THE IHE METHODOLOGY: WHAT AND WHY?

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INTRODUCTION

- Elliot Silver, MSc.
- Lead FHIR Software Engineer
  ResMed
- Co-chair, HL7 International Devices WG
- HL7 Canada Council member
- Past co-chair, IHE ITI Technical Committee; member ITI Planning Committee, RAD Technical Committee, RAD Planning Committee
- Past co-chair, HL7 Imaging Integration/DICOM WG-20

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AGENDA

- IHE Overview and Structure
- IHE Terminology
- Integration Statements
- Profile Walkthrough
- IHE vs FHIR Profiling
- IHE Process
- Domain Committees Work Cycle
- Connectathon
- Other events

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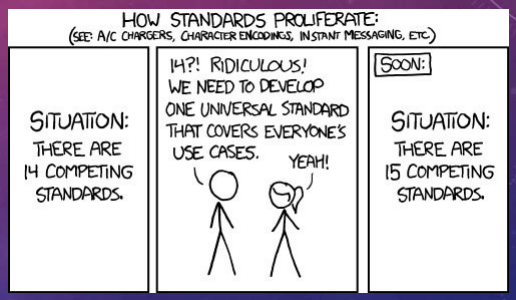
INTEGRATING THE HEALTHCARE ENTERPRISE

- Healthcare IT standards are good:
  - Reduce cost to develop, deploy solutions
  - Make it easier for solutions to work with each other
- But:
  - They are often designed for a wide range of uses
  - Leave room for variability
  - Limit scope to the single standard/don't provide detailed mappings between standards



Source: https://xkcd.com/927/

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INTEGRATING THE HEALTHCARE ENTERPRISE

- Develop, promote free, implementable Interoperability Specifications
  - Address specific use cases
  - Based on unbiased selection of existing standard(s)
  - In composable, reusable, retargetable ways
- Run events to test conformance with the specification
- Interoperability Specifications
  - Reduce development, production, deployment/installation costs and risks
  - Let vendors focus on value-add
    Let clinicians focus on patient care
- Participation from more than 250 member organizations
  - professional societies, government agencies, provider organization, education, and vendors

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INTEGRATING THE HEALTHCARE ENTERPRISE

*Domain includes Planning and Technical Committees

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IHE GLOSSARY

IHE Terminology	Description
Implementation Profile	Interoperability specification for identified use case, leveraging proven standards, e.g. XDS (Cross-enterprise Document Sharing)
Actor	Use case participant (usually system) with required behaviors, e.g. Document Source. • Usually expressed in an implementation independent manner, e.g. Image Manager, not PACS. • Same actor may appear in multiple profiles with different expected behaviors • Products often implement groups of actors (from multiple Profiles)
Transaction	Strictly specified, standards-based interaction between Actors, e.g. ITI-41 (Provide and Register Document Set), based on ebRS • Interface/Interface-related behaviour only. Internal behaviour out of scope • Internal communications between grouped actors out of scope

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IHE GLOSSARY

IHE Terminology	Description
Option	Named package of capabilities beyond baseline required behavior
Integration Statement	Vendor-authored standard format claim of Profiles, Actors, and Options implemented by a product

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IHE GLOSSARY

IHE Terminology	Description
Domain	(Usually) clinical-focused committee of IHE, e.g. Radiology (RAD) or IT Infrastructure (ITI)
Technical Framework	The collected "Final Text" Integration Profiles of a Domain, e.g. RAD TF, nominally published in volumes (now sections of website)
Supplement	New Integration profile. Proposed addition to TF; consists of additions/deletions from existing TF volumes.
Draft	Proposed in development supplement; limited distribution for committee review
Public Comment	Proposed supplement issued for wide review and feedback
Trial Implementation	Supplement issued for implementation feedback and experience
Final text	Sufficient implementation experience (Connectathon testing); identified issues addressed; no further changes expected; integration to TF pending

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IHE GLOSSARY

IHE Terminology	Description
Change proposal (CP)	Proposed corrections/clarifications to TFs or Supplements
TF Volume 1	Introduction to domain, profile overview, and profile details: introduction (problem statement), actor definitions (including non-transaction behaviors), actor groupings, profile options
TF Volume 2	Transaction specifications
TF Volume 3	Cross-transaction specifications, including document contents
TF Volume 4	National extensions (customizations)

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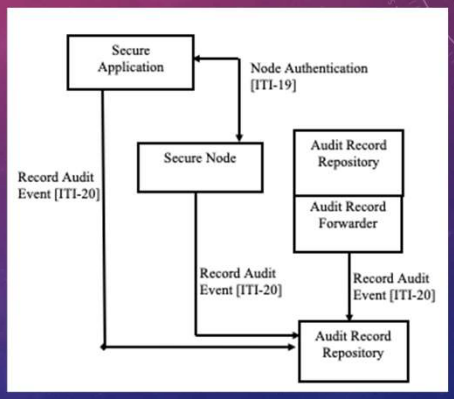
AUDIT TRAIL/NODE AUTHENTICATION (ATNA) WALKTHROUGH

