FOX Systems, Inc.

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MITA EHRS & PHRs RHIOs & NHII

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Topics

- HL7 EHRs Functional Model
- EHRs Profiles – Binding to Specifications
- EHRs Certification
- EHRs Semantic Interoperability – What's required
- PHRs – Different Models
- Architecture needed for Exchange
- Benefits & Opportunities
- Risks & Costs
- MITA and Health Information Exchange (HIE)

HL7 EHR System Functional Model

- The HL7 EHR-S FM is a standardized model of the functions that may be present in EHR Systems
- Focus is on the system functionalities, not the content of electronic health records
- Functions are described from a user perspective
- Enables consistent expression of system functionality
- Could be a single system or a system-of-systems
- Implementation agnostic

HL7 EHR-S Profiles

- The FM is the superset of functions from which a user chooses the subset of functions they need within their EHR-S
- This subset is specified in an EHR-S profile
- Profiles are standardized description and common understanding of functions sought or available in a given setting (e.g., intensive care, cardiology, office practice in one country or primary care in another country).
- Profiles are certified, not the FM

Certification

- Testable Criteria based on Functional Conformance Criteria – e.g., receive, read, persist electronic images; demonstrate RBAC
- Display vs. Output Tests
- CCHIT has only completed ambulatory
- Many Profiles are possible: Behavioral Health, LTC, Pediatrics, etc
- Other Certification Approaches: HL7 Conformance, NIST
- P4P will likely require Certified EHRS
- Not clear that CCHIT Certified EHRS will support AHIC *break through use cases*

EHR-S Functional Model is divided into three sections:

-Direct Care
-Supportive
-Information Infrastructure

Direct Care	DC.1	Care Management
	DC.2	Clinical Decision Support
	DC.3 and	Operations Management Communication
Supportive	S.1	Clinical Support
	S.2 Research and Reports	Measurement, Analysis,
	S.3 Financial	Administrative and
Information Infrastructure	I.1	Security
	I.2 Management	Health Record Information and
	I.3 Services	Identity, Registry, & Directory
	I.4	Terminology Standards & Services
	I.5	Standards-based Interoperability
	I.6	Business Rules Management
	I.7	Workflow Management

Functional Model - Infrastructure

ID#	Type	Name	Statement/Description	See Also	Conformance Criteria	Row #
			In addition to the ISO standard, context authorization for an EHR-S is extended to satisfy special circumstances such as, work assignment, patient consents and authorizations, or other healthcare-related factors. A context-based example ~~might be~~ is a patient-granted authorization to a specific third party for a limited period to view specific EHR records. Another example is a right granted for a limited period to view those, and only those, EHR records connected to a specific topic of investigation.		6. The system **MAY** provide the ability to define context for the purpose of principal authorization based on identity, role, work assignment, present condition, ~~or~~ location, patient consent, or patient's present condition	14.
IN.1.3	**F**	Entity Access Control	**Statement:** Verify and enforce access control to all EHR-S components, EHR information and functions for end-users, applications, sites, etc., to prevent unauthorized use of a resource, including the prevention or use of a resource in an unauthorized manner. **Description:** ~~This~~ Entity Access Control is a fundamental function of an EHR-S. To ensure that access is controlled, an EHR-S must perform ~~an identity lookup~~ authentication and authorization of users or applications for any operation that requires it ~~(authentication, authorization, secure routing, querying, etc.)~~ and enforce the system and information access rules that have been defined.		1. The system ~~**SHOULD** provide~~ **SHALL** conform to function IN.1.1 (Entity Authentication) ~~(function I.1.1)~~	15.
					2. The system ~~**SHOULD** provide~~ **SHALL** conform to function IN.1.2 (Entity Authorization) ~~(function I.1.2)~~	16.
					3. The system ~~**SHOULD** enable the definition of~~ **SHALL** provide the ability to define system and data access rules	17.
					4. The system ~~**SHOULD**~~ **SHALL** enforce system and data access rules for all EHR-S resources (at component, application, or user level, either local or remote)	18.
I.1.4	**F**	Patient Access Management	**Statement:** Enable a healthcare ~~professional to~~ delivery organization to allow and manage a patient's access to the patient's personal health information. ~~Patient access management includes allowing a patient access to the patient's information and restricting access by the patient or parent/guardian to information that is potentially harmful to the patient.~~		1. The system **SHALL** ~~implement~~ conform to function IN.1.3 (Entity Access Control) ~~(function I.1.3) in order for an authorized healthcare professional~~ in order for a healthcare delivery organization to manage a patient's access to his or her healthcare information	19.

