

# Establishing the Building Blocks for Interoperability:

## Overview of ONC's Office of Science & Technology

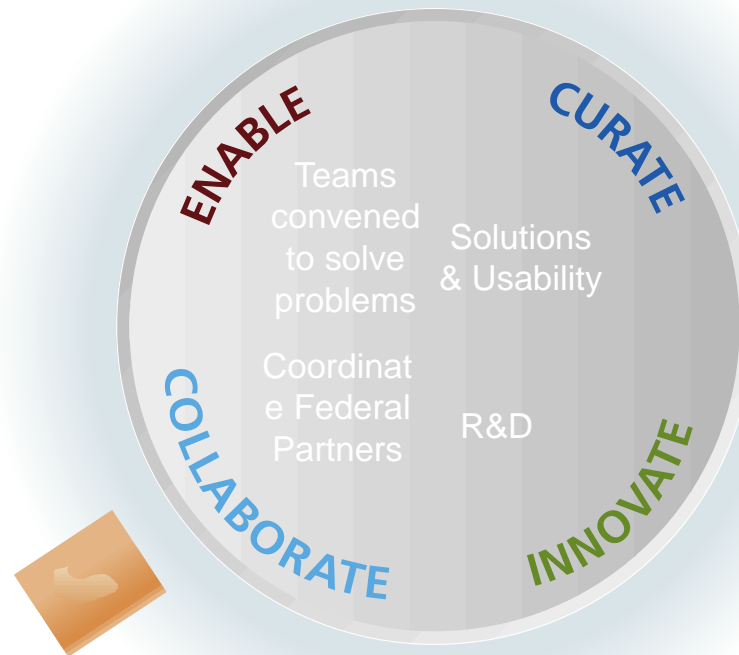
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- None

## Enable stakeholders

to come up with simple, shared solutions to common information exchange challenges

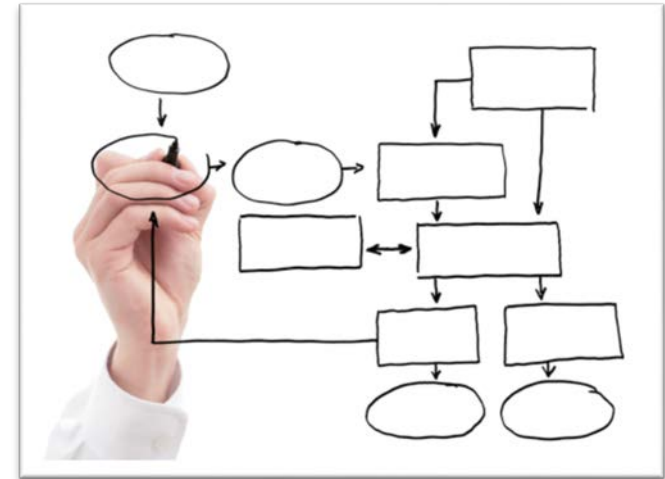


**Curate a portfolio** of standards, services, and policies that accelerate information exchange

**Collaborate** with federal agencies to coordinate federal health IT priorities as manager of Federal Health Architecture

**Support Innovation** through SHARP program, Innovation/Challenge Grants, and interfacing with international Standards community

- Interoperability is a *journey*, not a destination
- Leverage *government as a platform* for innovation to create conditions of interoperability
- Health information exchange is *not one-size-fits-all*
- Build in *incremental steps* – “don’t let the perfect be the enemy of the good”



# What is the S&I Framework?

- The Standards and Interoperability (S&I) Framework represents one investment and approach adopted by the Office of Science & Technology (OST) to fulfill its charge of prescribing health IT standards and specifications to support national health outcomes and healthcare priorities
- The S&I Framework is an example of “government as a platform”— enabled by integrated functions, processes, and tools – for the open community\* of implementers and experts to work together to standardize



*\* As of April 2012, 1100+ people had registered on the S&I Framework wiki, and 450+ people representing 300+ organizations had committed to the S&I Framework.*

