CONNECTing to the NHIN

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The Federal Health Architecture

"If you want to go fast, walk alone."

"If you want to go far, walk together."

More than 20 federal agencies work together in a collaborative.

Goals:

- Provide the tools and solutions to support the development and exchange of interoperable health information
- Support better care, increased efficiency, and improved access to care for American citizens

"Secure Exchange of Interoperable Health Information"

The current landscape in health information technology…

The Nationwide Health Information Network

The NHIN provides:

- **Common legal framework for information sharing**
- **Common infrastructure necessary for network security and connectivity**
- **Specifications for interoperable services**

Federal and Private Sector Partners Using NHIN in 2009*

Agency (7)

Department of Defense**

Department of Veterans Affairs**

Social Security Admin

Indian Health Service**

Centers for Disease Control**

National Cancer Institute**

National Disaster Medical System**

Currently In Limited Production

Private Sector (15)

CareSpark

Cleveland Clinic Foundation

Community Health Information Collaborative

Delaware Health Information Network

Healthbridge

Healthlinc (Bloomington Hospital)

MedVirginia

INHS

Kaiser Permanente

Long Beach Network For Health

Lovelace Clinic Foundation

Minnesota Community Health Information Collaborative (CHIC)

New York eHealth Collaborative

NCHICA

NMHIC

Regenstrief Institute

West Virginia Health Information Network

Wright State University

State Level (3)

New York State Department of Health (NYSDOH)**

Department of Health (NYSDOH)**

Indiana State Department of Health (ISDH)

*Via demonstration and/or production activities.

** Using the **CONNECT Solution**

NHIN Architectural Principles

- Highly distributed**: Patient health information is retained at the local health information exchange level**
- Local autonomy**: Each HIE must make their own determinations with respect to the release of patient information**
- Focus only on inter-organizational health exchange**: The NHIN does not attempt to standardize implementations of the NHIN services and interfaces, only the communications between HIEs**
- Use public internet: **The NHIN is not a separate physical network, but a set of protocols and standards that run on the existing internet infrastructure**
- Platform neutral**: The NHIN has adopted a stack (web services) that can be implemented using many operating systems and programming languages**

NHIN Services Architecture

NHIN Profiles

Consumer Preferences (HIEM)
- Store and exchange consumer preferences for sharing of personal health information (XACML)

Biosurveillance Aggregate Minimum Dataset (HIEM)
- Summary data about disease incidence

Profiles describe how to implement services for a specific domain like consumer preferences for information sharing or biosurveillance

NHIN Services

Discovery Services
- Subject Discovery (PIXv3)
- Authorized Case Follow-up (PIXv3)
- Query for Documents (XCA)
- NHIE Service Registry (UDDI)

Information Exchange Services
- Retrieve Documents (XCA)
- Query Audit Log (ATNA)
- Health Information Event Messaging (WS-Base Notification)

Services describe specific interfaces (web services) used between HIEs to discover and exchange health-related information

Messaging, Security and Privacy Foundation

Messaging
- Enclosure (SOAP)
- Service Description (WSDL)
- Addressing (WS-Addressing)
- Reliability(WS-Reliable Messaging)

Security
- Digital Certificates (x.509v3)
- Transport Encryption (TLS)
- Message Security (WS-Security)
- Digital Signature (SAML Holder of Key)

Authorization Framework
- Requestor Authentication (SAML)
- Requestor Authorization (SAML)

Messaging, Security and Privacy Foundation describes the underlying protocols and capabilities necessary to send and secure messages between NHIEs

NHIN Shared Versus Local Infrastructure

Shared	Local
PKI Certificate authority	**Patient records**
Organizational registry	**Patient indexes**
Network identifier distribution	**Audit logs**
Legal framework (DURSA)	**Consent directives**
	Provider information
	Disclosure decisions

NHIN - SOA work in progress

- **End to end security**
- **Message reliability**
- **Improving patient location mechanisms**
- **Enhancing conformance to IHE profiles**
- **Enhancements to privacy and authorization**
- **Service versioning**

- **For more information on the NHIN: http://healthit.hhs.gov**

CONNECT: Tools for Information Exchange

FHA's CONNECT Initiative provides three related tools to enable organizations to connect to the NHIN:

