Section C

Testing
Testing

- Specification comment and review
- Vendor recruitment
- Connectathon/interoperability testing
- HIMSS showcase: end-to-end testing
- Document revision
- Certification testing
Specification Comment and Review

- Desktop review of specification

- Offered by standards development organizations to its members or to the public

- Conceptual validation of the specification content prior to implementation testing

- Opportunity for feedback from product vendors and product consumers
Vendor Recruitment: Challenge

- Many challenges to engaging testers
- Testing public health interoperability is an emerging area
- Limited routine testing participation for vendors of public health systems
- Broadening EHR interoperability to public health trading partners
Vendor Recruitment: Education

- Outreach through the public health data standards consortium
  - Raise awareness during proposal and specification development phases
  - Establish and promote vision of interoperable public health systems

- Specification education
  - Electronic health record system vendors
  - Public health system vendors
    - Commercial
    - Public health agencies
What is the Connectathon?
- Large-scale, informal interoperability testing event
- Companies try connectivity with each other and work out interface issues
- Vendors performing all of the transactions required for the roles they have selected, compliance with IHE profiles

NIST serves as a proctor for the tests

Passing required tests is a pre-requisite to participation in HIMSS Interoperability Showcase™

Last few days of Connectathon include HIMSS Interoperability Showcase scenario rehearsals

Connectathon/Interoperability Testing

Who participates

- Government involvement
  - CDC (NCPHI, NPCR)
  - DOD, VA, NIST, FHA
- Public health agencies and system vendors
- Electronic health record (EHR) systems (hospital systems, emergency department systems, ambulatory EMR systems, academic research systems hospital EMRs)
- Infrastructure vendors (subject identity resolution—PIX/PDS, XDS registry, XDS repository, identity management systems, form managers, HIE integrators, HIE implementations)
- Health researchers, academic institutions
IHE Connectathon

- Foster development and implementation of the interoperability specifications
  - Increase awareness of available guidance and support
  - Encourage participation in technical committees

- Ensure “fitness for use” of interoperability specifications
  - Debug
  - Identify improvements

- Encourage and support vendor application demonstrations and end-to-end “testing” at the HIMSS Interoperability Showcase
IHE Connectathon

- This is *not* certification testing

- Successful testing is published and is available to prospective customers through the “Connectathon Results” Web pages

- Vendors that pass Connectathon testing may provide IHE integration statements indicating which product(s) and version(s) of those products support which profiles

- Provides assurances to prospective customers that the products support the specified profile
End-to-End Testing: HIMSS Interoperability Showcase™

- Booth at HIMSS focused presentations in tradeshow environment
- Scripted scenarios play on kiosks and with guided demonstrations
- End-to-end use case testing and demonstration
- Incentive for vendor testing

Showcased functionality includes
- Federal health systems interoperability
- EMR clinical scenarios
- Quality reporting

Public health
- Biosurveillance
- Laboratory reporting
- Immunizations
- Vital records
- Cancer registries
- Early hearing screening detection (care plans, quality measures)

Specification testing not only demonstrates product conformance to the specification, but it highlights areas for improvement for the specifications
- Reduce ambiguity
- Identify specification errors

Specifications are revised and subject to further testing until the specification is fully tested and stable

Published as final text
Certification Testing

- Certification testing is used to verify conformance to regulatory requirements

- The regulatory requirements may cite a given specification against which to test, or may cite requirements that are not part of a specification
  - E.g., meaningful use requirements cite the HITSP C32 specification (a type of medical summary XML document)
  - With some of the optional content modules further constraints to be required
  - Stage optionality for migration from ICD-9, to ICD-10, to ultimately SNOMED-CT
Certification Testing

- Testing tools used for certification may leverage some of the same tools used for testing IHE profiles
  - E.g., the National Institute for Standards and Technology (NIST) generated tools for Clinical Document Architecture Release 2 (CDA R2)
  - CDA R2 and C32 are used for both Connectathon testing and certification testing

- Successful certification testing of a product allows for a system vendor’s customers (health care providers) to be eligible for US federal incentive programs under meaningful use

- Certification testing does not assure interoperability between the product vendors
  - This is a function of the specifications used and tested for a given information exchange environment
Meaningful Use Stage 1: (Ambulatory)

- §170.302 (h) Incorporate lab results (EP/HOS)
- §170.302 (k) Submission to immunization registries (EP/HOS)
- §170.302 (l) Public health surveillance (EP/HOS)
- §170.304 (b) Electronic prescribing (EP)
- §170.304 (f) Electronic copy of health information (EP)
- §170.304 (h) Clinical summaries (EP)
- §170.304 (i) Exchange clinical information and patient summary record (EP)
- §170.304 (j) Calculate and submit clinical quality measures (EP)

Meaningful Use Stage 1: (Hospital)

- §170.302 (h) Incorporate lab results (EP/HOS)
- §170.302 (k) Submission to immunization registries (EP/HOS)
- §170.302 (l) Public health surveillance (EP/HOS)
- §170.306 (d)(1) Electronic copy of health information (HOS)
- §170.306 (f) Exchange clinical information and patient summary record (HOS)
- §170.306 (g) Reportable lab results (HOS)
- §170.306 (i) Calculate and submit clinical quality measures (HOS)

Meaningful Use Helpful Links

- Electronic Health Record Incentive Program; Final Rule

- NIST Test Scripts
  - [http://healthcare.nist.gov/use_testing/effective_requirements.html](http://healthcare.nist.gov/use_testing/effective_requirements.html)