

The Healthcare Services Platform Consortium



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**STANLEY M. HUFF, MD
CHIEF MEDICAL INFORMATICS OFFICER
INTERMOUNTAIN HEALTHCARE**

Suggested National Strategy



- Develop truly interoperable data services and exchange standards
 - We need development to get to truly interoperable standards; everything we need does not exist today
 - We can make incremental progress, but the whole strategy will take 8-10 years (not 1 year)
- Certify messages and services (not applications)
- Mandate the use of the standards
- Hold people accountable for outcomes (not process measures)

Healthcare Services Platform Consortium



- Short Version: Create a new marketplace for **plug-n-play interoperable** healthcare applications by standardizing application programmer interfaces (APIs)
- Long Version: Enable the acceleration of application development through an open, standards based, services oriented architecture platform and business framework that supports a new marketplace for interoperable healthcare applications
- Why?
 - **To improve the quality and decrease the cost of health care.**

Essential Functions of the Consortium



- **Select the standards for interoperable services**
 - Standards for models, terminology, security, authorization, context sharing, transport protocols, etc.
 - Modeling: SNOMED, LOINC, RxNorm – FHIR Profiles – do it together
 - Publish the models, and development instructions openly, licensed free-for-use
- **Provide testing, conformance evaluation, and certification of software**
 - Gold Standard Reference Architecture and its Implementation
 - We will work with an established company to provide this service
 - Fees that off set the cost of certification will be charged to those who certify their software
- **Commitment from vendors to support the standard services against their database and infrastructure**
 - Everyone does not have to do every service
 - There must be a core set of services that establish useful applications

HSPC Technology Assumptions (already decided)



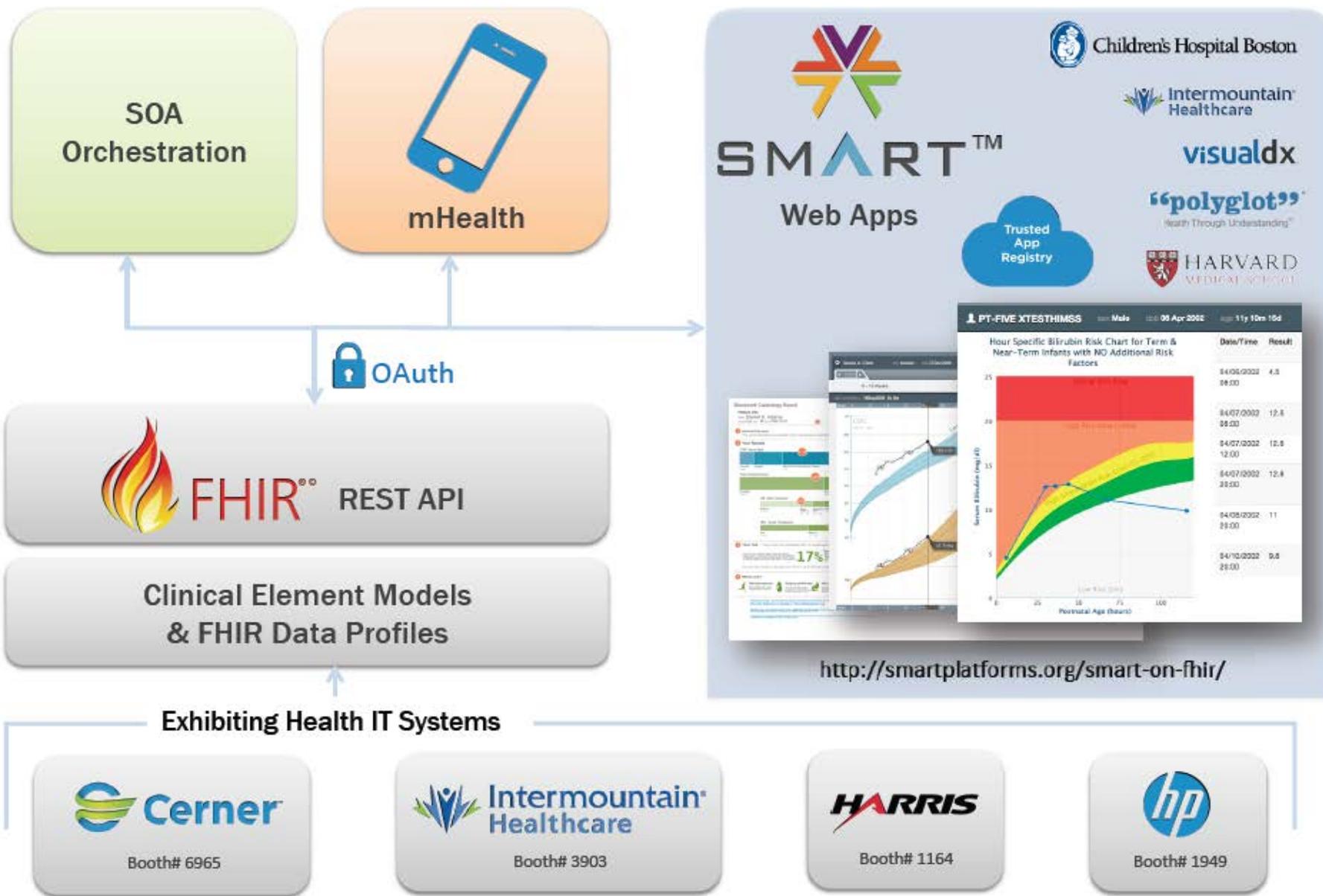
- **Services – FHIR**
 - Generate FHIR profiles from existing model content
- **Data modeling**
 - Clinical Element Models (now)
 - CIMI models as soon as they are available
- **Terminology**
 - LOINC, SNOMED CT, RxNorm, HL7 tables
- **EHR Integration – SMART**

