



**The Argonaut Project:
Accelerating the Next Generation of Interoperability**

October 18, 2016

Agenda

Why do we need the Argonaut Project?

Who's behind it and what do we want to do?

What have we done?

What's next for the Argonaut Project?

What is the Argonaut Project?

The Argonaut Project is a market-initiated code and documentation sprint to accelerate the market readiness of open industry FHIR-based APIs for patient- and provider-driven interoperability use cases

It is:

- leveraging the work of other initiatives such as the S&I framework, SMART, and HSPC
- accelerating the maturation of FHIR for the industry
- open to all participants

It is NOT:

- an organization or entity
- competitive with other existing initiatives
- proprietary

Who's behind the Argonaut Project?

Founding organizations

- athenahealth
- Beth Israel Deaconess Medical Center
- Cerner
- Epic
- Intermountain Health
- Mayo Clinic
- McKesson
- MEDITECH
- Partners Healthcare System
- SMART at Boston Children's Hospital Informatics Program
- Surescripts
- The Advisory Board Company
- Accenture

Staff

- Prime contractor – HL7
- FHIR API development: Grahame Grieve, Brett Marquard, Eric Haas
- OAuth security development: Dixie Baker, Josh Mandel
- Project management: Micky Tripathi, Jennifer Monahan

Many Organizations Registered in Argonaut Implementation Community

Accenture	GE	Office of National Coordinator (ONC)
ActualMeds Corp.	Geisinger	Optum (UnitedHealth Group)
AEGIS.net,Inc.	Hackensack University Medical Center	Orion Health
Aetna	Health Samurai/Aidbox	OSIA Medical
Akana	i2b2/Mass General Hospital	Partners Healthcare
Allscripts	Iconic Systems	Persistent System Ltd
American Medical Association	Infor	Personal Medicine Plus
Amida Technology Solutions	Inpriva	Pokitdok Inc.
Apigee	Intermountain Healthcare	Practice Fusion
Applied Informatics	InterSystems Corporation	Premier Inc
athenahealth	KaiRx	Qvera
Bespoke Systems	Mana Health	Redox Engine
BIDMC	Mayo Clinic	Reliant Medical Group
Care at Hand	McKesson/RelayHealth	RxREVU
Carebox	Medfusion	SMART Health IT
Carefluence	MedicaSoft	Surescripts
Carolinas HealthCare System	Medicity	The Advisory Board Company
Cerner	MEDITECH	The Sequoia Project (formerly Healtheway)
CipherHealth	Medivo	Trinity Health
Clinical Cloud Solutions, LLC	MITRE	UC Santa Cruz
Commerce Kitchen	MobileSmith	UPMC
DoD/VA	ModuleMD	US Postal Service
Duke Medicine	My Total Health	Vetter Software
eClinicalWorks	NavHealth	VigiLanz Corporation
Eligible	NaviNet	VSee
EMR Direct	Netsmart	xG Health Solutions
Epic	NextGen/QSI	Xperterra

Mix of EHR vendors, providers, app developers, government agencies, and others....

Why do we need the Argonaut Project?

JASON Task Force (2014) makes a **call to action for “public APIs based on FHIR”**

Meaningful Use Stage 2 experience with Direct standard highlights need to **prevent inclusion of immature standards in ONC certification**

Leadership initiative by providers and vendors to **bring market discipline to standards development process**

Industry initiative to swing the balance of responsibility for nationwide interoperability back to the **private sector**

What's wrong with current standards?

Limited



- Document exchange (e.g., CCDA) is too broad, while existing data-level exchange (e.g., HL7 v2, NCPDP) is too narrow
- No nationwide standards to support query-based use cases

Complex



- CCDAs are inefficient and cumbersome
- IHE-based standards are complex

Myopic



- Not based on modern internet standards, protocols, or conventions
- Not scalable



Implication



- *Standards and ecosystem don't support a rich set of use cases*
- *Cost and complexity of standards are barrier to adoption*
- *Discourages innovators from outside health care*

The Real Implication: Clinician Users Despise the CCDA

Why FHIR-based APIs?

