HL7 FHIR Connectathon 30 Report Out

Hi there! This document is for track leads and helpers to record results of the 30th HL7 FHIR Connectathon by track. This document will be open for results reporting until end of day May 4, 2022 at which point it will be removed for formatting and archived at the same link from Confluence in a static document.

If you have questions email sandy@counterpointsol.com

Please record your results by answering the following questions:

1. summary: what was the track trying to achieve
2. list of participants (logos if there is time)
3. systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)
4. notable achievements
5. screenshots if relevant and interesting and/or links to further information about implementations/achievements
6. discovered issues / questions (if there are any)
7. now what?

At-Home Result Report (At-Home In-Vitro Test Result Report)

Summary: what was the track trying to achieve

The track was focused on testing the functionality/completeness of the Implementation Guide in preparation for a September 2022 Ballot.

- Build (manually or automatically) a FHIR Bundle
- containing At-Home In-Vitro test results
- Validate the FHIR Bundle against the IG
- Identify missing data
- Identify “challenging” data
- Identify issues with the IG

List of participants

- Krishna Juluru – NIH/NIBIB
- Matt Rahn - ONC
- Gay Dolin – HL7
- Sarah Gaunt – Lantana Consulting Group
- Andrew Weitz – NIH
- Arpita Basak
- Brett Young-Moxon
- Chang Liu - Intrivo

- Chris Cash – ImageMover
- Dan Alsagar - Image Mover
- Deb Loniewski – MDHHS-Michigan
- Devin Stompanato – Abbott
- Dmitry Verkhovsky – Intrivo
- Jackie Martinez – Primary.Health
- John Park
- John Schullin - Abbott
- Mario Beltran – MDHHS-Michigan
- Michele Mottini - CareEvolution
- Nikki Williams – HRSA
- Cindy Bush – CDC/NCHS
- Prakash Viswanathan – Rover Diagnostics
- Rondalyn Shelby
- Samuel Sohn – Primary Health
- Shuo Liu – Health Labs
- Wanda Govan-Jenkins

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered

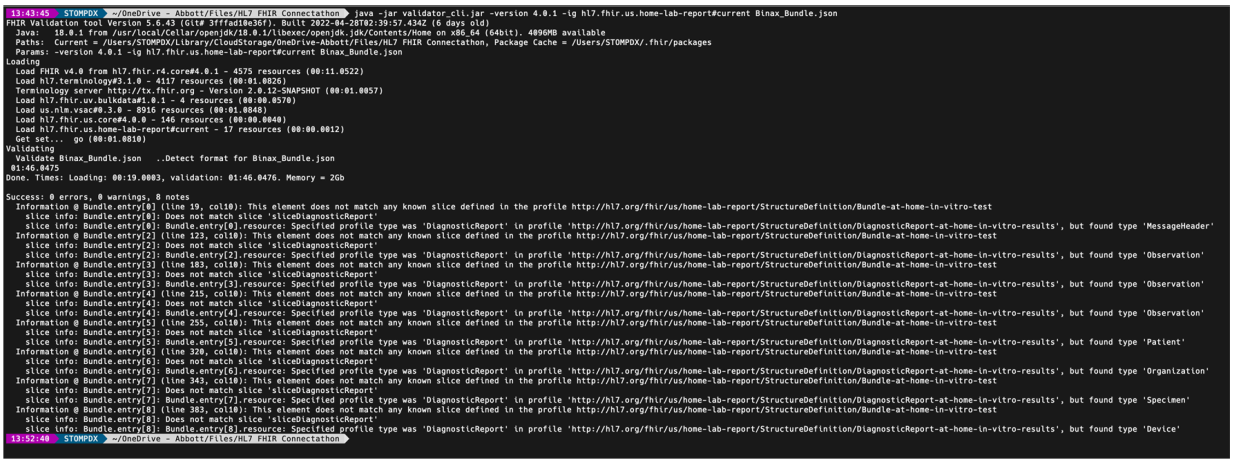
- Primary Health - Bundle generated - 100% of profiles included
- ImageMover - Converter to change existing outputs to FHIR - Bundle generated - 100% of profiles included
- CareEvolution - Converter from the internal format used by app (MyDataHelps) to the implementation guide Bundle - 100% of profiles included

Notable achievements

- Chang Liu - Intrivo
    - Tried with the example data to send over to the Lantana endpoint
    - Used the validator jar to validate the sample data
- Chris Cash & Dan Alsagar – ImageMover
    - Adapted FHIR code to be used by our app
    - Wrote a converter to change existing outputs to FHIR
    - Able to send from local app to lantana endpoint
- Devin Stompanato – Abbott
    - Created a sample Observation & Bundle using Abbott's BinaxNOW OTC Rapid covid test info by hardcoding values in a static JSON message and sending via postman
        - I also was able to locally validate the messages using the .jar validator utility
        - When testing the above process, I found the Device identifier in the udiCarrier section to be difficult to lookup. I elected to provide the values in the LIVID excel file using a concatenation of column M and P

- Referencing any of the values from the LIVID excel I would find beneficial or providing a lookup reference to the uidCarrier IDs

Validation report and a partial screenshot of the message created:



```
13:43:45  STOMPDX  ~/OneDrive - Abbott/Files/HL7 FHIR Connectathon  java -jar validator_cli.jar -version 4.0.1 -ig hl7.fhir.us.home-lab-report#current Binax_Bundle.json
FHIR Validation tool Version 5.6.43 (Git# 3fffad10e35f). Built 2022-04-28T02:39:57.434Z (6 days old)
  Java:   18.0.1 from /usr/local/Cellar/openjdk/18.0.1/libexec/openjdk.jdk/Contents/Home on x86_64 (64bit). 4096MB available
  Paths:  Current = /Users/STOMPDX/Library/CloudStorage/OneDrive-Abbott/Files/HL7 FHIR Connectathon, Package Cache = /Users/STOMPDX/.fhir/packages
  Params: -version 4.0.1 -ig hl7.fhir.us.home-lab-report#current Binax_Bundle.json
Loading
  Load FHIR v4.0 from hl7.fhir.r4.core#4.0.1 - 4575 resources (00:11.0522)
  Load hl7.terminology#3.1.0 - 4117 resources (00:01.0826)
  Terminology server http://tx.fhir.org - Version 2.0.12-SNAPSHOT (00:01.0057)
  Load hl7.fhir.uv.bulkdata#1.0.1 - 4 resources (00:00.0570)
  Load us.nlm.vsac#0.3.0 - 8916 resources (00:01.0848)
  Load hl7.fhir.us.core#4.0.0 - 146 resources (00:00.0040)
  Load hl7.fhir.us.home-lab-report#current - 17 resources (00:00.0012)
  Get set...  go (00:01.0810)
Validating
  Validate Binax_Bundle.json   ..Detect format for Binax_Bundle.json
 01:46.0475
Done. Times: Loading: 00:19.0003, validation: 01:46.0476. Memory = 2Gb

Success: 0 errors, 0 warnings, 8 notes
  Information @ Bundle.entry[0] (line 19, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[0]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[0]: Bundle.entry[0].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'MessageHeader'
  Information @ Bundle.entry[2] (line 123, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[2]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[2]: Bundle.entry[2].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Observation'
  Information @ Bundle.entry[3] (line 183, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[3]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[3]: Bundle.entry[3].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Observation'
  Information @ Bundle.entry[4] (line 215, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[4]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[4]: Bundle.entry[4].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Observation'
  Information @ Bundle.entry[5] (line 255, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[5]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[5]: Bundle.entry[5].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Patient'
  Information @ Bundle.entry[6] (line 320, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[6]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[6]: Bundle.entry[6].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Organization'
  Information @ Bundle.entry[7] (line 343, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[7]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[7]: Bundle.entry[7].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Specimen'
  Information @ Bundle.entry[8] (line 383, col10): This element does not match any known slice defined in the profile http://hl7.org/fhir/us/home-lab-report/StructureDefinition/Bundle-at-home-in-vitro-test
    slice info: Bundle.entry[8]: Does not match slice 'sliceDiagnosticReport'
    slice info: Bundle.entry[8]: Bundle.entry[8].resource: Specified profile type was 'DiagnosticReport' in profile 'http://hl7.org/fhir/us/home-lab-report/StructureDefinition/DiagnosticReport-at-home-in-vitro-results', but found type 'Device'
13:52:40  STOMPDX  ~/OneDrive - Abbott/Files/HL7 FHIR Connectathon
```

- Jackie Martinez & Samuel Sohn – Primary Health
    - Wrote bundle generator and sent to lantana server via local app
    - Final generated bundle: https://pastebin.com/XiRQHzNg Pw: JsiRVd3tYN
    - ID for above: e418a2d4-a845-4ca8-8cdc-e463f1f20791

- John Schullin - Abbott
    - A few notes to better understand:
        - Clarity in the method to identify the sending system or application
        - Overall, we noted some places where we've previously used reference or placeholder data attributes to fill ELR data gaps due to the Self-Reporting use case (ex. ordering provider, lab). It would be great to see this particular FHIR spec focused only on the data that is relevant to the use case.
        - Additional areas for exploration could be in school identification. There is CDC guidance for adding a school identifier to a traditional ELR message. But note that, some states allow schools to utilize self-administered/OTC tests and share the results with the school. This can create some confusion in whether or even how a school identifier could be associated with a self-reported test.
- Michele Mottini - CareEvolution
    - Wrote a stand-alone converter from the internal format used by our app (MyDataHelps) to the implementation guide bundle (patient+diagnosticreport+observation+specimen+device), used it to create 34 bundles from test data, uploaded them to the Lantana server (Sarah validated some of them off-line). Discussed some details of the bundle format: what goes in MessageHeader, fullUrl, why DiagnosticReport
- Prakash Viswanathan – Rover Diagnostics
    - New to FHIR and learning the basics.
    - Experimented with creation of various resources starting with the provided examples and subsequently adding/editing/removing attributes.
    - Validations against the stand-alone FHIR validator as well as the Lantana server.
    - Working on translating HL7v2 messages into XML compliant with the FHIR specifications.
    - Questions about relevance of required attributes HL7v2 such as CLIA and Ordering Physician for OTC/POC devices.

Screenshots if relevant and interesting and/or links to further information about implementations/achievements

Discovered issues / questions (if there are any)

- GoogleSheet containing discovered issues: https://docs.google.com/spreadsheets/d/1QDOHAa2RveHF78lvcww5qkIlJAfxKLer7GJIVOC4lVY/edit#gid=46054766
- Notable:
    - Considerations around including data in FHIR structures simply because they are required fields in V2 ELR spec, common consensus was to not include this data and to only include data that is needed by APHL/PHAs, need to discuss with O&O

    - Device (i.e. test) identifying data from LIVD spreadsheet needs to be clarified and mapped into Device profile
    - Type of test - proctored or not is important to PHAs to determine reliability of results, need to add a performer or extension to contain this data

Now what?

- Work with O&O to work through some of the discovered issues
- Update IG based on findings and future discussions with O&O
- Continue work with implementers and PHAs to test updates (make sure all C'thon attendees have details of IG / O&O meetings)
- Finalize IG ready for Ballot in September 2022

Bulk Data

Summary

Healthcare and payor organizations have many reasons to transmit data on large populations of patients, such as moving clinical data into an analytic data warehouse, sharing data between organizations, or submitting data to regulatory agencies. Today, bulk export is often accomplished with proprietary pipelines, and data transfer operations often involve an engineering and field mapping project. The bulk data implementation guide (IG) is an effort by HL7, Argonaut, SMART and the FHIR community to bring the FHIR standard to bear on these challenges of bulk-data export. This track provided a forum for server implementers (providing bulk data) and client implementers (retrieving bulk data) to test the IG, including updates in the recently published version 2.0.

Participants

Name	Organization
Bin Mao	Boston Children's Hospital
Dan Gottlieb	SMART / Argonaut
Jamie Jones	Boston Children's Hospital
Vlad Ignatov	Boston Children's Hospital
Ryan Weihler	Independent
David Roberts	Independent
Ming Dunajick	Lantana Consulting Group
Tom Roderick	Flamelit Consulting
Joon Hyun Song	HealthAll Inc.
Vandhana Sree Gopinath	Philips
Rangoli Ranjan	Philips
Prashanthi Koneru	Lantana Consulting Group
Beth Ellinport	ONC
Poureya Sohbati	iHealthLabs
Manoj	Englewood Health
John Park	JMC Consulting
Jerry Vettemthadathil	Vizient, Inc.
Lalit Gawad	GCOM Software LLC
Md Nazmul Karim	Alphora
Wesley Jebadoss	GCOM Software LLC

Alex McManus	athenahealth
Sravanthi Kotica	KY DPH /OATS
Reece Adamson	MITRE
Daniel Kitchener	athenahealth
Mike Flanigan	Carradora Health Inc.
Branden Rauch	CareEvolution

Public Servers and Clients

https://docs.google.com/spreadsheets/d/1oe48aka3Xb-_M5S3ilMPZxPffxUi9n1m_W0GdS3yGaU/edit#gid=0

Notable Achievements

- Initial testing of AthenaHealth Bulk Data Server
- Testing of Inferno (g)(10) standardized testing tool
- Test of multi-server bulk data export pipeline for downstream analytics use cases
- Updates to SMART Reference Server Implementation
    - Added SMART V2 scopes support
    - Added proof of concept _typeFilter support (only _filter is partially supported for now)
    - Converted project to TypeScript (to be deployed after the connectathon)

Discovered Issue and Questions

- Interest by at least one EHR vendor and several other participants in returning a partial manifest as part of the bulk data in-progress status response. This is neither explicitly allowed or disallowed by the bulk data IG, but should be backward compatible since clients can ignore the interim manifest if they choose. Further discussion on Zulip around mechanics of this approach.
- Discussion of how systems manage performance when returning large bulk data responses. AthenaHealth and Epic throttle bulk data file generation as required to avoid impacting clinical operations, so large requests may take a while when a system is under load. Cloud FHIR services can auto scale, adding servers to return requests quickly (potentially with some additional cost).
- FDA immunization adverse event registry use case would require complex temporal filtering around events to obtain the minimum dataset required from a bulk export. Discussion around potential approaches included extracting larger than needed dataset and transmitting it to a server that would do further querying and then pass along matching patients to the FDA.

- Maternal health data in public health use case would require _typeFilter support by EHR vendors to retrieve the minimum data required. Potential approach discussed is similar to that of FDA use case: extract, filter and submit, though filtering in this case is simpler.

Now What?

- Consider documenting support for returning a partial manifest as part of the bulk data in-progress status response in a future version of the IG.

Cancer Electronic Pathology Reporting

List of Participants

- Fred Marsh
- Maria Michaels
- Caitlin Kennedy
- Alex Goel
- Ruby Nash
- Iman Simmonds
- Genny Luensman
- Rob Dingwell
- Matt Tiller

Test Cases:

PlanDefinition Trigger Based reporting

Goal: Test a PlanDefinition containing trigger codes relevant to reportable pathology results and load this into an instance of eCR-Now application running in an environment receiving pathology results/reports.
Result: Successfully got test application to run, but have work to do setting up Knowledge Artifacts for MedMorph use case

Bundle Registry Reporting

Goal: Report using a Registry Reporting Bundle to a Cancer Registry actor
Results: Partial success: identified what elements were missing using Postman, but have not updated Reference Implementation to include those elements

Exchange Bundle

Goal: Send a Transaction Bundle between 2 EMR/AP-LIS Actors
Results: Successful post of exchange bundle on Lantana server once edits to references were made

Order Specimen

Goal: Create a Specimen resources and POST/PUT it with a FHIR Server
Results: Successful post of specimen, however further testing required. Recommend future testing includes slices, parent-child specimens, and specimens which have been moved from one health facility to another

Next Steps

- Finish MedMorph Knowledge Artifact
- Test in MedMorph eCRNow implementation in next connectathon
- Attempt to submit to Cancer Registry endpoint

Care Planning

Summary: What Was the Track Trying to Achieve

This track is hosted by the Multiple Chronic Conditions (MCC) eCare Plan project to evaluate and test goal-oriented care planning. The objectives for this track are to:

- **Demonstrate** the purpose of using goals in care planning, where goals may be created by any member of the care team, including patients and caregivers.
- **Explore**:
    - How care goals in practice can be **clinically useful and interoperable**.
    - **Relationships** between a goal and the following:
        - Conditions and/or assessment observations that goals address
        - Outcome observations that document goal progress
        - Other goals
        - Associated interventions
        - Associated “notes” about goals
    - The **clinical workflow feasibility** for creating FHIR Goal.description using coded terminology vs. free text.
    - **Clinical workflow and challenges** with creating measurable goals that reference specific codes, e.g., lab or vital sign LOINC code.
- **Evaluate**:
    - The use of **FHIR Goal** to capture and track SMART goals, i.e., Specific, Measurable, Achievable, Relevant, and Time-Bound.

- **Recommended updates** to existing **US Core Goal Search Parameters**.

List of Participants

The Care Planning Track had 56 participants, with 18 people attending both days.
Attendance sheet: Attendance Sheet - Care Planning Track Connectathon 30

Care Coordination System Actors	Name	Organization	Logo
Provider SMART on FHIR eCare Plan App	MCC Project Team	NIH AHRQ	
Patient/Caregiver SMART on FHIR eCare Plan App	MCC Project Team	NIH AHRQ	
Operational Data Hub (ODH) - Shared Care Plans	ACF Project Team	ACF	

Systems Which Have Implemented the IG

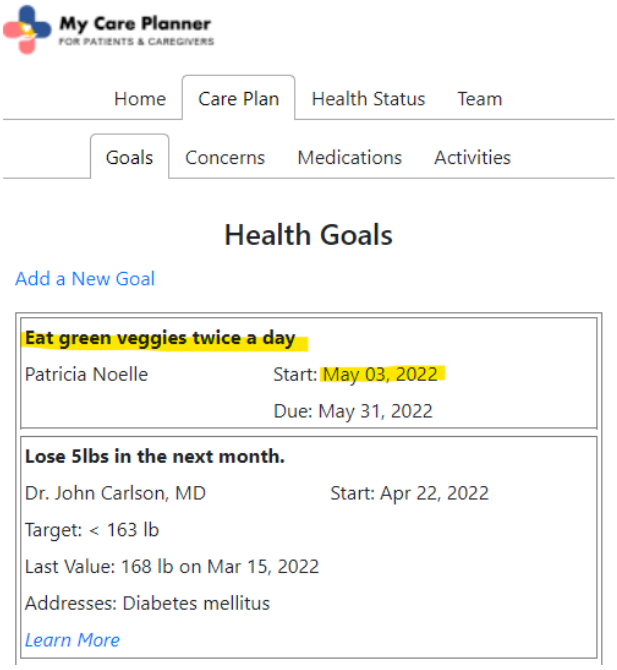
N/A

Notable Achievements

- Gathered robust representation from multiple tracks, projects, and initiatives including Care Planning, Gravity SDOH, Clinicians-on-FHIR, US Core, Social Services Case Management Shared Care Plans, and Clinical Reasoning.
- Demonstrated CQL logic embedded in Patient/Caregiver SMART-on-FHIR eCare Plan App, a standards-based application built from the MCC eCare Plan IG, to provide decision support for goal-oriented care.
- Aligned approaches to Goal relationship across multiple use cases and identified future areas for continued exploration.
- Identified potential updates for the Goal resource; for example, adding ClinicalImpression resource as one of the referenced resources for the Goal.addresses element.
- Facilitated thoughtful discussions around shared care plans, comprehensive care plans, and specific care plans, especially regarding workflow considerations and technical approaches for data integrity and references between resources.

