



## **The Argonaut Project: Accelerating FHIR**

**February 2019**

# 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

# It all started with JASON Report

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## A Robust Health Data Infrastructure

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November 2013

JSR-13-700

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Agency for Healthcare Research and Quality

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- **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)

Member Name	Organization
David McCallie (Co-Chair)	Cerner
Micky Tripathi (Co-Chair)	MAeHC
Deven McGraw	Manatt
Gayle Harrell	Florida State Legislator
Larry Wolf	Kindred Healthcare
Troy Seagondollar	Kaiser
Andy Wiesenthal	Deloitte
Arien Malec	RelayHealth
Keith Figlioli	Premier, Inc.
Wes Rishel	
Larry Garber	Reliant Medical Group
Josh Mandel	Boston Children's Hospital
Landen Bain	CDISC
Nancy J. Orvis	FHA/DoD
Tracy Meyer	FHA/ONC
Jon White	HHS

- 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

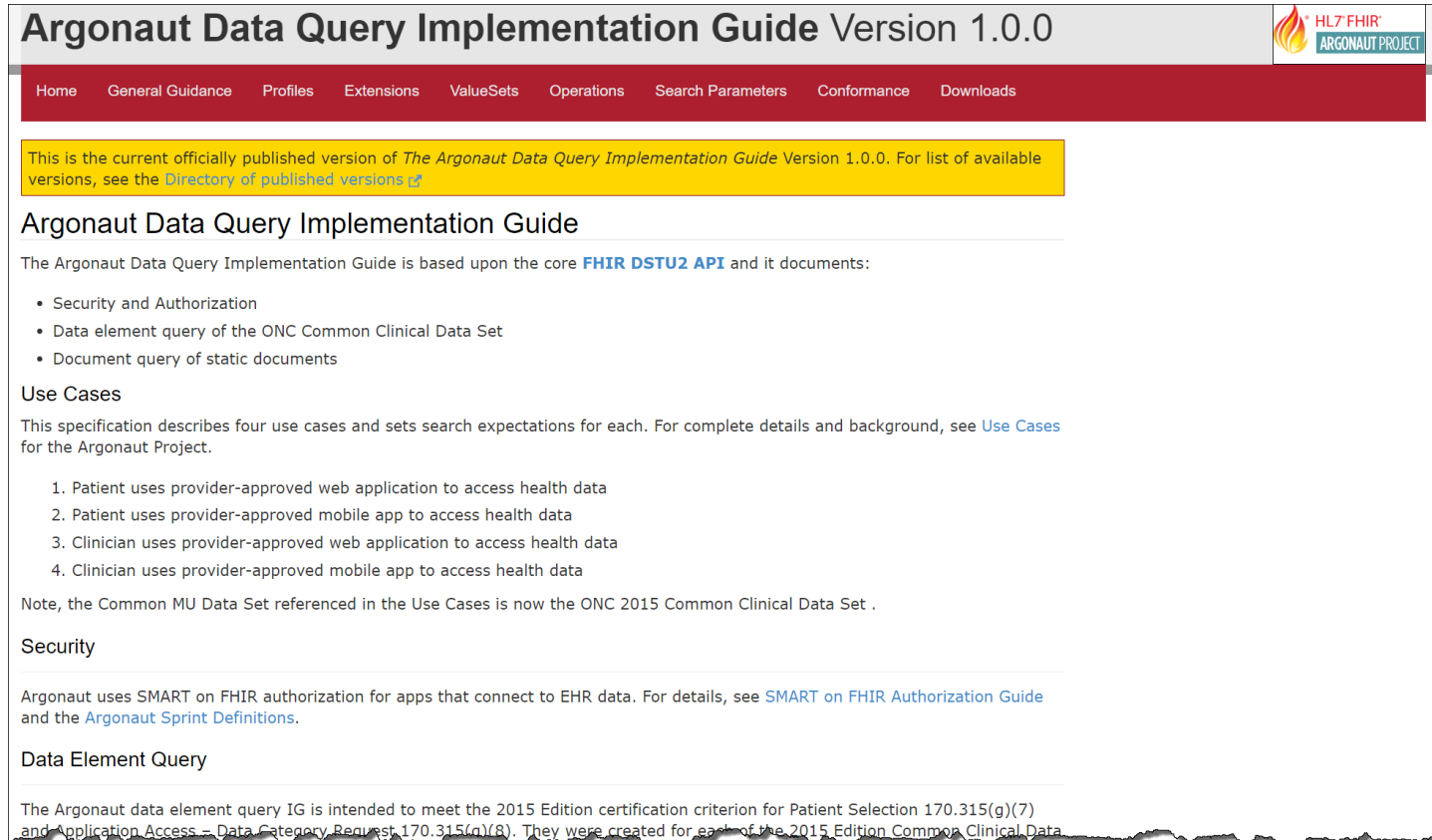
# Why do we need the Argonaut Project to accelerate FHIR?

**Comprehensiveness ↔ Speed-to-market**

**Relevance and Usability requires market input**

**Early collaboration to head off balkanization**

# A Signature Event: Argonaut Data Query Implementation Guide



Argonaut Data Query Implementation Guide Version 1.0.0

Home General Guidance Profiles Extensions ValueSets Operations Search Parameters Conformance Downloads

This is the current officially published version of *The Argonaut Data Query Implementation Guide* Version 1.0.0. For list of available versions, see the [Directory of published versions](#).

