HL7 Argonaut Project: One Year Later

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Conflict of Interest

Charles Jaffe, MD, PhD

Has no real or apparent conflicts of interest to report.
Conflict of Interest

Micky Tripathi, PhD, MPP

Has no real or apparent conflicts of interest to report.
Agenda

• Overview of the Argonaut Project Phase 3
• Provide example of a FHIR app in use in a provider setting (Geisinger)
• Status of FHIR standard development in 2016 and beyond
• Review HL7 industry collaboration / partners in interoperability
Learning Objectives

• Compare the current state of FHIR development with the Argonaut Project’s initial objectives
• Assess the adoption trajectory of FHIR in the marketplace and federal legislation
• Demonstrate the ways that FHIR has improved interoperability
STEPS™ Value HealthIT

Presentation content ties into:
• E – Electronic Secure Data
• P – Patient Engagement
• S – Savings
Meet the Speakers

• Charles Jaffe, MD, PhD
  HL7 International CEO

• Micky Tripathi, PhD, MPP
  President and Chief Executive Officer, Massachusetts eHealth Collaborative; Project Manager, Argonaut Project
Overview of the Argonaut Project Phase 3
“Jason and his Greek gang of half gods and magical men made numerous bad decisions on their quest for the golden fleece…..

They also completed their fantastic mission while vanquishing monsters and employing quick wittedness as well as making important friends….”
Origins

Argonaut Project is a focused, market-driven code and documentation sprint.
Its origins lie in:

- JASON Task Force recommendations on market-based interoperability governance and coordination, and call to action on “public APIs”
- Market experience with MU 2 and associated certification
- HL7 request for resources to support FHIR STU2 in early summer

Small group of vendors and providers founded the effort with funds for:

- Funding for technical expertise and project management
- General support to HL7 for STU2 development
- Focused support for narrower focus profiles and implementation guides
- Support for implementation program for market testing/adoption
Origins and Purpose

There are three main motivations for this initiative:

• Advance the recommendations of the JASON Task Force
• Support and accelerate development of market-ready, FHIR-based standards
• Spark industry leadership of the future of interoperability

Specifically, we would like to develop a first-generation FHIR-based API and Core Data Services specification and package it to support more rapid market adoption:

• Support foundational FHIR work already underway at HL7
• Accelerate and focus work on more specific FHIR profiles and documentation
• Accelerate and focus accompanying security specifications and documentation
Origins and Purpose

The Argonaut Project is simply pooling resources for a code and documentation sprint, the products of which will be openly available to the market:

• Argonaut is not an organization or an entity – it is a time-limited project
• Argonaut does not intend to replace or compete with any existing initiatives – it will leverage and integrate relevant work already being done by other initiatives
• The products of Argonaut will be open standards and documentation available to all
Argonaut Scope (Jan 2015 – Mar 2016)

The Argonaut Project is refining and packaging specifications and implementation guides for:

- FHIR RESTful API for data element query of the Common MU Data Set
- FHIR RESTful API for document-level query of static documents (such as CCDA)
- SMART on FHIR OAuth2 security profile for authorization of enterprise-approved applications to retrieve health data
- SMART on FHIR OpenID Connect profile for single sign-on to enterprise-approved applications
- Provider directory to facilitate provider/entity location
Argonaut Scope (Jan 2015 – Mar 2016)

Use Cases:

- Hosted applications that enable a patient to access her own EHR data
- Mobile apps that enable a patient to access her own EHR data
- Hosted applications that enable a clinician to access data within a single EHR
- Mobile apps that enable a clinician to access data within a single EHR
- Hosted or mobile apps that enable access to data by users in different entities

Stewardship:

- The FHIR Data Query Profile and FHIR Document Query Profile and accompanying Implementation Guides will be included as an informative ballot mapped to the general FHIR STU R2
- The Security Implementation Guide will eventually be incorporated in the HL7 balloting process but for this project will be developed in parallel to accompany the FHIR Data Query and Document Query Profiles and Implementation Guides
99 FHIR Resources (50 STU1, 49 STU2**)
16 Argonaut Common MU Dataset Resources in **blue**

### Clinical
- AllergyIntolerance
- CarePlan
- CarePlan2**
- ClinicalAssessment**
- Condition (aka Problem)
- Contraindication**
- DiagnosticOrder
- DiagnosticReport
- FamilyHistory
- Goal**
- ImagingObjectSelection**
- ImagingStudy
- Immunization
- ImmunizationRecommendation
- Medication
- MedicationAdministration
- MedicationDispense
- MedicationPrescription
- MedicationStatement
- NutritionOrder**
- Observation
- Procedure
- Questionnaire
- QuestionnaireAnswers**
- ReferralRequest**
- RiskAssessment**
- Specimen
- VisionPrescription**

### Administrative
- Alert
- Appointment Response**
- Appointment**
- Communication**
- CommunicationRequest**
- Contract**
- Device
- DeviceComponent**
- DeviceMetric**
- DeviceUseRequest**
- DeviceUseStatement**
- Encounter
- EpisodeOfCare**
- Group
- HealthcareService**
- Location
- Order
- OrderResponse
- Organization
- Patient
- Person**
- Practitioner
- ProcedureRequest**
- RelatedPerson
- Schedule**
- Slot**
- Substance
- Supply

