

SESSION 08

FHIR TRAINING

CDC FOUNDATION
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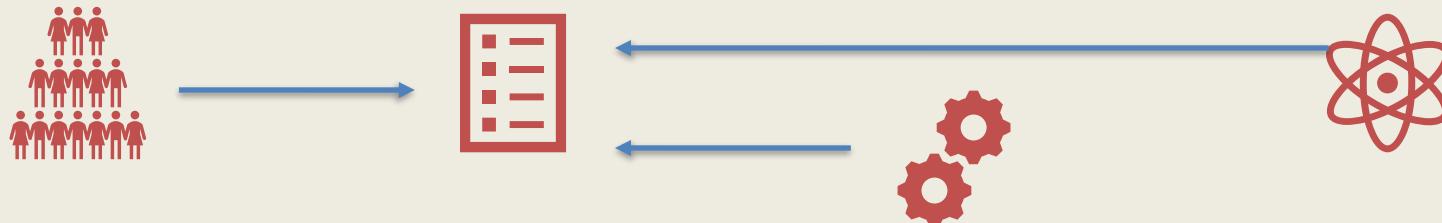
Session 8 – HL7 PROCESS, ACTIVITIES, RESOURCES

1. BLOCK 1: HL7 STANDARDS DEVELOPMENT PROCESS
2. BLOCK 2: PUBLIC HEALTH WORKGROUP & ZULIP STREAMS
3. BLOCK 3: CONNECTATHONS AND WG MEETINGS
4. BLOCK 4: STANDARDS IMPLEMENTATION RESOURCES

BLOCK 1: HL7 STANDARDS DEVELOPMENT PROCESS

- HL7 Workgroups
- HL7 Accelerators
- HL7 Projects
- (we will skip PH specific wg,accelerators and projects, as those belong to the next block but...everything else is also...eventually...public health!)

HL7 Workgroups, Projects, and Accelerators



WORKGROUPS

Workgroups are the bodies within HL7 that take on responsibility for developing and maintaining standards. They are where the “work” of HL7 gets done.

PROJECTS

Specific initiatives undertaken by workgroups to develop, update, or maintain standards and implementation guides. These projects are essential for advancing interoperability and improving healthcare data exchange.

ACCELERATORS

The HL7 FHIR Accelerator program is designed to assist communities and collaborative groups across the global healthcare spectrum in the creation and adoption of high-quality FHIR Implementation Guides

OTHER INITIATIVES

This includes special projects with international participation (several countries) or with multiple contributing organizations (SDOs or others)

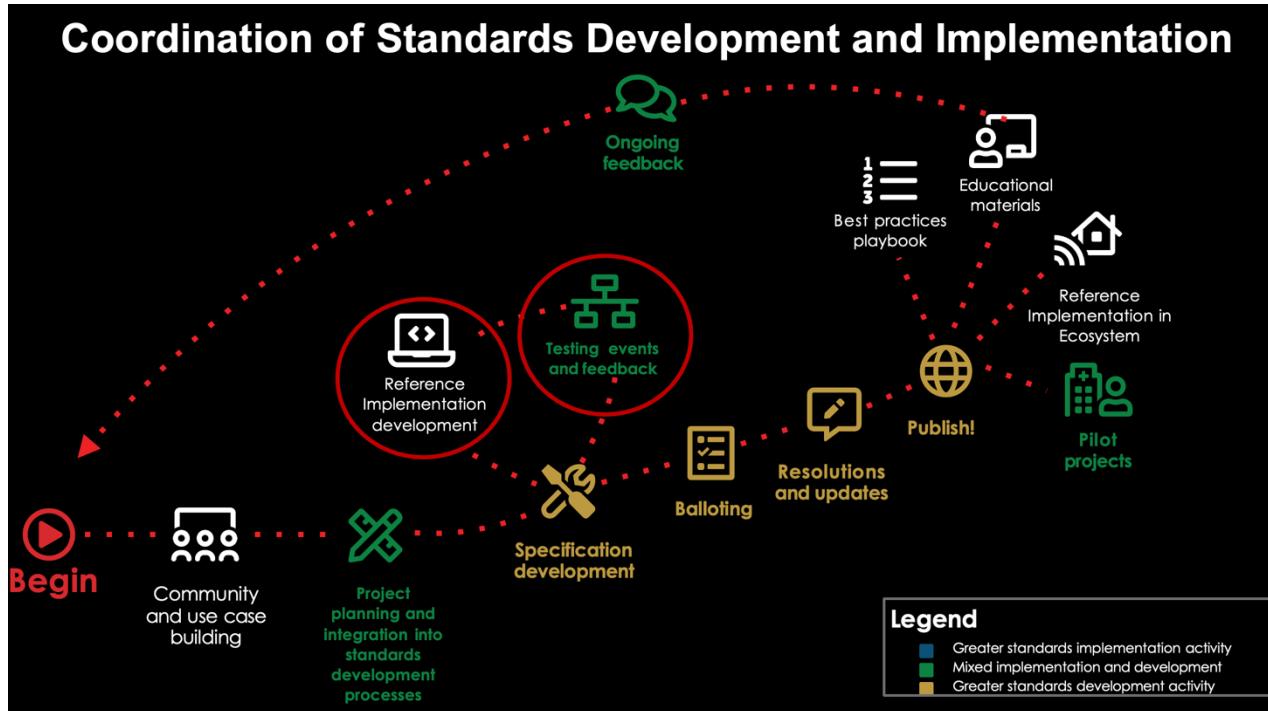
All the projects are here:

<https://www.hl7.org/Special/committees/projman/searchableProjectIndex.cfm?action=list>

Also if you want to see the project proposals, they can be found here:

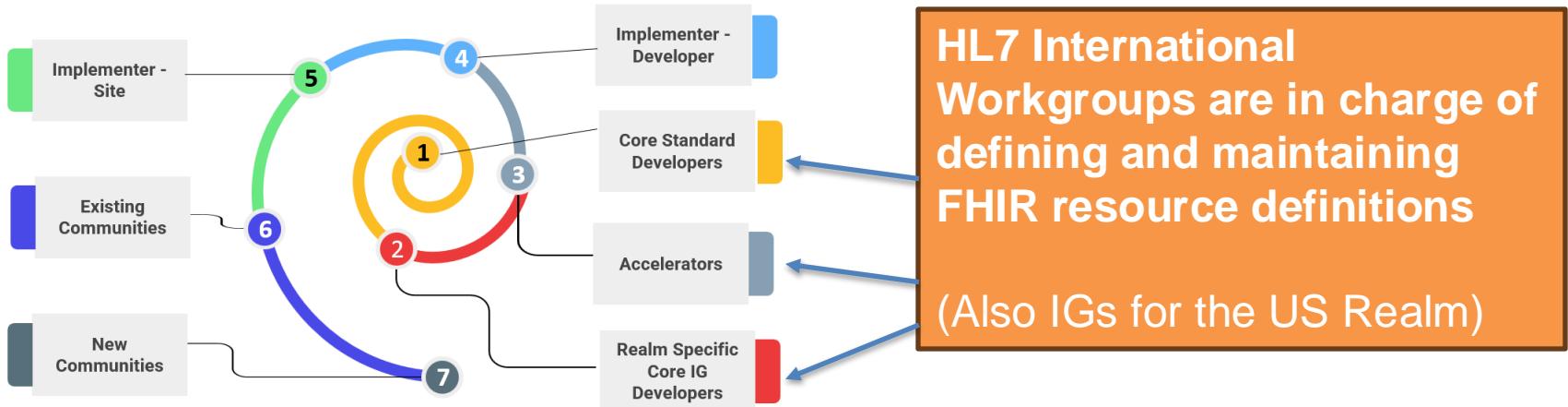
<https://confluence.hl7.org/display/FHIR/IG+Proposals>

From idea to implementation



Workgroups

Workgroups are the bodies within HL7 that take on responsibility for developing and maintaining standards. They are where the “**work**” of HL7 gets done.



How do HL7 Workgroups function?

- They have two or more co-chairs that facilitate and document the meetings
- They meet periodically and
 - Can create their own decision making rules and mission
 - Can sponsor or co-sponsor projects
 - Discuss and advance their sponsored/co-sponsored projects
 - Resolve any technical issues derived from the ballot process
- They all work under the same governance body called the TSC
(Technical Steering Committee)

More info here: <https://www.youtube.com/watch?v=1win9y-afdQ&list=PL4DUfomz2RZzSJCFhwgC5I96NshOL76QW&index=9>

Which are the workgroups?

During this presentation, we will discover

- **which are the active workgroups in HL7,**
- **what is their domain/focus**, and, more importantly,
- **which projects are they working on**, highlighting some of them.

We will also unleash the relationship between **FHIR resources and HL7 Workgroups**.

8.1 Resource Patient - Content

Patient Administration	Work Group	Maturity Level: N	Normative (from v4.0.0)	Security Category: Patient	Compartments: Patient, Practitioner, RelatedPerson
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What is this?

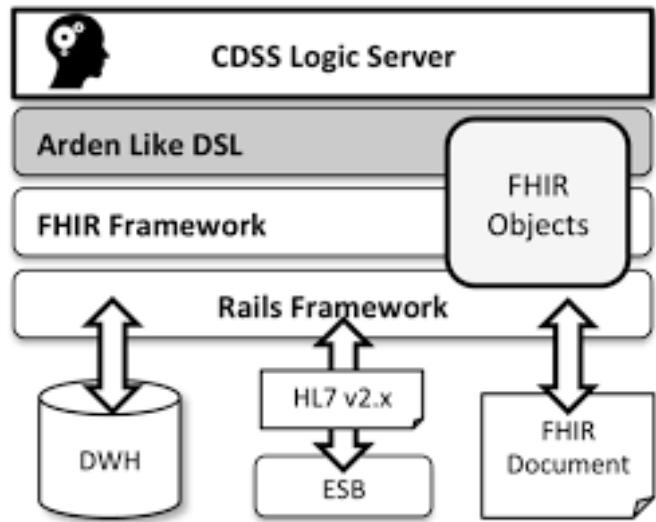
Remember that this tour is only about projects/WG inside of HL7 International and does not include the Affiliate projects or other FHIR projects (IHE's for example)

Which are the Workgroups? (as of Nov/24)

Arden Syntax	Emergency Care	Patient Administration
Biomedical Research and Regulation	FHIR Infrastructure	Patient Care
Clinical Decision Support	Financial Management	Patient Empowerment
Clinical Genomics	Human and Social Services	Payer/Provider Information Exchange
Clinical Interoperability Council	Imaging Integration	Pharmacy
Clinical Quality Information	Implementable Technology Specifications	Public Health
Community-Based Care and Privacy	Infrastructure and Messaging	Security
Conformance	Learning Health Systems	Structured Documents
Cross-Group Projects	Mobile Health	Terminology Infrastructure / Vocabulary
Devices	Orchestration, Services, and Architecture	
Electronic Health Records	Orders & Observations	



WG: Arden Syntax



URL: <https://confluence.hl7.org/display/ARD/Arden+Syntax+Work+Group+Home>

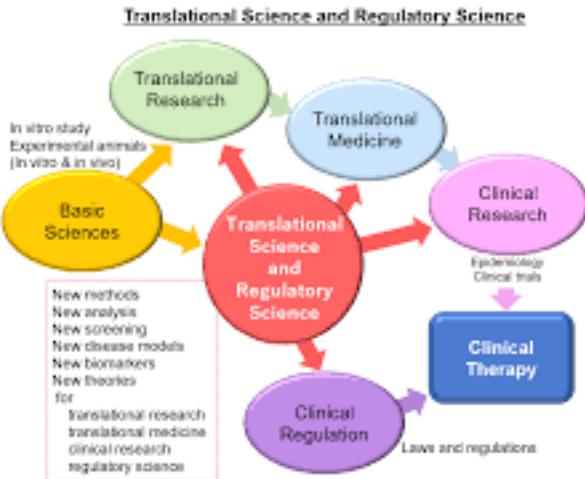
Develops future versions of the Arden Syntax to facilitate its use in representing procedural medical knowledge and promoting knowledge sharing.

Comment: Arden Syntax is a legacy standard dating from the 1990's. However, this WG created Arden Syntax on FHIR! Think of Arden Syntax as a precursor to CQL (not exactly, though)

<https://confluence.hl7.org/download/attachments/40741751/arden-syntax-IG-R3-2019-09-16-ballot-reconciliation.pdf>



WG: Biomedical Research and Regulation (BRR)



URL:

<https://confluence.hl7.org/display/BRR/Biomedical+Research+and+Regulation>

Creates and promotes standards to facilitate biomedical research and regulatory evaluation of medical products, ensuring interoperability and compliance.

