

# *Social Determinants of Health HL7 Implementation Guide*

Session #52, March 15, 2022

**HIMSS** 22

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# Welcome



Evelyn Gallego

CEO, EMI Advisors  
Program Director  
Gravity Project



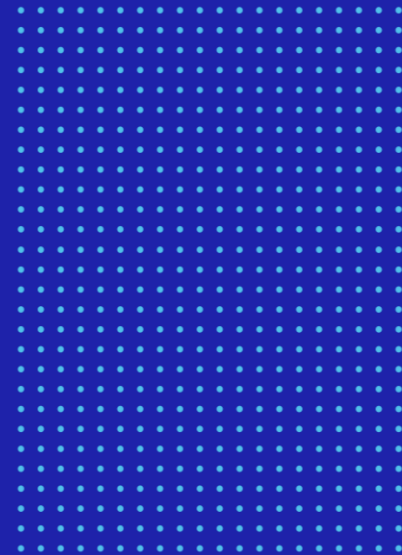
Aaron Seib

SVP, SAFFRON Labs  
Co-chair, Executive Committee,  
Gravity Project

# *In Absentia*



Robert Dieterle  
*CEO EnableCare Group, LLC  
Sr. Advisor, the Gravity Project*



# *Conflict of Interest*

Aaron Seib, SVP has no real or apparent conflicts of interest to report.

Evelyn Gallego, CEO has no real or apparent conflicts of interest to report.

Robert Dieterle, CEO has no real or apparent conflicts of interest to report.

# Agenda

- Gravity Project Overview (10 mins)
- HL7® FHIR® and Standards Development Process Overview (10 mins)
- Introduction to the HL7 SDOH FHIR Implementation Guide (20 mins)
- Barriers to Adoption and Opportunities to Advance SDOH Interoperability (10 mins)
- Project Success and Looking Ahead (5 min)
- Questions (5 min)

# Learning Objectives

- Describe how standardized APIs and a FHIR implementation guide can be used to support SDOH data capture, exchange, and aggregation across clinical and non-clinical IT systems.
- Discuss how broad industry stakeholders are participating in the development and testing of SDOH data standards.
- Describe the role of semantic and syntactic standards in the design of a FHIR implementation guide.
- Introduce the role of provider associations and health plans in advancing SDOH data interoperability.

# *Gravity Project Overview*

# Why SDOH are Important

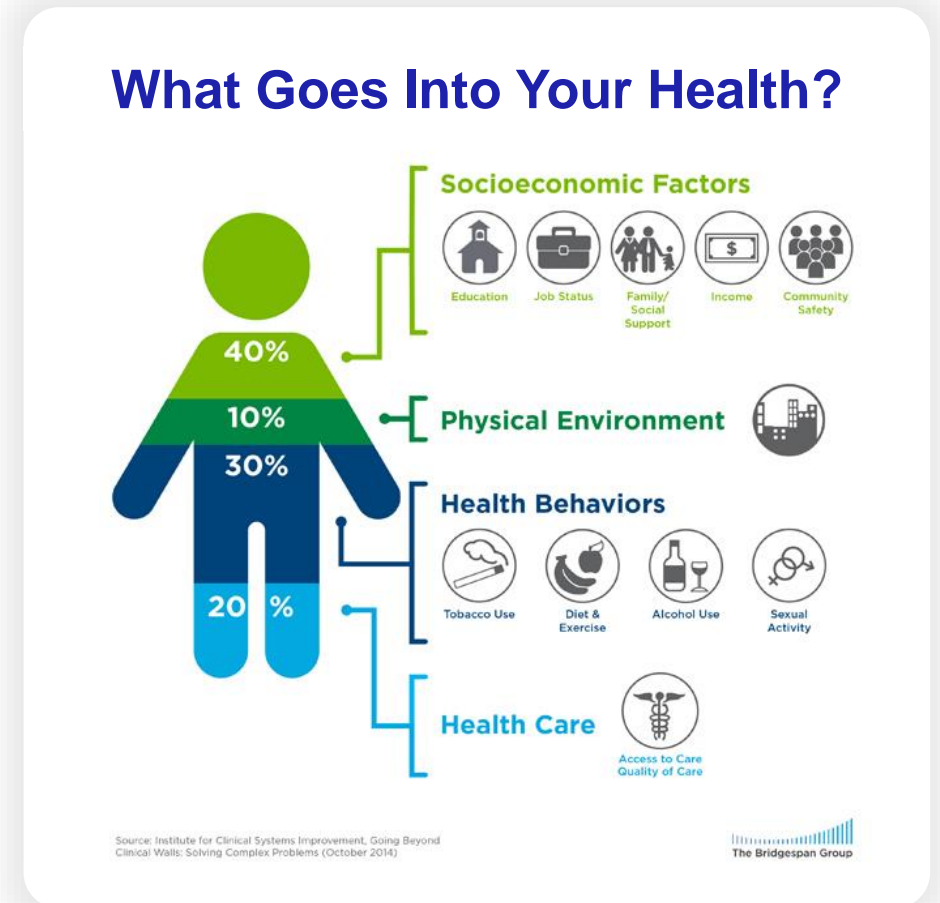
There is growing awareness that SDOH information improves whole person care and lowers cost. Unmet social needs negatively impact health outcomes.

-  **Food insecurity** correlates to higher levels of diabetes, hypertension, and heart failure.
-  **Housing instability** factors into lower treatment adherence.
-  **Transportation barriers** result in missed appointments, delayed care, and lower medication compliance

Addressing SDOH is a primary approach to achieve health equity.

<sup>1</sup><https://www.cdc.gov/nchhstp/socialdeterminants/faq.html>

<sup>2</sup>[https://www.bridgespan.org/insights/library/public-health/the-community-cure-for-health-care-\(1\)](https://www.bridgespan.org/insights/library/public-health/the-community-cure-for-health-care-(1))





# Why Standardize and Structure Social Risk Data?

- As care for social needs has advanced in healthcare, there is an increasing demand to **expand and standardize** the terminology and information models for social needs in order to:
  - **Better care for patients with social needs and the populations they live within.**
  - **Collaborate with clinical and community partners.**
  - **Study social needs, their effect on health outcomes, and the effects of interventions.**
  - **Allocate resources toward social risk within value-based care.**

# SIREN Social Risk Codes Review

**133** Screening question panel codes

**33** Screening procedure codes

**686** Assessment/Diagnosis codes

**243** Treatment/Intervention codes

**1095** **SDH Codes**

- SNOMED CT®
- LOINC®
- CPT®
- ICD-10-CM

Arons A, DeSilvey S, Fichtenberg C, Gottlieb L. Documenting social determinants of health-related clinical activities using standardized medical vocabularies. JAMIA Open. 2018;2(1):81-88. (<http://sirennetwork.ucsf.edu/tools-resources/mmi/compendium-medical-terminology-codes-social-risk-factors>)



## **Gravity Project**

*A collaborative public-private initiative launched in May 2019 with the goal to develop consensus-driven data standards to support the collection, use, and exchange of social determinants of health (SDOH) data.*

# Project Scope: The SDOH Domains

Develop data standards to represent and exchange patient level SDOH data documented across four clinical activities:

- Screening
- Assessment/diagnosis
- Goal setting
- Treatment/interventions

Test and validate standardized SDOH data for use in patient care, care coordination between health and human services sectors, population health management, public health, value-based payment, and clinical research.

<https://thegravityproject.net>

## SDOH Domains



# Public Collaboration

Gravity has convened over **2,000+** participants from across the health and human services ecosystem:



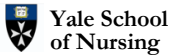


































- Clinical Provider Groups
- Community-based Organizations
- Standards Development Organizations
- Federal And State Government
- Payers
- Technology Vendors

Public Calls 4-5:30 EST every other Thursday

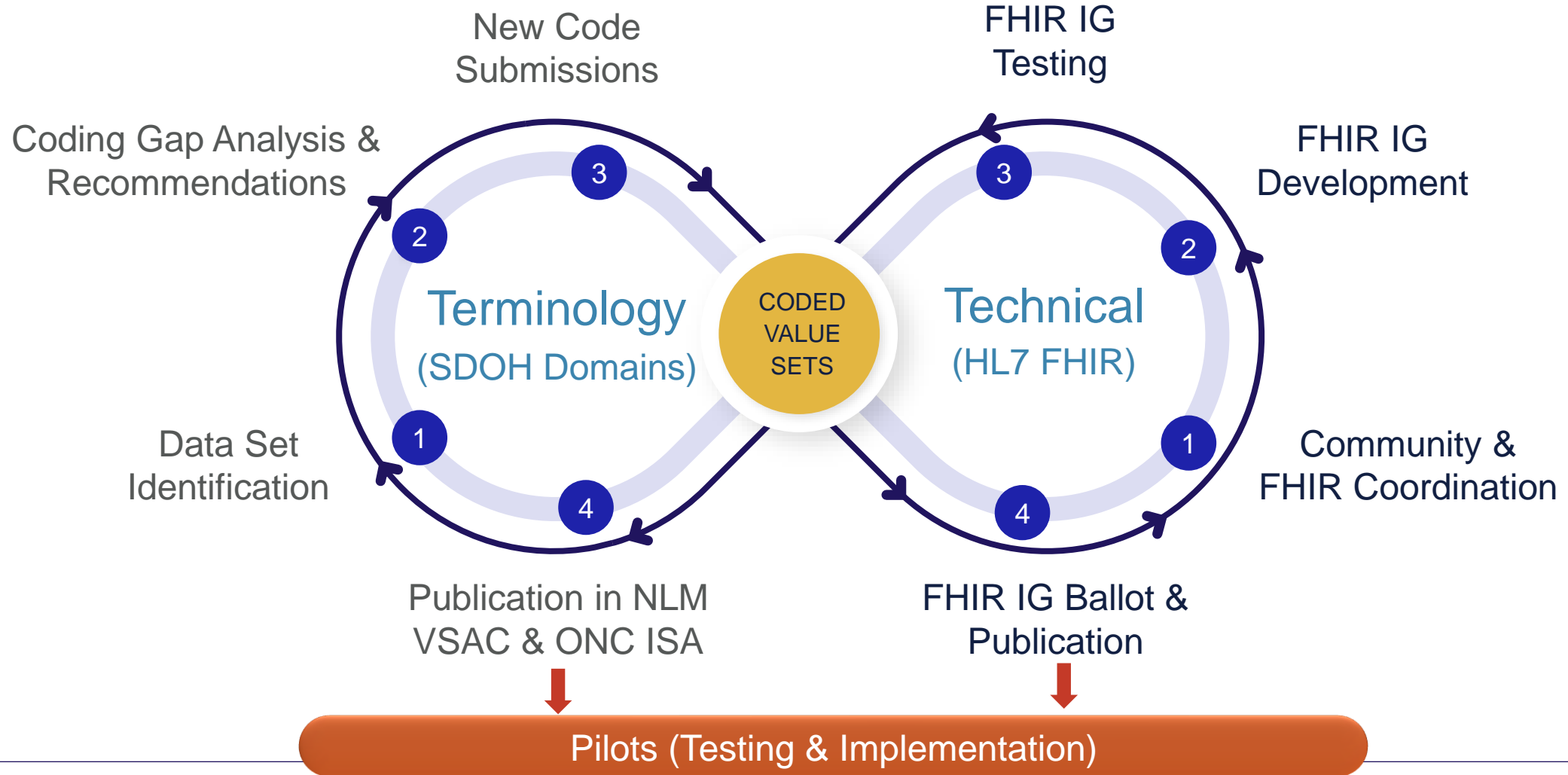


<https://confluence.hl7.org/pages/viewpage.action?pageId=46892669#JointheGravityProject-GravityProjectMembershipList>

