

FHIR Roadmap

Presenters



Casey Fitzgerald

FHIR Developer



Cooper Thompson

FHIR Nerd

Learning Objectives

1. Learn about Epic's existing FHIR capabilities



2. Find out about Epic's upcoming features



3. Explore the future vision of FHIR



What is FHIR?

1

FHIR Resources

AllergyIntolerance

Patient

Immunization

MedicationAdministration

2

Exchange Methods

REST API

Bulk Export

Messaging

Document Exchange

3

Implementation Guides

US Core

UDS+

Da Vinci PlanNet

International Patient Summary

UDS+ Quality Measures

Bulk Import

Adverse Events

REST API

Document Templates and Rules

Operations

Insurance Card Image Exchange

REST API

Payer-to-Payer Exchange

Bulk Operations

Cross-Organization Scheduling

Operations

Norway e-Prescribing

Messaging

Social Care

REST API

External EHR Connections

REST API

Prior Authorization

Operations, Subscriptions

Payer Decision Support

CDS Hooks

Clinical Summary Export

REST API

Netherlands Patient Access API

REST API

DK Hospital Notifications

Messaging

Death Reporting

Document Submission

Vaccine Credentials (COVID)

SMART Health Links

Patient Access API from Payers

REST API

Payer's Provider Access API

Operations

Clinical PDF Exchange

REST API

NL MP9 e-Prescribing

Transactions

DK Clinical Correspondence

Messaging

Document Scanning

REST API

Appointment Slot Publishing (COVID)

