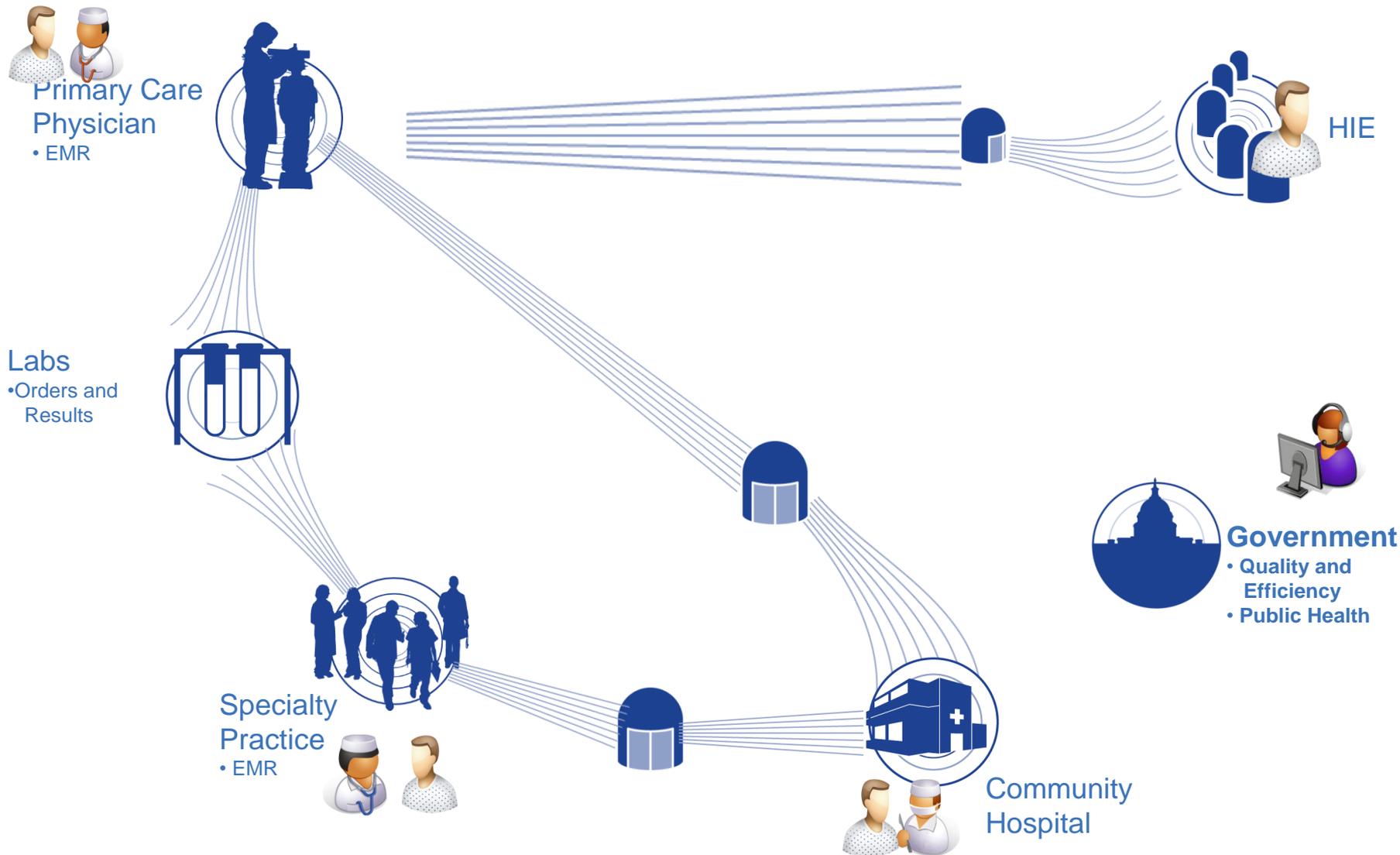
HITE-CT Collaboration with State Agencies

- Development of HITE-CT Operational Core
 - Contributions through committee
- Alignment with Meaningful Use Support
 - Collaborative Infrastructure Development to Support Public Health Related Exchanges through HIE Interoperability with DPH MU Related Programs
 - Immunization
 - Laboratory
 - Surveillance
- Participation in Health Technology Workgroup
 - Charged with providing recommendations to the Health Care Cabinet regarding a fully coordinated and integrated approach to the design and purchase of technology related to health reform with an eye towards integrated architecture
- Collaboration with eHealthConnecticut and DSS to optimize support for Medicaid Meaningful Use Requirements