Screenshots and Links

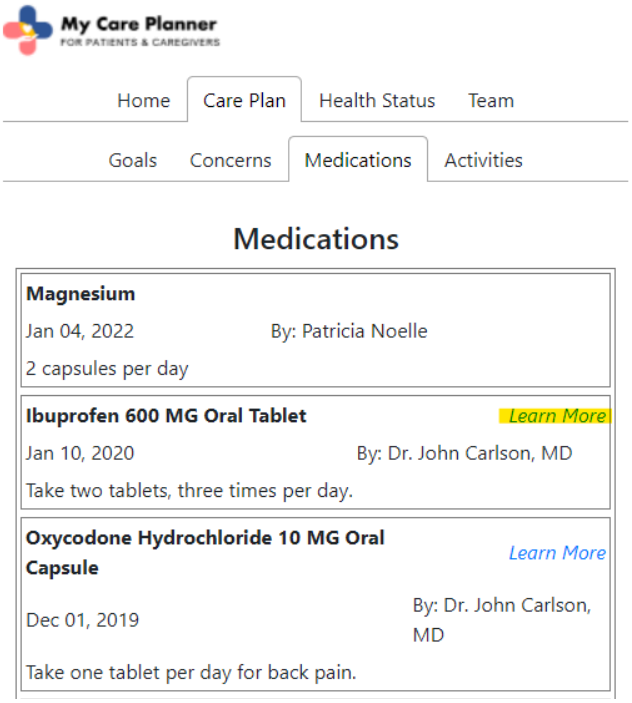
Demo of the Patient/Caregiver eCare SMART on FHIR app that enables a patient or caregiver to author a new goal to be shared with others on her care team.

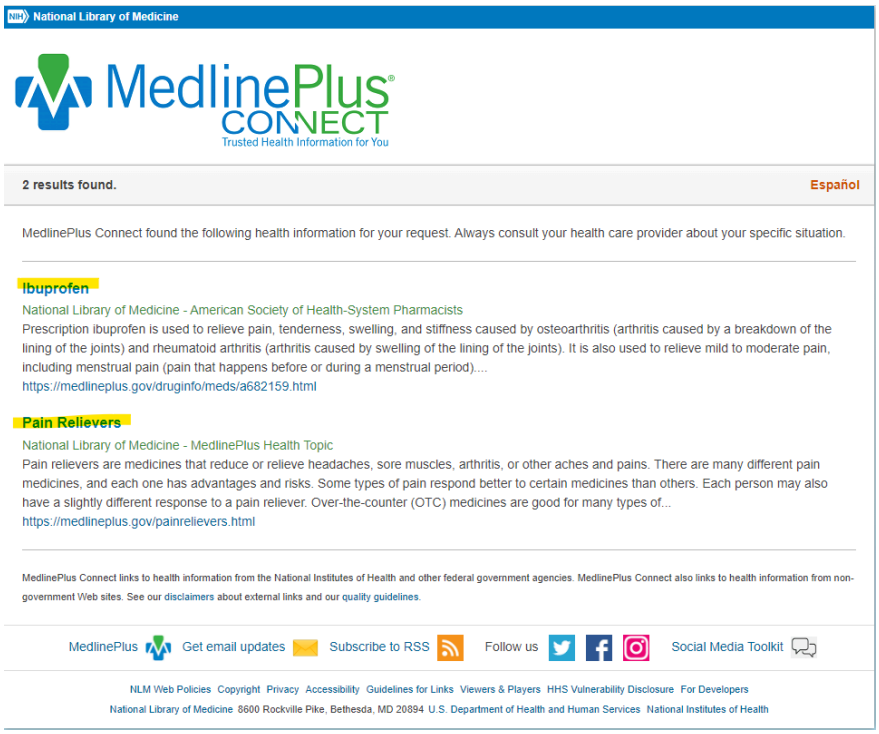


Patient or caregiver-authored goals shared in an interoperable way with the Provider eCare SMART on FHIR app.

Demonstrated execution of CQL logic embedded in the Patient/Caregiver eCare SMART on FHIR app to classify and summarize patient data, and also used to create a URL to query and display

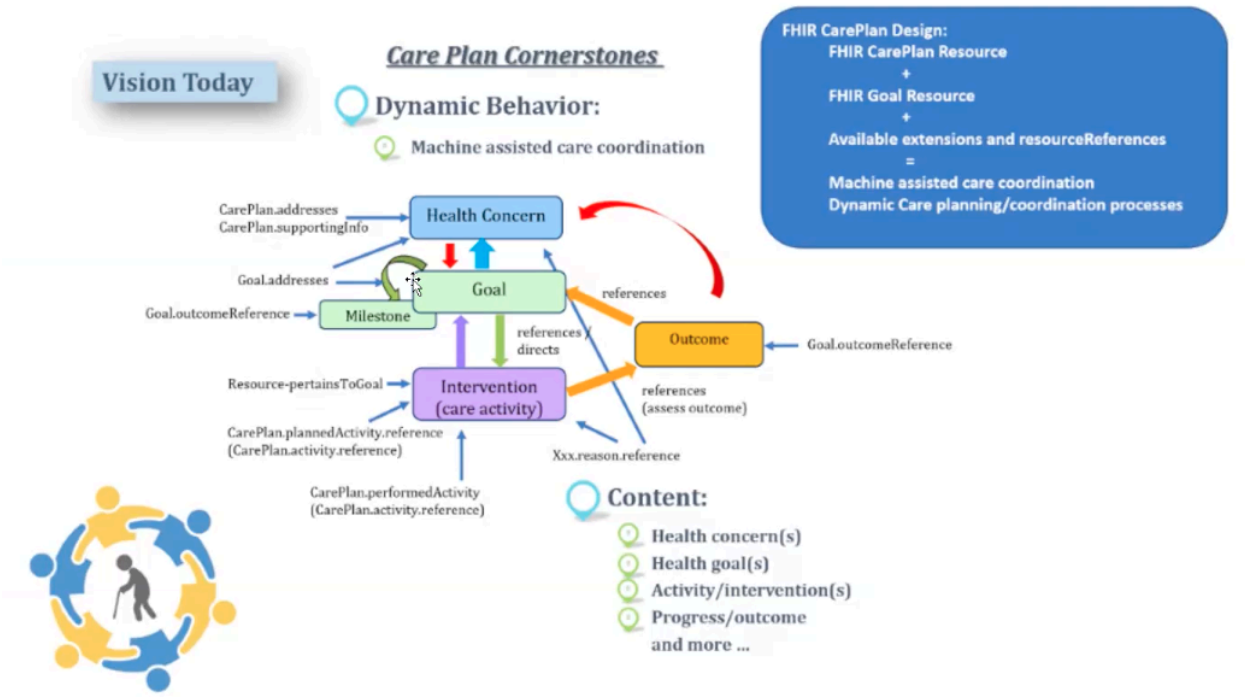
Medline Plus Connect information for patients/caregivers looking to learn more about conditions, lab results and medications.



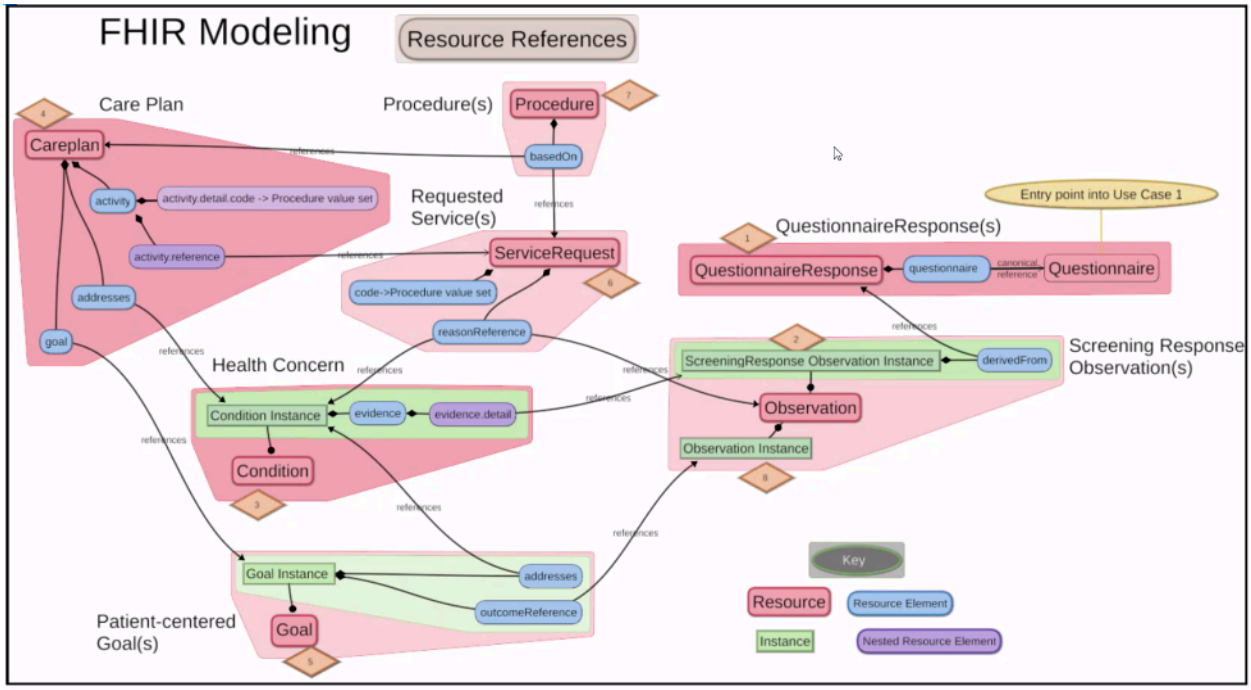


Clinical Care Plan Process Analysis

3.1.1.1 High Level Dynamic Care Plan Process Diagram



Comprehensive Care Plan FHIR Modeling (shared by Monique)



MCC Sample Data: https://github.com/chronic-care/mcc-sample-data/tree/main/pnoelle
Care Plan DAM:
https://confluence.hl7.org/display/PC/Care+Plan+DAM%3A+Functional+and+Structural+Needs

Discovered Issues / Questions (if there are any)

1. Can CQL logic be used to evaluate progress on Goal.target measure?
2. Goal should have an "end date" at the root level (as well as the goal.target due date.)
3. Can CDA documents contain sufficient discrete data to support transformation and use by FHIR applications providing care management/case management solutions?
4. Responsibility for resolving references in FHIR Bundles when exchanging data between organizations. Who could/should/would resolve bundle content to limit duplications?
5. Should the Goal point to the Procedure or should the Procedure point to the Goal? A similar question was discussed for relationships between Goal and other resource types.
    a. Should a goal point to other resources using the Goal.addresses element or should other resources point to goal using the pertains-to-goal extension? Preference should be given to use of the pertains-to-goal extension because it seems like the natural direction of such relationships. For example, a goal is set then a procedure occurs to accomplish the goal. The procedure should use the pertains-to-goal extension to reference the set goal.
6. Nutrition intake resources as reference from goal.addresses (NutritionIntake is used for food dairies, diet-related data from myFitnessPal, data to assist malnourished patients. However, NutritionIntake is a new resource in R5 and not available for use in our R4 test environments.

Now What?

- Should Patient Care open a Jira ticket for adding a Goal.endDate as well as keeping target.due element on Goal?
    - MCC eCare Plan will bring this conversation to Patient Care Thursday Q1 Care Planning quarter.
- Potential update for the Goal resource- Possibly adding ClinicalImpression resource as one of the referenced resources for the Goal.addresses element.
    - MCC eCare Plan will bring this conversation to Patient Care Thursday Q1 Care Planning quarter and future Clinicians on FHIR calls. Will need to create some more examples for how it can be used.

- Identify how to exchange comprehensive care plans for MCC across organizations when part of the care responsibility and clinical records are shared. Specifically, determine how to reconcile and minimize duplication of patient data.

- Transferring a Care Plan between two different entities through resolving references.
    - A Jira ticket will be assembled and the MCC eCare plan team will continue discussions with ACF through Patient Care.
- Integration of more decision-support logic into care planning and care management.
- Focus on care teams in collaboration with the HL7 Learning Health System Work Group.

CARIN IG for Blue Button

Summary

- Real world testing of the CARIN IG for Blue Button®.

Participants

Cambia Health	SmileCDR
MaxMD	EMR Direct
MITRE	Aetna
CareEvolution	Optum
UPMC	Aegis
CNSI	1UpHealth
Onyx	ONC

Notable Achievements

- MaxMD connected with Humana, 1UpHealth, Onyx, MITRE, and Optum.
- MITRE was able to connect with EMR Direct and 1UpHealth.

Systems Implementing the IG

- All of the implementers were testing using the STU 1.1.0 version.

Test Scripts

- CareEvolution used the 1.2 test scripts within Touchstone and found them helpful, but found it challenging to create test data to run the test.
- ONC was able to run the Touchstone test scripts.

Discovered Issues

- MaxMD was able to get code and tokens from Onyx and Optum, but not the EOB resources. Need to follow up with CNSI for identity verification. Failed the token process with MITRE.
- MITRE ran into an issue with the capability statement at 1UpHealth.

Next Steps

- CARIN will be reassessing how we manage tracks at future Connectathons to ensure that they have more focused testing sessions and less time spent on information and technical overview sessions.
- We will likely shift the track to a 1-day session for future testing events due to the large number of other tracks.
- Con Man was helpful to locate testing information, but having an actual person to test with live in a breakout room is much more helpful.
- Develop a user-friendly guide for implementers for some of the areas such as slices where there is flexibility available for the implementer. As an example, within the required bindings, the implementer can use their own slice within adjudication. Make sure the adjudication structure has the right binding strength to allow for custom local slices.
- Develop test data for implementers to use in the Aegis test scripts.
- Two new JIRA tickets were created: https://jira.hl7.org/browse/FHIR-37335 and https://jira.hl7.org/browse/FHIR-37334, which we will review and address soon.

CARIN IG For Digital Insurance Card

Summary

- Real world testing of the CARIN IG for Digital Insurance Card.

Participants

Humana
Microsoft
Aetna
Anthem
Anonymous Observers

Notable Achievements

- Three successful client apps retrieved data conformant to the profiles from the Humana sandbox server including Microsoft, Touchstone, and Humana test application.
- During the Aegis session, they were able to update the test scripts to point to the latest IG so it has the latest build.

Systems Implementing the IG

- Humana

Test Scripts

- How to register in Touchstone - YouTube recording: https://youtu.be/zwRjZiNZP-0
- Tutorial on creating Test System and running test executions: https://youtu.be/_akupWJEF3o
- Tutorial on creating test set up and reviewing results: https://youtu.be/H9Hij-EfDCo
- CARIN for Digital Insurance Card IG specific test scripts: Touchstone (aegis.net)

Discovered Issues

- Remove the beneficiary cost strings extension from the header line in the coverage profile.
- Check that we removed the HTML from the IEC color codes system URL in example JSON's.

Next Steps

- Recommended that we log JIRA tickets for R5 around gaps that were identified within the coverage resource as part of our work.
- We will discuss attendance at future Connectathons to determine interest as we move towards publication and a potential STU2.

CDS Hooks

Clinical Genomics: Accessing FHIR Genetic data Operations

Summary: what was the track trying to achieve

The track is focused on improving the Operations and testing out the existing ones, in preparation for a possible Q1 2023 Ballot.

- Test out operations to improve their coverage of use cases, especially participant use cases
- Solicit discussion for new operations or changes to existing
- Socialize the operations
- Identify issues

List of participants

- Shannon Lee - Flatiron
- Kim Peifer - Flatiron
- Wei Ding - MUSC
- Wenjun He - MUSC
- Alison Kemp - ONC
- Sreedevi Kumaresan - Indian Health services HMS
- Tamás Varjas - GE Healthcare
- Noemi - GE Healthcare
- Jyothi Kondamuri - J Michael consulting
- Curt Pasfield - J Michael consulting
- Qi Yang - IQVIA
- Kathleen Conner- Mitre
- May Terry - Mitre (mCode)
- Jamie Jones - Boston Children's Hospital
- Aly Khalifa - MAYO
- Joel Schneider - NMDP/CIBMTR
- Bob Dolin - ELIMU
- Bret Heale - Humanized Health Consulting

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered

A reference implementation was prepared that covers all the operations to date. The reference implementation *Reference Implementation: https://fhir-gen-ops.herokuapp.com/* is available as open-source *git-repo: https://github.com/FHIR/genomics-operations* . Many of the operations were tested out by clients using either the swagger interface (*https://fhir-gen-ops.herokuapp.com/*) to the reference implementation or post-man (*https://github.com/FHIR/genomics-operations/blob/main/FHIRGenomicsOperations.postman_collection.json*). Please see wiki in reference implementation github repository.

Notable achievements

LIVE development in a rapid web-application prototyping environment to demonstrate how operations streamline development.

Screenshots if relevant and interesting and/or links to further information about implementations/achievements

There are educational exercises for each operation as part of the documentation of the reference implementation.
https://github.com/FHIR/genomics-operations/wiki/3.-Examples-and-Exercises

Discovered issues / questions (if there are any)

- GoogleSheet containing discovered issues: https://docs.google.com/spreadsheets/d/1xPRDB2lvMPTImPHLwUvSboILZLG6jH1LHVXoOfgak9U/edit#gid=0

Now what?

The next step is to report back to our HL7 Clinical Genomics Working group. We will be reconnecting with those participants that continue to work on their use case. Additionally, the Operations use case group of GenomeX (https://confluence.hl7.org/display/COD/Enabling+Access+to+Complex+Genomic+Information+through+FHIR+Genomics+Operations) , part of FHIR accelerator CodeX, will receive the feedback to help in their efforts to meet the use cases determined by that group. The open-source reference implementation will be kept up to date with the FHIR implementation guide.