Section	URL
Profiles home	https://profiles.ihe.net
ATNA Vol 1	https://profiles.ihe.net/ITI/TF/Volume1/ch-9.html
ITI-20 Record Audit Event	https://profiles.ihe.net/ITI/TF/Volume2/ITI-20.html
Domain/Profile list	https://www.ihe.net/resources/profiles/
Profile Wiki	https://wiki.ihe.net/index.php?title=Profiles



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IHE VS HL7 PROFILING

Different but complementary

IHE Integration Profile

- Tailors standards for specific use case
- Leverages one or more standard
- Follows IHE Profile development process
- Often provides restrictions on content
- Well defined transactions
- Well defined actors
- Some IHE Integration Profiles are documented in FHIR Implementation Guide

IHE Profile:
Standardized solution to specific use case

FHIR Implementation Guide

- Customizes standards for particular use cases
- Exclusively HL7 FHIR
- Lacks guidance on development methods
- Frequently includes FHIR Profiles that limit content
- Might feature CapabilityStatement, OperationDefinition, SearchParameter, and a narrative detailing "transactions"
- Actors are specified via CapabilityStatement or (R5+) ActorDefinition

FHIR Profile:
Resource constraints for specific use case

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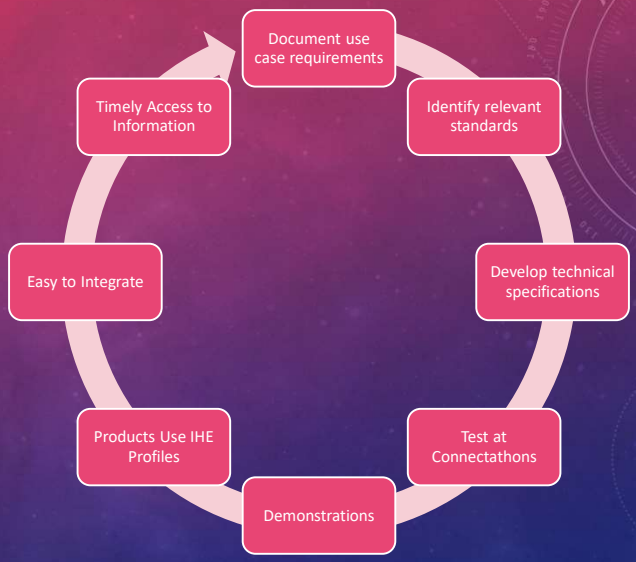
STANDARDS ADOPTION PROCESS

Continual feedback loop



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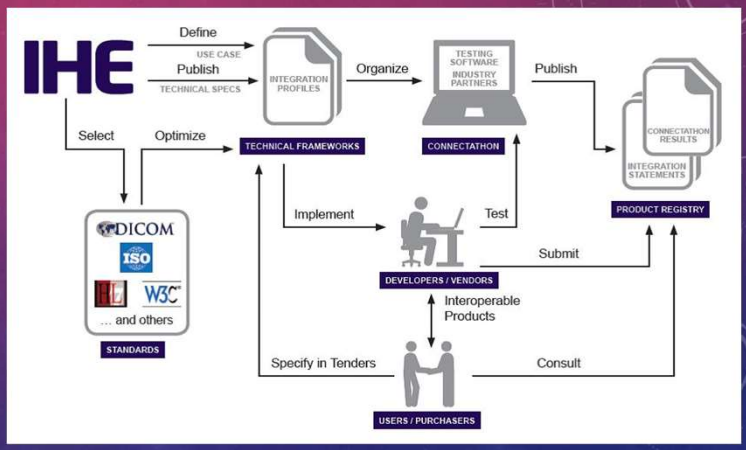

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"TYPICAL" IHE DOMAIN CALENDAR

Details vary by Domain

- E.g. ITI allows WIs longer or shorter than 1 year, does intake and publication throughout the year

August	•Call for Work Item Proposals (PC)
September-October	•Work item review, evaluation, and selection (PC assisted by TC)
November-December	•Supplement Volume 1 Drafting (WI author)
January	•Supplement Volume 1 Review (TC)
February-March	•Supplement Volumes 2/3 Draft (WI author)
April	•Supplement Volumes 2/3 Review (TC)
May-June	•Supplement Update (WI author) and issue for Public Comment
July	•Supplement Public Comment Review (TC), •Publication for Trial Implementation (Joint PC/TC) •TF Update (CP Integration, Supplement FT promotion)

CP Review, Process, Ballot

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PLANNING COMMITTEE ACTIVITIES

September-October	•Work item review, evaluation, and selection •Initial proponent presentation and questioning •Expand proposal •Shortlist selection •Clarify use cases/Exclude use cases •Consider potential standards to use •Score proposal based on size, complexity, impact, author availability, implementer commitment, risk, etc. •Final selection by ranked vote
January	•Confirm Work Item Supplement Volume 1 draft aligns with expectations
July-August	•Promotion of TI Supplements to FT •Education and outreach for new Supplements

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TECHNICAL COMMITTEE ACTIVITIES

