



Testing for Reliable and Dependable Health Information Exchange

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Discussion Topics

1. eHealth Exchange Testing Programs & Tooling
2. Enhanced Content Testing Program
3. RSNA Image Share Validation Testing Program

The Sequoia Project and Initiatives



The Sequoia Project is a trusted, independent convener of industry and government that supports independent initiatives to address the challenges of secure, interoperable nationwide health data sharing.



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



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



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

About eHealth Exchange Testing

Largest Health Information Exchange Network in the U.S.

All 50 states



26,000 medical groups

4 federal agencies
(DoD, VA, HHS including CMS,
and SSA)



3,400+ dialysis centers

Almost 50% of U.S.
hospitals

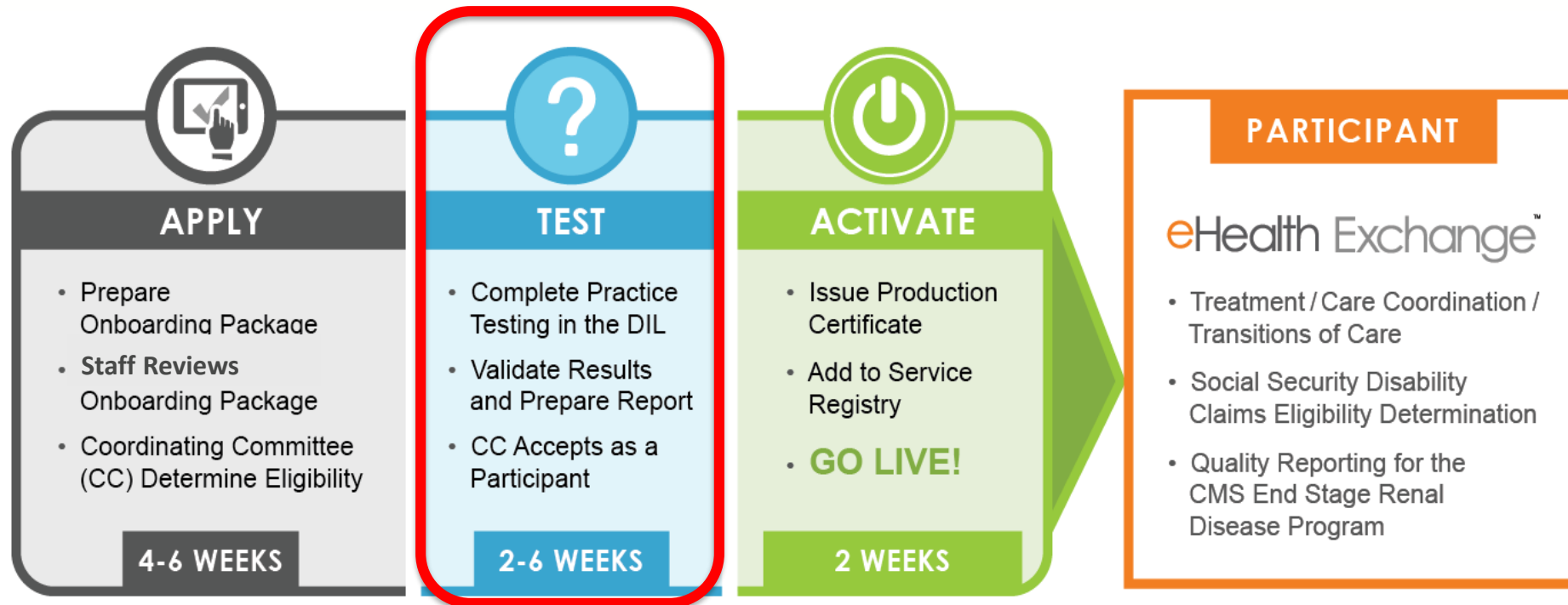


8,300 pharmacies



Supporting more than
100 million patients

Onboarding & Testing Process



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.

What is the Testing Program of the eHealth Exchange?