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

FHIR isn't the only way to approach APIs, but it's the leading candidate

- Gaining rapid enthusiasm in the health information technology community
- Supported by an existing health care SDO (HL7)

Why do we need the Argonaut Project to accelerate FHIR?

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

SDOs not resourced to provide dedicated project management and SME support to implementation-oriented activities

- 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

Argonaut Focusing on FHIR Resources Supporting CCDS

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

Argonaut Implementation Guides Based on DAF Profiles

From US Data Access Framework Implementation Guide

Meaningful Use conceptual data element	DAF profile	FHIR Resource
Medication allergies	DAF-AllergyIntolerance	AllergyIntolerance
Laboratory Order(s)	DAF-DiagnosticOrder	DiagnosticOrder
Laboratory Test(s)	DAF-DiagnosticReport	DiagnosticReport
Encounter Diagnoses	DAF-Encounter	Encounter
Family Health History	DAF-FamilyMemberHistory	FamilyMemberHistory
Immunizations	DAF-Immunization	Immunization
Laboratory Result Value(s)	DAF-Results	Observation
Medications	DAF profiles for medications , DAF-Medication , DAF-MedicationStatement , DAF-MedicationAdministration , DAF-MedicationDispense , DAF-MedicationOrder	Medication , MedicationStatement , MedicationAdministration , MedicationDispense , MedicationOrder
Patient name, Sex, Date of Birth, Race, Ethnicity, Preferred Language	DAF-Patient	Patient
Problems	DAF-Condition (Problem)	Condition
Procedures	DAF-Procedure	Procedure
Smoking status	DAF-SmokingStatus	Observation
Vital Signs (Height, weight, BP, BMI)	DAF-VitalSigns	Observation
MedicationAllergies list, Problem list, Medication List, Immunizations, Encounters, Laboratory Result Values, Procedure List	DAF List (DAF-AllergyList , DAF-ProblemList , DAF-MedicationList , DAF-ImmunizationList , DAF-EncounterList , DAF-ResultsList , DAF-ProcedureList)	List
	DAF Supporting Profiles : DAF-Organization , DAF-Location , DAF-Practitioner , DAF-Substance , DAF-RelatedPerson , DAF-Specimen	Organization , Location , Practitioner , Substance , RelatedPerson , Specimen

Setting Practical Constraints

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

What will the Argonaut Project produce?

FHIR RESTful API Implementation Guides

- 
- Data element query of the Common Clinical Data Set
 - Document (CCDA) query
 - Provider directory query

OAuth/OIDC Implementation Guides

- 
- Authorization of enterprise-approved applications
 - Single sign-on to enterprise-approved applications

FHIR Implementation Guides map to FHIR DSTU 2

OAuth/OIDC Implementation Guides currently being developed outside of HL7 but will eventually be incorporated in HL7 balloting process

What will Argonaut Implementation Guides allow people to do?

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Smoking status
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Care team members
Immunizations
Unique Device identifiers
Assessment and Plan of Treatment
Goals
Health concerns



Within enterprise:

- Patient or Provider uses authorized hosted or mobile application to query for data or documents from a single enterprise EHR