Clinical Reasoning

Summary: what was the track trying to achieve

- Measure Evaluation ($evaluate-measure)
- Individual/Population Reporting (POST MeasureReport)
- Data Element Submission ($submit-data, $collect-data)
- Touchstone test scripts available for all Measure Evaluation scenarios
- Log results in Conman

List of participants

- Academy of Nutrition and Dietetics
- Alphora
- Bellese Technologies
- Chickasaw Nation Industries
- Clinovations Government + Health
- DCG
- Dynamic Health IT
- Firely
- GE Healthcare Partners
- Highmark Health
- HHS/ONC
- ICF
- Indicina, LLC
- iParsimony, LLC
- Johns Hopkins University School of Medicine

- JuniperCDS
- Lantana Consulting Group
- Mathematica
- MD Partners, LLC
- Medical University of South Carolina
- MUSC
- NIH/NLM
- Novillus
- Optum
- Patient Centric Solutions
- PJM Consulting, LLC
- RTI International
- SemanticBits
- Telligen
- The Joint Commission
- The MITRE Corporation
- VSAC
- Vermonster
- Vitamin Software Inc
- Yale CORE

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered

- CQF Ruler - Reference Implementation of QM IG, DEQM IG, RA, DaVinci DTR, CPG, CDS Hooks
- Encender implementation - Clinical Reasoning $apply/CPG $apply, SDC
- Telligen - QM IG, DEQM IG
- Juniper CDS Smart-on-FHIR - Clinical Reasoning $apply/CPG $apply, SDC
- Optum - CPG, Clinical Reasoning $apply/CPG $apply, SDC
- UMLS VSAC FHIR Terminology Service - QM IG Measure Terminology Service
- MITRE Bulk Import implementation - Bulk Import IG + $submit-data adaptation

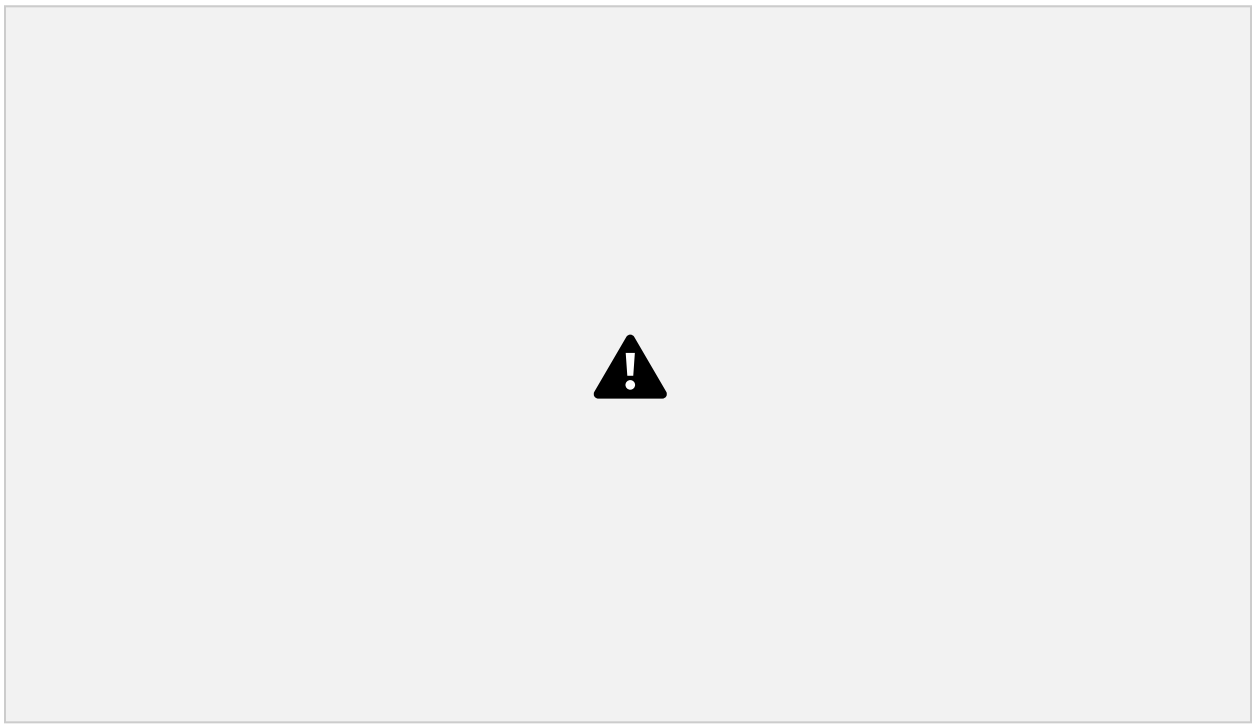
Notable achievements

- Testing FHIR R4 Terminology Services/Quality Measure Terminology Service
    - read/search interactions
    - Version-specific value set $expand
    - All QICore and FHIR content related to quality measure support is loaded and available (in the UAT endpoint)
- All 3 PlanDefinition $apply implementations able to run the same ASBI content
- DaVinci ATR Testing
    - Successfully integrated ATR module as a plugin to the CQF Ruler

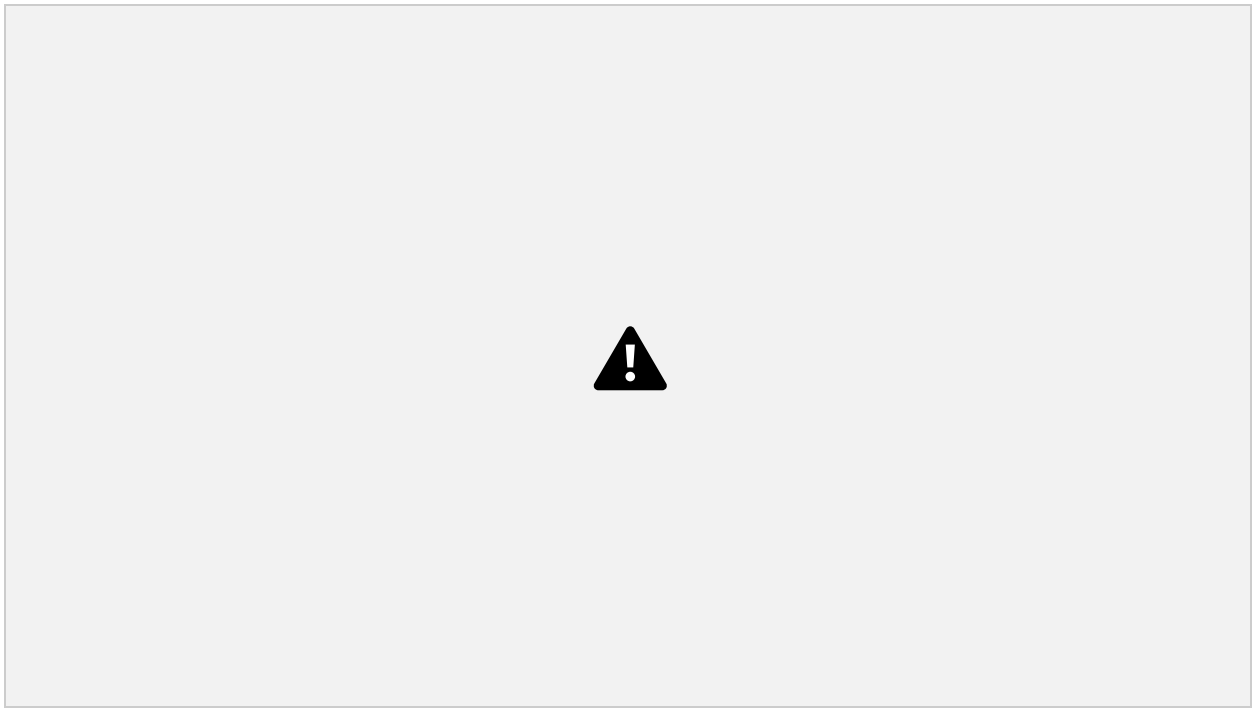
    - Tested $member-add and $member-remove operations
- Bulk import demonstrated with EXM130 connectathon testing content, both full server and group-specific imports
- Agreed on further enhancements to the $apply operation around use of RequestGroup rather than a containing CarePlan, as well as improved result type (use of Bundle 0..* instead of Resource and clarified return semantics)

Screenshots if relevant and interesting and/or links to further information about implementations/achievements

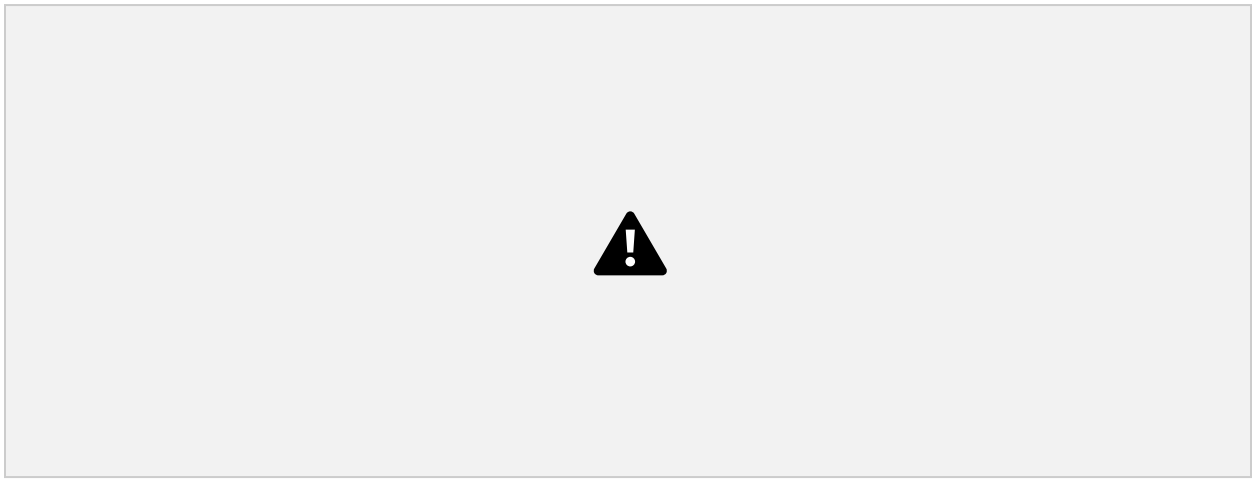
Screenshot of Codespace environment unit testing the BCSEMY2022 HEDIS measure:



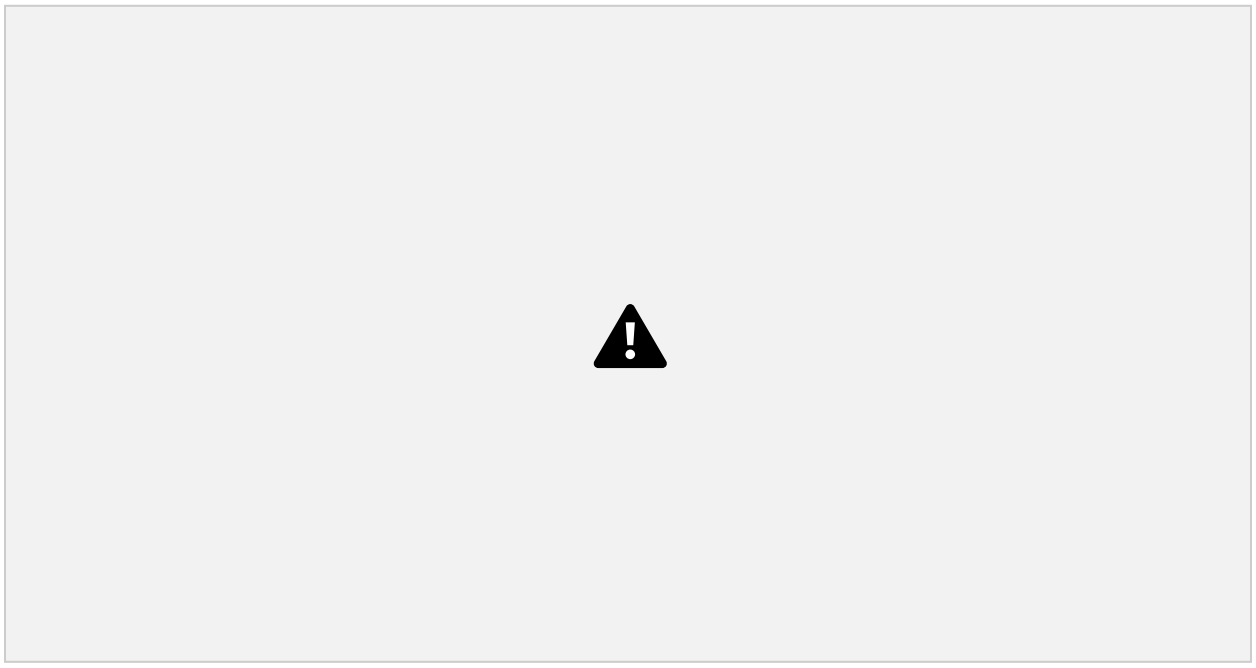
Screenshot of PlanDefinition $apply semantics discussion:



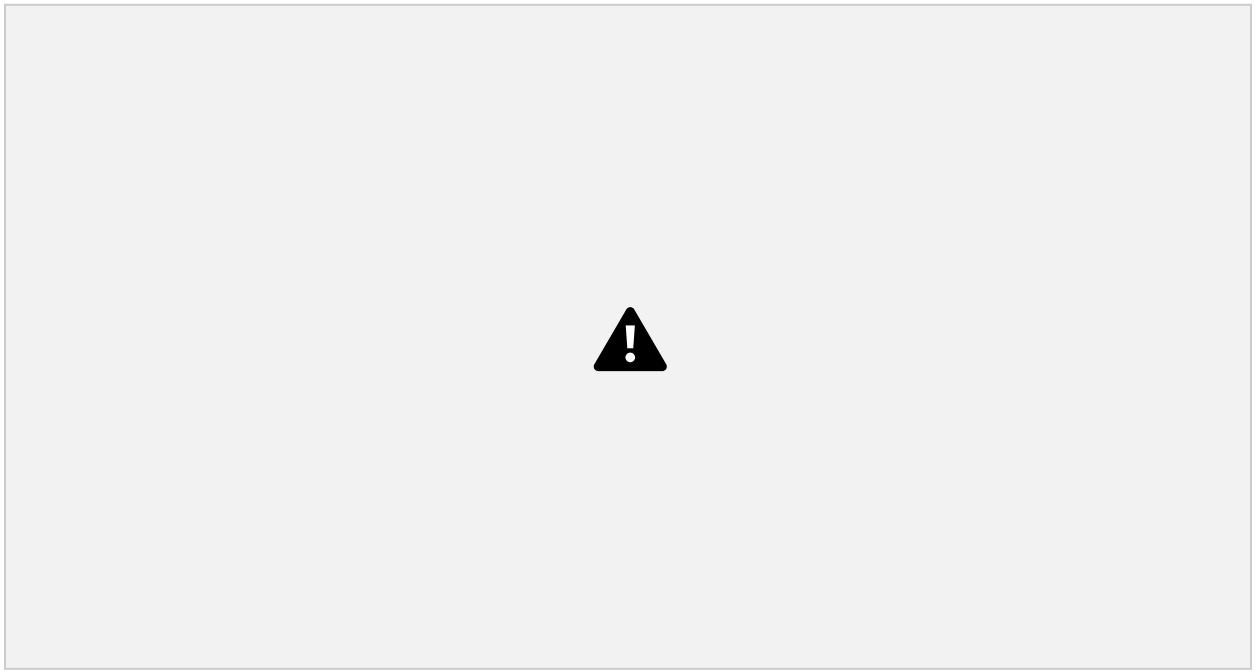
Profile-informed Authoring



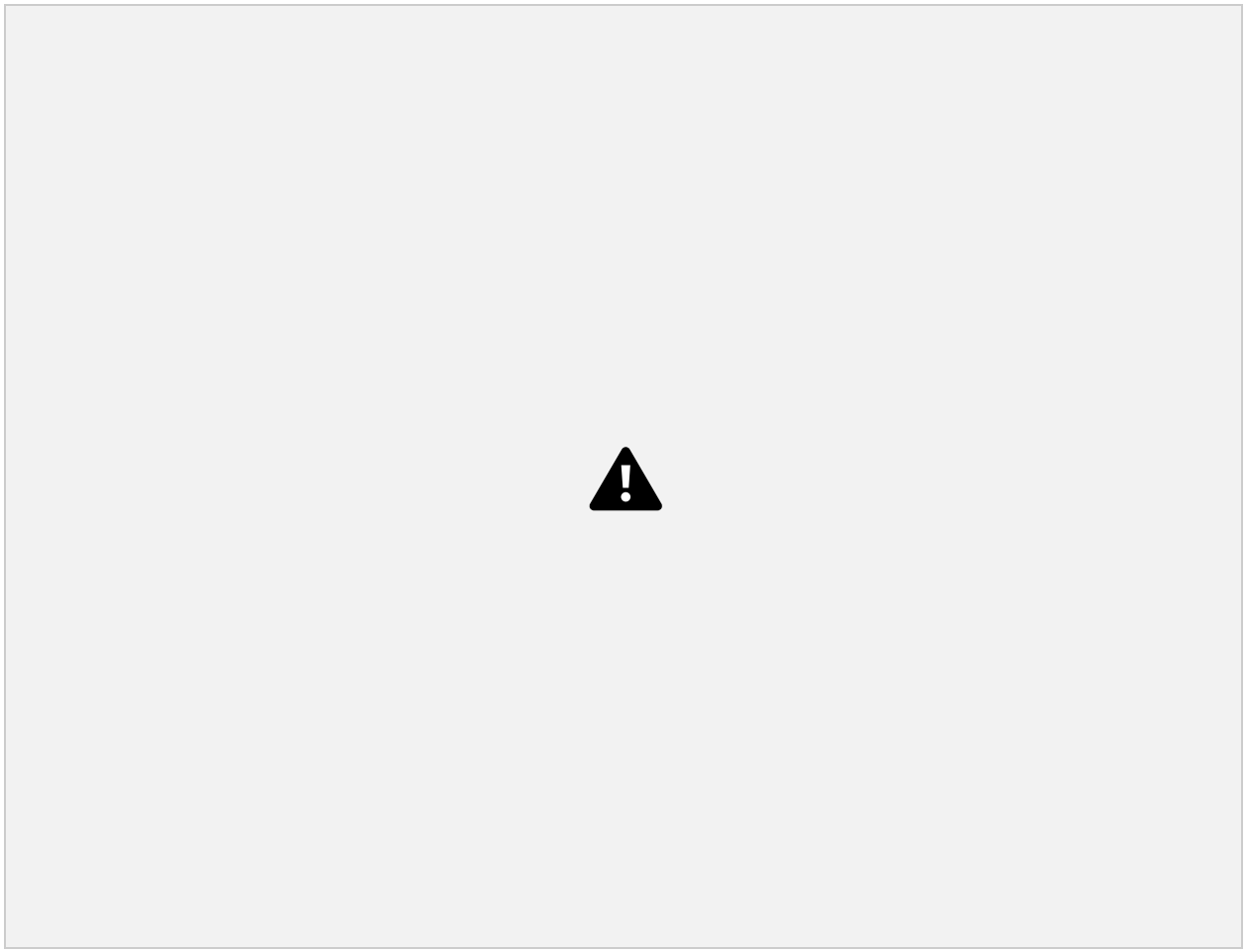
PlanDefinition $apply Simulated in EHR App



JuniperCDS running a Questionnaire:



Bulk Data



Discovered issues / questions (if there are any)

- Submit FHIR tracker on PlanDefinition/$apply changes:
    - Proposal: Change the PlanDefinition/$apply semantics to always return a RequestGroup (nested RequestGroups for nested PlanDefinitions) (i.e. remove the useCarePlan parameter entirely). Also change the return signature to return 0..* Bundle where each Bundle is the result of the operation for an input subject. Each Bundle has the structure of a document where the root RequestGroup is the first entry, and subsequent entries are additionally created or referenced resources.
- FHIR R4 Testing with VSAC, search results for a given canonical URL return multiple versions, but each version has the same logical id. Feedback provided that the logical id need to be unique across versions so that individual ValueSet resources per version can be retrieved through the read interaction
- Submit FHIR tracker for proposed modifications to the $submit-data operation in DEQM to support bulk import

Now what?

