Think Locally, Connect Nationally

Didi Davis
Director of Testing
www.sequoiaproject.org
The Sequoia Project’s Role

The Sequoia Project is a trusted, independent convener of industry and government.

We work to address the challenges of secure, interoperable nationwide health information exchange (HIE).
Current Sequoia Project Initiatives

**eHealth Exchange** is the first and largest public-private health data sharing network in the U.S.

**Carequality** is a national-level interoperability framework to inter-connect networks.

**RSNA Image Share Validation Program** is an interoperability testing program to enable sharing of medical images and reports.
eHealth Exchange Objectives

• Establish multi-use framework for information exchange
  – Across communities
  – Between private sector and government
• Agree upon a common set of policies to engender trust
• Standardize interfaces
• Test once: exchange with many
Patients Are Mobile, Their Data Should Be To

Henry’s doctor electronically requests and receives medical records from Virginia. Notes he is diabetic.

Destination:
San Francisco, CA

During a Trip to San Francisco, Henry broke his arm

Henry Tucker
Alexandria, VA
Age: 62
Diabetic
When he returns home, his doctors have electronic access to his medical records from California.
eHealth Exchange is Largest Public-Private Health Data Sharing Network

Supporting More Than 109 Million Patients Across:

- All 50 states
- 50,000 medical groups
- Four federal agencies (DoD, VA, HHS including CMS, and SSA)
- 3,200 dialysis centers
- ~65% U.S. hospitals
- 8,300 pharmacies

Shared Governance and Trust Agreement

Common Standards, Specifications & Policies

2017 © The Sequoia Project. All rights reserved.
National Use Cases and Standards Supported
http://sequoiaproject.org/resources/exchange-specifications/

Specifications & Standards

- **Query**: SOAP / SAML + IHE
- **Push**: Direct, Document Submission / Admin Distribution
- **Content**: HL7 CDA, CCDA, quality measures
- **HL7® FHIR®**
- **Imaging Exchange**
  - Integrating the Healthcare Enterprise (IHE) - XDS-I, XCA-I
- **Others added in 2016**
  - VPN (transport)
  - HL7 v2 (content)
  - NCPDP, PMIX, SCRIPT
eHealth Exchange Query Workflow (one of several supported)

- **Patient Discovery (IHE XCPD)**: Searches for patients
- **Query for Documents (IHE XCA)**: Searches for Document(s)
- **Retrieve Documents (IHE XCA)**: Transmits Document(s)

**eHealth Exchange Participant Gateway**
- (Acting as an Initiator)
- (Acting as a Responder)
Broad Range of Patient-centric Use Cases

- Treatment / Care Coordination
- Social Security Benefits Determination
- Immunization
- Authorized Release of Information – Consumer Access to Health Information
- Syndromic Surveillance
- Encounter Alerts
- Authorized Release of Information – Life Insurance
- Prescription Drug Monitoring Program (PDMP)
- Electronic Lab Reporting (in support of public health)
- Image Share Use Case
Supporting Active Duty Military, Retirees, their Families, & Veterans

**Sample Federal Use Cases**

**DoD and VA:**
Support active servicemen and veterans throughout their care by making it possible for medical records to follow the patient, providing caregivers with up-to-date medical histories.

**Social Security Administration:**
Requests claimant’s records electronically to make disability determinations. Cut down claims processes *from months to days*.

**CMS:**
CMS’ End Stage Renal Disease (ESRD) program is able to receive quality reporting data from dialysis centers to assure that individuals with ESI receive the highest quality care.
Social Security Administration Disability Determinations Use Case

A Closer Look

Manual Process (Mail, Fax, Scan)

Application Filing

Request for Medical Records

Waiting for Medical Records

Weeks to Months

Receipt & Review of Medical Records

Decision

Electronic Process (eHealth Exchange)

Application Filing

Request for Medical Records

Waiting for Medical Records

Seconds to Minutes

Receipt & Review of Medical Records

Decision

Benefits for Patients

- Faster disability claim determinations
- Quicker access to monthly cash benefits
- Earlier access to medical insurance coverage

Social Security Disability Programs

As of November, 2015, SSA is interoperating with nearly 100 eHealth Exchange partners and tens of thousands of sites
Supports Alternative Payment Models – Intel Connected Care