SMART Scheduling Links

Patient Access API from Providers

REST API

Claims Exchange

Bulk Export

Life Insurance and Law Firms

Operations

NL MP9 Medication History

Transactions

International Patient Summary

Document Exchange

Release of Information

Bulk Export

Coverage Requirements Discovery

CDS Hooks

Care Gaps Exchange

Bulk Export

Health Plan Provider Directory

Bulk Publish

Care Everywhere on FHIR

REST API

UK e-Prescribing

Operations



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Document Exchange

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Implementation Guides

US Core

UDS+

Da Vinci PlanNet

International Patient Summary



FHIR is a Community













FHIR Communities











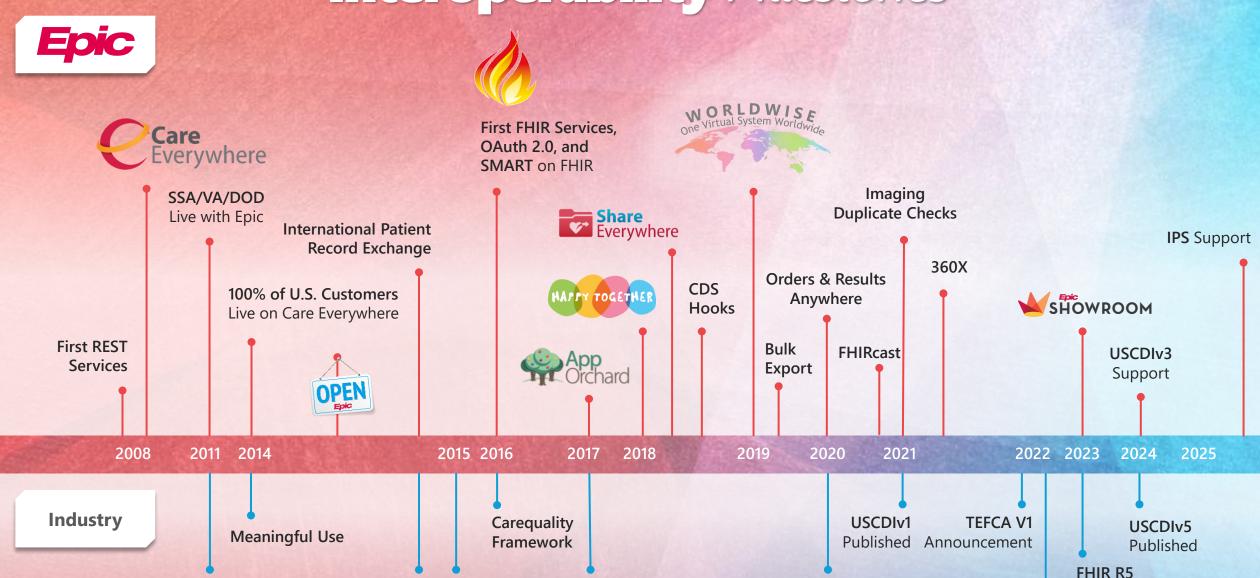








Interoperability Milestones



FHIR STU3

Mar. 2017

FHIR R4

Oct. 2019

Mar. 2023

USCDIv3 Published

eHealth Exchange

Network Go-Live

FHIR DSTU1

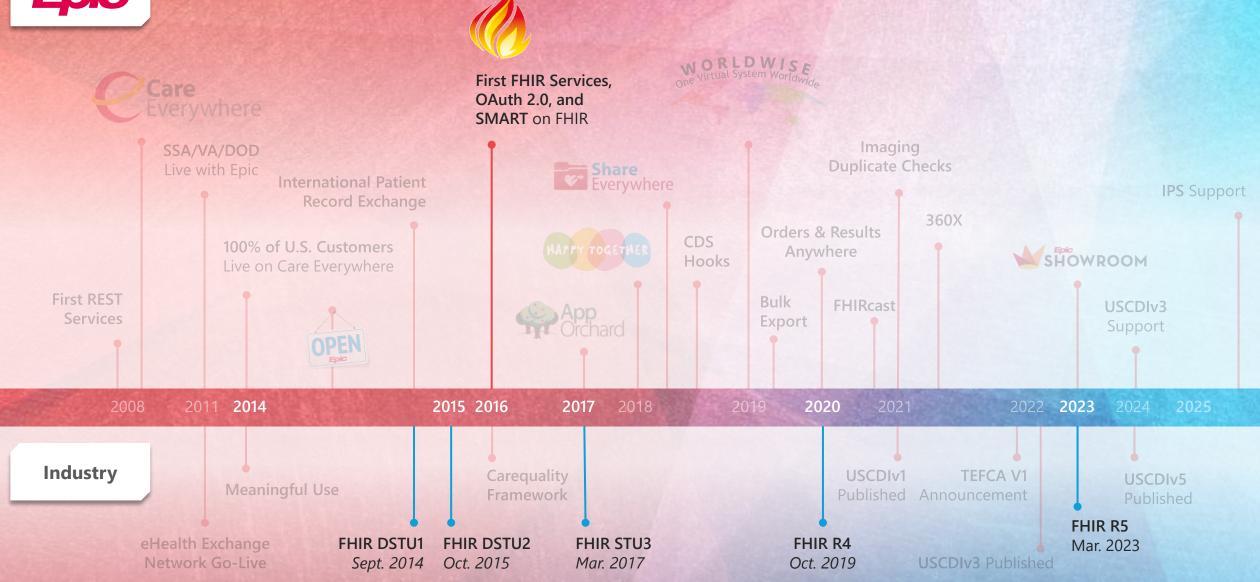
Sept. 2014

FHIR DSTU2

Oct. 2015

Interoperability Milestones





First Epic Organizations Live

on FHIR for Patient Access



December 2016



December 2016



January 2017