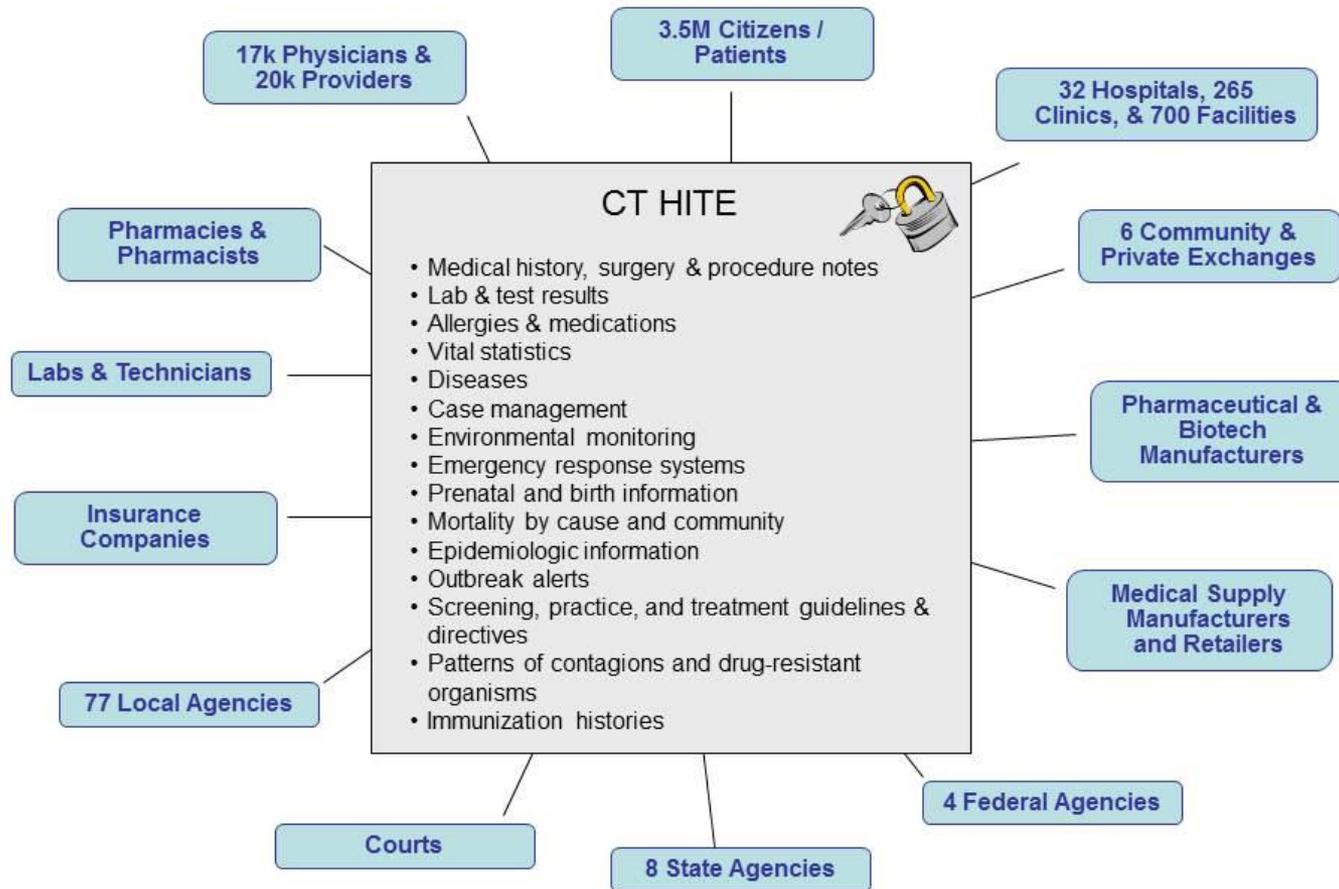
HITE-CT Collaboration with Capitol Community College (workforce Training)

- Exploring Opportunities for Collaborative Student Projects
- Technology Laboratory Interoperability
 - Working with CCC to Establish Connectivity from the Training Lab to the HITE-CT Test Environment
 - Working with EMR Vendors to Establish Training Environments at CCC with Integrated HIE
- HITE-CT as Prospective Employer

Current State of Connecticut HIE



CT HIE Stakeholders



Current State HIE CT

- 35- 40% Primary Care and specialists have EHR's (> 30 types), 30 hospitals (Large # of CIS)
 - Some connect to Labs, Hospital networks usually one way interface – none to state level HIE
 - Many are newly adopting / plan to adopt EHR's which will meet Meaningful Use standards
- Several Regional HIE's exist, are forming or potential
 - Danbury, Hartford HealthCare, Middlesex, Yale, CCMC, VA
 - HIE's do not readily interface with each other
- No HIE's cross State Line except VA

What are the Regional HIE in CT

- Can connect one hospital (or Integrated Delivery Network) with its physicians or with another healthcare entity.
 - Can allow sharing of Hospital lab and other data such as discharge summaries, images etc.
 - In CT mostly view data in a Portal that you have to sign into separately from your EHR.
 - Usually have limited capacity to directly interact with providers or organizations outside the enterprise that purchased the HIE.
 - Should be able to be connected to CT HIE and retrieve and post data back and forth to it.

Connecticut Regional HIEs

State-Wide

Safety.net Planning

Collaboration between providers to plan the implementation of EHR systems funded by the CT Health Foundation.

Includes: UConn Health Center, Asylum Hill Family Practice Center, Community Health Center Association of CT, Fair Haven CHC, St. Francis Hospital and Medical Center, Generations Family HC, Hill HC, Staywell HC, Burgdorf/ BofA HC

14 FQHC Federally Qualified Community Health Centers

Share diagnosis, prescriptions, diagnostic tests
40% adoption of EMR & EHR
Emergency room utilization using My Health Direct scheduling
Dental EHR module for eClinicalWorks
Dental digital imaging using Gendex
Hypertension DM using eClinicalWorks v8

Medicaid Transformation Project

HIE pilot through the DSS with eHealthConnecticut
Policy requirements for data exchange during the pilot
Legal framework for exchanging data (DURSA)

Aetna Personal Health Record (PHR)

Claims, labs, member-reported data

NHIN Direct CT Pilot

Use NHIN-D protocols to securely share clinical information with small practices using email and the Internet
Participants: QuestimedPlus, DocSite, Middlesex Hospital, The Kibbe Group, LLC, American Academy of Family Physicians, eClinicalWorks, Microsoft Health Vault, Community Health Center

Regional

Charlotte-Hungerford Hospital

upper Litchfield County
reviewing various EHR, PM and HIE vendors, configurations and pricing models
sharing patient data and using hospital services (lab, radiology, referrals) using the HIE to connect to a shared billing service

HealthLink HIE

Danbury Hospital, area practices, laboratories and pharmacies incorporates over 250 providers, 500 support staff and 500,000 patient records services include: 1) Printifax capabilities for providers; 2) Virtual Health Record; 3) ePrescribing, 4) Electronic Medical Record & EHR lite, 5) EMR Connector two-way task interface, 6) Imaging and report repository exchange



The William W. Backus Hospital

Eastern CT / Norwich HIE covering 300 area physicians broadband infrastructure to support secure, confidential and interoperable electronic health records patient information from The William W. Backus Hospital, Backus outpatient facilities, outreach laboratories, schools, the local community college, private physician practices, several community health centers, adult daycare centers, a home health agency, and citizens.

Middlesex County Hospital

500 physicians have privileges at Middlesex Hospital and will be offered eHX - eClinical Work's HIE product
piloting eHX with the hospital and a 35 physicians / 20k patient Practice loaded 650,000 master patient records
Intends to have 98% of the primary care physicians and 37% of the specialists connected to the eHX providing patient updates and posting Continuity of Care (CCD) records.

