

Application for Demonstrating at California Connects 2014



This document collects critical information for each proposed demonstration at the **2014 California Connects Interoperability Exhibition**, to be held in conjunction with the *Connecting California to Improve Patient Care in 2014* conference sponsored by Redwood MedNet.

Prospective participants in California Connects 2014 must complete this form for each proposed demonstration, and submit it for approval to the California Connects Steering Committee via email c/o Karen Boruff at karen.boruff@ca-hie.org. Please see the California Connects 2014 page at <http://www.ca-hie.org/projects/california-connects-2014> for more information. Please direct questions to Karen Boruff or Rim Cothren at robert.cothren@ca-hie.org.

1. Demonstration Synopsis

Please provide a title for your demonstration and a brief description of the demonstration. Try to limit the description to no more than 100 words. The title and description will appear on our web site in advance of the Exhibition to attract meeting participants to your demonstration.

SMART on FHIR

SMART on FHIR provides a set of open specifications to integrate clinical apps with Electronic Health Records, portals, Health Information Exchanges, and other Health IT systems. We'll demonstrate a set of Web-based SMART apps running against our open-source reference implementation as well as a commercial EHR (Cerner Millennium). We'll show off the technology stack that powers the platform (Fast Healthcare Interoperability Resources; OAuth2; and OpenID Connect) and outline what it takes for a Health IT system to become SMART.

2. Demonstration User Story

Please provide a user story describing the demonstration, with specific emphasis on its clinical relevance. Be specific, illustrating how you will weave the technology you are demonstrating into real clinical flow.

A pediatrician wishes to comply with national guidelines for diagnosing hypertension and prehypertension in children and adolescents. Her EHR is capable of capturing structured data like age, height, systolic, and diastolic blood pressures, but lacks the ability to calculate the

“blood pressure percentile” values required for clinical assessment. Fortunately, her EHR supports the SMART on FHIR app platform, and her practice has installed BP Centiles, an open-source SMART app. By launching BP Centiles from inside the EHR, she can automatically view percentile values for recent and historical visits, with no data-entry required. Under the hood, BP Centiles uses SMART on FHIR specifications to obtain authorization, issue a FHIR REST API call, retrieve vital signs data and demographics, and perform a set of percentile calculations automatically.

An emergency department physician prescribes oral antibiotics for to an elderly Russian-speaking woman with cellulitis. Her EHR supports SMART on FHIR, and her department has installed Meducation, a SMART app that can produce tailored patient-facing medication instructions in eighteen languages. The physician uses Meducation to print out a set of instructions for the patient to take home. Under the hood, Meducation uses SMART on FHIR specifications to obtain authorization, issue a FHIR REST API call, retrieve medication prescription data, and perform a set of percentile calculations automatically.

3. Goals and Objectives of the Demonstration

Please provide a brief description of the goals and objectives of the demonstration, emphasizing what you expect your audience to learn. Be sure to indicate how your demonstration aligns with the objectives and guidelines found in the California Connects Demonstration Charter at <http://www.ca-hie.org/projects/california-connects-2014/charter>.

We introduce the audience to FHIR, an emerging resource-oriented standard and RESTful API for health data from HL7. We present FHIR in the context of SMART Platforms, a project funded by ONC's SHARP program to develop open standards-based app platform for Health IT. We demonstrate a set of real-world clinical apps running inside an open-source reference platform as well as a MU2-certified commercial EHR (Cerner Millennium). These apps support demonstrated clinical needs including the diagnosis of high blood pressure in children, as well as patient communication for non-English speakers.

California Connects Demonstration Goals and Objectives

- Demonstration makes use of current or emerging national standards.
- Demonstration illustrates how health information technology can improve patient care, reduce cost, and promote patient engagement, and is not limited to Meaningful Use criteria or metrics.
- Demonstrated technology helps solve a real-world problem that clinicians or patients face today by providing better access to health data.

4. Participant Information

Please list information about the primary organization and any supporting organizations and/or sponsors for the demonstration. The primary organization will be responsible for creating, testing, and showcasing the demonstration. Supporting organizations might be collaborating to demonstrate the user story or otherwise deserve recognition. A sponsor may be funding or otherwise providing resources for the development of the demonstration.