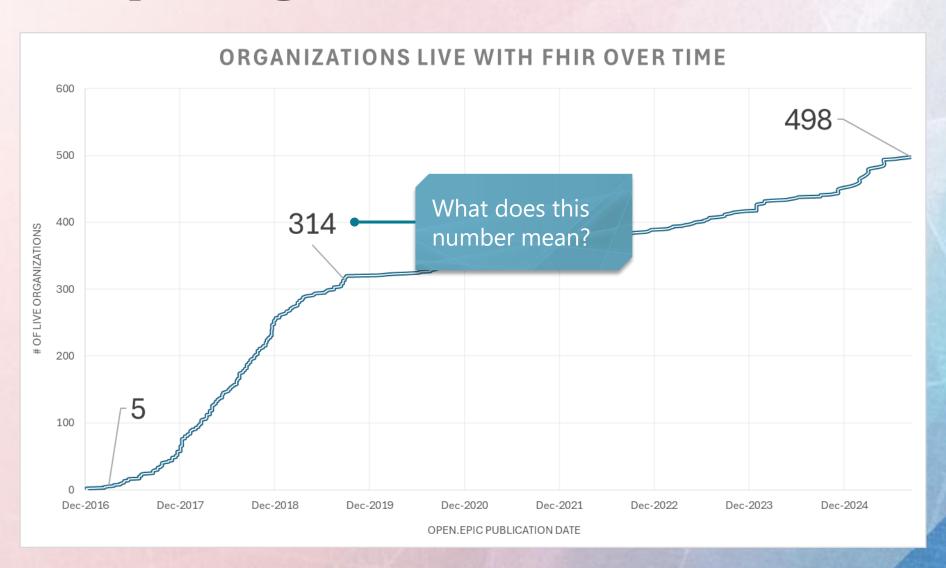


January 2017



January 2017

Epic Organization Live on FHIR



First Epic Organizations Live

on FHIR for Patient Access



December 2016



December 2016



January 2017



January 2017



January 2017

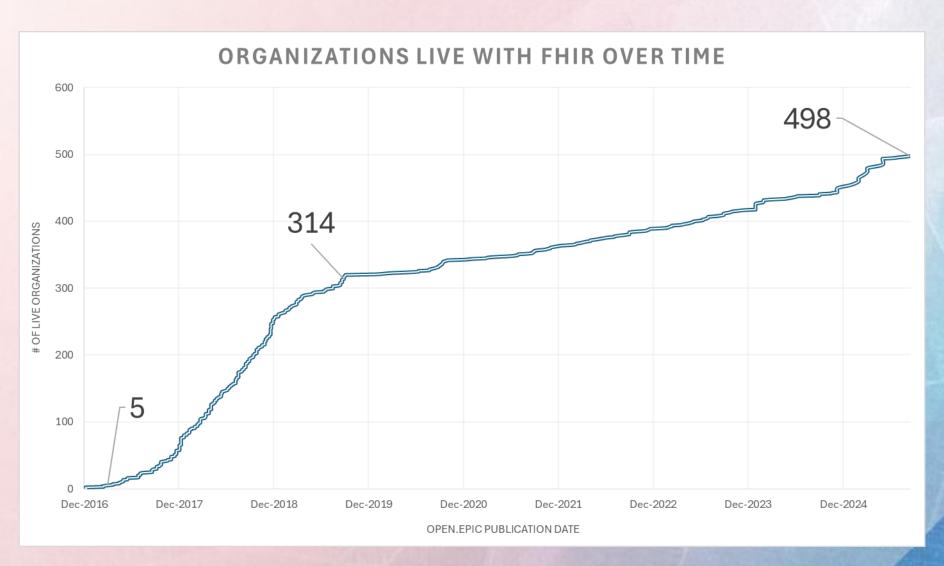
Patients who receive care at

57,500

hospitals and clinics in the U.S.

can access their data using Epic's FHIR APIS

Epic Organization Live on FHIR

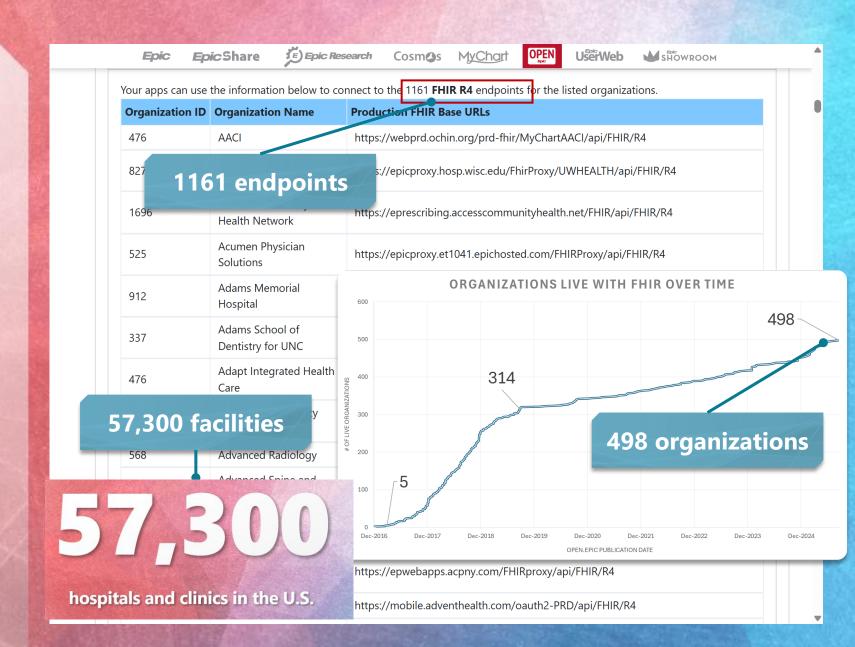


FHIR Endpoints



https://open.epic.com/MyApps/Endpoints





















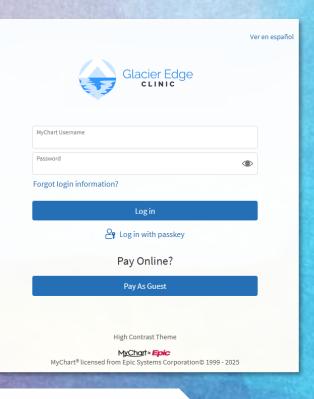






https://river-hills.org/**m**

https://river-hills.org/lv



https://river-hills.org/**gec**/api/FHIR/R4

Generalize to Benefit More with Industry Standards



User Access Brands



https://hl7.org/fhir/smart-app-launch/brands.html



SMART App Launch 2.2.0 - STU 2.2





Table of Contents > User-access Brands and Endpoints

This page is part of the Smart App Launch Implementation Guide (v2.2.0: STU 2.2) based on FHIR (HL7® FHIR® Standard) R4. This is the current published version. For a full list of available versions, see the Directory of published versions