Yale New Haven Health System (YNHHS)

YNH Hospital, Bridgeport Hospital and Greenwich Hospital
A common Physician portal
MPI for 1400 employed and affiliated physicians.
Implementing Epic EHR (to be completed in 2015)

Regional HIE and HITE-CT

- HIE Bridging and Gateways for Interoperability
 - Cross Community Patient Discovery
 - Cross Community Access of HIE Clinical Content
 - Gateway for Federal and Inter-HIE exchanges
- Connecting HIE 'HUB' to the Exchange
- Policy Bridging

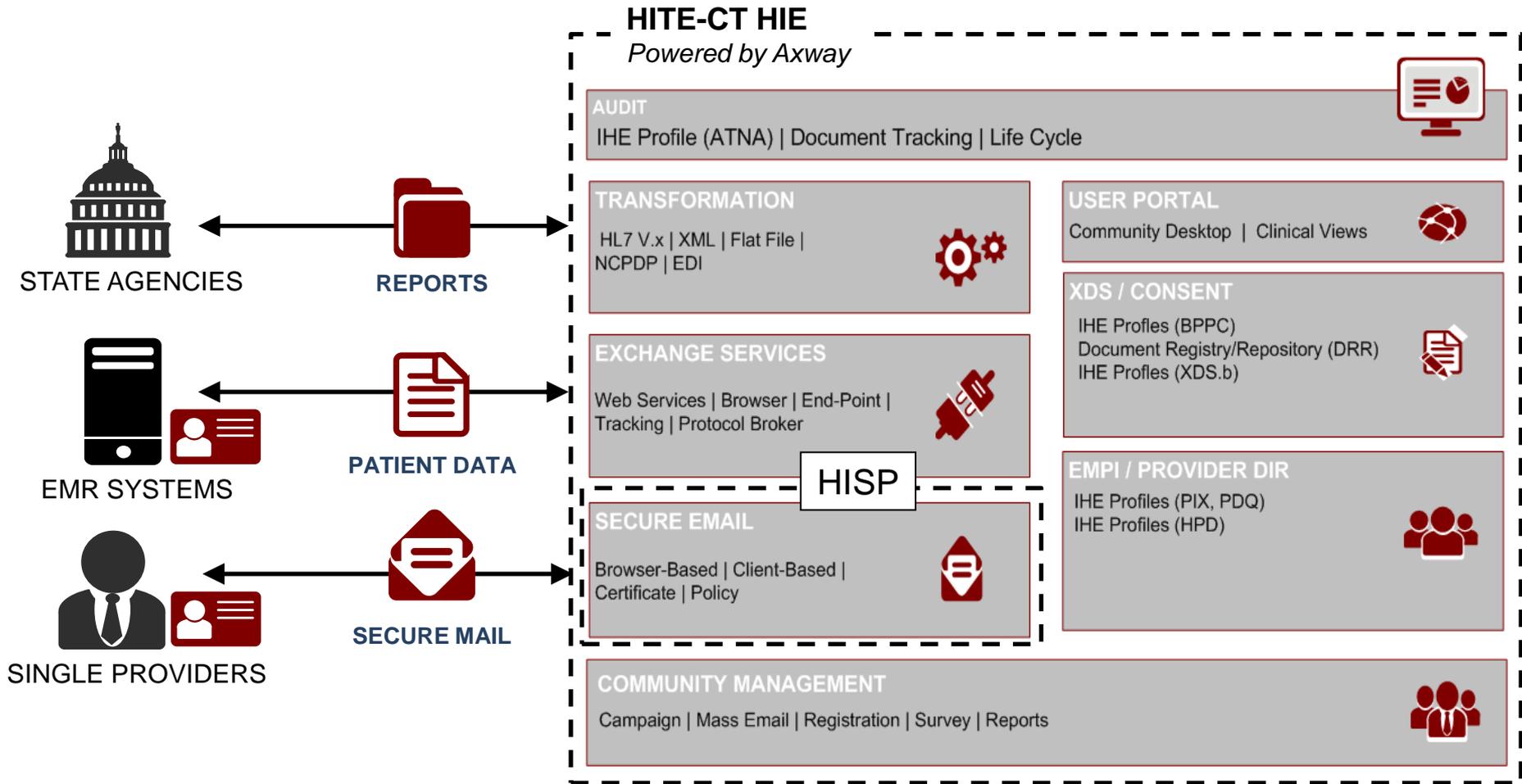
Organization of HITE-CT

- Board of Directors – 20 members
- Executive Committee (subcommittee chairs & officers)
- Legal and Policy Subcommittee
- Technical Infrastructure Subcommittee
- Finance Subcommittee
- Business and Technical Operations Subcommittee
- Special Populations Subcommittee

What will the CT HIE contain?

- Direct Messaging Service (Secure Email – referrals, care coordination)
- Provider Portal
 - Web or EHR based viewer to post / retrieve clinical documents
 - Initially providers & organizations – future patient connection
- Clinical Data Repository
 - Healthcare data that is “ mapped and standardized” to national specifications (lab is recognized by different EHR’s)
 - Can be on “local” servers and accessed by Record Locator Service
- Patient and Provider Matching services
 - Assures correct identity of patients and providers across settings
- Privacy, Security and Auditing services
- Management tool

Components by Service



Accelerate HIE Adoption

- Automated on-ramping
 - Provide portal for HIE members to register based on connectivity options they prefer
 - Create campaigns to target specific groups for on-boarding
 - Track and Manage campaign, gain intelligence on HIE adoption

Provider connections

- No Tech
 - No implemented EMR or gateway technology
 - Zero-Footprint , browser-based secure web client
- Low Tech
 - Implemented EMR, no gateway technology
 - Automated End-point integrates with EMR
- High Tech
 - Implemented EMR and gateway / integration technologies
 - Direct connectivity to HIE hub

HIE Standard Policies

- Establishes practices for information exchange in the areas of
 - Security Standards and Practices
 - Privacy Standards and Practices
 - Interoperability Standards
 - Transaction Standards
 - Vocabulary Standards
 - Information Content Standards
 - Standard Operating Procedures

HIE Standard Agreements

- Data Use and Reciprocal Support Agreement
 - A comprehensive agreement that governs the exchange of health data between participants in HITE-CT
- Common Supporting Consent Language
- Common Interoperability Requirements

The HIE for CT will facilitate “Meaningful Use” of HIT

- Allow delivery of labs, D/C summaries to Clinicians
- Allow “proof” of secure transfer of standardized and non-standardized healthcare data between providers
 - CCD, CCR, Labs, Referrals, Care Coordination , Reminders
- Connect with Department of Public Health
 - Immunization Registry (2012)
 - Reportable Conditions directly from labs
 - Disease surveillance (future)
- Will remain MU compliant into the future
 - Requirements to use and not just test HIE

How will data get into the HIE?

