

HIMSS[®]19 CHAMPIONS OF HEALTH UNITE

Global Conference & Exhibition
FEB 11-15, 2019 | ORLANDO



interoperability
showcase™

Gemini Pilot Project: Imaging for Cancer Care

SessionID: ISED05, February 12, 2019

Chris Carr
Director of Informatics, RSNA



IHE
INTERNATIONAL

Open healthcare APIs are now the law of the land

The new 21st Century Cures Act mandates that medical records be accessible via open APIs.

By David Chiu December 14, 2016

With a stroke of his pen, President Obama turned the landmark *21st Century Cures Act* into law on December 13, 2016. This extensive healthcare bill sailed through both the U.S. House and Senate with huge bipartisan majorities, by focusing on improving patient outcomes through research, regulatory changes, and funding for initiatives like Vice President Biden's "cancer moonshot".

But buried deep inside the 996-page legislation is a subsection on IT that is poised to transform the way that doctors, hospitals, insurance companies, and patients interact with medical information. In clear language, the *Cures Act* mandates the use of open healthcare APIs beginning January 1, 2018, by requiring electronic health record (EHR) systems to have:

[API Management](#)

Share



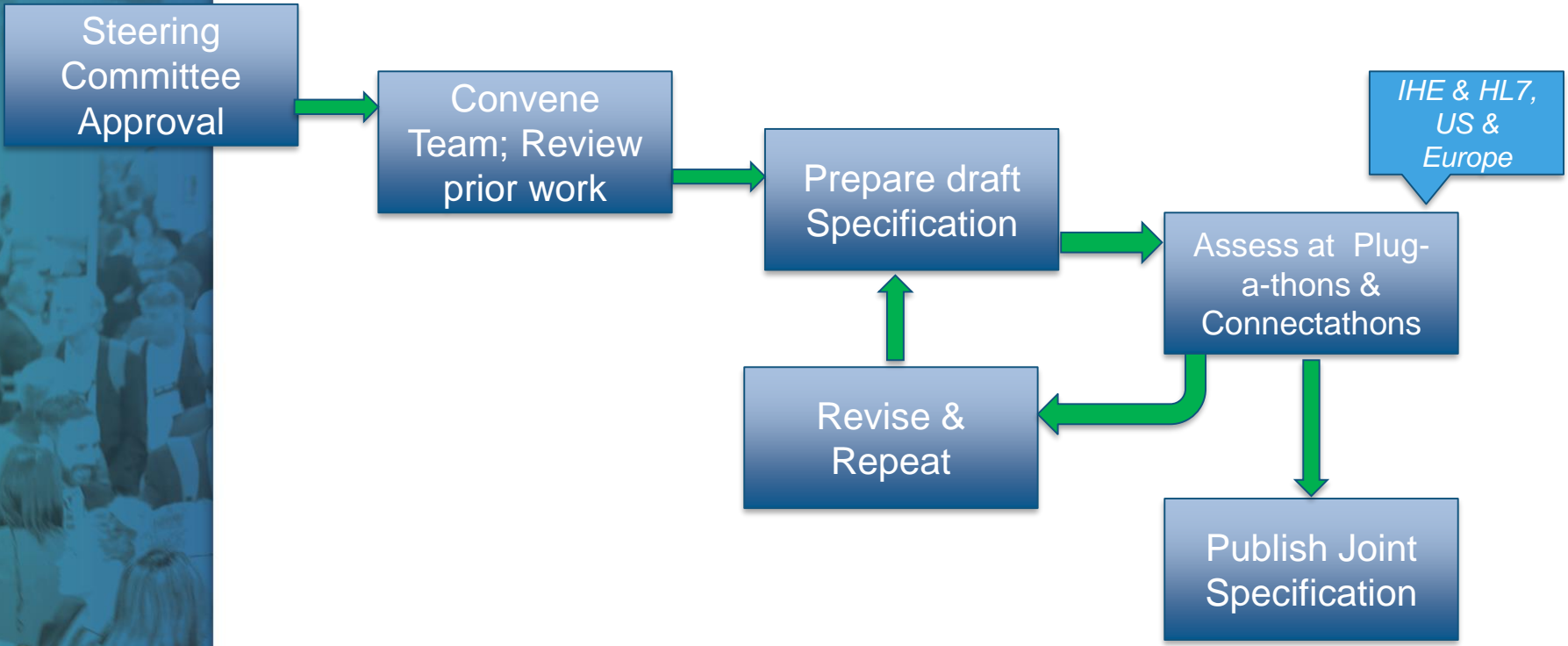
Gemini Builds on Sets of Connectathons



- HL7 FHIR Connectathons help implementers assess, test and explore new opportunities for applying the FHIR specification.
 - Testing as part of a connectathon is a pre-requisite for progressing resources and implementation guides up the FHIR Maturity Model
- IHE Connectathons (and plug-a-thons) 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)
 - Enables more formal testing of specific product solutions.