8 User-access Brands and Endpoints

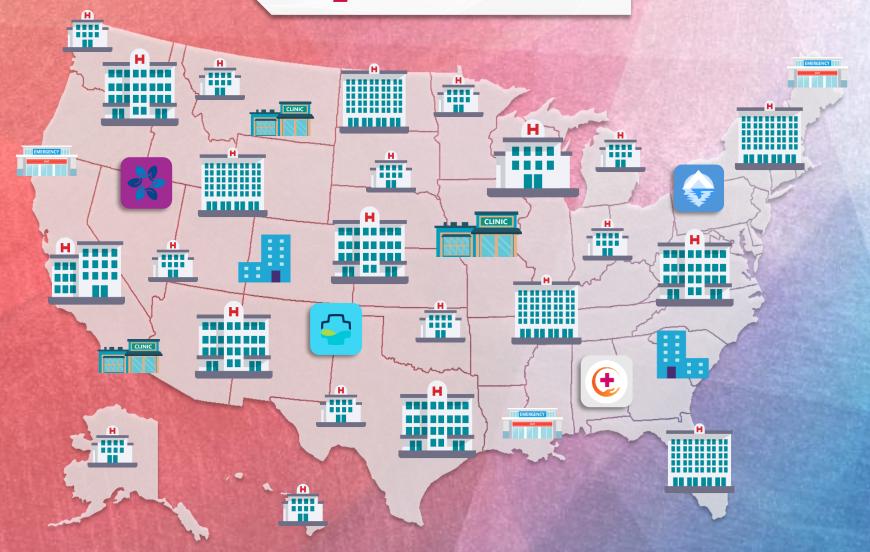
8.0.1 Introduction

The specification defines FHIR profiles for Endpoint , Organization , and Bundle resources that help users connect their apps to health data providers. It outlines the process for data providers to publish FHIR Endpoint and Organization resources, where each Organization includes essential branding information such as the organization's name, logo, and user access details. Apps present branded Organizations to help users select the right data providers.

- Introduction
- Brands and Endpoints
- Design goals
- Brand Information
- Conformance Overview
- FHIR Profiles
- Rules And Best Practices

By following this specification, EHR systems, healthcare providers, payers, and app developers can ensure a consistent and recognizable user experience when connecting users to health records across various platforms and services.

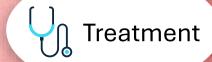
Epic FHIR

















































Beth Israel Lahey Health

































Cheyenne Regional







































































CLINIC

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Fort Worth, Texas

JPS Health Network











Luminis Health.



























Maritie







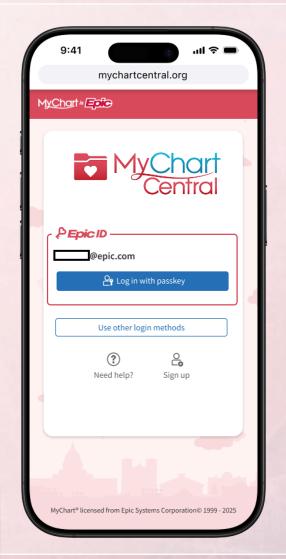


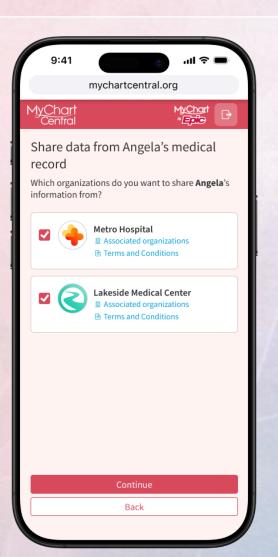


hospitals and clinics in the U.S.

One Login with









COMING SOON

FHIR Connections

Patient Access



Cross-Org Data Exchange



Inside the Enterprise



Epic FHIR Toolkit



REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization



Bulk FHIR

Population Level Exchange





REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization



Bulk FHIR

Population Level Exchange

500+ FHIR APIS



Account

AdverseEvent

AllergyIntolerance

Appointment

Binary (CCDA Documents)

Binary (Clinical Notes)

Binary (Handoff)

Binary (HIS)

Binary (Labs)

Binary (OASIS)

Binary (Practitioner Photo)

BodyStructure (Tooth)

CarePlan (Dental)

CarePlan (Encounter-Level)

CarePlan (Inpatient Pathway)

CarePlan (Inpatient)

CarePlan (Longitudinal)

CarePlan (Oncology)

CarePlan (Outpatient)