Principles



- Not-for-profit entity
 - There could be an associated for-profit entity
- Simple majority of providers on the Board of Directors
- All organizations will have equal influence and opportunity
 - Intermountain and Harris will not be “special”
- Start small, be effective, and then grow
 - We want to allow everyone that is interested to participate
- Allow diverse strategies and participants
 - Open source and for-profit
 - One person business up to multi-national corporations
 - Healthcare providers and healthcare software developers
 - Students and professional software engineers
- Initially, focus on the minimum set of standards and technology
 - Increase options as we gain experience and success
- HSPC is ***not*** producing software (mostly)
 - HSPC members or groups of members produce software
 - HSPC may need to provide a reference implementation for purposes of certification
- No “central planning” by HSPC of app development
 - Participants decide what they want to build and invest their own resources
 - We ***DO*** need to agree about the minimum set of services that will enable a marketplace

SMART on FHIR[®] – Open Platform Architecture



Additional Information



HSPC History



- Initiated by Intermountain and Harris
- Meetings
 - May 2013 Salt Lake City
 - August 2013 in Phoenix
 - January 2014 Salt Lake City
 - May 2014 in Phoenix
 - July 2014 Salt Lake (Technical modeling meeting)
 - August 21-22 2014, Washington DC, hosted by IBM
 - ✦ Governance
 - ✦ More modeling
 - ✦ Use cases
 - ✦ SOA services,
 - ✦ More....
- Currently working on bylaws and membership agreements to form a business entity
- For more information: Craig Parker, Oscar Diaz, Stan Huff

HSPC and SMART



- Entirely different groups
 - No plans to merge
- Highly aligned goals and values: open platform services
- Mutual respect
- HSPC has decided to use SMART technology as the initial strategy for integration of applications into EHRs

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 - There must be a core set of services that establish useful applications

