eHealth Exchange Network in U.S. – Bottom Up Complements Top Down?

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The Sequoia Project’s Role

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

We address the practical challenges of secure, interoperable nationwide health information exchange.
The Sequoia Project Initiatives

The Sequoia Project’s independent initiatives each have their own:

- Mission
- Governance
- Membership
- Structure

The Sequoia Project is an ideal home for projects that require a collaborative environment where multiple parties with differing perspectives can work together.
Current Sequoia Project Initiatives

The **eHealth Exchange** is the largest and fastest growing health data sharing network in the US.

**Carequality** facilitates consensus on a standardized, national-level interoperability framework to link all data sharing networks from across the entire US healthcare ecosystem.

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

The Largest Health Information Exchange Network in the U.S.

An initiative of the Sequoia Project
Choosing How to Connect

Centralized
“Hub” networks

Federated
The Internet

Federated with Shared Services (Hybrid)
Introduction to the eHealth Exchange

Shared Governance and Trust Agreement

Common Standards, Specifications & Policies
10 Years of Experience

- A solid proven governance model
- Common legal agreement minimizes barriers to nationwide exchange
- Mature capabilities, processes, operations, testing, and strong cultural knowledge base
- Testing and onboarding have simplified efforts for partners to exchange nationwide

- Growth is in the number of medical groups
- Federal partner programs leverage eHealth Exchange as integral part of their interoperability strategy
- Relatively negligible maintenance costs
- Recognized by SDOs as significant nationwide community of implementers

**Timeline**

- **2006**
  ONC Conceived the Nationwide Health Information Network (NHIN / NwHIN)

- **2008**
  NHIN moves from prototype to production pilot

- **2009**
  First production exchange between Social Security Administration & MedVirginia

- **2012**
  NHIN transitions from government to private sector & renamed eHealth Exchange

- **2015**
  Participation quadruples & expands to all 50 states

- **2016**
  New initiatives increase quality & types of content shared
Largest Health Information Exchange Network in the U.S.

Today, the eHealth Exchange connects:

- 26,000 medical groups
- 3,400+ dialysis centers
- 8,300 pharmacies
- All 50 states
- 4 federal agencies (DoD, VHA, HHS including CMS, and SSA)
- ~50% of U.S. hospitals
- Supporting more than 100 million patients
eHealth Exchange Core Values

- Lead in national-level exchange of health information to establish interoperability as a standard, while fostering and supporting innovation
- Maintain openness and transparency in the conduct of operations
- Cultivate trust and protection of information exchanged
- Encourage participation and inclusiveness across a diverse set of stakeholders
- Provide for accountability, fairness and due process
- Maximize effectiveness and efficiency in the exchange of health information
- Evaluate, learn and promote continuous improvement in its own operations
eHealth Exchange has a Trust Foundation

- Legal Agreement
- Governing Committee
- Operating Policies and Procedures

eHealth Exchange uses Technical Services

- Web services registry (phone book of network Participants)
- Security (x.509 Managed Certificate Authority)
- Automated testing using Aegis platform
National Use Cases and Standards Supported

Use Cases
- Treatment / Care Coordination
- Military / Veteran Health
- Disability Benefits Determination
- Quality Measures Reporting
- Immunizations
- Consumer Access
- Life Insurance

Standards
- Query: SOAP / SAML + IHE Suite
- Push: Direct, Document Submission / Admin Distribution
- Content: C32, CCDA, quality measures
- FHIR
- Others under consideration
### eHealth Exchange Architectural Layers/Specifications

#### Profiles
Employing exchange patterns to enable clinical data enabled workflows

- Care Summary Exchange
- Quality / Admin Data Push
- Claims Eligibility

#### Information Exchange
Employing lower-level layers to enable basic message exchange patterns

- Patient Discovery
- Query for Documents
- Retrieve Documents
- Patient Consent
- Push
- Publish / Subscribe

