HL7 & IHE: Paving a Better Path to Interoperability

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Common Vision

A world in which everyone can securely access and use the right health data when and where they need it.

Enable seamless and secure access to health information that is usable whenever and wherever needed.
To provide standards that empower global health data interoperability.

IHE improves healthcare by providing specifications, tools and services for interoperability. IHE engages clinicians, health authorities, industry, and users to develop, test, and implement standards-based solutions to vital health information needs.
• Domains and Technical/Planning Committees
• Conformity Assessment processes and tools
• 3 Annual Connectathons (USA, Europe, Asia)
• Coordinates use of standards such as HL7 and DICOM for specific needs
• IHE National Deployment Committees in 17 countries

Both conduct “testing, education, outreach, collaboration with local health agencies”

• Work groups and Steering Committees
• Conformance statements for HL7 Standards
• 3 Annual FHIR Connectathons (preceding HL7 Working Group Meetings)
• Develops standards that are often used in IHE profiles (with DICOM, X.12 . . .)
• HL7 Affiliates in 55 countries
IHE Profile Development: A Proven 1-year Quality Management Cycle

IHE provides a trusted, open process: proven since 1998!

IHE Profiles Drafted & Published

- Profile Selection by Committees
- IHE Call for Proposals months 1-3
- Published For Public Comment
- IHE Technical Framework Development
- Trial Implementation Posted
- IHE International Development
- IHE Connectathon
  - Results published in Product Registry

Testing and Certification

- months 4-14
- Demonstrate at a HIMSS Interoperability Showcase
- IHE USA Deployment
- Install interoperable solutions worldwide

HIMSS18
HL7 ANSI-Accredited Standards Process

- HL7 work groups meet via conference call and at annual Working Group Meetings (WGMs)
- All meetings are open, run under Robert’s rules, with minutes available
- STUs and Connectathons allow for ongoing testing by implementers
- ANSI rules govern openness, transparency, balance of interests, due process, appeals.
Profiles

• IHE creates and maintains implementation guidelines called IHE Profiles, which are published in a set of documents called the IHE Technical Frameworks. IHE Profiles provide a common language for purchasers and vendors to discuss the integration needs of healthcare sites and the integration capabilities of healthcare IT products.

• HL7 FHIR Profiles define a group of StructureDefinitions (Constraints or Extensions), Value Sets, and examples associated with a FHIR resource for a specific problem or use case.

• A FHIR Implementation Guide is a set of rules about how FHIR resources are to be used to solve a specific problem.

• HL7 EHR Functional Profiles define functional requirements for use cases such as Behavioral Health, Child Health, Long term care . . .
What is a Connectathon?

- Cross-vendor, live, supervised, structured testing event
- All participating vendors’ products tested together in the same place/time
- Experts from each vendor available for immediate problem resolution… fixes are done in minutes, not months!!
- Each vendor tests with multiple trading partners (actual product to actual product)
- Testing of real-world clinical scenarios
Connectathons

- **HL7 FHIR Connectathons** help implementers assess, test and explore new opportunities for applying the FHIR specification.
  - Testing as part of a connectathon is a prerequisite for progressing resources and implementation guides up the FHIR Maturity Model

- **IHE Connectathons** provide a detailed implementation and testing process to enable standards-based interoperability.
  - Here systems exchange information in a structured and supervised peer-to-peer testing environment, performing transactions required for the roles that perform in carefully defined interoperability use cases (profiles).
IHE Profiles on FHIR

IT Infrastructure (ITI) domain

- **Mobile access to Health Documents (MHD)**: a profile on DocumentReference and DocumentManifest to provide a HTTP REST and Mobile application friendly API for the use ases profiled in XDS, XDR, and XCA. The MHD profile may be used as an API to these Document Sharing infrastructures, or may be used alone.

- **Patient Demographics Query for Mobile (PDQm)**: a profile of the FHIR Patient resource for simple lookup and reference. Following the functionality requirements profiled in PDQ (HL7 v2), and PDQv3 (HL7 v3)

- **Patient Identifier Cross-reference for Mobile (PIXm)**: an operation profile for retrieving just cross-referenced identifiers for a given patient

- **RESTful Query to ATNA**: a profile on AuditEvent for query and reporting.

- **Mobile Alert Communication Management (mACM)**: a profile on Communication for alert notifications

- **Mobile Care Services Discovery (mCSD)**: provides a RESTful interface to discover Care Services: Organization, Location, Practitioner, and Health Services

- **Mobile Cross-Enterprise Document Data Element Extraction (mXDE)**: accesses data elements extracted from shared structured documents

- **Non-patient File Sharing (NPFSm)**: provides a RESTful interface enable sharing of non-patient files such as clinical workflow definitions, domain policies, and stylesheets
IHE Profiles on FHIR

