OWL Language, Tools, and Services
Stanford Knowledge Systems Laboratory

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Areas

- Semantic Web Language and Committee Work
- Proof and Explanation (Inference Web)  * Demo/Poster
- Semantic Web Services (SDS)  * Demo/Poster
- Reasoning Engine (JTP) and Query

Other
- SWRL/Rule-ML integrated with the Protege/OWL facility
- Chimaera
- Ontolingua / OKBC
- Operational Examples: KSL Wine Agent, OWL-QL Server, …
Language and Committee Work

- **OWL Recommendation Status** *(W3C WebOnt)*

- **Semantic Web Services (OWL-S, SWSI)**
  - OWL-S release, OWL-S (and FLOWS) proposal to SWSL
  - SWSL Requirements document

- **Rules and Query (EU/US Joint Committee)**
  - W3C submission for rules, OWL-QL TM

- **Semantic Web Best Practices (W3C SWBP)**
  - Ontology Engineering and Patterns Task Force chaired by McGuinness

- **Deliverables**
  - SWSL, OWL-S – W3C submission 9/04
  - OEP task force notes class as instance 6/04, closing roles 9/04, time?
  - Outreach to UML/MOF (Enterprise Distributed Object Computing model driven semantics workshop 9/04, model-driven semantic web paper – 7/04)
  - WebOnt – document maintenance, PR

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Proof and Explanation

Inference Web – an infrastructure for proof and explanation

- **PML** – Proof Markup Language - interlingua for proof interchange
  - PML and IW in use by question answerers: JTP, DQL, OWL-QL, ISI Prometheus Mediator, CALO’s query manager, IBM’s UIMA, SemMatch, etc.

- **Distributed registry** for Provenance information used in proofs

- Tactics under development for rewriting proofs into explanations
  - Formal SCL-based language for expressing and matching inference rules (with Hayes for design)

- **Explainer prototype** – summarization, multiple formats, reqs gathered from DARPA, intelligence community, and companies

Deliverables: http://iw.stanford.edu

- PML publication, PML ISWC tutorial proposal, pattern language paper TM11/04
- Increased IW user base and functionality (PML Abstractor, distribution and proof generation services, integration with semantic web services, information extraction, improved integration with JTP for owl-based explanations)
- Registration on SemWebCentral for Browser, Explainer, Docs, IWBase

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KSL Semantic Translation & Discovery Service Project: Integrate industrial infrastructure and software with SW technologies (OWL, OWL-S, OWL-QL, JTP)

- Demonstrates the value-added of integrating SW technologies into emerging industry standards for Web services
- Demonstrates the drawbacks of existing industry standards for WS
- Extends industrial machinery (BPEL4WS) from the “bottom-up” with the representation and reasoning abilities provided by SW efforts
  - Automated customization: dynamic, run-time discovery and binding of Web services tailored to functional and user-defined constraints
  - Semantic translations: integration of services operating on syntactically incompatible messages with equivalent semantics by exploiting richer descriptions of service properties
  - Use case: reveals limitations of industrial standards

- Deliverables:  http://ksl.stanford.edu/sds
  - Executable demo with source code and documentation in semwebcentral  6/04
  - Integration with Inference Web enabling explanations of semantic translations  9/04

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**Reasoning (and other) Tools**

**JTP** – Hybrid Reasoner with OWL-reasoning component

- Special purpose OWL reasoner using OWL Axioms
- Active use by PAL’s CALO Query manager at SRI and USC ISI, ARDA’s NIMD project with IBM, Batelle, …, IHMC Policy. UMBC/SRI/Security, …
- Untell mechanism designed and implementation in process
- Deliverables
  - Untell alpha version 6/04
  - Export OWL Axioms for JTP (and in SWRL with BBN?)
  - Query planning extensions to JTP supporting dynamic reordering and grouping of subgoals 10/04

- KSL Tool Suite and Demo Support as needed:
  - Chimaera, OKBC, Ontolingua (used in RKF’s, SHAKEN, HALO, etc.)
  - KSL Wine Agent – Semantic Web in Action Demo
  - OWL-QL (and DQL) server demos

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Come See the Inference Web and Semantic Discovery Services Demos Tonight

Demos by: Pinheiro da Silva and McGuinness