# 2022-05 Gravity SDOH Exchange

- **Short Description**
  
  Test the Social Determinants of Health (SDOH) Clinical Care FHIR IG. The SDOH Clinical Care IG provides a framework for multiple SDOH domains. The focus of this Connectathon track is 1) test the resources and exchange workflow in the updated IG and 2) test the exchange workflow to and between other stakeholders.

- **Long Description**
  
  The goal of the Gravity Project is to develop consensus-based standards for the exchange of social determinants of health (SDOH) data within the health care sector and between the health care sector and other sectors for patient/person-centered care, care coordination between the health and human services sectors, population health management, value-based payment, quality reporting, and clinical research. To advance this interoperability goal, the Gravity Project joined the HL7 FHIR Accelerator Program in August 2019 and is developing specifications to support the use of SDOH data using FHIR. The specification includes the creation and administration of SDOH focused assessments, creation of goals and interventions/referrals and tracking them to completion. It provides for workflow specifications between the various participants in documenting and managing social risks.

- **Type**
  
  Test an Implementation Guide

- **Submitting Work Group/Project/Accelerator/Affiliate/Implementer Group**
  
  The Gravity Project

- **Track Lead(s)**

  - Bob Dieterle  rdieterle@enablecare.us
  - Gregory Harris  gregory.harris@newwave.io

- **Track Lead Email(s)**

  - rdieterle@enablecare.us; gregory.harris@newwave.io

- **Related Tracks**

- **FHIR Version**

  FHIR R4

- **Specification(s) this track uses**


  Current Update: [http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/](http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/) (we will be testing this version where updates have been applied)

- **Artifacts of focus**


**Link to GitHub reference to urls and setup information:** Gravity-SDOH-Exchange-RI/README.md at main · FHIR/Gravity-SDOH-Exchange-RI (github.com)

**Logica Links:**

Logica EHR open endpoint URL:  https://api.logicahealth.org/GravitySandboxNew/open

Logica Coordination Platform open endpoint URL:  https://api.logicahealth.org/GravitySDOHCBRO/open


**LHC forms builder links:**

https://lhcforms.nlm.nih.gov/

https://formbuilder-lhcforms.herokuapp.com/

https://lforms-fhir-app.herokuapp.com/lforms-fhir-app/

**Profiles for survey / assessment**


**Profiles for referral request and response**


**Profiles for patient exchange**


This track will support the following actors:

1. Provider (Physician or Social Worker) / EHR (FHIR API)
2. Intermediary / Coordination Platform (CP) (FHIR API)
3. Community Based Organization (CBO) / FHIR API
4. Community Based Organization (CBO) / application
5. Survey Application / Platform
6. Payer / Payer HIT (FHIR API)
7. Health Information Exchange (HIE) as Intermediary (FHIR API)
8. Patient / Application

The track will support the following Reference Implementation (RI) capabilities:

1. Ability to create, record, and exchange
   a. LOINC coded assessment/surveys (as Observations)
   b. LOINC or SNOMED-CT Observations from interactions with the Patient
   c. SNOMED-CT and ICD-10 Condition resources (to document health concerns and problems)
   d. LOINC, SNOMED-CT, Textual Goals
   e. SNOMED-CT, CPT, HCPCS, and LOINC Coded ServiceRequest resources to document referrals (support for 211 LA Taxonomy is also included)
   f. SNOMED-CT, CPT, HCPCS, and LOINC Coded Coded Procedures to document completed activities by the referred to entity (support for 211 LA Taxonomy is also included)
2. Creation and exchange of consent resource to document patient consent to share information between a Business Associate and a non-HIPAA covered entity
3. Ability to manage closed loop referrals using the Task resource
4. Ability to receive referrals and to manage the status of the referral (including the ability to accept or reject the referral requests)
5. Ability to exchange information with a patient/client application to communicate the service information, contact information, risk questionnaires, reference information, and service completion information

Sign-up Info:

In addition to registering with HL7 for the CMS Connectathon, please sign-up on the Gravity Project confluence page and indicate the role(s) you intend to play

Connectathon Participation Sign-Up - Gravity Project - Confluence

Track Kick Off Presentation for the May 2022 Connectathon:

TBD

Track Recordings and Discussion Notes for the May 2022 Connectathon:

TBD
Track Kick Off Presentation for the January 2022 Connectathon:
Gravity SDOH Exchange Track January 2022 RCD2.pptx

Track Recordings and Discussion Notes for the January 2022 Connectathon:

**January 11**

Kick-off, agenda review, Connectathon objectives, brief review of STU2 IG changes (Gravity SDOH Exchange Track Kick Off Jan. 11, 2022)

Reference Implementation Demo (Gravity SDOH Exchange RI Demo Jan.11, 2022)

Testing - Referrals (Use Case A) - No testers. Therefore, no recording. Instead, time was used for “Personal Characteristics” discussion (see below).

