OMG Ontology PSIG Position Paper

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Background

- ∞ OMG's primary charter includes
  - – Promoting frameworks for compatible and independent development of applications
  - – Enabling coordination among applications across heterogeneous networked systems in a multinational, multilingual environment
  - – Adopting a core of commercially available specifications of these frameworks, and
  - – Promoting international market acceptance and use
- ∞ OMG's Ontology Definition Metamodel (ODM) standard was adopted in 2006, finalized in 2008, now in revision to fix usability issues, update to support OWL 2
- ∞ Production Rule Representation (PRR) & Semantics for Business Vocabularies & Rules (SBVR), are also standards, with PRR / RIF closely aligned

Challenges

- ∞ No independent specification of the common elements of RDF vocabularies & OWL ontologies that connect them to the web
  - Some elements, including documents, local names, namespaces, namespace definitions, and IRIs, could be collected in a common specification that both languages reference
  - Common specification for literals and built-in datatypes (& facets), rather than embedding them in the OWL 2 syntax specification

- ∞ Namespace organization in RDF is tangled & made it impossible for separation of an RDF metamodel from an RDF Schema metamodel in the ODM
  - Definition of rdfs:Resource & rdfs:Literal in the RDF Schema namespace, but rdf:Property in the RDF namespace
  - Containers and collections - a circular relationship between independent metamodels for RDF and RDF schema would be required to maintain namespace separation, which is not permitted in UML

- ∞ Vocabulary & ontology alignment & mapping is high priority for mapping the semantics of UML & domain specific language models

- ∞ Named graphs & related capabilities defined in "Named Graphs, Provenance and Trust" should be considered seriously

Need for Standard Interfaces / APIs

- ∞ Currently, there are a number of APIs for accessing RDF/S & OWL data / KBs
    - Jena, Sesame/Sail, DIG
    - OWL API, OWLlink
- ∞ They provide varying degrees of language coverage, varying completeness, varying levels of robustness, error handling, explanation support
- ∞ Lack of a real standard, no common way of describing IRIs, documents, local names, namespaces, or additional services *from an API perspective*
- ∞ Lack of coverage for RIF
- ∞ Organizations building tools to bridge the UML & Semantic Web standards must use multiple, often competing APIs with conflicting jar files, for example

OMG RFP: API4KBs Issued Yesterday (6/25/2010)

∞ Championed by Thales Group for SemEUsE project

∞ Calls for a single, standard set of interfaces for accessing KBs, with a shared layer for accessing IRIs, documents, & other common infrastructure

∞ Users include parsers, ontology editors & tools, reasoners, repositories & other applications needing common APIs & access services, including query support

∞ Support for
  – OWL 2 DL, profiles, OWL 2 Full, & RDFS is required
  – Common Logic, SBVR, RIF, others is optional (more is better)

∞ Requests a Platform Independent Model (PIM) & 3 Platform Specific Models (PSMs) for Java, WSDL & REST, others optional but welcome

Target functionality

∞ Parsing, error checking

∞ KB manipulations : load, query/retrieve, update

∞ Reasoner queries: expressivity of KB, reasoning capabilities

∞ Additional reasoner tasks, e.g., explanation and additional error handling

∞ Primary concerns: plug-in, modular architecture (*e.g.*, OSGi), common veneer

Help wanted

- ∞ We are reaching out to folks in this community to participate –
  - – OWL API developers & users
  - – Jena, Sesame, Mulgara developers
  - – Others interested in KBs for Rule Bases
  - – Discussions initiated at SemTech, OWLED, here
- ∞ OMG membership is preferred but not required
- ∞ RFP will be posted on OMG home page "soon" – http://www.omg.org/
- ∞ Letters of Intent due 30 January 2011, initial submissions in March 2011
- ∞ Contact Evan Wallace or Elisa Kendall if interested