- Developed to test compliance for Health Information Exchange (HIE) standards as required by the eHealth Exchange Coordinating Committee
- Purpose is to enable organizations that wish to participate to validate the compliance of their Health Information Technology (HIT) with the eHealth Exchange Performance and Service Specifications.
- Designed to ensure interoperability and assure specification compliance and minimal implementation
- eHealth Exchange staff developed and operate validation programs to implement testing in groupings of service sets, test scenarios and test cases
- Implementation-hardened by years of operations
- Evolves as new interoperability issues arise (The Specification Factory)
- Intends to publish a multi-year roadmap (Testing Workgroup)
- The community has developed a large body of test cases, testing data, and conformity assessment tools including negative testing
- The testing programs leverage AEGIS test lab [Developers Integration Lab \(DIL\)](#)



A E G I S

eHealth Exchange Test Case Documentation

2010 Specifications for Participants & Product Vendors

- 2010 Smoke Test Cases (6 required)

2011 Specifications for Participants

- 2011 Smoke Test Cases (6 required)
- Security Test Cases (19 required for Participants)
- Provisional Security Test Cases ***applicable to Product Testing ONLY*** (52 provisional)

2011 Specifications for Product Vendors

- 2011 Smoke Test Cases (6 required)
- Security Test Cases (35 required for Product Vendors)
- Provisional Security Test Cases ***applicable to Product Testing ONLY*** (52 provisional)

eHealth Exchange Validation Programs



Participant Testing Program

- Enables organizations wishing to participate in the eHealth Exchange network to validate the compliance of their implemented HIT with the eHealth Exchange Performance and Service Specifications



Product Testing Program

- Focus on compliance and interoperability testing
- Reduces cost and burden for participants to onboard by approximately 50%
- Minimizes the level of vendor / developer support of providers / HIOs onboarding
- Reduces risk of interoperability issues being introduced into production, including the cost and burden of fixing interoperability issues and deploying patches

<http://sequoiaproject.org/ehealth-exchange/testing-overview/>

Who can Leverage the Testing Program?

The eHealth Exchange Testing program supports:

- Applicants who wish to join the eHealth Exchange as Participants;
- Existing eHealth Exchange Participants who wish to test new capabilities or retest as a condition of continued participation in the eHealth Exchange; and
- Developers of systems who wish to have their product validated as eHealth Exchange compliant

The eHealth Exchange Testing program **verifies** that a System Under Test (SUT):

- **Complies with the eHealth Exchange Specifications;**
- **Has the ability to interoperate** with other eHealth Exchange Participant Systems; and
- Has implemented key security features as demonstrated by negative testing

eHealth Exchange Validated Products



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)

Vendor



Validated Product



Clinical Exchange Platform



re Everywhere (2012, 2014, 2015)



Greenway Exchange



CareAlign 3.0

Vendor



Validated Product



Network v5 and v7



Optum HIE 2.0



Exchange Gateway v3

eHealth Exchange Participant & Product Testing Fees

Participation Validation Testing:

	2010 Specs	2011 Specs
Smoke Tests (Essential tests to verify connectivity and core functionality)	No charge	\$11,000
Security Tests	N/A	\$8,000
Content (Basic C32, Bridge C32, C-CDA) ¹		

Notes:

