What is the Argonaut Project?

The Argonaut Project is an implementation community comprising leading technology vendors and provider organizations to accelerate the use of FHIR and OAuth in health care information exchange.

We are:
- Private sector initiated and funded
- Working collaboratively with other FHIR initiatives such as SMART-on-FHIR, the Health Systems Platform Consortium, and the FHIR Foundation
- Creating open industry Implementation Guides in high priority use cases of importance to patients, providers and the industry as a whole

We are NOT:
- A standards development activity
- A separate legal entity
- A proprietary activity
Technology Vendors
Accenture
Apple
athenahealth
Cerner
Epic
Change Healthcare
MEDITECH
Surescripts
The Advisory Board Company/Optum

Provider Organizations
Beth Israel Deaconess Medical Center
Intermountain Health
Mayo Clinic
Partners Healthcare
SMART at Boston Children’s Hospital

Staff (current and past)
Prime contractor: HL7
FHIR initiatives: Grahame Grieve, Josh Mandel, Brett Marquard, Eric Haas
OAuth initiatives: Dixie Baker, Josh Mandel
Project Management: Micky Tripathi, Jennifer Monahan
Highly critical of the status and trajectory of US healthcare interoperability
- Blamed EHR vendor technology and business practices and lack of an architecture supporting standardized APIs

Recommended a “unifying software architecture” to migrate data from legacy systems to a new centrally orchestrated architecture
- ONC should define “an overarching software architecture for the health data infrastructure” within 12 months
JASON Task Force Recommendations (2014)

1. Foundation of interoperability should be an orchestrated architecture employing Public APIs based on FHIR

2. Current interoperability approaches need to be gradually replaced with more comprehensive API-based models

3. FHIR is the best candidate for such API-based models

4. Meaningful Use Stage 3 & 2015 Edition EHR certification should be used as a pivot point to initiate this transition
What’s so great about FHIR?

Flexible to document-level and data-level exchange
  • Sometimes individual data elements are important, sometimes entire documents are appropriate

Based on modern internet conventions
  • RESTful API – same browser-based approach as used by Facebook, google, twitter, etc
  • Infinitely extensible to detailed resources/profiles to meet any use case
  • Supports push and pull use cases

Attractive to developers from outside of healthcare
  • Brings new voices into health care and pushes the industry to innovate at internet speed
Why do we need the Argonaut Project to accelerate FHIR?

Standards development process, by design, values comprehensiveness over speed-to-market

Market input is needed to make standards relevant and usable
  • Identification of priority use cases to meet market needs
  • Development of well-packaged implementation guides
  • Facilitation of testing and implementation community
  • Coupling with other standards or protocols needed for implementation (e.g., security)

Implementers need to have greater input (i.e., deeper, earlier) into standards development

Need to get as much collaboration as early as possible in the cycle to head off problems of heterogeneous implementations down the road
A Signature Event: Argonaut Data Query Implementation Guide

- Access to individual data elements of *Common Clinical Data Set*

- Access to structured document (CCD) containing all *Common Clinical Data Set* elements

- Leverage OAuth2-based security and authorization

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http://www.fhir.org/guides/argonaut/r2/
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What does the Argonault process do? Set priorities

2015 Edition
Common Clinical Data Set

<table>
<thead>
<tr>
<th>Patient name</th>
<th>Sex</th>
<th>Date of birth</th>
<th>Race</th>
<th>Ethnicity</th>
<th>Preferred language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Smoking status</td>
<td>Problems</td>
<td>Medications</td>
<td>Medication allergies</td>
<td>Laboratory tests</td>
<td>Laboratory results</td>
</tr>
<tr>
<td>Vital signs</td>
<td>Procedures</td>
<td>Care team members</td>
<td>Unique Device identifiers</td>
<td>Immunizations</td>
<td>Assessment and Plan of Treatment</td>
</tr>
<tr>
<td>Goals</td>
<td>Health concerns</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Clinical
- AllergyIntolerance
- Condition (Problem)
- Procedure
- ClinicalImpression
- FamilyMemberHistory
- RiskAssessment
- DetectedIssue
- CarePlan
- Goal
- ReferralRequest
- ProcedureRequest
- NutritionOrder
- VisionPrescription
- Medication
- MedicationOrder
- MedicationAdministration
- MedicationDispense
- MedicationStatement
- Immunization
- ImmunizationRecommendation
- Observation
- DiagnosticReport
- DiagnosticOrder
- Specimen
- BodySite
- ImagingStudy
- ImagingObjectSelection

Identification
- Patient
- Practitioner
- RelatedPerson
- Organization
- HealthcareService
- Group
- Location
- Substance
- Person
- Contract
- Device
- DeviceComponent
- DeviceMetric

