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