FHIR Update and Challenges

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- Strategic Health IT Advanced Research Projects (SHARP) - David Blumenthal
  - SMART – Substitutable medical objects (Boston Children’s Hospital)
  - SHARPn – Secondary Use of data (Mayo Clinic)
• HL7 WG Meeting Orlando
  • Fast Healthcare Interoperability Resources (FHIR) – (HL7 v4?)
  • Clinical Information Modeling Initiative (CIMI)
    • Improve the interoperability of healthcare systems through shared implementable clinical information models.
Our end user is someone who makes this stuff work. ...

But what is this end-user looking for? We kind of made a gambit statement that we *could* define a world in which point to point mapping wouldn't be required. I think we showed that:

(a) that's not possible - all uses of V3 I've seen, ... have use case specific processing

(b) Users are increasingly telling us that they don't care. The price of this consistent semantics is higher than they'd pay *even if* we solved the consistent semantics problem. Instead, they want ad-hoc wire forms that are close to their domain use cases. And what they want from HL7 is a meta framework that's easy to adapt to this use, while ensuring that the point-to-point stuff isn't *too* hard.

So. Is that right? Does it ring bells for anyone else?

Am I saying that we shouldn't try for plug-and-play?
Interoperability Pyramid

- HL7 Version 2 Compliance
- HL7 FHIR Compliance
- Argonaut Compliance
- HSPC Compliance
Interoperability Pyramid

1. Preferred structure, standard extensions, explicit LOINC and SNOMED, units, magnitude, ...

Common resources, extensions and some specific LOINC and SNOMED

Structure(s), Generic LOINC

Structure, No terminology Constraints
Healthcare Services Platform Consortium

Mission

*Improve health by creating a vibrant, open ecosystem of interoperable applications, content, and services*

Vision

*Be a provider-led organization accelerating the delivery of a platform that supports innovative healthcare applications for the improvement of health and healthcare.*
SMART-on-FHIR

- SMART team endorses FHIR rather than continue developing their own api
SMART on FHIR® – Open Platform Architecture

FHIR Profiles from CIMI
detailed clinical models

OAuth

Heterogeneous Systems

Cerner
Booth #6965

Allscripts

Epic

Others ...

http://smartplatforms.org/smart-on-fhir/
SMART on FHIR®© – Open Platform Architecture

- SOA Orchestration
- mHealth

FHIR Profiles from CIMI detailed clinical models

Heterogeneous Systems

- Cerner
- Allscripts
- Epic
- Others...

Real Impact
- Occult sepsis
- Community Acquired Pneumonia
- Pulmonary Embolus
- ICU Glucose
- Ventilator management
Partial Interoperability

Application

Application and User

Standard Structure (Non-standard codes)

Structure Translators

Local databases, Cerner, Epic, Allscripts, etc.
Preferred Strategy – Full Interoperability

Application

Application and User

Standard Structure
AND Standard Terms
(As defined by CIMI Models)

Requirement

Term and Structure
Translators

Local databases,
Cerner, Epic, Allscripts, etc.
• JASON Group report (MITRE)
  • Sharing healthcare data should be more like the web

• Argonauts
  • Agora Restaurant
    • Jacob Reider, John Halamka, Aneesh Chopra, Arien Malec, Stan Huff
  • Accelerate FHIR development and use
  • FHIR resource profiles for MU Common Clinical Data Elements
Argonaut profiles and CIMI profiles

Invariant Profile Structure – CIMI Leaf Node Content
2016
CDS Hooks
Josh Mandel
Kevin Shekleton

1. EHR triggers a CDS hook

2. CDS Cards (displayed in EHR)
   - Information card
     - $200 per month (patient pays $30)
   - Suggestion card
     - Try HCTZ as first-line
     - Switch to HCTZ
   - App link card
     - Managing hypertension?
     - Launch JNC 8 Rx Pro

EHR Med Order
RX Toprol XL 50 mg daily
July 2017
CIIC

- Clinical Information Interoperability Council
- Working specifically with professional organizations
  - American College of Surgeons
  - American College of Obstetricians and Gynecologists
  - American College of Cardiology
  - American Association of Family Physicians
  - Radiology
  - Inviting others
    - American Nurses Association
    - Internal medicine
    - Anesthesiologists
    - Emergency Department
    - Etc.

FHIR Profiles
Repository of Shared Models in an approved Formalism

Terminology and Model Review Repository of Shared Models in an approved Formalism

Knowledge Models
Repository of Shared Models in an approved Formalism
Tasks for Clinical Experts

- What data should be collected? (part of domain analysis)
  - It will be different for different situations
  - Sherlock Holmes, “Data! Data! Data!” he cried impatiently. “I can’t make bricks without clay.”

- How should the data be modelled?
  - Two fields or one (the degree of pre and post coordination)

- What does the data mean?
  - How do we make computable definitions for diabetes mellitus, myocardial infarction, heart failure, chronic renal failure, etc.
• **Progress**
  - FHIR is well spoken of everywhere, unprecedented support
  - FHIR works
    - FHIR APIs and SMART on FHIR applications are in use in production
  - Huge investment in FHIR development worldwide
  - FHIR is being implemented by EHR and software vendors

• **Challenges**
  - The base FHIR specification is a huge advance, but it does not provide plug-and-play interoperability
    - Model and Terminology Entropy
    - Need to expend energy to move to semantic interoperability
  - Getting FHIR services from vendors has been slower than expected, especially for write services
  - Vendor requirements for “development partner” agreements
  - CDS Hooks
    - Need more hooks
    - Need to support “headless” (background hooks service)
    - Need general publication and subscription for medical events
Thank you

@HSPConsortium

#HSPCImplementersForum