*“Personal Characteristics” Discussion - IG Race/Ethnicity profiles and other “personal characteristics”:

  - Recording: (Gravity SDOH Exchange “Personal Characteristics” Discussion Jan. 11, 2022)
  - Discussion Notes (Jan 2022 Connectathon, Gravity SDOH Exchange - Discussion on Race, Ethnicity, and SOGI)

Testing - Risk Surveys / FHIR Questionnaires (Use Case B) (Gravity SDOH Exchange Testing Risk Surveys/FHIR Questionnaires (Use Case B) Jan. 11, 2022)

**January 12**

Recap of Day 1, Reference Implementation Demo, and Prototype Review (Gravity SDOH Exchange Recap of Day 1, RI Demo, Prototype Review Jan. 12, 2022)

Testing - Authorization and Authentication (Use Case C) - No testers, but RI demo and discussion (Gravity SDOH Exchange Authorization and Authentication (Use Case C) Jan. 12, 2022)

Testing - Patient Application (Use Case D) - No testers, but RI demo and discussion (Gravity SDOH Exchange Patient Application (Use Case D) Jan. 12, 2022)

Testing - Community Based Organization (CBO) web app (Use Case E) No testers. Instead the group discussed of various IG/SDOH issues – Not recorded.

Track Presentations for the September 2021 Connectathon:
Gravity SDOH Exchange Track Sept 14 AM Kick-off Presentation: Gravity SDOH Exchange Track September 2021.pptx

Implementing PRAPARE with SDC and outputting Gravity IG artifacts Presentation: ImplementingPRAPARE_Sept14_Presentation_JoeeG.pptx

Gravity Track Report Out can be found here:

Track Recordings for the September 2021 Connectathon

**Sept 14**

Kick-off, agenda review, Connectathon objectives, Connectathon operations: https://hl7-org.zoom.us/rec/share/whr_K866QnKTnoe6XiAcScy6bRoz10xeKCd-AvCK7UsMrkCT768v9ELRPlq51i.2FbzSaDiqKP-LbCS?startTime=1631625641000

RI walkthrough/demo - Focus on Surveys and Referrals: https://hl7-org.zoom.us/rec/share/whr_K866QnKTnoe6XiAcScy6bRoz10xeKCd-AvCK7UsMrkCT768v9ELRPlq51i.2FbzSaDiqKP-LbCS?startTime=1631627998000

Implementing PRAPARE with SDC and outputting Gravity IG artifacts - QuestionnaireResponse, Observation, and Conditions using StructureMap:

https://hl7-org.zoom.us/rec/share/whr_K866QnKTnoe6XiAcScy6bRoz10xeKCd-AvCK7UsMrkCT768v9ELRPlq51i.2FbzSaDiqKP-LbCS?startTime=1631631585000

Testing - Surveys (No testers - therefore showed some related IG profiles/examples for PRAPARE and HVS): https://hl7-org.zoom.us/rec/share/whr_K866QnKTnoe6XiAcScy6bRoz10xeKCd-AvCK7UsMrkCT768v9ELRPlq51i.2FbzSaDiqKP-LbCS?startTime=1631639650000

Testing - Referrals : RI not recorded.

**Sept 15**

RI walkthrough/demo - Focus on patient smartphone app and Community Based Organization (CBO) web app: https://hl7-org.zoom.us/rec/share/eaRVJh2Clyg-BTa930RkPOWq5sYaQySV--5dD3yoW7Cj5AptsKadr0FFLdINQeouo.T1GR4C2p-rvUM3R8?startTime=1631714520000

Testing - Authorization and Authentication: https://hl7-org.zoom.us/rec/share/eaRVJh2Clyg-BTa930RkPOWq5sYaQySV--5dD3yoW7Cj5AptsKadr0FFLdINQeouo.T1GR4C2p-rvUM3R8?startTime=1631718294000