Workflow
- Encounter
- EpisodeOfCare
- Communication
- Flag
- Appointment
- AppointmentResponse
- Schedule
- Slot
- Order
- OrderResponse
- CommunicationRequest
- DeviceUseRequest
- DeviceUseStatement
- ProcessRequest
- ProcessResponse
- SupplyRequest
- SupplyDelivery

Infrastructure
- Questionnaire
- QuestionnaireResponse
- Provenance
- AuditEvent
- Composition
- DocumentManifest
- DocumentReference
- List
- Media
- Binary
- Bundle
- Basic
- MessageHeader
- OperationOutcome
- Parameters
- Subscription

Conformance
- ValueSet
- ConceptMap
- NamingSystem
- StructureDefinition
- DataElement
- Conformance
- OperationDefinition
- SearchParameter
- ImplementationGuide
- TestScript
- ExplanationOfBenefit

Financial
- Coverage
- EligibilityRequest
- EligibilityResponse
- EnrollmentRequest
- EnrollmentResponse
- Claim
- ClaimResponse
- PaymentNotice
- PaymentReconciliation
- ExplanationOfBenefit

93 FHIR DSTU2 Resources (17 Argonaut CCDS Resources in red)
### What does the Argonaut process do? Resolve practical problems

<table>
<thead>
<tr>
<th>What search criteria can you use?</th>
<th>What type of data will you get in response?</th>
<th>How will that data be represented?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Search operations</td>
<td>Scope of response</td>
<td>Content of response</td>
</tr>
<tr>
<td>Examples:</td>
<td>Examples:</td>
<td>Examples:</td>
</tr>
<tr>
<td>• Can search for individual patient by identifier (e.g., MRN) OR full name &amp; gender OR full name &amp; birthdate</td>
<td>• Search for patient will get all FHIR patient resources • Search for Procedures will get all current and historical procedures or within specified date range</td>
<td>• Patient search will get name, identifier, gender, birthdate, birth sex, REL • Procedures search will get type of procedure, date performed, and procedure status • In some cases created Argonaut extensions and value sets</td>
</tr>
</tbody>
</table>

Scope of response:

Examples:

• Search for patient will get all FHIR patient resources
• Search for Procedures will get all current and historical procedures or within specified date range

Content of response:

Examples:

• Patient search will get name, identifier, gender, birthdate, birth sex, REL
• Procedures search will get type of procedure, date performed, and procedure status
• In some cases created Argonaut extensions and value sets
Argonaut Project 2017 Projects

   - Appointments request – request for appointment
   - Appointment response – reply to an appointment request
   - Slots – blocks of time available for booking appointments

2. CDS Hooks: Enhancing integration of EHRs and Apps (HL7 Ballot in May 2018)
   - Integration of an external app or service into an EHR workflow
   - Validation of security model for integration of external apps/services with EHRs
Argonaut Project 2018 Projects

1. **Clinical Notes**, which will enable access to a common set of text-based notes & reports from EHR systems to complement the structured data already covered in the previously published Argonaut Data Query Implementation Guide

2. **Bulk Data Access of Clinical Data**, which will enable access to structured clinical data (CCDS/USCDI) for a roster of patients to complement the individual patient access already covered in the previously published Argonaut Data Query Implementation Guide (building on SMART Flat FHIR and Backend Services Authorization)

3. **Simple Assessment Questionnaires**, which will enable sharing of an organized set of textual questions and consistent capture and sharing of responses, for example, for an ACO that wants to implement consistent assessments and aggregate responses across disparate EHR systems or a provider organization that wants to use incorporate expert assessment content from external sources
Argonaut Project Timeline

Oct 2014

Call to action for APIs and FHIR

Dec 2014

Launch of Argonaut Project

Oct 2015

EHR certification includes API requirement

Dec 2016

Data Query Implementation Guide published

Jun 2017

Provider Directory Implementation Guide published

Mar-May 2018

Scheduling Implementation Guide

CDS Hooks Implementation Guide
Four Short Years from Inception to Market Adoption

Jan 2018

Carequality implements Argonaut Provider Directory specifications

CommonWell includes Argonaut FHIR specifications in core services – MEDITECH goes live on FHIR

Feb 2018

50% of 100+ certified vendors use FHIR APIs

Apple includes Argonaut FHIR specifications in iPhone
FHIR Technical Experts:  Brett Marquard (brett@riverrockassociates.com), Eric Haas (ehaas@healthedatainc.com), Graham Grieve (grahame@healthintersections.com.au)

Project management:  Micky Tripathi (mtripathi@maehc.org), Jennifer Monahan (jmonahan@maehc.org)

www.argonautproject.org