- Clinical Information Sources
 - At time of signing off on Note in certified and connected EHR – a standardized CCD/CCR is sent to the HIE
 - At the time of transmission of Laboratory Result, standard HL7 Lab Message is sent to the HIE and transformed to a standardized Laboratory Report Document
 - Future – at time of Immunization Registry Update, a standardized Immunization Content Document is updated in the HIE
- Methods
 - Direct
 - Fully Integrated EMR Standard Document Source
 - Transformation Services

Future State of Connecticut HIE



Primary Care Physician
• EMR



HIE



Labs
• Orders and Results



Specialty Practice
• EMR
• eReferral



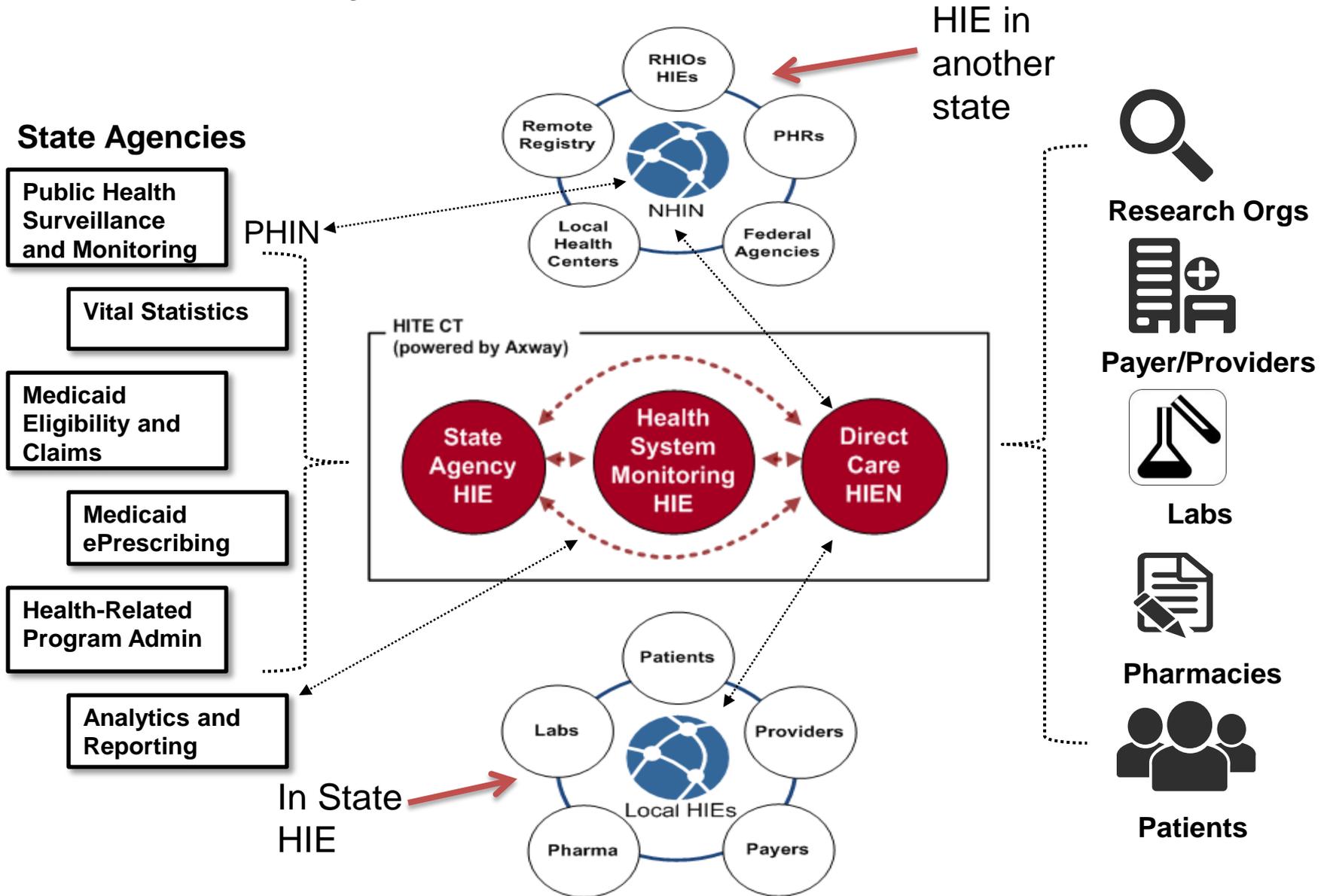
Community Hospital



Government
• Quality and Efficiency
• Public Health



Health Systems Infrastructure - Vision



DIRECT Secure Messaging

- Secure Messaging allows providers and users to securely exchange any type of clinical information via email
- Solution offers support for both browser-based and email client based solutions
- Key Features of Secure Messaging:
 - Simple Web User Experience
 - Easy Self- Registration
 - HIPAA/HITECH Policy Scans
 - S/MIME Cert Management
- In production in hundreds of providers and plans

Direct Model Support (Secure Mail)

SECURE EMAIL

Browser-Based | Client-Based |
Certificate | Policy



- Simple Clientless Secure Webmail Solution For All Users
- Enterprise Secure Email Solution (including DLP & Policy Filters)
- Support for Secure Connectivity to 3rd Party Mail Clients & HISPs
- Certificate Support (S/MIME – Encrypt & Signing) & Validation (OCSP)
- Full Hosted HISP Model (Direct Email Accounts & Routing)

Sender

Receiver

Message:

To: jimtolandnh@yahoo.com

CC:

BCC:

Subject: Lab Observation

Patient Don B888888

Attachment Filename: LLO00000.hc

View message

Opening LabReport_CBC_03Jan2008.xml

You have chosen to open

```
<?xml version="1.0" encoding="UTF-8" ?>
<ClinicalDocument xmlns="urn:hl7-org:v3" xmlns:cda="urn:hl7-org:v3" xmlns:lab="urn:oid:1.3.6.1.4.1.19376.1.3.2"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <realmCode code="US" />
  <typeId extension="POCD_HD000040" root="2.16.840.1.113883.1.3" />
  <templateId extension="Lab.Report.Clinical.Document" root="1.3.6.1.4.1.19376.1.3.3" />
  <id extension="68f56991-c4d2-4ffc-8252-f5483066885f" root="2.16.840.1.113883.3.72.5" />
  <code code="11502-2" codeSystem="2.16.840.1.113883.6.1" codeSystemName="LOINC" displayName="LABORATORY
REPORT.TOTAL" />
  <effectiveTime value="20071123115501+0500" />
  <confidentialityCode code="N" codeSystem="2.16.840.1.113883.5.25" />
  <setId extension="POLB_IN224200" root="2.16.840.1.113883.1.6" />
  <versionNumber value="1" />
</ClinicalDocument>
```