Leaping Forward thru Collaboration



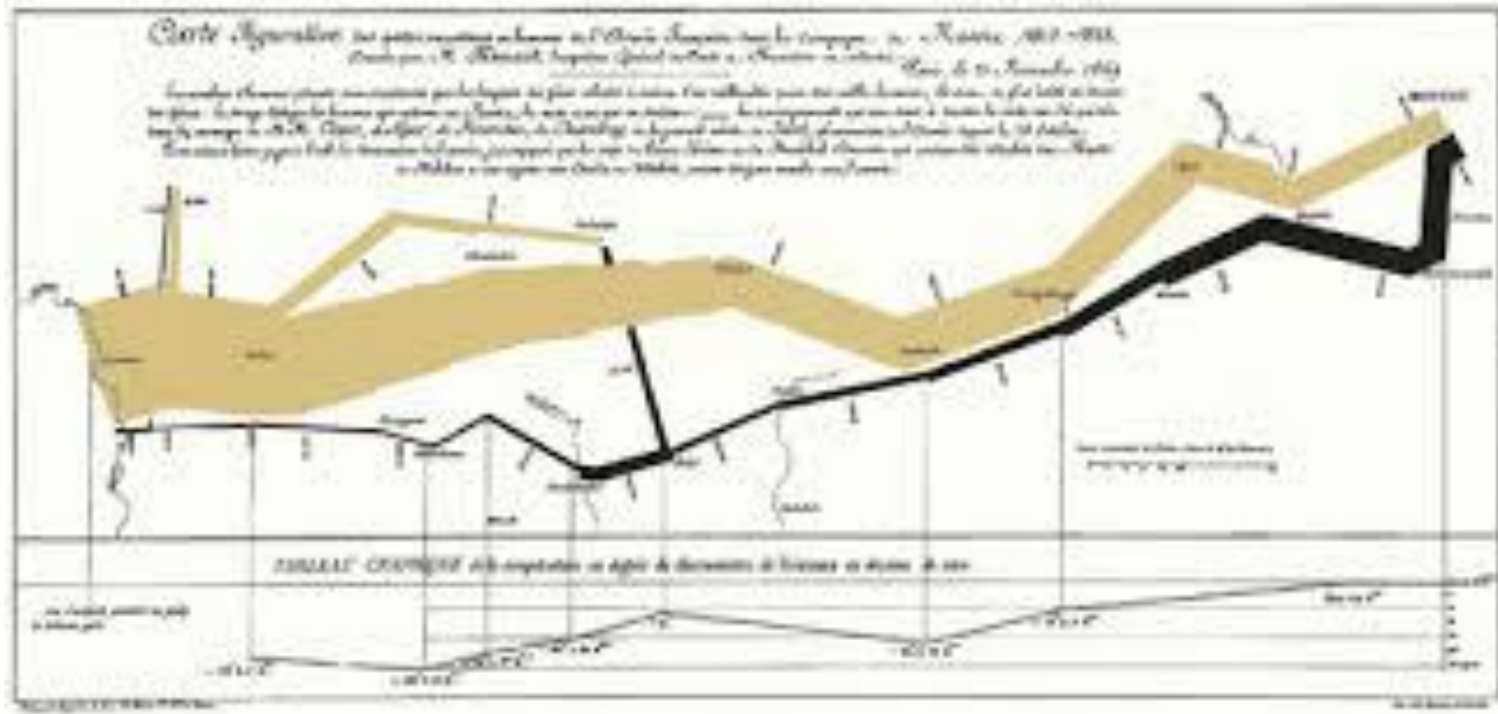


Some More Ambitious Objectives

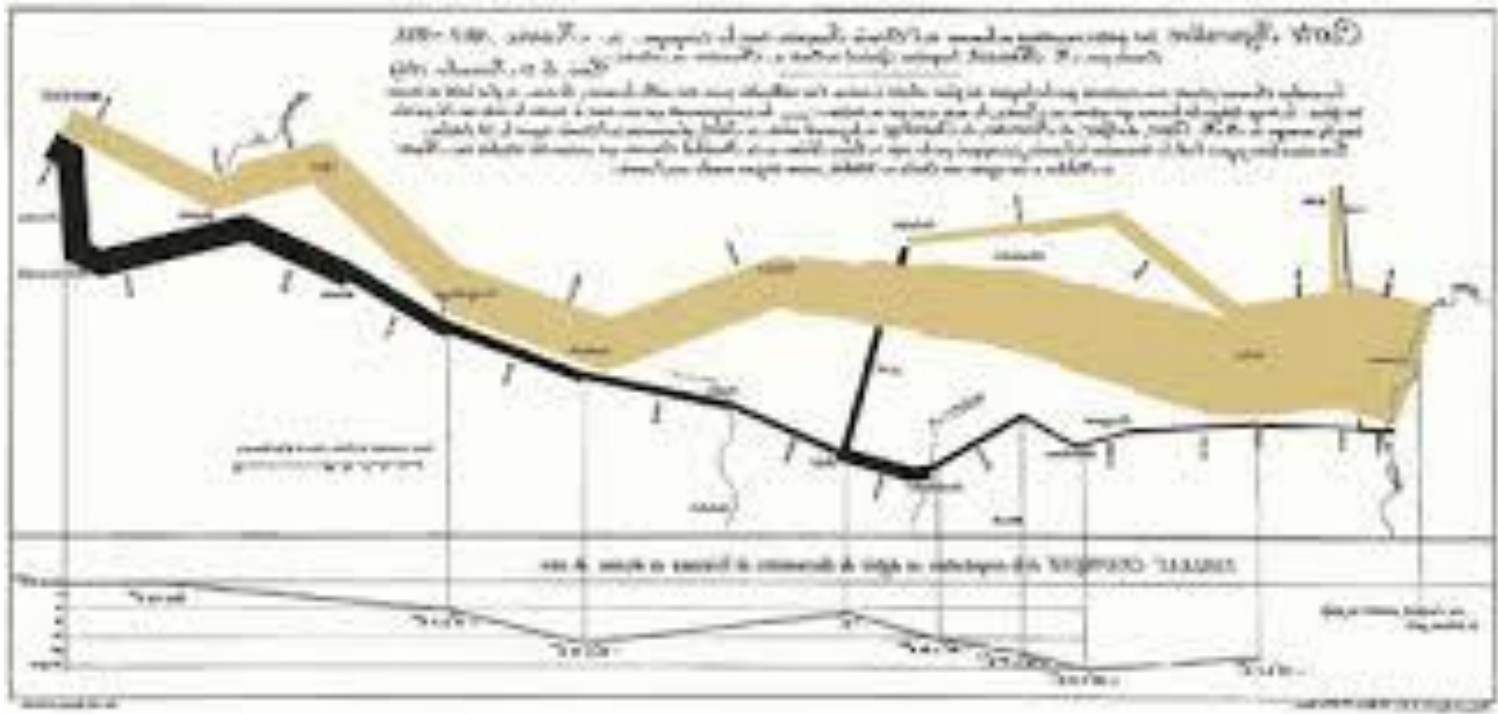
- Joint opportunities to improve organizational processes for both organizations
 - Publication Tooling
 - Registry and Repositories
 - Use of FHIR Terminology Services and Value Sets in IHE Profiles
- Capitalizing on rigorous IHE testing to verify specific product solutions
- Providing clear, common advice on what profile or IG to use when
- Increasing confidence and trust in both organizations among adopters of HL7 and IHE standards
- Making more rapid advances to improve interoperability.



