Requirements and Use Cases for a Semantic Web Rule Language

http://www.isi.edu/~stefan/rules

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Rationals

- Identify Prototypical Use Cases
- Build Consensus
- Identify Objectives and Requirements
- Structure Specification Process
- Provide Input for Language Design

What is in a Rule?

- Controversial: Knowledge Representation vs. Programming
- Rule Types:
  - Derivation
  - Reaction
  - Transformation
  - Integrity Constraints

Derivation Rules

- ## Extended Inference
  - ### Augmentation of OWL with additional inference rules
    - *a Debtor is a Person whose (cumulative) liabilities exceed his (cumulative) assets.*
    - *2 siblings have the same father, i.e. sibling(S1, S2), father(S1, F)=>father(S2, F)*

Transformation Rules

- ## Ontology and Data conversion
  - *Conversion of attribute values (* `fahrenheitTemperature` *to* `celsiusTemperature, birthDate,` *to* `currentAge`*)*
  - *Conversion of instances*
    - *Person enrolled at a university -> student*

Reaction Rules

- Financial service monitoring
  - *If any 3 of the named analysts report a strong buy on the same stock within the same day and before the market closes, then buy 1000 units of that stock.*

Integrity Constraints

- Does a given dataset comply to a set off rules (e.g., with an ontology)?

Candidate Requirements

- Support for RDF
- Support for OWL
- Procedural Attachments
- Aggregation functions

Unresolved Questions

- Are the Examples Representative?
- Relationship to OWL?
- Multiple Languages (Layering)?
- Datamodel?

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