Patient Care Coordination (PCC) domain

- Patient Care Coordination profiles are published on the IHE Technical Framework, and described on the IHE wiki. Clinical Mapping (CMAP) supports mapping to and from clinical terminologies.
- Guideline Appropriate Ordering (GAO) Supplies a mechanism by which EHR and departmental systems can evaluate orders to determine whether these orders conform to guidelines.
- Reconciliation of Clinical Content and Care Providers (RECON) Provides the ability to communicate lists of clinical data that were reconciled, when they were reconciled and who did the reconciliation using CDA® constructs and FHIR® Resource attributes.
- Dynamic Care Planning (DCP) Profile provides the structures and transactions for care planning, sharing Care Plans that meet the needs of many, such as providers, patients and payers.
- Dynamic Care Team Management shares information about a patient's care teams.
- Query for Existing Data for Mobile (mQED) queries for clinical data elements, including observations, allergy and intolerances, conditions, diagnostic results, medications, immunizations, procedures, encounters and provenance.
IHE Profiles on FHIR

Radiology Imaging (RAD) domain

• Radiology Imaging profiles are published on the [IHE Technical Framework](https://www.ihe.net), and described on the [IHE wiki](https://wiki.ihe.net). Standardized Operational Log of Events (SOLE) stores and retrieves logs of operational events (patient arrives, scan complete, etc)

Quality, Research, and Public Health (QRPH) domain

• [Mobile Retrieve Form for Data Capture (mRFD)](https://www.ihe.net) describes the exchange of context data to allow a seamless form launch with supporting clinical context

• [Vital Records Death Reporting (VRDR)](https://www.ihe.net) defines a Retrieve Form for Data Capture (RFD) content profile that will specify derivation of source content from a medical summary document. By defining requirements for form filler content and form manager handling of the content
IHE on FHIR Connectathon Tracks

• To support testing at HL7 & IHE Connectathons on the IHE Profiles that leverage HL7 FHIR.

• 201801 Care Plan
  – IHE Dynamic Care Planning Profile

• 201801 Medical Device and Implantables Tracking using UDI
  – IHE Point-of-Care Medical Device Tracking Profile

• 201801 Provider Directory
  – IHE Mobile Care Services Discovery (mCSD) Profile

• 201801 Patient Track
  – IHE Patient Demographics for Mobile (PDQm) Profile

• Devices on FHIR® IHE Plugathon
IHE January Plug-a-thon Example

IHE Document: Draft for Discussion only
Joint HL7-IHE Cancer Staging Project

• Purpose: to demonstrate how the combined efforts of IHE, HL7 and HIMSS can add value to advance interoperability

• Goal: seek to make incremental progress over the course of IHE and HL7 Connectathons to develop an interoperability solution built on FHIR and profiles, culminating in a joint publication in 2018

• 2 breast cancer storyboards involving pathology, imaging, treatment and other electronic health data

• Primary HL7 work groups participating include Health Care Devices, Image Integration and CIMI

• Primary IHE domain likely to be Patient Care Coordination.
# SHR TNMStage Profile

The stage of a cancer, assessed according to the standard established by American Joint Committee on Cancer (AJCC). TNM Stage Grouping categorizes the progression of cancer using the Roman Numeral system. See Table 140 in HL7 CDA® R2 Implementation Guide: Clinical Oncology Treatment Plan and Summary, Release 1 - US Realm.

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**Short description**
SHR TNMStage Profile

**Alternate names:**
Vital Signs, Measurement, Results, Tests

**Definition:**
The stage of a cancer, assessed according to the standard established by American Joint Committee on Cancer (AJCC). TNM Stage Grouping categorizes the progression of cancer using the Roman Numeral system. See Table 140 in HL7 CDA® R2 Implementation Guide: Clinical Oncology Treatment Plan and Summary, Release 1 - US Realm.

**Comments:**
Used for simple observations such as device measurements, laboratory atomic results, vital signs, height, weight, smoking status, comments, etc. Other resources are used to provide context for observations such as lab reports, etc.

**Data Type:**
Observation

**Constraints:**
- dataAbsentReason: If the resource is contained in another resource, it SHALL NOT contain nested Resources
- context[x]: Observation[x] SHALL have 1..1 context
- context[x]: Observation[x] SHALL have 1..1 CodeableConcept binding
Technical Objectives of Collaboration

• Learn how to integrate FHIR test scripts and tools with IHE Gazelle test management system and tools

• Build awareness within IHE on how to publish implementation guides through the FHIR IG Publisher

• Engage HL7 work groups who might benefit from IHE experience in conformance testing and validation services, specifically terminology services and the FHIR Patient Track

• Expose IHE to HL7 FHIR terminology services and value set tooling to support other IHE profiles.
Industry Objectives of Collaboration

• More rapidly advance interoperability by sharing knowledge and expertise
• Build on decades of standards development experience to inform innovation
• Break down silos and align work, minimize duplication where feasible
• Demonstrate the importance of standards in enabling interoperability and build the bridge to improved quality and outcomes
Conclusions

• Interoperability by definition needs all affected parties to work together if it is ever to become a feasible reality

• Committing to the interoperability vision thus involves placing the common good above that of any single individual or organization

• HL7 and IHE, with the support of HIMSS, can make a significant difference in achieving the vision by sharing the best of all worlds

• We’re only beginning to realize what we can do – stay tuned for more progress updates as our collaboration continues.
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Questions?