- **S&I Framework Approach:**
  - Create a collaborative, coordinated incremental standards process,
    - Guided by ONC, with input from Federal Advisory Committees,
    - Enabled and led by an open community of industry participants who are interested in solving real world problems
- **Value created through this approach:**
  - Solve **real-world** issues to enable health information exchange
  - Harness the expertise and passion of the community to solve problems
  - Empower the community to create the best solutions for interoperability and standards adoption

# S&I Initiative Portfolio Snapshot

Pre-Discovery

Use Case

Harmonization

RI, Test & Pilot

Evaluation

Direct Project (S&I Archetype)			
Transitions of Care			<i>Pilots Underway</i>
Lab Results Interface			<i>2<sup>nd</sup> IG Ballot Publication (4/9/12)</i>
Query Health			<i>Plan to begin piloting in April 2012</i>
Provider Directories			<i>Looking at potential pilots and reference implementation</i>
Data Segmentation for Privacy			<i>Targeting completion of pilot(s) and initial evaluation by September 2012</i>
Public Health Reporting	<i>Community-Led initiative</i>		
esMD			<i>1<sup>st</sup> (of 3) use cases consensus-approved; Targeting completion of pilot(s) and initial evaluation by October 2012</i>
Longitudinal Coordination of Care	<i>Working on Extension of the ToC Use Case for LCC (reuse); Limited Support Initiative</i>		
Laboratory Orders Interface	<i>Finalizing Initiative Charter and drafting Use Case; S&amp;I Community Launched 3/30</i>		
Health eDecisions	<i>S&amp;I Community launching early June 2012</i>		

# Current S&I Initiatives: Operating Metrics

## How long has it been?

Framework Launch Date	Jan 7, 2011
First Initiatives Launched	Jan 31, 2011
Elapsed Time (as-of today)	17 months

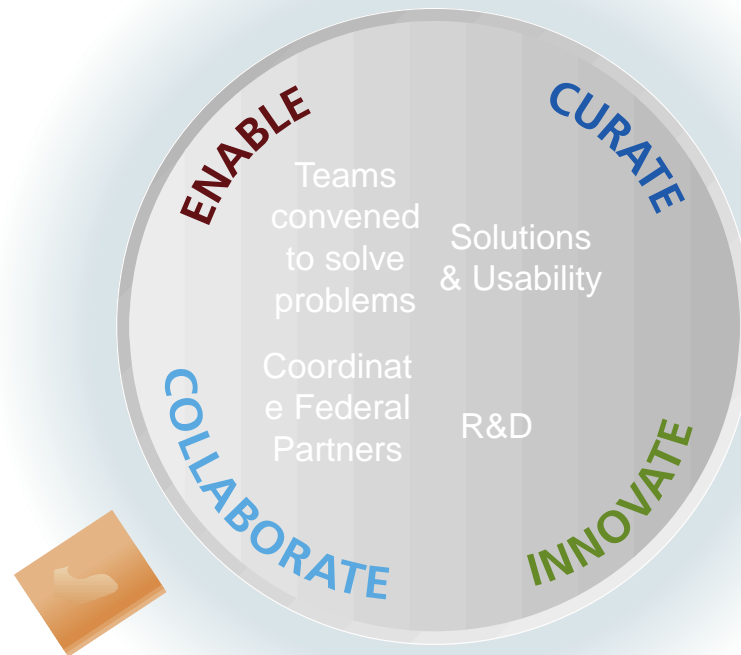
## How much effort have we put in?

# Wiki Registrants	1268
# Committed Members	502
# Committed Organizations	376
# Working Sessions Held	799
# Days Between Sessions*	0.5

## How much have we accomplished?

# Use Case Artifacts	33
# Harmonized Segments/Sections	150
# RI/Test Artifacts	64
# Pilots Committed or In Discovery	20+
# Pilot Vendors	25+
# Pilot Healthcare Organizations (e.g. hospitals, HIEs)	35+
HL7 Ballots	3
# Ballot Comments Received	1,854
# Ballot Comments Resolved	1,479

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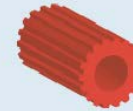
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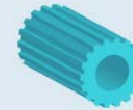
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A portfolio of **services**, **standards** and **policies** that enable secure health information exchange over the Internet.

