FHIR IG for Human Service Resource and Provider Directories

# Front matter

# FHIR IG for the Human Service Resource and Provider Directories

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* Created on: Draft version of mapping artifact delivered June 1, 2022
* Last updated: May 31, 2022

# Introduction

Information about the social services available to people in need is complex and ever-changing. In any given community, multiple “resource directories” might be available to people seeking assistance (whether it be clients searching the directory seeking help; or health care providers looking for appropriate community-based services to refer patients who are in urgent need of or can benefit from a referral to community services. These resource directories are useful to those conducting research and analysis to assess population health and communities’ needs as well.

The Human Services Data Specification (developed by the Open Referral Initiative) is an industry standard for interoperable resource data exchange that has been endorsed by the Alliance of Information and Referral Systems, the trade association for the sector of social service information-and-referral), as well as most recently by the government in the United Kingdom.

HSDS enables social service directory information to be published in a machine-readable format and has been adopted by a wide range of social care coordination vendors. As more healthcare systems seek to improve care coordination and health outcomes for patients and clients across the health and social care sectors, an interoperable, FHIR-based directory of community-based social services will help providers develop care coordination workflows with available social service agencies using FHIR-enabled EHR-systems.

# Context or Background

## Summary of the problem and why it’s worth solving

States have invested in resource directory and referral management systems to support their efforts to streamline and improve their systems for connecting older adults and people with disabilities to long-term services and supports. Provider- and plan-specific referral platforms are often not leveraging the existing network of the variety of services and supports thar can help address unmet social needs. Health IT developers are implementing innovative platforms for referring people to community resources, but often solutions do not incorporate the necessary interoperability standards thereby creating siloed communities; inefficiencies for managing social services referrals by creating duplicative workflows in already strained systems; and impeding opportunities to provide better care and support for people by helping them to access appropriate social service agencies in the locations they desire/require.

Past/Current Efforts to offer a standard approach to address a directory suitable to the human and social services domain have yet to be published. In late 2021, the Administration for Community Living (ACL) at the U.S. Department of Health and Human Services (HHS) announced a competition for state and community leaders in the aging and disability network, health care systems, health plans, and health IT vendors to help improve care coordination by developing and/or optimizing interoperable and scalable technology approaches to the secure sharing of standardized data on social determinants and person-centered plans through the use of open resource directories that interoperate between health care provider’s electronic health record-systems (EHR) and community-based organizations. The Challenge involves developing prototypes for implementable solutions that help track referral patterns to social services order to demonstrate the impact of social services on health-related outcomes over time.

[ACL Social Care Referrals Challenge](https://acl.gov/socialcarereferrals) searched for solutions to an interoperable social services directory that could be used by the varying states’ resource directory and referral management systems and platforms.

## How developing a standard for Human and Social Services Directories fits into overall goals for the ACL Social Care Referrals Challenge

The ability to search a directory for services is fundamental to allowing users to navigate to categories of available services at a given location, and services described in an even more granular way to meet client-specific needs. The new FHIR IG for the Human Service Resource and Provider Directories (Profiles, APIs, and implementation guidance) will permit third parties to include directory search functionality in applications used by health care providers, patients/consumers, and social service organization agents to query a directory of participants in a social services network to identify which organizations can provide services that address their immediate needs, along with the locations at which those services may be provided.

The CMS Interoperability and Patient Access Rule (CMS-9115-F) specified various FHIR technical standards and implementation guides that support development and testing of FHIR APIs to foster interoperability. CMS identified [technical standards for Provider Directories](https://www.cms.gov/Regulations-and-Guidance/Guidance/Interoperability/index#P_Directory) and specifically recommended the [PDEX Payer Network Implementation Guide](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1/) for provider directory support. It made sense to include the emerging standard for incorporating a social services directory and extend what is already in regulation to support future closed-loop referrals use cases related social determinants of health screening assessments.

The new profiles and guidance to support the human services directory will be tested by various ACL Social Care Referral Challenge participants in demonstrations and at CMS and HL7 FHIR Connectathons. The IG will appear on the HL7 January 2023 ballot as standard for trial use level 1 (STU1), and once through the ballot reconciliation and publication process, the IG may be considered a content guide extension to the FHIR PDEX Payer Network IG. Guidance within the FHIR IG for Human Services will help implementers avoid the unnecessary duplication of efforts to map local social services organization data that has been mapped to the HSDS logical model to the appropriate FHIR profiles.

Once effort was underway in the mapping process, we chose the most recent published version of the [PDEX Plan-Net Provider Directory IG](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/) (STU 1.1 US), and selected three profiles that best aligned with the [four core tables](https://docs.openreferral.org/en/latest/hsds/logical_model/) of the logical model of [Human Data Services Specification](https://docs.openreferral.org/en/latest/hsds/reference/#objects-and-fields) (HSDS).