# Project Founders, Grants, and In-Kind Support To Date

PROVIDER	SOCIAL SERVICES	PAYER	TECHNOLOGY VENDOR	GOVERNMENT
      	     	          	       	    

# Project Execution: Three Workstreams (Terminology, Technical, Pilots)



# Terminology Workstream Accomplishments

Data definitions and code submissions for **14** SDOH Domains

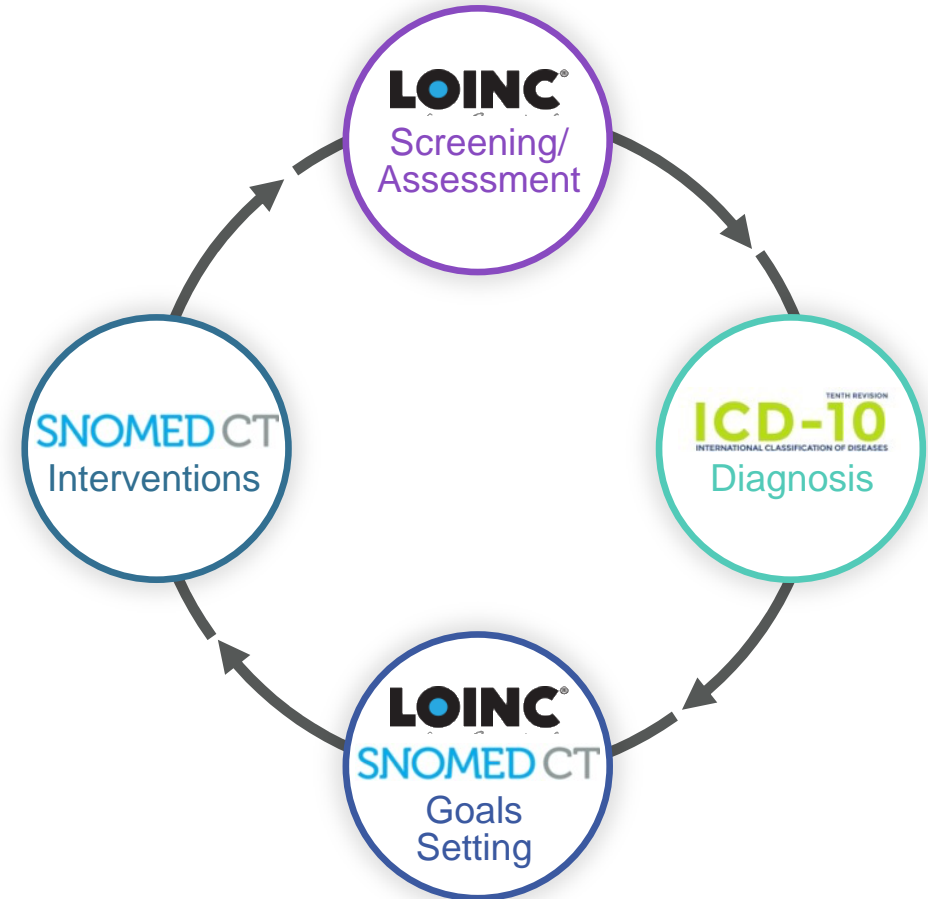
**LOINC** screener codes available for **11** domains

**ICD-10** z-codes available for **6** domains

**SNOMED-CT** intervention codes available for **1** domain (food insecurity)

Published **71** value sets in National Library of Medicine (NLM)

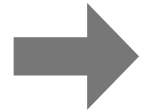
Data class included in ONC USCDI v2





# Interoperability Glide Path: Domain Data Sets & Implementation Guides

## SDOH Data Sets



Develop and test coded value sets for use in FHIR

Refine, test, and ballot HL7® FHIR® SDOH Implementation Guide



Regulators

EHR Vendors

Payers & Providers

Patients

Clinicians

Registries/  
Researchers



<http://www.hl7.org/about/fhir-accelerator/>

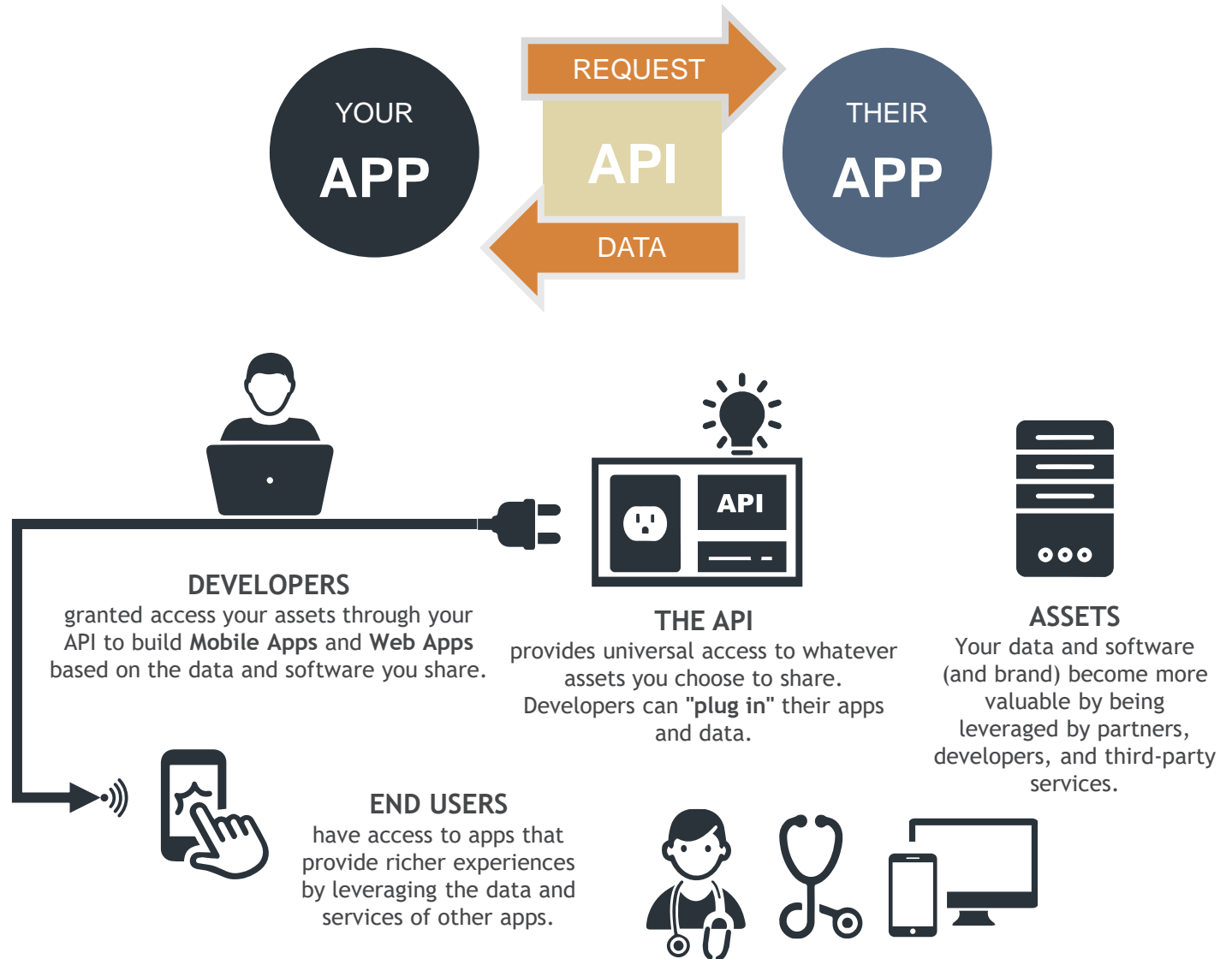


*HL7<sup>®</sup> FHIR<sup>®</sup> and  
Standards Development  
Process Overview*

# API Overview

## APIs...

- An API is a software intermediary which allows applications to talk to each other
- APIs allow the capabilities or data of one computer program to be used by another
  - Lego blocks of data
  - Doesn't matter what the underlying computer or technology is
- APIs are a foundational technology that drives modern computing and the API economy (Amazon, Netflix, Google, Facebook, EBay, YouTube, Twitter, & etc.)
- APIs enable innovation in an unprecedented manner
- APIs are not new... simplified, easy to use versions of them are



# What is FHIR?

## FHIR® – Fast Healthcare Interoperability Resources

- An HL7 next generation standard
- Helps two computer systems talk to each other

## FHIR "resources" are standardized & reusable

- Patient, practitioner, organization, deviceRequest

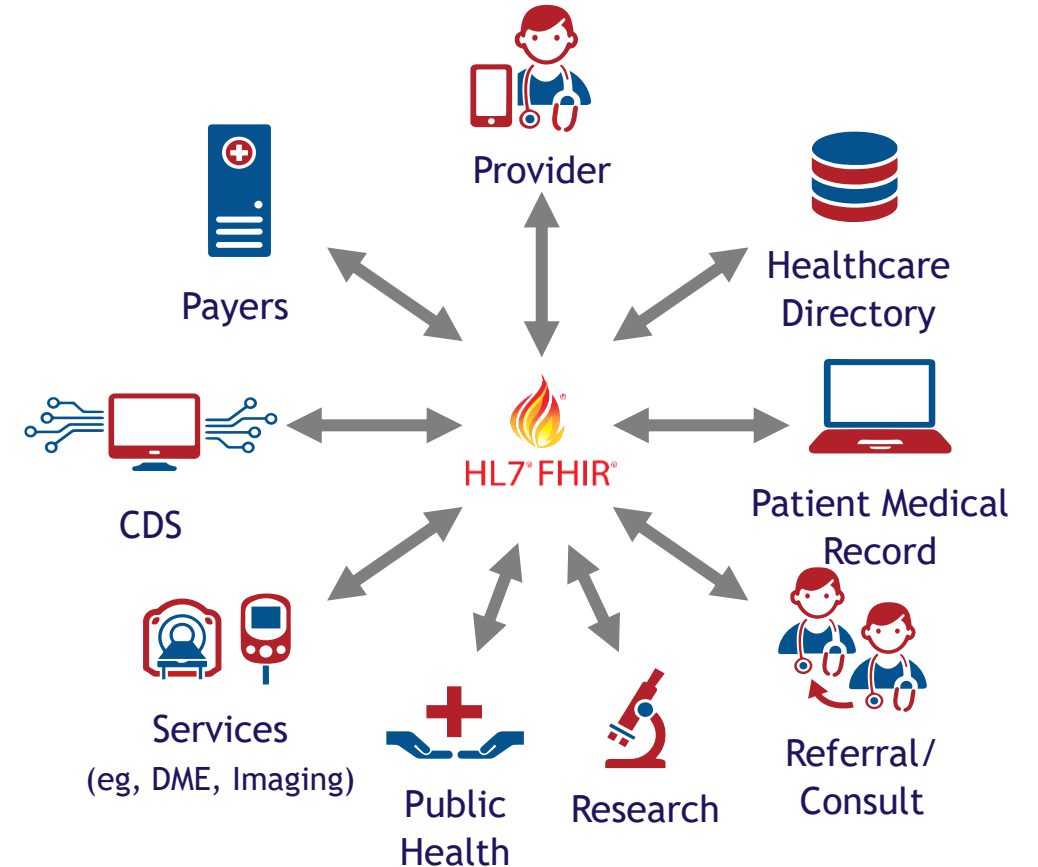
## FHIR supports common exchange methods