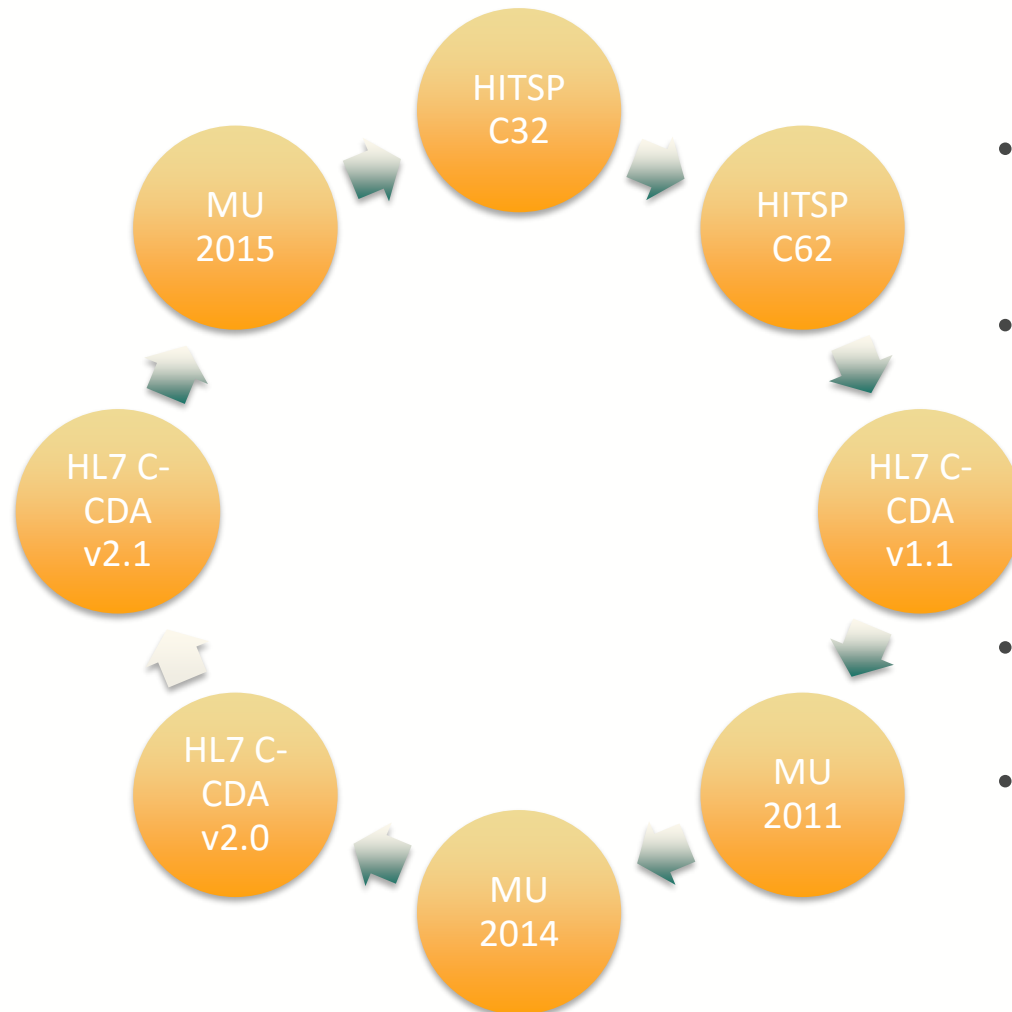
¹Optional Content testing: 1) Basic C32; 2) Bridge C32 and 3) C-CDA. Content testing is waived if Applicant uses a product that was certified for the 2011 or 2014 edition of EHR certification for Stage 1 or Stage 2 meaningful use. (**\$3,000** for each type of content to be tested.)

Applicants using an eHealth Exchange Validated Product **ONLY** complete Smoke Testing.

Product Validation Testing **\$34,000**

Smoke Test Cases, Security Test Cases (Required and Provisional)

Content Testing Documentation (2009 – 2015)



- No Content Testing Required: If Participant or Vendor’s architecture is certified for MU 2011 edition or 2014 edition
- If not MU certified: Required to test one or more of the following:
 - [The Basic C32 \(ONC 2011 Edition\)](#)
 - [The Bridge C32](#)
 - [The Consolidated CDA \(C-CDA\) \(ONC 2014 Edition\)](#)
- June 2015 - Coordinating Committee – Not Good Enough
 - **Needs Improvement**
- Approves Launch of Testing Workgroup – Initial Focus on Content Testing

Introduction to the Enhanced Content Testing Program

Testing Workgroup (TWG) Overview

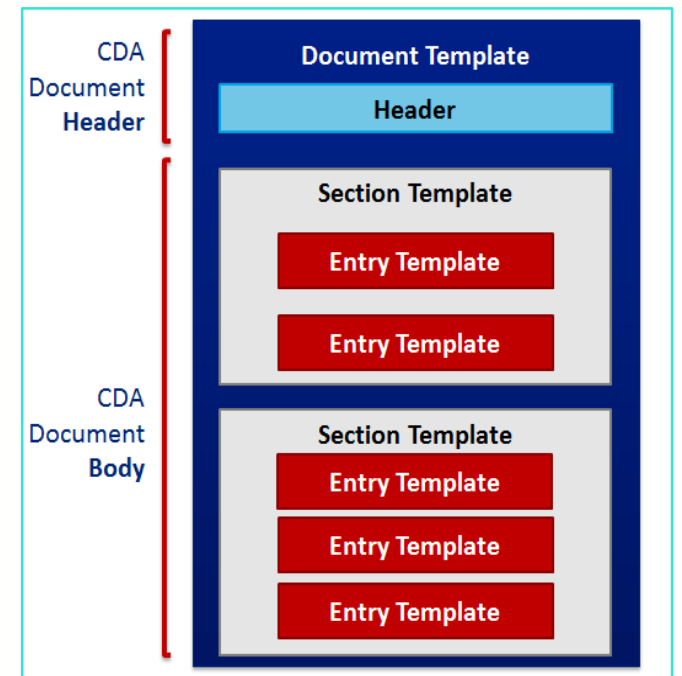
- Testing Workgroup approved by the eHealth Exchange Coordinating Committee (CC) on 6/16/2015
- Testing Workgroup Launched 6/30/2015 – 2 co-chairs
- Testing Workgroup Charter Approved 7/21/2015
- Content Test Tooling Resources Inventory and Demonstration completed by 10/31/2015
- Draft Enhanced Content Testing Documentation Published 11/5/2015
- Industry Content Testing Tools Evaluation and Scoring Completed 1/5/2016
- Public Comments resolved and Enhanced Content Testing Documentation Re-Published 2/29/2016
<https://ehealth-exchange-testing.wikispaces.com/Draft+Documentation+for+Comment>
- Content Testing Pilot March – June 2016
<https://ehealth-exchange-testing.wikispaces.com/Content+Testing+Pilot+2016>