Other Functions of the Consortium



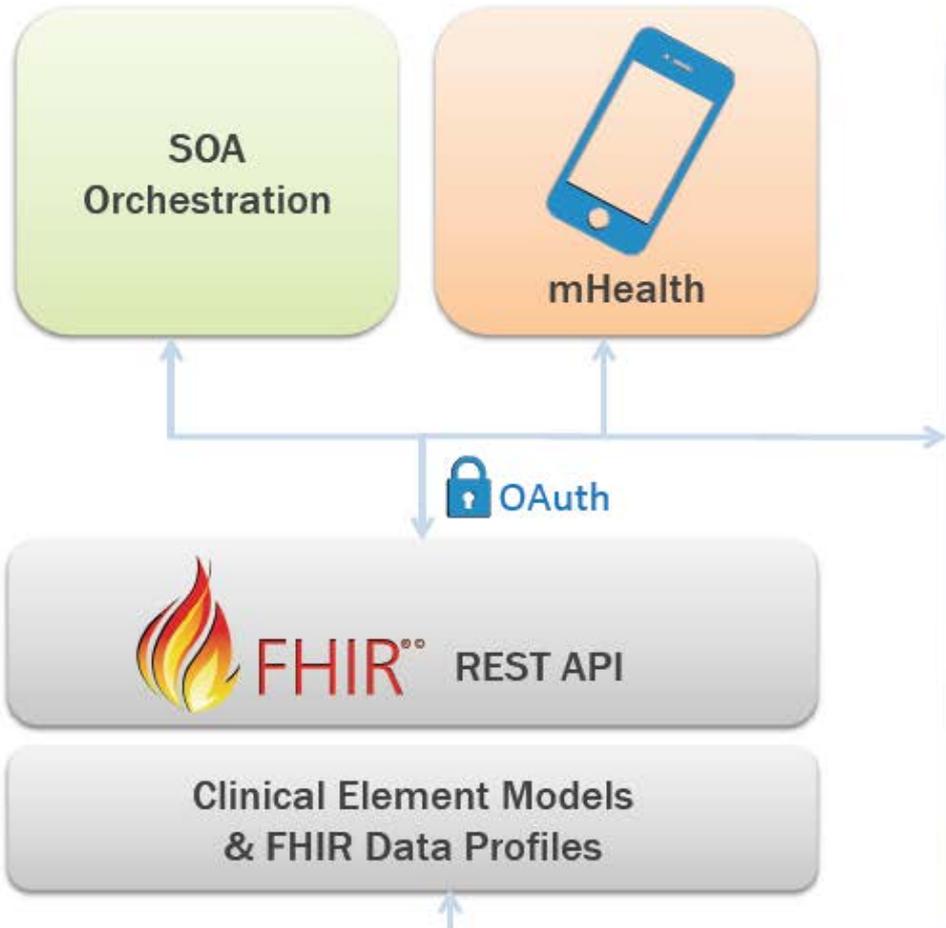
- Participation in “other” functions is optional for a given member
 - Enable development “sandboxes”
 - ✦ Could be provided by companies or universities
 - ✦ Could be open source or for-profit
 - Set up an actual “App Store”
 - ✦ Many companies already have their own app stores
 - ✦ Vendor certification that a given application can be safely used in their system
 - ✦ Accommodate small contributors that won’t have their own app store
 - Create a business framework to support collaborative development
 - ✦ Pre-agree on IP, ownership, co-investment, allocation of revenue
 - ✦ Try to avoid unique contracts for each development project
 - Provide a way for people to invest (Venture capital)

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SMART on FHIR[®] – Open Platform Architecture



SMART[™] Web Apps

Children's Hospital Boston
Intermountain Healthcare
visualdx
"polyglot"
"Learn Through Understanding"
Trusted App Registry
HARVARD MEDICAL SCHOOL

PT-FIVE XTESTHMS Male 06 Apr 2002 11y 10m 10d

Hour Specific Bilirubin Risk Chart for Term & Near-Term Infants with NO Additional Risk Factors

Date/Time	Result
04/06/2002 08:00	4.5
04/07/2002 08:00	12.5
04/07/2002 12:00	10.5
04/07/2002 12:00	12.8
04/08/2002 09:00	11
04/10/2002 09:00	9.8

<http://smartplatforms.org/smart-on-fhir/>

Exhibiting Health IT Systems

Cerner
Booth# 6965

Intermountain Healthcare
Booth# 3903

HARRIS
Booth# 1164

hp
Booth# 1949

Relevant Core Assumptions



- We use existing standards whenever possible
- We need comprehensive and unambiguous models of clinical data (hematocrit, white count, temperature, blood pressure, adverse reactions, health issues (problems), prescriptions, substance administration, etc.)
 - The models are the basis for querying and retrieving data for storing data through services
- We need a single set of consistent models for HSPC based interoperability
 - It would be even better if there was one common set of FHIR profiles industry wide
- We want to create needed FHIR profiles from existing content

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Outcomes from July 7-8 Meeting



Meeting Participants (~50)



- FHIR – Grahame Grieve
- SMART – Josh Mandel
- Cerner – David McCallie
- Epic – Janet Campbell
- Allscripts – Surj Ramlogan
- Siemens – Carmela Couderc
- VA – Keith Campbell
- openEHR – Thomas Beale
- OHT – David Carlson
- Harris
- Intermountain Healthcare
- Wes Rishel
- ASU – Aziz Boxwalla
- Systems Made Simple
- Lantana – Yan Heras
- Center for Medical Interoperability – Todd Cooper
- Relay Health – Arien Malec
- NLM – Clem McDonald
- Infocare Healthcare – Herb White
- Mayo Clinic – Cris Ross, Chris Chute
- Clinical Architecture – Shaun Shakib
- Cognitive Medical Systems – Doug Burke