# FHIR Profiles included in this version of the FHIR for Human Services Provider Directories

[Plan-Net HealthcareService](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-plannet-HealthcareService.html)

* The profile chosen for cloning/modeling the new Human-Social HealthcareService profile is derived from the base FHIR [HealthcareService](http://hl7.org/fhir/R4/healthcareservice.html) Resource.
* This profile references the Plan-Net Organization and Plan-Location profiles (as well as the Plan-Net Endpoint profile)
* This profile refers to the following extensions:
  + [newpatients](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-newpatients.html#root): the newpatients extension is used to indicate whether new patients are being accepted in general, or from a specific network. This extension is included in the Plan-Net HealthcareService, and Plan-Net Location profiles. This provides needed flexibility for specifying whether a provider accepts new patients by location and network. The ability to associate a healthcare service with an attribute describing whether a provider is accepting new patients, including accepting the 'type' of patient (e.g., Medicaid; some physicians serving 'private pay' only) is a vital to healthcare providers and patients searching healthcare provider directories*. Is there a similar requirement for CBOs, especially for search capabilities, and if so, what are the conditions, types of clients that would need to be described by the value set bound to this extension?*
  + [delivery-method](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-delivery-method.html#root): an extension describing the service delivery method. If service delivery is virtual, one or more delivery modalities should be specified.
  + [contactpoint-availabletime](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-contactpoint-availabletime.html#root): an extension representing the days and times a contact point is available
  + [via-intermediary](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-via-intermediary.html#root): a reference to an alternative point of contact (Plan-Net-Organization, or Plan-Net-Location) for this organization

[Plan-Net Organization](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-plannet-Organization.html)

* The profile chosen for cloning/modeling the new Human-Social Organization profile is derived from the [USCoreOrganization](http://hl7.org/fhir/us/core/STU3.1.1/StructureDefinition-us-core-organization.html) profile
* This profile references Plan-Net Organization
* This profile refers to the following extensions:
  + [qualification](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-qualification.html#root): an extension to add qualifications for an organization (e.g., accreditation) or practitionerRole (e.g., registered to prescribe controlled substances).
  + [org-description](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-org-description.html#root): an extension to provide a human-readable description of an organization.
  + [identifier:NPI](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-plannet-Organization-definitions.html#Organization.identifier:NPI): a business identifier for the organization that is used to identify the organization across multiple disparate systems. *Not used by this IG*
  + [identifier:CLIA](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-plannet-Organization-definitions.html#Organization.identifier:CLIA): a business identifier for the organization that is used to identify the organization across multiple disparate systems. *Not used by this IG*
  + [contactpoint-availabletime](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-contactpoint-availabletime.html#root): an extension representing the days and times a contact point is available
  + [via-intermediary](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-via-intermediary.html#root): a reference to an alternative point of contact (Plan-Net-Organization, or Plan-Net-Location) for this organization
  + [geolocation](http://hl7.org/fhir/R4/extension-geolocation.html): The absolute geographic location of the Location, expressed using the WGS84 datum (This is the same co-ordinate system used in KML.)

[Plan-Net Location](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-plannet-Location.html)

* This profile references the Plan-Net Organization and Plan-Location profiles (as well as the Plan-Net Endpoint profile)
* This profile refers to the following extensions:
  + [newpatients](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-newpatients.html#root): the newpatients extension is used to indicate whether new patients are being accepted in general, or from a specific network. This extension is included in the Plan-Net HealthcareService, and Plan-Net Location profiles. This provides needed flexibility for specifying whether a provider accepts new patients by location and network. The ability to associate a healthcare service with an attribute describing whether a provider is accepting new patients, including accepting the 'type' of patient (e.g., Medicaid; some physicians serving 'private pay' only) is a vital to healthcare providers and patients searching healthcare provider directories*. Is there a similar requirement for CBOs, especially for search capabilities, and if so, what are the conditions, types of clients that would need to be described by the value set bound to this extension?*
  + [accessibility](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/StructureDefinition-accessibility.html): an extension to describe accessibility options offered by a practitioner or at a location. *This is not specific to accessibility for disability but more akin to HSDS element* [*location.transportation*](https://docs.openreferral.org/en/latest/hsds/reference/#location). A new extension (*disabilityaccess*) will be created to represent the accessibility\_for\_disabilities table reflecting the kinds of arrangements required for access to locations for people with disabilities.