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**Services**



**Standards**



**Policies**



**Trust Fabric**

# Transport is necessary, but not *sufficient*

## Vocabulary & Code Sets

How should well-defined values be coded so that they are universally understood?

## Content Structure

How should the message be formatted so that it is computable?

## Transport

How does the message move from A to B?

## Security

How do we ensure that messages are secure and private?

## Services

How do health information exchange participants find each other?

Direct and  
NwHIN  
Exchange  
focus at these  
levels

# A Sample Patient Scenario

- A primary care doctor orders a lab test and gets the test back from the lab. She schedules the patient to be seen in the office to discuss the results.
- Based on the results of the test, the primary care doctor decides to send the patient to a subspecialist. She sends a summary of care record to the subspecialist electronically with a summary of the most recent visit.
- When the patient sees the subspecialist, it becomes apparent that there is a missing test that was done at a different hospital that would be helpful in taking care of the patient. Rather than repeating the test, the doctor queries the outside hospital for the lab test that she needs.



# What will this transaction require?

The physician ordered an outpatient lab test on a patient, and the lab sends the information to your office. The patient is here to discuss the results.

## Vocabulary & Code Sets

How should well-defined values be coded so that they are universally understood?

LOINC: to code lab results & observations

## Content Structure

How should the message be formatted so that it is computable?

HL7 2.5.1: to format the lab result so EHRs can incorporate it

## Transport

How does the message move from A to B?

Direct: to securely send the lab result from the lab to the EHR

## Security

How do we ensure that messages are secure and private?

X.509: to ensure it is safely transmitted to the intended recipient

## Services

How do health information exchange participants find each other?

DNS+LDAP: to find the recipient's X.509 certificate

# What will this transaction require?

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How does the message move from A to B?

NWHIN secure messaging (SOA): to issue query to NWHIN participants

## Security

How do we ensure that messages are secure and private?

X.509: to ensure it is safely transmitted to the intended recipient

## Services

How do health information exchange participants find each other?

Services Directory: to find certificates and web services

- The Direct Project began as an independent, open government project to specify a standard for secure, directed health information exchange. Based on its success, OST modeled the S&I Framework after Direct, and Direct has now become one of the S&I Initiatives.
- More than 38 vendors are in production or are about to be in production.
- Direct is part of the core strategy of 51 State HIE Grantees, 28 of which have already implemented Direct.
- Current number of providers signed up with state HISPs: 5129.

- Exchange is now evolving to an independent business to maintain a trajectory of growth.
- Contract/Grant requirement for participation has been lifted
- There is a rapidly growing community of federal agencies, states, health systems and HIOs using the Exchange shared infrastructure and oversight.
- As of September 2011, Exchange participants represented:
  - 500 hospitals
  - 4,000+ provider organizations (physician practices, clinics, etc.)
  - 30,000 users
  - 1 million shared patients / beneficiaries covered via current connectivity
  - ~65 million people in population coverage area

- **Technology providers support Exchange:**
  - The EHR Association (EHRA) is at the table; membership represents 90% of US providers.
  - Technology providers who support Exchange participants are among the largest players.
- **Participants are realizing value from Exchange:**
  - Faster Social Security benefits determination (45% faster).
  - Expedited benefit payments to the disabled.
  - Revenue enhancement of \$2.1M for Bon Secours (hospital system in Virginia).
  - High rate of veterans, patients and individuals consent / authorize exchange.
  - Clear clinical benefits and improved decision making:
    - Avoided prescribing multiple narcotics;
    - Enabled focused follow-up questions that helped narrow down treatment options;
    - Detected life-threatening allergic reactions.
- Exchange is very supportive of the Care Connectivity Consortium (CCC) efforts and will continue to collaborate and align.