- REST\*, messaging, documents and services

## FHIR supports the spectrum of devices/systems

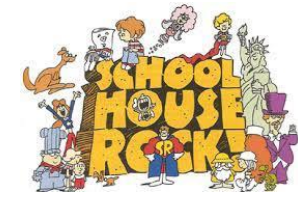
- Mobile phone apps, EHR-based data sharing, institutional solutions

## FHIR helps with existing use cases & provides for future innovation

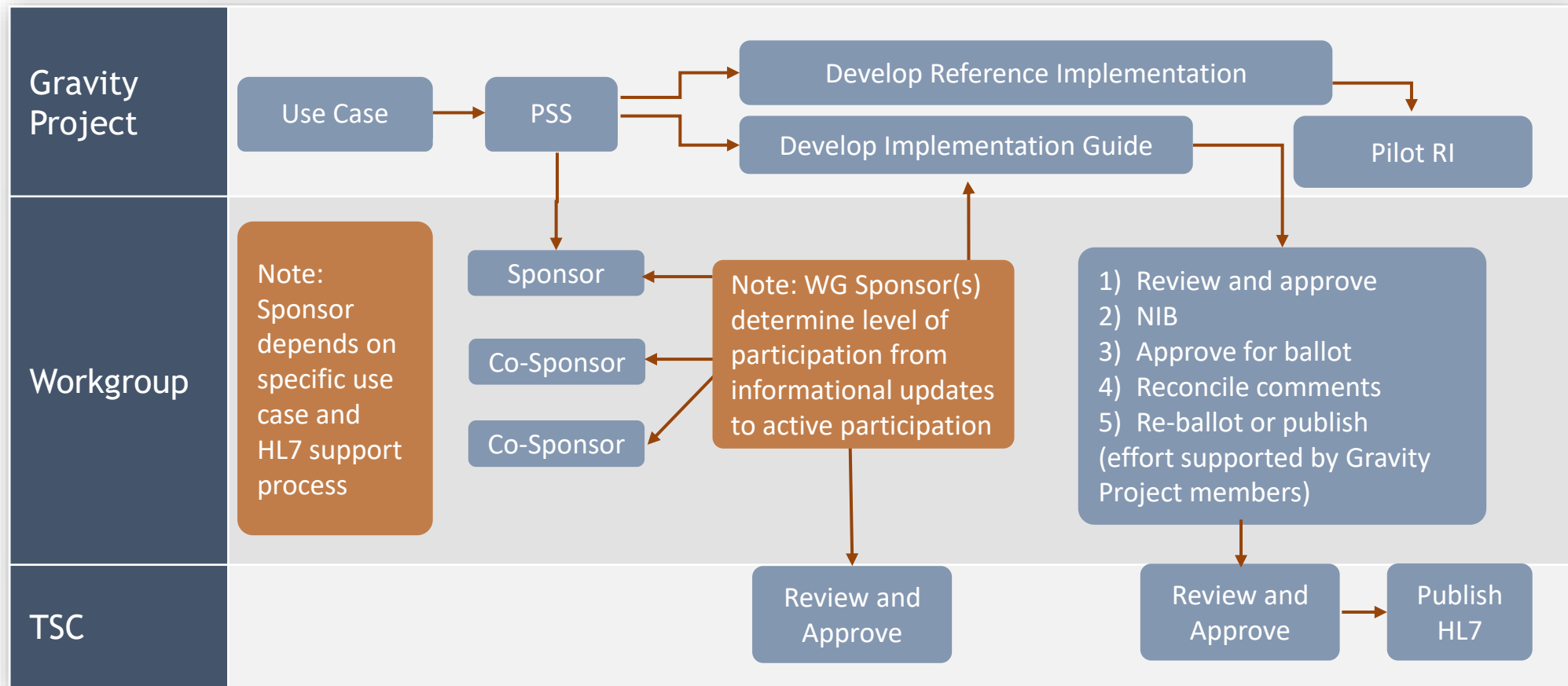


*Data available in-workflow supports value-based care and population health management*

\*Representational State Transfer (REST) defines a set of constraints used for creating web services

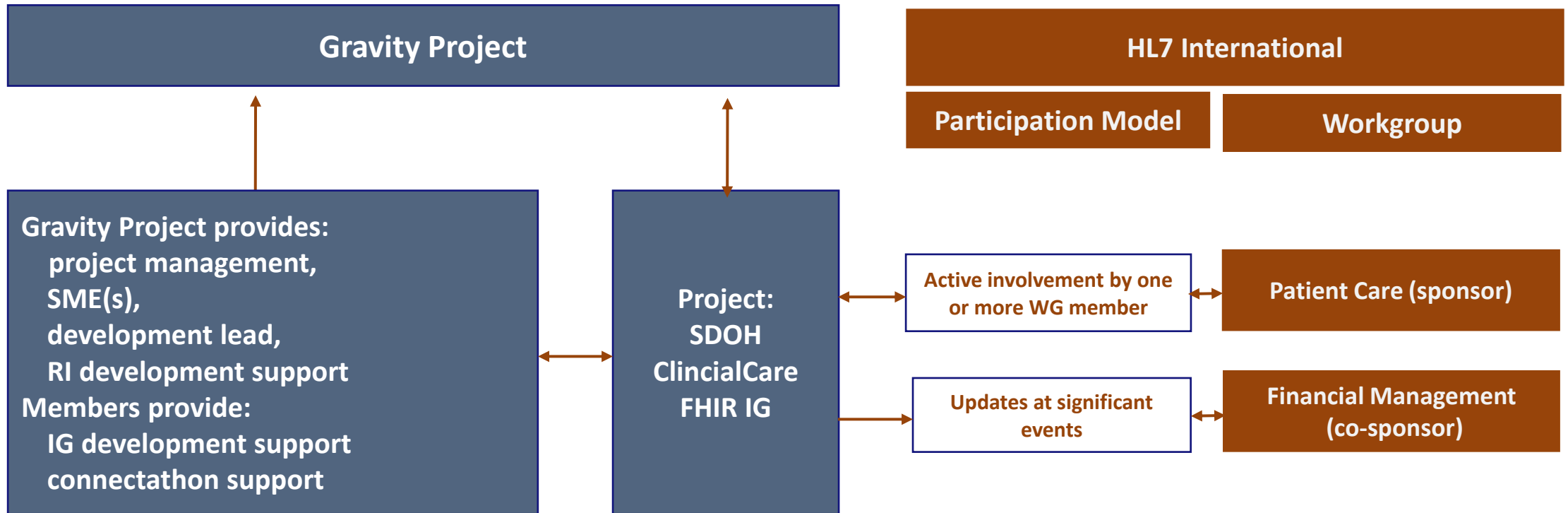


# Interaction with FHIR Standards Process



# HL7 WG Participation

## Use Case: SDOH ClinicalCare FHIR IG



*Introduction to the  
HL7 SDOH FHIR  
Implementation Guide*

# SDOH Clinical Care FHIR Implementation Guide

1. The SDOH Clinical Care IG is a framework Implementation Guide (IG) and supports multiple domains.
2. The IG supports the following clinical activities
  - **Assessments**
  - **Health Concerns / Problems**
  - **Goals**
  - **Interventions/ Referrals**
  - **Consent**
  - **Aggregation for exchange/reporting**
  - **Exchange with Patient/Client applications**
  - **Draft specifications for Race/Ethnicity exchange**
3. Standard for Trial Use Level 1 (STU1) Published 8/5/2021
4. STU2 Ballot closed on 1/10/22

**HL7 International** gravity PROJECT

**SDOH Clinical Care**  
1.1.0 - STU 2 ballot

HL7 FHIR

IG Home Table of Contents STU2 Changes Background Context Specifications Downloads Credits Artifact Index

Table of Contents > Home Page

This page is part of the SDOH Clinical Care for Multiple Domains (v1.1.0: STU2 2 Ballot 1) based on FHIR R4. The current version which supercedes this version is 1.0.0. For a full list of available versions, see the Directory of published versions.

## 1 Home Page

### 1.1 Overview

Social Determinants of Health (SDOH) are increasingly being recognized as essential factors that influence healthcare outcomes. This HL7 Implementation Guide (IG) defines how to exchange SDOH content defined by the Gravity Project using the Fast Healthcare Interoperability Resources (FHIR) standard. It defines how to represent coded content used to support the following care activities: screening, clinical assessment/diagnosis, goal setting, and the planning and performing of interventions. This IG addresses the need to gather SDOH information in multiple settings, share that information between stakeholders, and exchange referrals between organizations to address specific social risk needs, all with appropriate patient consent. In addition, the IG demonstrates how to share clinical data to support secondary purposes such as population health, quality, and research. The guide supports the following use cases:

- Document SDOH data in conjunction with the patient encounters with providers, payers, and community services
- Document and track SDOH related interventions to completion
- Identify cohorts of individuals that have a common relationship to another entity (e.g., covered by the same payer)

This implementation guide was developed by the Gravity Project, which specifically focuses on using HL7 FHIR to define standards for the exchange of SDOH-related information. Both the project and this implementation guide are focused on the U.S. environment. This implementation guide leverages content from the US Core implementation guide and binds to US-specific terminology. However, the basic constructs and interaction patterns may well be applicable outside the U.S.