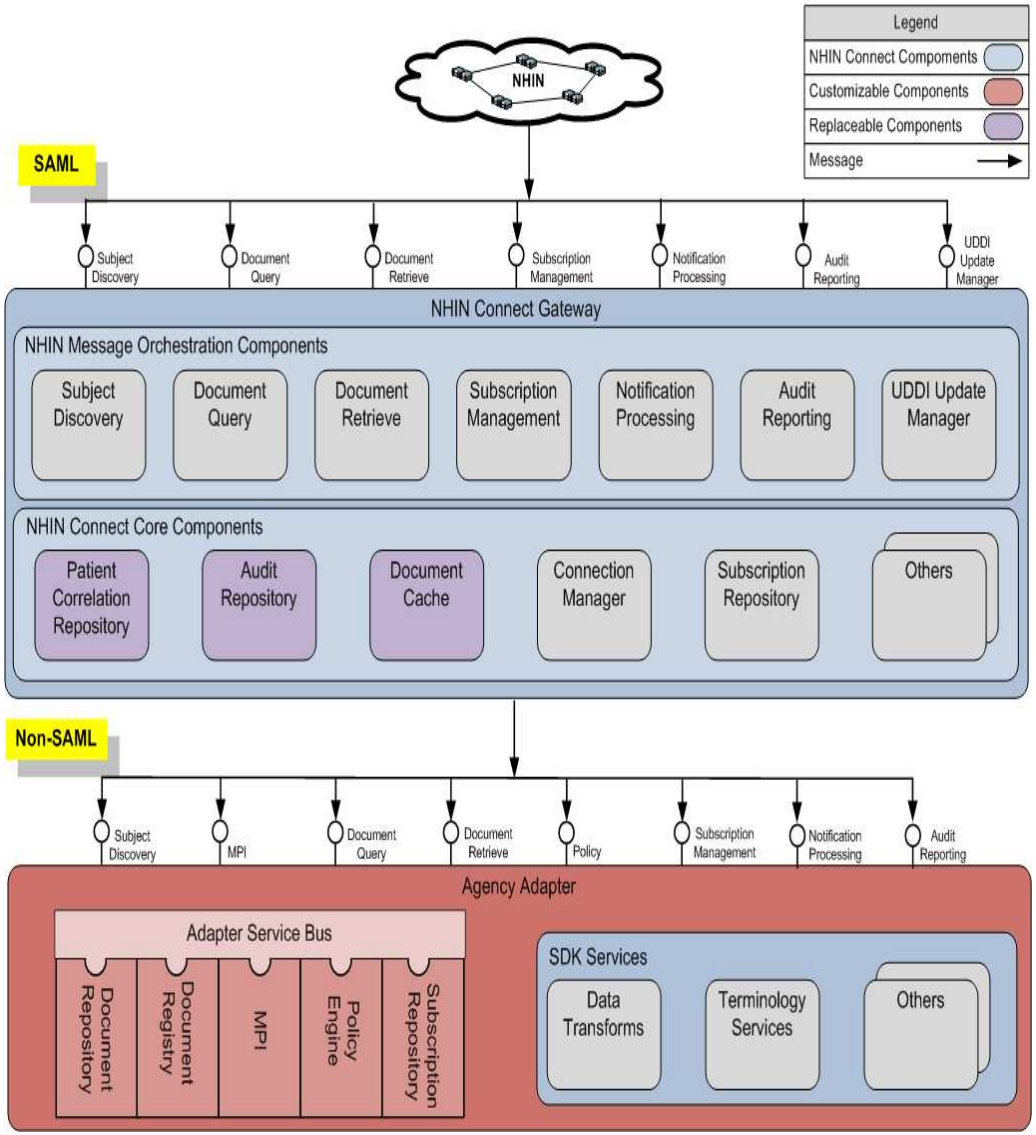
The Gateway, which implements the core services defined by the NHIN

Enterprise Service Components, which provide robust tools for indexing patient identities, maintaining patient health documents, implementing business rules for authorizing the release of medical information and more

Universal Client, a client framework for developers to implement enterprise service components