FHIR R4 Resources: [ResearchStudy](#), [ResearchSubject](#)



BRR Projects

- [AE for Clinical Research](#)
- [AE Reporting for Transfusion and Vaccination](#)
- [BR&R FHIR Resources](#)
- [BRIDG Model](#)
- [Clinical Research Sponsor Lab Semantics Implementation Guide](#)
- [Clinical Study Schedule of Activities](#)
- [CRN - FHIR Investigation and Implementation Guide](#)
- [Eligibility Criteria for Clinical Trials represented in FHIR](#)
- [FHIR to CDISC Joint Mapping](#)
- [Implementation Guide](#)
- [FHIR to OMOP Mapping](#)
- [Gravitate Health/Vulcan FHIR IG for Electronic Medicinal Product Information \(ePI\)](#)
- [Integrated Trial Matching for Cancer Patients & Providers](#)
- [PQ - Pharmaceutical Quality Common Page](#)
- [Retrieval of Real World Data for Clinical Research,](#)
- [SPL V3 to a FHIR-based submission](#)

WG: Clinical Decision Support

URL: <https://confluence.hl7.org/display/CDS/WorkGroup+Home>

Work on standards for representation and presentation of knowledge in health care , including Decision Support Services, Infobuttons and Order Sets. Maintain an expression language for clinical decision support. Develop a data model specifically tailored for clinical decision support



FHIR R4 Resources: [ActivityDefinition](#), [EffectEvidenceSynthesis](#), [Evidence](#), [EvidenceVariable](#), [GuidanceResponse](#), [Library](#), [PlanDefinition](#), [ResearchDefinition](#), [ResearchElementDefinition](#), [RiskAssessment](#)

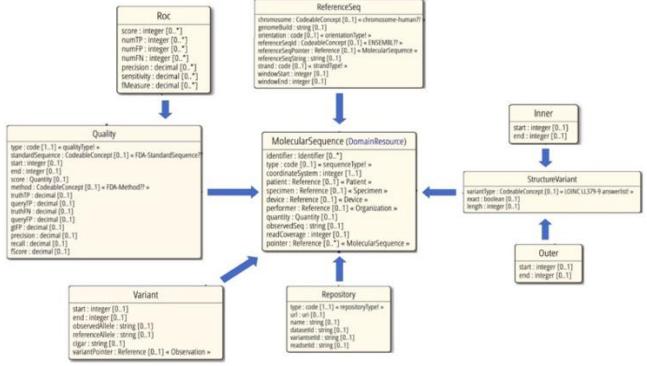


CDS Projects

- [CDS Hooks](#)
- [Clinical Quality Language](#)
- [CPGonFHIR](#)
- [CRMI - Canonical Resource Management Infrastructure IG](#)
- [EBCMonFHIR](#)
- [PDDI CDS](#)
- [Documentation Templates & Rules](#)
- [Infobutton](#)

WG: Clinical Genomics

URL: <https://confluence.hl7.org/display/CGW>



Enables the meaningful exchange of genomic data and family health history to support precision medicine, developing standards for clinical information management.

FHIR R4 Resources: **MolecularSequence**



Clinical Genomics Projects

- [CDA IG for Genetic Testing Reports](#)
- [CG Work Group Ballot Health Infractions - March 2022](#)
- [FHIR IG Genomics Reporting](#)
- [HL7 Clinical Genomics Domain Information Model\(s\)](#)
- [HL7 V2 Genomics Report Lite](#)
- [Version 3 Standard Clinical Genomics Pedigree](#)

WG: Clinical Interoperability Council

URL:

<https://confluence.hl7.org/display/CIC/Clinical+Interoperability+Council>



A nexus of communication and bridge to the standards development framework, organizational processes and forums for the clinical community to define content, flow and other domain requirements necessary to the development of robust health data standards



CIC Projects

- [Breast Cancer Imaging and FHIR Profile Development](#)
- [Health Record Exchange Framework \(HReX\)](#)
- [Minimal Common Oncology Data Element \(mCODE\) Project](#)
- [VANGUARD Project \(Venous Access: National Guidelines and Registry Development\)](#)
- [Pain Assessment](#)
- [Advancing Registry Infrastructure for a Modern API-based Health IT Ecosystem](#)
- [CREDS Project Repository](#)
- [Emergency Medical Services Patient Care Report](#)
- [\(ICHOM\) Breast Cancer PCOM set FHIR IG](#)
- [Phenomics Exchange for Research and Diagnostics](#)

WG: Clinical Quality Information

URL:<https://confluence.hl7.org/display/CQIWC/Clinical+Quality+Information+Home>



Create and maintain HL7 standards in support of measuring, evaluating, reporting, and thereby improve the quality of health care.

FHIR R4 Resources: **Measure**, **MeasureReport**



CQI Projects

CDA R2 Based

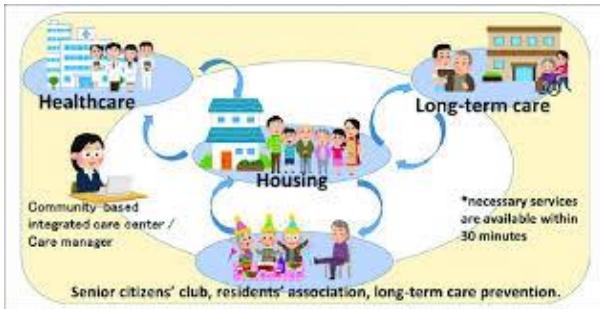
- [Quality Reporting Document Architecture Category 1](#)
- [Quality Reporting Document Architecture Category 3](#)

FHIR Based

- [CQL-based HQMF IG R1, STU 4.1](#)
- [2023JAN NIB - Da Vinci Data Exchange for Quality Measure IG](#)
- [2023JAN NIB - Da Vinci Risk Adjustment IG](#)
- [2023JAN NIB - Quality Measure IG \(QM IG\)](#)

WG: Community-Based Care and Privacy

URL: <https://confluence.hl7.org/display/CBCP>



Identifies and validates information system requirements with an emphasis on privacy protection, enhancing community-based care through collaboration. Areas: Behavioral Health, Privacy and Consent, Long Term Care

FHIR R4 Resources: [Consent](#)

<https://confluence.hl7.org/display/CBCP/Consent+Implementations>



WG: Conformance

URL: <https://confluence.hl7.org/display/CONF/Conformance>

Discuss general implementation guidance, conformance issues including guidance on testing conformance constructs, and to share best practices, success stories, and challenges

Projects: V2 Conformance/Data Type Flavors, FHIR Conformance Review, FHIR Conformance, Guidance and Best Practices



The screenshot shows a slide titled "Conformance" with the FHIR logo at the top right. Below the title is a bulleted list of topics:

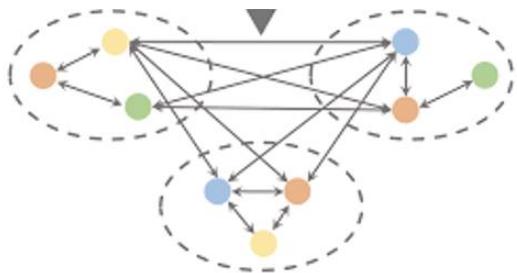
- Terminology Use
 - Custom Codes, Value Sets, Mappings
- Resource Use
 - Profiles and Logical Models, Data Dictionaries
- Behaviour
 - Interaction support, Search Parameters, Operations
- Published by Servers, Clients, Projects
 - "Implementation Guide"



WG: Cross-Group Projects

URL: <https://confluence.hl7.org/display/CGP/Cross-Group+Projects+Home>

Manages projects that span multiple workgroups, providing centralized communication and coordination for initiatives without a single workgroup sponsor. Also wor



Cross-Group Projects WG's Projects

C-CDA to FHIR and from US Core Mapping

CodeX Radiation Therapy

Military Service History and Status FHIR Profiles

WG: Devices

URL: <https://confluence.hl7.org/display/HCD/Devices>

ICAL DEVICE INTEGRATION



Facilitate health care device interoperability at the device-to-device, device-to-enterprise, personal health devices, and at the enterprise levels. Harmonize data models with ISO/IEEE 11073. Support point of care device integration.

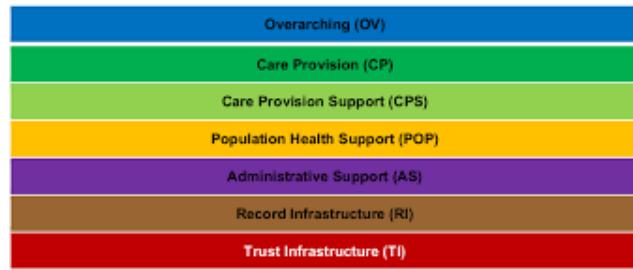


Devices Projects

- Gemini Safe, Effective & Secure Medical Device Interoperability
- FHIR for Device Data Reporting
- Personalized Health Navigation
- Sharing Continuous Glucose Monitoring Data
- Device Alerting

WG: Electronic Health Records

URL: <https://confluence.hl7.org/display/EHR>



Focuses on developing standards for electronic health records capabilities or 'Functional Profiles'. Currently working also on a list of 14 AI-related projects:

<https://confluence.hl7.org/pages/viewpage.action?pageId=101353849>



EHR WG Projects (Functional Profiles)

- [Dental Health Functional Profile](#)
- [Pediatric HIT](#)
- [Problem Oriented Health Record](#)
- [Behavioral Health](#)
- [EHR System Usability Functional Profile](#)

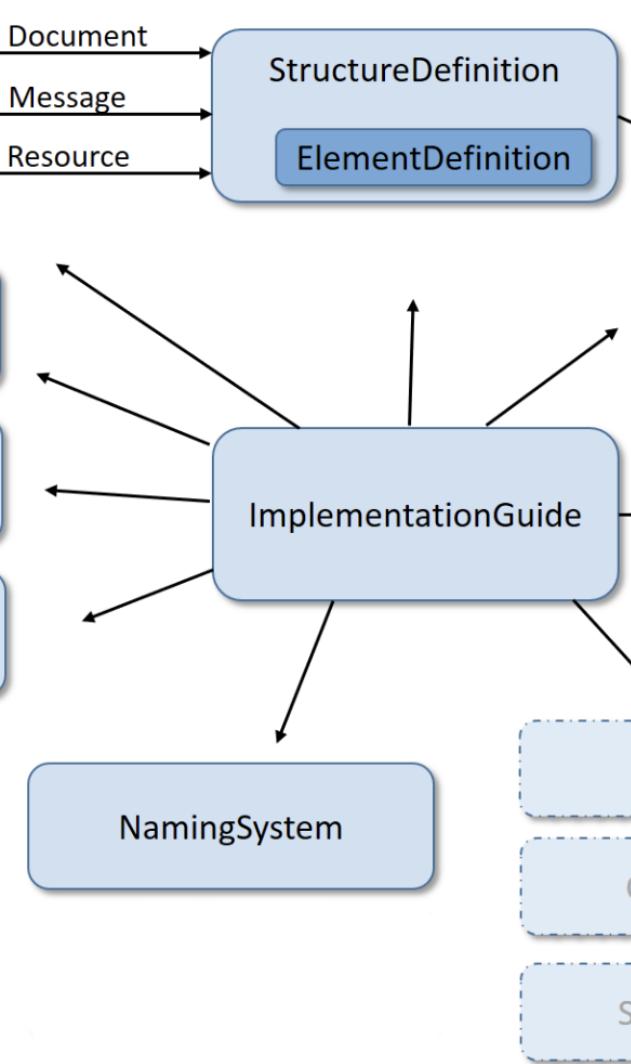
WG: Emergency Care



URL: <https://confluence.hl7.org/display/EC/Emergency+Care>

Brings the unique understandings and perspectives of the emergency health care enterprise to HL7 Standards





WG: FHIR Infrastructure

URL:

<https://confluence.hl7.org/pages/viewpage.action?pageId=40743450>

Maintains and advance the core components and exchange paradigms of the FHIR specification



FHIR Infrastructure (FHIR-I) Resources

The core components of the specification...!

Basic, Binary, Bundle, CapabilityStatement,
GraphDefinition, ImplementationGuide, NamingSystem,
OperationDefinition, OperationOutcome, Questionnaire,
QuestionnaireResponse, SearchParameter,
StructureDefinition, StructureMap, Subscription,
TestReport, TestScript

FHIR-I Projects THE HEART OF FHIR!

