

Ontologies for the Semantic Web, and vice versa

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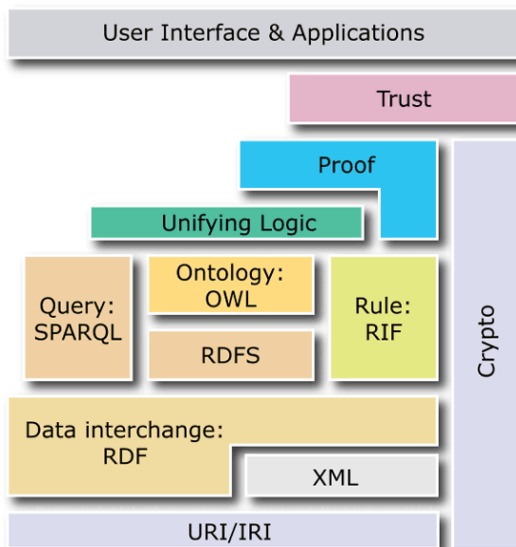
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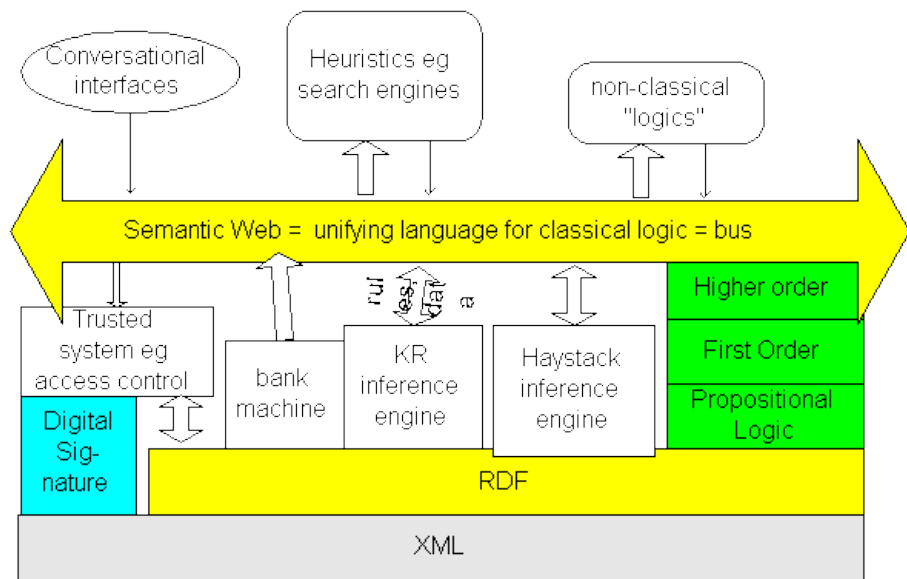
Semantic Web Applied Ontology SIG of the IAOA

Ontologies for the Semantic Web

The Semantic Web Layer Cake



Tim Berners Lee's early semantic web layer cake



Challenges

- Diversity of data and ontology languages:
 - RDF, RDFS, OWL, RIF, SparQL, FOL, HOL
 - actually even more: EER, OBO, UML, SKOS, F-logic, Common Logic, SBVR, ...
- matching and alignment — also across languages
- merging/combination along alignments
- distributed data and ontologies
- ontology-based data access/management

OntolOp

Need for a Unifying Meta Language

Not yet another ontology language, but a meta language covering

- diversity of ontology and data languages
- translations between these
- diversity of operations on and relations among ontologies

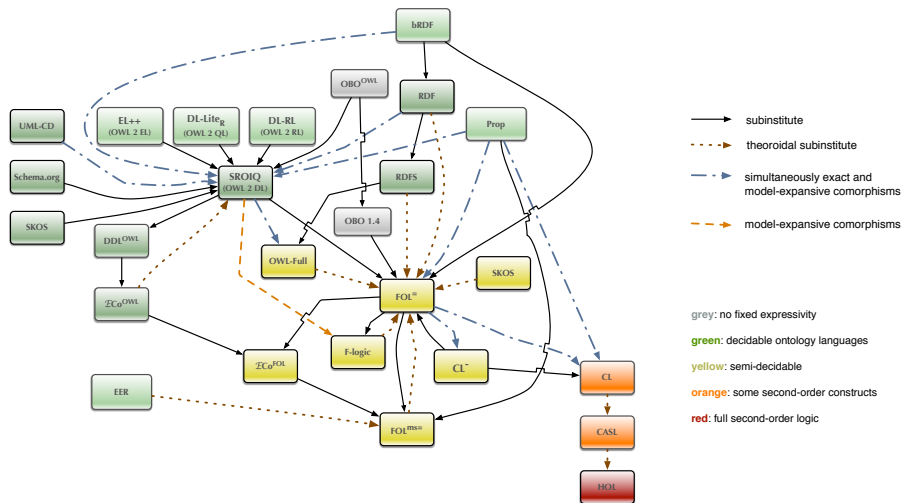
Current standards like the OWL API or the alignment API only cover parts of this

The
Ontology, Modeling and Specification
Integration and Interoperability (OntoOp)
initiative addresses this

The OntoOp initiative

- started in 2011 as ISO 17347 within ISO/TC 37/SC 3
- now continued as OMG standard
 - request for proposals (RFP) to be issued in December 2013
 - proposals answering RFP due in December 2014
- 50 experts participate, ~ 15 have contributed
- OntoOp is open for your ideas, so **join us!**
- Distributed ontology language (DOL) is being prepared as one answer to RFP

An Initial Logic Graph for OntoOp



Towards a Semantic Web of ontologies

SparQL for BioPortal

- **search** for data and metadata **across all ontologies**
- **query** (meta)data in fine-grained and application-specific ways
- metadata is organised according to **BioPortal Metadata Ontology**, which extends the Ontology Metadata Vocabulary (OMV)

Manuel Salvadores, Matthew Horridge, Paul R. Alexander, Ray W. Fergerson, Mark A. Musen, Natalya Fridman Noy: Using SPARQL to Query BioPortal Ontologies and Metadata. International Semantic Web Conference (2) 2012: 180-195

Ontohub web portal and repository

Ontohub is a web-based repository engine for distributed heterogeneous (multi-language) ontologies

- prototype available at ontohub.org and develop.ontohub.org
- speaks DOL, RDF, OWL, Common Logic, and other languages
- git repositories as version control backend
- **linked data** compliant
- annual Ontology summit as a venue for review, and discussion