### 1.2 Content and organization

The implementation guide is organized into the following sections:

- **Background:** Includes Gravity Background, SDOH Clinical Care Scope, Functional Use Cases, and Technical Background, that describe the environment in which this implementation guide establishes standards for information exchange
- **STU2 Changes** describes the changes included in the STU 2 ballot version of the IG
- **Context:** Describes the Survey Instrument Support, QuestionnaireResponse Mapping Instructions, Support for Multiple Domains, Exchange Workflow and Synchronizing Applications with API Data Sources that details a high-level overview of expected process flow
- **Specifications:** Provides an overview of the FHIR Artifacts defined and used in this IG, Checking Task Status to describe managing task status, Privacy and Security issues, MustSupport and Missing Data concepts and Draft Specifications for Race and Ethnicity
- **Downloads:** Provides for the download of various IG related artifacts
- **Credits:** Identifies the individuals and organizations involved in developing this implementation guide
- **Artifacts Index:** Introduces and provides links to the FHIR R4 profiles, examples and other FHIR artifacts used in this implementation guide

### 1.3 Note to Implementers

Implementers should pay specific attention to the following sections:

- **Technical Background** if the implementer needs basic FHIR information references
- **Survey Instrument Support**, and **QuestionnaireResponse Mapping Instructions** if implementing support for structured assessment instruments
- **Support for Multiple Domains** to understand this IG's approach to domain specific value sets

- Overview
- Content and organization
- Note to Implementers
- Authors



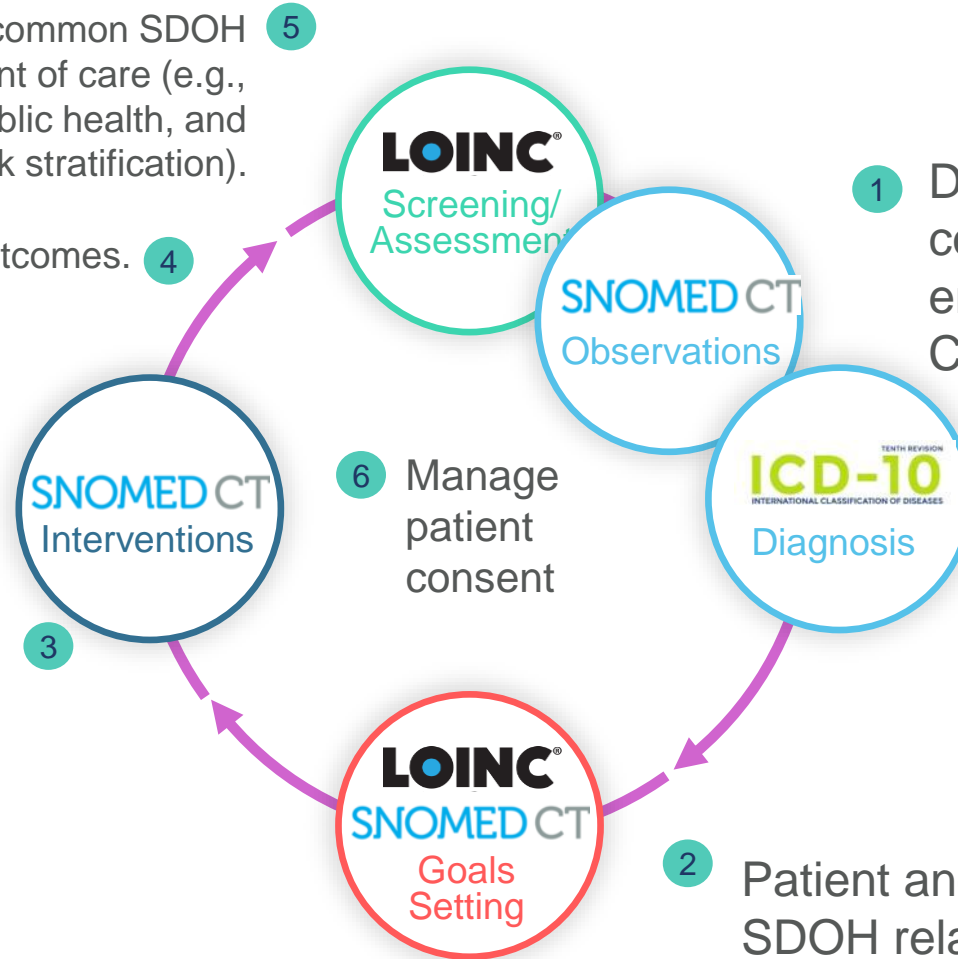


# Gravity SDOH FHIR IG Scope by Use case

Establish cohorts of patients with common SDOH characteristics for uses beyond the point of care (e.g., population health, quality reporting, public health, and risk adjustment/ risk stratification).

Measure outcomes.

Plan, communicate, and track related interventions to completion.



## STU2 Updates Overview

- Add support for patient / client workflow
  - Patient task
  - Support for questionnaires (risk, status, application, outcome)
  - Support to cancel referral/request for information
  - Support for exchange of supporting information
  - Support for providing contact information
- Separate Tasks for referral and patient workflow
- Synchronization process for patient and CBO applications with multiple APIs
- Adopted US Core value sets where appropriate
- Added support for VSAC and 211-LA taxonomy
- Added draft support for collection and communication of race and ethnicity including source and method of collection
- Complete summary of changes: [http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/stu2\\_changes.html](http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/stu2_changes.html)



# *FHIR Implementation Guide: New Features*

More refined approach to reporting Race and Ethnicity

*(consistent with OMB and CDC standards)*

Currently, US Core uses a FHIR “extension” elements on the Patient resource

This approach offers very limited metadata and provenance support

Based on stakeholder **input and discussion with US Core team**, we are piloting draft profiles using the more robust *Observation* structure that support:

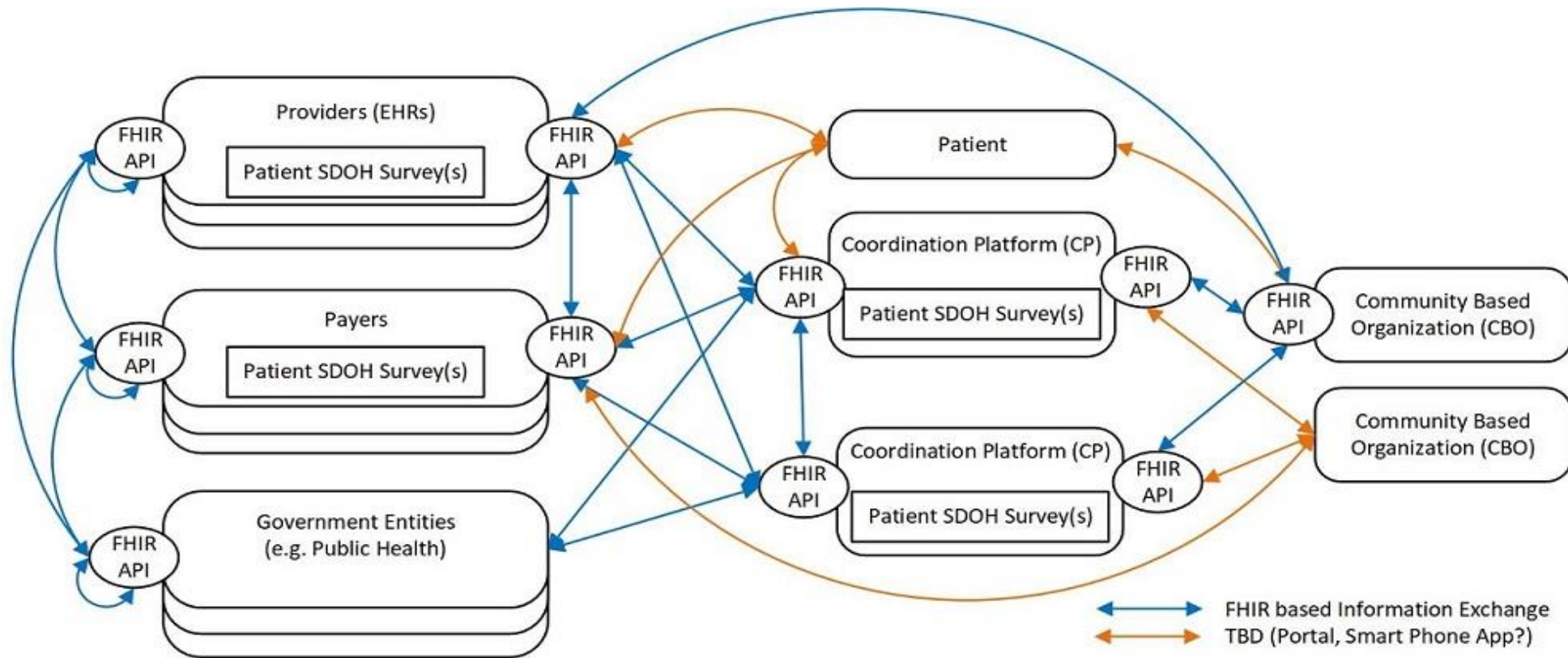
- Exchange of Race and Ethnicity about patients, related-persons, and providers
- Exchange of the “source” and “method” by which the information was obtained

**Implementer feedback** will determine whether/if this approach will supersede the current extension-based approach

*SDOHCC FHIR IG - Continuous Integration Build*



# Detailed Exchanges Supported by the SDOH FHIR IG



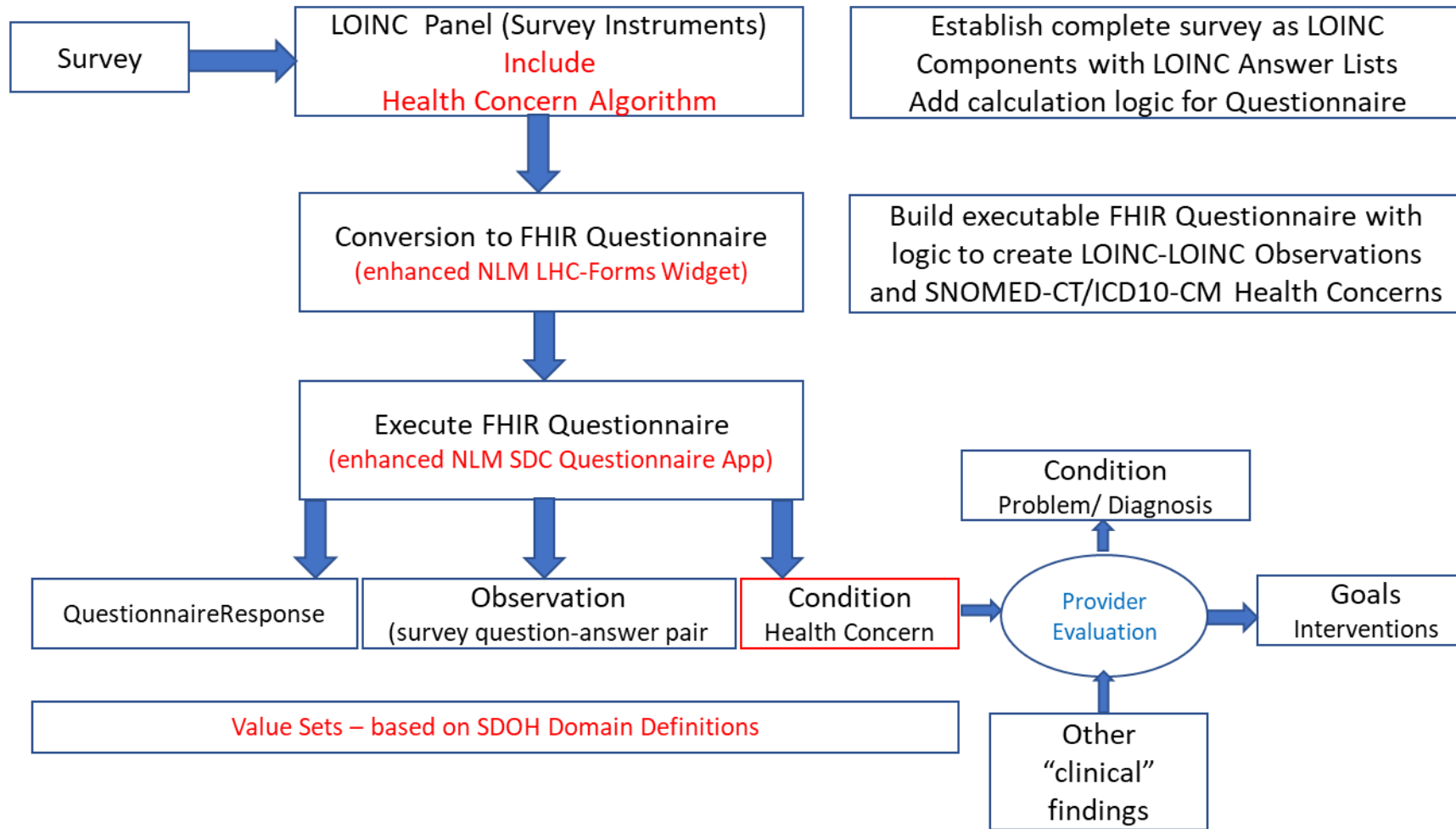
Note: Where two FHIR APIs are shown, it is for drawing simplicity and not a technical requirement