Testing - Patient smartphone app: https://hl7-org.zoom.us/rec/share/eaRVJh2Clyg-BTa930RkPOWq5sYaQySV--5dD3yoW7Cj5AptsKadr0FFLdINQeouo.T1GR4C2p-rvUM3R8?startTime=1631725713000
Testing - Community Based Organization (CBO) web app: https://hl7-org.zoom.us/rec/share/eaRVJh2CyG-BTa930RkPQWq5aYqSV--5dD3yoWY7Cj5AptsKadr0FFLdNQEOou.T1GR4C2P-rvUM3R8?startTime=1631731075000

Track Presentations for the CMS July 2021 Connectathon:

Gravity SDOH Exchange Track Presentation: Gravity SDOH Exchange Track CMS July 2021.pptx

Gravity Track Report Out can be found here:

Track Recordings for the CMS July 2021 Connectathon

Kick-off July 12, 2021: CMS Connectathon Track Orientation Call Recording from July 12, 2021

AM Session July 21, 2021: Introductions, IG Review, RI Overview

PM Session July 21, 2021: SDOH Connect!

Track Presentations from the May 2021 HL7 Connectathon

Evelyn Gallago's presentation on The Gravity Project - 20210518 HL7 FHIR Connectathon FINAL.pptx

Bob Dieterle's Gravity SDOH Exchange Track Presentation - Gravity SDOH Exchange Track May 2021.pptx

Joee Garcia's presentation on Implementing PRAPARE with SDC and outputting Gravity IG artifacts - Conr27_ImplementingPRAPAREESlidePresentation.pptx

Gravity Track Report Out can be found here: https://docs.google.com/document/d/1nvsv7vEK7plfZr5iARTLGmvp7vn9xyR/edit#

Track Recordings from the May 2021 HL7 Connectathons

May 18

Kick-off: https://hl7-org.zoom.us/rec/share/LXmRmDylkzbDT77mo4j2uw71B_pN654RIiolqMgw49QCrPwDL9iA7lYqR_-LB4qON.tgX5iG5fGuagWhbl?startTime=1621342301000

Reference Implementation Demo: https://hl7-org.zoom.us/rec/share/LXmRmDylkzbDT77mo4j2uw71B_pN654RIiolqMgw49QCrPwDL9iA7lYqR_-LB4qON.tgX5iG5fGuagWhbl?startTime=1621346602000

Implementing PRAPARE with SDC and outputting Gravity IG artifacts: https://hl7-org.zoom.us/rec/share/LXmRmDylkzbDT77mo4j2uw71B_pN654RIiolqMgw49QCrPwDL9iA7lYqR_-LB4qON.tgX5iG5fGuagWhbl?startTime=1621350007000

Testing Use Case A: https://hl7-org.zoom.us/rec/share/LXmRmDylkzbDT77mo4j2uw71B_pN654RIiolqMgw49QCrPwDL9iA7lYqR_-LB4qON.tgX5iG5fGuagWhbl?startTime=1621357472000

May 19

Welcome and Review: https://hl7-org.zoom.us/rec/share/X_27uDo07sxb2srqQ-VZ_xc87MCI0IWEyx8j53ZhlU7wbEtUx8tKri9U5xrZiZl.zqZozyzz7pTtIJS?startTime=1621422828000

Testing Use Cases C and D: https://hl7-org.zoom.us/rec/share/X_27uDo07sxb2srqQ-VZ_xc87MCI0IWEyx8j53ZhlU7wbEtUx8tKri9U5xrZiZl.zqZozyzz7pTtIJS?startTime=1621433009000

Testing Use Case E: https://hl7-org.zoom.us/rec/share/sqE29N509/5q2q9N1_K01PXSf6wC-0IX63LaM8FA0N34_xjn5nLdidqWsZGnr.GRxQvehPvGHH-9qK?startTime=1621443947000

Track Report Out: https://hl7-org.zoom.us/rec/share/YrUDeabTYRSZHJSL_Jk2BlqpvNgTFj9qAXFNklk_XNHCCUnw5OATT-BTmDFcUmd.nwV7cv4--wM6j13?startTime=1621452832000

Expected participants

Individuals and Organizations interested in the standardization and exchange of SDOH information – anticipate between 30 and 40 individuals

Zulip stream

https://chat.fhir.org/#narrow/stream/233957-Gravity-sdoh-cc/topic/Connectathon

Track Kick Off Call
## Track Details

The following are from the January Connectathon and will be updated with May information as it is available.

For the Track agenda, please see Whova: [https://whova.com/portal/webapp/conne_202201/Agenda](https://whova.com/portal/webapp/conne_202201/Agenda). Select the Gravity SDOH Exchange Track.

Note: Track Use Cases are actively being updated – please check back periodically for the most recent updates.

