

Health Internet ~ How the CMS Blue Button and FHIR APIs for EHR Data can Support Care Redesign

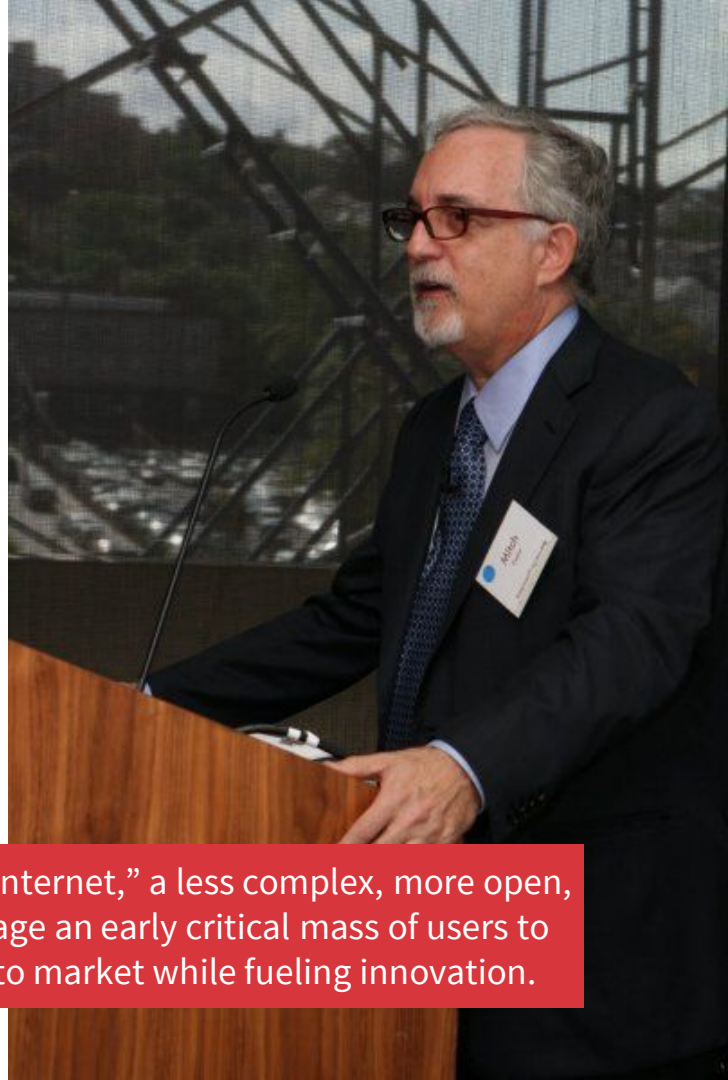
@aneeshchopra
www.navhealth.com

The Meeting of Harvard on a

Health Information Technology Platform

www.HITHealth.org

Executive Summaries



In a 10/09 speech, Kapur called for a “health Internet,” a less complex, more open, “light federal approach” that would encourage an early critical mass of users to participate—thus reducing costs and time to market while fueling innovation.

“All-in” Embrace of Open APIs for Data Exchange

Regulations, industry response aligned on technical capability

MU3: “Access to ONC-Certified API”

Certification Criteria (2015 Edition)

“The 2015 Edition includes “**application access**” criteria...to the **Common Clinical Data Set** via an **application programming interface (API)**.”



HL7® FHIR®
ARGONAUT PROJECT

“The purpose...is to rapidly develop a **first-generation FHIR-based API** and Core Data Services specification...based on **Internet standards** and architectural patterns and styles.”