Attachment Filename: LabReport CBC_03Jan2008.xml

Size: 13,082 bytes

Save Selected Files

OK Cancel

Communications and Data Management

HITE-CT uses Axways B2B solution is a world class communications platform that enables the secure and reliable movement of data over the internet

- B2B supports numerous internet transport protocols
 - Exchange of ANY type of data (HL7, CCA, CCD, IHE Profile)
 - HTTP/s, Web Services, FTP, SMTP, MLLP
 - Hub technology supports content based routing
 - Supports digital certificates, SSL and TLS
- Mapping and Routing
 - Translation for HL7 v2.x, CCD, CDA and any document type
 - Mapping interface, advanced content –based routing
- Tracking and Alerting Framework
 - Tracks movement of every document
 - Alerting framework, auto resend/retry, dashboard visibility for HIE traffic

Patient Identifiers & Provider Registries

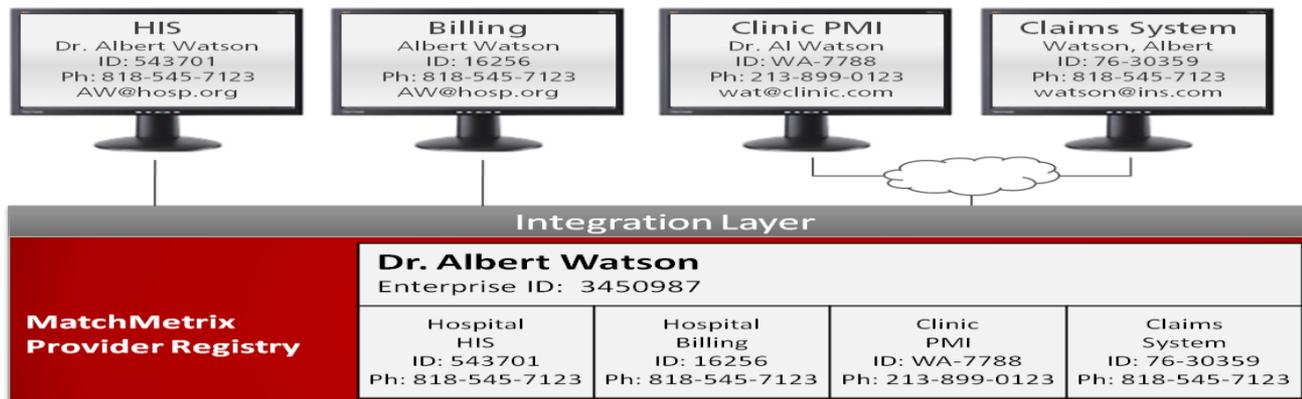
PROVIDER DIR
IHE Profiles (HPD)



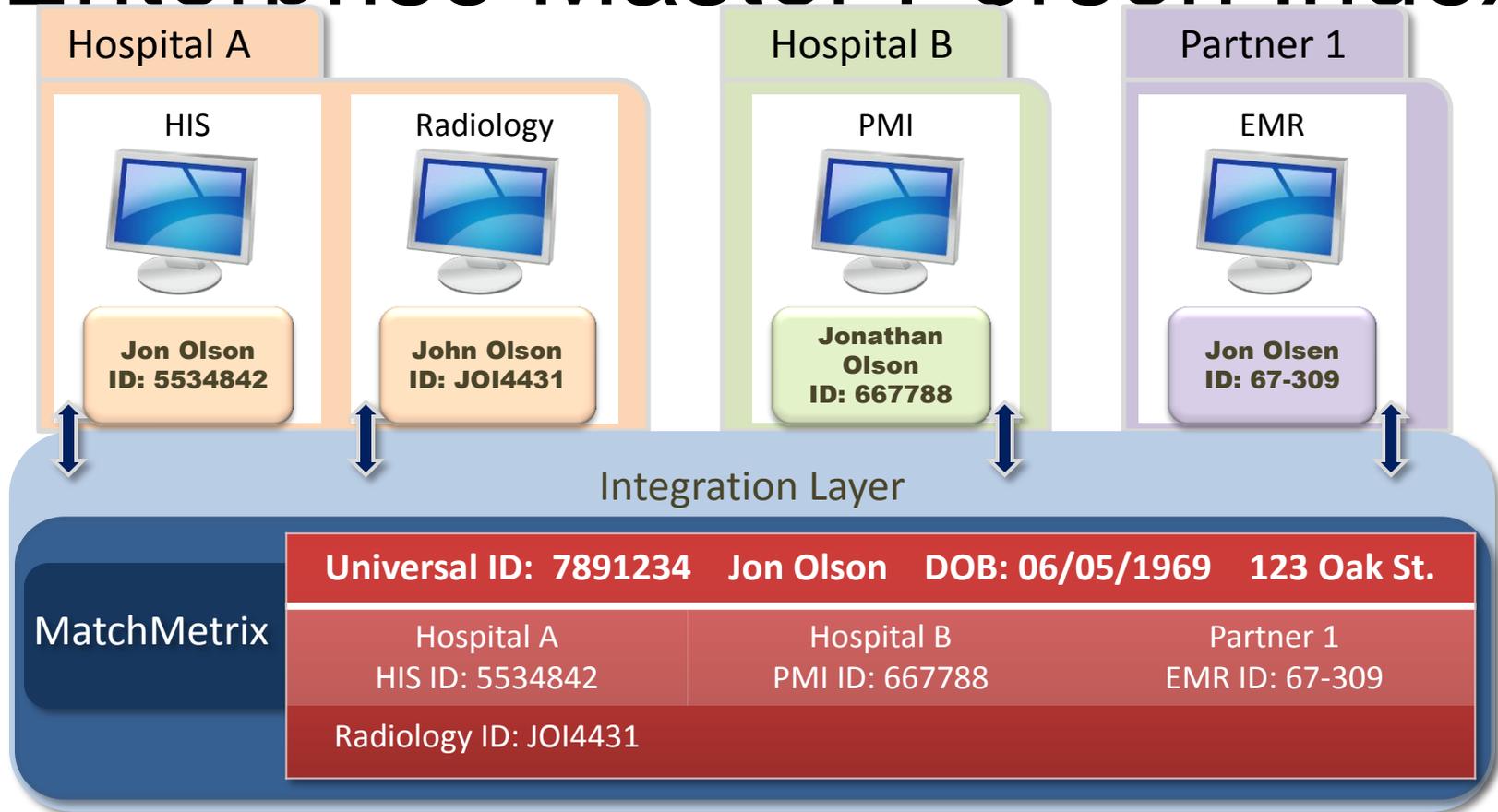
EMPI
IHE Profiles (PIX, PDQ)