CONNECT Architecture Overview

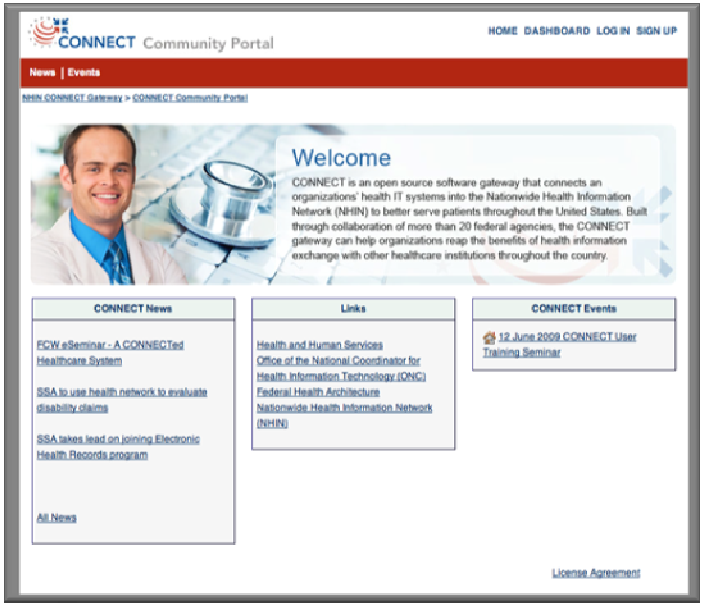
- **Flexible, extensible architecture built on Java/OpenESB/Glassfish**
- **Fully implements all client and supplier interfaces for existing NHIN services**
- **All components have web service interfaces**
- **Adapters can be created for any existing health information systems**
- **Implementers can use supplied enterprise components, or substitute their own**



CONNECT 2009 Timeline

- **March 2009: Version 2.0 Release**
  - General availability as open source
  - Implementation of existing 10 NHIN services
- **July 2009: Version 2.1 Release**
  - Includes Enterprise Service Components (MPI, Document Registry/Repository, Policy Engine, Audit Log)
  - Enhancements to messaging security and reliability
  - Add Linux platform support
- **Version 2.2 and beyond**
  - Integration with additional health vertical networks
  - Improved capabilities for public health, quality reporting and clinical decision support
  - Universal client framework

Public availability of CONNECT solution



Released under a "non-viral" license that makes it easy to develop solutions using the CONNECT software code base

A website where interested parties can download the CONNECT solution at:

www.connectopensource.org

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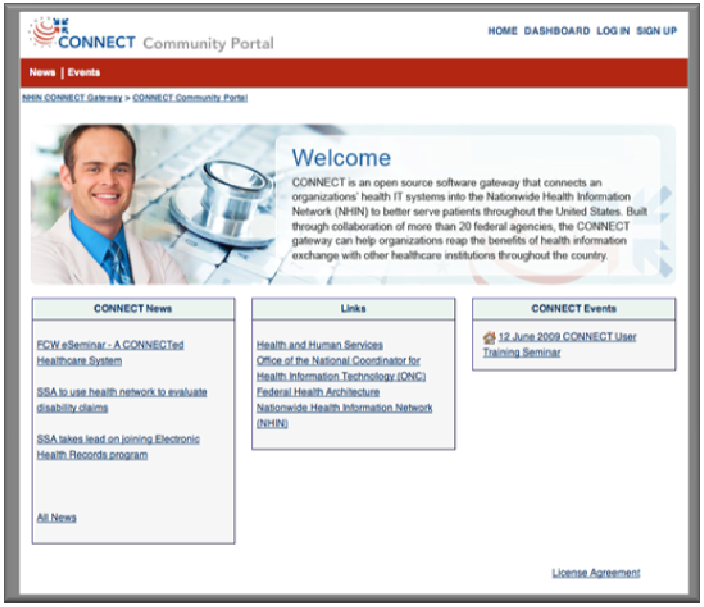
CONNECT Training Seminar

CONNECT



June 29th & 30th, 2009
Washington D.C.
JW Marriott

Free Registration at
www.connectopensource.org

Enhanced Care Delivery by CONNECTing to the NHIN:

Wounded Warrior Case Study

Tim Cromwell

Director of Standards & Interoperability

Office of Chief Health Informatics Office

Business Drivers for Health Record Interoperability

- 3 out of 4 Veterans receive a portion of their care from non-VA providers
- Providers need a more complete record to make informed decisions, avoid duplicative therapies, orders, etc.
- Patients and families carry the burden and play the role of information exchange

Serving Our Veterans

VA Hospitals	**153**
VA Nursing Homes	**136**
Domiciliary Residential Rehabilitation Treatment Programs	**44**
Outpatient Clinic Totals	**876**
Hospital Based Outpatient Clinics (HBOC)	**156**
Independent Outpatient Clinics (IOC)	**4**
Mobile Outpatient Clinics (MOC)	**5**
Community Based Outpatient Clinics (CBOC)	**711**
Vet Centers	**206**