A March to Interoperability



A March to Interoperability





What Types of Projects are Gemini Candidates?

- Unmet Need where significant value can be offered by the collaboration
- Potential Multi-national or global use
- Utilizes the respective strengths of both organizations
- The project results in implementable specifications that can be advanced thru international IHE plug-a-thons and FHIR and IHE Connectathons
- Goal is to support 2-3 concurrent projects, with a 1-2 year time horizon.



Some Gemini Projects



- Endorsed: Breast Cancer Staging (HL7 Project) Work in Progress
- Approved: Medical Imaging for Cancer Care
- Under Consideration:
 - e-Immunization
 - Computable Care Guidelines
- Future Consideration: Decision Support Incorporating CDS Hooks

Joint HL7-IHE Cancer Interoperability Project



- Purpose: to demonstrate how the combined efforts of IHE and HL7 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
- 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 domains include Radiology and Patient Care Coordination.



E-Immunization Candidate



- Championed by Jürgen Brandstätter (IHE International Board Member)
- Objective: a “Best of Breed” *global* Interoperability Standard for recording, accessing and acting upon vaccinations, immunization requirements and plans
- Will try to identify a common global approach to reduce heterogeneity across nations and bring e-immunization to a wider global population
- Several countries on multiple continents have already expressed interest in participating
- For additional information, contact J.Brandstaetter@codewerk.at



Computable Care Guidelines Candidate

- Develop a global method for disseminating CCGs that can be operationalized by Point of Service solutions
 - Share machine readable guidelines on how to best manage care and provide feedback
- Will develop profiles to describe care encounter resources and care path/workflow specifications
- Will also profile how to handle alerts or actions via CDS Hooks
- Will leverage IHE Dynamic Care Planning (DCP) profile
- FHIR Resources: CarePlan, PlanDefinition, ActivityDefinition, Task, Subscription
- Plans to partner with WHO, US CDC, Hamilton Health Sciences, Canada. Open-HIE



Summing Up

- Interoperability by definition needs active cooperation by all parties to become a feasible reality
- Committing to the interoperability vision thus involves placing the common good above that of any single organization
- HL7 and IHE, with the support of HIMSS, can make a significant difference in achieving the vision by joining forces and leveraging their collective and complementary strengths
- Identifying one more evolutionary grand march projects may be one opportunity to build step-wise toward achieving the vision
- We're only beginning to realize what we can do – stay tuned for more progress updates as our collaboration continues.



Conflict of Interest

Christopher Carr

Has no real or apparent conflicts of interest to report.



Agenda

- Prologue
- Imaging for Cancer Care Goals
- Opportunities for Enhanced Interoperability
 - Context Sharing: FHIRcast
 - Decision Support: CDS Hooks
 - Structured Reporting: FHIR/CDA/SDC
 - Access to Imaging Results: Sync for Science
- Benefits
- Pilot Project Step
- Upcoming Events
- Conclusions



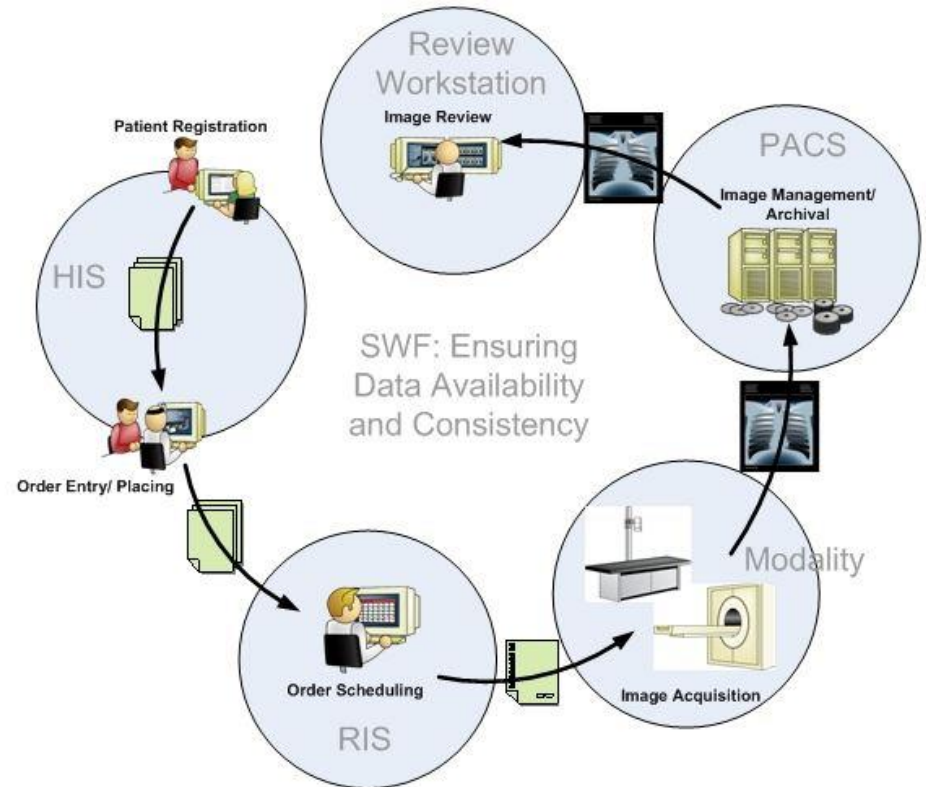
Learning Objectives

- Understand the motivation for the Project Gemini Imaging for Cancer Care Pilot
- Identify emerging standards that support improvements in care technologies
- Become aware of opportunities for engagement in driving these innovations