Exchanges in blue supported by STU1

Exchanges in burnt orange supported by STU2

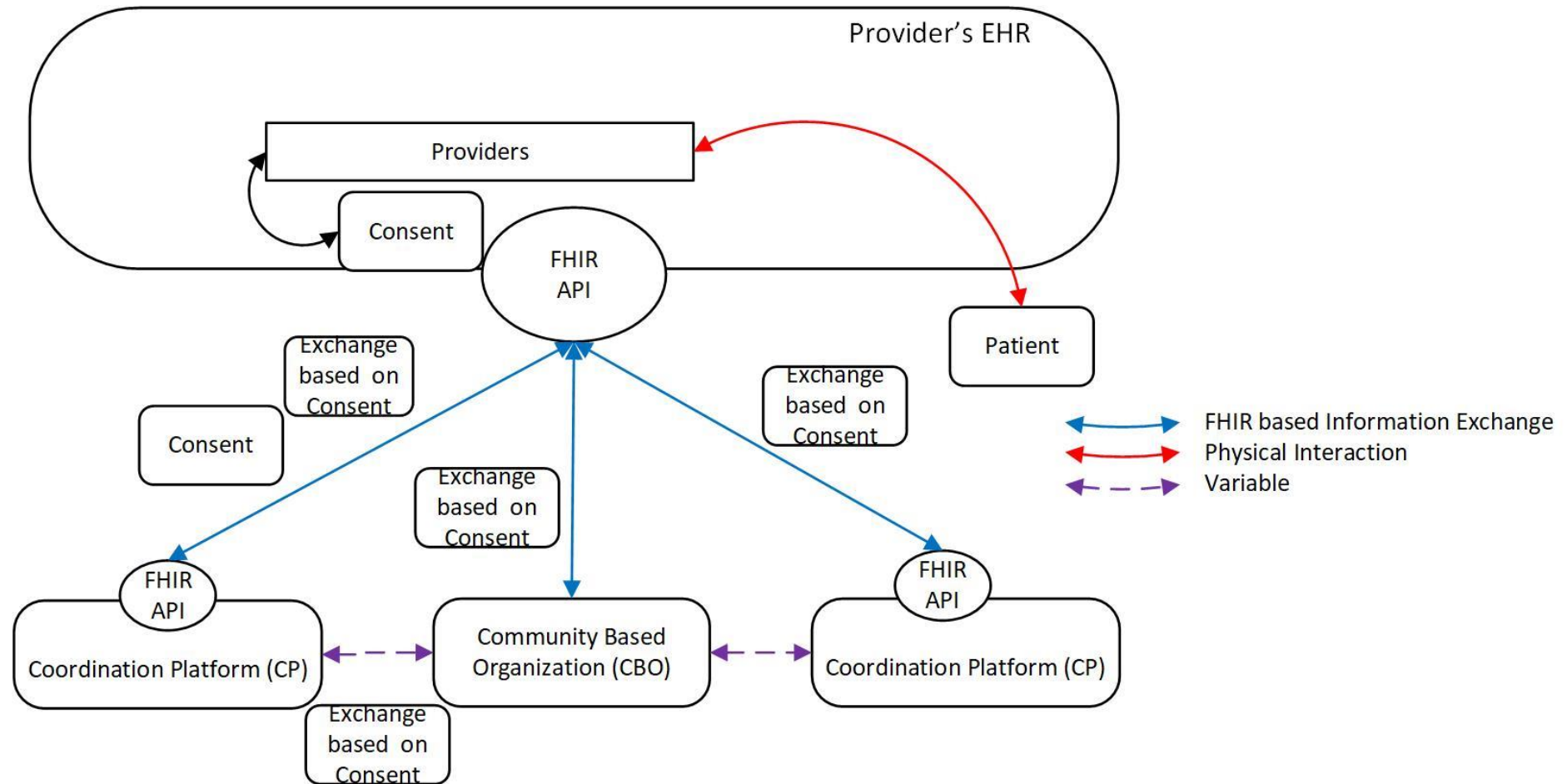


# Enabling Survey Instruments



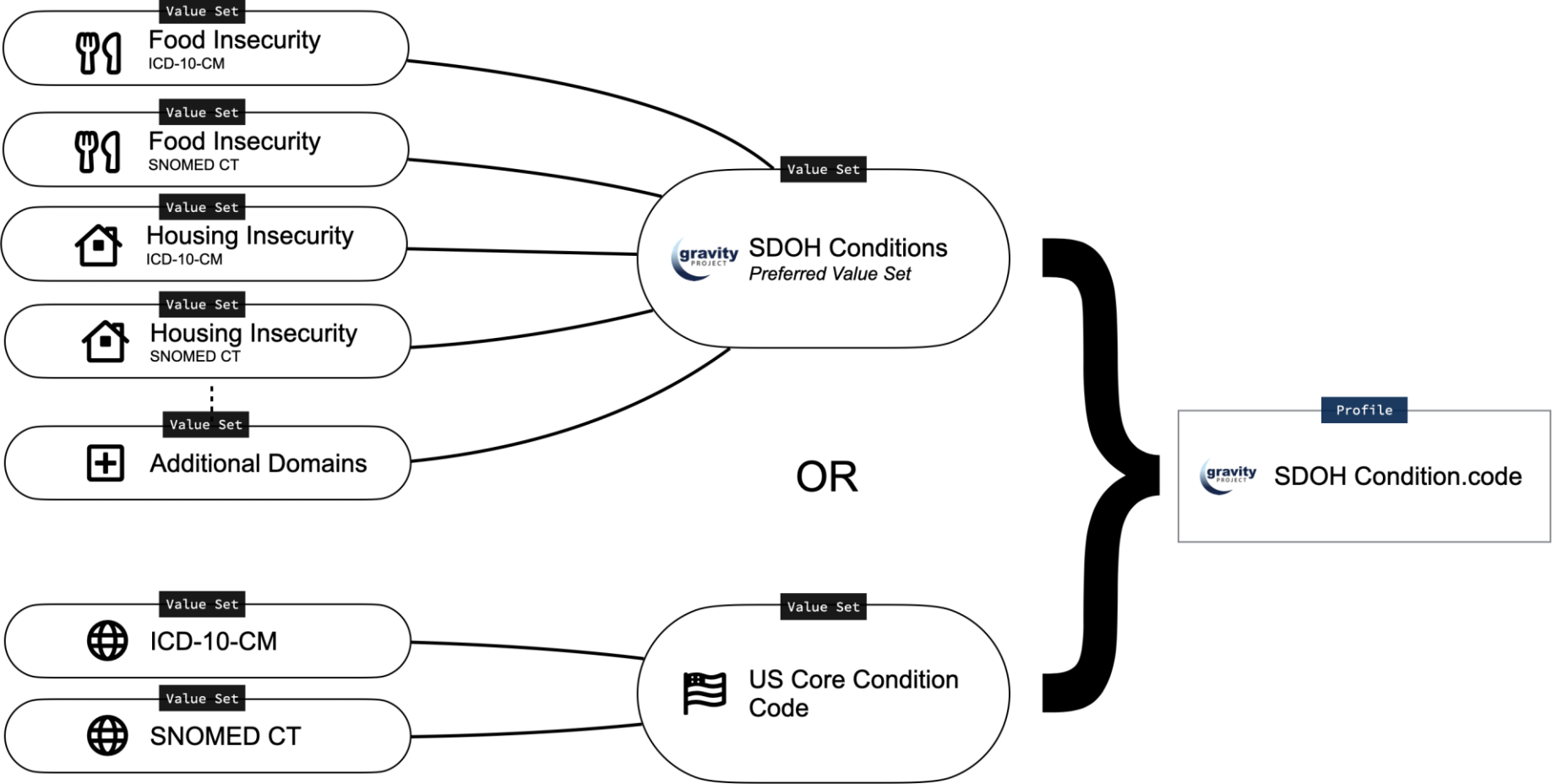
Note: all Survey instruments produce Health Concerns with Gravity defined value sets