- State-wide authenticated registry reduces effort to identify providers, patients
- Improved matching accuracy
 - Tuned algorithms provide the best match
- Find patient identity and access records more quickly



Enterprise Master Person Index



Creates Universal ID and correlates data from disparate sources enabling a single view of information

User Portals (Web EMR, Clinical Viewers)

USER PORTAL

Community Desktop | Clinical Views



XDS

Document Registry/Repository (DRR)
IHE Profiles (XDS.b)



- Clinician access to patient records, assists those without access to EMR
- Enables patient, document query, retrieval (view DICOM images and more)
- View history of encounters, medication, diagnoses, etc.

The screenshot displays a clinical viewer interface with the following components:

- Documents Panel (Left):** A sidebar with a 'Documents' header, a 'VIEW BY:' dropdown set to 'Document Type', and a list of documents including 'Radiology studies', '05/04/2011 12:38 - Radiology Report', '05/04/2011 12:29 - Radiology Report', '04/17/2011 00:00 - Hand Scan Image Radi...', and '04/01/2011 00:00 - Dicom image'. It also shows 'Showing 1 DocumentTypes / 4 Total Docs' and an 'Add New Document' button.
- Patient Information (Top Left):** 'Nom du patient : test1', 'Pnom : test', 'Date de naissance : 17/11/1964', 'Examen effectué le : 23/07/2010', and 'I.R.M. CEREBRALE'.
- Contente (Middle Left):** 'Céphales rebelles.'
- Technique (Middle Left):** 'Acquisition axiale T1, diffusion, FLAIR, T1 post-injection de Gadolinium (3D) et coronale T2.'
- Résultats (Middle Left):** 'On ne note pas de processus expansif sus ou sous-tentorial individualisable en dehors d'une formation hypersignal T1, hypersignal T2 frontale para-médiane droite au contact de la ligne médiane, value environ 14 mm de diamètre. Prise de contraste periphérique fine mminge. Aspect donc vocateur d'un kyste arachnoïdien.'
- Conclusion (Bottom Left):** 'Kyste arachnoïdien très probable para-médian frontal droit de 14 mm.'
- MRI Image (Right):** A grayscale axial MRI scan of the brain with 'A' and 'P' markers.
- Details Panel (Bottom Right):** A green header with 'Send To Printer' and 'Send To File' buttons, followed by fields for 'Title: Abdomen Report', 'Document Type: Healthcare Communication', 'Creation Time: 05/03/2011 09:00', 'Author: Reyan smith', 'Organization:', and 'Comments:'.

Consent (Opt-Out, Break-Glass)

CONSENT
IHE Profiles (BPPC)



Centricity EMR - NOT FOR PATIENT USE - Harry S. Winston MD @ Southside Clinic (sut90) - 6/14/2011 3:39 PM - [Desktop]

Go Actions Options Help

Desktop Chart Appts Reg Reports LinkLogic New View Print Help EXIT

Summary Alerts Flags Documents File Attachments Messaging

Back Forward Stop Refresh

Home Messages Patients

Search

SEARCH

Please search by Patient ID and Facility OR by patient Demographics

Patient Id: * Last Name: * Address:
Facility: * First Name: * City:
State:
Code:

SEARCH RESULTS

The number of search results: 1

PATIENT	RELATION
Bob, Christie	

Warning

You have selected to override the security settings and access the **Bob ,Christie** medical record.
Please select Continue to confirm or Cancel to go back.

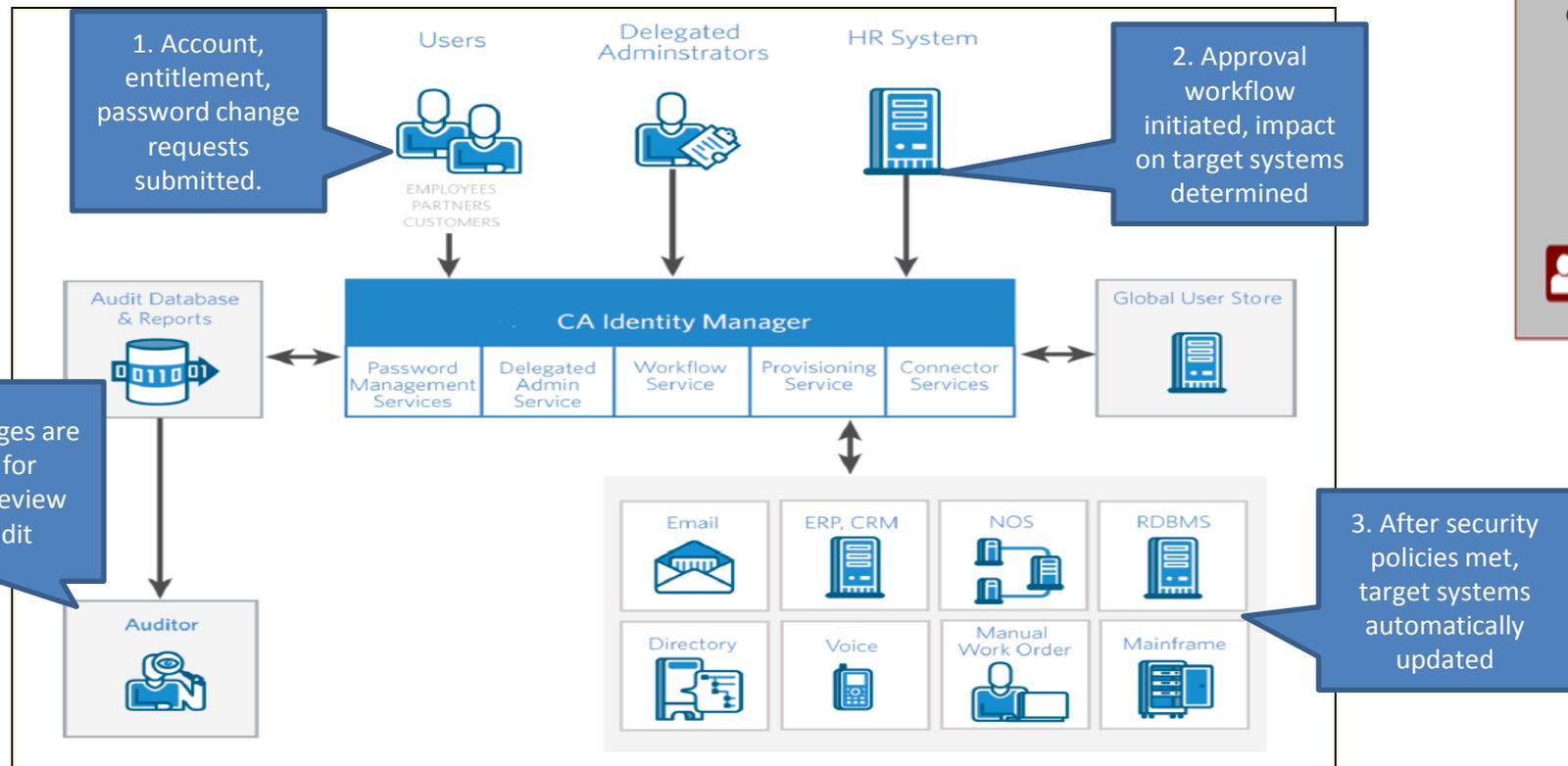
SECURITY ALERT : The patient has not consented to share their medical data