Prologue: IHE Radiology Scheduled Workflow

- First IHE profile published (1999)
- Addresses integration of radiology systems with hospital information systems
- Covers flow from ordering up to image availability
- Focuses on communication of operational/event information
- Built on HL7 v. 2.3 and DICOM 3
- Widely implemented--with local variation
- Established IHE's role in driving implementation of standards

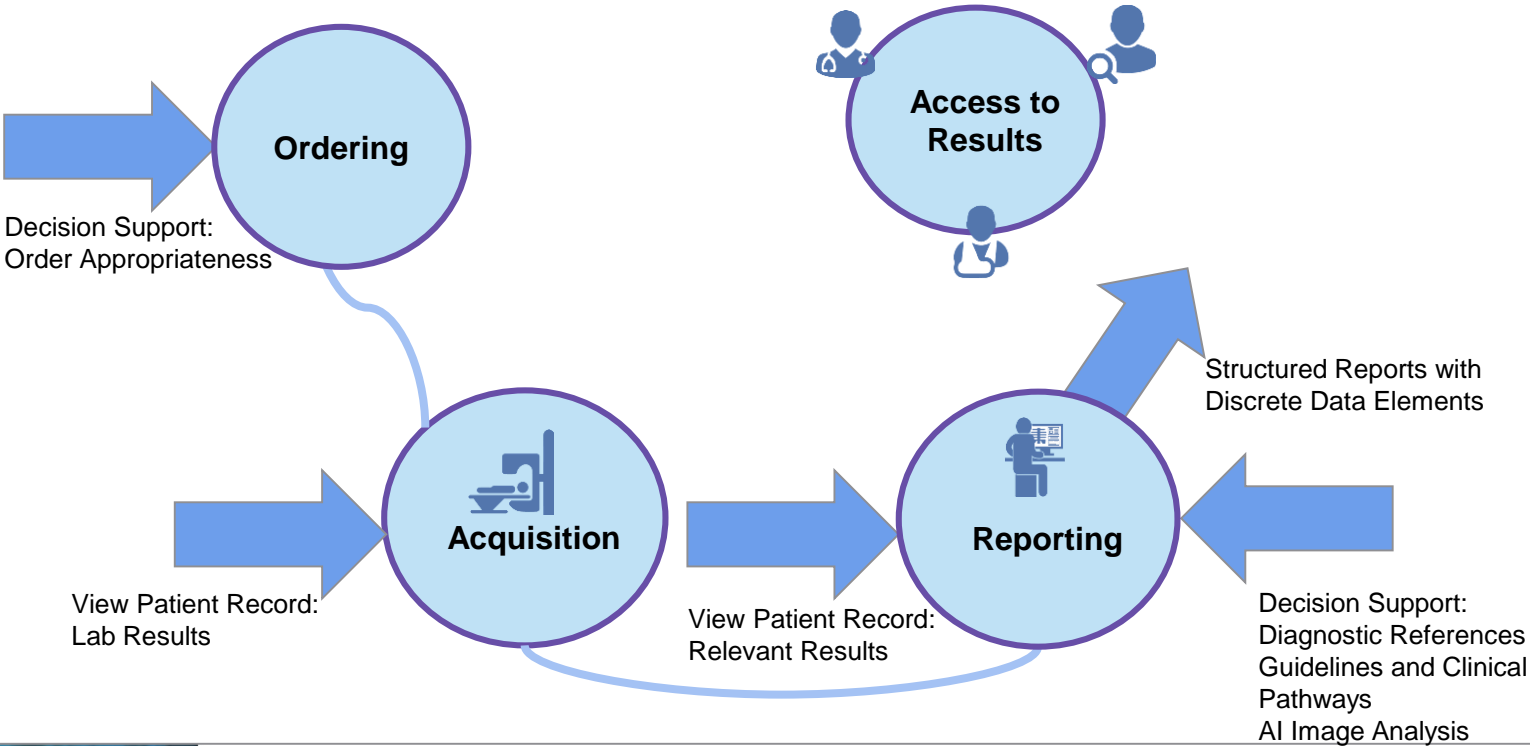


Imaging for Cancer Care - Project Goals

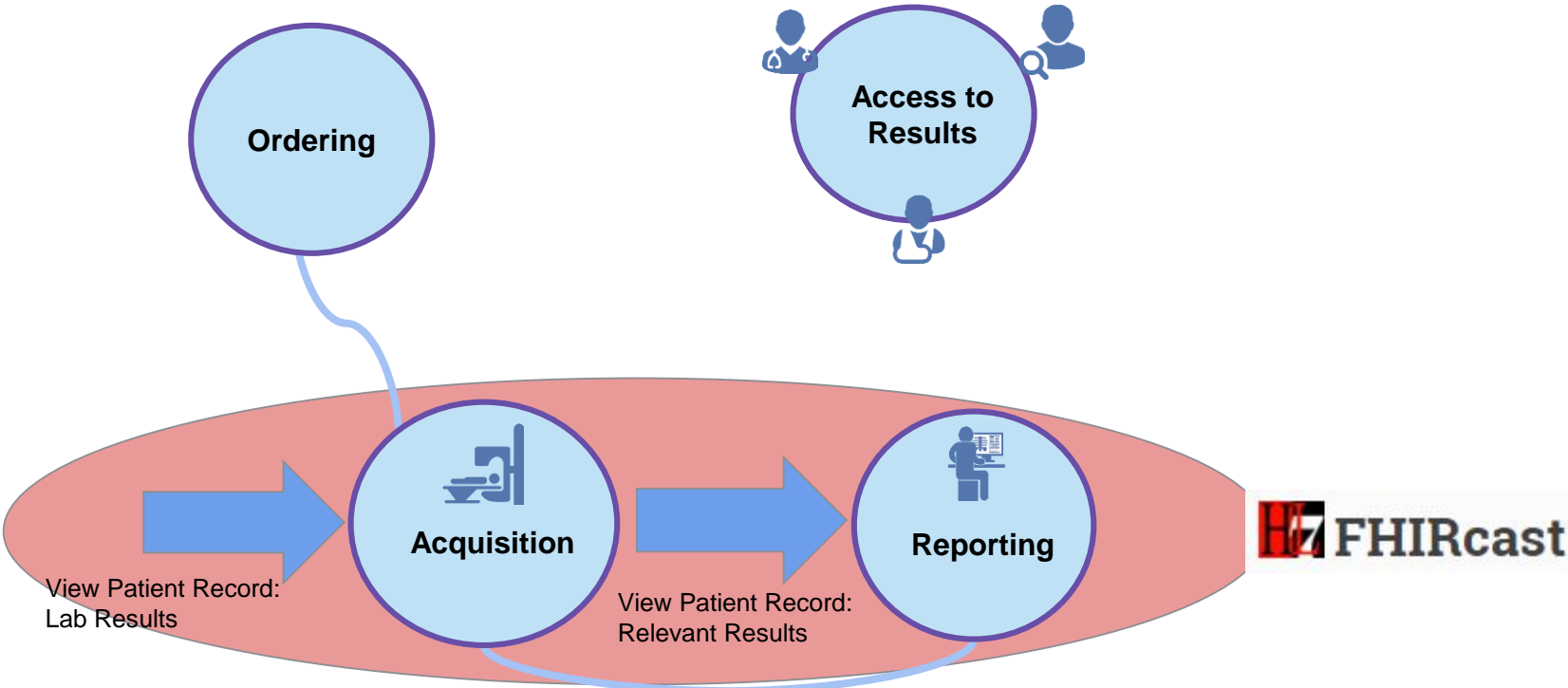
- Capitalize on strengths of HL7, IHE and other standards orgs in driving the implementation of emerging standards - HL7 FHIR®, DICOMweb
