RDF as a Universal Healthcare Exchange Language

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Audience

• Involved in healthcare?
• Have already used RDF?
• Plan to use RDF?
Imagine a world
Imagine a world in which all healthcare systems speak the same language with the same meanings covering all healthcare.
What would it be like?

- Better treatment
- Better research
- Lower cost
Healthcare Today

Tower of Babel, Abel Grimmer (1570-1619)
REPORT TO THE PRESIDENT REALIZING THE FULL POTENTIAL OF HEALTH INFORMATION TECHNOLOGY TO IMPROVE HEALTHCARE FOR AMERICANS: THE PATH FORWARD

Executive Office of the President
President’s Council of Advisors on Science and Technology

December 2010
"PCAST has also concluded that to achieve these objectives it is crucial that the Federal Government facilitate the nationwide adoption of a universal exchange language for healthcare information"
Will RDF get us there?

• No. But it will get us closer.
• And along with the right policy incentives, RDF can get us much closer.
Why RDF?

1. Semantics, not syntax
Why RDF?

1. Semantics, not syntax
2. Self describing – deferenceable URIs
Why RDF?

1. Semantics, not syntax
2. Self describing
3. Schema promiscuous
Why RDF?
Schema promiscuous

• Multiple models peacefully co-exist
• Semantically linked
Why RDF?

Schema promiscuous

• Each app sees what it needs
Why RDF?

1. Semantics, not syntax
2. Self describing
3. Schema promiscuous
4. Neutral, mature, international standard
Goal: Semantic interoperability

Sender1
HL7 v2.x

Sender2
FHIR

Receiver

SPARQL Query
Goal: Semantic interoperability

Sender1

HL7 v2.x

|OBX|1|CE|3727-0^BPsysolic, sitting||120||mmHg|
Goal: Semantic interoperability

```
<Observation
   xmlns="http://hl7.org/fhir">
   <system value="http://loinc.org"/>
   <code value="8580-6"/>
   <display value="Systolic BP"/>
   <value value="107"/>
   <units value="mm[Hg]"/>
</Observation>
```
Goal: Semantic interoperability

SELECT ?systolic
WHERE {
   ?observation a mOut:Observation ;
   a mOut:BP_systolic ;
   mOut:value ?systolic ;
   mOut:units mOut:mmHg .}

SPARQL Query
Goal: Semantic interoperability

Sender1: HL7 v2.x
Sender2: FHIR

Receiver

SPARQL Query
Step 1: Syntactic transformation

- RDF is the *substrate language*
Step 2: Semantic transformation

- RDF to RDF
- Align vocabularies and models
Which vocabularies and models?
Standardization

- **PROS:** Most efficient; desirable whenever possible
- **CONS:** Infeasible when committee/standard gets too big
Standards and diversity

- RDF accommodates both
RDF as a Universal Healthcare Exchange Language

Q&A / DISCUSSION
Yosemite Manifesto
on RDF as a Universal Healthcare Exchange Language

1. RDF is the best available candidate for a universal healthcare exchange language.

2. Electronic healthcare information should be exchanged in a format that either: (a) is an RDF format directly; or (b) has a standard mapping to RDF.

3. Existing standard healthcare vocabularies, data models and exchange languages should be leveraged by defining standard mappings to RDF, and any new standards should have RDF representations.

4. Government agencies should mandate or incentivize the use of RDF as a universal healthcare exchange language.

5. Exchanged healthcare information should be self-describing, using Linked Data principles, so that each concept URI is de-referenceable to its free and open definition.
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Sign at http://goo.gl/mBUrZ
RDF as a Universal Healthcare Exchange Language

NEXT STEPS?
Yosemite Manifesto
on RDF as a Universal Healthcare Exchange Language

Sign at
http://goo.gl/mBUrZ

More details at

Thank you!

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Questions?