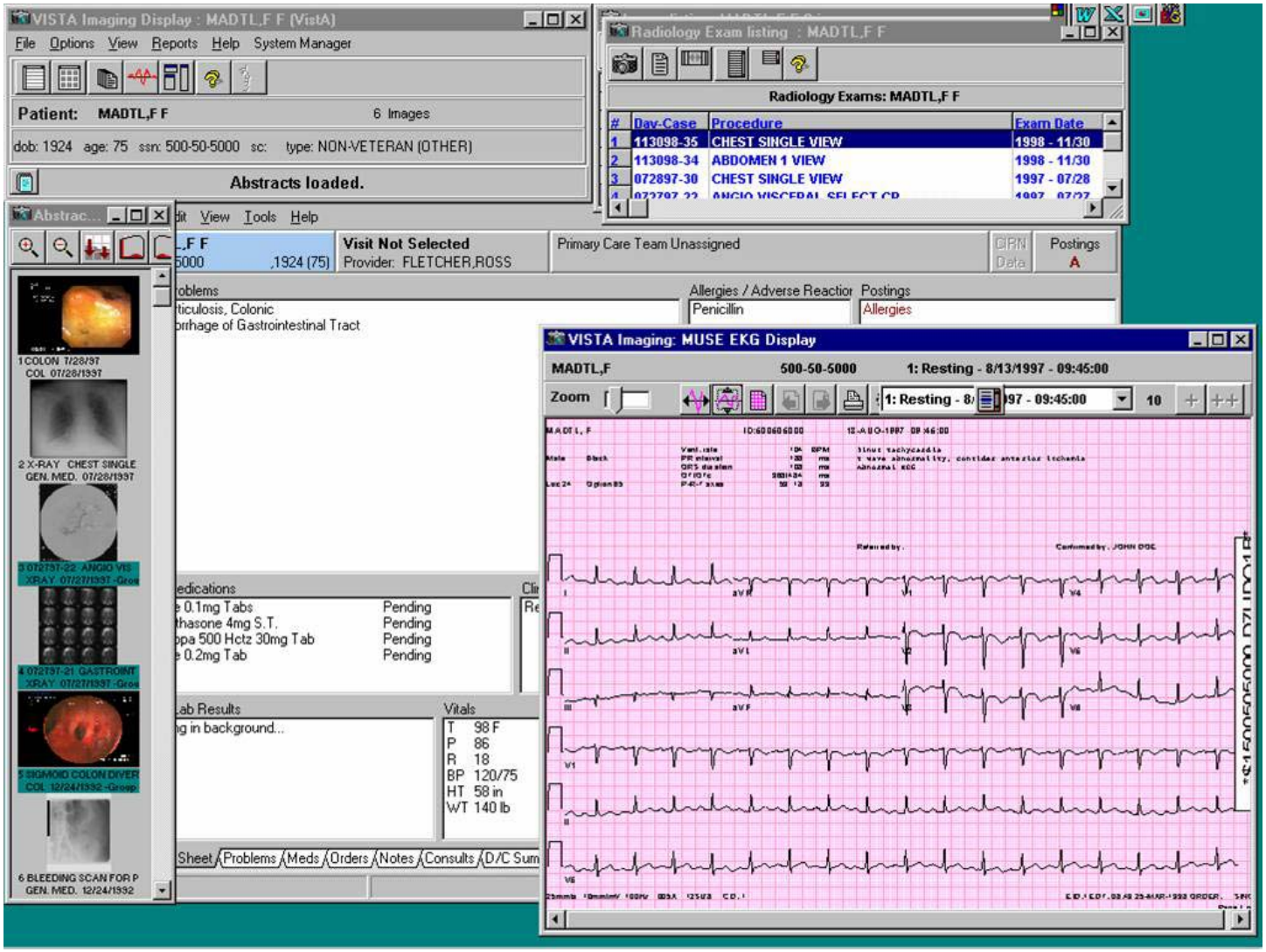
Semantic Interoperability

- Participants in the NHII must use standards for the EHRs functions
- Terminology, exchange and security standards are key
- Requires shared vocabulary and a common reference information model – e.g., HL7 RIM
- HITSP has finally come to this realization
  - Also, in order to prepare for future use cases, we must address several foundation items such as establishing a common, prospective, coordinated process for all SDOs/code set maintainers/implementation guide authors to work with HITSP, making future harmonization work easier.
  - We need to continue to work on terminology as we continue our journey toward semantic interoperability.
  - We need to establish a common reference information model which ensures our interoperability specifications are part of a consistent framework.09/15/06 - Update from John D Halamka MD