CarePlan (Questionnaires Due)

CareTeam (Longitudinal)

Communication (Community Resource)

Condition (Care Plan Problem)

Condition (Dental Finding)

Condition (Encounter Diagnosis)

Condition (Genomics)

Condition (Health Concern)

Condition (Infection) Condition (Problems) Consent

Coverage Device

DiagnosticReport (Results)

DocumentReference (CCDA Documents)

DocumentReference (Clinical Notes)

DocumentReference (External CCDA)

DocumentReference (Handoff) DocumentReference (HIS)

DocumentReference (Labs)

DocumentReference (OASIS)

Encounter

Endpoint

EpisodeOfCare

ExplanationOfBenefit

FamilyMemberHistory

Flag (Patient FYI)

Goal (Patient)

Goal (Care Plan)

Goal (Pathway Step)

Immunization

List (Allergies)

List (Family History)

List (Hospital Problems)

List (Immunization)

List (Medications)

List (Patient List)

List (Patients With Questionnaires Due)

List (Problems)

Location

Medication

MedicationOrder

MedicationRequest (Orders)

MedicationRequest (Unsigned Order)

MedicationStatement

Observation (ADLs)

Observation (Core Characteristics)

Observation (Labs)

Observation (LDA-W)

Observation (Obstetric Details)

Observation (Periodontal)

Observation (SmartData Elements)

Observation (Smoking History)

Observation (Vitals)

Organization

Patient

Practitioner

PractitionerRole

Procedure (Orders)

Procedure (Surgeries)

Procedure (Surgical History)

ProcedureRequest (Orders)

ProcedureRequest (Unsigned Order)

Questionnaire (Appointment and Series)

QuestionnaireResponse (Appointment and Series)

RelatedPerson

ResearchStudy

ResearchSubject

Schedule

ServiceRequest (Community Referral)

ServiceRequest (Dental Procedure)

ServiceRequest (Order Template)

ServiceRequest (Orders)

ServiceRequest (Referral)

ServiceRequest (Unsigned Order)

Slot

Specimen

Substance

Task (Community Referral)

ValueSet

and more....







Connects 2000+ unique apps

Across 13 countries

138 Billion FHIR calls last year

Reporting period: Aug '24 – Aug '25





REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization



Bulk FHIR

Population Level Exchange

SMART App Launch

Standalone Launch

User starts in the app.



AVAILABLE NOW

EHR Launch

User starts in the EHR.



AVAILABLE NOW

Backend Services

No human user is involved.



AVAILABLE NOW



Providers

Hyperspace (Desktop & Web)

Haiku, Canto, Rover (Mobile)

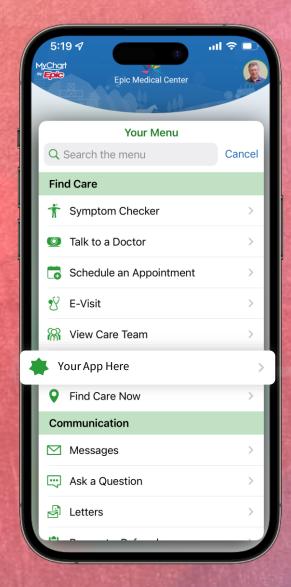
EpicCare Link (Web)

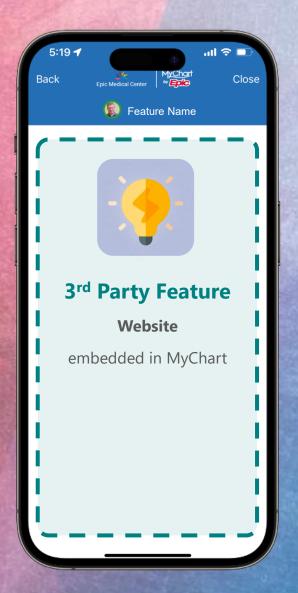
Patients

MyChart (Patient Portal)

Welcome (Kiosk)

Embed Applications









REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization



Bulk FHIR

Population Level Exchange





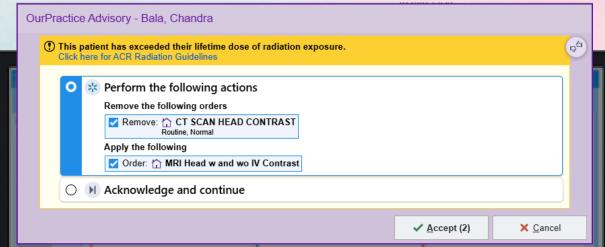








Clinical Decision Support (CDS) Service



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CDS Hooks



https://cds-hooks.hl7.org/



CDS Hooks

2.0.1 - STU 2 Release 2 🚳



CDS Hooks Hook Library ▼ Change Log Downloads

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This page is part of the CDS Hooks Specification (v2.0.1: STU2) based on FHIR (HL7® FHIR® Standard) R4. This is the current published version. For a full list of available versions, see the Directory of published versions

1 Home

Official URL: http://cds-hooks.hl7.org/ImplementationGuide/hl7.fhir.uv.cds-hooks

Version: 2.0.1

IG Standards status: Trial-use

Computable Name: CDSHooks

1.1 Intellectual Property Statements

The HL7 CDS Hooks Implementation Guide is the copyright of HL7 International and Boston Children's Hospital. The specification is licensed under a Creative Commons Attribution 4.0 International License.