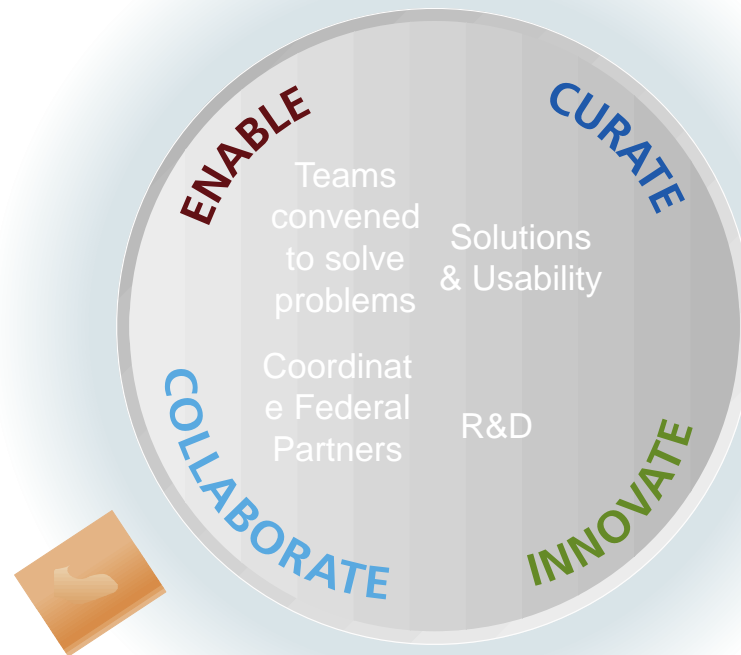
## Directed Exchange

- Develop specifications and implementation support for Certificate Discovery and Provider Directories for Directed Exchange
- Support adoption of Directed Exchange in federal agencies
- Continue working with State HIE program to support Direct implementations

## Query/Web Services Exchange

- Simplification of specifications around discovering patients and query/retrieve of patient health information
- Development of Exchange Business Plan for long term sustainability
- Bridge support for Certificate Authority to ensure continuity of operations for Exchange until transition is completed

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**Support Innovation** through SHARP program, Innovation/Challenge Grants, and interfacing with international Standards

- ONC's Challenges and Prizes program spurring private-sector innovation and engaging developers to address health problems that touch **every person in America:**
  - Care Transitions
  - Cancer Research
  - Heart Disease
  - Population Health
  - Sexual Abuse
  - Disabilities
- Over 100 new applications developed
- Winners have received **\$195,000** in prizes
- Over 25 new challenges planned





**Security of Health IT** - Innovations in security and privacy required to build public trust in health IT systems



Automated complex decisions around health record exchange, assuring regulation compliance



Developed techniques to analyze health records access logs to catch policy violations



**Patient-Centered Cognitive Support**  
– Innovations in health IT usability and clinical decision support



Piloted Rapid Usability Assessment Protocol for EHRs



Comparing usability across EHR systems via Usability Lab



**Healthcare Applications** – New health IT architectures enabling substitutable applications



Created **SMART platform** – a test-bed for the substitutable app development



SMART-enabled i2b2, a data analytics platform, and Indivo, a PHR



**Secondary Use of EHR Data** – Enabling exchange through creating tools, services for large-scale data sharing

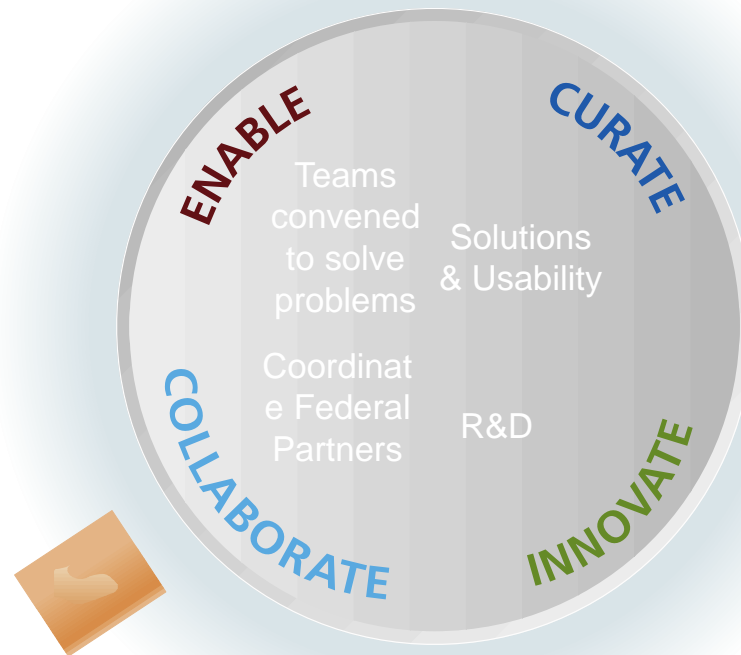


Conversion and normalization of lab messages & medication orders



Extraction of medication from narrative clinical documents

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# Federal Health Architecture: Advancing the Federal Health IT Agenda