- Document clinical use case(s) for cancer care to support optimal care, patient-provider communication, research and technological innovation
- Identify gaps in current imaging data- and workflow
- Build collaboration to accelerate development and implementation of needed standards
- Establish goals and timelines for specification development, testing, demonstration and implementation
- Develop relevant IHE Profiles and FHIR Implementation Guides
- Conduct series of increasingly rigorous testing and demonstration events
- Conduct pilot implementation projects at care sites



Opportunities for Enhanced Interoperability



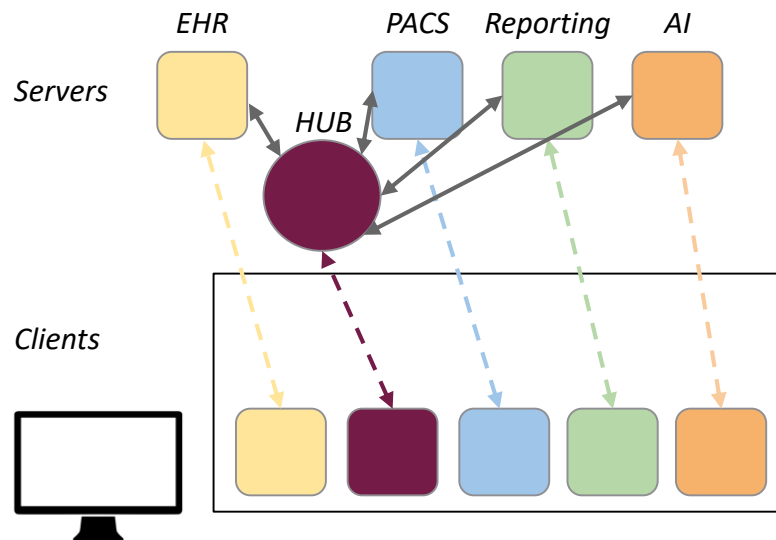
Opportunities for Enhanced Interoperability