1.2 Overview

This HL7 CDS Hooks Implementation Guide is published at the level of Standard for Trial Use 2. It describes a "hook" \(\mathbb{C}\)'-based pattern for invoking decision support from within a clinician's workflow. The API supports:

- · Synchronous, workflow-triggered CDS calls returning information and suggestions
- · Launching a user-facing SMART app when CDS requires additional interaction

The companion HL7 CDS Hooks Library of contains specifications of industry standardized clinical workflow steps used by systems conforming to this guide. While changes to this guide become infrequent and tightly constrained, new hooks will continue to be specified and matured in the Library.

See https://cds-hooks.org/ of for additional information, resources and ways to get involved.

1.3 Conformance Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this specification are to be interpreted as described in RFC2119 . Further, the key word "CONDITIONAL" indicates that a particular item is either REOUIRED or

- Intellectual Property Statements
- Overview
- Conformance Language
- Use of JSON
- CDS Hooks Anatomy
 - CDS Services CDS Clients
 - Cards
- Discovery
 - HTTP Request
 - Response
 - HTTP Status Codes
 - Discovery Example
- Calling a CDS Service
 - HTTP Request
 - hookInstance
 - Example
- Providing FHIR Resources to a CDS
 - Prefetch Template
 - Prefetch tokens





REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization

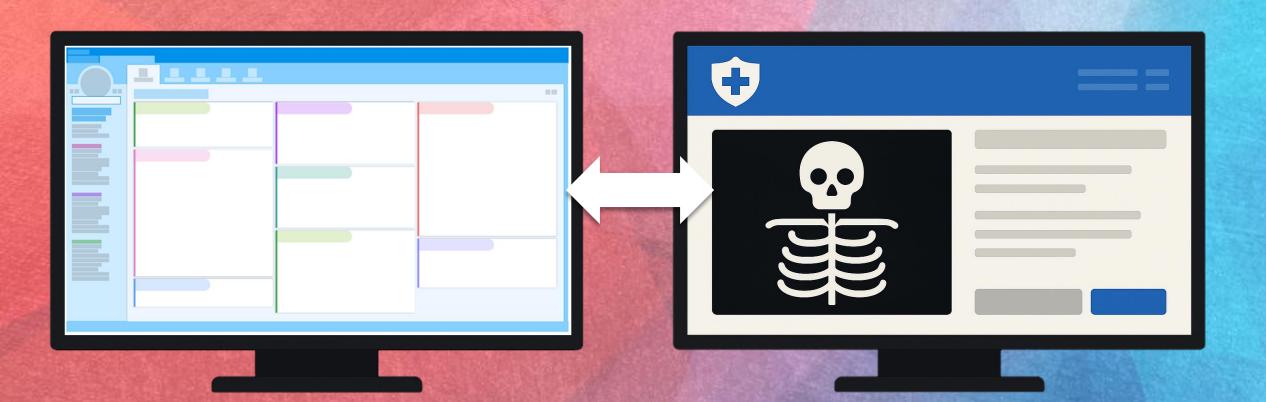


Bulk FHIR

Population Level Exchange







Generalize to Benefit More with Industry Standards

FHIRcast





https://fhircast.hl7.org/



FHIRcast 3.0.0 - STU 3



Table of Contents > Introduction

This page is part of the FHIRcast (v3.0.0: STU3 (v3.0.0)) based on FHIR (HL7® FHIR® Standard) R4. This is the current published version. For a full list of available versions, see the Directory of published versions

1 Introduction

Official URL: http://fhircast.hl7.org/ImplementationGuide/hl7.fhir.uv.fhircast

Version: 3.0.0

IG Standards status: Trial-use

Maturity Level: 4

Computable Name: FHIRcast

1.1 Overview

FHIRcast synchronizes healthcare applications in real time to ensure the user acts on the same clinical information across these applications. For example, a radiologist often works in three disparate applications at the same time (a radiology information system, a PACS and a dictation system), in this case, each of these three systems needs to display the same study or patient at the same time.