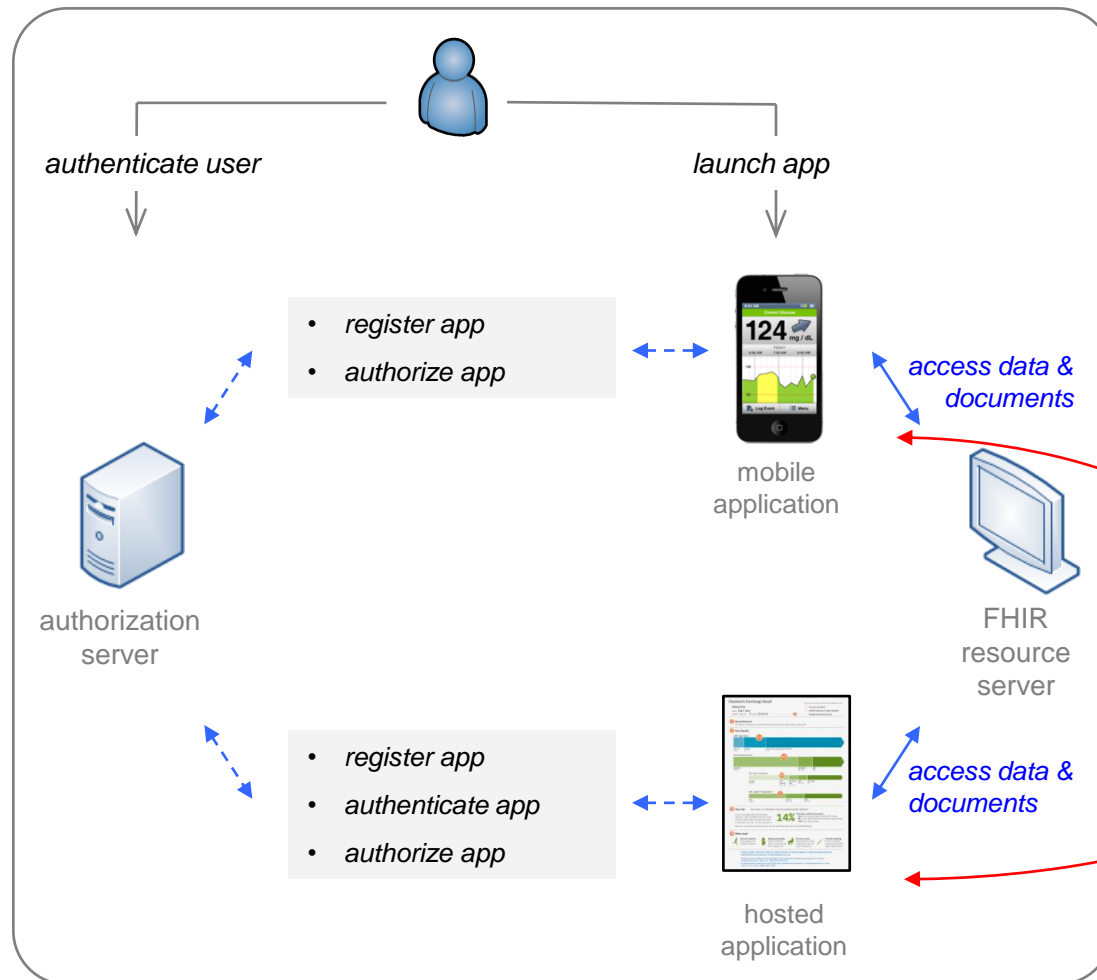
Cross enterprise:

- Provider uses hosted or mobile application to query for data or documents from EHRs in other enterprises

What will Argonaut Implementation Guides allow people to do? (continued)