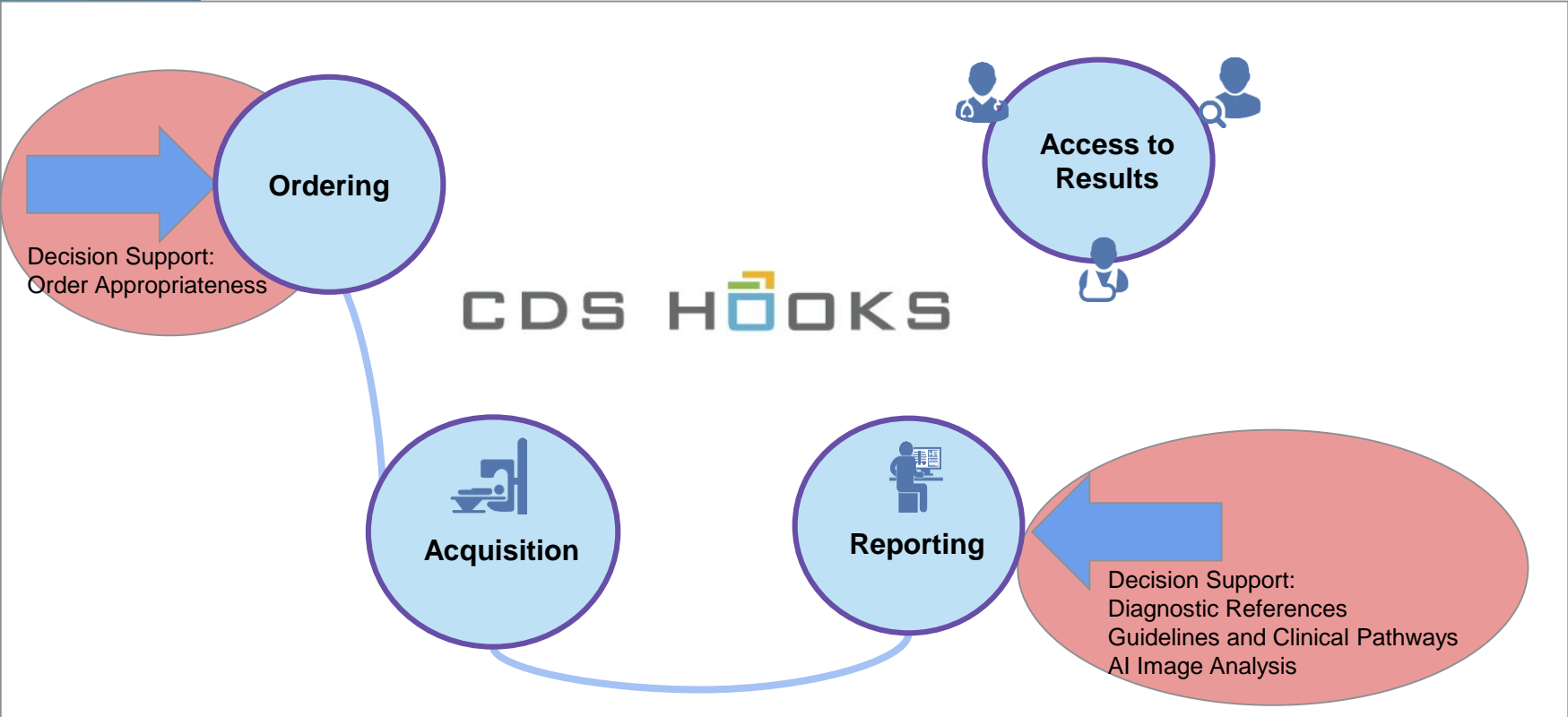
FHIRcast – Clinical Context Sharing

- Establishes context synchronization between systems: same patient, same encounter, same study
- Allows systems to subscribe to relevant events (eg, open imaging study, close patient chart)
- Enables access to records across system boundaries (eg, access to labs from radiology ordering and reporting environments)