- Modify PlanDefinition/$apply implementations to return consistent results and to remove/deprecate the useCarePlan parameter
- Continue feedback and refinement of $submit-data bulk import
- Continue feedback and refinement of Measure Terminology Service
- Continue testing QICore Authoring and Evaluation (needs to get into the CQF Ruler and other implementations for integration testing
- Expanded sandbox with separate endpoints for:
    - Knowledge Repository
    - Terminology Service
    - Data Repository
    - Receiving System
- Pursue test data generation strategies
    - Synthea modules?
    - ClinFHIR and GraphBuilder
- Aggressively pursue test servers that conform to US Core as participants in the Data Repository role above

Da Vinci Burden Reduction

Da Vinci Clinical Documentation Exchange (CDex)

Summary

- This Da Vinci track was focused on testing the functionality of the CDex implementation guide. The guide covers provider to provider and provider to payer exchanges to help facilitate continuity of care. Testing intended to focus on 4 topics:
    - Using Task as a mechanism to asynchronously solicit clinical information from a remote system
    - Invoking an operation to submit unsolicited attachments to claims and prior authorizations
    - Use of signatures with Task-based data requests
    - Use of signatures with direct query-based retrieval

Participants

- Active participation from Anthem, Blue Cross/Blue Shield Tennessee and HealthLX
- Joined at some point by representatives from Aetna, CVS, Evernorth/Signa, Philips, Telegen, Washing Dept. of Health

IG Coverage

We did not have sufficient participants prepared to test the interface

Notable Achievements

- Made significant progress on design enhancements for reference implementations
- Identified several areas where the CDex specification needs additional guidance/clarification
- Began initial discussion around requirements for 'solicited attachments'

Discovered issues

- https://jira.hl7.org/browse/FHIR-37264
- https://jira.hl7.org/browse/FHIR-37195
- https://jira.hl7.org/browse/FHIR-37271
- https://jira.hl7.org/browse/FHIR-37331
- https://jira.hl7.org/browse/FHIR-37332
- Additional work potentially needed in FAST routing to accommodate routing where initiator will not be looking up the final URL of the eventual recipient and that responsibility is delegated to an intermediary

What's next?

- More work needed on solicited attachments, particularly around alignment with X12
    - PIE work group discussion at WGM next week, followed by CDex and possibly additional conference calls
    - Once requirements are solid, will be updating the CDex specification to include that functionality
- Will need to decide whether to publish this as 'draft' in the next CDex release or go back to ballot
- Need some further guidance around interoperability with multiple intermediaries where the initiator can't/won't use a registry to identify the URL of the final endpoint (possible issue for FAST project?)
- Will need to further flesh out expectations around 'test data' in preparation for CMS connectathon
- Will continue discussions with HealthLX around reference implementation objectives for CMS connectathon and beyond
- Once the 'solicited attachments' design solidifies, will need to introduce additional test cases in Touchstone
- Get more participants (EHRs and payers) signed up so we can get some real testing done at the CMS connectathon in July

Da Vinci Member Attribution Track Connectathon Testing Report Out

Summary: what was the track trying to achieve

The track was focused on exercising the new features added to the STU2 version which is in-progress of being created for January 2023 ballot. The features include

- Creation of Group

- Addition of Members to the Group (member-add operation)
- Removal of Members from the Group (member-remove operation)

These changes along with generalizing the DaVinci Member Attribution Group resource for other use cases were the focus of the test. The generalized group resource profile will be renamed from atr-group to atr-patient-list so that it can be used for many use cases such as

- CMS DPC/BCDA
- DEQM
- Gaps In Care / Risk Adjustment

List of participants

- GapsInCare Track participants
- Drajer

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)

- Drajer (All operations of the IG)
- Alphora (Group Creation, Member Add / Member Remove)

Notable achievements

- The GapsInCare Reference Implementation and the Member Attribution Reference Implementations were combined together to create a single reference implementation that was used to demonstrate the synergies between the Gaps In Care and Member Attribution.
    - Specifically GapsInCare use case workflow was able to create a Group dynamically, add members, remove members to the Group
    - Call the care-gaps operation on the Group and retrieve the care gap report.
    - This demonstrates the value of the Member Attribution Group resource to other IGs that require a Group resource for identifying members and/or exporting data in bulk for a specific purpose.

Discovered Issues

- Need to enable bulk export of non member attribution resources in the reference implementation

Now What

- Generalize the Group management functionality in the Member Attribution IG
- Allow other use cases to use the IG for basic Group Management

    - Creation of a Group
    - Modification of a Group
    - Discovery of a Group
    - Bulk Export data using the Group
- Join the Member Attribution Call on wednesdays at 3pm ET
- Join the CMS Connectathon for the Member Attribution Track in July

DaVinci Notifications

Summary: What was the track trying to achieve

Focus is Notification IG - make the care team aware of what is going on with a patient as a framework - current use case Admit / Transfer / Discharge

Testing connection between sender and receiver

Testing of validity of FHIR bundles created by the sender

Specifically, sender is converting v2 ADT message into DaVinci notification bundle to send to receiver for both admin and discharge use case and working on transfer as well

List of Participants

Track leads: Riki Merrick, Eric Haas

DaVinci PMO: Vanessa Candelora

Touchstone: Carie Hammond

Surescripts (testing sender): Brian Frankl, Jake Lynema, Ram Talasila, Roshan Pandy, Hima Patel, Joseph Shook,

Infor (Testing receiver; also will do Touchstone testing): Rob Brull

CVS Aetna (Observer): Cindy Morgan, Courtney Bland

Optum Technology: Erin Huston, Linda Michaelsen

APHL Support of AIMS eCR routes: Michael McCune

Evernorth: Tom Loomis

Need to find organization: Ani Singh, Damian Smith, Jared Taylor, Henry Moseley, Pratap Prattipati, Yukta Bellani, Smitha Vellanky, Todd Andersen, Usha

Systems which have implemented the IG

- Surescripts Care Event Notifications in testing phase
- Infor in testing phase

Notable Achievements

- Surescripts successfully sent admit, discharge and transfer notifications to Infor – Infor validated and parsed bundle content into their FHIR server

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Discovered Issues / Questions (if there are any)

- Vocabulary for encounterReason
    - http://hl7.org/fhir/us/core/STU3.1.1/ValueSet-us-core-encounter-type.html
    - preferred binding to SNOMED CT; but in real life often get ICD-10 also
    - ACTION:
        - add notice to IG how to handle support for potentially both code systems (either by updating the value set or using translation to provide BOTH, when needed)
- Examples in IG cause 4 errors in current build validator
    - ACTION:
        - update examples in the build to fix
        - this brought up the potential need to update the IGs on a regular basis to keep up with IG publisher enhancements = bring up to DaVinci Coordination call)
- Vocabulary for discharge disposition:
    - In order to harmonize with Direct trust Notifications IG = https://directtrust.box.com/s/vxrzcd88k9qmf922mutij73niyhsgmf2 discharge disposition value set – using NUBC UB-04 Patient Discharge Status codes used in Form Locator 17 and this IG, which is using as example binding https://terminology.hl7.org/3.1.0/CodeSystem-discharge-disposition.html
    - ACTION:
        - Create mapping between these
        - Get input from patient care perspective to create more complete list to standardize this value set going forward
        - Reach out to Direct to better understand their choice of the NUBC value set (issues with that are: need for licensing to be used and timeline, as they are usually associated with claims, which are available much later (up to a year) than the discharge event the notification is about

- Encounter.location:
    - More of a base FHIR question how to craft the encounter.location.identifier.value (is ST) - should this represent
        - each instance of a bed + room + ward + floor + building + facility + organization, i.e. Bed 1 in room 101 on ward 1 (if the ward name is unique in the facility may not need these: on floor 1 in building 1) in facility 1 of organization 1
        - should we create 1 resource for bed 1, one resource for room 1, one resource for ward 1 etc, so that then you repeat the backbone to create the valid combination for the actual location without combinatorial explosion, when each room has a bed called Bed1 and each floor / ward has a room called room 1 etc?
    - ACTION:
        - Review V2-FHIR mapping of PV1-3 and PV1-6 (https://build.fhir.org/ig/HL7/v2-to-fhir/ConceptMap-datatype-pl-to-location.html), where PL datatype is used suggests it is #1, because these elements in PL are mapped as "partOf"
            - Room
            - Bed
            - Facility
            - Building
            - Floor

            but PL does not require you to have a single unique ID, but rather the combination of the Point of Care + Bed + Room is what creates the location (at least per the examples)
    - During testing found that when location.identifer.value had a space "Emergency Room" had issues processing (this goes beyond the IG testing), because they were converting the identifier into a URL - so NOTE: IF you process Identifier values to URLs receiver needs to perform URL encoding (this will also be needed for creating search parameters) AND ensure to have assigning authority included when searching for identifiers

Now What?

See "ACTION" in paragraph above for each issue

Da Vinci Patient Cost Transparency
Da Vinci Payer Data Exchange (PDex STU2 inc. Payer-to-Payer)
Da Vinci Payer Data Exchange Formulary and Plan-Net

Da Vinci Risk Adjustment

Summary: what was the track trying to achieve

- Re-run test scripts from the Connectathon 29 against the post ballot updated STU 1 IG
- Run the new test scripts to test the new test cases identified from the Connectathon 29
- Preliminary testing of the draft STU2 profiles for conformance

List of participants

Optum	Novillus	Epic	Alphora	Optimum eHealth
Vitamin Software	MITRE	Yale	Aetna	

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered

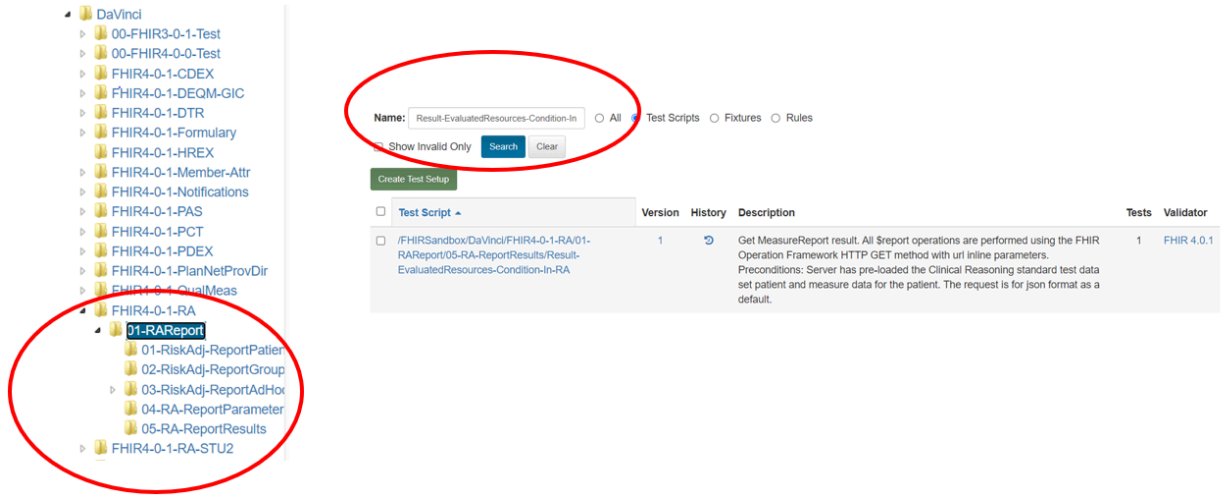
- Risk Adjustment Reference Implementation
    - Server Endpoint: https://cloud.alphora.com/sandbox/r4/ra/fhir/

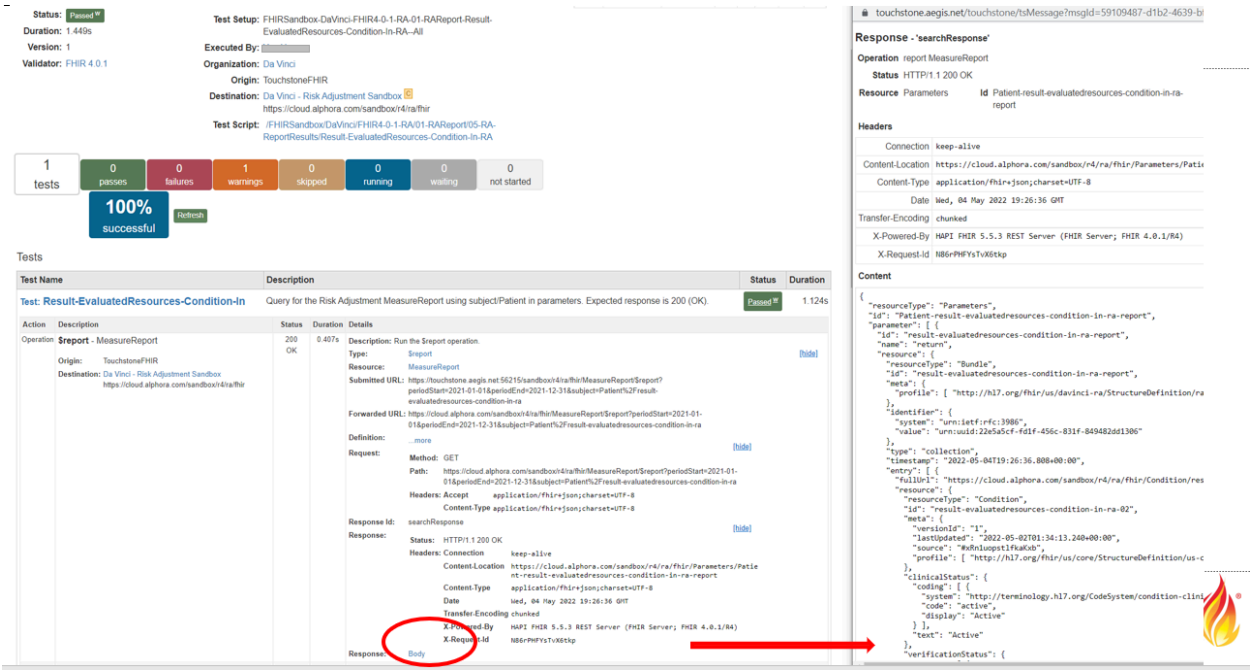
Notable achievements

- A new updated Server EndPoint
- Tested against two separate versions of the IG:
    - Created two separate validators and two sets of test scripts in Touchstone; one for STU1 and another for the draft STU 2
- Developed and tested new test scripts and test data for the new test cases that are identified during the last Connectathon
- Discovered an issue in a test script. Re-uploaded the corrected test script and retested successfully.
- Identified an issue in IG example
- Documented a number of issues and suggested enhancements to ConMan and Touchstone
- Used the Connectathon Manager to record testing results

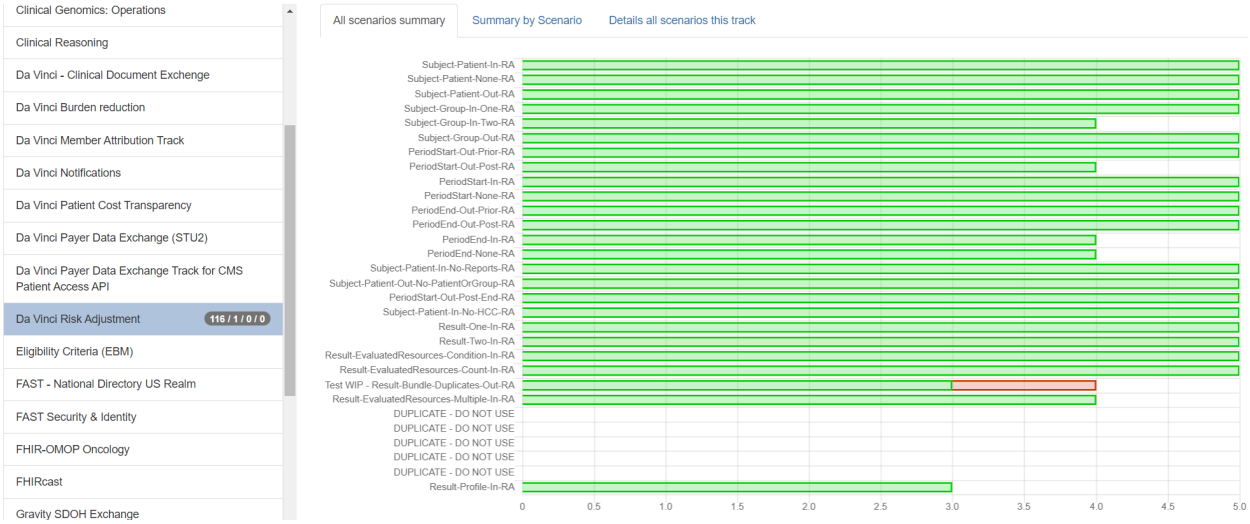
Screenshots if relevant and interesting and/or links to further information about implementations/achievements

Test scripts in Touchstone





Testing results in ConMan



Discovered issues / questions (if there are any)

- Identified an issue with a test script
- Identified issues with ConMan
- Raised a number of questions that need to be followed up around DetectedIssues when testing STU 2 profiles for conformance
- Identified an issue with an IG example
- Identified the need to add to Track documentation to explain the “conformance” feature of Touchstone

Now what?

- Publish STU 1
- Continue
- Discuss the Risk Adjustment bundle especially DetectedIssue in public calls
- Enhance test data so that IG examples and test data can be uploaded into the Reference Implementation without conflicting
- Consider in future connectathons to include a test scenario using Member Attribution
- Submit feedback to ConMan and Touchstone
- File a tracker for the issue identified in an IG example
- Update the test scripts description
- Document the “conformance” feature of Touchstone

Eligibility Criteria (Evidence-Based Medicine/EBMonFHIR)

summary: what was the track trying to achieve

Justification: Need to express complex characteristics defining Eligibility Criteria in FHIR

Scenario: Expressing Eligibility Criteria
Action: Select complex eligibility criteria (e.g. from research studies described at ClinicalTrials.gov) and express using EvidenceVariable Resource.
Success Criteria: Track participants are able to express eligibility criteria with satisfactory degree of granularity.