Voluntary, Industry Consensus Effort

February 2017

- 1 Consistent access to data (Common Clinical Data Set)
- 2 Consistent schema in returned data (Data Access Framework)
- 3 Open Implementation & Testing Framework (Sync for Science)

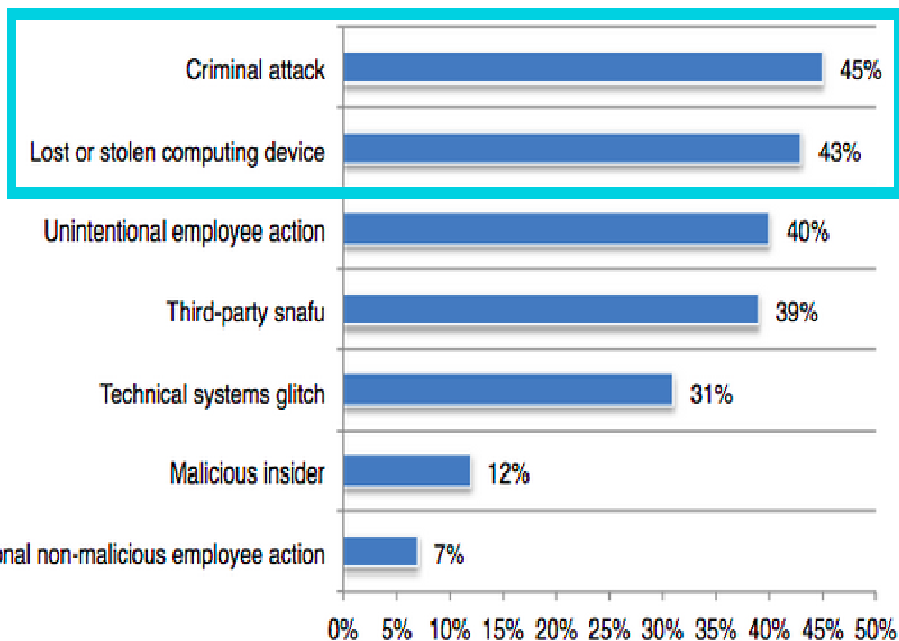
2017 Road Map includes support for scheduling, provider directory, and “CDS Hooks” (mechanism for integrating 3rd party decision support services to workflow)

Opening Up While Locking Down

“API-First” approach adds security protection by monitoring use

What was the root cause of the healthcare organizations' data breach?

More than one response permitted



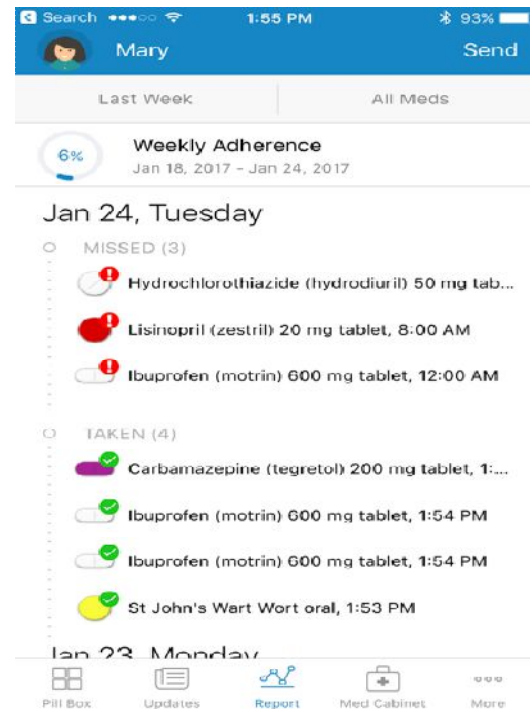
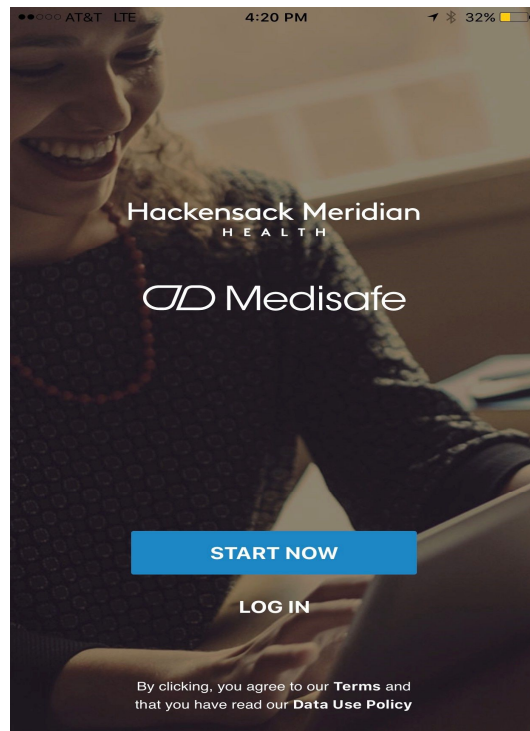
API vs. “Point to Point”