FHIRcast isn't limited to radiology use-cases. Modeled after the common event notification design pattern and specifically WebSub Lar, FHIRcast naturally extends the SMART on FHIR launch protocol to achieve tight integration between disparate, full-featured applications.

- Overview
- How it works and an example scenario
- Reading the Specification
- Relation to FHIR Subscriptions
- Get involved
- Credits

FHIRcast builds on the CCOW of abstract model to specify an http-based and simple context synchronization specification that doesn't require a separate context manager. FHIRcast is intended to be both less sophisticated, and more implementer-friendly than CCOW and therefore is not a one-to-one replacement of CCOW, although it solves many of the same problems.

Adopting the WebSub terminology, FHIRcast describes an application as a Subscriber synchronizing with a Hub (which may be an EHR or other system). Any user-facing application can synchronize with FHIRcast. While less common, bidirectional communication between multiple applications is also possible.

1 1 1 Whv?

The large number of vendor-specific or proprietary context synchronization methods in production limit the industry's ability to enhance the very large number of integrations currently in production. In practice, these integrations are decentralized and simple.

1.2 How it works and an example scenario

Epic FHIR Toolkit



REST FHIR APIS

Request-Based Exchange



SMART App Launch

Embedded Apps in Epic



CDS Hooks

Clinical Decision Support



FHIRcast

Context Synchronization



Bulk FHIR

Population Level Exchange

Bulk Data

Bulk Export

App queries for data.



Formerly known as **Bulk Import**

Bulk Submit

App is notified about data.

UDS+



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FUTURE IDEA

Bulk Publish

Data is pre-published



COMING SOON



FUTURE IDEA

Health Plan Provider Directory

Generalize to Benefit More with Industry Standards



Bulk Data





https://hl7.org/fhir/uv/bulkdata/





Bulk Data Access IG 2.0.0 - Standard for Trial Use





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This page is part of the FHIR Bulk Data Access (Flat FHIR) (v2.0.0: STU 2 2) based on FHIR R4 3. This is the current published version. For a full list of available versions, see the Directory of published versions 3 2

Plain Language Description

Hide

This standard defines a method for efficiently exporting large healthcare datasets such as patient records or claims from FHIR-based systems. It addresses the need to transfer bulk data between software systems or between organizations that have appropriate data sharing agreements in place for purposes like research, population health management, and clinical quality measurement. Key beneficiaries include developers of FHIR servers, healthcare organizations, payer organizations, and researchers. The standard recommends the SMART Backend Services Authorization Profile for secure access management.

1 Bulk Data IG Home Page

Providers and organizations accountable for managing the health of populations often need to efficiently access large volumes of information on a group of individuals. For example, a health system may want to periodically retrieve

- Conformance
- Use Cases

Bulk Data



App queries for data.



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Bulk Submit

App is notified about data.



FUTURE IDEA

REST API

App queries for data.



AVAILABLE NOW

Notifications

App is notified about data.