What is the Enhanced Content Testing Program?

- Focused on one document type HL7 Consolidated CDA (C-CDA) – Continuity of Care Document (CCD)
- Developed to test compliance for base HL7 C-CDA CCD requirements plus Meaningful Use (MU) requirements
- Purpose is to provide enhanced test cases and procedures that align with the 2015 Edition Meaningful Use test methods.
 - <https://www.healthit.gov/policy-researchers-implementers/2015-edition-test-method>
- Designed to ensure interoperability and assure specification compliance and minimal implementation testing among partners
- Implementation-hardened by years of operations and documented pain points

Content Testing Pilot Program

- Draft Testing Documentation has been developed and published <https://ehealth-exchange-testing.wikispaces.com/Content+Testing+Pilot+2016>
- Pilot Content Testing Program will cover HL7 C-CDA CCD r1.1 and r2.1 with an overlay of the 2015 Meaningful Use requirements during the trial period through June 2016.
- The Implementation FAQ's/Pain Points being tracked will continue to be reviewed by the Testing Workgroup Committee members and lessons learned will be coordinated with HL7 efforts to improve specifications and the pilot content testing documentation.
- **FREE TESTING!!!** Open call for voluntary submissions of fully populated CCD's from industry through June 30, 2016 to receive validation summary report.



Pilot Testing Tools Overview

- Content Testing Automated Tooling was tested with four static documents with analysis compiled and published 2016-01-05
 - <https://ehealth-exchange-testing.wikispaces.com/Resources+and+Samples>
- Resulted in the following tools chosen to pilot March – June 2016



- <http://sitenv.org/c-cda-validator>



- <http://gazelle.ihe.net/EVSCClient/cda/validator.seam?extension=C-CDA>



- [Diameter Health's C-CDA Analyzer \(Sequoia Staff will provide testing results\)](#)

Draft Content Testing - Formal Change Process Milestones

Approval Milestones	Target Date
Present Draft to CC for review:	06/16
Participant Input: <ul style="list-style-type: none"> - Post draft to eHealth Exchange Wiki - Review updates with Spec Factory - Review updates on Info Call 	07/16
Participant Input (Webinar to review updates):	07/16
CC Approval:	08/16
30 day public comment notice to participants:	08/16
Objection Period Ends:	09/16
Target Effective Date:	10/16

Testing Workgroup Deliverables

- The Testing Workgroup will continue to develop functional and conformance testing requirements to test and validate Health IT Modules to the eHealth Exchange criteria
- Facilitate an **open change management process** that allows maintenance of the testing artifacts and expansion of the programs to meet industry needs.
- **Coordinate pilots** of new testing documentation and tooling
 - Content Testing
 - Patient Health Record (PHR)
 - Patient Matching Improvements
 - Improved Security Testing
- Determine how best to **facilitate testing of the eHealth Exchange** between differing technology platforms and architectures, as well as differing transport protocols (e.g. SOAP, RESTful, etc.) and data types (e.g. document-based exchange, message-based exchange, API-based, etc.)
- We invite your participation in the Testing Workgroup. For more information on ways to participate visit:
 - <https://ehealth-exchange-testing.wikispaces.com/Communications+%26+Calendar>

Introduction to the RSNA Image Share Validation Testing Program

Why Tackle Medical Image Sharing Now?