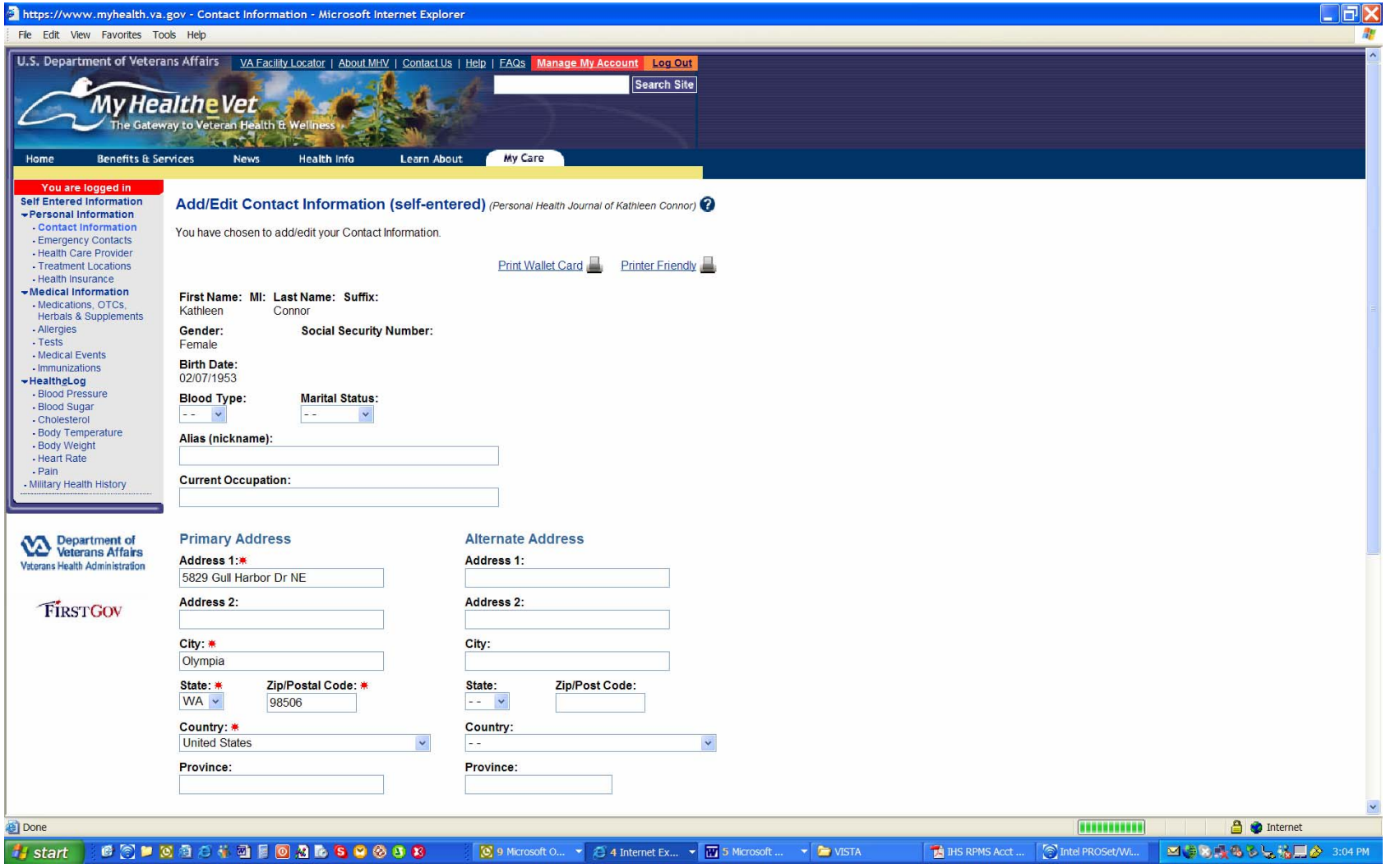
VistA

Every VA Medical Center has Electronic Health Records !

Chart Metaphor, Combining Text and Images



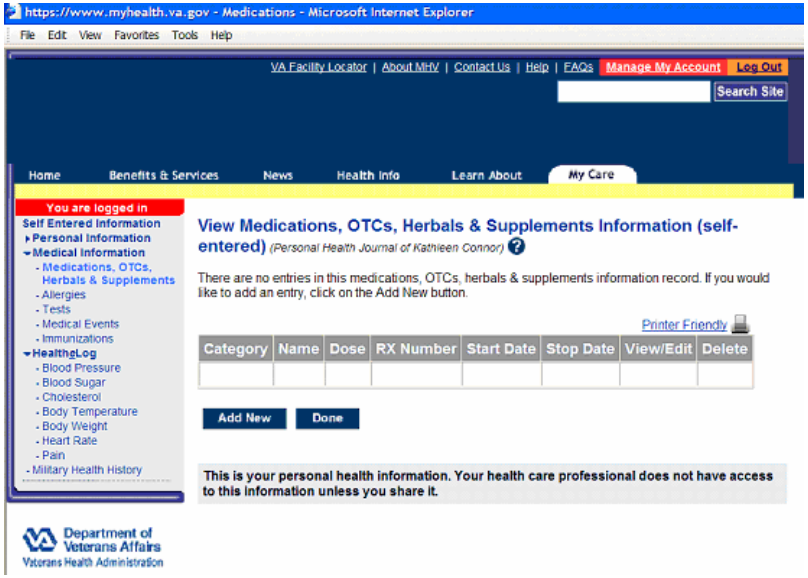
MyHealtheVet PHR

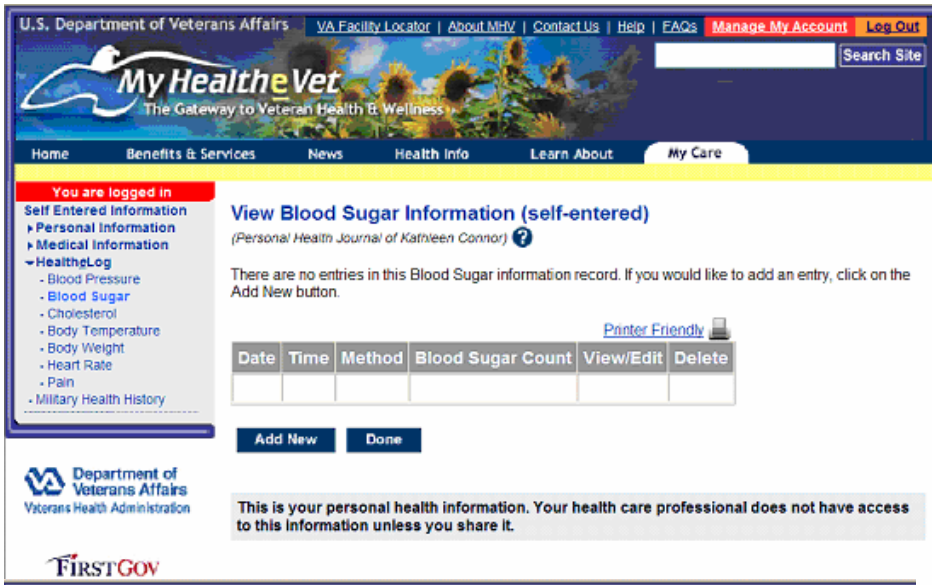


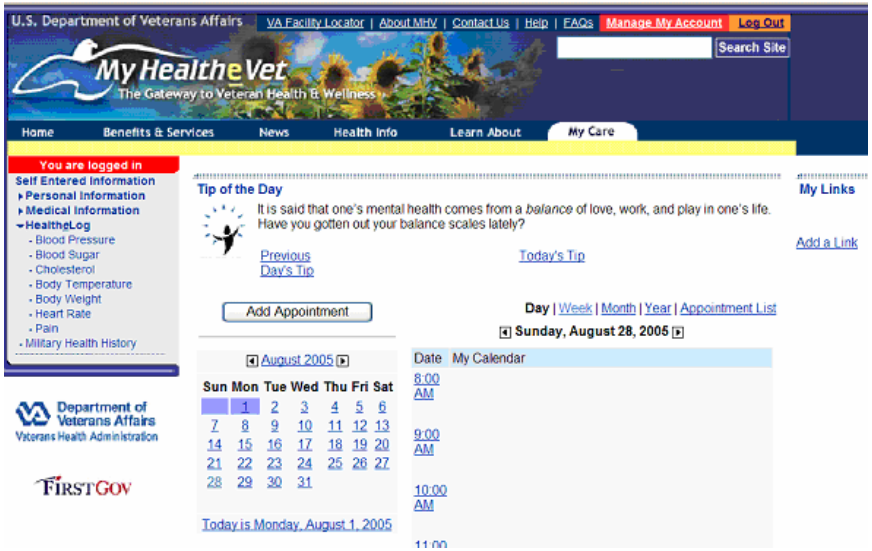
- My Health**e**Vet = online environment where veterans, family, and clinicians come together to optimize veterans' health care