First Name: Christie
Last Name: Bob
Gender: M
Date of Birth: 01/01/1960
SSN: *****6001
Phone Number: (812)100-4352
Street Address: 148 Kurlon Street
State: TX
City: TX

Done

Security (ID, Roles, Trust Framework)

- Consistent provisioning of new users
- Consistently enforced roles and access rights
- Single Sign-On
- Certificate Management
 - Issuance, Renewal, Revocation



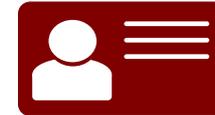
Audit/Tracking & Security



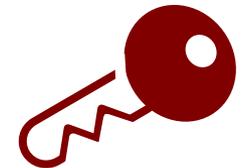
AUDIT

IHE Profile (ATNA) | Document Tracking | Life Cycle

- All activities are recorded (support for ATNA)
 - Full history of all registry changes
 - Full history of transaction history
- Retention period is configurable
- Searchable & Configurable audit files
- Dashboards & Alerts
- Consistent provisioning of new users
- Consistently enforced roles and access rights



ID Management
Single Sign-On



Cert Mgmt &
Validation

The screenshot displays a software interface for monitoring and managing system events. On the left, a sidebar lists various applications and processes. The main area shows a sequence of events in a lifecycle, with arrows indicating the flow from one event to the next. The events are: Registration Invite (ACM), User Registration (Direct), HL7 Document Sent (Direct), and HL7 v2.3 -> XD Lab (Mapping Services). Below this flow, an event for 'XD Lab Record Posted' (XDS Repository) is highlighted. On the right, a 'Detailed Information' panel provides specific data for the selected event.

Application	Process
<input type="checkbox"/> XDS Repository	XD Lab Record Posted
<input type="checkbox"/> Mapping Services	HL7 v2.3 -> XD Lab
<input type="checkbox"/> Direct	HL7 Document Sent
<input type="checkbox"/> Direct	User Registration
<input type="checkbox"/> ACM	Registration Invite
<input type="checkbox"/> XDS Repository	Immunization Record Posted
<input type="checkbox"/> Gateway	Immunization Record Received
<input type="checkbox"/> Gateway	Request Immunization
<input type="checkbox"/> XDS Repository	Encounter Posted
<input type="checkbox"/> EMPI	Patient ID Lookup
<input type="checkbox"/> Gateway	ADT Received

EVENTS

Select an item to display the detailed information.

ACM	Direct	Direct	Mapping Services
Registration Invite 2011-06-16 axwayhub.com 19:14:58	User Registration 2011-06-16 axwayhub.com 19:14:58	HL7 Document Sent 2011-06-16 axwayhub.com 19:14:58	HL7 v2.3 -> XD Lab 2011-06-16 axwayhub.com 19:14:58