#### Discovery, Message Security and Privacy
Message security, privacy, and interoperable healthcare data exchange

- Web Services Discovery (UDDI)
- Message Platform
- Authorization Framework

#### Operational Infrastructure
Runtime systems supporting the eHealth Exchange

- Security Infrastructure (Managed PKI)
- Web Services Discovery (UDDI)
IHE Mappings to eHealth Exchange Architecture

Profiles
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Information Exchange
Employing lower-level layers to enable basic message exchange patterns

- IHE XCPD
- IHE XCA
- IHE XCA
- IHE BPPC
- IHE XDR/XDM

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Operational Infrastructure
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eHealth Exchange Query Workflow

1. **Patient Discovery** (IHE XCPD)
   - Searches for patients
   - Found patient

2. **Query for Documents** (IHE XCA)
   - Searches for Document(s)
   - Lists zero or more found documents

3. **Retrieve Documents** (IHE XCA)
   - Transmits Document(s)
   - Returns zero or more documents

**eHealth Exchange Participant Gateway**
(Acting as an Initiator)

**eHealth Exchange Participant Gateway**
(Acting as a Responder)
Onboarding & Testing Process

**APPLY**
- Prepare Onboarding Package
- **Staff Reviews** Onboarding Package
- Coordinating Committee (CC) Determine Eligibility

4-6 WEEKS

**TEST**
- Complete Practice Testing in the DIL
- Validate Results and Prepare Report
- CC Accepts as a Participant

2-6 WEEKS

**ACTIVATE**
- Issue Production Certificate
- Add to Service Registry
- **GO LIVE!**

2 WEEKS

**PARTICIPANT**
- Treatment / Care Coordination / Transitions of Care
- Social Security Disability Claims Eligibility Determination
- Quality Reporting for the CMS End Stage Renal Disease Program

Timelines are based on averages and may be extended depending on Applicant’s internal constraints (e.g., legal review, configuration/setup of technical environments, configuration control processes, technical resource availability. The test lab (Developers Integration Lab – DIL) is currently available to any organization that wants to begin practice testing.
eHealth Exchange Validation Programs

Participant Testing
- Verifies that a participant’s implemented exchange gateway complies with the eHealth Exchange specifications, and validates for known interoperability and security risks
- Required for new participants and existing who wish to test for new functions or retest for major system changes

Product Testing
- Focus on compliance and interoperability testing of the products “out of the box”
- Reduces cost and burden for participants to onboard by approximately 50%
- Reduces risk of interoperability issues being introduced into production, including the cost and burden of fixing interoperability issues and deploying patches
eHealth Exchange Validated Products

<table>
<thead>
<tr>
<th>Vendor/Product</th>
<th>Validated</th>
</tr>
</thead>
<tbody>
<tr>
<td>Browsersoft</td>
<td>Clinical Exchange Platform</td>
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<tr>
<td>Connect</td>
<td>Connect</td>
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<tr>
<td>Greenway Health</td>
<td>Greenway Exchange</td>
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<tr>
<td>ICAO</td>
<td>CareAlign 3.0</td>
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<td>IOD</td>
<td>PRISM</td>
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<tr>
<td>Intermountain</td>
<td>HealthShare</td>
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<td>Intersystems</td>
<td>Exchange Gateway v3</td>
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<td>InterSystems</td>
<td>LTS Hex</td>
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<tr>
<td>Medicity</td>
<td>Network v5 and v7</td>
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<tr>
<td>Optum</td>
<td>Optum HIE 2.0</td>
</tr>
<tr>
<td>Orion Health</td>
<td>eHealthExchange Gateway 1.0</td>
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</tbody>
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Health IT systems complete rigorous set of tests to validate:
- Conformance to underlying standards and specifications
- Systems are free from known interoperability issues - transport, security, transactions and content (if not MU certified)
- Configured and operate securely (negative security tests)
# eHealth Exchange Impact