### Infrastructure
- Basic**
- Binary**
- Bundle**
- Composition
- ConceptMap**
- Conformance
- DataElement**
- DocumentManifest
- DocumentReference
- ExtensionDefinition**
- List
- Media
- MessageHeader
- NamingSystem**
- OperationDefinition**
- OperationOutcome
- Other
- Provenance
- SearchParameter**
- SecurityEvent
- Subscription**
- ValueSet

### Financial
- ClaimResponse**
- Coverage**
- EligibilityRequest**
- EligibilityResponse**
- EnrollmentRequest**
- EnrollmentResponse**
- ExplanationOfBenefit**
- InstitutionalClaim**
- OralHealthClaim**
- PaymentNotice**
- PaymentReconciliation**
- PendedRequest**
- PharmacyClaim**
- ProfessionalClaim**
- Readjudicate**
- Reversal**
- StatusRequest**
- StatusResponse**
- SupportingDocumentation**
- VisionClaim**
Argonaut Requirements: FHIR Resources and DAF Profiles

<table>
<thead>
<tr>
<th>MU Data Item</th>
<th>FHIR Resource</th>
<th>DAF Profile</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Details</td>
<td>Patient + Encounter in support</td>
<td>DAF Patient + DAF Encounter</td>
</tr>
<tr>
<td>Smoking status</td>
<td>Observation</td>
<td>C-CDA Smoking Status Observation</td>
</tr>
<tr>
<td>Problems</td>
<td>Condition</td>
<td>DAF Condition (a.k.a. Problem)</td>
</tr>
<tr>
<td>Medications</td>
<td>A combination of MedicationPrescription, MedicationDispense, MedicationAdministration, MedicationStatement, Immunization</td>
<td>DAF: Not done yet, DAF Medication Administration, DAF MedicationStatement, DAF Immunization (note: it is expected that this be replaced by use of MedicationAdministration)</td>
</tr>
<tr>
<td>Medication allergies</td>
<td>AllergyIntolerance</td>
<td>DAF AllergyIntolerance</td>
</tr>
<tr>
<td>Laboratory test(s)</td>
<td>DiagnosticOrder</td>
<td>DAF DiagnosticOrder</td>
</tr>
<tr>
<td>Laboratory value(s)/result(s)</td>
<td>DiagnosticReport &amp; Observation</td>
<td>DAF Diagnostic Report / DAF Results</td>
</tr>
<tr>
<td>Vital signs</td>
<td>Observation</td>
<td>DAF Vital Signs</td>
</tr>
<tr>
<td>Care Plan</td>
<td>CarePlan or CarePlan2</td>
<td>Not done yet (HL7 is considering two different approaches here)</td>
</tr>
<tr>
<td>Procedures</td>
<td>Procedure</td>
<td>DAF Procedure</td>
</tr>
<tr>
<td>Care team</td>
<td>Practitioner</td>
<td>Not done yet</td>
</tr>
<tr>
<td>Patient Documents</td>
<td>DocumentReference</td>
<td>Not done yet (will be consistent with IHE use in the MHD profile)</td>
</tr>
</tbody>
</table>
Alignment with Federal Certification

The healthcare delivery and health care information technology markets are rapidly evolving, and so too will the balance of public versus private roles in driving interoperability:

• Ultimately, we hope that successful and rapid adoption would preclude the need for further federal government intervention in interoperability standards.

• We also believe that a premature certification requirement might have an adverse effect on the development and adoption of this important work.

• FHIR-based standards were not mature enough for inclusion in 2015 Edition Certification

• 2016 Edition Certification includes requirement for APIs for patient engagement use cases:
  • Does not require a particular standard, but provides motivation for accelerating development of FHIR-based functions
Argonaut Current and Future Scope

Phase 1 scope: “within” enterprise

- authenticate user
- launch app
- register app
- authorize app
- query/retrieve documents & data

Phase 2 scope: cross-enterprise

- authenticate user
- launch app
- register app
- authorize app
- query/retrieve documents & data

health care organization A

- authentication server
- hosted application
- mobile application
- authorization server
- FHIR resource server

health care organization B

- authentication server
- FHIR resource server

„within“ enterprise

cross-enterprise

FHIR
resource server

mobile application

hosted application

registered application
Provider Directory Implementation Guide

Implementation Guide development underway

Based on specifications provided by David McCallie and Surescripts

Currently turning specification into an IG for review by FHIR Team
  • Support generic directory sources
  • Applicable to variety of use cases

Drafts will be available at:
Security Tasking Deliverables

*Use Cases Description*, Version 1.1 available at:
http://argonautwiki.hl7.org/images/e/ec/Argonaut_UseCasesV1-1.pdf

*Application Authorization Profile* available at:
http://docs.smarthealthit.org/authorization/

*Cross-Organizational Authorization Profile* available at:

• DRAFT *Risk Assessment Update*:
  • Updates Risk Assessment through Phase 2
  • Available for review on Argonaut Auth: SMART on FHIR Google Drive
    https://drive.google.com/open?id=0B8NVHvNTY_HUWXp2NzRfX2tjbjA
## Sprint Structure

### Welcome to the Argonaut Project Wiki!

<table>
<thead>
<tr>
<th>Dates</th>
<th>Server Sprint</th>
<th>Client Sprint</th>
<th>Checkin Meetings (all times America/New_York)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aug 6th - 21st</td>
<td>Sprint 1</td>
<td>Sprint 1</td>
<td>Aug 21st 3-4:30pm</td>
</tr>
<tr>
<td>Aug 24th - Sep 9th</td>
<td>Sprint 2</td>
<td>Sprint 2</td>
<td>Sept 9th 4-5:30pm</td>
</tr>
<tr>
<td>Sep 16th - Oct 23rd</td>
<td>Sprint 3</td>
<td>Sprint 2</td>
<td>Oct 23rd 3:30-5pm</td>
</tr>
<tr>
<td>Nov 11th-Dec 2nd</td>
<td>Sprint 4</td>
<td>Sprint 3</td>
<td>Nov 6th 3:30-5pm</td>
</tr>
<tr>
<td>Dec 2nd - Dec 22nd</td>
<td>Sprint 5</td>
<td>Sprint 4</td>
<td>Nov 30th 1:30-3pm</td>
</tr>
<tr>
<td>Dec 22nd - TBD</td>
<td>Sprint 6</td>
<td>Sprint 5</td>
<td>Dec 22nd 2:00-3:30pm</td>
</tr>
</tbody>
</table>

**Sprint 1:** Patient search and read  
**Sprint 2:** Authorization with OAuth 2  
**Sprint 3:** Share a patient’s documents  
**Sprint 4:** Medications and EHR launch with context  
**Sprint 5:** Problems, allergies, and App integration  
**Sprint 6:** Quantitative labs (and refresh tokens)  
**Sprint 7...** TBD (immunizations, smoking status)

[https://github.com/argonautproject/implementation-program/wiki](https://github.com/argonautproject/implementation-program/wiki)
HL7 Vision:
A world in which everyone can securely access and use the right health data when and where they need it.

HL7 FHIR developed in support of that vision

Argonaut Project Phase 3
OAuth security projects are examples
Examples of FHIR apps in use in a provider setting
Geisinger Health System

• **EnrG Rheum** is a rheumatology app created by Geisinger and xG Health Solutions, a technology company founded by Geisinger and part of the EnrG suite of interoperable software applications.

• The web-based interoperable SMART container and the corresponding HL7 FHIR interface can exchange information in real-time with any SMART-using FHIR-enabled EHR.

• FHIR used to connect the app in real-time to a number of EHRs, including Epic and Cerner.
Geisinger Health System

- **EnrG Rheum** integrates data streams from patients, doctors and nurses
- The app enables doctors to auto fill the majority of the record and focus on consultation
What are the benefits to providers?

• “Out of the box” solution that provides data access to everyone in the healthcare continuum

• Enables developers in the provider space to focus on accessing data, not necessarily writing it

• Sprint cycles in the Argonaut Project have shown a massive reduction in development cycle (from 3 – 5 months to 2 – 3 weeks)
Additional provider solutions

• Duke Medicine: implemented the FHIR interface in conjunction with Apple's HealthKit

• Other providers and vendors have also recently developed programs to give users access to data across platforms
Status of FHIR standard development in 2016 & beyond
Update on FHIR standard development

• September 2015: Release 2 of standard for Trial Use

• January 2016: HL7 announced hire of Grahame Grieve as HL7 FHIR Product Director

• Continue work from Argonaut Project

• Updates on May ballot and FHIR governance
Review industry collaboration efforts in support of interoperability
HL7 Industry Collaborations

• Partners in Interoperability

• FHIR Foundation
Future Interoperability Value

Source: KLAS
Making FHIR-Based Interoperability Real

Market ecosystem needs to develop to support FHIR-based interoperability

- Terms and conditions of “open APIs”
- Contracting
- Intellectual property
- Safety

With highly fragmented market, unclear at present what scalable models will emerge and survive:

- SMART
- EHR vendor-mediated
- Industry consortium (CommonWell, HSPC, Carequality, EHRA, Argonaut, other)
- SDOs and standards facilitation organizations (HL7, IHE)
- Federal government (ONC, CMS, DoD, other)
- Other new initiative?
HL7, HL7 FHIR and the Argonaut Project:

- Primary goal is to support the value of step E
- Real world-applications of the FHIR standard show value that supports steps P and S
Questions

• Speaker contact information:
  Charles Jaffe, MD, PhD
  Email: cjaffe@HL7.org
  Twitter: @HL7

  Micky Tripathi, PhD, MPP
  Email: mtripathi@HL7.org

• Online resources:
  HL7 website: www.HL7.org
  Argonaut Project website: argonautproject.org
  FHIR resources: www.HL7.org/FHIR
  SMART on FHIR: smarthealthit.org