- Structured Data Capture
- Workflow
- FSH Shorthand
- Methodology/Data Types
- Subscription BackPort IG
- Exchange with/without Intermediaries
- Bulk Data
- Subscriptions
- Smart V2
- IG Authoring
- Capability Features IG

WG: Financial Management

URL:

<https://confluence.hl7.org/display/FM/Financial+Management+Home>



Financial aspects of healthcare exchange, including billing, coverage, contracts, and claims processing.



Financial Management (FM) Resources

Everything is about money...contracts, claims, eligibility, coverage

**Claim, ClaimResponse, Contract, Coverage,
CoverageEligibilityRequest,
CoverageEligibilityResponse, EnrollmentRequest,
EnrollmentResponse, ExplanationOfBenefit,
PaymentNotice, PaymentReconciliation,
VisionPrescription**

FM Projects

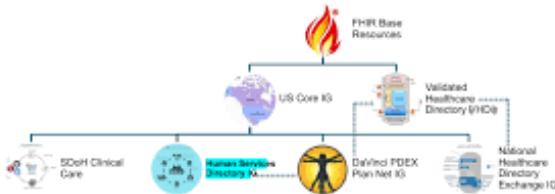
- [Anaesthesia Billing Support](#)
- [Coverage: Concept/Nomenclature Definitions](#)
- [DaVinci Postable Remittance](#)
- [Statements, Payments, and Accumulators](#)
- [Uniform Structure and Coding of Elements for Prior Authorization](#)
- [US CORE and Considerations for Extensions and Clinical Resources](#)

WG: Human and Social Services

URL:

<https://confluence.hl7.org/display/HSS/Human+and+Social+Services+Home>

Requirements and artifacts for interoperable human services data exchange, focusing on social determinants of health.



Project: FHIR IG for Human Services
Directory: <https://hl7.org/fhir/us/hsds/STU1/>

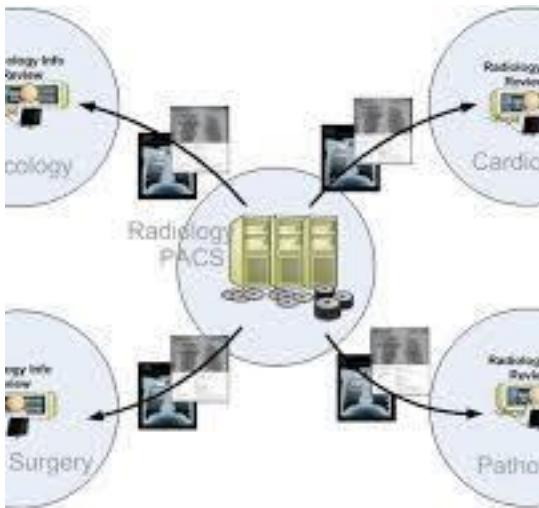


WG: Imaging Integration

URL:

<https://confluence.hl7.org/display/IMIN/Imaging+Integration+Home>

Develops standards for the integration of imaging systems and associated information systems. Focus on the relationship with DICOM objects: how to represent them and link to them



FHIR R4 Resources: [ImagingStudy](#)

II Projects

[Imaging Service Request Profile Implementation Guide](#)

[DICOM SR to FHIR Resource Mapping IG](#)

[Radiation Dose Summary for Diagnostic Procedures on FHIR](#)

WG: Implementable Technology Specifications



URL: <https://confluence.hl7.org/display/ITS>



Maintains implementable technology specifications and messaging protocol guidelines to support interoperability in healthcare.

FHIR Project: RDF/FHIF. Playground here:
<http://rdfplayground.dcc.uchile.cl/>

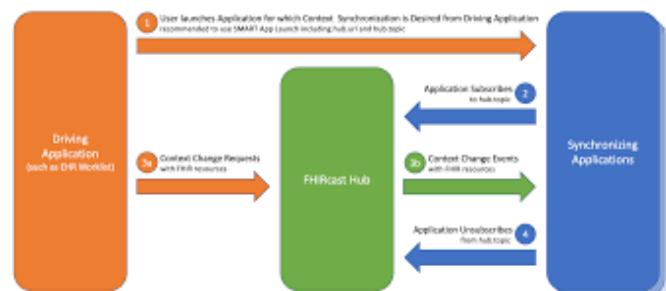


WG: Infrastructure and Messaging



URL:

<http://confluence.hl7.org/display/INM/Infrastructure+And+Messaging+Work+Group>



Provides support for systems to exchange domain content as specified by HL7 standards other than FHIR

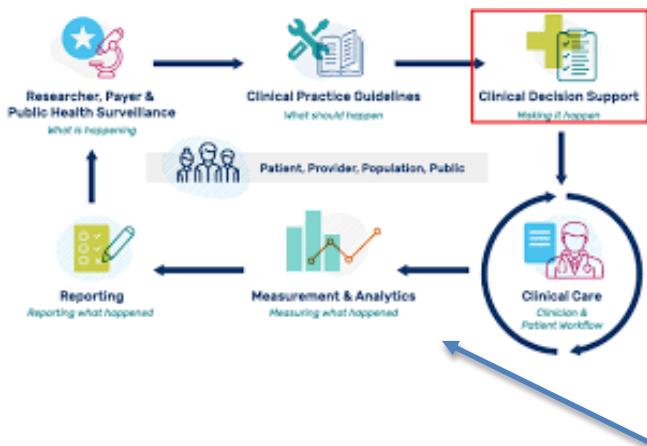
+One FHIR Project: FHIR CAST (Context Synchronization in FHIR)

<https://confluence.hl7.org/display/ASD/FHIRcast%3A+Application+Context+Synchronization+in+FHIR>

WG: Learning Health Systems

URL:

<https://confluence.hl7.org/display/LHS/Learning+Health+Systems>



Support the Learning Health System (LHS virtuous cycle) and to develop a DAM for Learning Health Systems as related to the adaptive systems Make use of real time data and analytics and making such information available to everyone, including patients.

Tip: they are behind this diagram



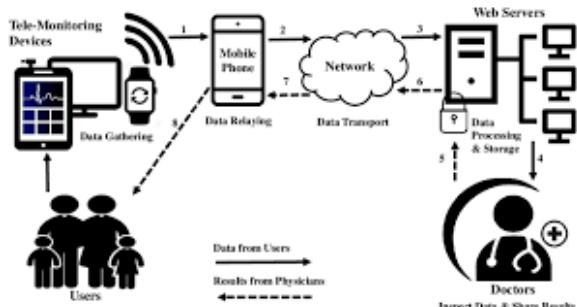
LHS Projects

- Patient Centered Care Team (DAM)
- The Learning Health System

WG: Mobile Health

URL: <https://confluence.hl7.org/display/MH/Mobile+Health>

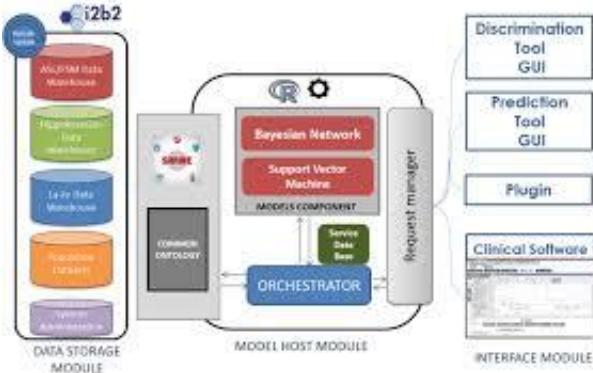
Definitions for mobile health
interoperability, security, functional
models, and profile(s)



MH Projects

- Consumer Mobile Healthcare Application Functional Framework (cMHAFF)
- Unique Mobile Health Application Identifier (UMHAI) Project
- School Healthcare Information Framework utilizing Technology (SHIFT)
- Mobile Framework for Healthcare Adoption of Short-Messaging Technologies (mFHAST)
- Mobile Health Data App Data Exchange Project

WG: Orchestration, Services, and Architecture



URL:

<https://confluence.hl7.org/display/SOA/Orchestration%2C+Services%2C+and+Architecture>

Develops standards for service-oriented architecture to improve interoperability and data exchange in healthcare.



SOA Projects

- [OSA Blueprint](#)
- [Coordination with BPM+ Health](#)
- [FHIR for FAIR \(FHIR4FAIR\)](#)
- [Common Terminology Service Release 2 \(CTS2\)](#)
- [Consent Management Service Project](#)
- [HL7 Universal Communication Service \(UCS\) Normative Publication Request](#)
- [HL7 Pub/Sub Service Publication Request](#)
- [Health Services Reference Architecture \(HL7-HSRA\)](#)
- [Model-Based Transformation Service](#)
- [Health Services Platform \(HL7-HSP\) Marketplace](#)
- [HL7 Cloud Planning Guide](#)

WG: Orders & Observations

URL: <https://confluence.hl7.org/display/OO>



Focuses on orders and observations for diagnostics and clinical lab, vitals, including specimens, devices, results, etc.

One of the most prolific and broad WGs



Orders and Observations (O&O) Resources

Vitals, labs, specimens, orders, devices...

BodyStructure, Device, DeviceDefinition,
DeviceRequest, DeviceUseStatement, DiagnosticReport,
Media, NutritionOrder, Observation,
ObservationDefinition, ServiceRequest, Specimen,
SpecimenDefinition, Substance, SupplyDelivery,
SupplyRequest, Task

O&O Projects (1/2)

- Device Resource Harmonization
- Loinc In In-Vitro Diagnostics IG
- V2-To-FHIR
- Simple FHIR Based Product Catalog for LMIC Countries
- Post Acute Orders
- eDOS/LOI/LRI
- Healthcare Product: Devices+Nutrition+Vision+Biological Derived
- ServiceRequest: Reflex/Follow-Up/Add-On
- Diagnostic Module - R6 Updates
- OO Families/Household/Workplace/Event
- Lab Interoperability

O&O Projects (2/2)

- Vital Signs Profile Revisions R6
- HL7 Domain Analysis Model: Specimen, Release 2
- Nutrition
- UDI Pattern R2 Project
- At-Home In-Vitro Test Report
- Multiple Specimen Use Cases
- FHIR Clinical Order Workflow - Universal
- Vital Signs Profiles
- OpenCDx
- Device FHIR Resource Proposal
- Diagnostic Report-Composition Work

WG: Patient Administration

URL: <https://confluence.hl7.org/display/PA>



Patient administration including the definitions and workflow for the healthcare administrative processes and the involved entities and registries: **Patients, Appointments, Organizations, Locations, Practitioners and Encounters**



Patient Administration (PA) Resources

All the entities required to administer care services

**Account, Appointment, AppointmentResponse,
ChargeItem, ChargeItemDefinition, Encounter,
EpisodeOfCare, HealthcareService, Location,
Organization, OrganizationAffiliation, Patient, Person,
Practitioner, PractitionerRole, RelatedPerson, Schedule,
Slot, VerificationResult**

PA Projects (1/2)

- [Da Vinci Alerts project](#)
- [FHIR R6 Plan](#)
- [Patient Merge and Link](#)
- [Validated Healthcare Directories](#)
- [National Healthcare Directory](#)
- [Using FHIR Identifiers](#)
- [Interoperable Digital Identity and Patient Matching](#)
- [Appointment Scheduling - Industry Divergence](#)

PA Projects (1/2)

- RTLS on FHIR
- Accounts (Perpetual and Episodic)
- Endpoint Payload
- Normative Breaking Changes
- \$merge for Encounter
- Personal Relationships and Households
- Location Service

WG: Patient Care

URL: <https://confluence.hl7.org/display/PC/Patient+Care>



Define the requirements and design and validate standards, specifications, and implementation guides for the capture, communication, and use of information related to the management, execution and quality of care provision.



Patient Care (PC) Resources

The clinical perspective of patient care

**AdverseEvent, AllergyIntolerance, CarePlan, CareTeam,
ClinicalImpression, Communication,
CommunicationRequest, Condition,
FamilyMemberHistory, Flag, Goal**

PC Projects (1/3!)

- Adverse Event Topic
- Care Plan Projects
- Clinicians on FHIR
- Child Health & Obstetrics International Collaboration and Exploration
- Clinical Assessment
- Concern vs Condition/Problem
- Clinical Status, disease course topics - context and perspectives

PC Projects (2/3!)