# Example of Exchanging Consent

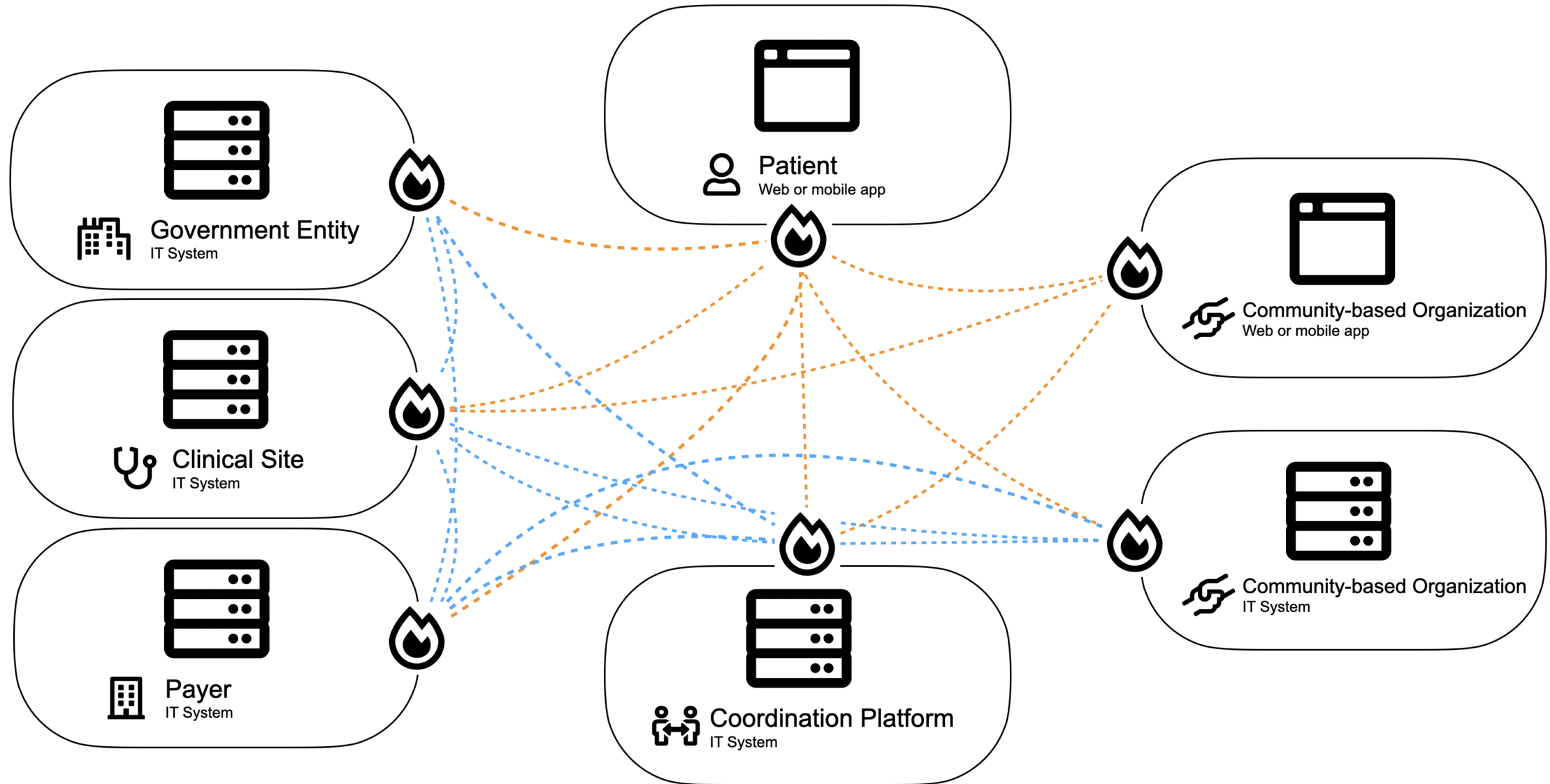


# Example Terminology Binding: Condition.code

If exchanging SDOH data, you *SHOULD* use the SDOH value sets



# Many Testable System Interactions

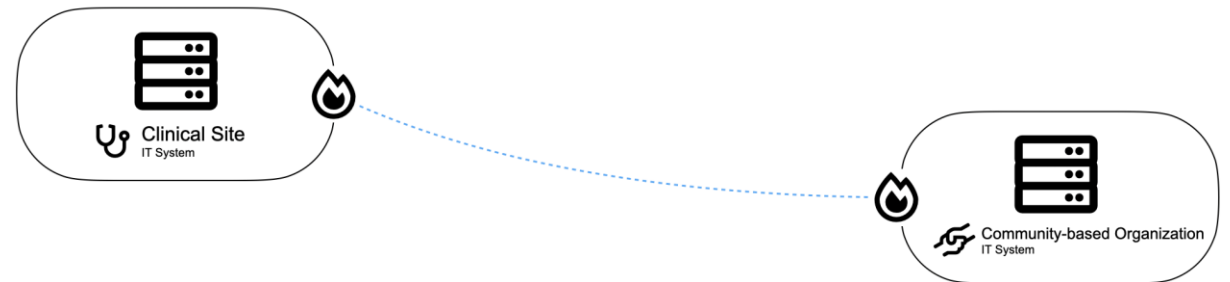




# Workflow Options: Direct Referral

A **referral source** communicates with a **referral receiver** via FHIR APIs. Here only 2 actors are communicating via FHIR read/write APIs. A referral receiver could be either:

a referral performer

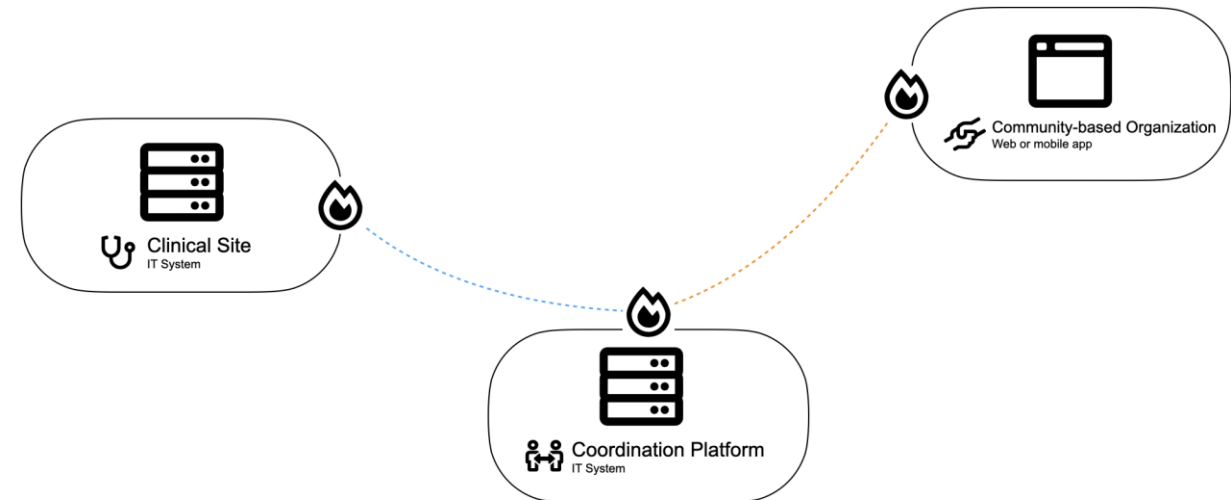


See [Exchange Workflows](#) in the Gravity SDOHCC FHIR Implementation Guide

# Workflow Options: Direct Referral via an Intermediary

A **referral source** communicates with an intermediary **receiver** via FHIR APIs. Here there are 3 actors are communicating via FHIR read/write APIs.

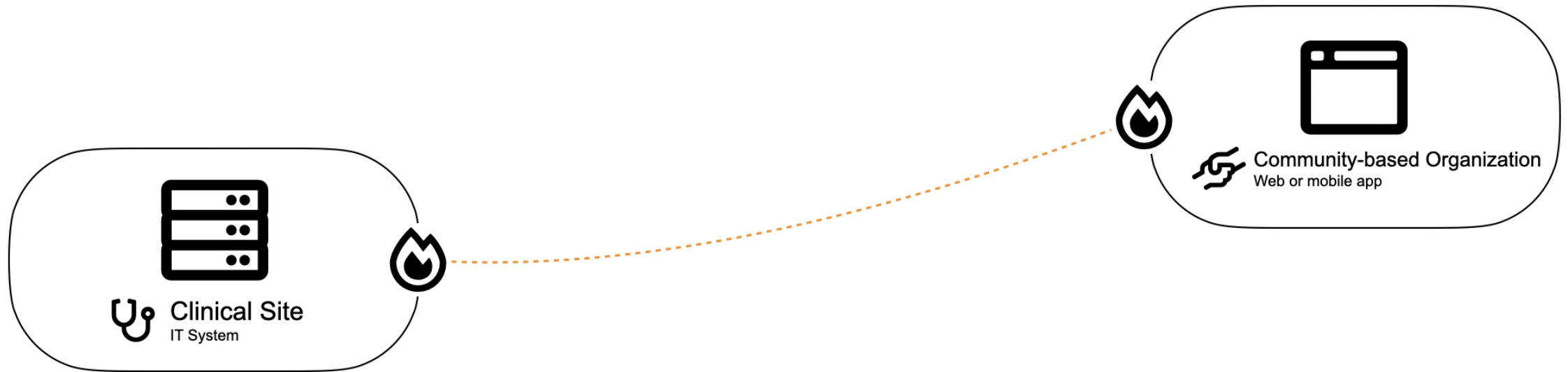
**intermediary** that communicates with the referral performer via FHIR APIs or with a FHIR enabled performer application



See [Exchange Workflows](#) in the Gravity SDOHCC FHIR Implementation Guide

# Workflow Options: Direct Referral Light

Same as a Direct Referral, except where the referral receiver does NOT have FHIR write capabilities. The referral receiver uses client application to interact with the FHIR API of the referral source system.

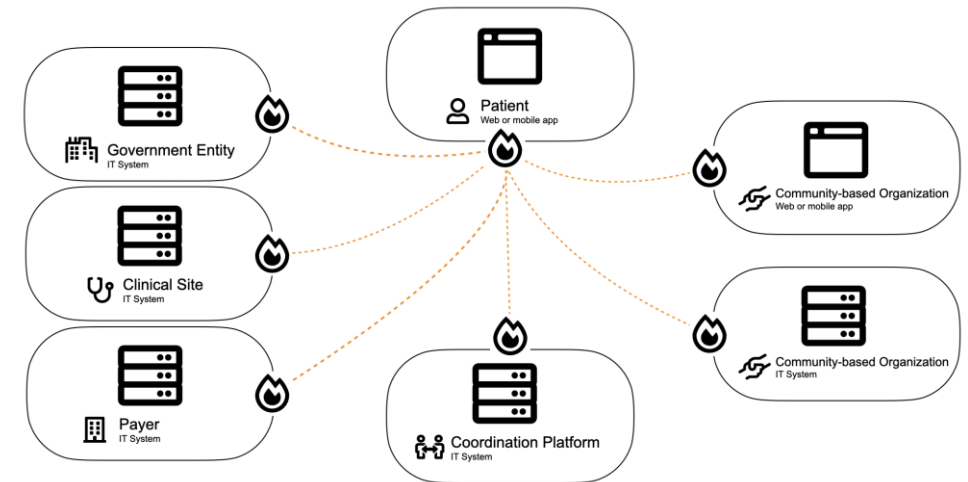


See [Exchange Workflows](#) in the Gravity SDOHCC FHIR Implementation Guide

# Workflow Options: Patient Interactions

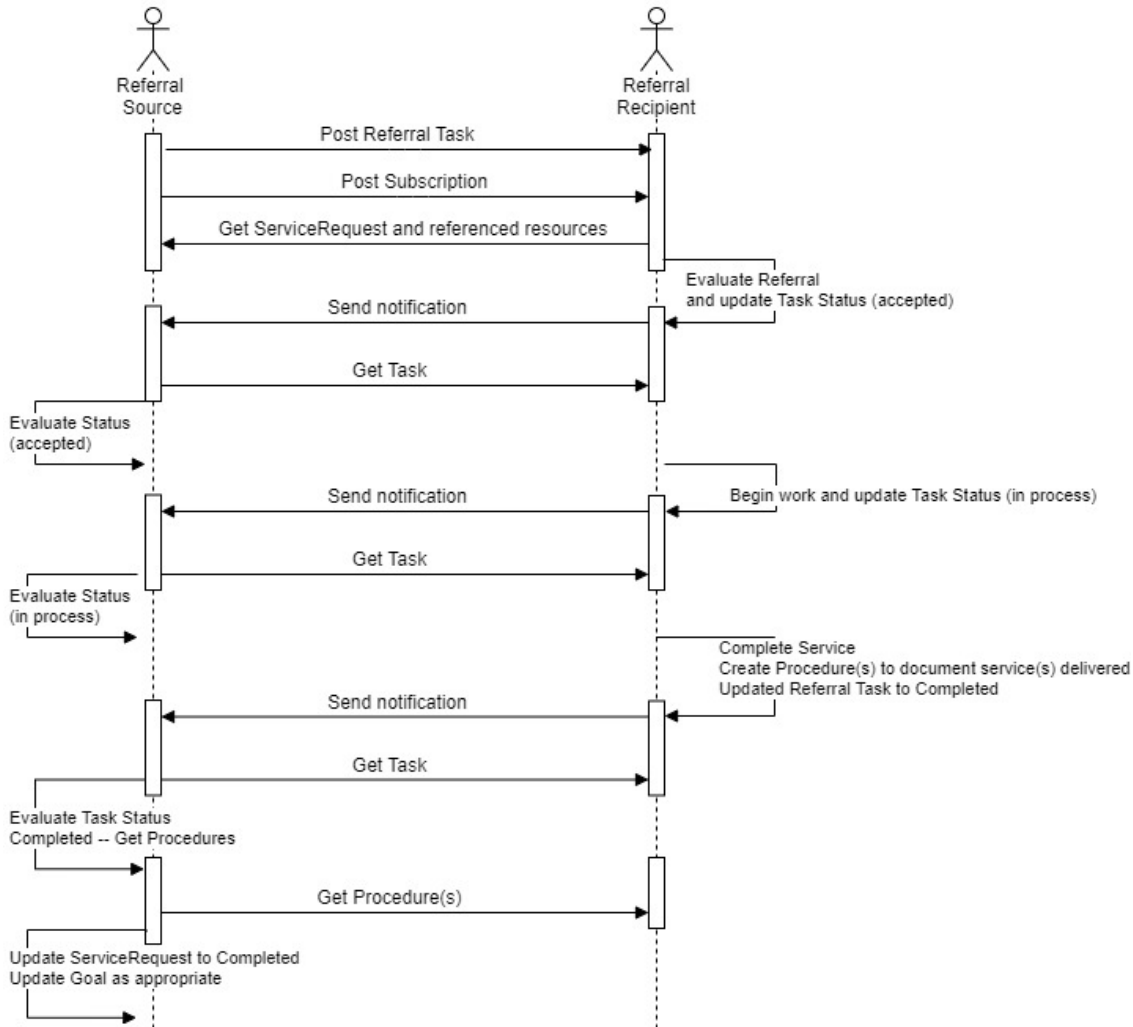
The IG supports clients (patients) interacting with other actors via an application that could enable various functions:

- Receive a copy of the service request sent to the service performer
- Receive contact information for the service performer
- Cancel the service and indicate the reason via a short questionnaire
- Complete a questionnaire or “form” to collect information regarding
  - social risks (risk assessments)
  - service status
  - application
- Receive information about available services (usually a PDF)
- Close the loop on services delivered (e.g., feedback forms)

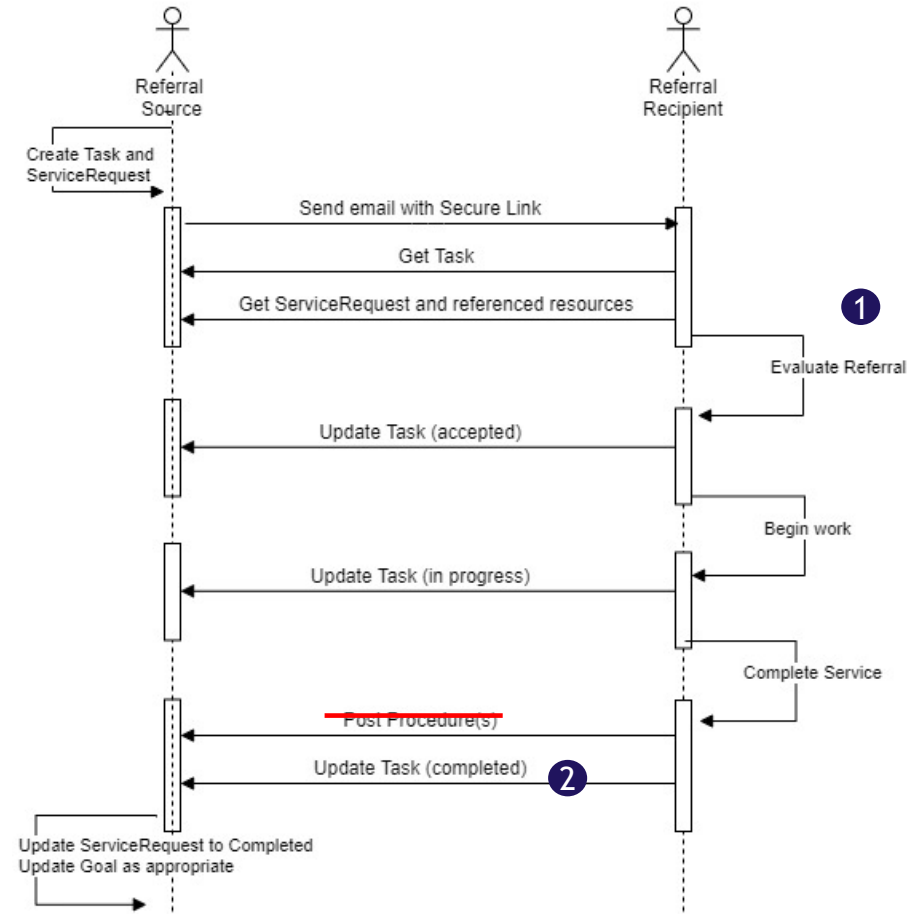


# System flow for Direct Referrals

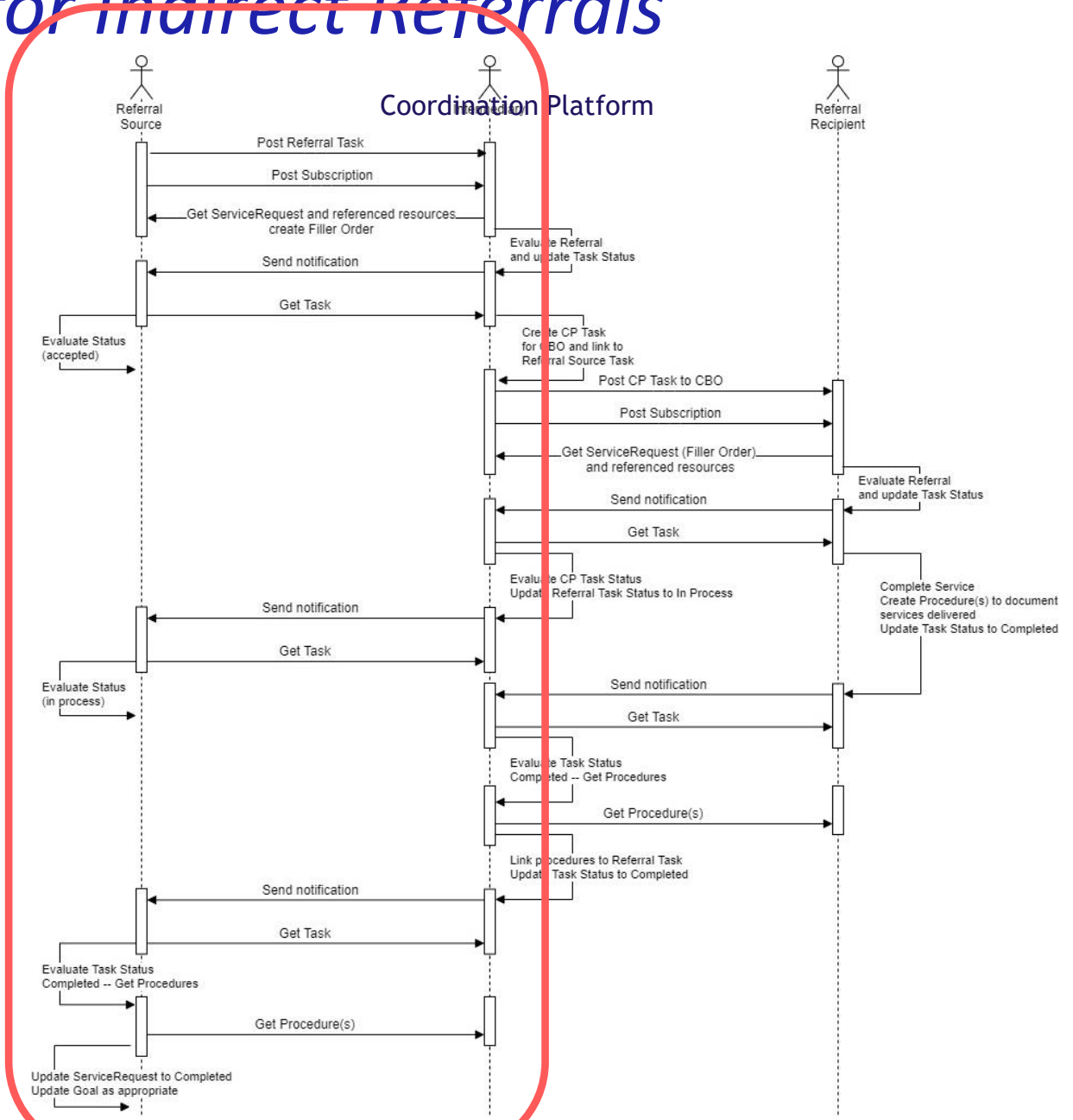
## Direct Referral



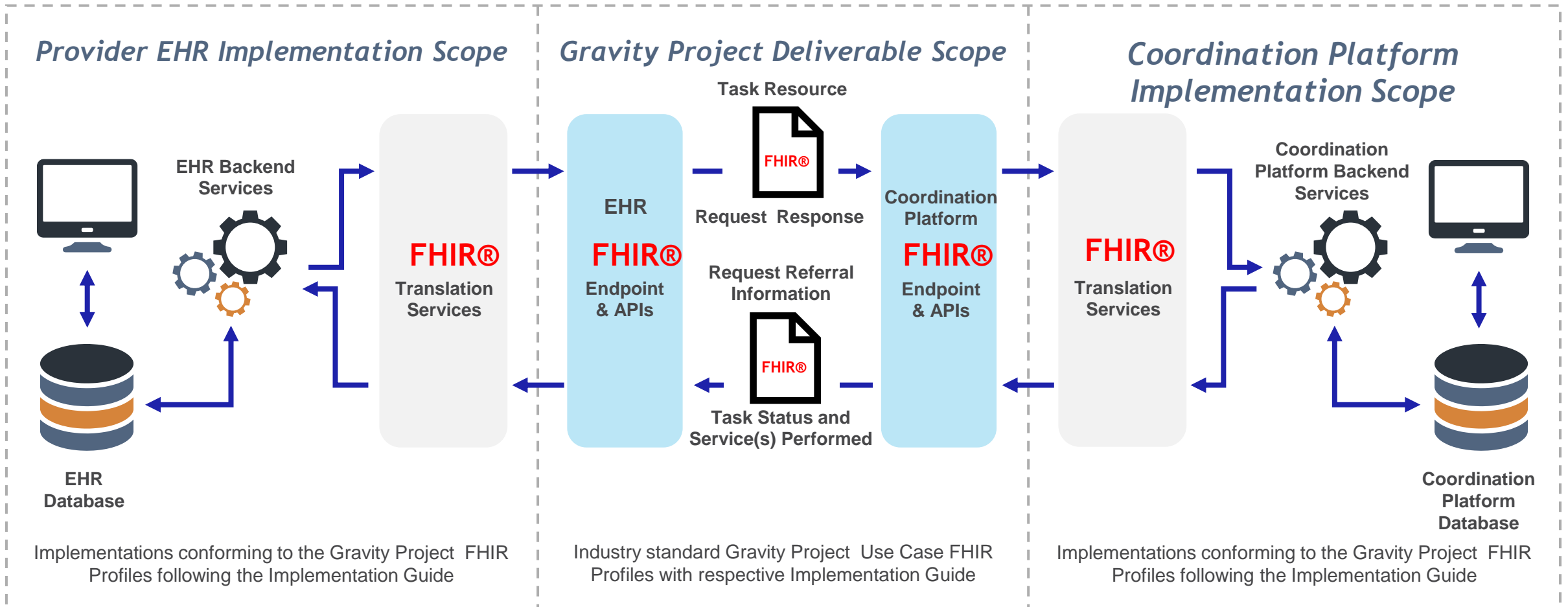
## Direct Referral (Light)