W3C WEBSUB HUB TO APP SERVERS MESSAGING

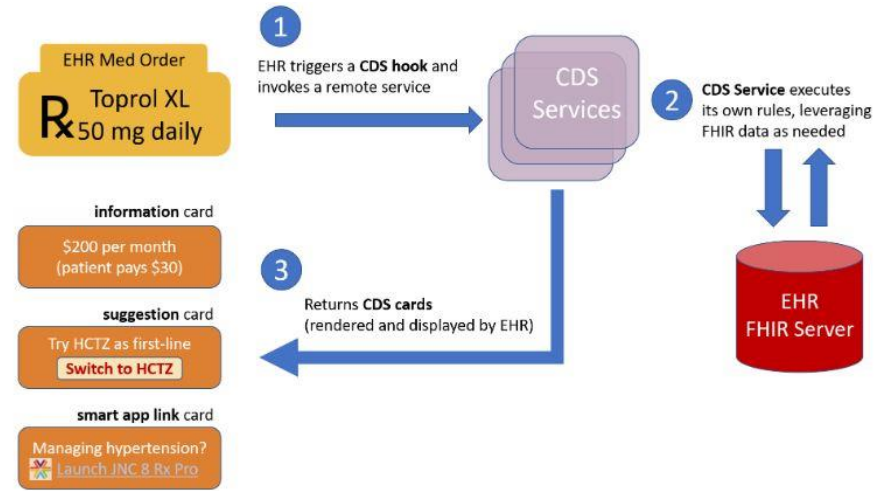


Opportunities for Enhanced Interoperability

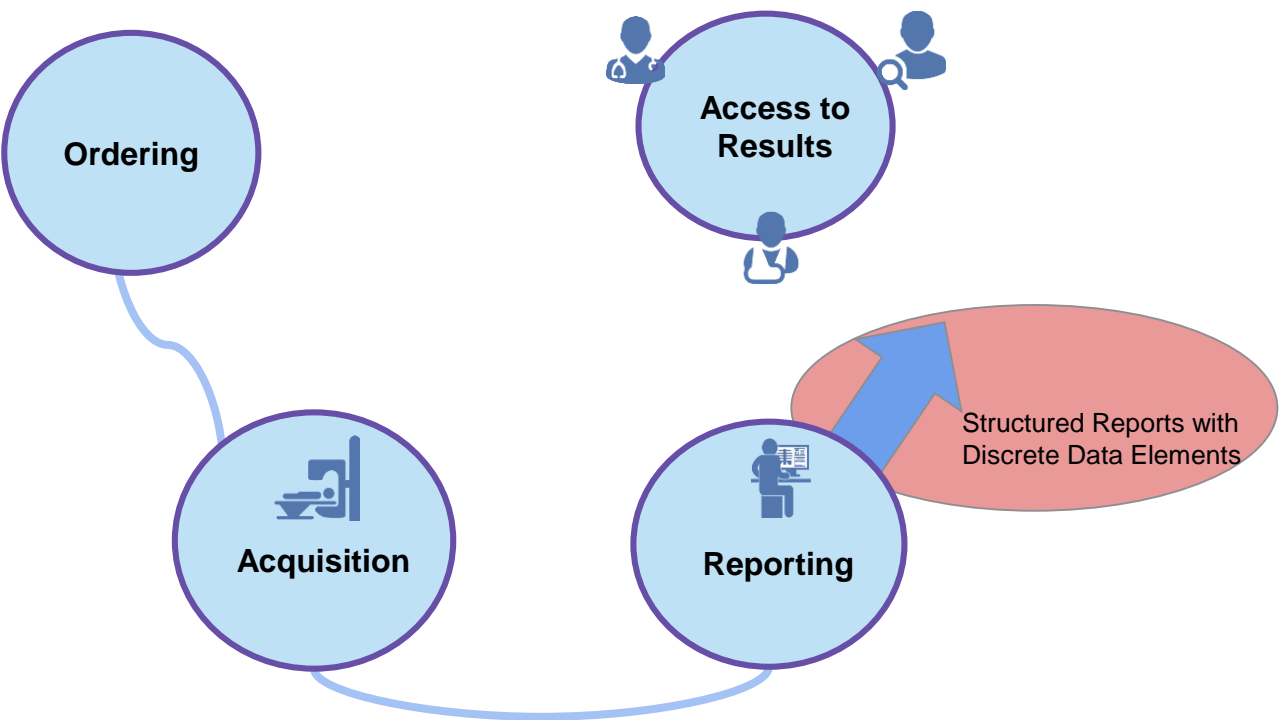


CDS Hooks - Decision Support

- Lets a system or user invoke a decision support service as part of the workflow, based on patient and encounter context.
- The service executes logic and returns “cards” that contain information or links to approved apps.
- Radiology-relevant tools include ordering appropriateness and diagnostic decision support.



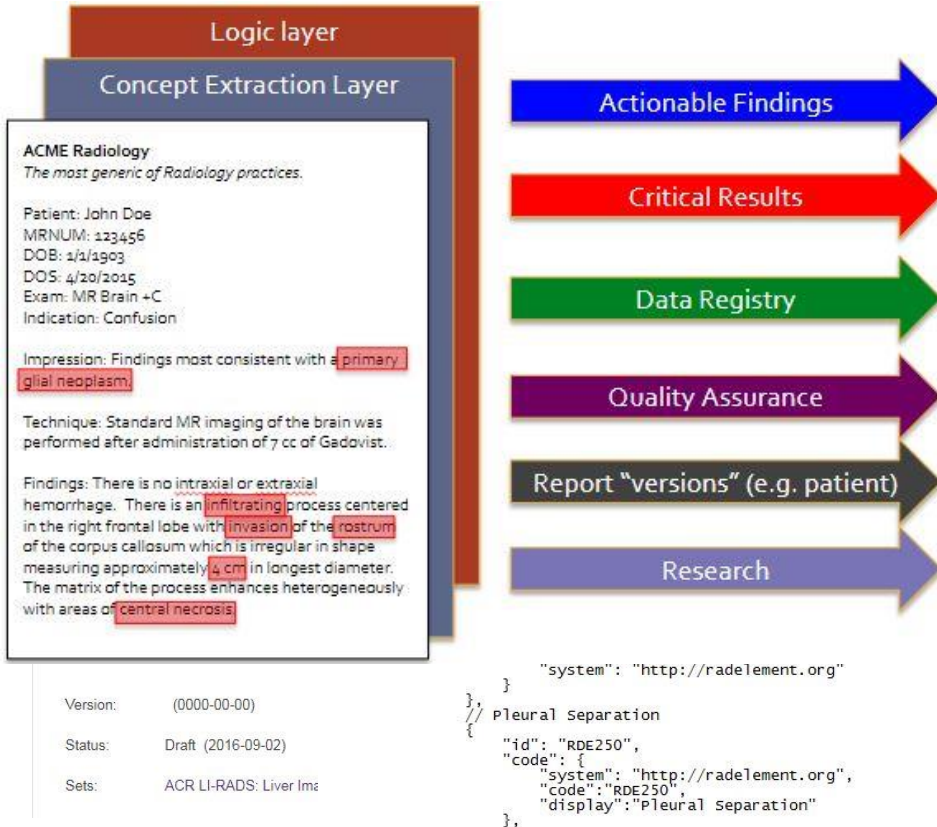
Opportunities for Enhanced Interoperability