Justification: Need to express complex characteristics defining Eligibility Criteria in FHIR

Scenario: Interpreting Eligibility Criteria
Action: Interpret complex eligibility criteria (e.g. from research studies described at ClinicalTrials.gov) that are expressed using EvidenceVariable Resource.
Success Criteria: Track participants are able to interpret eligibility criteria expressed by other participants or by pre-created examples.
Bonus Point: Convert eligibility criteria from EvidenceVariable into executable expressions (e.g. FHIR search queries, CQL, AQL)

list of participants (logos if there is time)

Brian Alper (Computable Publishing LLC)
Gustav Vella (Healex)
Khalid Sahin (Computable Publishing LLC)
Joanne Dehnbostel (Computable Publishing LLC)
Lorenz Rosenau (Universitätsklinikum Schleswig-Holstein / Universität zu Lübeck)
Martin Doege (Healex)
Gregor Lichtener (Universitätsmedizin Greifswald)
Harold Lehmann (John Hopkins)
Henrich Krämer (BI X GmbH)
Robert Dingwell (MITRE Corp)
Rana Cook (NTT Data Services)
Bret Eathorne (GE Healtcare)
Darell Woelk (Green Room Technologies)
Michelle N Dardis (Director, Department of Quality Measurement)
Matt Bishop (Open City Labs)
Alexander Zautke (Firely)

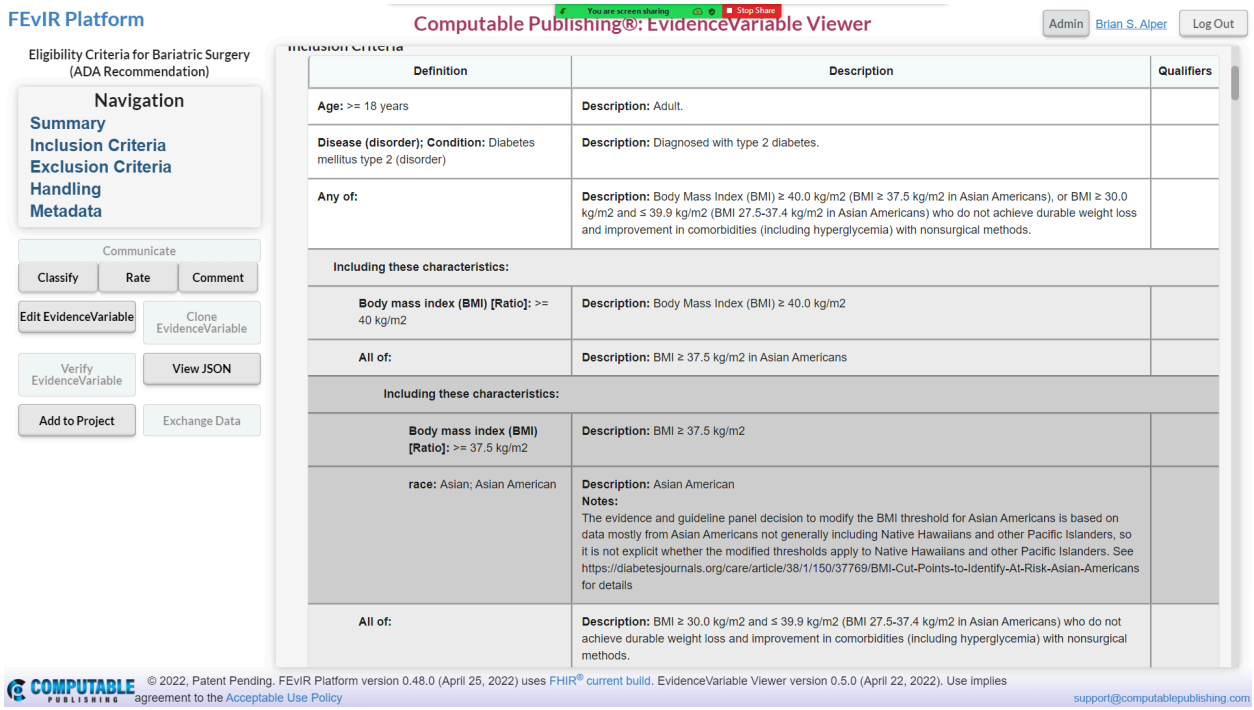
systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)

FEvIR Platform has multiple example instances https://fevir.net/resources/Project/32444 and shows 70%-80% of the functionality

notable achievements

1. Introduction and understanding of many elements in EvidenceVariable.characteristic, including 7 different definition element choices
2. Documentation of “when to use” and “how to use” for 7 different definition element choices and 6 different value element choices
3. two FHIR change requests for EvidenceVariable
    a. add a characteristic.defByCombination.code = “except-subset”
    b. add a characteristic.instances[x] 0..1 Quantity | Range
4. Modeling of many characteristics of different forms of definition, many examples provided
5. EvidenceVariable Resource created by an third party (German Medical Informatics Initiative) was viewable on FEvIR Platform
6. Confirmation of need for and general acceptance of Eligibility Criteria in EvidenceVariable

screenshots if relevant and interesting and/or links to further information about implementations/achievements



discovered issues / questions (if there are any)

1. How to express that a medication is prescribed for a specific indication?

now what?

The group will continue to develop:

1. EvidenceVariable StructureDefinition – improved structure and documentation
2. 4 examples at https://fevir.net/resources/Project/32444
3. expanded documentation via Implementation Guide
4. later creation of Profiles

FAST Hybrid/Intermediary Exchange
FAST National Directory US Realm

FAST Security & Identity

Summary

Continued testing of the Security and Identity IGs, and gathered feedback about the various aspects of the Identity IG which is newer and was just balloted in May 2022.

Participants

BIX
Drummond Group
eHealth Exchange
EMR Direct
Epic
Flexpa
GCOM
Initiate Government Solutions, LLC
MITRE
MUSC
ONC

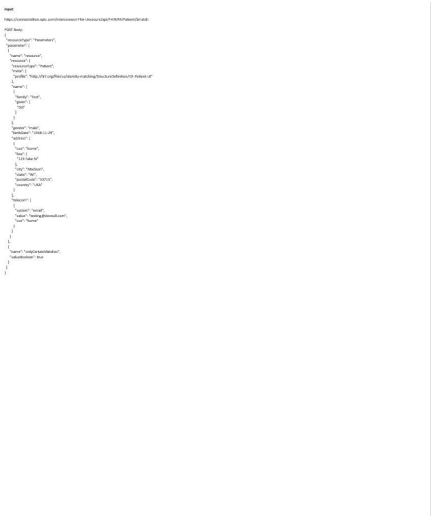
Systems which have implemented the IG

MITRE Reference Implementation (Identity Implementation Guide) and EMR Direct FHIR server were used to test patient matching scenarios.

We did not collect new information about security implementations this time. Please refer to status from January connectathon here

Notable Achievements

1. Multiple cross-system tests of prototypes implementing the Identity IG's profiled $match operation, often building on existing patient search implementations (see screenshot for one example):



2. Utilized Reference Implementation:
    a. Verified external server could successfully perform IG-specific match operation on request
    b. Verified that it could identify match requests that did not meet minimum criteria based on defined profiles, and rejected them
3. Rich discussion of the profiled patient resource and match quality score, generally reinforcing these needs: 1) how to express attribute identity assurance and how it is relevant to certain workflows and 2) interest in seeing additional profiling of the patient resource to help guide what constitutes good matching input information, possibly at a level between the current L0 and L1 that considers SSN or Member ID in addition to some type of address like we have now

Links to further information about implementations/achievements

We welcome additional community members to join our calls or discuss the IGs and implementation topics on this Zulip stream to collaborate in the development of the Identity IG

Discovered issues / questions

1. Driver's license is recognized as a strong indicator of identity on its own when used in a match request, but is not often something that can be matched on in systems today; example might better consider this attribute type wrt practical uses
2. Balancing the need to improve match inputs and avoid false positives that pose a patient safety issue against the potential safety issue of making too little data available in an emergency setting when limited demographics are available
3. Guidance on previous names and addresses was requested, potentially along with soundex/transposition best practices. Similarly, when are exact matches important.
4. What levels of identity assurance are relevant to Patient Access workflows?
5. Our profiled Patient resource using Invariants may be useful to put into context of workflows where they are appropriate
6. When we get to a grammar for indicating verification status, time of verification (of the person or a specific attribute) is likely also relevant, as well as guidance about what that should mean in terms of need to repeat identity verification or a diminished level of identity assurance. Consider also name changes. And the value of matching on a previous name and/or address.
7. Suggestion that requesting party may not be permitted to access patients returned, so it may be helpful to indicate which demographics match in this case

Now what?

Ballot reconciliation for the Identity IG
Continued development of scenarios that will be tested in a cross-over track at the July CMS connectathon

FHIRcast

Notable Achievements

The FHIRcast track witnessed some developers write a FHIRcast client from scratch, hosted some good sessions, and experimented with some of the thornier areas of context synchronizations.

Clients from scratch

- Gino Canessa from Microsoft Healthcare began developing a FHIRcast client proof-of-concept mid-day on Tuesday and by late Wednesday morning had successfully integrated with the Philips and Nuance FHIRcast hubs. Gino's even open-sourced his work, check it out: https://github.com/GinoCanessa/fhircast-test-client-ui.
- Nathan Loyer from Athenahealth similarly spun up a FHIRcast client for the first time, which he was able to subscribe, receive event notifications, and push events all using Nuance's hub.

Recorded sessions worth checking out

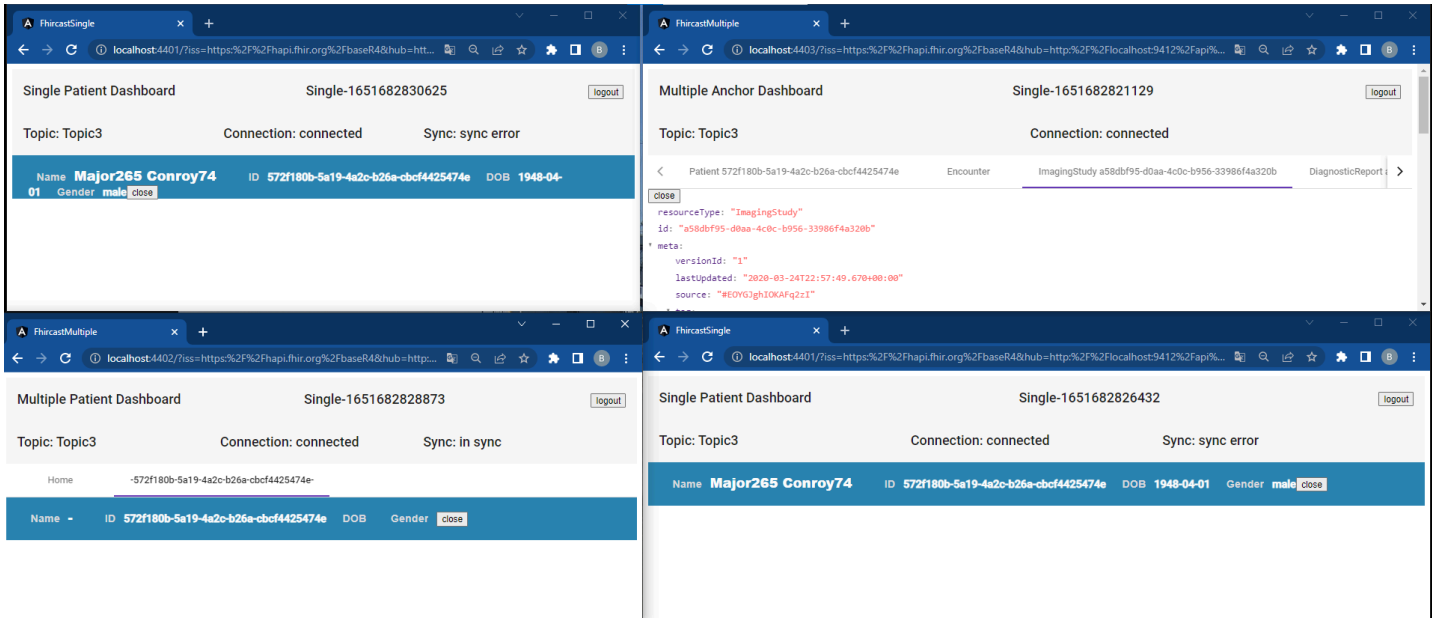
- Our Wednesday morning Introduction to FHIRcast session was well attended and provides a nice overview to FHIRcast. Great for a casual introduction!
- Analysis and comparisons of architectural and security protocols for enterprise FHIRcast deployments by Evan Schnell.

Experimentation

Some of the thorniest problems in context synchronization relate to implicit differences across applications. For example, some apps are multi-tab, but others can only ever have a single patient open. Additionally, healthcare applications are naturally about certain clinical content, for example the user of a CPOE system may only interact with patient charts, but a radiology viewer may not have the concept of a patient outside of an imaging study. How then, could a CPOE system be synchronized with the viewer? We describe these issues in:

- Multi-tab considerations
- Apples & oranges: considerations for synchronizing applications that talk past one another (aka "multi-anchor" session)

Bas van den Heuval from Philips Research developed and demonstrated a proof of a concept implementing the currently recommended solution for multi-anchor sessions.



Implementing participants

Nuance: Catie Ladd, Kamal Gnanadesikan
Siemens: Gergely Heja, Andras Veges, Eric Martin
Philips: Bas van den Heuval, Nick Haarselhorst
Epic: Alex Z. Liu, Isaac Vetter
Microsoft Healthcare: Gino Canessa
Canon: Evan Schnell
Athenahealth: Nathan Loyer

Next Steps

FHIRcast's STU3 ballot just closed and it received significant feedback from the HL7 and implementer community. Our focus for the foreseeable future will be on ballot reconciliation.

FHIR-OMOP Oncology

Imaging Track

Summary

The primary objectives of the Imaging track were:

- Testing and discussion around in-progress DICOM SR to FHIR Resource Mapping IG
    - Presentation here: https://confluence.hl7.org/display/IMIN/Connectathon+30+Presentation

Participants

- John Moehrke – ByLight

- Jonathan Whitby – Canon Medical
- Abderrazek Boufahja, Nathan Danielshak, Bret Eathorne**,** Chris Lindop, Sean Lister, Steve Nichols – GE Healthcare
- John Baumbauer – Initiate Government Solutions
- Scott Bohon, Andrew Northup – ONC
- Haritha Mouli, Nikhilesh Sonar, Khaled Younis – Philips
- Wei Ding – MUSC
- Mohannad Hussain – Techie Maestro

Implementing Systems

- DICOM SR to FHIR Resource IG implementors: GE Healthcare, Philips

Testing Systems

- Touchstone: https://touchstone.aegis.net/touchstone/testdefinitions?selectedTestGrp=/FHIR4-0-1-Connectathon30/Imaging
    - DicomSrMappingCollection script covers initial IG testing

Notable Achievements

- Two implementations of WIP implementation guide
- Good discussion on further IG requirements

Next Steps

- Complete draft of DICOM SR to FHIR Mapping IG
    - Clarify difference between measurement group types – TIDs 1410, 1411 and 1501
    - Add DerivedFrom mapping to link Observation to source DICOM SR
    - Include informational reference to FHIR mapping language: https://confluence.hl7.org/display/FHIR/Using+the+FHIR+Mapping+Language
- Test script updates:
    - Complete test scripts for DICOM SR to FHIR Mapping IG and ImagingSelection
    - Update test scripts to R5
    - Update WADO-RS retrieve to use /metadata endpoint

International Patient Access

International Patient Summary

Summary

The primary objectives of the track:

- Promote the sharing of experiences
- Identify tools and resources for IPS examples and validation
- Identify gaps and pitfalls in the IPS adoption

Overall the track provided education and testing around the publication updates to IPS, efforts by Global Digital Health Partnership, G7 and SDOs, tools available for validation, tools available for visualization, IPS examples (both validated and non-validated) and national adaptations of the IPS.

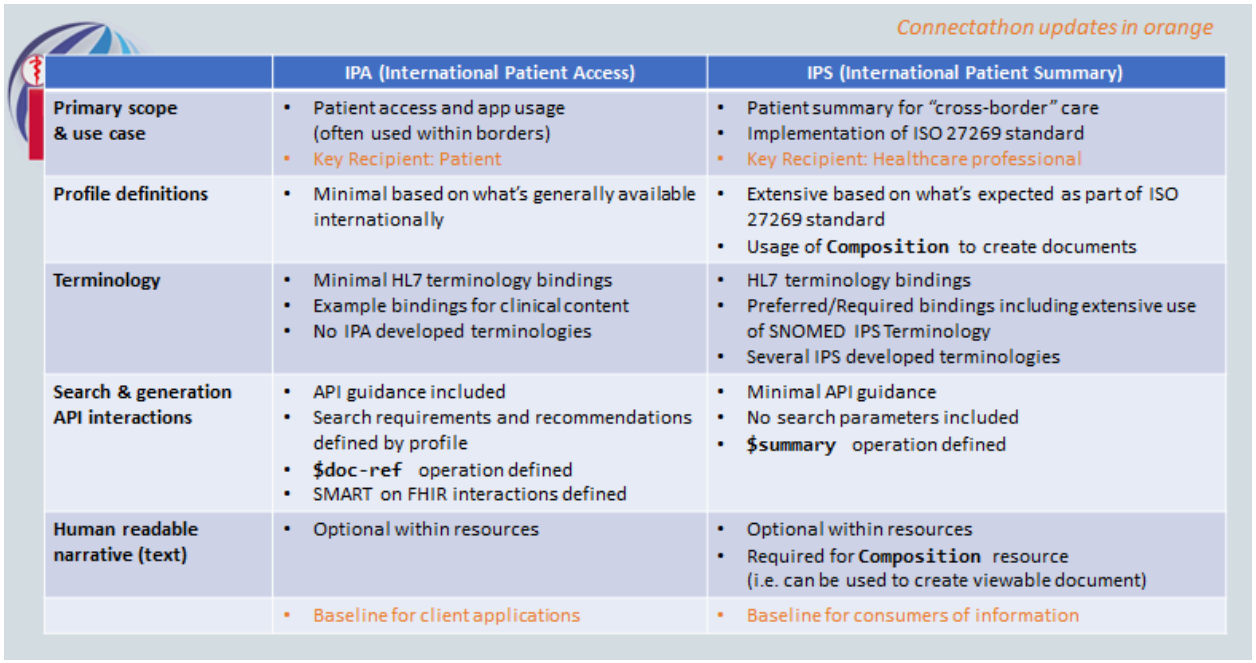
Participants

- John D'Amore, Track Lead, **USA**
- Rob Hausam, Primary Editor of IPS, **USA**
- Giorgio Cangioli, Primary Editor of IPS, **Italy**
- Gary Dickinson, Contributor of IPS, **USA**
- Sheridan Cook, Accenture, Presenter on Track, **Canada**
- Steve Moore,Washington University of St Louis, Presenter on Track, **USA**
- Aishwarya Narapaneni, National Electronic Disease Surveillance System, **USA**
- Alexander Zautke, Firely, **Germany**
- Aniruddha Singh
- Beth Ellinport, ONC, **USA**
- Carie B Hammond, Drummond Group, **USA**
- Chang Liu, telehealth
- Danielle Duncan, orthotics/orthopedics EHR
- Deepak Mekala, National Electronic Disease Surveillance System, **USA**
- Didi Davis, Sequoia Project, **USA**
- Esther Peelen, Nictiz, **Netherlands**
- Ghislain Bellemare, Bellemare - Solutions et integration Inc, **France**
- Grahame Grieve (Joint with IPS/IPA), HL7, **Australia**
- Gustav Vella, Healex, **Germany**
- He Wenjun, Medical University of South Carolina, **USA**
- Jaehoon Lee, MITRE, **USA**
- Jaya Peramanki, Open Clinica, **USA**
- John Bender, ONC, **USA**
- John Moehrke, By Light, **USA**
- Karen Johnson (Guest), NHSx, **United Kingdom**

- Matt Blackmon, Sequoia Project, **USA**
- Matt Rahn, ONC, **USA**
- Mikael Rinnetmaki (Joint with IPS/IPA, Sensotrend, **Finland**
- Nancy Lush, Patient Centric Solutions, **USA**
- Oliver Egger,ahdis ag , **Switzerland**
- Peter Muir, PJM Consulting, **USA**
- Peter Jordan**, New Zealand**
- Ricardo Quinano, Philips, **Netherlands**
- Robert Stegwee, Trace Health, **Netherlands**
- Rondalyn Shelby,National Electronic Disease Surveillance System, **USA**
- Sean Lister, GE
- Shahim Essaid, University of Colorado, **USA**
- Usha Ramaswamy, CVS/Aetna, **USA**
- Vassil Peytchev (Joint with IPS/IPA, Epic, **USA**
- Ward Weistra, Firely, **Netherlands**
- Wei Ding, Medical University of South Carolina, **USA**

Notable Achievements

- 40+ track participants from 10 countries
- Multiple participants tested IPS samples using various tools
- Demonstration of new release for Inferno
- Updates to publication made with progress during connectathon
    - Must Support: https://github.com/HL7/fhir-ips/pull/22
    - Publication Update Cleanup (multiple JIRA tickets): https://github.com/HL7/fhir-ips/pull/23
    - Vocab Slicing Removal: https://github.com/hl7/fhir-ips/tree/additionalBinding-extension-test
- Presentation on Canadian adaptation of IPS and connectathon practices
- While active exchange was minimal, 3 servers available for event
- Positive feedback on track report out on track content / education / tools
- Active dialogue from joint IPA/IPS session on differences
  (See attached slide for revisions to one-slide overview)



Connectathon updates in orange

	IPA (International Patient Access)	IPS (International Patient Summary)
Primary scope & use case	• Patient access and app usage (often used within borders) • Key Recipient: Patient	• Patient summary for "cross-border" care • Implementation of ISO 27269 standard • Key Recipient: Healthcare professional
Profile definitions	• Minimal based on what's generally available internationally	• Extensive based on what's expected as part of ISO 27269 standard • Usage of **`Composition`** to create documents
Terminology	• Minimal HL7 terminology bindings • Example bindings for clinical content • No IPA developed terminologies	• HL7 terminology bindings • Preferred/Required bindings including extensive use of SNOMED IPS Terminology • Several IPS developed terminologies
Search & generation API interactions	• API guidance included • Search requirements and recommendations defined by profile • **`$doc-ref`** operation defined • SMART on FHIR interactions defined	• Minimal API guidance • No search parameters included • **`$summary`** operation defined
Human readable narrative (text)	• Optional within resources	• Optional within resources • Required for **`Composition`** resource (i.e. can be used to create viewable document)
	• Baseline for client applications	• Baseline for consumers of information

Next Steps

- Follow-up discussion between IPA-IPS at 2:30 (5/4) regarding $summary (IPS) vs. $doc-ref (IPA) operation. Opportunity to edit narrative and guidance in both IPA and IPS
- Follow-up meeting on Canadian FHIR Visualizer as related to rendering of IPS (and PS-CA) documents, planned 5/13
- Session at DevDays related to IPS
- Planned meeting at HL7 working group at 3:30pm, 5/11.
    - Plan is to request an STU extension.
    - The current plan to release CI-build for 30-day review sometime May (or early June)as next publication (without ballot).
- Any outreach in regards to further GDHP participation

Longitudinal Maternal & Infant Health Information for Research
PACIO Integration of Post-Acute Care IGs

Patient Consent for Specialty Medication Enrollment

Summary: what was the track trying to achieve

The track is focused on getting feedback on additions to the Specialty Medication Enrollment FHIR IG in preparation balloting in September…

- Test and get input on proposed consent flows and content
- Discuss real-world clinic workflows and how the proposed consent steps would fit into them (or need to be changed)
- Discuss implementability of different workflow and exchange approaches – for requesters and EHRs
- Discuss how the proposed content and workflow match up with current FHIR Consent conventions. What adjustments would make sense? How / does R5 Consent change anything?