- [Essential Information for Children with Special Health Care Needs](#)
- [The Gravity Project Home](#)
- [PACIO Project](#)
- [International Patient Summary](#)
- [International Patient Access](#)

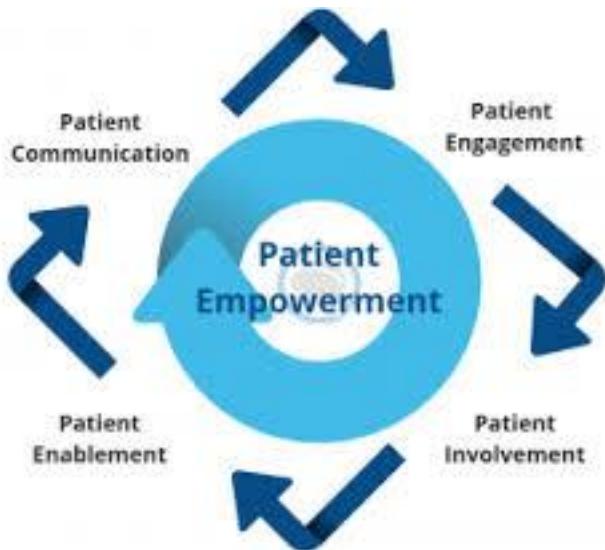
PC Projects (3/3!)

- "Eyes on FHIR" - FHIR for Ophthalmology
- Procedure Analysis
- Vital Signs Assessment - Definition and Scope
- Cross-Paradigm Implementation Guidance for Medical Device Data Sharing
- CMS Data Element Library (DEL)
- Physical Activity

WG: Patient Empowerment

URL:

<https://confluence.hl7.org/display/PE/Patient+Empowerment+Home>



Focuses on empowering patients in their healthcare decisions: intervening in their own record and auditing it



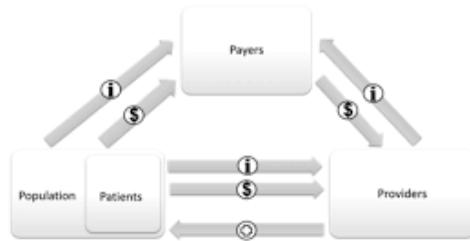
Patient Empowerment Projects

- Advance Directives Interoperability (ADI) - FHIR IG
- Consumer Outreach Subgroup
- Patient Contributed Data
- Patient Requests for Corrections
- Personalized Health Navigation
- Standard Personal Health Record FHIR IG

WG: Payer/Provider Information Exchange

URL:

<https://confluence.hl7.org/pages/viewpage.action?pageId=3440389>



Produce normative and informative standards for administrative and clinical records/data sharing between healthcare entities to support payer/provider processes.



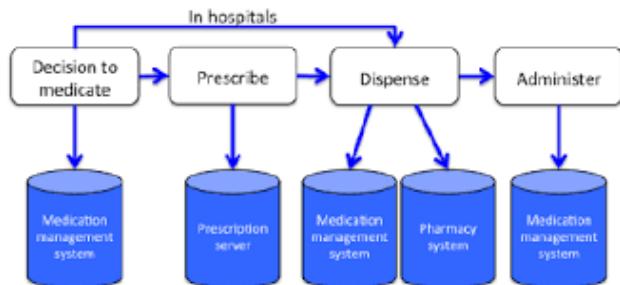
PIE Projects

- [Dental Summary Exchange Project](#)
- [Dental Attachment Implementation Guide](#)
- [Orthodontic Attachment Implementation Guide](#)
- [HL7 Attachments Supplemental Guide](#)
- Da Vinci/Carin Use Cases:
 - HL7 FHIR - CARIN IG Digital Insurance Card
 - HL7 FHIR DA Vinci Clinical Document Exchange 2.0.0 (CDEX)

WG: Pharmacy (PHAR)

URL:

<https://confluence.hl7.org/display/PHAR/Pharmacy?src=spaceMenu>



Develops standards for pharmacy-related data exchange including the definition of the medications and their prescription, dispense and administration



Pharmacy (PHAR) FHIR Resources

Medication: From definition to administration

Medication, MedicationAdministration,
MedicationDispense, MedicationKnowledge,
MedicationRequest, MedicationStatement

PHAR Projects

- [CARIN Consumer-facing Real-time Pharmacy Benefit Check](#)
- [CodeX Medication REMS FHIR IG](#)
- [daVinci Formulary Project](#)
- [NHSN Inpatient Medication Report](#)
- [Patient Medication List Guidance](#)
- [Standardized Medication Profile](#)
- [US Prescription Drug Monitoring Program \(PDMP\) FHIR Implementation Guide](#)

WG: Public Health



URL:

<https://confluence.hl7.org/display/PHWG/Public+Health+Work+Group>

Public health data exchange and reporting.

FHIR R4 Resources: **Immunization**,
ImmunizationEvaluation,
ImmunizationRecommendation

Only 30% of the projects are FHIR related. Most are HL7 V2.x or CDA.



FIGURE 2: Ten Essential Public Health Services
Source: Centers for Disease Control and Prevention

Public Health Projects (only FHIR related)

- Birth and Fetal Death FHIR IG
- Birth Defects DAM and FHIR IG
- Development and Maintenance of Immunization-related FHIR Resources
- FHIR IG for Immunization Forecasting
- FHIR Lab Results
- HL7 FHIR® Implementation Guide: Electronic Case Reporting (eCR)

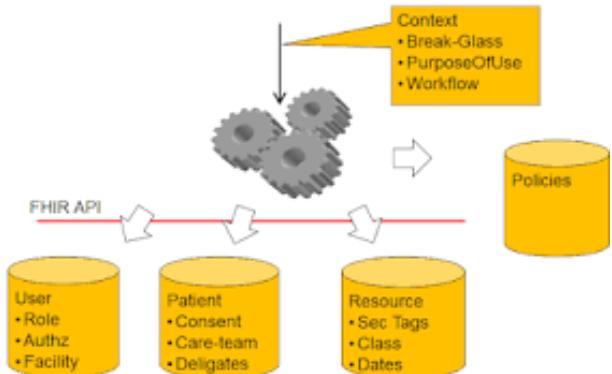
Public Health Projects (only FHIR related)

- NHSN Healthcare Associated Infection (HAI) Reports for Long Term Care Facilities (CDA & FHIR)
- ODH in HL7 v2 and FHIR
- Vital Records Death Reporting FHIR IG

WG: Security

URL:

<https://confluence.hl7.org/display/SEC/Security+Work+Group>



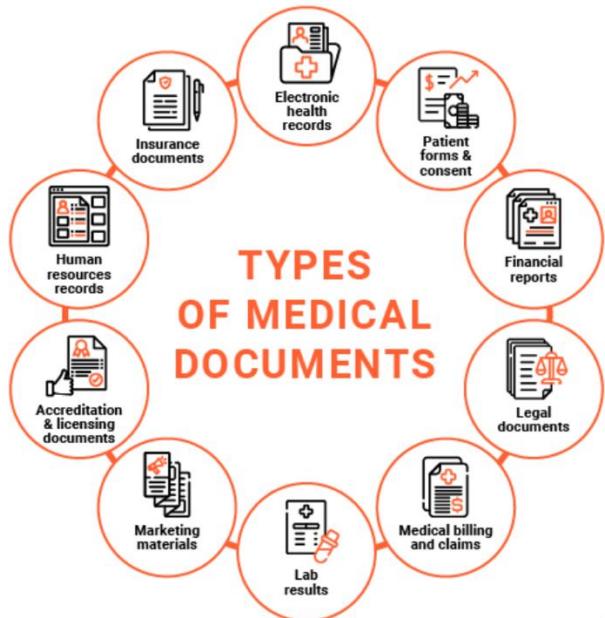
Security and privacy policy, role, and privilege management, access control, auditing to support surveillance and privacy use cases.

FHIR R4 Resources: **AuditEvent**, **Provenance**

SEC Projects

- Share with Protections White Paper Project
- HL7 Privacy and Security Information Model
- Privacy and Security Architecture Framework Project (PSAF)
- Basic Provenance Implementation Guide
- Data Segmentation For Privacy (DS4P)
- Composite Security and Privacy DAM
- FHIR - GDP

WG: Structured Documents



URL:

<https://confluence.hl7.org/display/SD/Structured+Documents>

Exchange and creation of structured documents

FHIR R4 Resources: **Composition**,
DocumentManifest,
DocumentReference



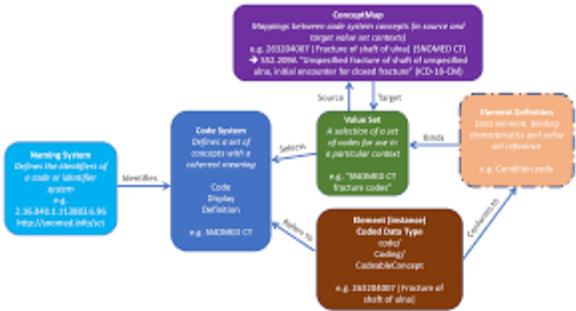
SD Projects

- [Consolidated CDA \(C-CDA\) Project](#)
- [C-CDA Companion Guide](#)
- [CCDA-on-FHIR](#)
- [C-CDA Rubric Criteria Project Page](#)
- [CDA IG Quality Criteria Project](#)
- [CDA Questionnaire Form and Response](#)
- [Healthcare Associated Infection Reports](#)
- [Occupational Data for Health](#)
- [Advance Directives Templates, Release 1 STU2 - US Realm](#)
- [Personal Advanced Care Plan \(PACP\)](#)
- [Pharmacist Care Plan](#)
- [US FHIR Core STU Update](#)
- [PHMR](#)
- [POLST CDA IG](#)
- [SDWG Administrative Activities](#)

WG: Terminology Infrastructure / Vocabulary

URL:

<https://confluence.hl7.org/pages/viewpage.action?pageId=5998679>



Terminology and vocabulary to support consistent semantic data exchange

FHIR R4 Resources: **CodeSystem**, **ConceptMap**, **TerminologyCapabilities**, **ValueSet**



VOC Projects

- [The Gender Harmony Project](#)
- [Guidelines for a Standardized Terminology Knowledge base Project](#)
- [Vocabulary Pilot Feedback](#)



Accelerators

URL: <https://confluence.hl7.org/display/FA>

Begun only 4 years ago, the Accelerator program assists implementers across the healthcare and research spectrum in the creation of FHIR API based implementation guides and critical public- and private-sector solutions.





Argonaut Project

An implementation community comprising leading technology vendors and provider organizations to accelerate the use of FHIR and OAuth in health care information exchange.



Highlight Reel

- SMART App Launch
- CDS Hooks
- Bulk Data Access
- Subscriptions
- Clinical Notes
- International Patient Access
- USCDI => US Core
- EHI Export API



Use Case Focus in 2024

- ② US Core 7 design for USCDI v4
- ② User Access Brands and Endpoints
- ② Reporting Changes (_lastUpdated)
- ② US Core 8 design for USCDI v5
- ② FHIR Write - CGM
- ② Bulk Optimize

CARIN Alliance

A multi-sector collaborative working to advance consumer-directed (including authorized care givers) exchange of health information.



Highlight Reel

[Consumer Directed Payer Data Exchange \(CARIN IG for Blue Button®\)](#)

[CARIN IG for Digital Insurance Card](#)

[CARIN Patient-facing Real time Pharmacy Benefit Check \(RTPBC\)](#)



Project Focus in 2024

Lots of references in CMS rules:

- ② Recommended moving to STU2, which would enable compliance with oral and vision claims requirements via Patient Access API

- ② CARIN Digital Insurance Card v1.1.0
+Support for SHL and SHC

- ② Piloting v1.0.0 with 7+ orgs as several states have passed requirements (CA, TX) and others considering

Member-driven community accelerating interoperable data modeling and implementation around HL7 FHIR standards, such as mCODE, leading to improvements in health care and research in cancer, cardiovascular health, genomics, and beyond.



Highlight Reel

[mCODE](#)

EHR Endpoints for Cancer Clinical Trials

Integrated Trial Matching for Cancer.

Patients and Providers

Cancer Registry Reporting

[Radiation Therapy Data for Cancer](#)

Prior Authorization in Oncology

[Genomics Data Exchange](#)

CardX Hypertension Management



Use Case Focus in 2024

② Genomics Operations

② Quality Measures for Cancer

② Risk Evaluation and Mitigation
Strategies (REMS) for key medications

② Cardiac Implantable Electronic Devices

Da Vinci



Industry leaders and health IT technical experts who are working together to accelerate the adoption of HL7® FHIR® as the standard to support and integrate value-based care data exchange across communities.