FUTURE IDEA



US Core Implementation Guide



USCDI Versions

USCDI v1

- Supported since 2022
- Nationwide baseline for FHIR APIs

USCDI v3

- Supported since August 2024
- New baseline in 2026

USCDI v5

- Development underway
- Updates on open.epic.com







USCDI Versions

USCDI v1

- Supported since 2022
- Nationwide baseline for FHIR APIs

USCDI v3

- Supported since August 2024
- New baseline in 2026

USCDI v6+

- USCDI v6 released this summer
- US Core profiles to follow







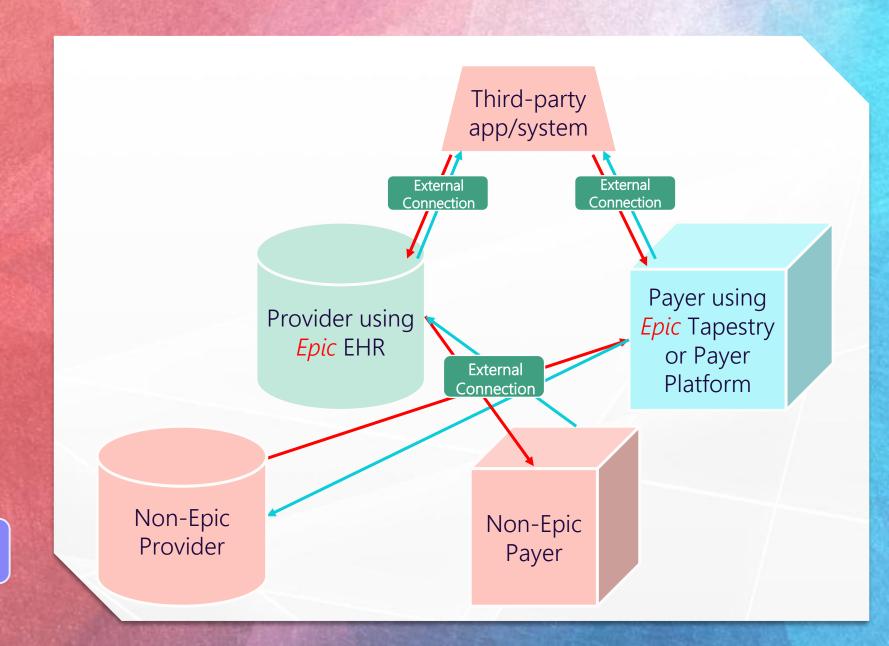
FUTURE IDEA

Payer APIs

USCDI v3

Payer APIs Feb 2026





FHIR Support for Prior Authorizations

Is prior auth needed?

Coverage Requirements Discovery What information is Needed?

Documentation
Templates and
Rules

Submit Authorization.

Prior
Authorization
Support



AUG 2025



FEB 2026



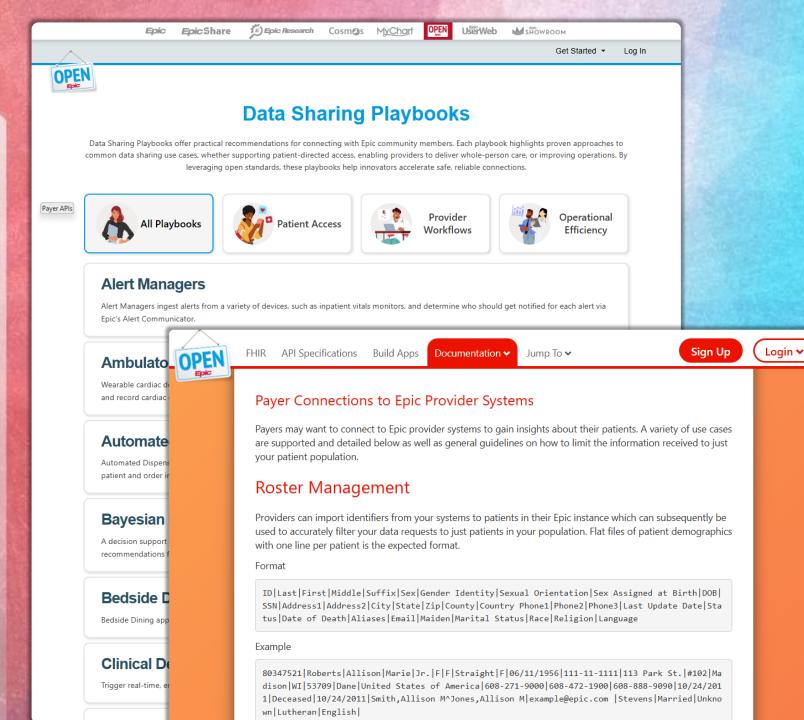
FEB 2026

Data Sharing Playbooks



https://open.epic.com/Playbooks





Hybrid Notifications



HL7 v2 Notification

FHIR Queries





Subscriptions









23M

daily charts exchanged with Care Everywhere



23M

daily charts exchanged with Care Everywhere

45M

daily notes exchanged via FHIR

International Patient Summary

Care Everywhere Built on FHIR



Produce IPS

for document exchange





Receive and Display

IPS from other systems



FUTURE IDEA

International Patient Summary

Care Everywhere Built on FHIR



International Standard



Workflows



Global Investment



FHIR Versions

R4

- Well established globally
- Active IG development
- Lasting support

R6

- Next major version of FHIR
- Expected in 2026
- Strong push for normativity

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After Visit Summary, ASAP, Aura, Beacon, Beaker, Beans, BedTime, Best Care Choices for My Patient,
Bones, Break-the-Glass, Bugsy, Caboodle, Cadence, Canto, Care Everywhere, Charge Router, Cheers,
Chronicles, Clarity, Cogito ergo sum, Cohort, Comfort, Community Connect, Compass Rose, Cosmos,
Cosnome, Cupid, Discovery, Epic, EpicCare, EpicCare Link, Epicenter, EpicShare, EpicWeb, Epic Earth, Epic
Nexus, Epic Research, Garden Plot, Grand Central, Haiku, Happy Together, Healthy Planet, Hello World,
Hey Epic!, Hyperdrive, Hyperspace, Kaleidoscope, Kit, Limerick, Lucy, Lumens, MyChart, Nebula, OpTime,
Phoenix, Powered by Epic, Prelude, Radar, Radiant, Resolute, Revenue Guardian, Rover, Share
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