List of participants and visitors

- Joe Kelly - Surescripts
- Frank McKinney - Point-of-Care Partners
- Todd Anderson - Surescripts
- Usha Ramaswa - CVS Health
- Matt Bishop - Open City Labs
- Grahame Grieve - Health Intersections
- Vishak Os - RFMH
- Osama Elhassan - Dubai Health Authority
- Joe Shook - Surescripts
- Cecilia Wong - Allscripts
- Natasha Kreisle - MaxMD
- Sahil Malhotra - Mitre
- Darrell Woelk - Green Room Technologies
- Diane Rodden - Duke Clinical & Translational Science Institute

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered

Systems that have implemented the Specialty Medication Enrollment FHIR IG's new consent content:

- Surescripts - Mock Application available for testing by EHRs, Pharmacies, Specialty Hubs, and other vendors. Including clinical exchange and consent request / response flows (https://specialty-fhir.azurewebsites.net/home) - ~90%

- Frank McKinney Group - Mock application implementing all of the IG's consent-related profiles and Task workflows demonstrating the requester view (e.g., pharmacy) and responder view (e.g., clinic) (https://specialty-consent.azurewebsites.net) - ~80%

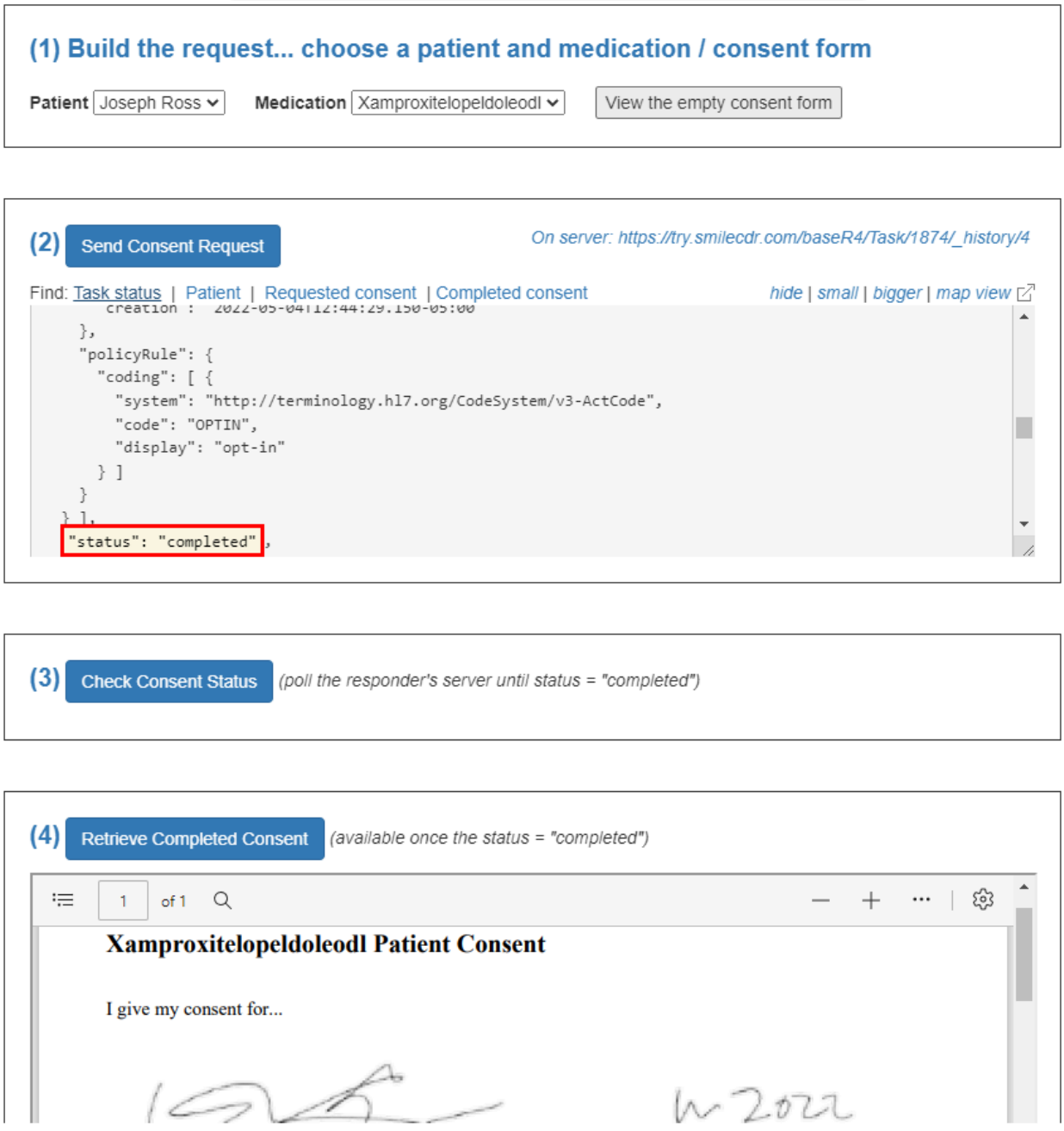
Notable achievements

Exercised the test applications and reviewed the IG's consent flows and profiles with visitors. Received input from participants that the IG's consent approach and content is reasonable and implementable–validating updates to the guide that were made in response to learnings from the January Connectathon.

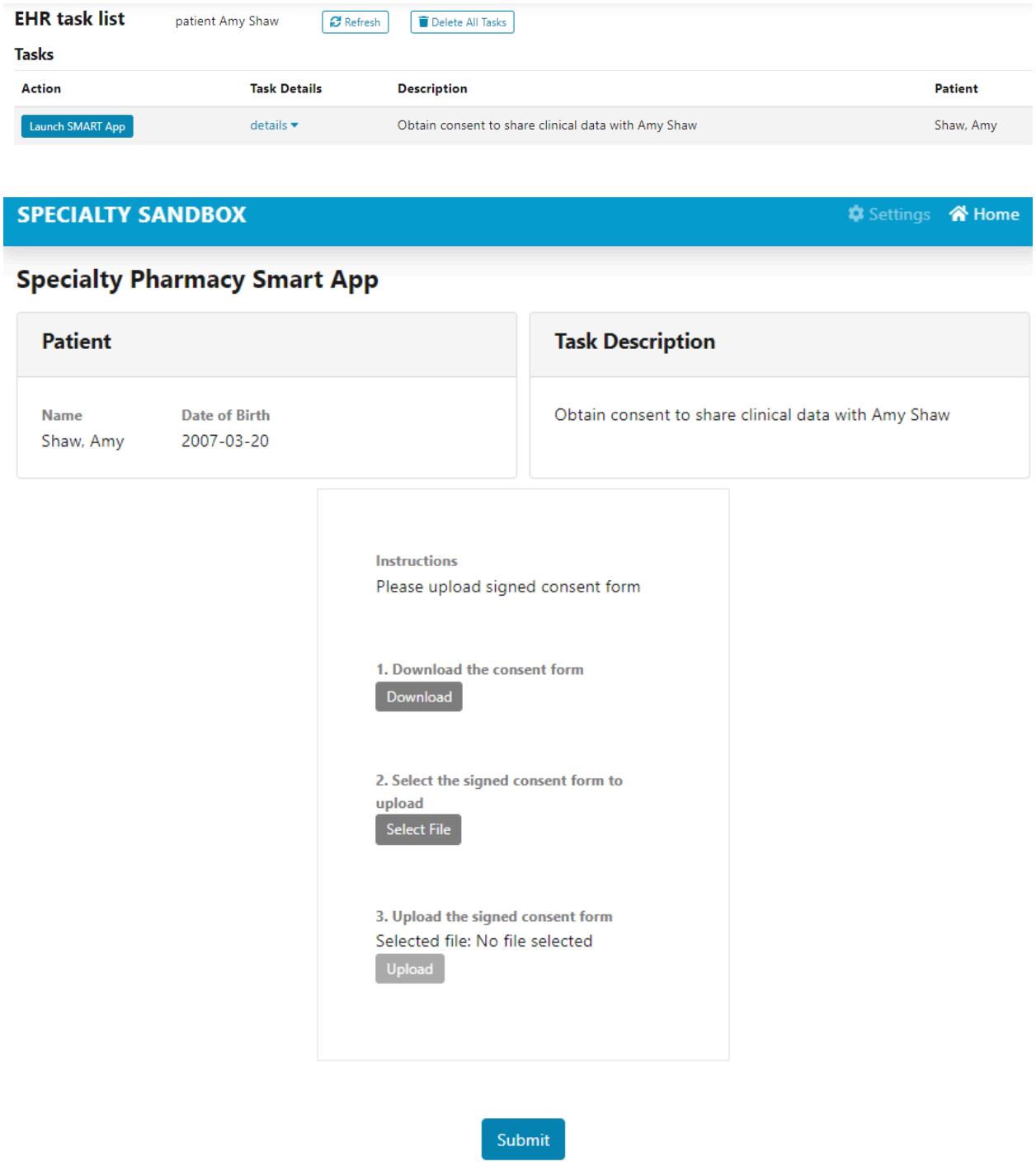
Screenshots if relevant and interesting and/or links to further information about implementations/achievements

Patient Consent Requester View (e.g, at the pharmacy)

Using the NCPDP / HL7 Specialty Medication Enrollment FHIR IG



Above: Requester View of the task workflow (implementing the IG's Task and Consent profiles).
https://specialty-consent.azurewebsites.net



Above: Surescripts sandbox illustrating the IG's Task-to-SMART launch profile, used to obtain consent. https://specialty-fhir.azurewebsites.net

Now what?

The goal is to bring the IG's consent additions to ballot in September, as an STU2 version of the guide.

Patient Track

The Patient Track continues to provide a good starting point for those wanting to learn about FHIR and how it works. We walked through a demonstration of each of the Level 1 testing scenarios--showing how to create, update, search and delete a FHIR Patient resource. We also discussed how the Touchstone testing tool provides a comprehensive way to ensure compliance with the FHIR RESTful API and ensures success when moving on to interact with other FHIR clients and servers.

Achievements:

We had two participants who spent a good portion of the connectathon working together to explore learning about FHIR and testing the Patient Track Level 1 scenarios using the Mirth Connect FHIR plugin as well as Postman. Through many iterations of trial and error over the two days, they discovered and learned a lot about FHIR and the Restful API as well branching out to other areas of the FHIR spec beyond just those concepts introduced in the Patient Track. Many other observers attended and/or watched the Patient Track kick-off session to see how FHIR works and learn about the basics of the Restful API.

Questionnaire
US Core/USCDI v2
FHIR Testing: an approach to National Testing Programs
Gravity SDOH Exchange
Terminology Service

Vulcan Schedule of Activities

Summary

What the track was trying to achieve:

- Demonstrate that the Protocol Design implementation proposed in the Draft Guidance can be used to identify and access patient data for the purposes of Clinical Research

Participants

- Geoff Low - Dassault Systemes
- Mike Ward - Lilly
- Jean Duteau - Duteau Design INC
- Scott Gordon - FDA
- Rahul Thandavan - Roche
- Jaya Peramanki - OpenClinica
- Stacy Tegan - TransCelerate
- Shani Sampson - TransCelerate

Scenario Summary

Given a set of data for multiple subjects plus the study metadata based on the study design

1. Given the plan definition, identify Encounters/Visits in concordance with the design.
2. Using the Defined Visit Windows, identify Encounters that would be classed as being out of line with the expected visits for a patient
3. Identify observations for a patient that can be assigned to a visit/encounter (and vice-versa)

Achievements

ALL SCENARIOS WERE SUCCESSFULLY EXECUTED

- Devised and implemented methodology for retrieval of patient resources for use in clinical research (ie pseudocode)
- Successfully executed all planned scenarios (documented in Conman) using:
    - desktop tooling (eg PowerQuery/Access/Excel)
    - API access (Postman)
        - React Web Application developed to summarise subject data 'journey' in the study (https://github.com/jduteau/vulcan-soa-react)
- Created a set of resources that can be shared and reused for future events
- Prepared some summary collateral that can be shared for explaining concepts
- More knowledge and content with which to populate the implementation guide.
- Fruitful discussions with fellow vulcan leaders on:
    - Vocabulary/Terminology - we recommend a dedicated Vulcan project to develop a roadmap/IG for adoption
    - Sample Datasets for use in future engagements/projectds

    - Possible broader use cases for FHIR in the regulated research process
- Published all developed code openly :beer:
- We have a gameplan for successful execution of a connectathon!

Discovered Issues/opportunities

1. Whereas PlanDefinition has attributes for offsetLow and offsetHigh, we need an attribute for “offsetTarget” to articulate the ideal time offsets between Encounters to enable visit calendaring and to better identify when Encounters and Observations occur outside of acceptable time parameters needed for the protocol.

Now what?

- MUST have greater exposure and input from vendors
    - EHR vendors in order to test the IG assumptions with near-real life usage with systems used in health care
    - CDMS vendors to test ability to ingest data from EHR vendors
- Expansion of ActivityDefinitions/ObservationDefinitions
    - Current Observations are disengaged from the process of generating them; ideally we should be able to track workflow, etc for activities
- Only tested observation data. Need to expand to include
    - Interventions (ConMeds, Exposure)
    - Events (Adverse Events, Medical History, Hospitalizations)
    - Other observations (Inclusion/Exclusion Criteria, Questionnaires)
    - Treatment Arms

Vulcan/Gravitate Health - ePI/IPS (Phase 3)

Summary: what was the track trying to achieve

Track objectives were to test and gather feedback on the following:

1. Vulcan ePI Profile.
2. ePI instances (EU, US and Japan).
3. Searching lists for a particular ePI.
4. Adjust presentation of the ePI to the profile of the individual personas.
5. Rules for the presentation of the ePI and classified extended materials.

List of participants (logos if there is time)

Clinovations GovHealth

Dubai Health Authority

FDA

Felleskatalogen AS

GE Healthcare Partners

HL7

Hoffman La Roche

Bellemare - Solutions et integration Inc

Johns Hopkins University

Lilly

Cerner

Medidata Solutions

MUSC

Nictiz

NProgram Ltd

Pfizer

trace-health

TransCelerate

UNICOM

Zenetar

Z-Index

Trifork

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)

Not applicable. IG and profiles still in testing and development.

Notable Achievements

Overall

- Successful and productive collaboration between the three programs: Gravitate Health, HL7 Vulcan and UNICOM.
- Completed testing and discussion of Gravitate Health, Vulcan, UNICOM and EMA scenarios. Achieved everything on the agenda. Proven all test scenarios are supported or facilitate by FHIR (with some caveats).
- The Capable app demo reminded us of the need to focus on the bigger picture and not to lose sight of the patient perspective. This demonstrated how information about the patient can be expressed according to one FHIR standard and can be used to customise that information with another FHIR standard.

EMA Scenarios

- Regarding test scenario 1, discussion identified an opportunity to use FHIR subscription resources and services to alert patients or HCPs to content changes.
- Regarding test scenario 2 (compare pregnancy sections) and test scenario 3 (search for ePIs with lactose), an opportunity was identified to structure sub-section headings in the Package Leaflet. Doing so would allow systems to easily find the pregnancy section, sections for allergens and interactions; or any other sub-section.
- Regarding test scenario 4, extensive discussion was had on the topic of search. Multiple options were considered and documented for future testing and consideration.

UNICOM scenarios

- Develop a way forward for
- got into the technical details and figured out how to move forward using the practical examples we had on the servers and figured out how to implement at the local level.
- we have a feeling that we have a way forward to make this happen. Still some work left to do with the PPL server ahead of the next FHIR Connectathon.

International Use Case

- Successfully proved that this FHIR ePI approach can be used internationally. It supports US FDA Patient Package Insert, Japanese PMDA Patient Insert, and Spanish AEMPS Package Leaflet.