Clinical Data Exchange



Payer Coverage
Decision Exchange+



Clinical Data
Exchange (CDex)♦



Payer Data Exchange
(PDex)*

Coverage, Transparency & Burden Reduction



Coverage Requirements
Discovery (CRD)*



Documentation Templates
and Rules (DTR)*



Prior-Authorization
Support (PAS)*

Foundational Assets



Member
Attribution List♦



Notifications*



Health Record
Exchange (HREx)



Postable Remittance



Formulary*



Plan Net/Directory*



Patient Cost
Transparency (PCT)*

Quality & Risk



Value Based
Performance Reporting
(VBPR)



Data Exchange for Quality
Measures/Gaps In Care
(DEQM/GIC)♦



Risk Adjustment (RA)

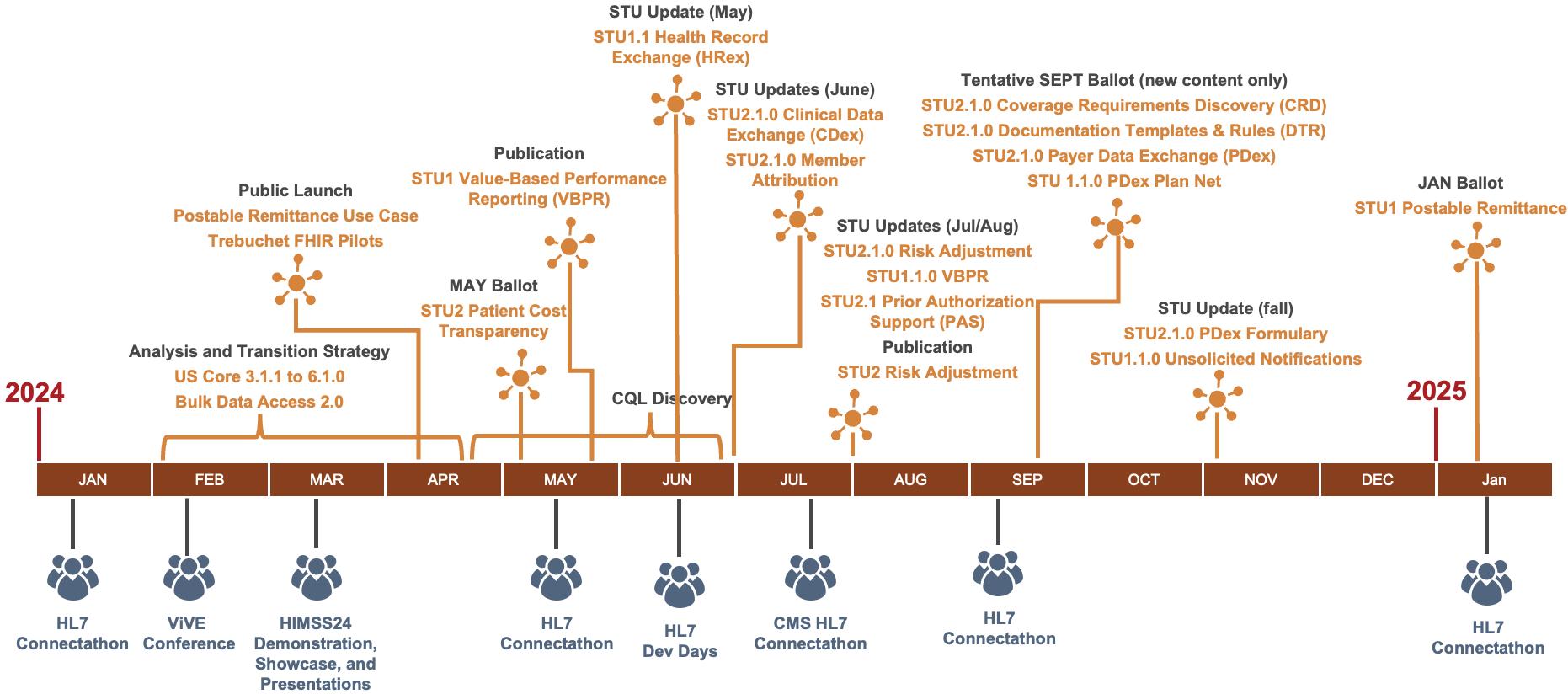
* Referenced in or supports Federal Regulation

♦ Aligned with expected Federal Regulation

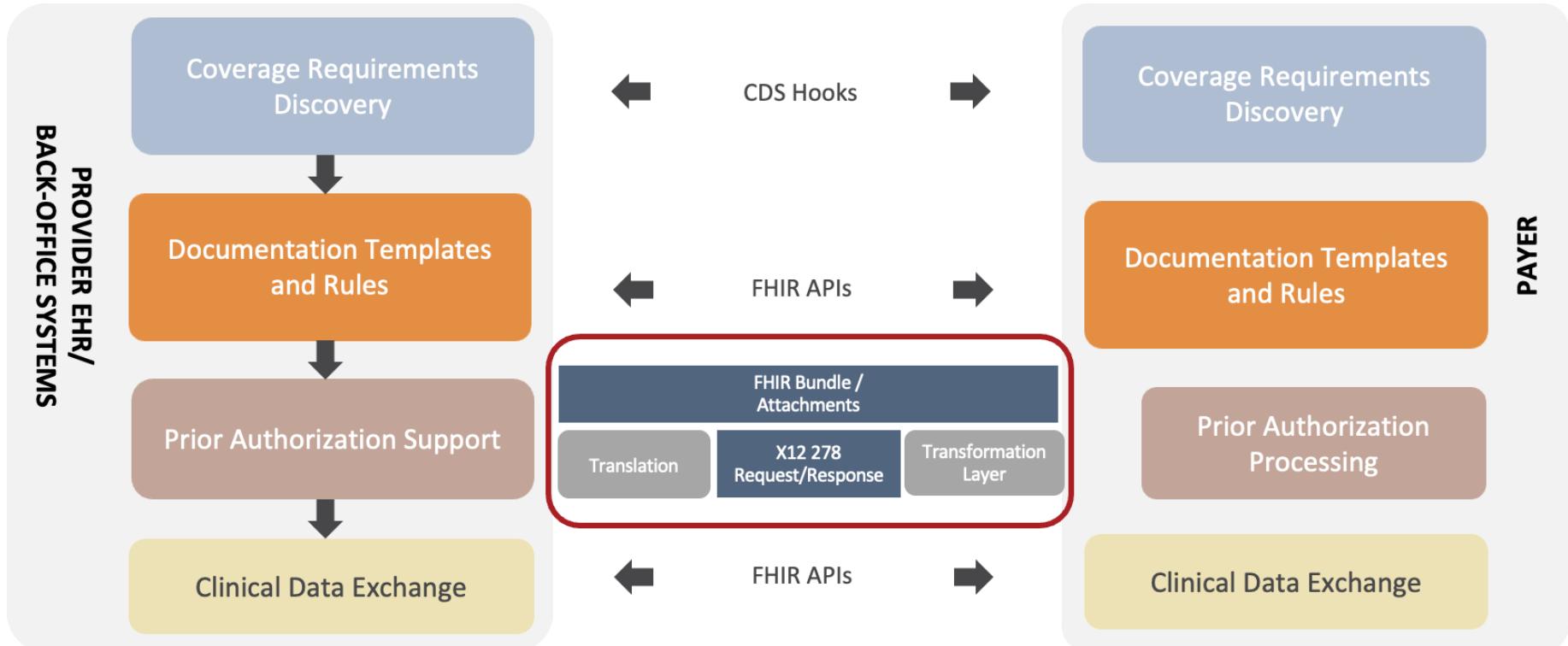
+ Guide Paused and Core Functionality moved to PDex

→ Dial denotes progress in current STU Phase

2024 Implementation Guide Roadmap



Prior Authorization — Burden Reduction



FAST



A community that identifies FHIR scalability gaps, defines solutions to address current barriers, and identifies needed infrastructure for scalable FHIR solutions.



Highlight Reel



Project Focus in 2024

[Identity](#)

[Security](#)

Directory

Consent

Testing and Versioning

STU2 development:

- Identity level requirements in patient credentials
Matching and expanding text on Use Cases

Adoption in TEFCA!

- STU2 development beginning

Post ballot - transitioning vocabulary content to terminology.hl7.org

- Defining project scope

- Community discussions



Gravity Project

A collaborative initiative with the goal to develop consensus-driven data standards to support the collection, use, and exchange of data to address the social determinants of health.



Highlight Reel

Terminology work stream

[Curated ValueSets](#) of social risk concepts

Technical work stream

[FHIR IG](#)

Implementation work stream

Testing, pilots, adoption



Use Case Focus in 2024

New consensus domains

Utility Insecurity

Digital Access

Digital Literacy

Program classification terminology

STU2.2 includes

Updated terminology

Clarifying narrative

Explanations re Support for Assessment Instruments

Social care co-design activities

Developing implementer-focus resources

Technical assistance to 4 pilots, including NY State for 1115 waiver



Vulcan

Serving the needs of the clinical and translational research communities through the implementation of HL7 FHIR standardized data exchange.



Highlight Reel

[Electronic Medicinal Product Information \(ePI\)](#)

[Retrieval of Real World Data for Clinical Research](#)

[Clinical Study Schedule of Activities](#)

[Adverse Events](#)



Use Case Focus in 2024

- ② Phenomics Exchange for Research and Diagnostic
- ③ FHIR to OMOP
- ④ Implementation Bridge: connecting multiple guides
- ⑤ Utilizing the Digital Protocol
- ⑥ Sample data



Joint Initiative Council



Other Initiatives

Gemini: Projects are hosted by HL7 or IHE

JIC: Projects are hosted by each SDO, with JIC coordination

WHO: Support in creating translation files for HL7 FHIR IG. Support for use of WHO Family of terminologies and classification



Organizations with Agreements with HL7

-  America's Health Insurance Plans (AHIP)
-  American Dental Association (ADA)
-  American Hospital Association (AHA)
-  American Medical Association (AMA)
-  American Medical Informatics Association (AMIA)
-  American Society for Testing Materials (ASTM)
-  Council for Affordable Quality Healthcare (CAQH)
-  CEN/TC 251
-  Clinical Data Interchange Standards Consortium (CDISC)
-  Coalition for Health AI (CHAI)
-  Digital Imaging and Communication In Medicine (DICOM)
-  SNOMED International
-  Integrating the Healthcare Enterprise International, Inc (IHE)
-  Interamerican Development Bank

-  International Conference on Harmonisation (ICH)
-  International Organization for Standardization (ISO)
-  Joint Initiative Council (JIC)
-  Object Management Group (OMG)
-  Observational Health Data Sciences and Informatics (OHDSI)
-  Open Concept Lab, LLC (OCL)
-  OpenMRS, Inc.
-  Pharmaceutical Users Software Exchange (PhUSE)
-  Regenstrief Institute, Inc.
-  The Sequoia Project
-  TransCelerate BioPharma, Inc
-  UDAP.org
-  Web3D Consortium
-  Workgroup for Electronic Data Interchange (WEDI)
-  World Health Organization (WHO)

The Gemini Project / Joint work with IHE

Current Projects



Device Interoperability using SDPi+FHIR

Service-oriented Device Point-of-care Interoperability (SDPi) Technical Framework

FHIR Multi-domain HIE Architecture

Develop guidance on using the FHIR API that allows intermediaries to be deployed with

The screenshot shows the FHIR Multi-domain Home page in Confluence. The header includes the Confluence logo, a search bar, and navigation links for Pages, Project Details, Projects, Recent, Glossary, More, and Create. A sidebar on the left has sections for Home, About, News, Events, and Help. The main content area features a large title "HL7 FHIR Multi-domain HIE Architecture" with a sub-section "Ensuring to Deliver Interoperability Across Domains". Below this is a "ACTION" button. The page contains several paragraphs of text, a table, and a list of questions. At the bottom, there's a "Join the mailing list" section with a link to "Join the Project Mailing List".

Medication Prescription and Delivery

Create FHIR-based IHE Profile for medication prescription and delivery workflow

Project: Medication Prescription and Delivery

The goal of this work item is to produce IHE Profiles for Medication Prescription and Delivery purposes.

Work-items

Within this Generic Project the following work-items are maintained:

IHE Profile: "Medication Prescription and Delivery (MPD)"

Creation of a IHE-Accredited Profile for the Medication Prescription and Delivery Workflow, fully utilizing medication-related FHIR RS resources and RESTful transport.