4.1. Primary Organization

Name of the organization *SMART Platforms / Harvard Medical School*
Role in the demonstration *Showing the SMART on FHIR platform for health apps*

4.2. Supporting Organization(s)

Name of the organization *Cerner Corporation*
Role in the demonstration *Providing one of two SMART on FHIR implementations for demo*

4.3. Demonstration Sponsor(s)

Name of the organization _____
Role in the demonstration _____

5. Technical Information

5.1. Business Workflow

Please provide a description of the business workflow for the user story, showing the various actors and systems involved in the health information exchange. A diagram may be used.

A healthcare organization or EHR vendor implements the SMART on FHIR specifications on top of their regular clinical data store. This implementation involves exposing structured, granular clinical data through a well-defined, standards-based set of data models, including well-coded fields using Meaningful Use vocabulary standards (RxNorm, SNOMED CT, LOINC).

Independently, app developers build and publish apps against a “sandbox” environment that implements the same APIs.

The healthcare organization review the available apps in the sandbox, and either purchases (in the case of a commercial app) or simply deploys (in the case of an open-source app) a set of applications that help meet clinical demands. At configuration time, these applications are registered with the EHR system.

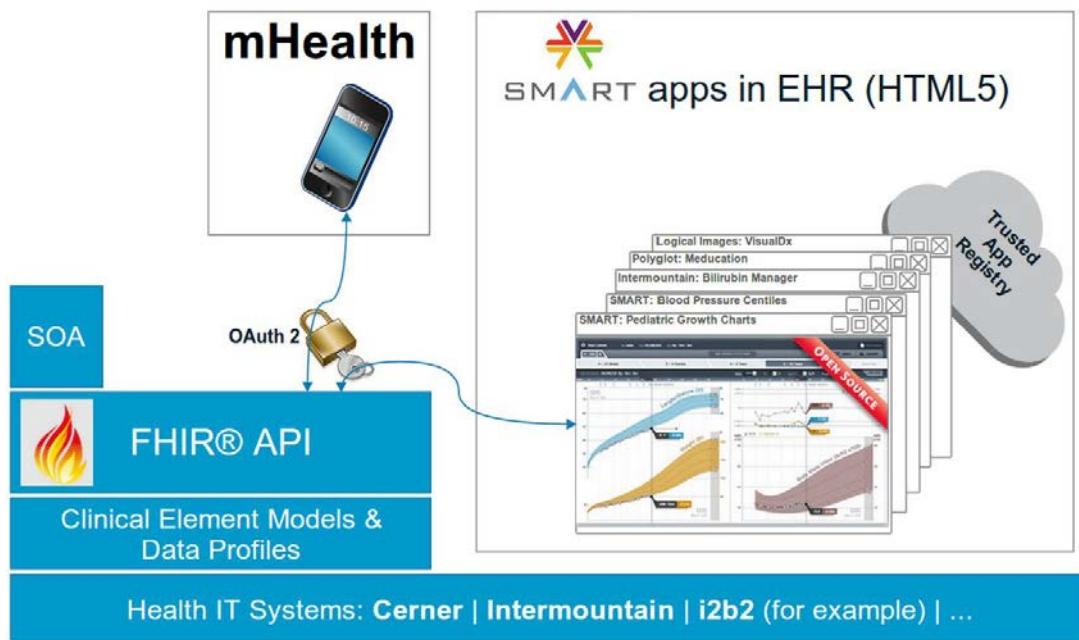
At runtime, an end user launches an app from within the EHR. The app obtains authorization to access EHR clinical data as well as contextual data (including current user and patient). Once authorized, the app uses the FHIR REST API to query for clinical data of interest. With these data, the app presents a user interface to help the end-user accomplish a specific task. (In the case of our demos: calculating pediatric blood pressure percentiles and producing medication instructions in a variety of languages.)

5.2. Technical Standards

Please provide a brief discussion of the technical transport and content standards used in the demonstration. Include security, authentication and authorization standards as necessary. Please review <http://www.ca-hie.org/projects/california-connects-2014/charter> for the technical priorities for California Connects 2014.

This demonstration illustrates the use of:

- FHIR (Fast Healthcare Interoperability Resources)
- OAuth 2
- OpenID Connecting
- SMART Platforms open specifications profiling the standards listed above



6. Maturity of the Demonstrated Technologies

Please describe the maturity of the technologies highlighted in your demonstration, and when they might be available for use, and what barriers there are to reducing them to practice, if any.

Technologies in the demonstration might be emerging and experimental, under development and soon to be available, or commercially available now.

The overall demonstration is in pilot stage. The underlying technologies range from draft standard (FHIR) to production-level (OAuth2, OpenID Connect).