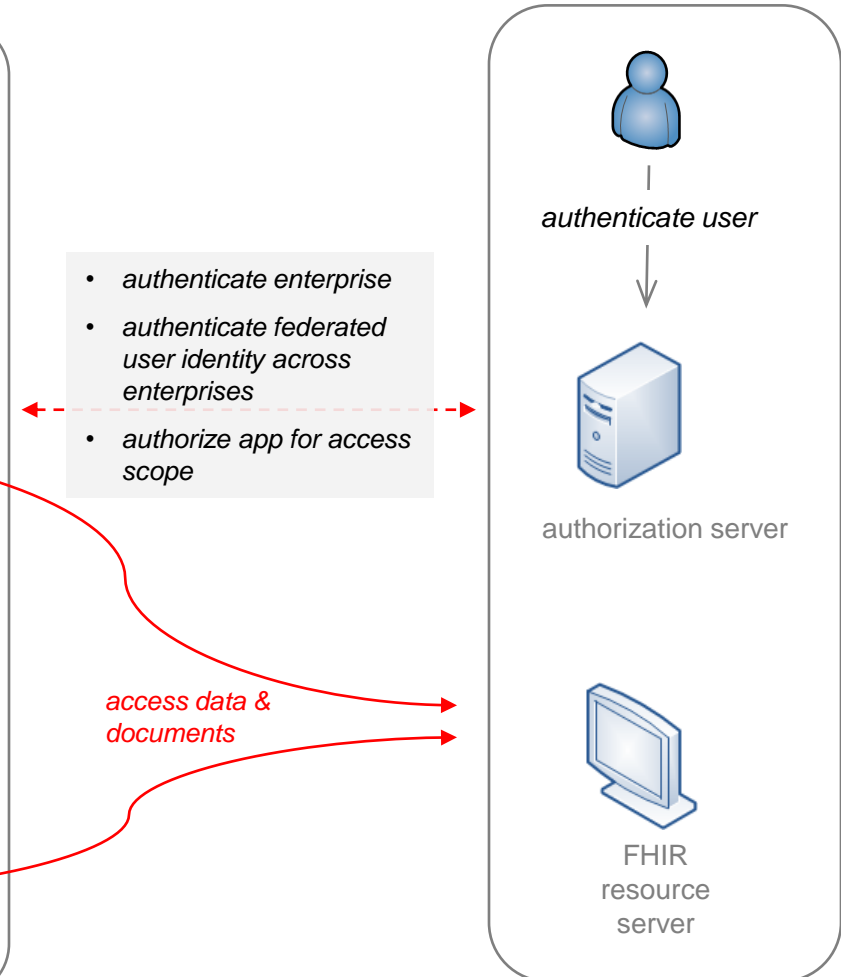
Within enterprise

health care organization A



Cross-enterprise

health care organization B



Implementation Sprints Testing CCDS Elements

Dates	Server Sprint	Client Sprint	Checkin Meetings (all times America/New_York)
Aug 6th - 21st	Sprint 1 (<i>Patient search & read</i>)	Sprint 1	Aug 21st 3-4:30pm
Aug 24th - Sep 9th	Sprint 2 (<i>Authorization with OAuth2</i>)	Sprint 2	Sept 9th 4-5:30pm
Sep 16th - Oct 23rd	Sprint 3 (<i>Search for document</i>)	Sprint 2	Oct 23rd 3:30-5pm
<i>DSTU2 Cutover</i>			
Nov 11th-Dec 2nd	Sprint 4 (<i>Medications, EHR launch with context</i>)	Sprint 3	Nov 6th 3:30-5pm
Dec 2nd - Dec 22nd	Sprint 5 (<i>Problems, Allergies, App integration</i>)	Sprint 4	Nov 30th 1:30-3pm
Dec 22nd - Feb 5th	Sprint 6 (<i>Quantitative labs, Refresh tokens</i>)	Sprint 5	Feb 5th 12-1:00pm
Feb 5th - Feb 24th	Sprint 7 (<i>Vital signs, smoking status</i>)	Sprint 6	Feb 24th 2-3:00pm
<i>HIMSS Feb 29th - Mar 4th</i>			
Feb 24th - Mar 18th	Sprint 8 (<i>Immunizations</i>)	Sprint 7	Mar 18th 1-2:00pm
Mar 18th - April 1st	Sprint 9 (<i>UDI</i>)	Sprint 8	April 1st 3-4:00pm

<https://github.com/argonautproject/implementation-program/wiki>

Links to Argonaut Deliverables

Argonaut FHIR API deliverables

- Argonaut FHIR Data Access Implementation Guide:
http://argonautwiki.hl7.org/index.php?title=Implementation_Guide
- Argonaut FHIR Document Access Implementation Guide:
http://argonautwiki.hl7.org/index.php?title=Argonaut_Document_Access
- Argonaut FHIR Provider Directory Implementation Guide:
http://argonautwiki.hl7.org/index.php?title=Provider_Registry_Implementation_Guide

Argonaut OAuth 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 <https://github.com/smart-on-fhir/smart-on-fhir.github.io/wiki/cross-organizational-auth>
- 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)

Argonaut Implementation Program

- <https://github.com/argonautproject/implementation-program/wiki>

All Providers and Vendors are Welcome to Join the Argonaut Project!



www.argonautproject.org

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