1. Work is performed in regular working meetings (see schedule, agenda and minutes on MPD main page).

Home-work-item:

- Housing Committee: H7 Pharmacy
- Accompanying Committee: H7 Pharmacy

Work-item Kickoff: March 2023

More Information

See the IHE MPD workshop for more information

LAMP license: <https://www.ihe.net/resources/ihe-lamp.html>

Project: Med Prescription and Delivery

Joint Interoperability Council

HL7 ❤️ JIC

Joint Initiative Council

The Forum for International Health SDO Collaboration

A non-legal consortium established in 2007, now with 13 members advancing global interoperability together

Current Chair

HL7 International (D Vreeman)



Digital Imaging and Communications in Medicine



Integrating the Healthcare Enterprise



JIC Executive Meeting in Athens

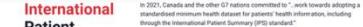
JIC Projects

Joint Initiatives



International Patient Summary

A suite of linked standard that support a non-exhaustive set of basic clinical data to support unscheduled cross-border care.



International Patient Summary

The Pan-Canadian Patient Summary Specification (PS-CA) will allow care providers to contribute patient health information into clinical repositories to improve health outcomes and reduce administrative burden for clinicians.

In October 2022, the first iteration of the PS-CA, based on the IHE International Patient Summary (IPSum) specification, will be implemented. This initial version of the PS-CA will support the IHE IPSum 2022. Both specifications will continue to evolve in parallel as a result of implementation and community feedback, with increased convergence anticipated over time. The PS-CA will be a single, integrated specification to create and share a condition-independent and specialty-specific patient summary.

Because the PS-CA is based upon the IPSum, it is not the IPSum, the provinces and territories will be able to configure its building blocks to address any necessary variances while aligning to the PS-CA specification.

Project: IPS

Identification of Medicinal Products

A suite of standards to describe medicinal products for exchange between global regulators, manufacturers, suppliers and distributors.

ISO IDMP is comprised of 5 standards:

[ISO 11238](#) | [ISO 11239](#) | [ISO 11240](#) | [ISO 11616](#) | [ISO 11615](#)



*The European Medicines Agency is using FHIR
to implement IDMP*

Project: IDMP

Standard Knowledge Management Tool

Gathers information, terms, and definitions from standards into a single, searchable online home.

Project: SKMT

BLOCK 2: PUBLIC HEALTH WORKGROUPS

- HL7 PH Specific Workgroups
- HL7 PH Accelerator
- HL7 PH Projects
- Public Health chat (Zulip) Streams

WG: Public Health



URL:

<https://confluence.hl7.org/display/PHWG/Public+Health+Work+Group>

Public health data exchange and reporting.

FHIR R4 Resources: **Immunization**,
ImmunizationEvaluation,
ImmunizationRecommendation

Only 30% of the projects are FHIR related. Most are HL7 V2.x or CDA.



FIGURE 2: Ten Essential Public Health Services
Source: Centers for Disease Control and Prevention



Public Health Projects (only FHIR related)

- Birth and Fetal Death FHIR IG
- Birth Defects DAM and FHIR IG
- Development and Maintenance of Immunization-related FHIR Resources
- FHIR IG for Immunization Forecasting
- FHIR Lab Results
- HL7 FHIR® Implementation Guide: Electronic Case Reporting (eCR)

Public Health Projects (only FHIR related)

- NHSN Healthcare Associated Infection (HAI) Reports for Long Term Care Facilities (CDA & FHIR)
- ODH in HL7 v2 and FHIR
- Vital Records Death Reporting FHIR IG



Helios

Helping public health to align with and benefit from the widespread standardization and transformation that is happening around digital health data



Highlight Reel

Make data in public health systems
accessible in Bulk

Deliver aggregate information to public
health

Public health query and response
(leveraging FHIR APIs)



Use Case Focus in 2024

Bulk patient matching
Advance testing to real world pilots

Defining high priority measures
Plan pilot exchange tests

Test initial use cases (via QHIN/HIE)
Case notifications
Patient matching
Query for STI clinical data
Query for NBS data
Query for Cancer data

Zulip Public Health Stream

- "Zulip" or chat.fhir.org
- Where the FHIR Community thrives

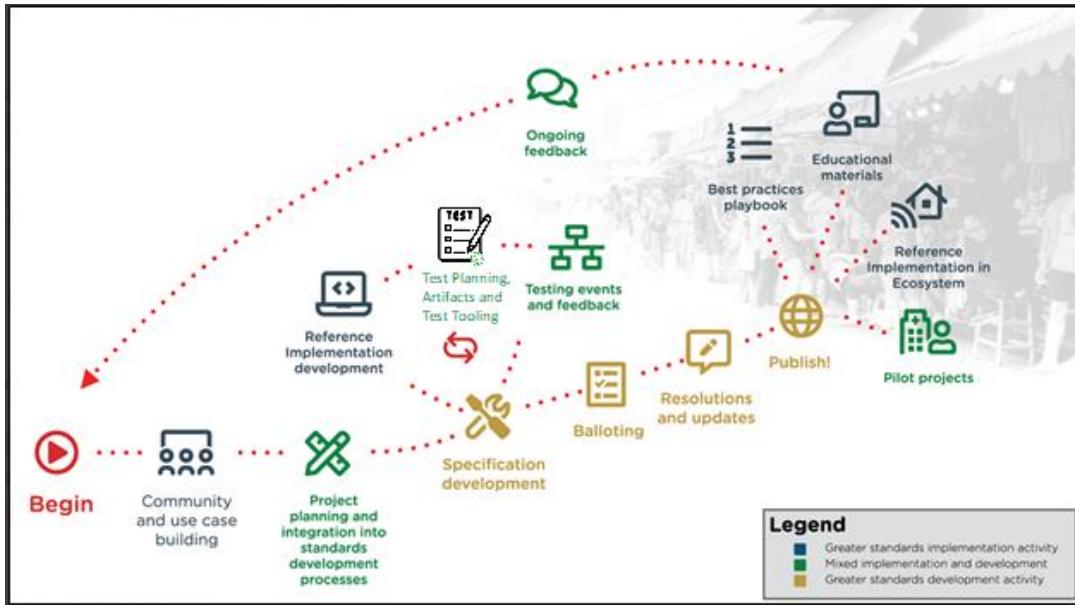
+  Public Health	57	Public Health aims to be a welcoming stream t...	
+  Public Health 2020-05 Connectathon	61	For all May 2020 Public Health track discussions	
+  Public Health Report of IHL Traveler for Air Co...	7	Stream to discuss the creation and utilization ...	
+  eCR Now FHIR App	275	eCR Now FHIR App for reporting to public heal...	
+  Helios Accelerator	126	Helios Public Health FHIR Accelerator	
+  Helios Aggregate Data	43	Discussion of exchange of aggregate data bet...	
+  Helios Bulk Data	58	Discussion about the application of the bulk d...	
+  Helios Query & Response	53	Helios Query & Response Public Health FHIR P...	

<https://chat.fhir.org/#narrow/channel/379724-Public-Health>

BLOCK 3: INTRO TO CONNECTATHON

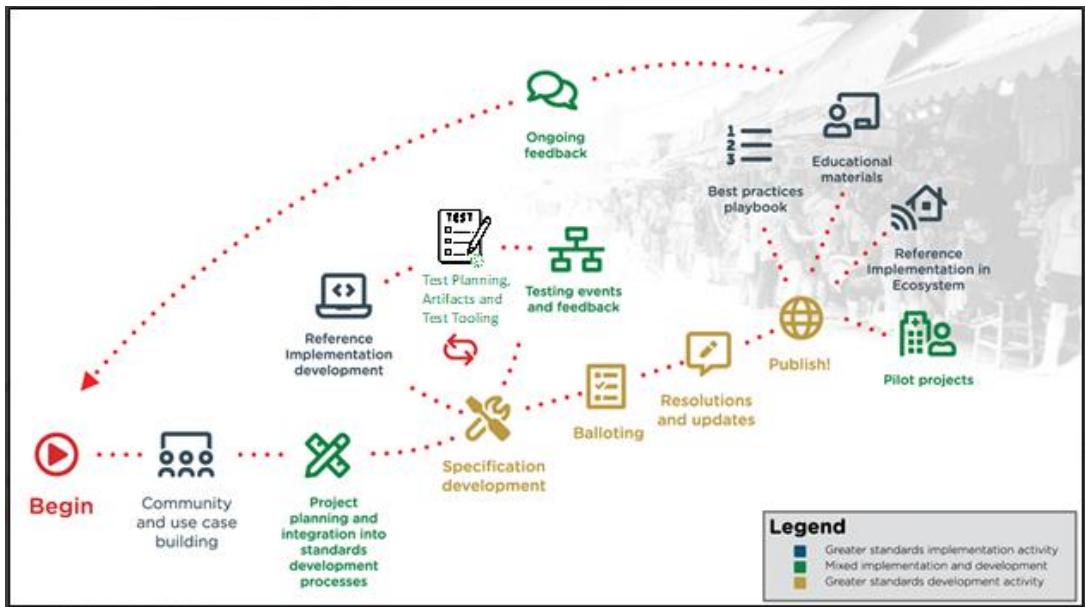
- Testing
- Testing glossary
- HL7 Projects

TESTING



Once you have an Implementation Guide, there are a lot of 'testing' activities involved. Even with a 'partially baked' implementation guide

DEFINITIONS: Specification Development

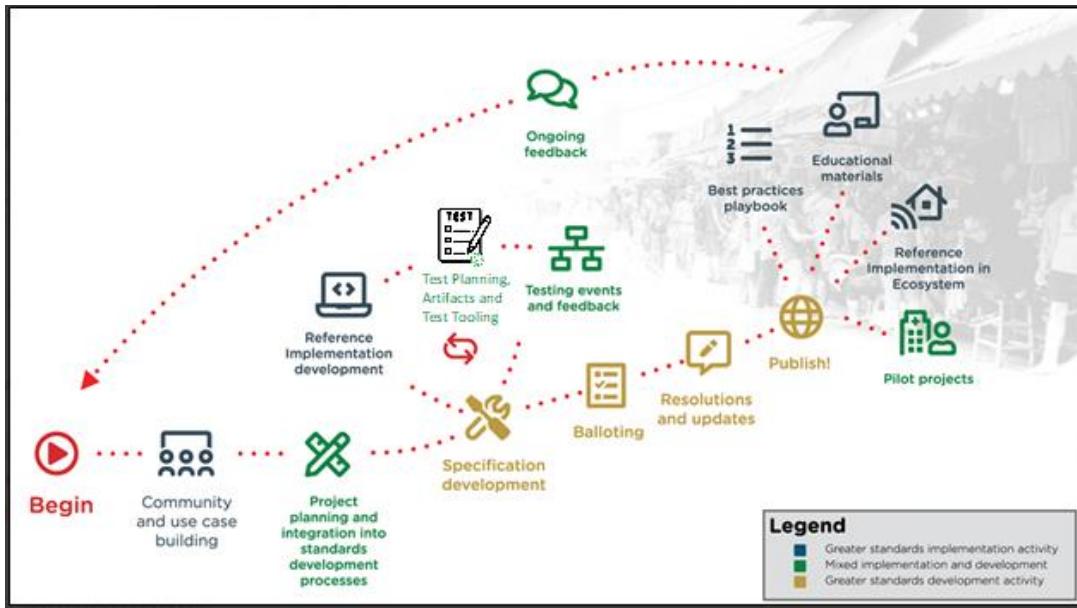


Specification Development

Writing the Implementation Guide: how we use FHIR for our realm / domain / use case.

The IG should include requirements and test plans.

DEFINITIONS: Reference Implementation



Reference Implementation

In the past: Just some examples

Now: Open Source Working Software (may not be production level) able to demonstrate an evolving fraction of the capabilities described by the IG

DEFINITIONS: FHIR Foundry

The screenshot shows the HL7 FHIR Foundry catalog interface. On the left, there's a sidebar with filters for TECHNOLOGY (FHIR Servers, FHIR Clients, Data & Scripts, COL Libraries, Other), BADGES (HL7 Accelerators, CDS Examples, Function, World Regions, Domains), and a Powered by "HL7 FHIR application delivery" section. The main area displays a grid of project cards:

- wildFHIR**: WildFHIR Community Edition Server
- HAPI FHIR**: HAPI FHIR is a complete implementation of the HL7 FHIR standard for healthcare interoperability in Java.
- DA VINCI**: DA VINCI is a CLINICAL DATA EXCHANGE (CDS) system.
- DA VINCI**: DA VINCI is a POSTABLE REMITTANCE system.
- fhir-candle**: fhir-candle is a Postable Remittance (Pemt) FHIR API server to retrieve a copy of a previously issued remittance. Rather than
- FUME FHIR Converter**: FUME is a FHIR conversion and transformation engine, designed to enable any data analyst to express
- FAST - UDAP Security Server**: A server reference implementation for the FAST Security for Scalable Registration, Authentication, and
- SMART Bulk Data CLI Client**: The Bulk Data client is an open-source, NodeJS command line interface for making bulk data requests
- Documentation Template and Rules (DTR) Examples CDS Library**: A library of Clinical Decision Support Rules (CDS) to support the



Interested? Watch this 8min video later:
<https://www.youtube.com/watch?v=oN99GPLBCvQ>

FHIR FOUNDRY

<https://foundry.hl7.org>

Gallery: A place to TRY the RIs (client/server). You can also download a working version to your own local environment

Hosting: Assets where the Ris can be installed

DEFINITIONS: Test Planning

- **Actors**
 - (which systems will interact)
- **Interactions**
 - (when will they share information)
- **Methods**
 - (which API methods/operations will be used)
- **Expected Results**
 - (which results we expect from each operation)

What do we need to test?