- *Intel Corporation* created an incentivized health insurance/care management program, “Connected Care”
  - Piloted in New Mexico
  - Rolled out to 20,000 beneficiaries in Portland, OR
  - Launching in other markets
- Beneficiaries receive care from on-campus clinic and contracted providers in Portland
- Value-based payment model where providers measured by customer satisfaction, quality, cost and interoperability
- Progress is measured
- Alternative payment models drive the need for health data sharing and will be the catalyst for change

**Intel’s Connected Care Program**
Value-based care model designed to improve overall health and wellness of Intel’s employees by providing information exchange and real-time care analytics for optimal care
### eHealth Exchange Validated Products

<table>
<thead>
<tr>
<th>Vendor</th>
<th>Validated Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsersoft</td>
<td>OpenHRE™ for Siemens</td>
</tr>
<tr>
<td>Cerner</td>
<td>Clinical Exchange Platform</td>
</tr>
<tr>
<td>FHA</td>
<td>CONNECT</td>
</tr>
<tr>
<td>Greenway Health</td>
<td>Greenway Exchange</td>
</tr>
<tr>
<td>ICA</td>
<td>CareAlign 3.0</td>
</tr>
<tr>
<td>IOD</td>
<td>PRISM</td>
</tr>
<tr>
<td>LTS</td>
<td>LTS HEX</td>
</tr>
<tr>
<td>INTERSYSTEMS</td>
<td>HealthShare</td>
</tr>
<tr>
<td>Medicity</td>
<td>A Healthagen Business</td>
</tr>
<tr>
<td>OPTUM</td>
<td>Optum HIE 2.0</td>
</tr>
<tr>
<td>ORION HEALTH</td>
<td>Exchange Gateway v3</td>
</tr>
<tr>
<td>OVERNOVUM</td>
<td>eHealth Exchange Gateway 1.0</td>
</tr>
<tr>
<td>zeomega</td>
<td>Jiva HIE Connect</td>
</tr>
<tr>
<td>Cerner</td>
<td>Resonance</td>
</tr>
</tbody>
</table>

**Benefits of Validation:**

New participants leveraging an eHealth Exchange Validated Product reduce effort and cost in onboarding.

[http://sequoiaproject.org/rsna/validated-products/](http://sequoiaproject.org/rsna/validated-products/)
The Situation

Communities of data sharing partners have formed, brought together by specific needs.

Some are geographically based, but other types of data sharing communities also exist.
The Challenge

What if you had a cell phone plan that only allowed you to call other customers of your carrier?

The communities have common use cases and a need to connect their members that has not previously been met in a systematic way.
The Solution

Carequality creates a standardized, national-level interoperability framework to link all data sharing networks.

Carequality is creating a web of interconnected communities.
Carequality’s Role

Carequality is not competitive with existing data sharing networks and programs but rather adds more value to their offerings. We bring to the table a wide array of stakeholder views at all points in our public-private consensus process.
Carequality Members
Essential Elements

Common rules of the road: In order for the varied participants to trust each other with health information, everyone needs to have a legal obligation to abide by the same rules.

Well-defined technical specs: Shared rules are not enough; clear standards must be laid out in an implementation guide that all implementers can follow.

A participant directory: To connect using the common standards, systems must know the addresses and roles of each participant.
Carequality Implementers

**HIEs**
- cchn
- CRISP
- MiHIN
- Santa Cruz Health Information Exchange
- SunCoast RHIO

**Technology Vendors**
- athenahealth
- eClinicalWorks
- Epic
- GE Healthcare
- Glenwood Systems
- MEDENT
- Medicity
- Netsmart
- NextGen

**Service Providers**
- Cognizant
- commonwell
- Inovalon
- Kno2
- mana
- surescripts

**PHRs**
- cartushealth
- onehealth
- WOMBA
Accelerating Health Data Sharing in America

25,000+ Clinics

1,000+ Hospitals

580K+ Providers

2M Clinical Documents Exchanged Monthly
Why Image Sharing Matters

• Enables Patient Access/Workflows
• Benefit of historical exam during interpretation
• Concerns about cost of imaging over-utilization
  • Redundant exams ordered when recent exams are not accessible
• Radiation exposure
  • Reduce unnecessary patient risk due to redundant exams
• Quality
  • Better, more efficient care through easy availability of imaging examinations
What is the RSNA Image Share Validation?

