Contexts and Importing in RDF

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Context Matters
- Provenance
Context Matters
- Assumptions

ISWC

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J. Bao

Foo forum

janesmith456

johnsmith123
Context Matters
- “World”

```
0100010111010101010101010...
```

```
THEY killed Kenny
```

```
Fictional People
```

```
South Park
```

```
"Real World"
```

```
"Matrix"
```
Contexts are

• Something related to the meaning of a sentence
  – Provenance (who, when, where, how, etc)
  – Assumptions (e.g., OWA, UNA)
  – World
  – ...

• Claim: when a triple is published/reused/inferred, its context should be made explicit.
Wait

• Don’t we already have
  – Named graph
  – C-OWL
  – N3 quotation
  – Contexts in AI
  – ...
Named Graph

Name = context

Graph_RPI
{:LiDing :hasRole :ResearchScientist.}

Contexts are more than names
• One triple may be in multiple contexts
• One context may be reused
• Relations between contexts need to be explicit, too.
C-OWL

- C-OWL provides an ontology mapping language that respects contexts.
- Knowledge transfer is controlled.
- Contexts are more than mapping
rpi:LiDing says

\{rpi:LiDing :hasRole :ResearchScientist.\}

• Again, contexts are more than quotation.
Our Proposal

• Based on named graph
• Add two constructs
  • rdf:context
  • rdf:imports
Adding Contexts to RDF

Part I: rdf:context

G rdf:context C.

C may give a context definition document

C agent LiDing.

C semantics OWL_Full

Part II: rdf:import

G1 rdf:imports G2.

G1 rdf:context C1.

G2 rdf:context C2.

• Importing as citation

• How knowledge transferred from G2 to G1 can be controlled by relations between C1 and C2.
Partial Reuse

{s1 p1 o1.}
rdf:context C1.

{s2 p2 o2.}
rdf:context C2.

{s3 p3 o3.}
rdf:context C3.

c3

C3 rdfc:compatibleWith C1.
C3 rdfc:incompatibleWith C2.
Reasoning with Contexts

Context relations
• Compatible
• Incompatible
• Extend
• In

Context rules
• C is compatible with contexts with agent “rpi:LiDing”
• C is compatible with contexts that are compatible with C2

Can be specified in OWL, RIF or other languages
Open Issues

• Context specification
  – Provenance model?
  – Context relation vocabulary?
• Formal semantics of contexts
• Default contexts