# Stakeholders

* ACL
* Challenge Participants
* HL7 Work Groups:
  + Human and Social Service (HSS) Work Group - Sponsor
  + Financial Management (FM) Work Group – co-sponsor and sponsor of parent IG (PDex Provider Directory)
  + Patient Administration (PC) Work Group – Interested Party and sponsor of National Directory IGs
  + Patient Care (PC) Work Group – Interested Party
  + Learning Health Systems (LHS) Work Group – Interested Party
  + Community Based Care and Privacy (CBCP) Work Group – Interested Party
* Healthcare Providers with FHIR EHR-enabled systems
* Human and Social Services Software Management Platform Vendors
* EHR-system Vendors

# Key Findings

* The primary focus of HSDS is to serve as a standard for displaying/exchanging a ‘listing service’ for human service provider resource/service information, including contact(s) information, descriptions and comments related to services, as well as two distinct accessibility characteristics: one reflecting access to the location (by means of transportation, etc.), the other, related to the ability for the disabled to access human services delivered at particular locations.
* Additional information about organizations, locations and services is held in separate tables and linked by a foreign key. Some tables only have a single foreign key for a single core table. When a single row contains multiple foreign keys, these must be interpreted as ‘OR’ relationships.
* FHIR Resource metadata is not comparable to HSDS metadata table content. We need a better understanding of how HSDS versions their records.

# Assumptions

* This version of the Implementation Guide will provide read-only capabilities. Subsequent updates to the IG may include validation, exchange (updates), and potentially may include eligibility requirements.

# Out of Scope

* Validation, exchange (updates) to the directory
* Eligibility
* Endpoint profile unless required

# Technical Requirements

* Requirements in the form of user stories
  + Domain Analysis Model including Use Cases, Actors, Interaction and Class Diagrams
* New FHIR Profiles (*HumanSocialService, HumanSocialOrganization, HumanSocialLocation*), FHIR Implementation Guide
* HSDS Data Model Analysis and API Schema ([HSDA](https://docs.openreferral.org/en/latest/hsda/))
  + Mapping Artifact (spreadsheet (HSDS to FHIR Profiles Analysis.xlsx) containing four worksheets, three corresponding to each of the three new profiles (*HumanSocialService, HumanSocialOrganization, HumanSocialLocation*)[[1]](#footnote-1)
  + Greg anticipates updates to HSDS based on mapping analysis – those updates to begin in the June/July timeframe
  + The FHIR Plan-Net HealthcareService profile most closely aligns to HSDS service\_at\_location table. FHIR Plan-Net Healthcare Service profile may refer to a service outside the context of a location, as well as a service at particular location(s) whereas both are required by the HSDS service\_at\_location table, one of the HSDS four “core tables”.
  + New extensions[[2]](#footnote-2) to the telecom element to support additional contact information element that are represented in the HSDS foreign key tables (Contact, Phone) as well information pertaining to the accessibility to services or locations for disabled clients.
    - *humanservicesparticipant-contact*: new extension to represent the list of human contacts for a service at a given location – used by HumanSocialService profile
      * *Note for alignment purposes*:

[*SDOHCC HealthcareService profile*](http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/StructureDefinition-SDOHCC-HealthcareService.html)includes an extension to the telecom element: extension [*SDOHCC-ExtensionHealthcareServiceTelecomAppointment*](http://build.fhir.org/ig/HL7/fhir-sdoh-clinicalcare/StructureDefinition-SDOHCC-HealthcareService-definitions.html#HealthcareService.telecom:AppointmentContact.extension:ForAppointment)*,* a flag (boolean) to indicate whether the contact details pertain to the one that can be used for the purpose of calling to make an appointment

* + - *disabilityaccess*: this new extension to provide information related to the location's accessibility related to persons with disabilities
    - *transportation:* new extension to provide a description of the access to public or private transportation to and from the location.
    - *addressregion*: new extension describing the region in which an address is located
    - *newapplicationprocess*: a potential new extension to represent values currently in HSDS service.application\_process

# Search Parameters

We are in the process of identifying the key data elements most useful for searching Community Based Organization directories by healthcare providers as well as client and CBO communities. In addition to the robust search capabilities inherent in FHIR, the following additional search parameters have been defined for searching healthcare provider directories as referenced in [PDEX](http://hl7.org/fhir/us/davinci-pdex-plan-net/STU1.1/artifacts.html#behavior-search-parameters). I’ve taken a stab at identifying those search and filtering capabilities most applicable to social services directories by bolding them:

* HealthcareService
  + **Search for services available in a region described by the specified location**
  + **Search for services provided by the specified organization**
  + **Search for services available at the specified location**
  + **Search for services with the specified name**
  + Search for services providing the specified category of services
  + **Search for services of the specified type**
  + Search for services associated with the specified specialty
  + Search for services with the specified endpoint
* Location
  + **Search for locations with the specified address.city**
  + **Search for locations with the specified address.postalcode**
  + **Search for locations with the specified address.state**
  + **Search for locations managed by a specific organization**
  + Search for locations that are part of the specified location
  + Search for locations of the specified type
  + Search for locations with a specified endpoint
* Organization
  + **Search for organizations with the specified address** (matches any of the string elements of an address)
  + **Search for Organizations with the specified name**
  + Search for Organizations that are part of the specified organization
  + Search for Organizations of the specified type

# Future Milestones & Deliverables

Based on analysis of the HSDS; initial mapping to the relevant FHIR profiles; and high-level analysis of the [Human Service Data API Suite (HSDA)](https://docs.openreferral.org/en/latest/hsda/#human-service-data-api-suite-hsda)[[3]](#footnote-3), the set of protocols for accessing, updating, exchanging and synchronizing HSDS-community resource directory data, the following lists the deliverables, their milestones, and responsible parties/stakeholders related to the development, testing, balloting and publication of the FHIR implementation guide for Human Service Provider Directories

|  |  |  |
| --- | --- | --- |
| **Deliverable** | **Milestone/Date Due** | **Responsible/Stakeholders** |
| Complete use case analysis | July 18, 2022ß | OpenReferral, ACL Challenge Participants?  FEI/BZ Team |
| Generate Domain Analysis Model using HSDS analysis & mapping artifact | Aug 1, 2022 | FEI/BZ Team |
| Generate draft FHIR Implementation Guide based on mapping artifact | July 6, 2022 | FEI/BZ Team |
| Create test data/resources | Sept 1, 2022 | Open Data Services team; FEI/BZ team |
| HL7 HSS WG participation – currently biweekly, should become weekly sessions once draft IG is ready for review and comment | Beginning 6/9/22 – ballot Jan 2023 reconciliation | FEI/BZ Team/EMI/Additional stakeholders from the community |
| HL7 Work Group Stakeholder sessions | July 2022 – Dec 2022 |  |
| CMS Connectathon – July 2022 – SDOH Track | June 30 Registration deadline | Registered as observer for all tracks; focusing on FAST National Directory and Gravity SDOH Tracks; collaborating with Open City Labs, one of the participants in Social Care Referrals Challenge |
| HL7 FHIR Connectathon Proposal for Sept 2022 | Due July 12 deadline |  |
| Sept 2022 FHIR Connectathon – Baltimore, MD | Sept 16-17, 2022 |  |
| September 2022 Working Group Meeting – Attendance/Participation? | Sept 19-23, 2022 |  |
| Notice of Intent to Ballot (NIB) | Nov 1, 2022 | FEI team/HL7 HHS WG co-chairs submit |
| HL7 FHIR Connectathon Proposal January 2023 | Nov 1, 2022 |  |
| JAN 2023 FHIR IG Publisher/Validator issues reported | Nov 1, 2022 |  |
| FHIR Ballot Content freeze | Nov 24, 2022 |  |
| HSS WG Approves Final Content | Nov 24 – Dec 3, 2022 |  |
| Final IG Ballot Content Due | Dec 4, 2022 |  |
| Jan 2023 Ballot Readiness Signoff | Dec 6-8, 2022 |  |
| HL7 FHIR Connectathon January 2023 | Jan 14-15, 2023 |  |
| January 2023 HL7 Working Group Meeting | Jan 16-20, 2023 |  |
| [Ballot Reconciliation](https://confluence.hl7.org/display/FHIR/G+-+Ballot+Specification+and+Reconciliation) |  |  |
| [Intent to publish is sent to FHIR IG Facilitator](https://confluence.hl7.org/display/FHIR/H+-+Publication+Request) |  |  |
| Complete and submit publication readiness checklist and send to FMG |  |  |
| Once approved by FMG, publication request is reviewed by TSC. |  |  |
| Once approved by TSC, IG published and added to the [Registry of FHIR IGs](http://fhir.org/guides/registry/) |  |  |

# Glossary

New terms readers/stakeholders may need to know.

1. The names are proposed profiles names [↑](#footnote-ref-1)
2. The proposed names for new extensions. Alternatively, some of the current PDEX extensions could be extended to include the necessary human and social services concepts (via-intermediary, accessibility)? [↑](#footnote-ref-2)
3. [The core HSDA protocol](https://docs.openreferral.org/en/latest/hsda/hsda/#hsda-spec) (HSDA) describes read/write functionality for the Open Referral’s Human Services Data Specification (HSDS), including resources for organizations, their locations, and their services [↑](#footnote-ref-3)