- 1 API-first approach to facilitate controlled access to data
- 2 Single point of “truth” for connected mobile, web apps
- 3 Real-time analytics to monitor use vs. shipping “blind” flat files

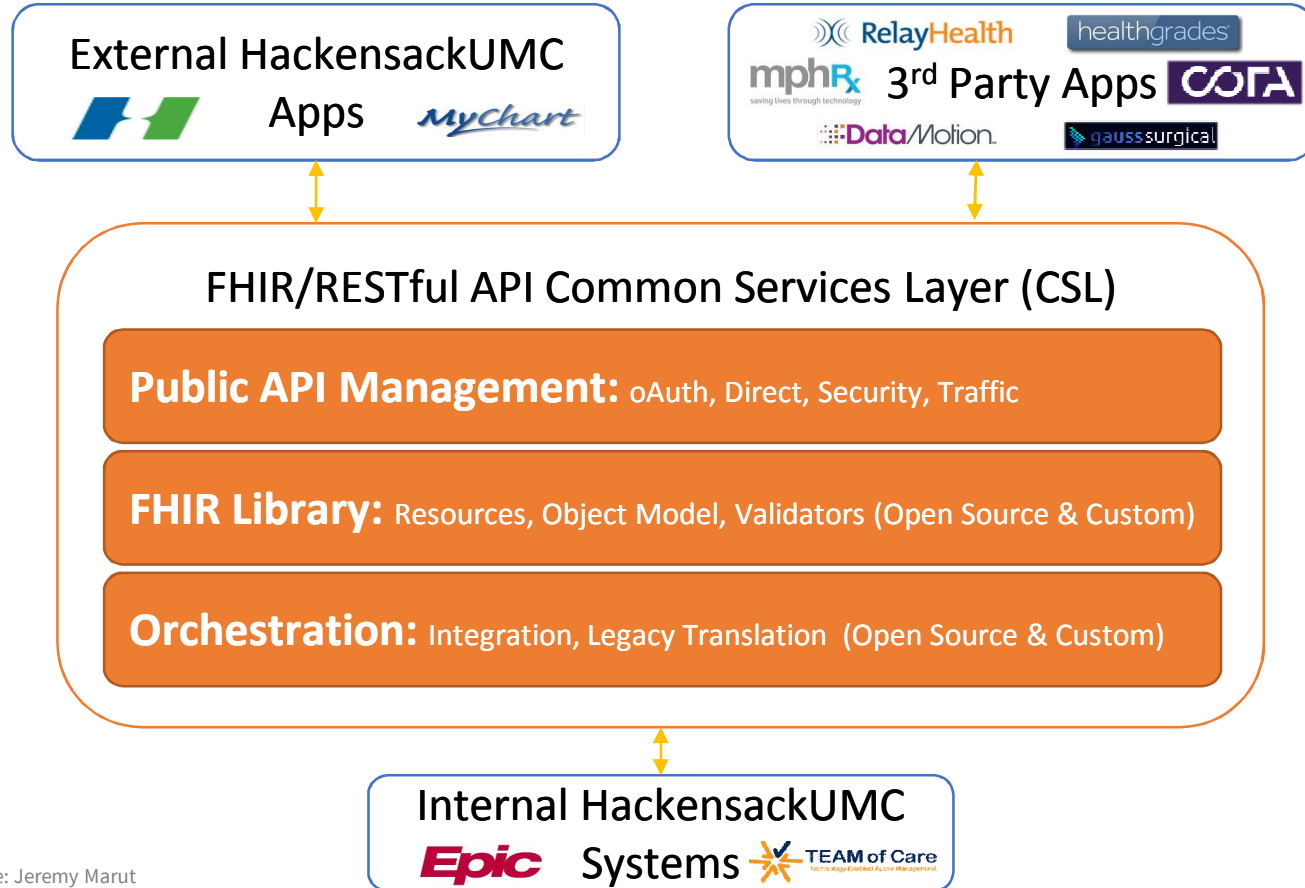
“Built-in” Security-APIs enforce a consistent protection mechanism across all channels with built-in authentication, authorization, and threat protection