FHIR



- Determine the best way to represent explicit detailed clinical model information in FHIR
 - Option #1:
 - ✦ Create FHIR profiles to the level of structural difference
 - Lab Results Example: numeric, coded, ordinal, textual, titer
 - ✦ Additional essential information in a knowledge resource
 - Hematocrit, white count, glucose, BP, temperature, HR, etc.
 - Option #2: Create FHIR profiles for the specific measurements
 - ✦ Hematocrit, white count, glucose, BP, temperature, HR, etc.
 - Option #3: ???
- Binding terminology to models
 - Value Set resource, terminology binding, value sets, and other terminology issues

SMART Discussion



- Determine as much detail as possible about strategies for
 - Authorization
 - Authentication
 - Context passing

Things that still need to be done



- Agree on tooling
- Agree on specific model content
- Review all of the modeling activities that are currently underway
- Determine the process for generating FHIR profiles from existing content (this is homework for the various modeling groups)

Things we don't plan to do



- Select a single preferred modeling approach
- Select a single source of modeling content
- Merge all current modeling activities

Questions and Discussion



Why is Intermountain interested in the Consortium?

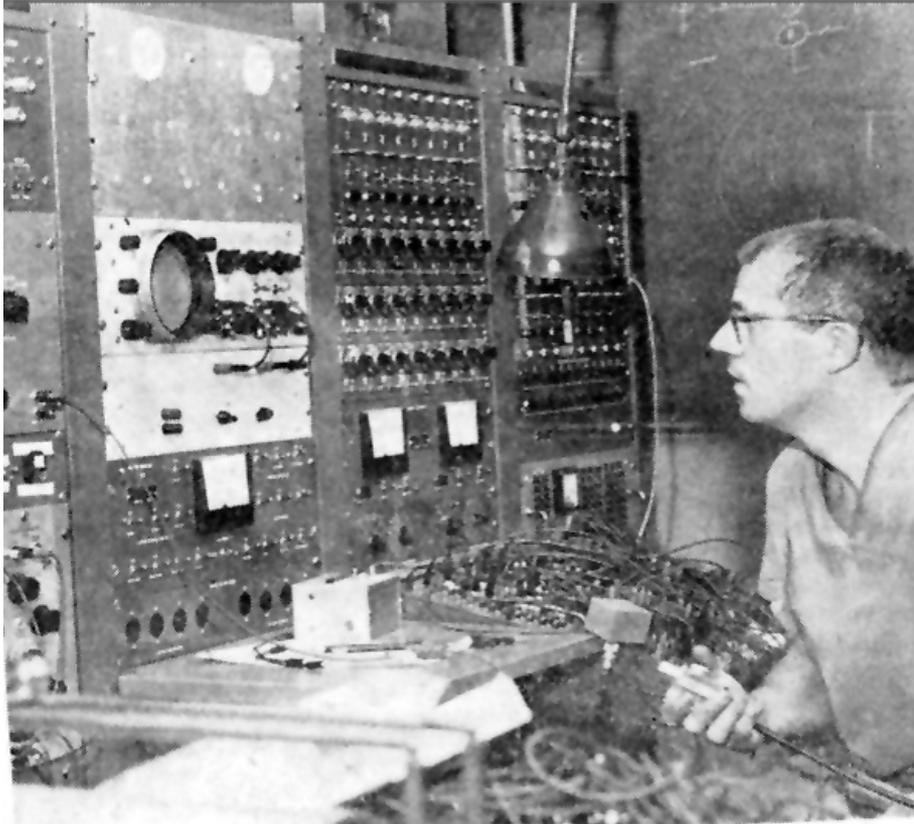


Desired Outcomes



- Sharing of decision support, apps, etc.
- New strategy
 - Current situation
 - ✦ Every useful application needs to be created by each vendor
 - ✦ And sometimes, each application needs to be created
 - Goal state
 - ✦ Competing applications, but can be shared by anyone that supports the standard APIs
- Create a marketplace for new companies
- New revenue for existing companies
- Overall decrease in the cost of healthcare software

Homer Warner and HELP



Intermountain can only provide the highest quality, lowest cost health care with the use of advanced clinical decision support systems integrated into frontline clinical workflow

Decision Support Modules



- Antibiotic Assistant
- Ventilator weaning
- ARDS protocols
- Nosocomial infection monitoring
- MRSA monitoring and control
- Prevention of Deep Venous Thrombosis
- Infectious disease reporting to public health
- Diabetic care
- Pre-op antibiotics
- ICU glucose protocols
- Ventilator disconnect
- Infusion pump errors
- Lab alerts
- Blood ordering
- Order sets
- Patient worksheets
- Post MI discharge meds

Strategic Goal



- Be able to share data, applications, reports, alerts, protocols, and decision support modules with anyone
- Goal is “plug-n-play” interoperability

From Ben Adida and Josh Mandel