Based on which are the requirements and possible interactions
Remember that FHIR is a framework for creating APIs
Sometimes complex ecosystems: several services, terminology, security, etc.

DEFINITIONS: Test Tooling

- **Touchstone** by AEGIS (testing as a service, complex testing and testing results management)
- **Inferno**: created by ONC (with Test Kits, no result management)
- **Karate**
- **Postman**
- **Tooling based on the actor apps platform**
 - Java (example: Junit)
 - Javascript (example: Jasmine)
 - C# (example: xUnit)

DEFINITIONS: Testing Events

- That's what a CONNECTATHON is (for HL7)
- A face-to-face or virtual event when we get together to test our implementations of a specific implementation guide
- **Goal of Testing:**
 - Evaluate the feasibility, maturity and correctness of the IG with the community of implementors
- **Not-A-Goal:**
 - Evaluate each implementor's implementation to certify products

DEFINITIONS: What do we test

- Always against requirements. No requirements->No testing
- Basic transactions (results and HTTPS status)
- Complex transactions (involving more than one server and/or technology)
- What is "wrong" with this specific transaction:
 - The client? The server?
 - The IG? (is not clear, is asking something very difficult to implement, etc)

BLOCK 4: STANDARDS IMPLEMENTATION RESOURCES

- Open Source Tools for FHIR
- The FHIR Foundry
- HL7 Education Resources

Where to find Open-Source Tools for FHIR

- The FHIR Foundry
 - <https://foundry.hl7.org/>
- Open Source FHIR Implementations (Diverse Categories)
 - <https://confluence.hl7.org/display/FHIR/Open+Source+Implementations>
- Public Test FHIR Servers
 - <https://confluence.hl7.org/display/FHIR/Public+Test+Servers>

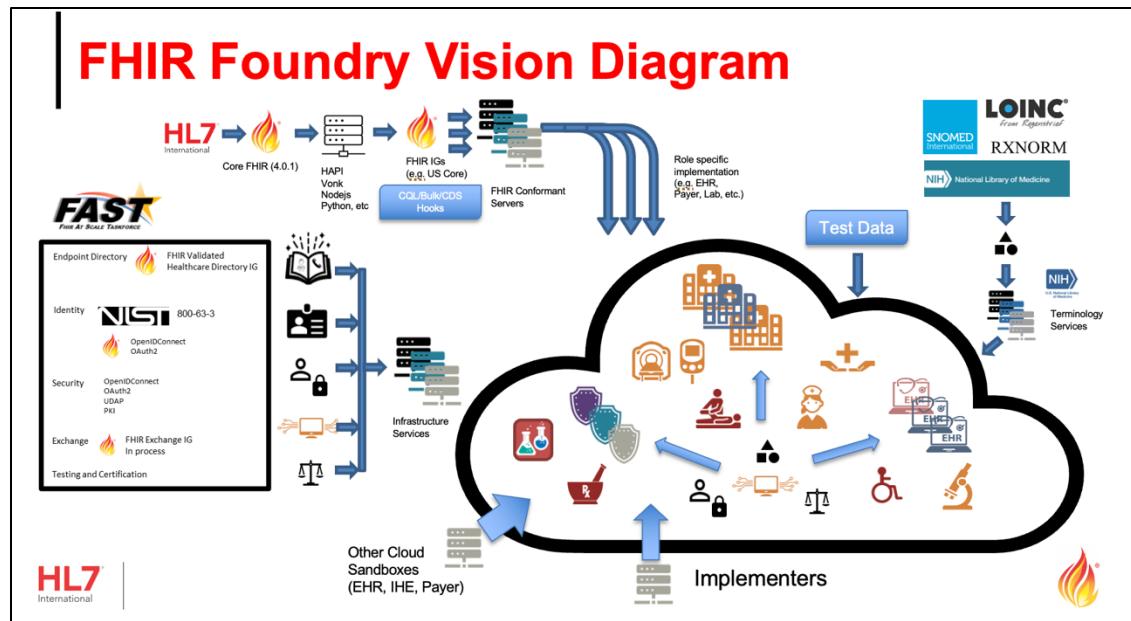
In this session: just some selected tools...We cannot review "everything" here!!

THE FHIR FOUNDRY: VISION

A robust ecosystem to support standards developers and implementers in identifying, demonstrating and testing FHIR specs.

...and...

OPEN
SOURCE
PRODUCTS!



The HL7 FHIR FOUNDRY

A place where anyone in the world can discover, test and try RIs for HL7 Specs

GALLERY

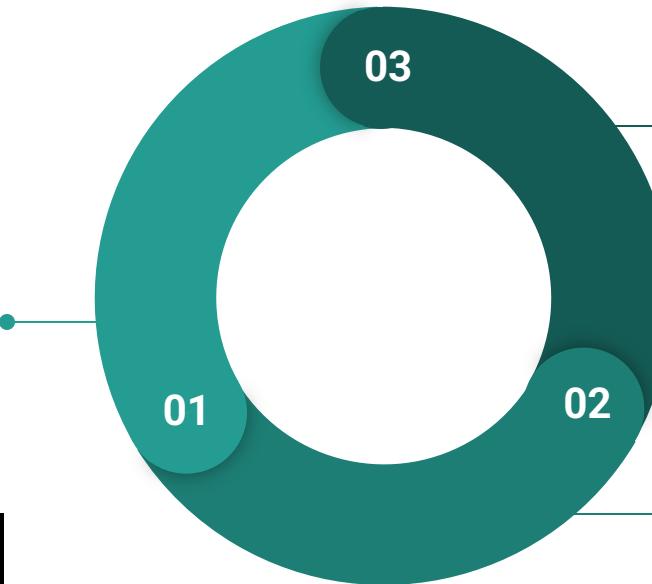
<https://foundry.hl7.org/>

01-DISCOVER

Search projects by technology, role, description or category/domain [KNOW MORE!](#)

What can I do using FHIR in Genomics?

How can I manage provider registries?



03- TEST

Use the RI Server
Can I try my own client against a known server?

02-TRY

Use a client RI
Can I try an app to see what it actually MEANS to implement this for the end user?
Re-Use / Learn from the Source Code

Discover

foundry.hl7.org

Jira: Implementaci... Jira: DK (Otros) Jira: Kern Lis + (DK) Jira: Kern Lis + (Q... Zendesk HL7 Email Calendar - Diego... HL7 FHIR DevDays... Making Requests ... All Bookmarks

About Catalog Developer Login Feedback

Search x

TECHNOLOGY

- FHIR Servers
- FHIR Clients
- Data & Scripts
- CQL Libraries
- Other

BADGES

- HL7 Accelerators
- Argonaut
- CARIN Alliance
- CodeX
- Da Vinci
- FHIR
- Gravity
- Hello
- Function
- Directories
- Financial
- Infrastructure
- World Regions
- United States
- Domains
- Genomics
- Pharmacy
- Terminology
- Testing

1 2 > 12 per page Name Last Updated Featured (Weighted) ↓

fhir-candle
fhir-candle When you need a small FHIR. 'fhir-candle' is a small in-memory FHIR server that can be used for testing and

Spark
Spark is an open-source FHIR server developed in C# that implements a major part of the FHIR specification. Now

Coverage Requirements Discovery (CRD) - Server
A payer server reference implementation for the

HAPI FHIR
HAPI FHIR is a complete implementation of the HL7 FHIR standard for healthcare interoperability in Java.

Meld Community Edition
Meld Community Edition (Meld CE) is InterOp.Community's open source FHIR sandbox solution for

Get Molecular Consequences App
Enter patient and gene, and get back all overlapping simple variants, structural variants, and

Burden Reduction Solution Bundle
This bundle provides a configurable Docker stack to run multiple reference implementations to

Prior Authorization Support (PAS) - Client
Da Vinci - PAS Subscription Notification Client Server Backend client

Plan Network Directory Examples
Da Vinci Plan-Net Resources Sample data for Plan Net Directory This project uses freely available

SKYAPP
gravity PROJECT CLIENT

TELEMETRY

Skycapp Telemetry Bundle
This Open Source software bundle adds OpenTelemetry-compatible capture and visual analytics for the Gravity SDOH Clinical

DA VINCI PATIENT COST TRANSPARENCY (PCT)

Price Cost Transparency (PCT) Client
This project provides a web application that is capable of generating GFE request and

Try

The screenshot shows the HAPI FHIR product page on the HL7 Foundry website. The page includes a logo featuring a cartoon raccoon, a navigation bar with a back button, and a main content area with sections for infrastructure, licensing options (Apache 2.0), configuration wizard, instructions, build products, and automated deployment.

HAPI FHIR
Infrastructure

HAPI FHIR is a complete implementation of the HL7 FHIR standard for healthcare interoperability in Java. It is maintained by an open community developing software licensed under the business-friendly Apache Software License 2.0. HAPI FHIR is a product of Smile Digital Health and maintained on GitHub.

These configurations of HAPI will automatically transmit telemetry data if enabled in your platform configuration.

[Try It Now](#) [Support](#) [Source Code](#) [Leave Feedback](#)

Licensing Options
Apache 2.0 (free)

Configuration Wizard

Select Build: v7.2.0

Configuration: r4

Automated Deployment: You must first register a platform environment to your account.

Tasks: hapi-r4-postgresql

Default Runtime Settings

Name	Default	
Kind	Descriptions	Required?

INSTRUCTIONS

BUILT PRODUCTS

INCLUDED WITH

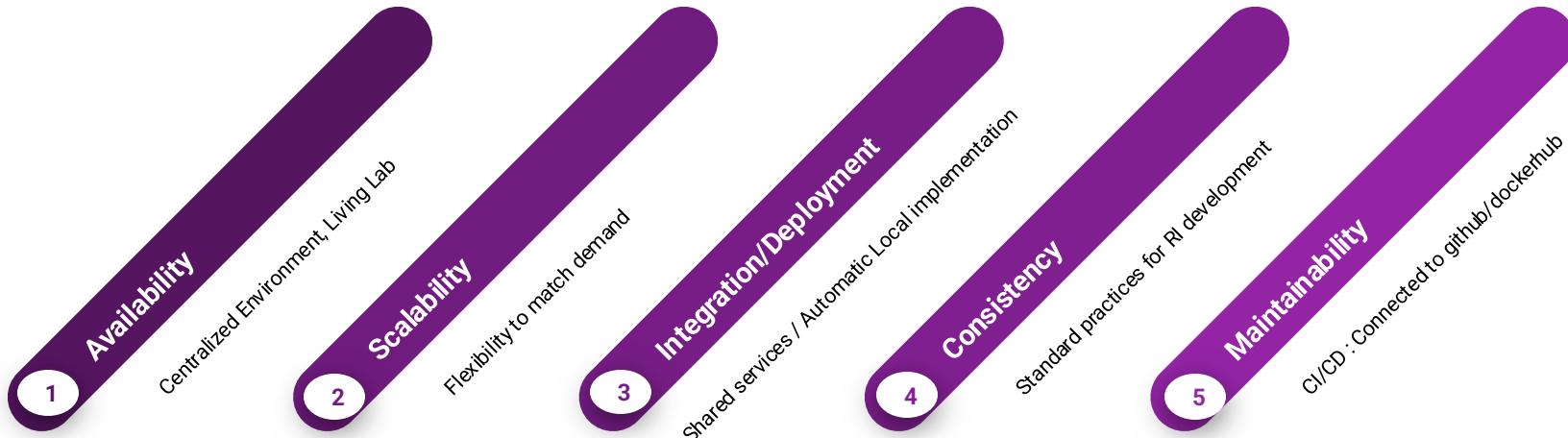
The HL7 FHIR FOUNDRY

A secure, HL7 managed place where we can install and run RIs for HL7 Specs

HOSTING

<https://cd.hl7.org/>

Server-less, container-based environment to host reference implementation (RI) clients and servers



Test Locally (your own) Deployment

The screenshot shows the Configuration Wizard interface for a product. On the left, under 'Select Build', 'v7.2.0' is selected. In the center, 'Configuration' is set to 'r4'. On the right, 'Automated Deployment' is shown with a note: 'You must first register a platform environment to your account.' Below this, the 'Default Runtime Settings' table lists various configuration parameters:

Name	Default	Kind	Descriptions	Required?
HTTP	8080:8080	portmap	HTTP service port.	<input type="checkbox"/>
JAVA_TOOL_OPTIONS	-javaagent:/app/opentelemetry-javaagent.jar	telemetry	Adds OpenTelemetry support.	<input type="checkbox"/>
OTEL_EXPORTER_OTLP_ENDPOINT	http://otel-collector:4317	telemetry	Where to send traces.	<input type="checkbox"/>
OTEL_SERVICE_NAME	hapi-fhir-r4-server	telemetry	Service name for trace collection.	<input type="checkbox"/>
OTEL_TRACES_EXPORTER	otlp	telemetry	Sets the trace export type	<input type="checkbox"/>
hapi.fhir.allow_cascading_deletes	true	environment	Whether or not to enable FHIR delete cascading to related records.	<input type="checkbox"/>
hapi.fhir.allow_external_references	true	environment	Whether unresolvable references can	<input type="checkbox"/>

On the far left, under 'Tasks', 'hapi-r4-postgresql' is selected, showing three items:

- 1 minimum instances
- 0 maximum instances
- 1500MiB minimum memory

Single Product Example

The screenshot shows the 'DA VINCI HL7 FHIR' Solution Bundle page for 'BURDEN REDUCTION (BR)'. It features a logo with a yellow figure, the bundle name, and a brief description: 'This bundle provides a configurable Docker stack to run multiple reference implementations to'. A large orange callout box on the right contains the text: 'Solution Bundle Example'.