The “Connected Apps” Era

Hackensack Meridian Health opens up many digital paths for patients



API-First Approach Flips Integration Upside Down



CMS “Blue Button” on FHIR (2017 Launch?)

Application access to 2010 launch of consumer data access service



CMS Blue Button API

Home

Help

Account

Login

Welcome

Welcome to the CMS Blue Button API

Beneficiary Help

Developer Documentation

Get User's ExplanationOfBenefit Record(s)

```
/bluebutton/fhir/v1/ExplanationOfBenefit/?patient=[sub][_format=json | _format=xml]
```

The ExplanationOfBenefit is an episode of care. The above URL returns the user's personal health information as an [ExplanationOfBenefit FHIR resource](#) according to [DSTU3](#). The record identifier corresponding to "me" is set by the server so this value is arbitrary and therefore could be anything. As a security measure the date of birth, SSN, and HICN are not provided. If the "_format" option is omitted, then JSON is returned by default. Below is a sample JSON response:

Interop via Consumer Directed Exchange

HHS prize competitions aims to demonstrate art of the possible

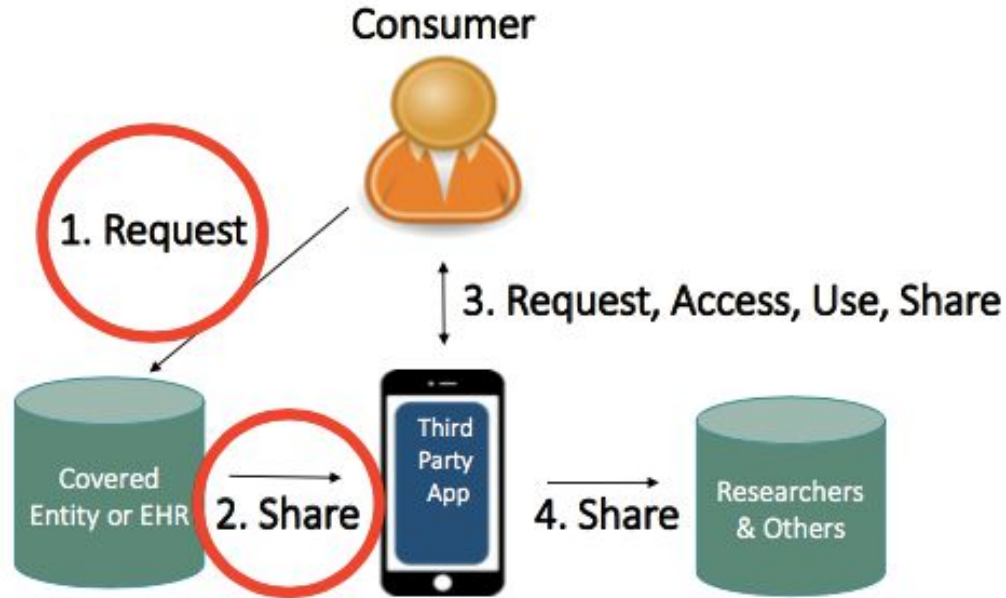
The screenshot shows the 1upHealth patient portal interface. On the left is a dark navigation sidebar with options: Home, Healthcare Providers, Patient Profile, Messages, Allergies, Immunizations, Problems, Medications, Results, and Calendar. The main content area is titled "Healthcare Providers" and shows a list of "Incoming" providers under "My Healthcare Providers". Each provider card includes the provider's name, logo, connection status, patient name, and a "Remove" button.