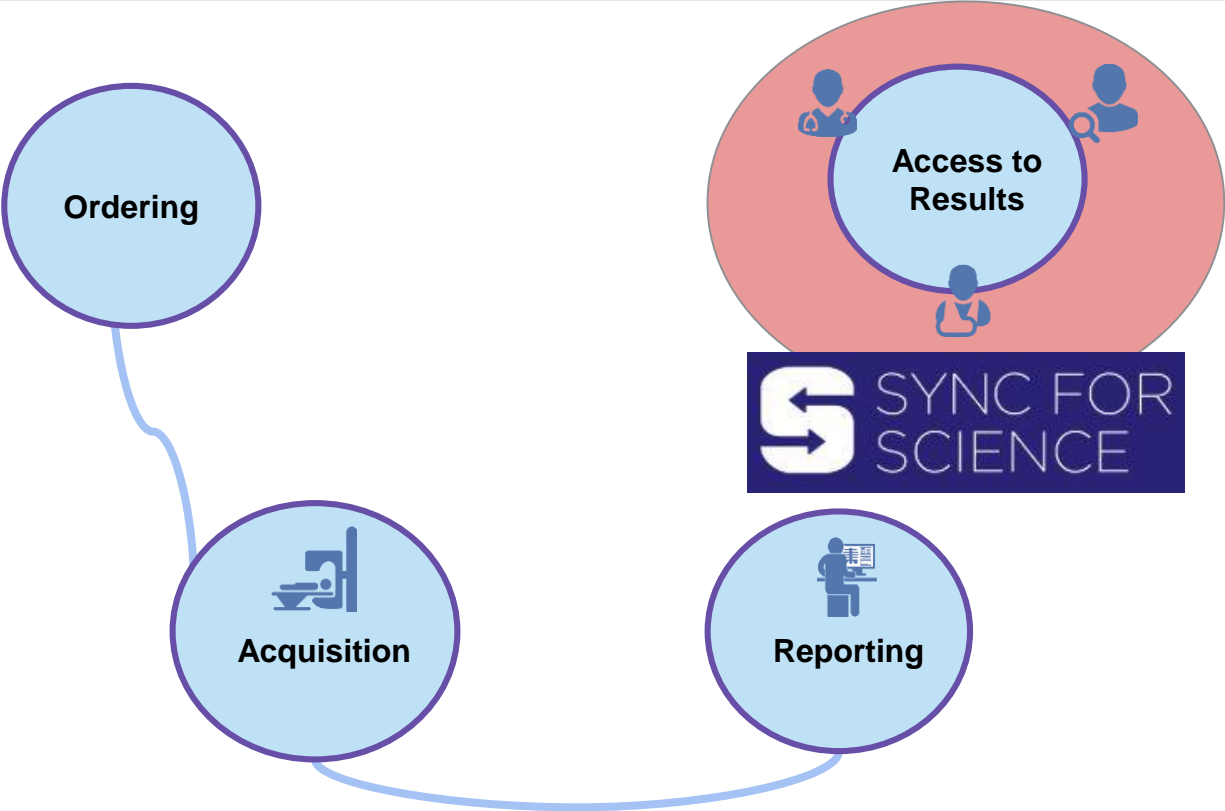
ACR-RSNA Common Data Elements

→ HL7 CDA and FHIR

- ACR-RSNA project to have radiologists define sets of data elements for specific clinical use cases
- Collaborating with HL7 CIMI and Cancer Interoperability Group to express as CDA, SDC and FHIR
- CDEs will be used in radiology reporting, decision support, outcomes research, AI, etc.

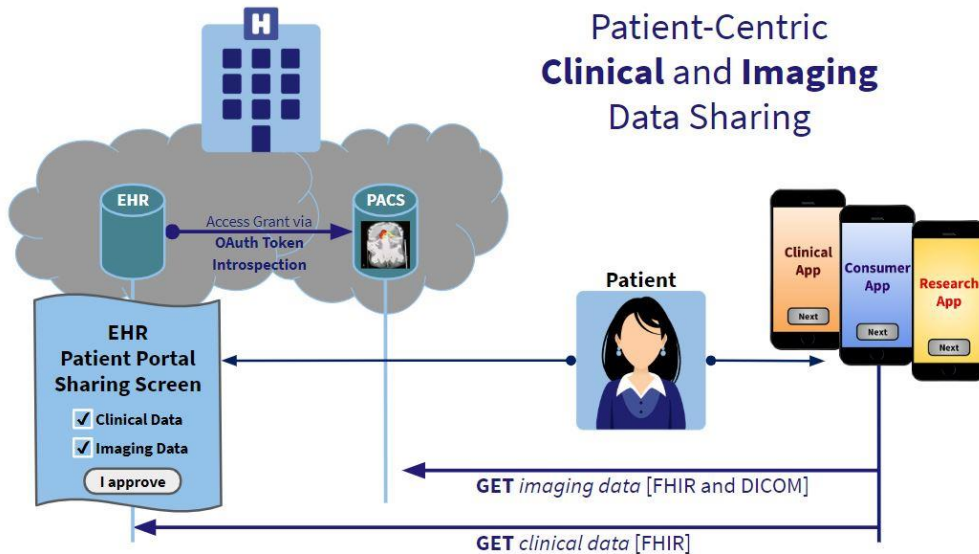


Opportunities for Enhanced Interoperability



SMART on FHIR/S4S for Imaging Access

Patient-Centric Clinical and Imaging Data Sharing



- Links EHR and radiology systems in shared security infrastructure (OAuth2).
- API based on HL7 FHIR and DICOMweb standards lets authorized applications find and access imaging studies and reports.
- Supports patient-facing applications, research applications and clinical applications.

Benefits of Enhanced Interoperability

- Streamlined workflow
- Enhanced access to relevant data
- Incorporation of new sources of data and data tools
 - Decision support
 - AI
- Ability to generate more consistent, data rich reports for improved clinical care, outcomes analysis, AI, etc.
- Better access to records for providers, patients and research

Pilot Project Steps

- Select and describe specific clinical scenario(s)
- Develop relevant testing and demonstration data
 - Imaging datasets
 - Common data elements
 - Radiology reports
 - Decision support modules
- Recruit participants for testing and demonstration events
- Develop technical specifications for demonstration participants
- Conduct testing and demonstration events of increasing rigor and specificity
- Develop standards based on progressively refined testing specifications
 - IHE Profiles
 - FHIR Implementation Guides
- Identify pilot implementation sites for emerging capabilities



Upcoming Events

- IHE-Europe Connectathon: April 8-12, Rennes, France
 - FHIR-based IHE profile testing
 - Plug-a-thon testing tracks
- HL7 FHIR Connectathon: May 4-5, Montreal, Canada
- HL7 FHIR Connectathon: Sept. 14-15, Atlanta, GA
- RSNA 2019 Annual Meeting: Dec. 1-6, Chicago, IL



References and Opportunities for Engagement

- <http://fhircast.org/>
- <https://cds-hooks.org/>
- <http://radreport.org/>
- <http://radelement.org/>
- <http://syncfor.science/use-case/imaging/>
- HL7 IIWG/DICOM WG-20:
<https://confluence.hl7.org/display/IMIN/Imaging+Integration+Home>
- IHE Radiology: <https://wiki.ihe.net/index.php/Radiology>

Conclusions

- Interoperability improves when all affected parties work together
- HL7 and IHE play complementary roles in advancing interoperability
- FHIR and other emerging standards present tremendous opportunities to improve interoperability and enhance clinical care
- You can get engaged in the process and reap its benefits today!



Questions

- ccarr@ihe.net



- Please complete your online session evaluation!

