RIF as a basis for declarative descriptions of RDB2RDF mappings

Axel Polleres (DERI)
Axel.polleres@deri.org

DISCLAIMER: This presentation represents partially my PERSONAL view and is not officially endorsed by the RIF WG, though inspired by discussions in the last RIF Telecon, cf.
http://lists.w3.org/Archives/Public/public-rif-wg/2008Nov/att-0008/2008-11-04-rif-minutes.html

W3C Rule Interchange Format WG

RIF: Towards a common rule interchange format

- W3C Rule Interchange Format working group (RIF)
  - established December 2005
  - like all W3C WGs: industrial and academic participants not only rules for RDF, but also production rules, business rules, policies, etc.
  - recent "last call working drafts", 30 July 2008:
    - RIF Basic Logic Dialect (BLD) [RIF-BLD, 2008]
    - RIF RDF and OWL Compatibility [RIF-RDFOWL, 2007]
    -
  - Will only show RIF's presentation syntax here, more details on RIF, as well as the latest RIF drafts, cf.

    http://www.w3.org/2005/rules/wg

RIF Presentation Syntax (currently under discussion)

RIF provides an XML syntax + a more readable presentation syntax, some examples follow:

1) Yet another prefix declaration mechanism:

```
Prefix(xs http://www.w3.org/2001/XMLSchema#)
Prefix(rdfs http://www.w3.org/2000/01/rdf-schema#)
Prefix(owl http://www.w3.org/2002/07/owl#)
Prefix(foaf http://xmlns.com/foaf/0.1/)
Prefix(ex http://www.example.org/)
```

2) "ASCII-writable" presentation syntax, borrows from both common logic (Connectives, Quantifiers), F-Logic (Frames), SPARQL/Turtle (variables, data-typed constants):

```
Forall ?S,?P,?O,?C ( ?O#?C :- And ( ?P[rdf:range->?C] ?S[?P->?O] ) )
```

RIF for Rules on top of RDF:

- As a unifying syntax for earlier proposals on RDF rules languages (N3, TRIPLE, Jena Rules,etc.)
- E.g.

The set of **conflicting reviewers**, that is, either persons having the same names as individuals the authors know personally, according to their FOAF files...

```
Forall ?P ?A ?P1 ?N
 ( ?P#ex:ConflictingReviewer :-  And(
      <http://dblp.l3s.de/d2r/page/publications/conf/rweb/EiterIKP08>
         [dc:creator -> ?A]
      ?A[foaf:knows -> ?P1]
      ?P1[foaf:name -> ?N]
      ?P[foaf:name -> ?N]
      ?P#foaf:Person
     )
 )
```

(1)

RIF for Rules from n-ary predicates to RDF

- RIF allows not only rules over frames, but also arbitrary predicates (could be relations in an RDB), e.g.:

```
Forall ?P ( ?P#foaf:Person[foaf:phone -> ?T] ) :-
 And (
   mydb:Customers( ?ID ?Name ?Phone ?Address)
   External( pred:iri-string( ?P External( func:concat( "http://mydb.org/Persons/" ?ID )))
   External( pred:iri-string( ?T External( func:concat( "tel:" ?Phone )))
 )
)
```

- Conversion from Table "Customers" in DB "myDB" to FOAF.
  - The above rule only converts/extracts the telephone numbers
  - Predicate: `mydb:Customers( id name phone address )` models the relation
  - Alternatively also possible in RIF: named arguments:

```
mydb:Customers( mydb:id -> ?ID
                mydb:name -> ?Name
                mydb:tel -> ?Phone
                mydb:addr -> ?Address)
```

  - Conversion is done using RIF – Built-in functions
  - RIF specifies a listof endorsed built-in functions: http://www.w3.org/2005/rules/wiki/DTB

Summary

- Mappings from RDB2RDF are rules
- RIF is the standard to be for exchanging rules
- Well-defined semantics
- Well-defined interplay with RDF and OWL

- RIF WG thinks RIF could/should be the basis to unify different mapping approaches for RDB2RDF (D2R, Triplify, Virtuoso views, etc.)

- Opinions/Feedback on RIF drafts welcome+necessary:
  - How to improve the Pres. Syntax for the RDB2RDF use case?
  - Missing built-ins?
  - etc.