# System flow for Indirect Referrals



# Reference Implementation (example flow)



*Barriers to Adoption and  
Opportunities to Advance  
SDOH Data  
Interoperability*

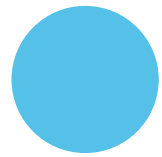


# *Barriers to Adoption of SDOH Data Capture and Exchange*

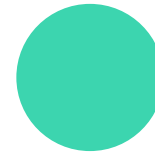
- **Financial**
  - Financial incentives to offset additional costs to implement and manage SDOH problems
  - Incentives for EHR and other technology vendors to adopt SDOH data standards
- **Privacy and Security**
  - Non-healthcare actors' ability to manage e/PHI
  - Consent management
  - Concerns about information collection and sharing
- **Access**
  - Access to technology, (Wi-Fi, smart phones, etc.) may be an issue for some who are affected by SDOH issues
  - Access to programs to address SDOH issues
- **Capacity**
  - Social care sector capacity and capability
  - Perception of increased physician burden – more data input and management
- **Technical**
  - Data sharing between ecosystem parties – some heavily HIT enabled some not
  - Standardization of SDOH data collection and storage

[https://www.nasdoh.org/wp-content/uploads/2020/08/NASDOH-Data-Interoperability\\_FINAL.pdf](https://www.nasdoh.org/wp-content/uploads/2020/08/NASDOH-Data-Interoperability_FINAL.pdf)

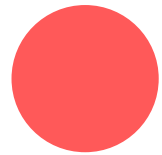
# Opportunities to Advance SDOH Interoperability



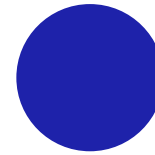
*Data standards adoption and data integration*



*Shared testing infrastructure*



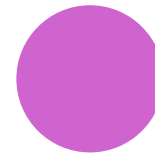
*Research to justify expanded investments and payment models*



*Ease collection of data*



*Patient and caregiver/provider engagement in platform design*



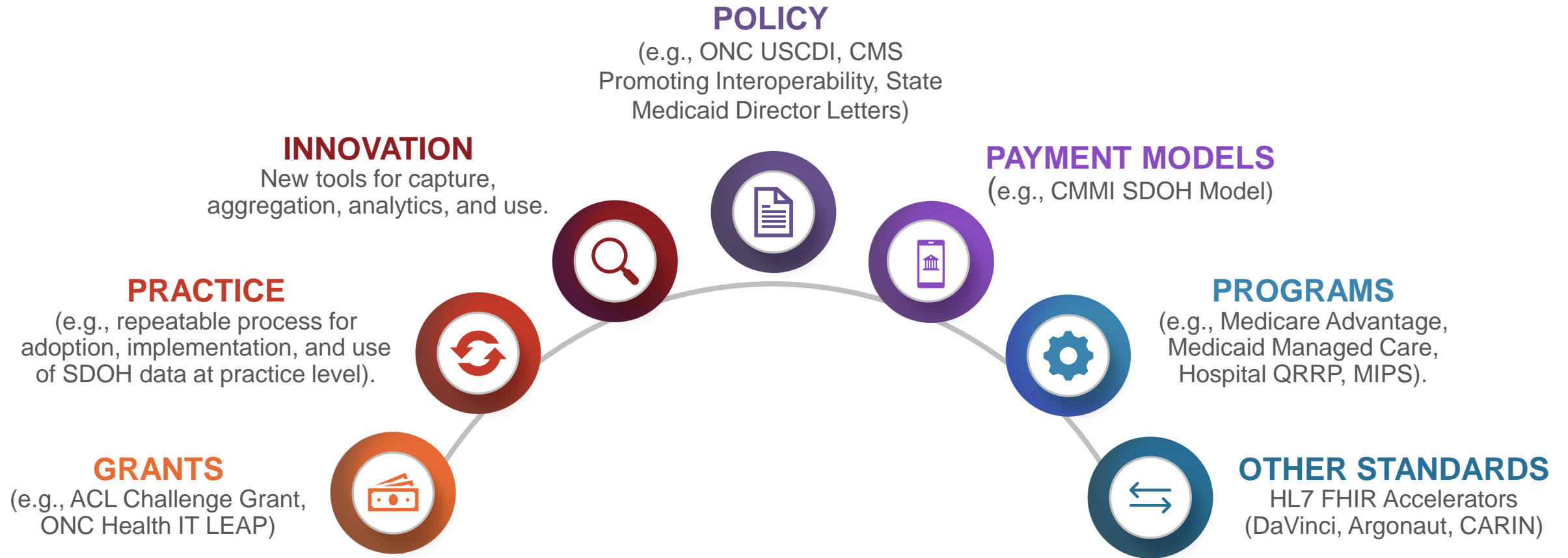
*Increase access to human service programs*

Pronovost, P., M.M. E. John, S. Palmer, R.C. Bono et al. *Procuring Interoperability: Achieving High-Quality, Connected, and Person-Centered Care*. Washington, DC: National Academy of Medicine. [www.nam.edu/interoperability](http://www.nam.edu/interoperability)

[https://www.nasdo.org/wp-content/uploads/2020/08/NASDOH-Data-Interoperability\\_FINAL.pdf](https://www.nasdo.org/wp-content/uploads/2020/08/NASDOH-Data-Interoperability_FINAL.pdf)

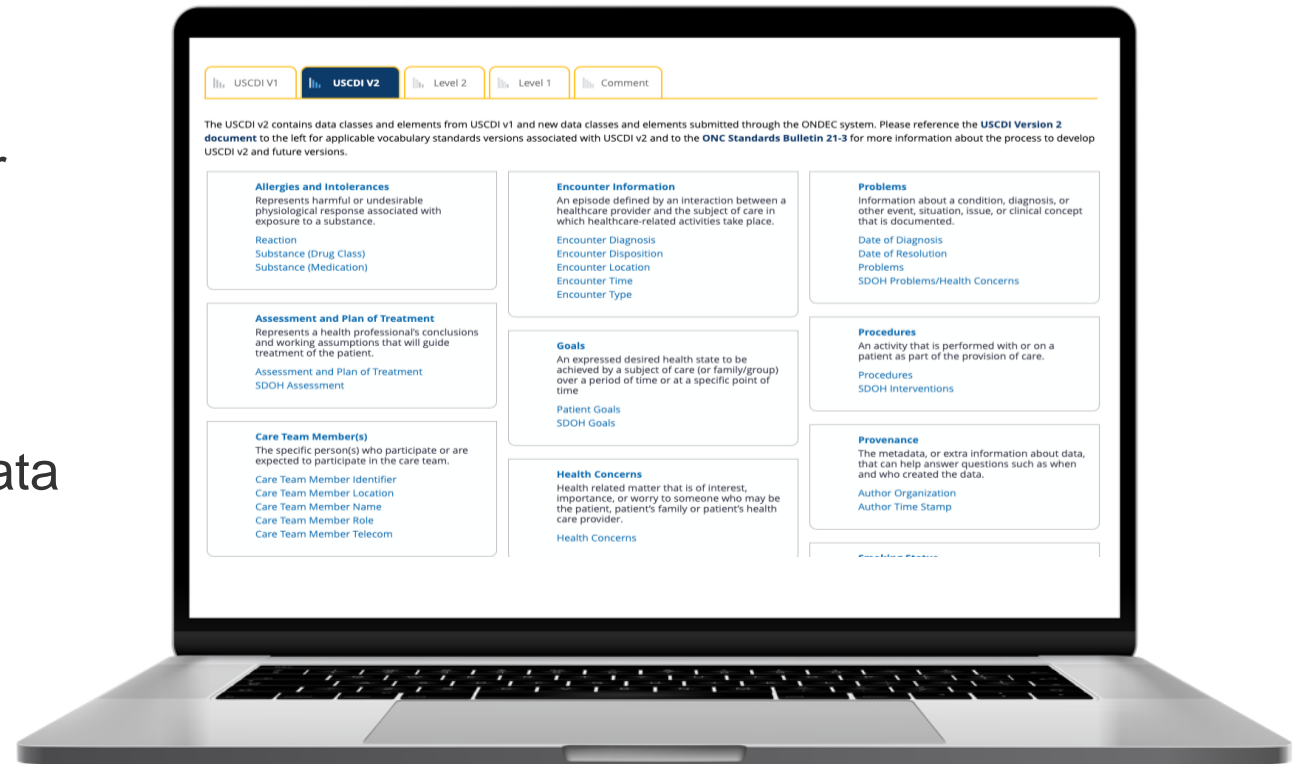
# *Project Success and Looking Ahead*

# Success Factors: Integration of Data Standards Into...



# Policy Integration: Gravity USCDI v2 Submission

- The Gravity Project formally made a submission to the ONC U.S. Core Data for Interoperability (USCDI) version 2 in October 2020.
- **On April 15, 2021**, HITAC approved and forwarded recommendation to ONC
- **On July 9, 2021** ONC included the SDOH data class in the USCDI V2 publication
- On **December 11, 2021** HL7 balloted a new version of US Core V4.1.0 that included the SDOH data class
- The balloted version is in ballot reconciliation



<https://www.healthit.gov/isa/united-states-core-data-interoperability-uscdi#uscdi-v2>

# ONC's New Interoperability Standards Workgroup

- New Interoperability Standards Workgroup appointed to **review and provide recommendations on the Draft USCDI Version 3 and other interoperability standards.**
- Review proposed new data classes and elements in Draft USCDI v3, specifically including:
  - Realigning value sets for **Sex Assigned at Birth** and **Gender Identity** (both in Patient Demographics data class) with HL7's Gender Harmony Project.
- Review and update standards to address HITAC priority uses of health IT, specifically including
  - SDOH standards: **Gravity standards**, and **CDC Race/Ethnicity vocabulary subsets.**

Workgroup's recommendations to HITAC are due **April 13 and June 16, 2022.**

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# Join the Gravity Project!

## Learn More

<https://confluence.hl7.org/display/GRAV/Join+the+Gravity+Project>

- Join our Public Collaborative calls on Thursdays from 4 to 5: 30 pm ET
- Join our FHIR IG WG calls on Wednesdays from 3 to 4 pm ET.

## Help us find new sponsors and partners

Partner with us on development of blogs, manuscripts, dissemination materials

## Submit SDOH domain data elements (especially for Interventions):

<https://confluence.hl7.org/display/GRAV/Data+Element+Submission>

## Help us with Gravity Education & Outreach

Use Social Media handles to share or tag us to relevant information

 [@thegravityproj](https://twitter.com/thegravityproj)

 <https://www.linkedin.com/company/gravity-project>



*Questions?*





*Thank you!*

**Aaron Seib**

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 <https://www.linkedin.com/in/aaron-seib-65811627/>

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 <https://www.linkedin.com/in/bob-dieterle-82a88211/>

**EnableCare**