

# Ontologies for the Semantic Web, and vice versa

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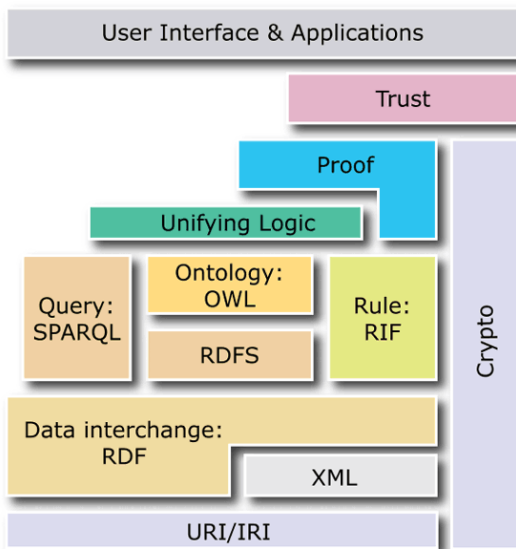
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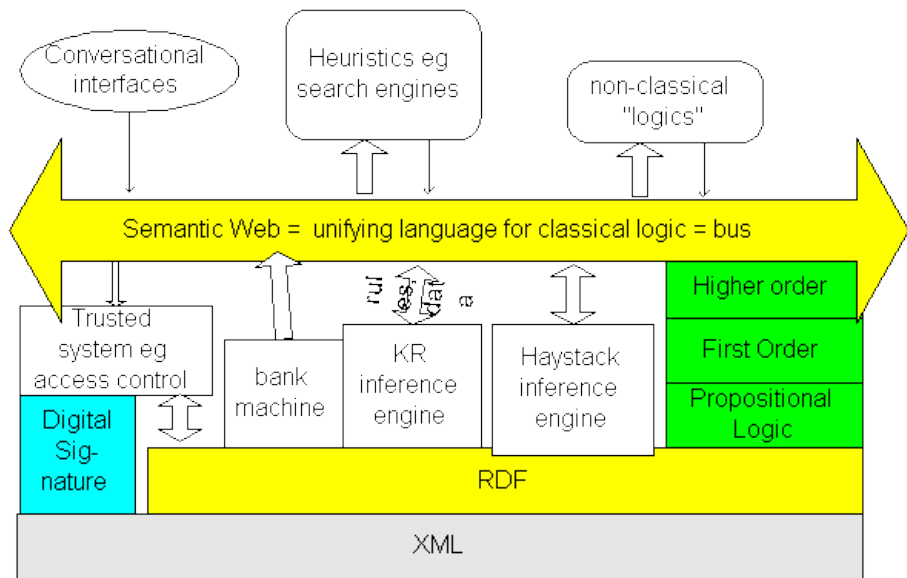
Semantic Web Applied Ontology SIG of the IAOW

# 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

# OntoOp

# 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

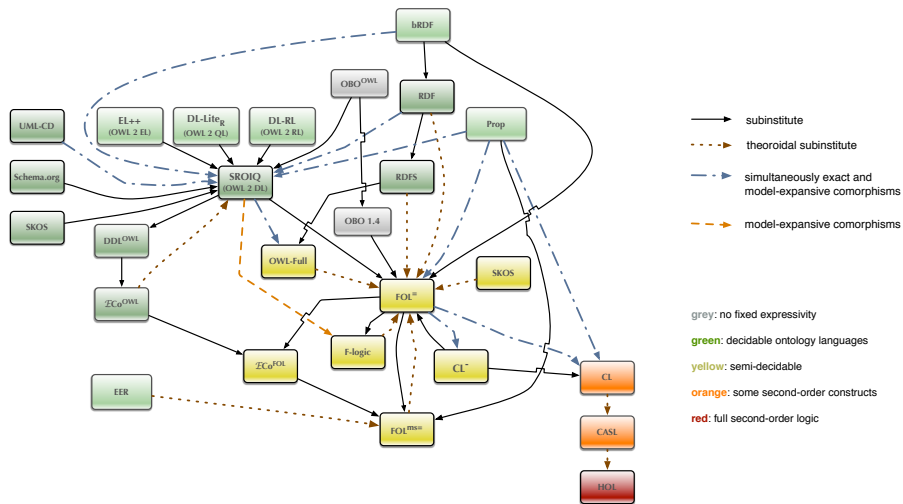
The  
Ontology, Modeling and Specification  
Integration and Interoperability (OntoOp)  
initiative addresses this

# 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](http://ontohub.org) and [develop.ontohub.org](http://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