- The Image Share Validation Program provides a conformity assessment program that sets the standard for consistency in the marketplace.

- The Image Share Validation Program tests the compliance of vendor systems using quality standards determined most effective for accurate and efficient exchange of medical images.

- The RSNA Image Share Validation Program benefits patients and providers with improved efficiency, reduced costs, enhanced quality of care, and standards-based interoperability to spur innovation.
RSNA Image Share Validation Program

• Fills a national Standards Gap
  – Product conformity assessment testing
• IHE profiles provide specifications for testing
• Modular Standards/Specifications/Test Cases
  – Cross-Enterprise Document Sharing for Imaging (XDS-I)
    • Document Source and Document Consumer
    • Registry and Repository
  – Cross-Community Access for Imaging (XCA-I)
    • Initiating Gateway
    • Responding Gateway
  – RSNA Image Share PHR
Foundational Standards for Image Sharing and Validation

- Ontologies - RadLex, SNOMED-CT
- DICOM medical imaging standards
- HL7 messaging and FHIR (Fast Healthcare Interoperability Resources)
- IHE-Integrating the Healthcare Enterprise
  - Radiology Technical Framework
  - Organizes the existing standards into practical, efficient workflows

RSNA/IHE Image Share Architecture
Who Should Participate:

- Providers of **imaging systems** such as Reporting Systems, RIS and PACS that wish to enable those systems to connect to networks for sharing images with providers and patients
- Providers of **health information exchange systems** that wish to enhance their systems to exchange medical images and reports
Benefits of Validation to Patients and Providers

• Improved efficiency
• Reduced costs
• Standards-based interoperability to spur innovation
• Reduce radiation exposure
• Stop duplicative procedures
• International IHE Conformity Assessment program

• Enhanced quality of care!
Participants Awarded Validation Seals
Lessons Learned
Nationwide Data Sharing Network
#1: Essential Building Blocks

- **Highly constrained specifications**
  - Transport, security, web services
  - Payload (e.g. clinical documents, images, etc.)

- **Robust Testing**
  - Well-defined test cases and automated tools that focus on known interoperability issues and security
  - Product testing to assure capabilities are “baked in”
  - Implementation-level testing of production configuration of system used in exchange

- **Work flow and best practices**
  - Patient matching
  - Consent

- **High-value use cases that drive adoption**
  - Meaningful use a start
  - Other high-value transactions essential to realize value from connectivity
  - Alternative payment models

- **Interoperability policies that work across networks**
  - Minimize barriers to exchange and foster trust
  - Need for clearly articulated responsibilities of parties to exchange

- **Interoperability eco-system and governance**
  - Accountability measures to promote and maintain compliance
  - Consequences for non-compliance
#2: Testing is Key

- Multi-level testing
  - Profile-level testing
  - Product testing and validation
  - Production-level testing to assure production configuration interoperates
- Automated, self-service approach
- Tightly constrained tests
- Focus on known interoperability issues and security, as well as “negative tests”
- Implementation-level testing essential to catch interoperability issues introduced by systems configurations
- Testing eco-system with feedback loop into tightly constrained implementation specifications
#3: Interoperability is an ongoing, evolving process

- Technology available and in the hands of providers
- Health IT systems tested and validated as conformant and interoperable (tightly constrained transport, security, policy, content, clinical work flow incorporates HIE)
- Health IT systems utilized and records populated with data
- HIE capabilities implemented at scale to enable connectivity
- High-value transactions and use cases implemented
- Transmissions work reliably
- Content sufficiently specified to assure consistency, value, and semantic interoperability to both sender and receiver
- Living process to refine and improve capabilities over time
Opportunities Abound for Interoperable Exchange

• Leverage the growing connectivity footprint in the US and expand to include image exchange
• Inform development of PHR profile that will be deployed nationwide and reflect requirements for image exchange
• Be part of growing movement to broaden connectivity to support care management and population health
Interoperability for the Future
2018 Sequoia Priorities

- Specificity & Testing of Clinical Documents
- Provider Directory
- Patient Matching
- Consumer Access to Health Information
Thank You!

Convene

Collaborate

Interoperate