## Federal Health Architecture (FHA) program was established as an OMB E-Gov line of business (LoB)

- To support federal activities related to the development and adoption of health IT standards
- To ensure that agencies seamlessly and securely exchange health data with other agencies, other government entities, and with other public and private organizations

## FHA focus and scope expanded

- To emphasize federal advancement of the national agenda for health IT
- To provide enterprise architecture, standards adoption, tools and communication support



# Federal Health Architecture: Advancing the Agenda

FHA ensures federal participation in initiatives such as the Nationwide Health Information Network, the Direct Project, EHR adoption and CONNECT

- E-gov initiative managed by ONC within HHS
- Many federal agencies participate in FHA





## The CONNECT gateway project was later established as a separate OMB E-Gov LoB

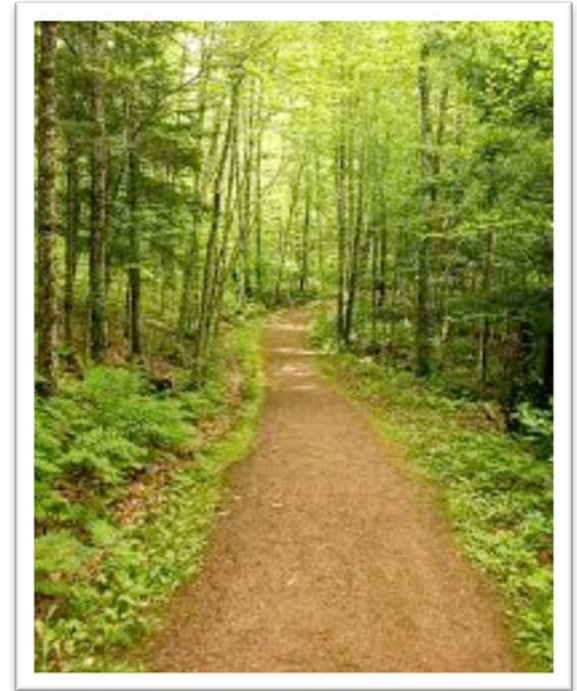
- To form a federal health IT consortium to jointly govern and develop CONNECT as a shared investment toward a common solution that would be deployed and operated separately utilizing existing standards and terminologies/value sets
- Provides transport gateway and adapter services for participants
- The CONNECT Gateway is a FHA initiative to develop a software gateway to link federal agencies and other organizations to the Nationwide Health Information Network Exchange

# CONNECT: Past, Present, Future

- More than half of Exchange participants are using CONNECT to participate in the Exchange
- CONNECT v3.3 was released in Spring 2012
  - Release will implement federal partner priorities with strategic features, performance improvements, maintenance fixes and software updates
- By December 2012, the CONNECT program will transition from an ONC-managed software development program to a distributed development program to fully leverage the open source community, to make CONNECT more modular and scalable, and make readily usable as the Exchange expands



1. Although not perfect, does it represent the best we have so far?
2. Is it the next step in an incremental approach to refining the standards and implementation guides?
3. Does it support our policy objectives?
4. Interoperability is not “one size fits all”:
  - Create modular standards and specifications that allow for innovation
  - i.e. Internet: we’re not building AOL; we’re creating the building blocks to make it possible for Facebook, Twitter, etc. to flourish
5. We are on a journey together!



# Stay connected, communicate, and collaborate

Putting the I in HealthIT   
www.HealthIT.gov

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## Learn more at:

ONC website: [www.healthit.gov](http://www.healthit.gov)

Direct Project website: [www.directproject.org](http://www.directproject.org)

S&I Framework wiki: <http://wiki.siframework.org>