Miscellaneous

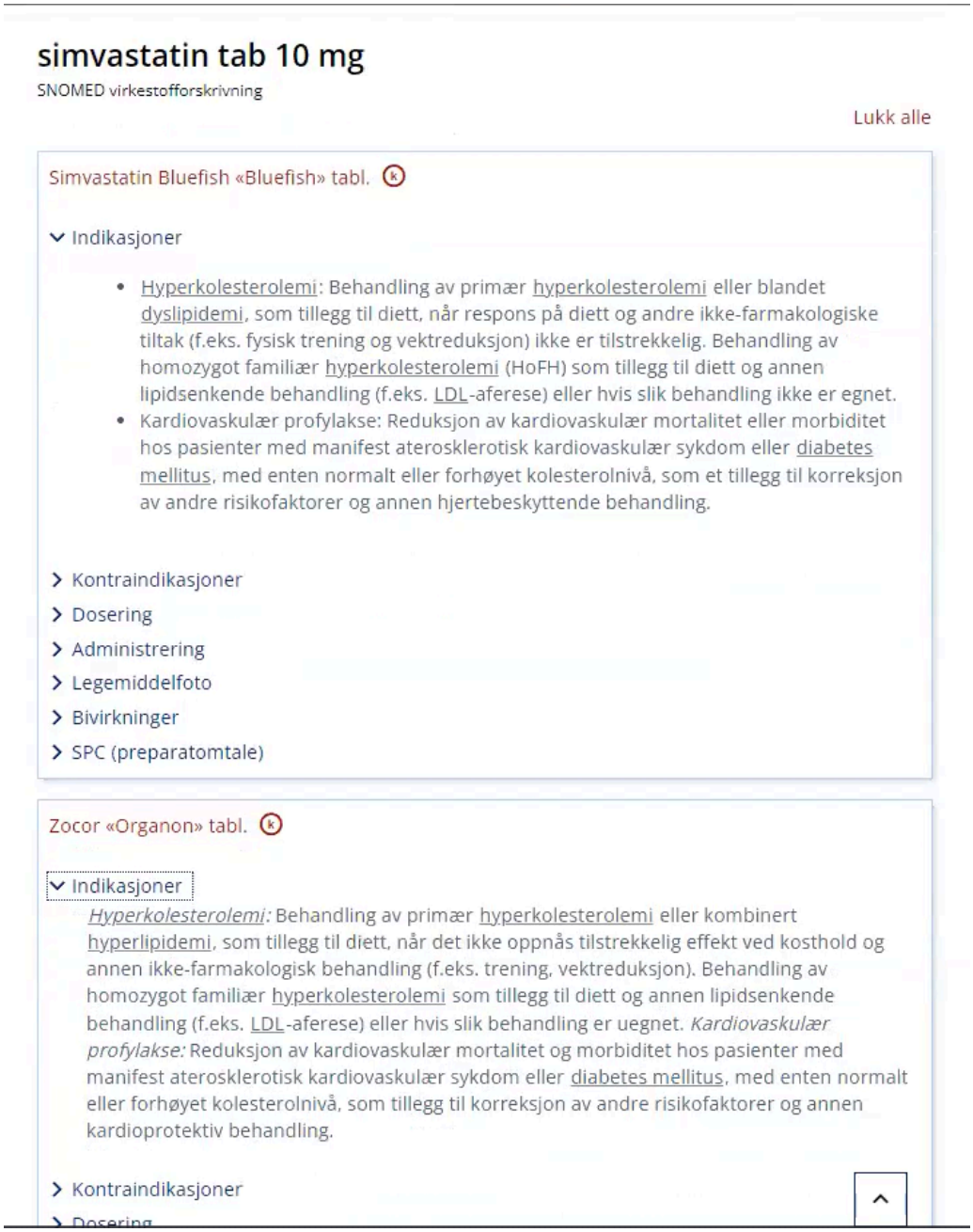
- Search
    - Identified approaches to search ePIs, Lists, MPDs
    - Still some work to be done to clarify how to search and acquire ePIs but the path to solution is clearer.
    - Learned about the transaction feature as a possible solution to keep duplicated resources up to date and to help post related resources.
    - Learned about the FHIR server characteristic of providing server system assigned ids to resources and the potential transaction feature.
- Composition Subject
    - Identified an opportunity to simplify the ePI structure by removing the Product List. Changing the cardinality on Composition.Subject from 0..1 to 0..* eliminates the need for the List of products. This has the added benefit of making the

Composition a more effective target; i.e., only need to search for one object (Composition)instead of two objects (Composition and List of products)

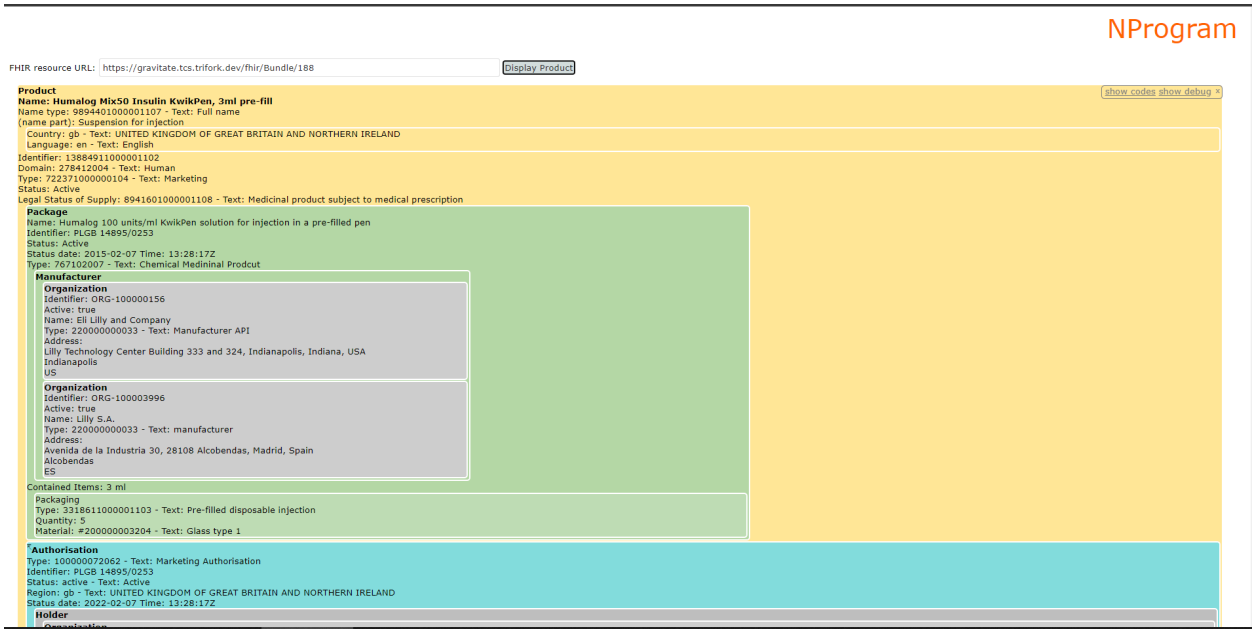
- Link to Narrative
    - Learned that it is possible for FHIR to associate XHTML text to resources using the Narrative Link.
        - Narrative - FHIR v5.0.0-snapshot1 (hl7.org) (section 2.4.0.5)
        - Extension: Narrative Link - FHIR v4.0.1 (hl7.org)
- Document Versions
    - Discussed the pros and cons of relying on the FHIR history capability, version number or timestamps to track ePI lifecycles over time.
        - Solution 1: use the FHIR history capability. More versions of the same resource; i.e., No new instances.
        - Solution 2: Make new resource instances with each new version.
    - Need to determine what is the purpose of the previous version and consider server constraints. E.g., need one server to manage the history. Each server has its own history. Cannot have v1 in server 1 and v2 on server 2. Need to be on the same server.
- Pharmaceutical Product and Administrable Product Definition
    - Valuable discussion to clarify the difference between PhPID vs Pharmaceutical Product Definition.
    - Refer to Rik Smithies blog post for further detail: AdministrableProductDefinition and PhPIDs - Biomedical Research and Regulation - Confluence (hl7.org)
- Education resources
    - Identified a need for a getting started guide to help technical or new members get up to speed on the pharmaceutical or regulatory content side. Conversely, a technical starter guide for non-technical audience.
    - Include reference to UNICOM's education working paper.
        - https://st1.zoom.us/web_client/1q1nf58/html/externalLinkPage.html?ref=https://bit.ly/IDMP_Education_Working_Paper
        - https://st1.zoom.us/web_client/1q1nf58/html/externalLinkPage.html?ref=https://bit.ly/IDMP_in_a_capsule
    - Ensure the ePI IG is written to support both technical and non-technical.
- Clarified that IDMP is meant to be supplementary to what everyone is doing now. Does not have to replace everything if possible.

Screenshots if relevant and interesting and/or links to further information about implementations/achievements

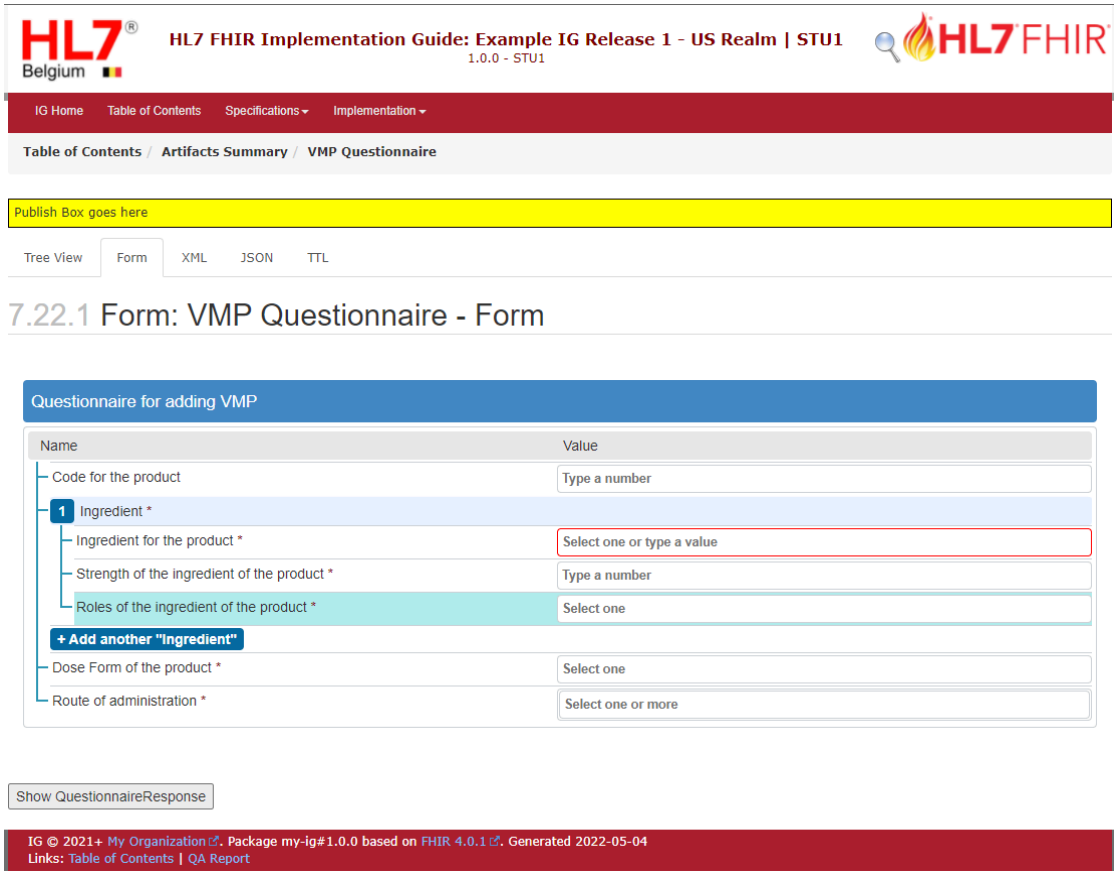
Demo from Felleskatalogen (Bente Jansen and Adam Kover) comparing content of different ePIs
Medisin - Felleskatalogen



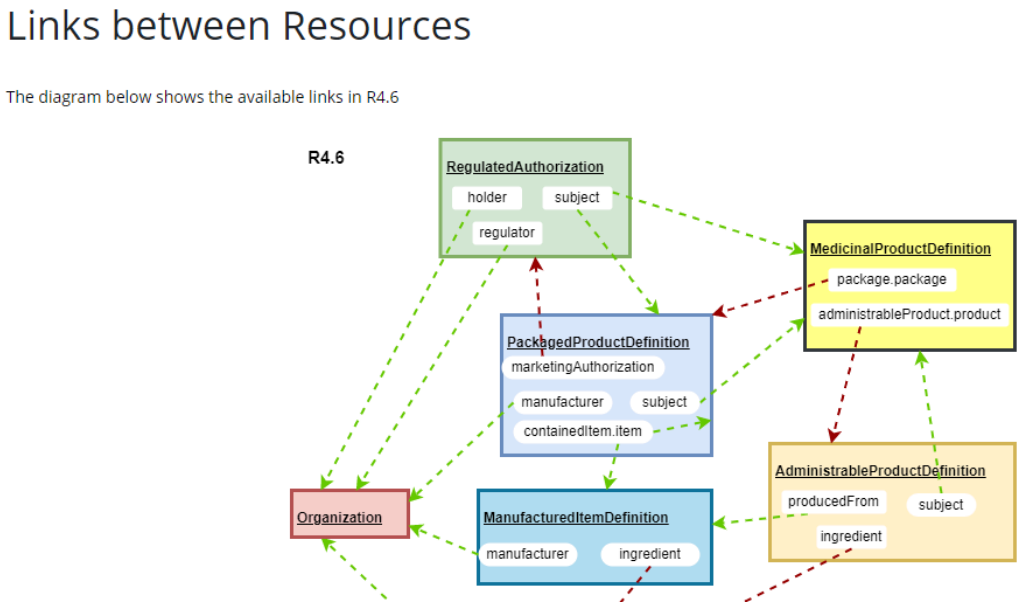
Demo from Rik Smithies (NProgram) visualization of ePI product information from the ePI server



Demo from Jose Teixeira



UNICOM server mean to mimic a MPD server



Discovered issues / questions (if there are any)

- IPS
    - Discussed provenance and authorship. Should patients be allowed to edit their IPS? Or should it be read only and updated by the HCPs.
    - Need to determine how to get the dispensed medication back into the IPS.
- MPD is integrated into the system rather than through a FHIR interface or FHIR server
- Need Tooling
    - Tooling for building resources during development and testing; e.g., still doing everything by hand with FSH, XML, JSON
    - Eventually need COTS tooling to support eventual production/operational use cases.
    - Visualizing resource content. E.g., IG only shows composition; Rik's viewer only shows product information.

- Revisit ePI structure so that the section headings are all structured. Make them easy to find.
- Show the detail of how we acquired/generated the PhPIDs used with the sample data. In the connectathon we only showed the identifier but not how we acquired the identifier.
- Terminology
    - Need to clarify which URIs to use (e.g., what system will be used for PhPIDs).
    - Clarify what are the system URIs for global use (e.g., country code) and national use (e.g., SPOR).
- Implementation Guide
    - Provide practical examples to accompany the profile and all the other sample data
    - Presentation of the examples need to be cleaned up. Choose a smaller number of examples since there is now too much content being pushed to the IG.
    - Need to clean up the Artifacts Index section of the IG. Too many resources to keep track of. E.g., Present artifact titles as a hierarchical list.
- Change connectathon schedule format
    - Consider the fact that FCATS may go back to F2F from September onwards.
        - September FCATS will be in Baltimore.
    - Focus more on the discussion, testing, and not building things.
- Technical specifications between the PPL server and the ePI servers are different. The Server has some caps on how to structure the document. e.g., PPL server has Bundles of type transaction vs ePI server has Bundles of type document.

Now what?

Gravitate Health/Vulcan

- Begin revising IG content to make it ready for the September and end of year ballot.
- Debrief EMA and FDA on FCATS experience and feedback.
- Incorporate the distinction between PhPID and Pharmaceutical Product Definition.
- Consider using the IG as a platform to identify issues and prompt discussion and decision amongst stakeholders.
- Document whether or how Narrative Link can be used in ePI.

UNICOM

1. Examples from different countries for Monuril and Humalog to be added to the UNICOM FHIR IDMP Server
    a. Focus, for now, on these two products in the scenario, rather than a whole lot of other products
    b. For the Netherlands: Leonora Grandia
    c. For the UK: Ben McAlister
    d. With the help of Hugh Glover (and Julie James) and any other resources needed to make this happen in the UNICOM FHIR IDMP Server
2. Describe in more detail the services that an MPID FHIR Server needs to provide
    a. This follows from the different scenarios in the space of Vulcan / Gravitate Health / UNICOM

    b. From this follows the set of resources and data elements that are needed for a minimal implementation
    c. Who will do this?
3. Prepare for local experimentation with Pharmacy/Prescribing systems at the September FHIR Connectathon
    a. Add the local product examples, if not already available, to the UNICOM FHIR IDMP Server
    b. What is the actual scenario in the particular country, compliant with local regulation and practice
        i. What services will be called?
        ii. What local identifiers will be extracted?
        iii. Which part of the scenario is supported by the Pharmacy/Prescribing system?
    c. Test with the UNICOM FHIR IDMP Server

ACTIONS:

1. Submit a request to change the Composition.Subject cardinality from 0..1 to 0..*.Needed so we can associate multiple medicinal products to the Composition and it simplifies the structure because we won't need a List of products anymore.
2. Flag for discussion with EMA:
    a. SPOR approach may cause some challenges when dealing with and processing the content of the ePI when some of the content is referenced outside of the ePI into SPOR.
    b. Discuss synergies between ePI and DADI.
3. Promote the fact that this standard is international and supports structured labelling in every country (e.g., engage FDA, PMDA, and others).

PDex STU2

Summary: what was the track trying to achieve

- Review of PDex STU2 IG
- Testing of Payer-to-Payer flow
- Testing of Prior Authorization Profile

List of participants (logos if there is time)

Organizations:

- Evernorth
- OnyxHealth
- 1Up
- CVS/Aetna

- EDIFECS
- United
- CMS
- CAQH
- Cigna

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)

1UP, Evernorth, OnyxHealth, Edifecs

Notable achievements

- Testing of parts of the IG's Payer to Payer Exchange workflow was successful between 1UP, Evernorth and OnyxHealth.
    - 1UP was able to reach and query Evernorth's $member-match and $patient-everything endpoints
    - 1UP and Evernorth were able to dynamically register on OnyxHealth's registration server (via UDAP) and query their $member-match and $patient-everything endpoints
- A POC of a Github repo containing Certificates/bundles was presented by Ben McMeen from Evernorth. Helpful as a starting point for what is needed in a full fledged solution
- A P2P POC was presented by Edifecs
- Aetna facilitated two break out sessions - Endpoint Management and Branding

Screenshots if relevant and interesting and/or links to further information about implementations/achievements

- POC of a Github repo by Evernorth: https://chat.fhir.org/user_uploads/10155/NrkloimVY7MgewWpgKfq4D6z/payer-directory.zip
- MIRO Board for Collaboration: https://miro.com/app/board/uXjVO-gHqEM=/

Discovered issues / questions (if there are any)

Needs to be defined:

- mTLS connection details .

- Certificates directory/bundle. Placement, governance, maintenance, rules of engagement.
- Error codes need to be defined for the member-match operation in the IG.
    - If no match is found.
    - If incomplete data is received.
        - Might then need to define what demographics will be require
- Need clarity from CMS on if consent is required for P2P and how Auth rep scenarios should be handled. Policy decisions on Trust Framework will help define what info needs to be included in the consent resource (if required)
- 1 token option being championed by Evernorth, instead of the 2 tokens approach proposed by the IG

Needs to be tested:

- Connect to OAuth 2.0 DCRP endpoint over mTLS

Now what?

- Aiming for testing DCR over mTLS + OAuth2.0 in next CMS Connectathon.
    - Blocker: details needed.
    - Bob Dieterle to bring answers in 3 weeks from now (5/4/2022)

DaVinci Member Attribution Connectathon Testing Report Out

Summary: what was the track trying to achieve

The track was focused on exercising the new features added to the STU2 version which is in-progress of being created for January 2023 ballot. The features include

- Creation of Group
- Addition of Members to the Group (member-add operation)
- Removal of Members from the Group (member-remove operation)

These changes along with generalizing the DaVinci Member Attribution Group resource for other use cases were the focus of the test. The generalized group resource profile will be renamed from atr-group to atr-patient-list so that it can be used for many use cases such as

- CMS DPC/BCDA
- DEQM
- Gaps In Care / Risk Adjustment

List of participants

- GapsInCare Track participants
- Drajer

Systems which have implemented the IG, Profile, or Resource, and approximate percentage covered (link to ConMan results if applicable)

- Drajer (All operations of the IG)
- Alphora (Group Creation, Member Add / Member Remove)

Notable achievements

- The GapsInCare Reference Implementation and the Member Attribution Reference Implementations were combined together to create a single reference implementation that was used to demonstrate the synergies between the Gaps In Care and Member Attribution.
    - Specifically GapsInCare use case workflow was able to create a Group dynamically, add members, remove members to the Group
    - Call the care-gaps operation on the Group and retrieve the care gap report.
    - This demonstrate the value of the Member Attribution Group resource to other IGs that require a Group resource for identifying members and/or exporting data in bulk for a specific purpose.