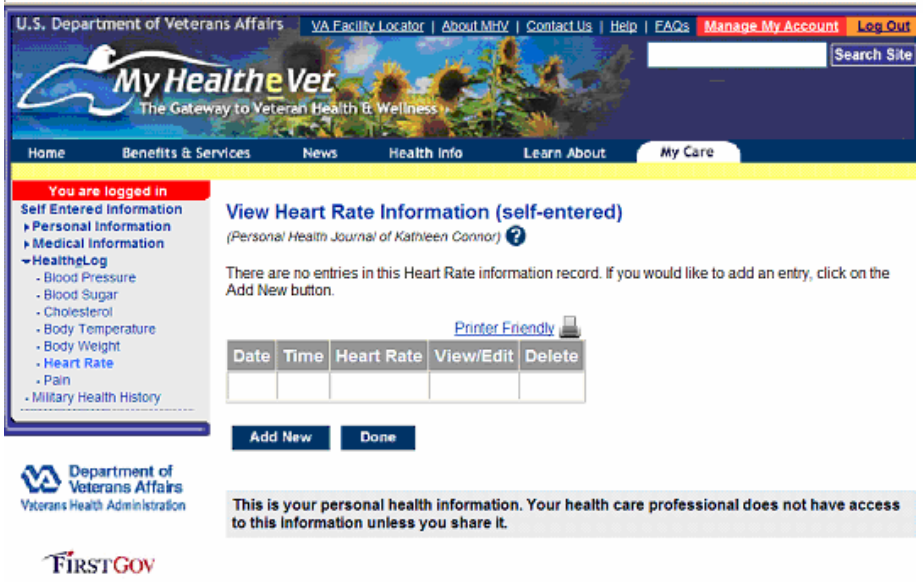
- Provides trusted information, online services, health record access, and messaging between veterans and clinicians.
- Combines essential health record information enhanced by online health resources to enable and encourage patient/clinician collaboration
- Provides powerful health education information and health self-assessment tools -> A Veterans Health Education Library is available to look up information on medical conditions, medications, health news and preventive health.
- Online calendar to set and track their appointments
- Veterans will be able to securely view and maintain a copy of key portions of their health record from VA's health information system, VistA, and later from Health**e**Vet-VistA, when that is operational.
- As veterans build their health records, they will be able to share all or part of the information in their account with their health care providers, inside and outside VA

Patient Entered PHI









PHR Models

Smart Card

- Patient's health record is electronically loaded on chip card
- Problems:
  - Patient must accompany card
  - Interferes with provider2provider (P2P) health information exchange (HIE)

Payer Provided PHRs

- Patient's health record is derived from claims data and accessed online via payer portal
- PHR follows the patient from payer2payer
- Problems:
  - Not clinical information - Medical Liability issues
  - HIPAA Payment Purpose now Treatment purpose - payer has more discretion about e.g., minimal necessary etc.
  - Questionable use for providers – not attested, may not reflect actual clinical care
  - PHR follows the patient from payer2payer

PHR Models

PHR Banks

- Trusted 3rd parties are PHR repositories
- Patients can have more than one and can move their PHR around (no way to enforce this now)
- Problems:
- Medical Liability
  - Interferes with P2P exchanges – Providers must exchange via Banks
  - With both EHRs (for P2P) and PHRs (Patient2Provider) there's overlapping capability – RLS and 1>* Banks pointing to patient information

Provider EHRs Based PHRs

- Another View into the Patient's EHR
- Trusted 3rd parties are RLS for both
  - No overlapping capability (only RLS)
- Patients are less likely to change providers than they are to change payers
- Patients trust providers more than payers