<table>
<thead>
<tr>
<th>Benefit</th>
<th>How eHealth Exchange Achieves Benefit</th>
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<tbody>
<tr>
<td><strong>Reducing Costs</strong></td>
<td>Using common standards, legal agreements and governance enables participants to reduce legal fees and avoid building custom interfaces with trading partners.</td>
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<tr>
<td><strong>Improving Clinical and Business Decisions</strong></td>
<td>Access to a nationwide data sharing network provides secure access to the comprehensive health data that healthcare providers, pharmacies and payers require to improve clinical decision making, patient safety, process improvement and fair payment.</td>
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<td><strong>Exchanging Data with Government Agencies</strong></td>
<td>Federal participation in the eHealth Exchange supports data sharing among all participants and with agencies such as Centers for Medicare &amp; Medicaid Services, the Department of Defense, the Social Security Administration and the Department of Veterans Affairs.</td>
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<td><strong>Planning for the Future</strong></td>
<td>Because the eHealth Exchange is governed by a representative set of participants, its multi-purpose interoperability platform has the ability to evolve and incorporate new use cases, standards, etc.</td>
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Who Benefits?

PATIENTS

• Improves Care Coordination and can reduce medical errors
• Expedites Social Security Benefits for the disabled
• Ensures that individuals with End Stage Renal Disease receive the highest quality of care

PROVIDERS

• Allows access to critical information such as test results, medication history and allergy information is available to providers when the patient is transferred to another service.
• Enables exchange with government providers with national level ROI
• Can earn credit for MU2 Transitions of Care Measures

ACTIVE DUTY MILITARY, RETIREES, AND VETERANS

• Supports active duty military, retirees, their families, and veterans throughout their care by making it possible for medical records to follow the patient
Lessons Learned in Building a Federated Health Data Sharing Network

An initiative of the Sequoia Project
Growing a Nationwide Network

Top Down
- Government supports uniform approach
- Strong government support and participation in pilot
- Driving private sector adoption:
  - Federal agencies participation
  - Meaningful use
  - Alt. payment structures

Bottom Up
- Provider and patient demand
- Private sector collaboration on implementation details
- Health IT technologies maturing
- Workflow improvements being made
- Exploring additional uses of the connectivity beyond federal use cases
Common Legal Agreement

• Eliminates one-to-one legal agreements
• Saves money with uniform contracts, policies and governance
• Contractual enforcement of compliance
• Provides transparency
• Creates clear expectations for participants
Test – Test - Test

- Testing should meet business and technical needs (e.g. test once, exchange with many)
- Need for more rigorous testing of clinical documents
- Network-level testing should focus on increasing assurances of interoperability in production
- Goal should be to reduce network-level testing over time as interoperability “is built into” products
- Testing should evolve as health IT capabilities mature
- Incremental improvements over time essential
- Feedback loop to standards development organizations
Journey Towards “Seamless Interoperability”

- Highly constrained specifications
- Send strictly, receive liberally (can be expensive)
- Key is to focus on the basics (simple is difficult enough!)
- Collaborate early to ensure the strategy is not siloed
- Very precise specifications are elusive
- If a spec is testable then you’ve won the battle (or at least a skirmish)
- Transport, security, web services are not the complete picture
  - Data sharing policies, patient matching, consent, content, work flow

“Flexibility and optionality are the enemy of interoperability”

--Wes Rishel – Vice President & Distinguished Analyst – Gartner
Costs and Savings

- eHealth Exchange has a non-profit, co-op business model
- Seeking to provide services as close to free as possible - shared savings model
- Leveraging a mutual investment in process, collaboration, specifications, tooling
- Network testing is not a profit center
- “Test once, exchange anywhere” goal
- Upfront costs result in lower downstream costs by shifting expenses forward in timeline where they are less expensive
- Optional vendor/product testing reduced level of effort
- Automation is the absolute key (quality, fast turnaround loop, continuous testing, cost-efficient)
Our focus in 2016

Service Level Guidance
Increasing connectivity
Provider directory
Production testing
Improve content testing
Patient matching
Convene

Collaborate

Interoperate
Questions & Discussion

www.sequoiaproject.org
Thank You!