September-October	•Work item review, evaluation, and selection •Propose relevant standards for WI •Provide input on WI clarify, feasibility, effort, risk, complexity
November-December	•Supplement Volume 1 Drafting (WI author) •Mentor new authors (TC)
January	•Supplement Volume 1 Review (TC)
February-March	•Supplement Volumes 2/3 Draft (WI author)
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IHE CONNECTATHON

- End-to-end, vendor-to-vendor testing in a neutral environment with neutral monitors following structured test plans
- Usually held annually in each of North America and Europe (5 days each)
- No customers; no egos. *What goes on in Connectathon, stays in Connectathon*
- Tests depend on Profiles/Actor/Options selected
- Must pass each test with three different partners for each actor
- Supported by testing and test suite management tooling
- Success gives "gold star" and listing on IHE website
- Connectathon feedback drives updates (CPs)
- Not hack-a-thon, certification, or conformity assessment
- Cautions
  - Vendor gets the "gold star," not a product
    - Vendor may take prototype or in-development code
    - Assumption: if vendor can do it for one system, they can do it for others
    - Vendor passes PIX Consumer and PDQ Consumer; not necessarily in same product
  - Integration Statement not connected to Connectathon results
- Historically, required for HIMSS Interop Showcase participation
- Sponsored by National/Regional Deployment Committee

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IHE CONNECTATHON

Monday Game on!	Tuesday Work Continues	Wednesday Work Continues	Thursday Crunch Time	Friday Victory!
• Set up • Connectivity	• Meet partners • Work with Monitors	• Continue testing	• Prioritize • Triage • Sacrifice • Socialize	• Complete testing • Pack up

- Each Actor/Profile (+Option) evaluated separately
  - Per test: Pass, DNC, Withdrawn, No Peer
  - Per Actor/Profile (+Option): Failed, Partial, Verified
- Published results: Actor/Profile (+Option) Passed
  - Incomplete/Failed known to vendor but not published
- https://connectathon-results.ihe.net/

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INTEGRATION STATEMENT

Vendor's claim of supported Integration Profiles and supporting information

Independent of Connectathon participation

Optionally may submit to IHE Product Registry

VITAL

IHE INTEGRATION STATEMENT FOR VITREA — VLC-10106 Rev. A

IHE Integration Statement

Vendor	Product Name	Version	Date
Vital Images, Inc	Vitrea	V7.10	8-Nov-18

This product implements all transactions required in the IHE Technical Framework to support the IHE Integration Profiles, Actors and Options listed below:

Integration Profiles Implemented	Actors Implemented	Options Implemented
Radiology IHE Radiology Technical Framework (Rev 17.0)		
Access to Radiology Information	Image Display	Multiple Sources
Scheduled Workflow	Image Display	None
Portable Data for Imaging	Image Display	None
	Portable Media Creator	None
	Portable Media Importer	None
IT Infrastructure IHE IT Infrastructure Technical Framework (Rev 15.0)		
Consistent Time	Time Client	None

Internet address for vendor's IHE information: http://www.vitalimages.com/about-us/compliance-documents

Link to Standards Conformance Statements for the Implementation

DICOM	http://www.vitalimages.com/about-us/compliance-documents

Links to General Information on IHE

In North America:	In Europe:	In Japan:
http://www.ihe.net/	http://www.ihe.net/	http://www.ihe-j.org/

SOP-301.300.T011A

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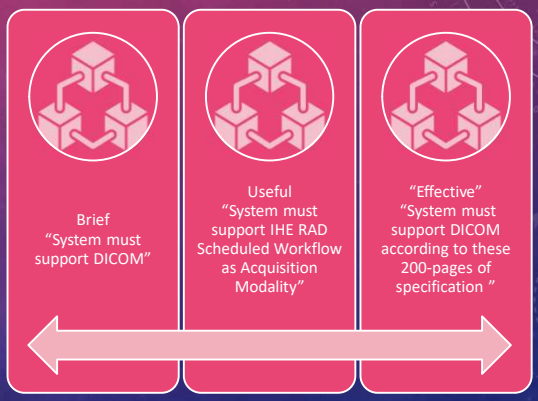
OVER TO YOU!

- Integration Profiles in RFP
  - "Does the <product> implement the <actor> in the IHE <profile>?"
  - "Shall support the IHE <profile> as the <actor> (with <option>)"
- Ask for Integration Statements
- Ask for Connectathon Results (or check IHE Results)



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OTHER ACTIVITIES

- IHE Conformity Assessment
  - More rigorous testing than Connectathon
  - Product specific
  - Supporting documentation required
  - Administered by accredited testing labs
- Projectathon
  - Focused on project testing (e.g., epSOS)
  - Usually run by project sponsors, not IHE
  - Testing customized to project
- IHE Plugathon
  - Education, Exploration, Innovation around IHE Profiles
  - Targeting specific (implementer or user) community
  - Sharing experiences
- HL7 FHIR Connectathon
  - Unrelated to IHE Connectathon
  - Main focus is exploring HL7 FHIR specification (not testing implementations against the spec)

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QUESTIONS

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