- **Medical care to more than 5.4 million veterans with > 7 million enrollees**
- **Largest single provider of health professional training in the world**
- **One of the largest and most productive research organizations in the country**
- **Largest direct care provider for homeless persons in the country**

CONNECT

Joseph Nhinpatient's Continuity of Care: Wounded Warrior Scenario

Next Steps for VA

- **"San Diego Project"**
  - Limited Production Pilot
    - San Diego KP facility, San Diego VA Medical Center
    - ~1000 patients who receive care at both the KP facility and at the San Diego VA
    - When patient is seen at KP, clinician will query the NHIN to receive VA data; when patient is seen at VA, VA clinician will query the NHIN to receive the KP data.
    - Query will be done through CPRS and VistAWeb
    - Starting in November, 2009
  - VA/KP will be the one of the first of the NHIN communities to do full exchange
  - SSA and MedVirginia are in production with "one-way" exchange of disability claim information

Next steps for VA

- **"San Diego Project" Challenges**
  - Technical Capability
    - Query MPI and positively identify patient
    - Extract and aggregate data from relevant VistA systems
    - Build an XML document and transmit to KP
    - Receive an XML document; parse and make sense of it
  - Operational
    - Receive authority to operate
  - Policy
    - Create a process & system that allows patients to "opt-in" (share data with the NHIN)
    - Preference is to clear legal barriers so that Sec VA can sign a DURSA (Data Use and Reciprocal Support Agreement) – legal contract with NHIN participants
      - Trusted network

Enhanced Care Delivery by CONNECTing to the NHIN:

Wounded Warrior Case Study

Dr. Steve Steffensen

Chief Medical Information Officer

Telemedicine & Advanced Technology Research Center

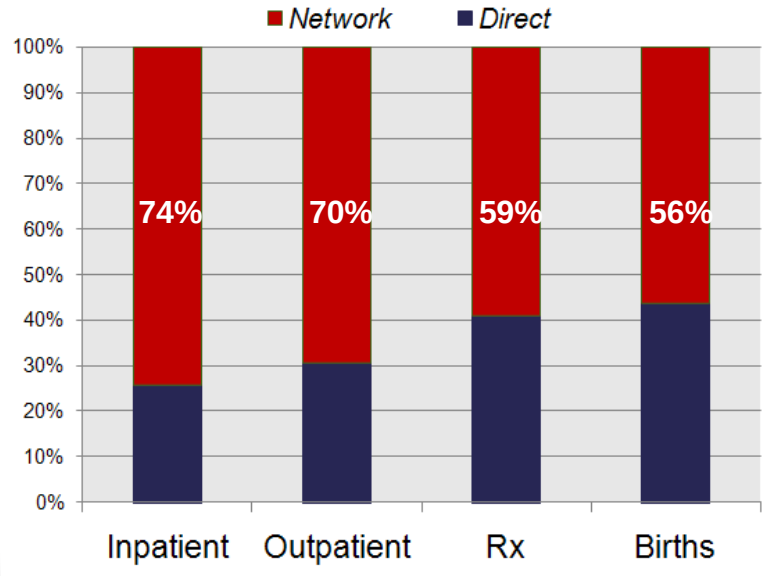
Department of Defense Commitment to Care

Military Beneficiaries: 9.3 million

Military Bases in US: 202

Military hospitals	63	Medical/Dental Clinics	826
Encounters/month	9 million	Average outpatient visits/year/patient	4

1:4 military families move in a given year
<50% of network consults make it back to the PCM



CONUS Military Bases

The Benefits of Collaboration

Benefits of NHIN:

- A single, secure network that will be able to take the place of proprietary, expensive point-to-point solutions
- A way to link together existing networks that agencies already participate in
- A set of standards, agreements and infrastructure that support clinical care, public health, administration, research and more

Benefits of CONNECT:

- An open-source software solution that can integrate any existing electronic health information system with the NHIN
- A set of components that provide important functionality for health enterprises, such as patient indexing, document management, and decisions about the release of medical information
- An extensible platform that can be used by industry to create innovative healthcare solutions

Questions?

Contact info: fha@hhs.gov or
202-205-8614