Open-Source Tooling Categories

- IG Reference Implementations
- General Purpose Servers
- Profiling/Validation/Testing Tools
- Transformation and Mapping
- Client Libraries
- Terminology Servers
- *(there are more...not today. Sorry)*

Not all products in this section are listed in The FHIR Foundry...yet

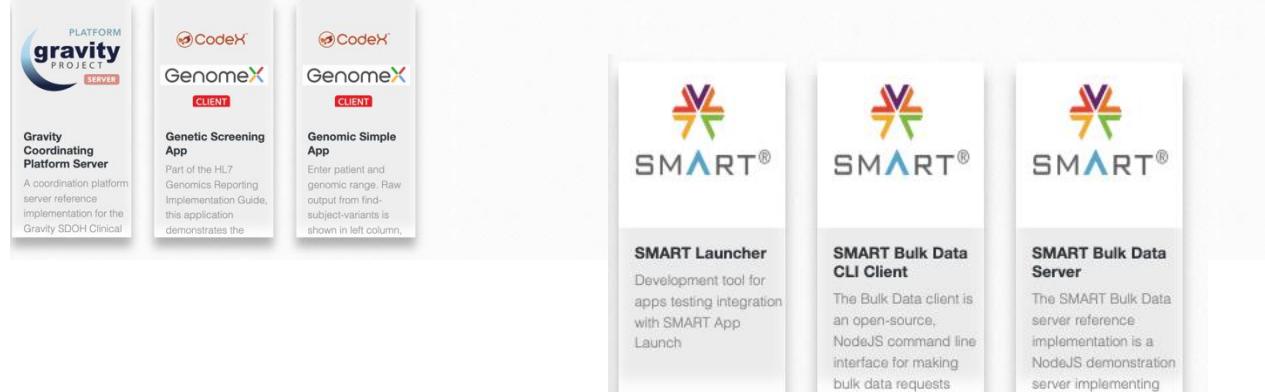
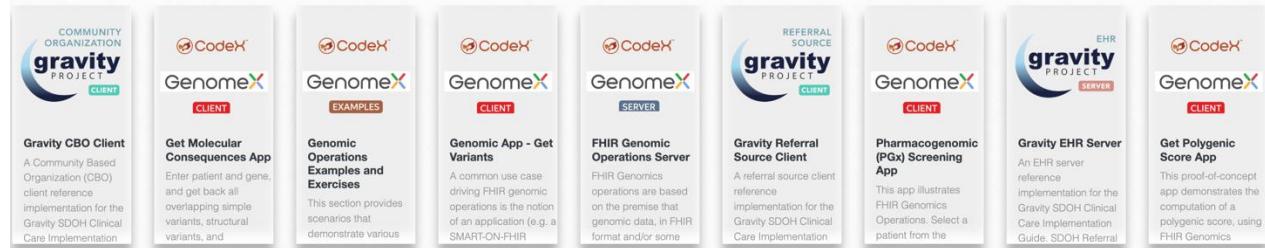
Inclusion in The FHIR Foundry is elective and requested by the product authors

Note: We try NOT to use the word "FHIR" because all these tools are FHIR based, but yes: it is "FHIR... something"

Category: Reference Implementations

Analysts: Try on-line, Devs: use the servers, or download&test in your environment

Gravity, CodeX, Argonaut Clients and Servers



Purpose of Certification

- Help develop HL7 proficiency in the industry
- Help professionals achieve industry recognition for their levels of proficiency and expertise
- Help employers develop HL7 expertise in their workforce
- Help employers identify candidates with HL7 initiative and expertise
- Develop best practices and a standardized workforce

Scope of the HL7 Certification Program

- Current tests are focused on the fundamentals of the most implemented standards in HL7
- Focused on core essential knowledge to ensure certified individuals are equipped to use the standard
- Our focus is on testing knowledge and proficiency

Structure of the Tests

- Format of test:
 - Multiple choice, multi-select and true/false questions
 - Closed book, but some tests provide specific resources you can use
 - No penalties for guessing
 - Two hours in length
 - 50-70 questions; passing score varies (depends on test)

Understanding Test Scope and Logistics

- The best assurance to passing an HL7 certification test is to study and master the competencies in the test tip sheet

HL7 Tip Sheet

A 1- or 2-page document related to a specific HL7 test that describes the test format and enumerates what is covered

www.hl7.org/documentcenter/public/training/HL7 FHIR Proficiency Study Guide.pdf

Preparing to Get Certified

- Review the tip sheet to plan your approach
- Take HL7 training courses to build your competency
- Prepare by studying the standard!!!!
- Leverage official HL7 certification preparation materials to ensure your readiness
- Register for the test

Test Specific Resources

- HL7 certification review courses
 - HL7 certification prep classes are designed specifically to help test takers as they finish their studies.
- HL7 practice tests
 - The official HL7 practice tests are carefully developed to reflect the actual test. If you struggle with the practice test, more preparation is required.

HL7 FHIR Study Guide

- Provides an overview of the relevant subject matter
- Can be used to focus on FHIR certification exam topics
- Contains chapter-specific knowledge exercises, essay questions and summary tests
- Answers are given at the end of the guide

HL7 Education: Asynchronous Courses

- HL7 Fundamentals (February, May, September)
- HL7 FHIR Fundamentals (April, July, November)
- HL7 FHIR Intermediate (March, June, September)
- HL7 FHIR Proficiency Exam Prep Course (March, June, September)

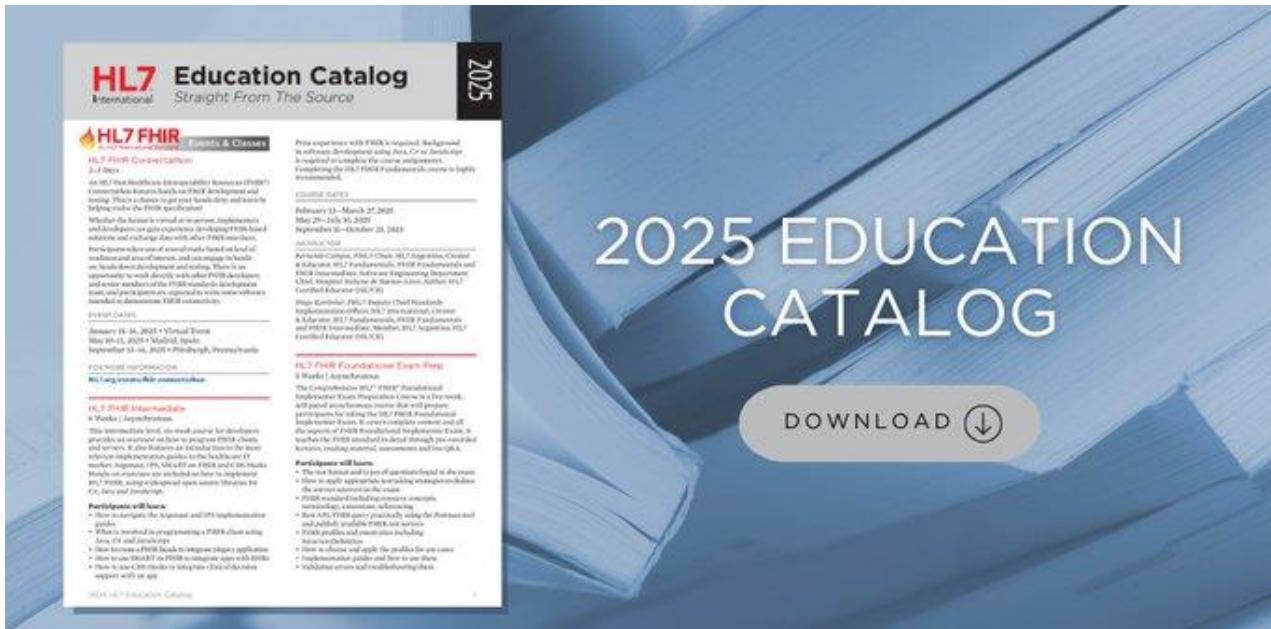
HL7 Education on Demand

- 24/7 source for HL7 training and education!
 1. Go to [HL7.org](https://www.hl7.org)
 2. Click the Training tab
 3. Select Education on Demand
 4. Choose Certification Bundles and Practice Exams
 5. Try “All Recent Courses” for other HL7 Courses

The screenshot shows the HL7 International website's main navigation bar at the top, with links for About, Standards, Membership, Resources, Events, Training, and Certification. The 'Training' tab is selected. Below the navigation is a banner for 'HL7 at HIMSS #HIMSS23' in Chicago, IL, April 17-21, 2023. The banner features a red 'LEARN MORE' button and a series of five dots indicating more content below. To the right of the banner is a sidebar titled 'My HL7 Account' with links for My Account and My HL7 Dashboard, and a 'Quick Links' section with links for Balloting, Committee Positions, Confluence, My HL7 Certifications, Ballot Calendars, and Work Groups & Listservs. At the bottom right is a 'Participate' section with links for Balloting Desktop, Conference Calls, FHIR Community Events, HL7 Chat, and JIRA. A logo for 'HL7 FHIR' with the text 'Release 5 Now Available!' and a 'Learn More' button is also present.

2025 Education Catalog

<https://t.co/G44dlwJdCO>



Test Logistics

- Register and pay for test on HL7 website (Member and student discounts available)
- Delivered two ways:
 - Online proctored testing from your own computer
 - Onsite at Kryterion testing centers located around the world
- Receive results and certificate immediately upon completion

Certificate Exams

1. Go to HL7.org
2. Click the Training tab
3. Select Certificate Exams (General Information)
4. Select the type of Exam
5. Click Register (Top Right)
6. Select Certificate Exams from the left sidebar

The screenshot shows a grid of eight certificate exam options, each represented by a shield-shaped icon with the HL7 logo at the top:

- HL7 Clinical Document Architecture (CDA) Specialist** (Students Only): \$315.00 Non-Member
- HL7 Clinical Document Architecture - Student Version**: \$170.00 DEFAULT
- HL7 FHIR (R4) Proficiency - Student Version**: \$170.00 DEFAULT
- HL7 Version 2 (V2) 2.8**: \$315.00 Non-Member
- HL7 V2 Control Specialist** (Students Only): \$170.00 DEFAULT
- HL7 Version 3 (V3) RIM 2.36**: \$315.00 Non-Member
- HL7 Version 3 (V3) RIM 2.36 - Student Version**: \$170.00 DEFAULT
- HL7 FHIR (R4) Proficiency**: \$315.00 Non-Member

Upon Passing the Exam

- Test takers that pass the exam will receive recognition by:
 - a listing in the HL7 Certification Directory
 - a digital badge (to proudly display on social media)
 - a certificate



Benefits of Certification

- Test takers: Prove their understanding of a particular HL7 standard specification
- Employers: Can identify individuals with expertise
- For HL7 and the world: Quality of workforce is improved and standardized