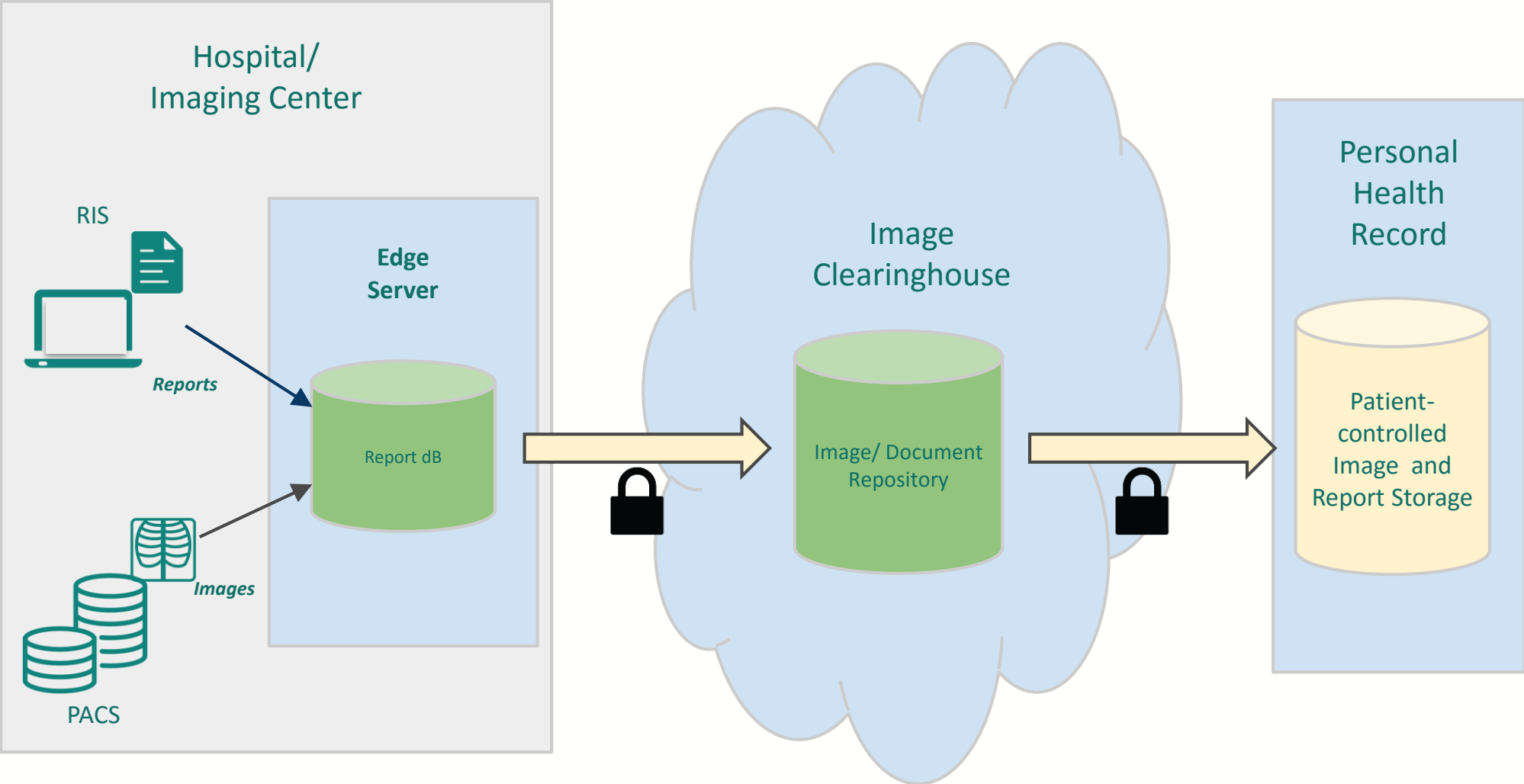
Providers and Patients Need Medical Images

- **Benefit of historical exam** during interpretation
- Rapidly **growing cost** of healthcare especially growing utilization of imaging
 - Overutilization- Inappropriate Utilization
 - **Prevent duplicate exam** because a recent exam is inaccessible
- Radiation exposure- reduction
- Quality
 - **Expedites clinical care** through easy availability of imaging examination

Current Image Share Network Usage

- 11 radiology centers
- Up to 20 more sites scheduled
- Vendors are implementing the RSNA Image Share Edge application through their own Edge appliances
- As of January 30, 2016
 - Exams – 95,149
 - Images- 20,932,780 (assume 220 images/exam)
 - Patients- 22,776
 - 6073 of those patients have created personal health record accounts and accessed their images

