Joint Committee Rules Update: Open Issues

Solicited Feedback; “Warning Label”


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OUTLINE OF SLIDES

• “Warning Label” for OWL Rules
  – Directions for extending expressiveness

• Key Issues for Feedback – overview

• Prioritization of Next Steps

• Discussion
Venn Diagram: Expressive Overlaps among KR's

First-Order Logic

Description Logic

Horn Logic Programs

Logic Programs

Rules

Lite

Description Logic Programs

Logic Programs

(Negation As Failure)

(Procedural Attachments)

2 Extensibility Paths:
- Towards LP
- Towards DL, FOL

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“Warning Label” for OWL Rules:
Usage Suggestions -- Interoperability and Extensibility Cautions

- It may be desirable to restrict expressiveness of rules, for:
  - interoperability, reusability, extensibility, scaleability, implementation

- A useful restriction: named classes only
  - Rules avoid direct complex class descriptions; instead refer to OWL
  - Maximizes interoperability with currently commercially important (CCI) rule systems and RuleML
  - Maximizes interoperability of ontology knowledge with OWL-speaking systems

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“Warning Label” for OWL Rules cont.’d

Usage Suggestions -- Interoperability and Extensibility Cautions

• It may also be desirable to restrict expressiveness of OWL class definitions.

• A useful restriction: Description Logic Programs (DLP)
  – avoids, e.g., existential/disjunction in rule consequent
  – enables extensibility to procedural attachments cf. CCI rules and RuleML
  – enables extensibility to nonmonotonic reasoning (negation-as-failure, prioritized
    conflict handling) cf. CCI rules and RuleML
  – guarantees computational tractability of complete rule+ontology inferencing
  – enables completeness in combining OWL Rules KB + CCI/RuleML rules KB

• The full KR of OWL Rules draft (= Horn FOL ∪ OWL) is not well studied
  – Need to use full FOL theorem-prover, for time being

• For more: Joint Committee archives http://www.daml.org/committee → archives

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Venn Diagram: Expressive Overlaps among KR’s

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**Key Decisions: Soliciting Feedback**

- current "Lite" subset: Horn, Datalog, binary predicates, …
- integration with OWL: syntax, semantics
- semantics: DL vs. LP, "warning label"
- syntax: which are (most) useful:
  - non-RDF XML representation of rules
  - OWL XML Presentation Syntax
  - RuleML subset syntax: in XML, in RDF
- explicit equality: desirable (some hair in LP)
- language naming:
Prioritization of Next Steps: Technical

- human-consumption string syntax
- built-ins, procedural attachments for querying/sensing
- modules
- n-ary predicates: slotted/unordered, ordered
- logical functions
- negation-as-failure
- prioritized conflict handling (default reasoning)
- procedural attachments for actions/effecting
- extensions towards FOL / Simple Common Logic
- ...
Prioritization of Next Steps: Process

- Requirements and feedback from relevant communities/sources:
  - Semantic Web Services: OWL-S; SWSI Lang., Arch., Industrial Partners
  - Rules-related standards efforts and industry/companies:
    - via RuleML, W3, OMG, Java communities
  - OWL'ers: DAML'ers, ...
  - Others: W3 staff, DAML-Security, DB (SQL, Xquery), RDF Query, ...

- Use cases, application scenarios

- **Wanted:** volunteers to implement and use
Discussion

• What are some requirements you think are important?
• What do you think about the key decision issues?