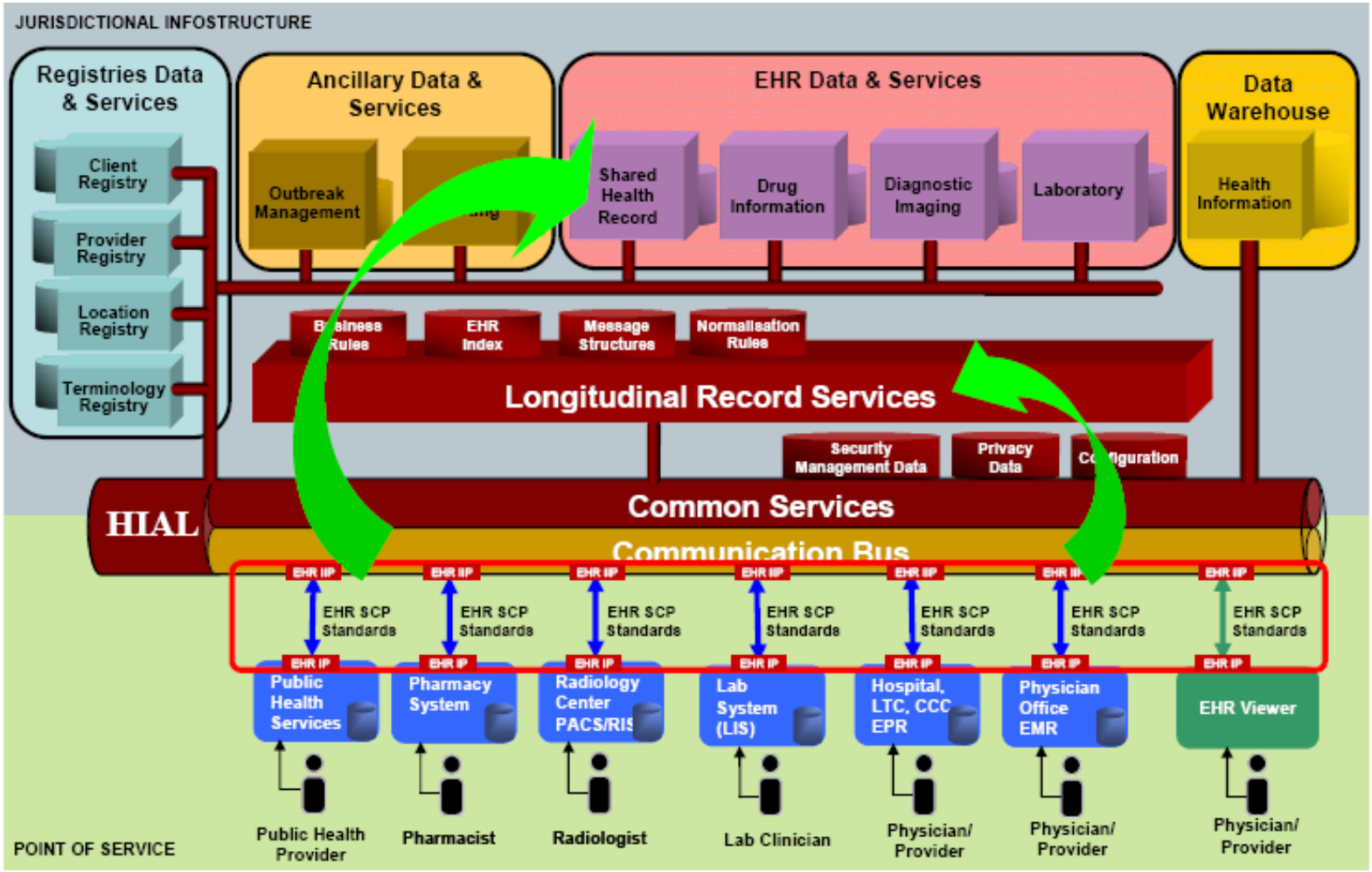
Privacy issues with EHRs and PHRs

- Once a provider is given access to PHR data, that data is open to HIPAA disclosures
- Payers are accessing and using payment data for non-payment purposes (e.g., health analytics to profile enrollee's risk) by creating pseudo clinical data
- Employers are requesting voluntary participation in care management programs for reduced premiums – If employees Opt-in, then employer has access to PHI
- Only privacy requirements for RHIOs and their non-HIPAA related participants are by business associate agreements – e.g., providers/payers may access PHI for patients/persons who are not under their care/coverage
- Support for consents required by 42 CFR and other more stringent state laws are deemed infeasible, burdensome, obstacles to care management, barriers to care coordination, and impediments to measuring quality
- Clear need for privacy architecture like other countries

Health Information Exchange Architecture

- Enterprise – Local and Dispersed Nodes
- Regional
- National
- Cross Jurisdiction
- Centralized / Federated
- Support for Semantic Interoperability

RHIO Diagram

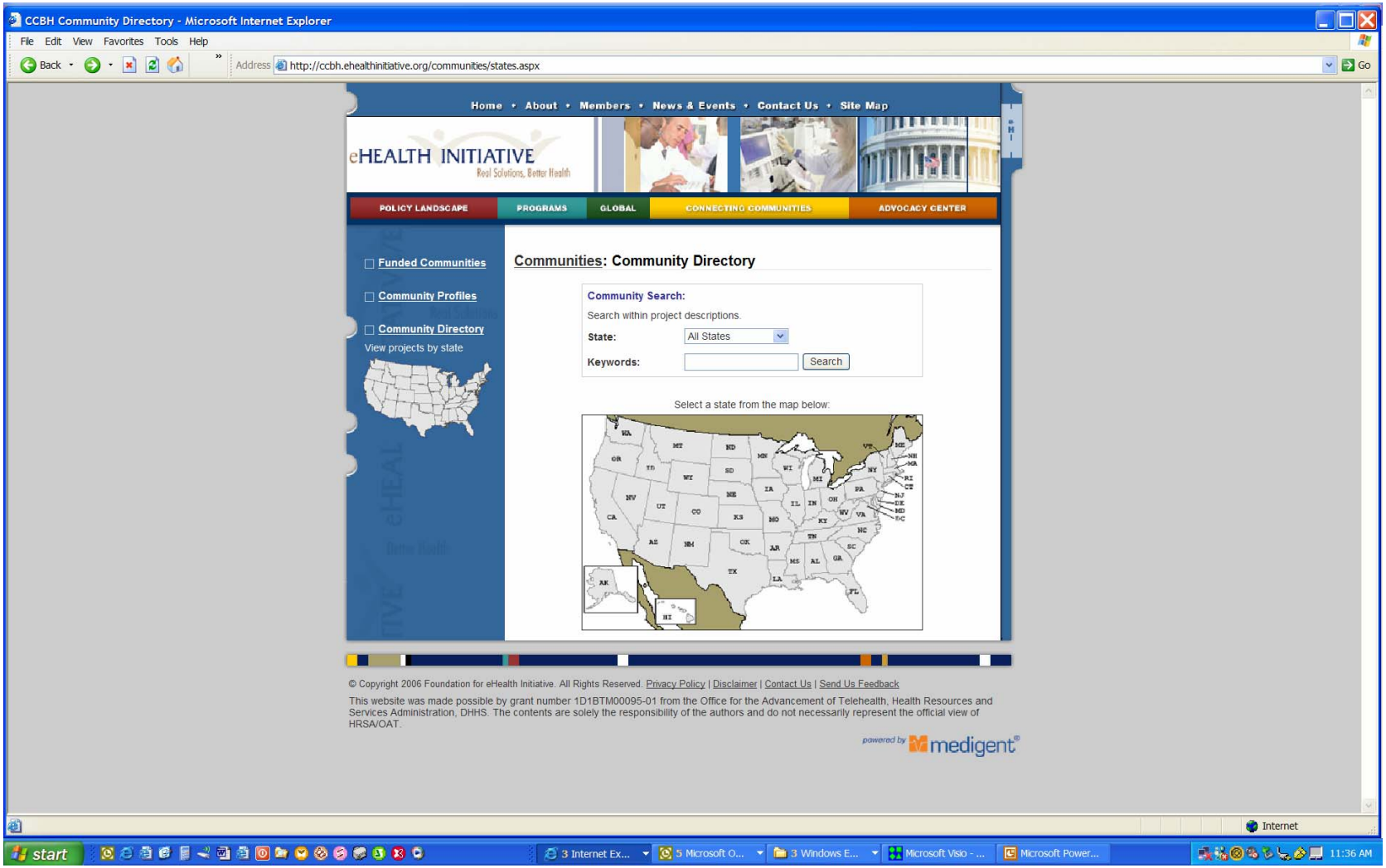


Infoway CA http://www.infoway-inforoute.ca/en/pdf/Private_Sector-Standards_V6.pdf