Track Orientation Kick Off Call: Wednesday, January 5th, 3:00-4:00 PM ET [https://zoom.us/j/5328571160](https://zoom.us/j/5328571160); Phone: +1 929-436-2866. Participant Code: 532 857 1160.

## Discussion notes

From the January 2022 connectathon

Connectathon Race Ethnicity SOGI discussion notes

### Use Case A

**DETAILS:**

**Use Case A: Creation and tracking of a referral**

**Actors:**

Provider/Social Worker/Payer Case Manager (will use the term provider for all three for this use case), Patient

**System roles:**

Ordering Systems (EHR, Payer System, Coordination Platform) and Receiving System Coordination Platform (CP) under a BAA

**Role 1 Name:**

Provider: Casey Payton

**Precondition:**

Any Conditions (health concerns) and Observations from the recent PRAPARE response are incorporated in the patient management system. An assessment of these Conditions and Observations is done by the Provider (and follow-up with Dan) to determine if there is a desire for the provider to address the identified health concern (may be promoted to the problem list if this is supported in the EHR).

**Scenario**

Casey sends ServiceRequest to CP for provision of housing options.

**Scenario Step 1**

Casey creates a ServiceRequest and accompanying Task that will be used to communicate status of the services that will be performed by the CPO. ServiceRequest is for provision of housing options and posts the Task to the CP system.

**Scenario Step 2**

CP fetches the ServiceRequest and associated resources and updates Task status to accepted.

**Scenario Step 3**

Provider retrieves task (polling) and displays the updated status.

**Scenario Step 4**

CP updates Task status to completed with services performed as FHIR Procedure instances addressing housing placement.

**Scenario Step 5**

Provider retrieves Task and based on completed status retrieves Procedure(s) instances documenting services provided to Dan by the CP.

**Success Criteria:**

Successfully sending a Task, retrieving the acknowledgement by the CP of services provided and generation of the Procedure instances associated with that ServiceRequest.

**Success Criteria:**

CP receives the Task and referenced ServiceRequest for patient Dan Mars from the provider EHR. CP communicates Task status and any resulting activity (reference Procedure) to the EHR.

**Bonus points:**

Provider creates Consent resource and attaches it to the ServiceRequest, CP retrieves the Consent resource and displays it on the CP system.

**Test Script(s):**

Security and Privacy Considerations:

Patient consent is provided/shared with CP/CBO. Consent resource is referenced by ServiceRequest.supportingInfo.

**Relevant Artifacts**

Relevant Artifacts link contains json examples of Condition, ServiceRequest, Task and Procedure.

### Use Case B

**DETAILS:**

**Use Case B: Creation of FHIR Questionnaire, QuestionnaireResponse, and Creation of Observations and Conditions (use a predefined StructureMap)**

**Actors:**

Provider/Social Worker/Payer Case Manager (will use the term provider for all three for this use case), Patient
<table>
<thead>
<tr>
<th>System roles:</th>
<th>Placer of an order/referral (ServiceRequest) for addressing housing and job insecurity using EHR or Payer member management system</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role 1 Name:</td>
<td>Provider: Casey Payton</td>
</tr>
<tr>
<td>Role 2 Name:</td>
<td>Patient: Dan Mars</td>
</tr>
<tr>
<td>Precondition:</td>
<td>On 4/18/2021, Patient Dan Mars has a phone visit with his provider Casey Payton who asks him to complete a routine risk screening questionnaire called PRAPARE that the office/payer uses to assess social risks that may impact the patient's health. It's an electronic questionnaire and Dan agrees to it. Dan has a portal account on the providers system with a secure login.</td>
</tr>
<tr>
<td>Scenario</td>
<td>Provider Casey Payton posts a link on the patient portal for a subset of the PRAPARE questionnaire for Dan to answer. The questions are focused on assessing risk with respect to housing or job insecurity. Based on the responses, Dan may be eligible for housing assistance and/or unemployment. The Provider receives the resulting FHIR QuestionnaireResponse instances and translate them into FHIR Observation and Condition (health concern) instances.</td>
</tr>
<tr>
<td>Scenario Step 1</td>
<td>5/26/2021 - Casey uses her patient management system to post a link to the PRAPARE questions to Dan.</td>
</tr>
<tr>
<td>Scenario Step 2</td>
<td>5/26/2021 - Dan logs into his portal and responds by selecting defined choices for each answer sequentially to complete the short questionnaire: Housing: “What is your housing situation today?” and Employment: “What is your current work situation?”. He responds with the choice selections of (2) for HsS0 and (1) for Emp0 which are “I do not have housing (staying with others, in a hotel, on the street, in a shelter, living outside on the street, on a beach, in a car, or in a park)” and “Unemployed” respectively.</td>
</tr>
<tr>
<td>Scenario Step 3</td>
<td>The result of the questionnaire are available to the patient management system as a FHIR QuestionnaireResponse instance conforming to the corresponding Gravity profile.</td>
</tr>
<tr>
<td>Scenario Step 4</td>
<td>The QuestionnaireResponse instance is translated automatically to a bundle of Observation and where appropriate, Condition (health concern) instances by the patient management system FHIR API using the Gravity StructureMap for that questionnaire as described in the IG.</td>
</tr>
<tr>
<td>Scenario Step 5</td>
<td>The FHIR bundle is decomposed into the Observation and Condition (health concern) instances that are persisted in the patient management system.</td>
</tr>
<tr>
<td>Success Criteria:</td>
<td>The provider successfully receives and processes PRAPARE QuestionnaireResponse into Observation and Condition (health concern) instances that are incorporated into their patient management system.</td>
</tr>
<tr>
<td>Bonus point:</td>
<td>Test Script(s):</td>
</tr>
<tr>
<td>Security and Privacy Considerations:</td>
<td>None</td>
</tr>
</tbody>
</table>