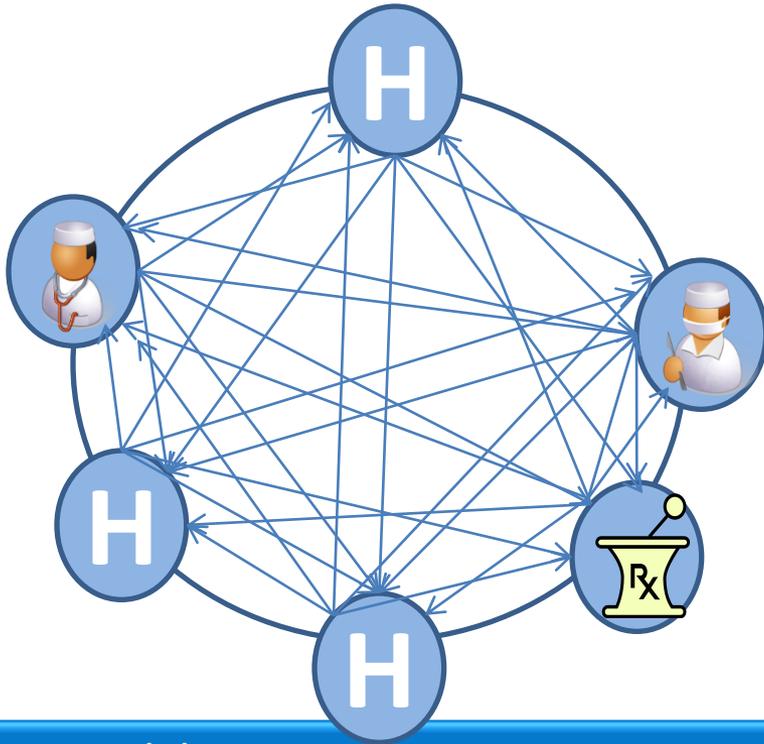
XDS Repository

	XD Lab Record Posted 2011-06-16 xdsrepository.com 19:14:58
--	---

Detailed Information

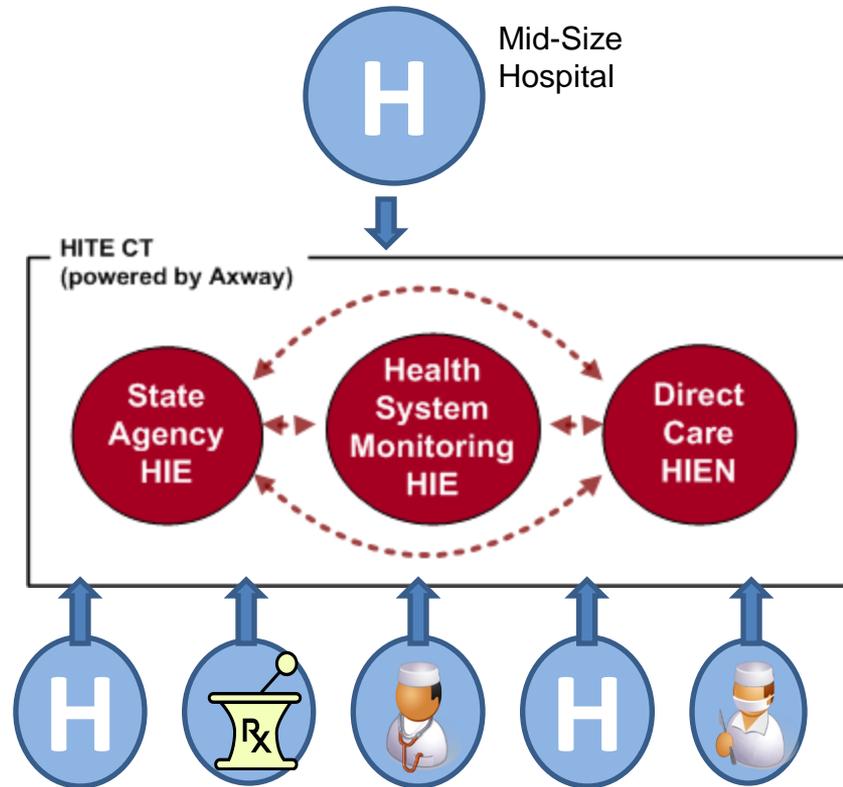
Item selected:	XDS Repository
Application:	XDS Repository
Process:	XD Lab Record Posted
Servername:	xdsrepository.com
Status:	ok
CycleId:	911
EventDate:	2011-06-16
EventId:	267101
EventTime:	19:14:58
GMTDiff:	-420
IsAlert:	0
IsEnd:	0
IsException:	0
ObjectId:	1881030048
ProductIPAddr:	ccdemo30.axway.us
ProductName:	TRKUTIL
ProductOS:	SYST_WIN32
State:	

Connecting Communities Reduces Costs



As Is Model

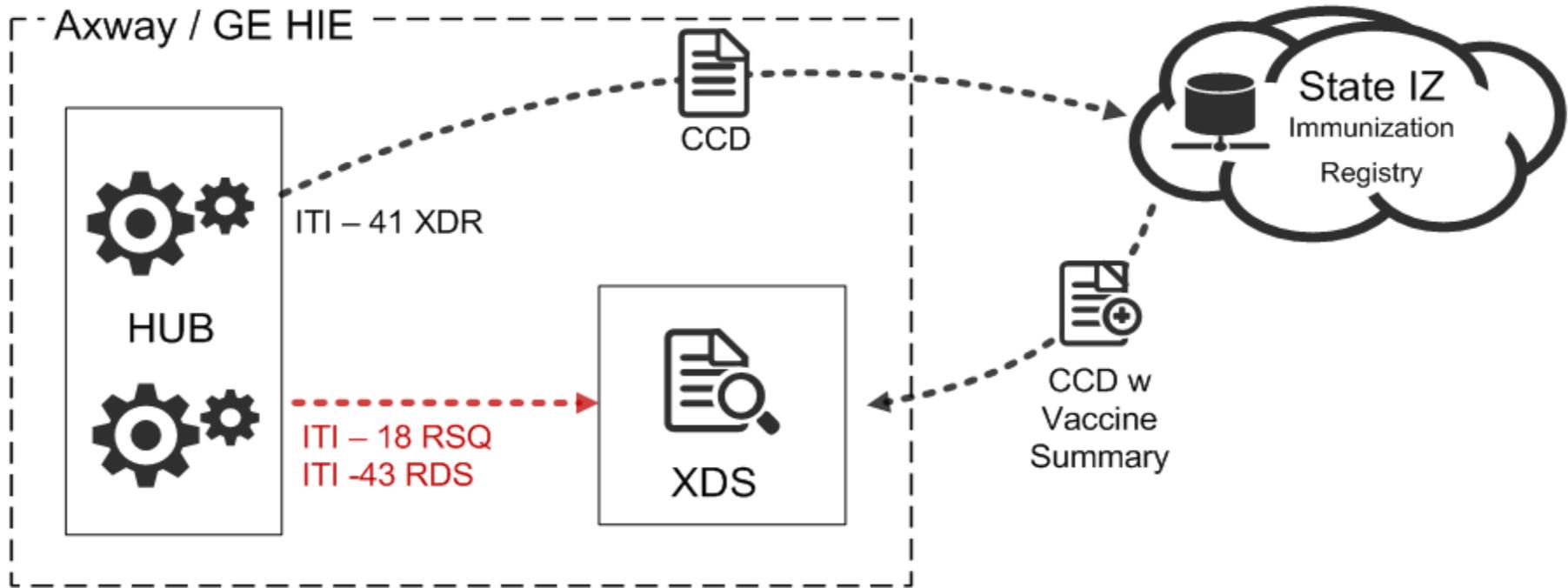
- Each hospital connects to everyone
- Each connection must be maintained, upgraded
- IT Resources required to connect & support



Can Be Model

- One connection to HIE
- HIE maintains connections
- Minimal Hospital IT resources

HIE Internal Operations



HUB will schedule periodic queries of the XDS for updated CCDs with IZ content

Take collected CCDs w/ IZ and send to State IZ repository. Which will return a CCD w/ Summary Data

How can this Improve Care?

- Automated receipt & filing of hospital D/C summaries, ER visits, image reports from any HIE connected hospital into your EHR.
- Use secure messaging for referring to a specialist, receiving data from them or coordinating care
- ER / other providers can access Medications, Allergies, Problem Lists and recent treatments
- Improved care management – longitudinal view
- Quality/Public Health metrics
- Care plans (e.g. Vaccine Forecast)

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