Key Architecture Components

- Registries (provider, client/member/patient, location, policy)
- Repositories
- Record Locator Service (RLS)
- Service Management Capabilities to negotiate computable exchange
- Underlying semantically interoperable reference information models to support computable “understanding”
- Technology infrastructures to support / negotiate computable exchange, orchestration, trading partner collaboration, and policies relating to compliance with jurisdictional requirements, e.g., provider credentialing, privacy and security

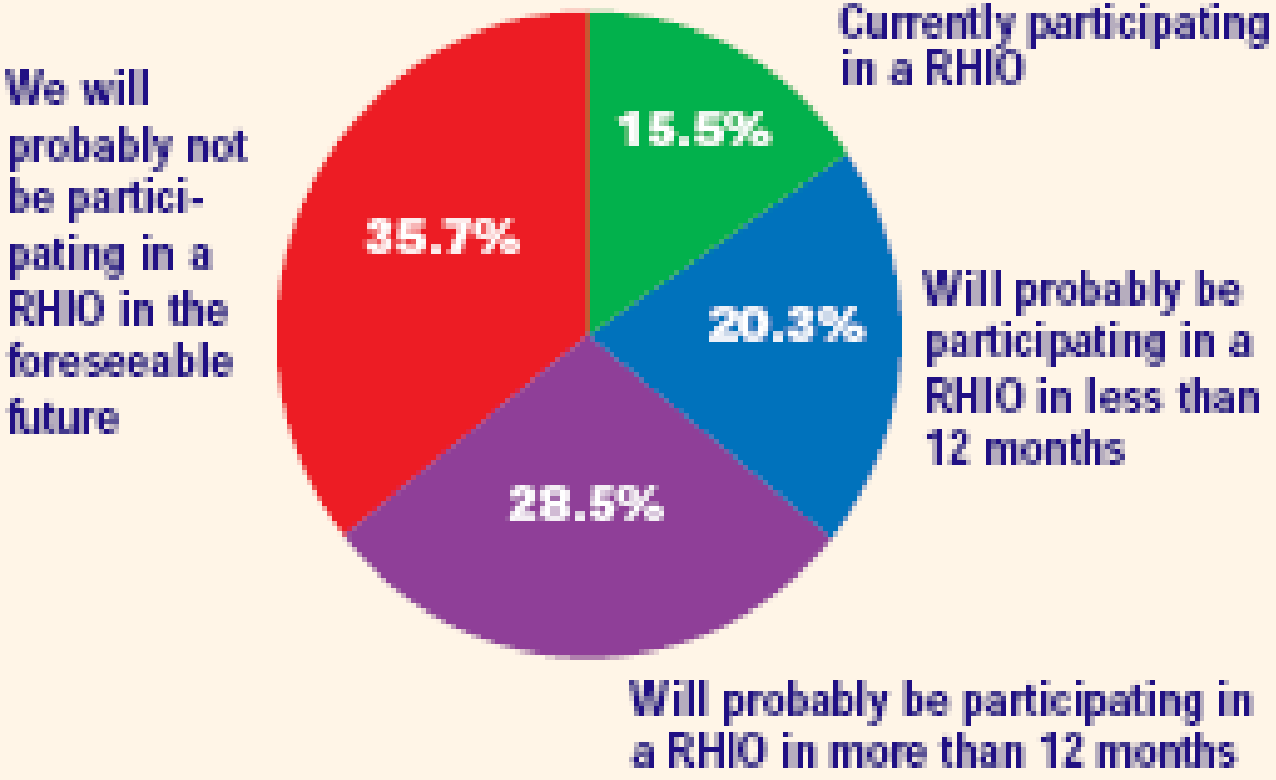
Where are the RHIOs?



