

Research and Innovation

CDC Post-Discharge Stroke Data Reporting App

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I. Research

1) Various resources were explored for dynamic FHIR resource form generation functionality to display Questionnaire resource. Following links were researched for the applicability to our requirements. After a couple of design discussions, we decided to build dynamic FHIR resource form generation component on our own.

- a. <https://lforms-demo.nlm.nih.gov/>
- b. <http://lhncbc.github.io/lforms/demos.html>
- c. <http://schemaform.io/examples/bootstrap-example.html>
- d. <https://github.com/jmandel/sdc-fhir-demo>
- e. <https://github.com/smart-on-fhir/fred>

2) Several documents were shared by the including

- a. Codes for SMART on FHIR Trigger Logic.docx
- b. Copy of Gap Analysis_draft_2016 09 26revFS_SWrev.xlsx
- c. CoverDell_SMART_GaTech_Kickoff revFS.pptx
- d. Gap Analysis_draft_2016 09 26revFS.xlsx
- e. Gap Analysis_draft_2016.09.26revFS.docx
- f. Workflows.vsd

- g. SMART on FHIR Notes and Setup.docx
- h. SMART on FHIR Web App Design.docx

3) HAPI FHIR APIs

<http://hapifhir.io/> - HAPI server was researched for the following and used in the application:

1. Leveraging the APIs for marshaling and un-marshaling the FHIR resources.
2. Used as a local standalone FHIR server.

4) CDS Trigger Hooks

<http://cds-hooks.org/> - This specification describes a “hook”-based pattern for invoking decision support from within a clinician’s EHR workflow. It was researched for supporting asynchronous hooks in the application.

II. Innovation

5) Dynamic Form Generation Component

We implemented an innovative dynamic form generator as part of this project. It takes a FHIR standard compliant questionnaire resource (JSON format) and dynamically generated a graphical user interface form from it. It supports various data types including range, date/time, choice options and input fields. It also supports n-level hierarchy (depth) in the form based on the nested structure of the FHIR questionnaire resource.

6) Trigger Service

One of the primary requirement of the project was to leverage CDS Hooks as a trigger service. However, after in-depth research, we found that it does not support asynchronous hooks. So we implemented a trigger service which is a reusable and configurable service, connecting to FHIR server to retrieve data, a configurable timer service to poll data, and a service to push processed data to a server.