Provider	Location	Connected Status	Patient Name	DOB
Fitbit	San Francisco, CA	Connected Successfully	Gajen Sunthara	08/09/1981
EPIC Medical Center	Scottsdale, AZ	Connected Successfully	Jason Argonaut	08/01/1985
Cerner Health Systems	Kansas City, MO	Connected Successfully	Wilma Smart	03/16/1947



Multi-stakeholder Alliance to Accelerate Progress

CARIN Alliance launches to make consumer-directed exchange work



Eliminate the business and policy barriers associated with the implementation of the FHIR APIs

SMART “Backend Services” Draft Standards

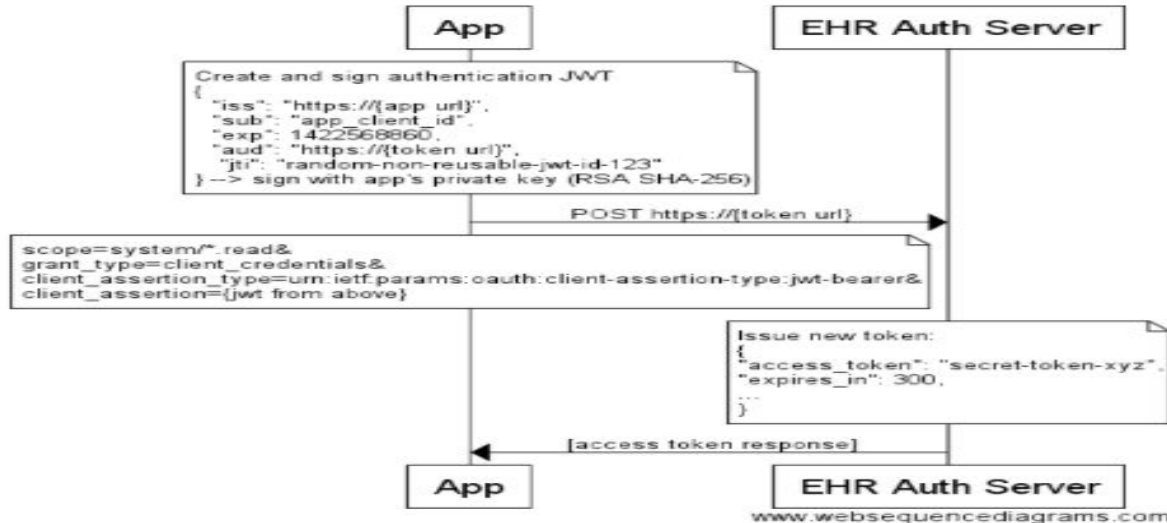
Need “Coalition of the Willing” to test, iterate implementation guide

Obtaining an access token

By the time a backend service has been registered with the EHR, the key elements of organizational trust are already established. That is, the app is considered “pre-authorized” to access clinical data. Then, at runtime, the backend service must obtain an access token in order to work with clinical data. Such access tokens can be issued automatically, without need for human intervention, and they are short-lived, with a *recommended expiration time of fifteen minutes*.

To obtain an access token, the service uses an OAuth 2.0 client credentials flow, with a [JWT assertion](#) as its client authentication mechanism. The exchange, depicted below, allows the backend service to authenticate to the EHR and request a short-lived access token:

Backend Service Authorization



Connecting the Dots on Care Delivery Reform

“Million Hearts” campaign invokes open data, connected apps, pmt reform

Medicare Reporting Coverage

CMS EHR Incentive Program 2011-2013