eHealth Initiative http://ccbh.ehealthinitiative.org/communities/states.aspx

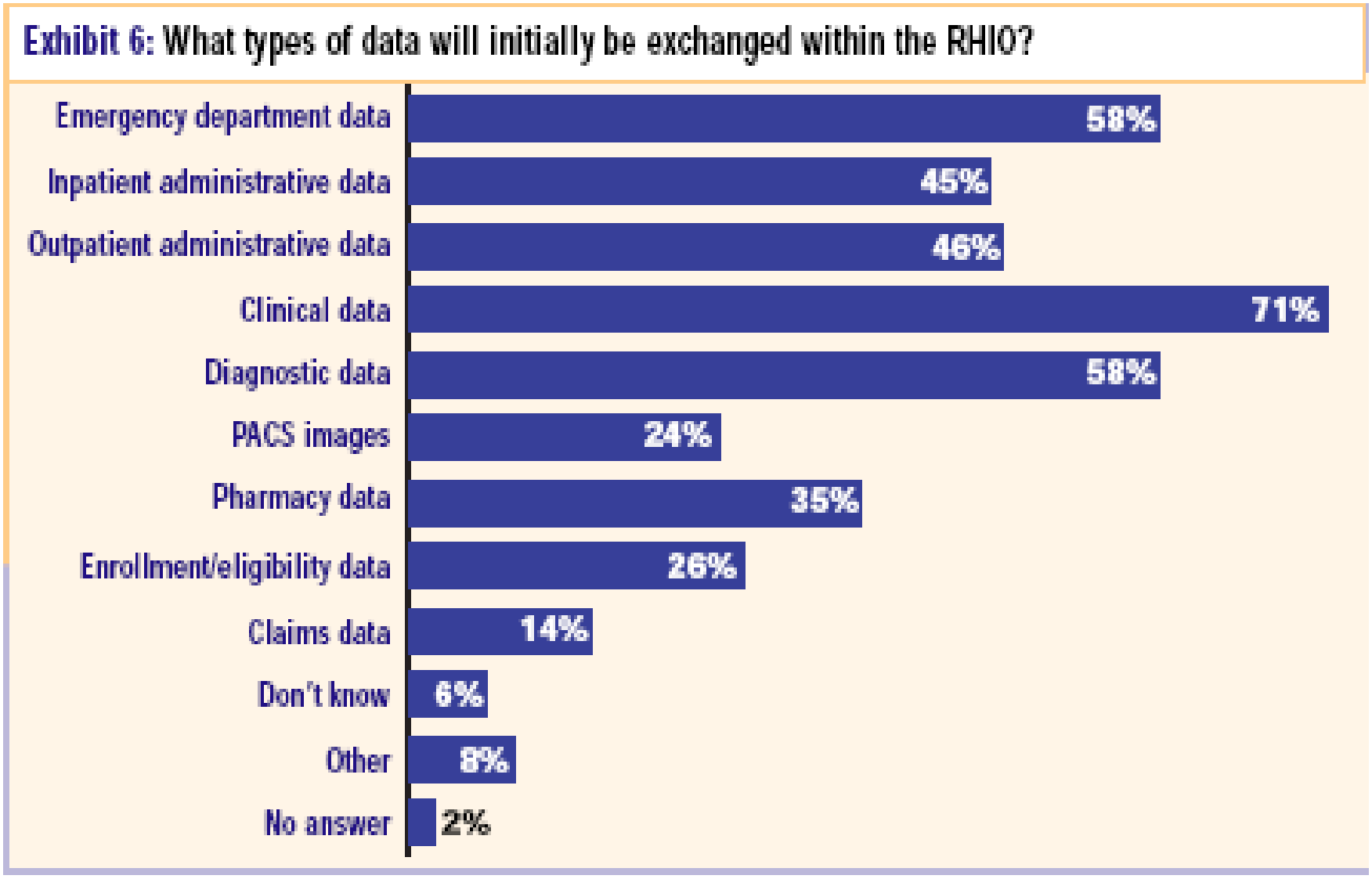
RHIO Participation

Exhibit 1: Which of the following best describes your organization's participation in a RHIO?



Mapping a Changing Health Care Landscape AHIMA ttp://www.ahima.org/hitweek/Mapping_Survey.pdf

Data Exchanged in RHIOs



NHII Costs

- Building an NHIN could cost as much as $79 billion (about 5% of current total annual health care expenditures per year for five years) as well as an ongoing $48 billion per year to maintain operations
- Cost neutral if it
  - Reduces the 44,000 deaths annually resulting from medical errors = economic cost of $4 million or
  - Improves efficiency of care by 5%
- Trade off
  - Could provide health coverage to 14 million of the 45 million uninsured
  - Increase physician pay by $120,000 or nurses pay by $33,000
  - Will cost each taxpayer $320 per year

The Evolution of RHIO Economics
Tom Lee, MD
August 23, 2005
http://www.ihealthbeat.org/index.cfm?Action=dspItem&itemID=113550

President Bush
Executive Branch

HHS
Michael Leavitt

OCR | DoD | VA | EPA

NCVHS | HRSA | AHRQ | SAMHSA | IHS | FDA | CMS | ASPE | CDC

ONCHIT
Dr. Brailer
ONC Contractor
Oversight/staffing

American Health Information Community
AHIC

AHIC Biosurveillance WG

Make recommendations to the Community so that within one year, essential ambulatory care and emergency department visit, utilization, and lab result data from electronically enabled health care delivery and public health systems can be transmitted in standardized and anonymized format to authorized public health agencies within 24 hours.

AHIC Consumer Empowerment WG
Nancy Davenport-Ennis
Robert Kolodner

Make recommendations to the Community to gain wide spread adoption of a personal health record that is easy-to-use, portable, longitudinal, affordable, and consumer-centered.

Recommendations:
1) How to protect privacy & security
2) Priority HIT that will provide immediate consumer benefit
3) Create private sector consensus based standard setting & harmonization process and product certification process
4) Nationwide architecture using the Internet for secure/timely sharing of health information
5) Create private sector successor to AHIC within 5 years

Make recommendations to the Community to gain wide spread adoption of a personal health record that is easy-to-use, portable, longitudinal, affordable, and consumer-centered.

AHIC EHRs WG

Make recommendations to the Community so that within one year, widespread use of secure messaging, as appropriate, is fostered as a means of communication between clinicians and patients about care delivery.

AHIC Chronic Care WG

AHIC

NHII Prototype Contractors

Accenture, working with Apelon, Cisco, CGI-AMS, Creative Computing Solutions, eTech Security Pro, Intellithought, Lucent Glow, Oakland Consulting Group, Oracle, and Quovadx. This group will work with the following health market areas: Eastern Kentucky Regional Health Community (Kentucky); CareSpark (Tennessee); and West Virginia eHealth Initiative (West Virginia)

CSC, working with Browsersoft, Business Networks International, Center for Information Technology Leadership, Connecting for Health, DB Consulting Group, eHealth Initiative, Electronic Health Record Vendors Association, Microsoft, Regenstrief Institute, SiloSmashers, and Sun Microsystems. This group will work with the following health market areas: Indiana Health Information Exchange (Indiana); MA-SHARE (Massachusetts); and Mendocino HRE (California).