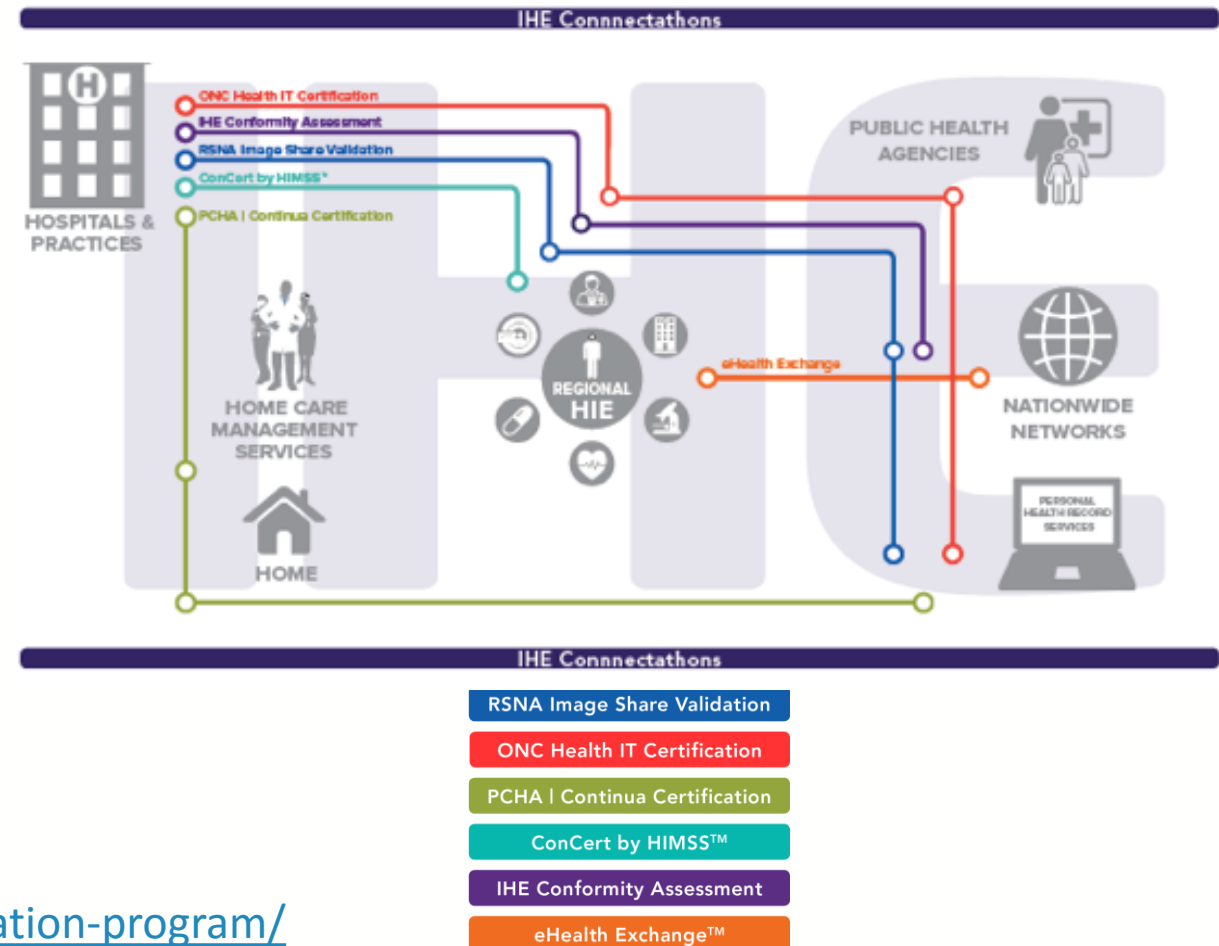
Image Share Architecture



RSNA® Image Share VALIDATION

- Fills a national Standards Gap
 - International Conformity Assessment
- IHE profiles provide the basis
- Modular
 - Cross-Enterprise Document Sharing for Imaging (XDS-I)
 - Document Source and Document Consumer
 - Registry and Repository
 - Cross-Community Access for Imaging (XCA-I)
 - RSNA Image Share PHR

<http://sequoiaproject.org/resources/rsna-image-share-validation-program/>



Validation Testing Details

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

Participant Fees and Program Timeline

- \$10,000 for the first testing bundle
- \$2,000 for each additional testing bundle
- Maximum of \$16,000 per participant for each testing cycle
- The validation mark will remain current for two years.
- **50% Discount for First Test Cycle!**





Questions and Answers
For further questions, please contact
testing@sequoiaproject.org