Discovered Issues

- Need to enable bulk export of non member attribution resources in the reference implementation

Now What

- Generalize the Group management functionality in the Member Attribution IG
- Allow other use cases to use the IG for basic Group Management
    - Creation of a Group
    - Modification of a Group
    - Discovery of a Group
    - Bulk Export data using the Group
- Join the Member Attribution Call on wednesdays at 3pm ET
- Join the CMS Connectathon for the Member Attribution Track in July

PACIO Integration of Post-Acute Care IGs

Summary:

- Demonstrated 9 FHIR IGs working together to allow data to follow a patient and be available for use at all points of care.
- Created, exchanged, and queried information between disparate health IT (HIT) systems, in a consumable format for clinicians, patients, and family members.
- Tested the expanded SPLASCH IG (Speech-Language-Swallowing-Cognitive Communication-Hearing)
- Tested the new PACIO Functional Performance IG which uses a new framework to combine the published PACIO Functional Status and Cognitive Status IGs

Participants:

Systems:

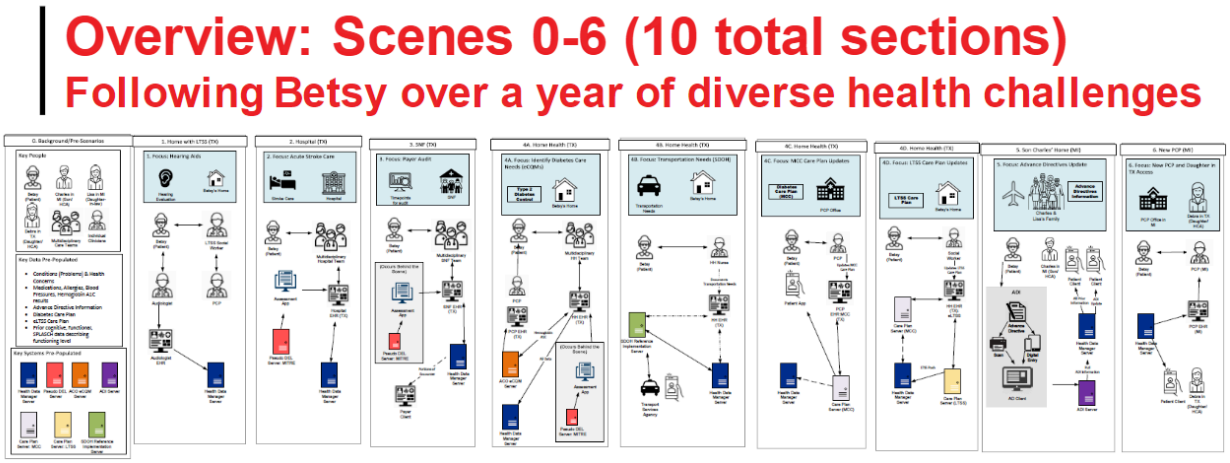
Test scripts and results will be located in ConMan / PACIO Integration of Post-Acute Care IGs: http://conman.clinfhir.com/?event=con30

Notable Achievements:

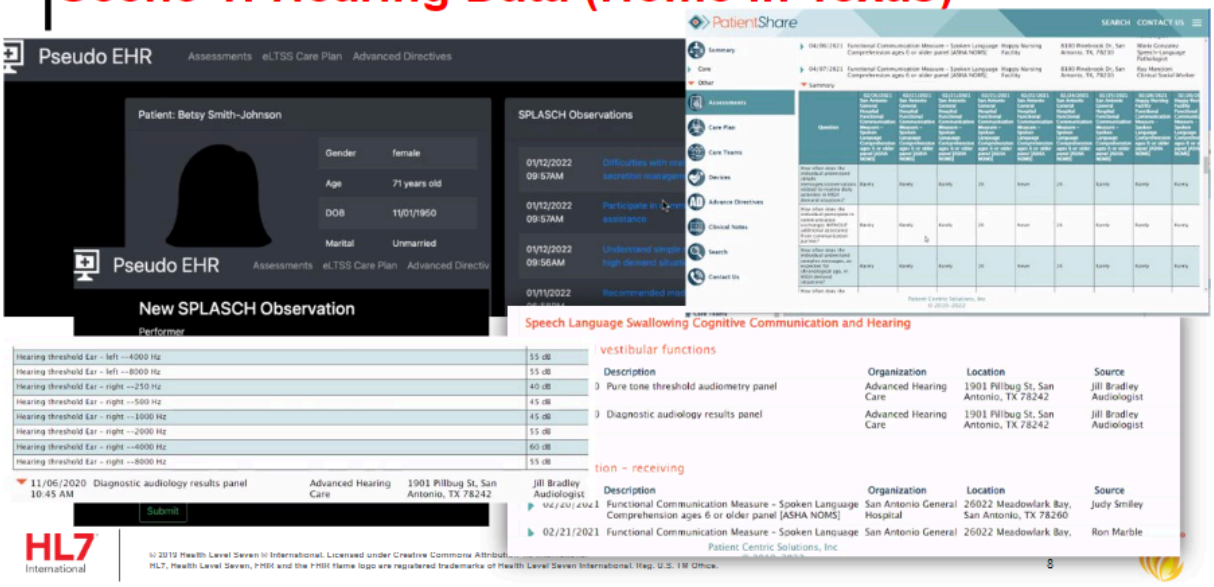
- Designed a longitudinal clinical scenario integrating 9 unique FHIR IGs and 20+ systems
- Created (or revised) over 800 resource instances including 610 data observations, 21 conditions, 9 goals, 33 practitioners, 8 locations and additional FHIR Resource data into a cohesive, medically accurate user story.
- Integrated extensive IG changes from previous Connectathon testing from evolving work
    - ADI, Cognitive Status, Functional Status, Re-assessment Timepoints, SPLASCH, and non-PACIO IGs including SDOH, MCC Care Plan, eCQMs, and eLTSS
    - Exchanged hearing, and multi-modal communication data for the first time using FHIR.

- Merged data used in multiple IGs with different emphases into a single central repository.
- Tested successfully a new Functional Performance IG that combined two published IGs (STU-1) and a third previously tested IG (SPLASCH).
    - Constructed to be scalable across content domains using the International Classification of Functioning and Disability (ICF) as the conceptual basis (e.g., differentiate clinical domain observations based on “category” value sets)
- Demonstrated “Proof of Concept” for sharing all data generated from diverse sources (hospital, SNF, home health, home) both “to” and “from” a central patient centric open health data manager.
    - Facilitates patient directed sharing to new care providers, caregivers, and family members (securely delivered via computable consent or other methods)

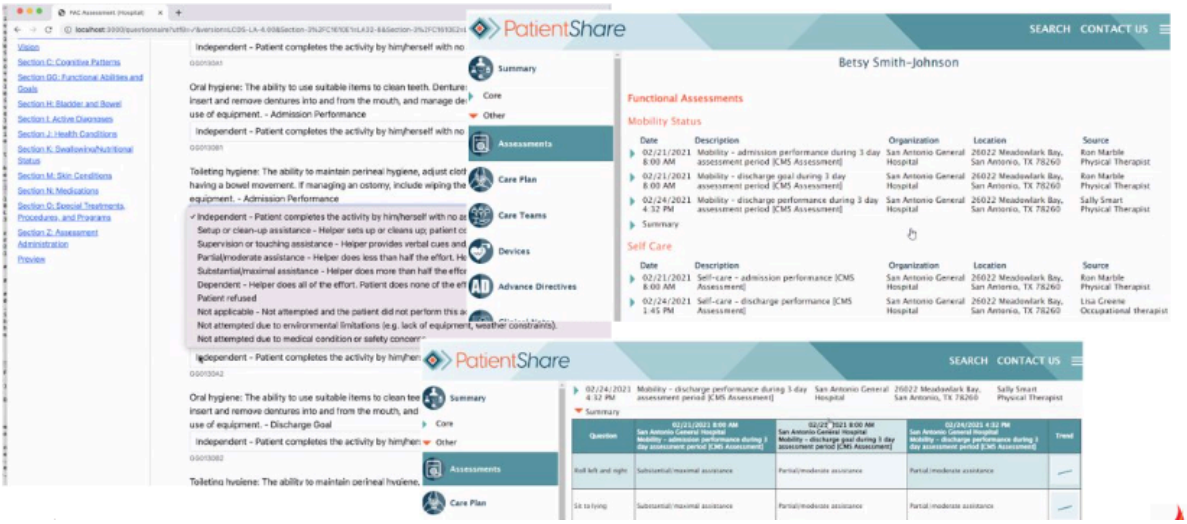
Screenshots:



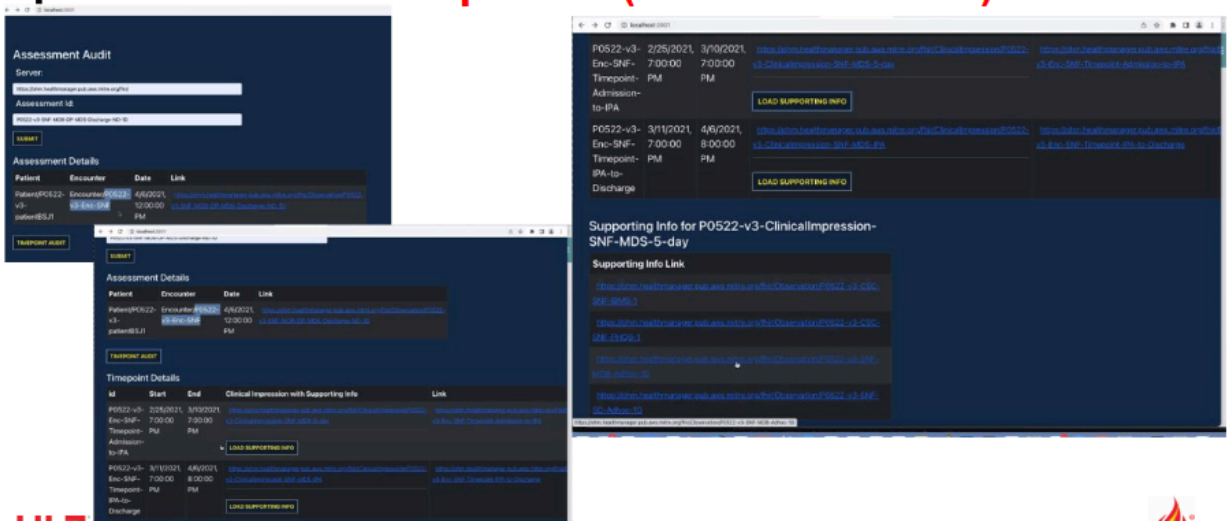
Screenshot Highlights
Scene 1: Hearing Data (Home in Texas)



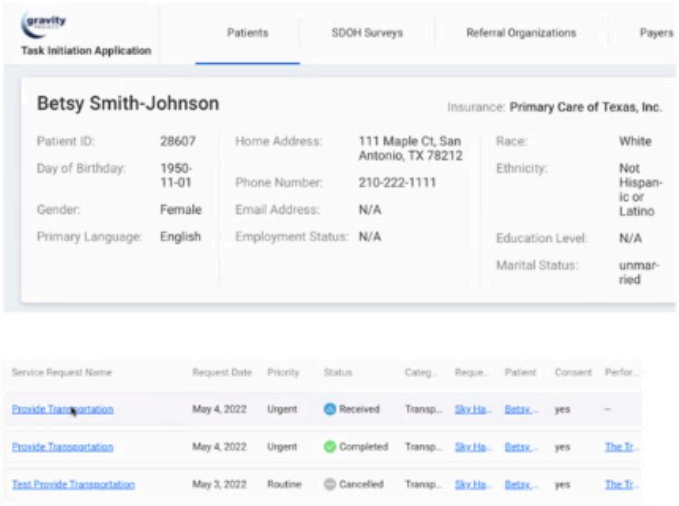
Scene 2: Functional Performance, SPLASCH, and DEL Assessment App (Hospital for Stroke)

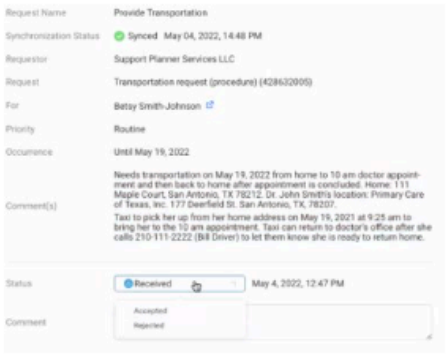


Scene 3: Payer Data Retrieval by Re-assessment Timepoints (SNF for Rehab)

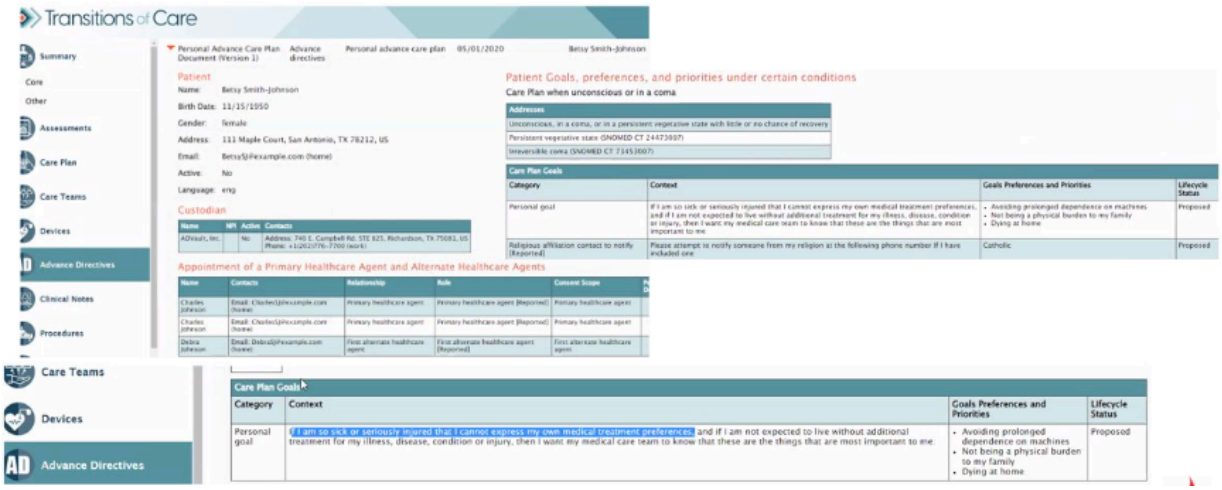


Scene 4A: eCQM (HH-Diabetes & Hgb A1C)
Scene 4B: SDOH (HH-Transportation Need)

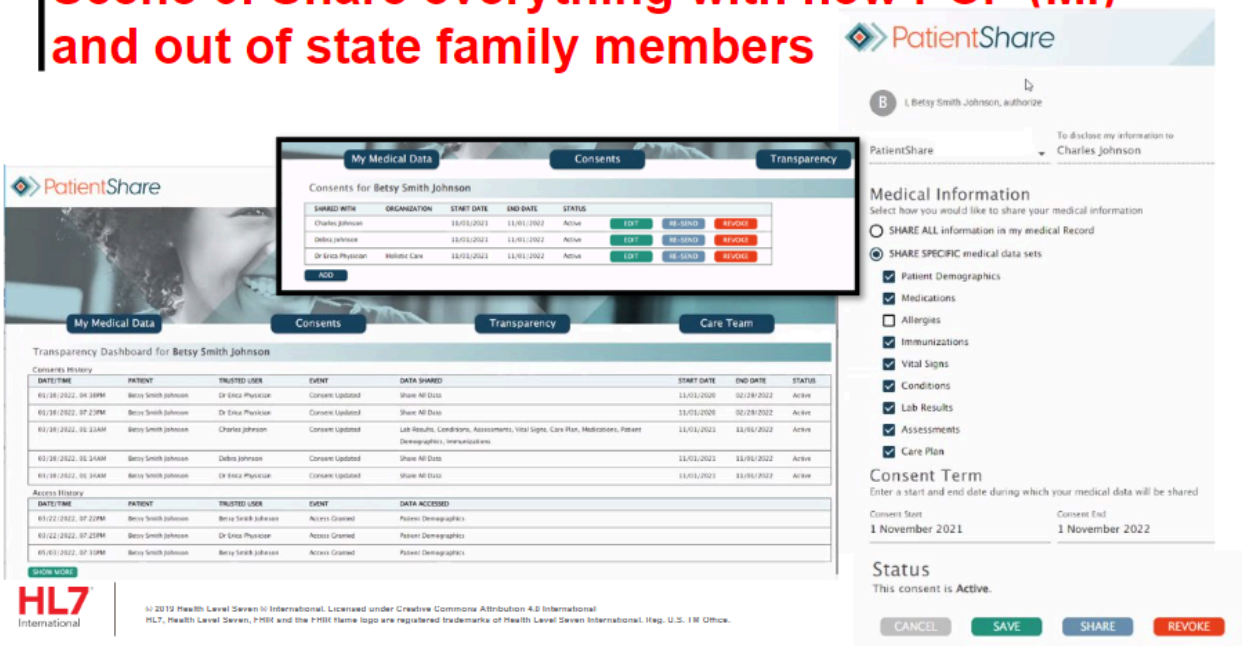




Scene 5: Advance Directives Update (MI)



Scene 6: Share everything with new PCP (MI) and out of state family members



Discovered issues / questions:

- Semantic interoperability challenges:
    - Similar clinical concept across care locations have different LOINC codes (based on assessment instrument/section). Results in difficulty to “trend” or display results in a longitudinal method without significant implementer effort to map LOINC codes across assessments/settings.

    - Sample data manually created with contextual “collection” structure improves implementer visual display opportunities and downstream clinical understanding when large amounts of data are exchanged across disparate settings.
    - Long term solution needed to support scalability
- Data context challenges:
    - Highlighted rough edges re: seamless display of data element contexts:
        - Example: admission performance vs. discharge goals at time of admission.
        - Example: if the hierarchical levels within LOINC are not considered, and collections generated.
- Document status challenges:
    - Tracking changes in Advance Directive document reference/composition statuses over time across different facilities (Investigate: require capability for systems to verify with document custodian?)
- Connectivity challenges between 20 + systems

Now what?

- Share PACIO learning and promote ecosystem discussion re: data sharing workflows
- Explore impact of consolidation of meaning across LOINC codes (in DEL) for similar clinical concepts.
- Demonstrate through Proof of Concepts (POC) working with implementers
    - Real data/real patient pilots
- On our radar: Long term collaboration
    - Healthcare ecosystem will need workflows and support for reconciling data from various contributors to determine the “source of truth”.
    - Care process paradigm shift anticipated if patient centered data hub (open health manager) is adopted. Expected benefits could include improved patient engagement, decreased cost, elimination of siloes (hopefully reducing safety concerns), reduced burden, and improved clinical outcomes.