IBM, working with Argosy Omnimedia, Business Innovation, Cisco, HMS Technologies, IDI, Solutions, Ingenium, and VICCS. This group will work with the following health market areas: Taconic Health Information Network and Community (New York); North Carolina Healthcare Information and Communications Alliance (Research Triangle, North Carolina); and North Carolina Healthcare Information and Communications Alliance (Rockingham County, North Carolina)

Northrop Grumman, working with Air Commander, Axolotl, Client/Server Software Solutions, First Consulting Group, SphereCom Enterprises, and WebMD. This group will work with the following health market areas: Santa Cruz RHIO (Santa Cruz, California); and HealthBridge (Cincinnati, Ohio); University Hospitals Health System (Cleveland, Ohio)

The four consortia are led respectively by Accenture, Computer Science Corporation (CSC), International Business Machines (IBM) and Northrop Grumman. Each consortium is a partnership between technology developers and health care providers in three local health care markets. Each group will develop an architecture and a prototype network for secure information sharing among hospitals, laboratories, pharmacies and physicians in the three participating markets. Additionally, all four consortia will work together to ensure that information can move seamlessly between each of the four networks to be developed, thus establishing a single infrastructure among all the consortia for the sharing of electronic health information.

4 NHII Prototype Contractors

Certification Commission for Health IT
CCHIT

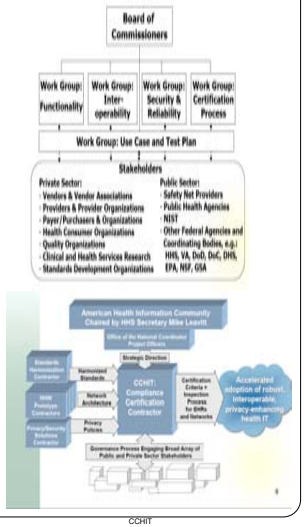
American Health Information Management Association
AHIMA

Health Information and Management Systems Society
HIMSS

National Alliance for Health Information Technology
NAHIT/Alliance

Vendors/Payers/Providers/Consulting Groups

Deliverables:
Certification Criteria
Certification Technologies
Certification Processes



CCHIT

Health Information Technical Standards Panel HITSP

Health Standards Develop Organizations SDO
X12, HL7, NCPDP, ASTM, DICOM, SNOMED, LOINC etc

National HIT Interest Groups, e.g., WEDI, AHIMA, HIMSS, NAHIT, eHI, Markle

Provider/Payer Associations
AMA, AHA, ACP, ADA

Consumers | Purchasers | Payers | Government Agencies | HIT Vendors

Providers | Safety Net Providers | Public Health | Research | Health Service Vendors Surescript, RXHUB, Clearinghouses. Billing Services

Deliverables:
Use Cases for AHIC; Collaborate with ONCHIT Contractors
Standards Landscape
Standards Harmonization & Implementation Guides for Use Cases
Self-sustaining Standards Harmonization Process

Organization	Name	Category	Sub-Category
Accredited Standards Committee X12	Donald Bechtel	SDO	
Clinical Data Interchange Standards Consortium (CDISC)	Rebecca Kush	SDO	
DICOM/National Electrical Manufacturers Association	Howard Clark	SDO	
Health Level 7	Dr. Bill Braithwaite	SDO	
IEEE Standards Association	Todd Cooper	SDO	
National Council Prescription Drug Program (NCPDP)	Lynne Gilbertson	SDO	
SNOMED International	John Madden	SDO	
Organization for the Advancement of Structured Information Standards (OASIS)	Dr. Brett Trusko	SDO	
American College of Physicians	Dr. Michael Barr	Non-SDO	Clinician
Mayo Clinic	Dr. Christopher Chute	Non-SDO	Provider
Healthcare Information and Management Systems Society (HIMMS)	Stephen Lieber	Non-SDO	IT
Electronic Health Record Vendors Association (EHRVA)	Charles Parisot	Non-SDO	Vendor
Blue Cross and Blue Shield Association	Richard Landen	Non-SDO	Payer
Public Health Data Standards Consortium	Walter Suarez	Non-SDO	Public Health
Pfizer, Inc.	Dr. Ross Martin	Non-SDO	Research
MedicAlert Foundation	David Harrington	Non-SDO	Safety Net
	To be determined	Non-SDO	Purchaser
National Consumers League	Alison Rein	Consumer	
Department of Defense	Dr. Bart Harmon	Government	
Department of Health and Human Services	Betsy Humphreys	Government	
Department of Veterans Affairs	Dr. Rob Kolodner	Government	
Office of the National Coordinator	Dr. John Loonsk	Government	

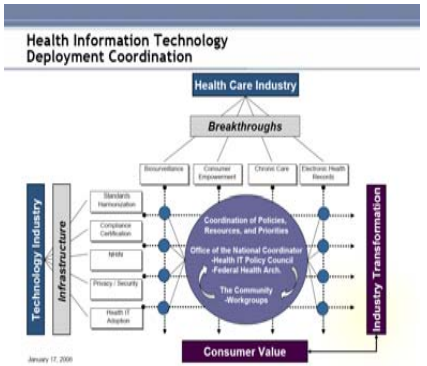
HITSP

Health Information Security and Privacy Collaboration HISPC

RTI | NGA | 40 State awarded Contracts | Privacy Experts

States and territories that receive an award will be required to complete their work within a year and undertake certain activities, including: examine privacy and security policies and business practices regarding electronic health information exchange; convene and work closely with a wide range of stakeholders in the state; and identify options to address organization-level business practices and state laws that affect privacy and security practices in order to permit interoperable health information exchange.

HISPC



MITA Maturity Level 4

- Supports provider access to and capture of data within clinical processes
- Able to *pull* clinical data electronically from EHRs and other provider systems
- May generate “clinical view” of administrative data, e.g., claims, prior authorization, claims attachment with payer-based health records
- MMIS participates in health information exchange via RLS and Registries
- May provide RHIO infrastructure
- May act as *Node* PHIN and the NHII

ASP EHRs

- Portal EHRs support provider access to & capture of data during the provision of care
- Payers sponsor ASP EHRS for small paper-based providers as web-based or downloadable applications
- Facilitate generation of clinical data needed for reporting, for claims attachments, and for outcome or performance measures
- Help small providers engage in HIE
- Prepare for transition for full scale EHRs
- ASP could support PHRs

MITA Maturity Level 5

- Clinical Data stored only at source
- Real time Peer2Peer collaboration with EHRs & PHRs
- Clinical data pushed electronically among systems
- Consumed Directly for both clinical and administrative purposes
- No need for transforming into billing or quality code systems