**Relevant Artifacts**

Relevant Artifacts link contains json examples of Questionnaire, QuestionnaireResponse, Condition and Observation.

**Use Case C DETAILS:**

Use Case C: Testing use of email, OAuth, and application capability to synchronize information between a Patient/Client application and multiple provider/payer/coordination platform APIs

**Actors:** Patient/Client and Provider

**Precondition:** Provider has 21st Century Final Rule compliant FHIR API and OAuth authentication server. A patient/client application exists that can communicate with the OAuth server

**Scenario:** Provider sends email to patient with link to application and link to API

**Step 1:** Create and sent email with link to application and API (as parameter)

**Step 2:** Use link to download application to smart phone (or access on Web Service) (first time only)

**Step 3:** Link parameter will connect application to API and redirect to OAuth server

**Step 4:** Authenticate using account and password

**Step 5:** Receive and store token and URL to API

**Success criteria:**

**Bonus point:** Perform steps 2-5 with another source

**Use Case D DETAILS:**

Use Case D: Exchanges to support a patient/client application

**Actors:** Patient/Client and Provider
## Use Case E: Exchanges to support a Community Based Organization (CBO) web application

**Actors:** Referral Source and CBO

### Precondition:
Referral source has 21st Century Final Rule compliant FHIR API and OAuth authentication server. A CBO application exists that can communicate with the OAuth server and FHIR API

### Step 1:
Connect to API using stored URL and token (may need to obtain access token from OAuth server using refresh token)

### Step 2:
Request task(s), service request (task.focus), and associated referred resources

### Step 3:
Display information and add to application store

### Step 4:
Update task on Referral API with accept or denial status

### Step 5:
Create procedures on Referral API to document work performed and link to (task.output)

### Step 6:
Update status so complete on Referral API

### Success criteria:
Demonstrate ability to connect, retrieve task/service request and return procedure(s) and update task status

### Bonus point:
Cancel Task with reason
Enabling Survey Instruments

Survey → LOINC Panel (Survey Instruments) → Include Health Concern Algorithm → Conversion to FHIR Questionnaire (enhanced NLM LHC-Forms Widget) → Build executable FHIR Questionnaire with logic to create LOINC-LOINC Observations and SNOMED-CT/ICD10-CM Health Concerns → Execute FHIR Questionnaire (enhanced NLM SDC Questionnaire App) → QuestionnaireResponse, Observation (survey question-answer pair), Condition (Health Concern) → Provider Evaluation (Problem/Diagnosis, Goals, Interventions, Other “clinical” findings) → Value Sets – based on SDOH Domain Definitions

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

Providers (EHRs) → Patient SDOH Survey(s) → FHIR API → Patient / Legal representative, Caregiver

Payers → Patient SDOH Survey(s) → FHIR API

Government Entities (e.g. Public Health) → FHIR API

Coordination Platform (CP) → Patient SDOH Survey(s) → FHIR API

Community Based Organization (CBO) → FHIR API

Community Based Organization (CBO) → FHIR API

Internet

FHIR based Information Exchange, TBD (Smart Phone App?)
Note: Where two FHIR APIs are shown, it is for drawing simplicity and not a technical requirement.