## Argonaut Data Query Implementation Guide

The Argonaut Data Query Implementation Guide is based upon the core [FHIR DSTU2 API](#) and it documents:

- Security and Authorization
- Data element query of the ONC Common Clinical Data Set
- Document query of static documents

### Use Cases

This specification describes four use cases and sets search expectations for each. For complete details and background, see [Use Cases](#) for the Argonaut Project.

1. Patient uses provider-approved web application to access health data
2. Patient uses provider-approved mobile app to access health data
3. Clinician uses provider-approved web application to access health data
4. Clinician uses provider-approved mobile app to access health data

Note, the Common MU Data Set referenced in the Use Cases is now the ONC 2015 Common Clinical Data Set .

### Security

Argonaut uses SMART on FHIR authorization for apps that connect to EHR data. For details, see [SMART on FHIR Authorization Guide](#) and the [Argonaut Sprint Definitions](#).

### Data Element Query

The Argonaut data element query IG is intended to meet the 2015 Edition certification criterion for Patient Selection 170.315(g)(7) and Application Access – Data Category Request 170.315(n)(8). They were created for each of the 2015 Edition Common Clinical Data

- 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

<http://www.fhir.org/guides/argonaut/r2/>



# What does the Argonaut process do? Set priorities

## 2015 Edition Common Clinical Data Set

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



## 93 FHIR DSTU2 Resources (17 Argonaut CCDS Resources in red)

### 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

### Financial

Coverage  
 EligibilityRequest  
 EligibilityResponse  
 EnrollmentRequest  
 EnrollmentResponse  
 Claim  
 ClaimResponse  
 PaymentNotice  
 PaymentReconciliation  
 ExplanationOfBenefit

# What does the Argonaut process do? Resolve practical problems

## What search criteria can you use?

Search operations

Examples:

- Can search for individual patient by identifier (e.g., MRN) OR full name & gender OR full name & birthdate
- Can search for Procedures by patient or by patient & specified date range

## What type of data will you get in response?

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

## How will that data be represented?

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

## 1. Scheduling Implementation Guide (Published March 2018)

- Appointments request – request for appointment
- Appointment response – reply to an appointment request
- Slots – blocks of time available for booking appointments
- <http://www.fhir.org/guides/argonaut/scheduling/index.html>

## 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
- <http://cds-hooks.org/specification/1.0/>

# Argonaut Project 2018 Projects

## 1. Clinical Notes

- Shouldn't there be a Common Clinical Note Set to accompany the Common Clinical Data Set?
- Plan to publish IG in February 2019
- <https://argonautproject.github.io/clinicalnotes/>

## 2. Bulk Data Access to Clinical Data

- A roster of patients rather than one patient at a time
- External security review completed and changes incorporated, plan to complete and publish IG February 2019
- <https://github.com/smart-on-fhir/fhir-bulk-data-docs/pulls?q=is%3Apr+is%3Aclosed>

## 3. Simple Assessment Questionnaires

- Import from external experts and capture/export data consistently
- Implement custom assessments across disparate systems and aggregate responses
- Plan to publish IG in February 2019
- CI Build IG: <https://argonautproject.github.io/questionnaire/adaptive.html>

# Argonaut Project 2019 Projects

## 1. Update Argonaut Data Query IG

- Update STU2 to US Core R4 resources
- Test R4 resources
- Add Encounters and Clinical Notes
- Consider adding write capability for subset of resources

## 2. Clinical Data Subscriptions

- Enables push use cases

## 3. Provenance

- Anticipated to be part of USCDI

## 4. SMART web messaging + CDS Hooks (radiology ordering)

- Supports 2020 PAMA requirement

# Argonaut Project Timeline

Oct 2014

JASON Task Force Recommendations

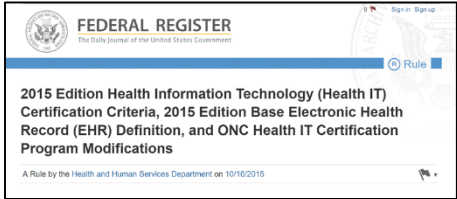
Call to action for APIs and FHIR

Dec 2014



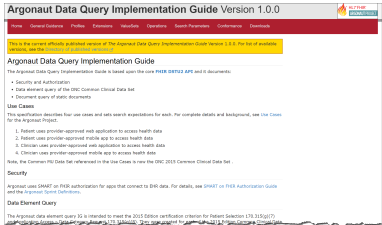
Launch of Argonaut Project

Oct 2015



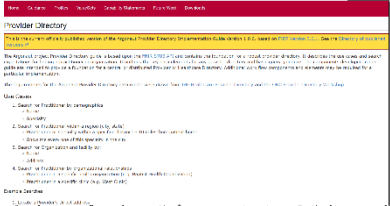
EHR certification includes API requirement

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

Feb 2018



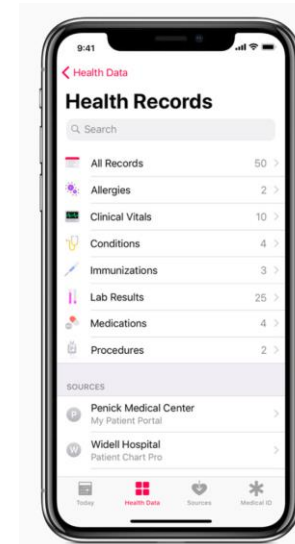
Carequality implements Argonaut Provider Directory specifications



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



50% of 100+ certified vendors use FHIR APIs



Apple includes Argonaut FHIR specifications in iPhone



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