

OWL Language, Tools, and Services Stanford Knowledge Systems Laboratory

Deborah McGuinness

Kaan Baloglu, Cynthia Chang, Priyendra Deshwal,
Richard Fikes, Jessica Jenkins, Dan Mandell, Rob
McCool, **Sheila McIlraith**, Mark Musen, **Paulo
Pinheiro da Silva**

- **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, ...**

- OWL Recommendation Status (W3C WebOnt)
 - ◆ Rec documents co[edited/co-authored by KSL: Overview Document (Japanese, French, Korean), Guide Document, Reference Document
- 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

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>

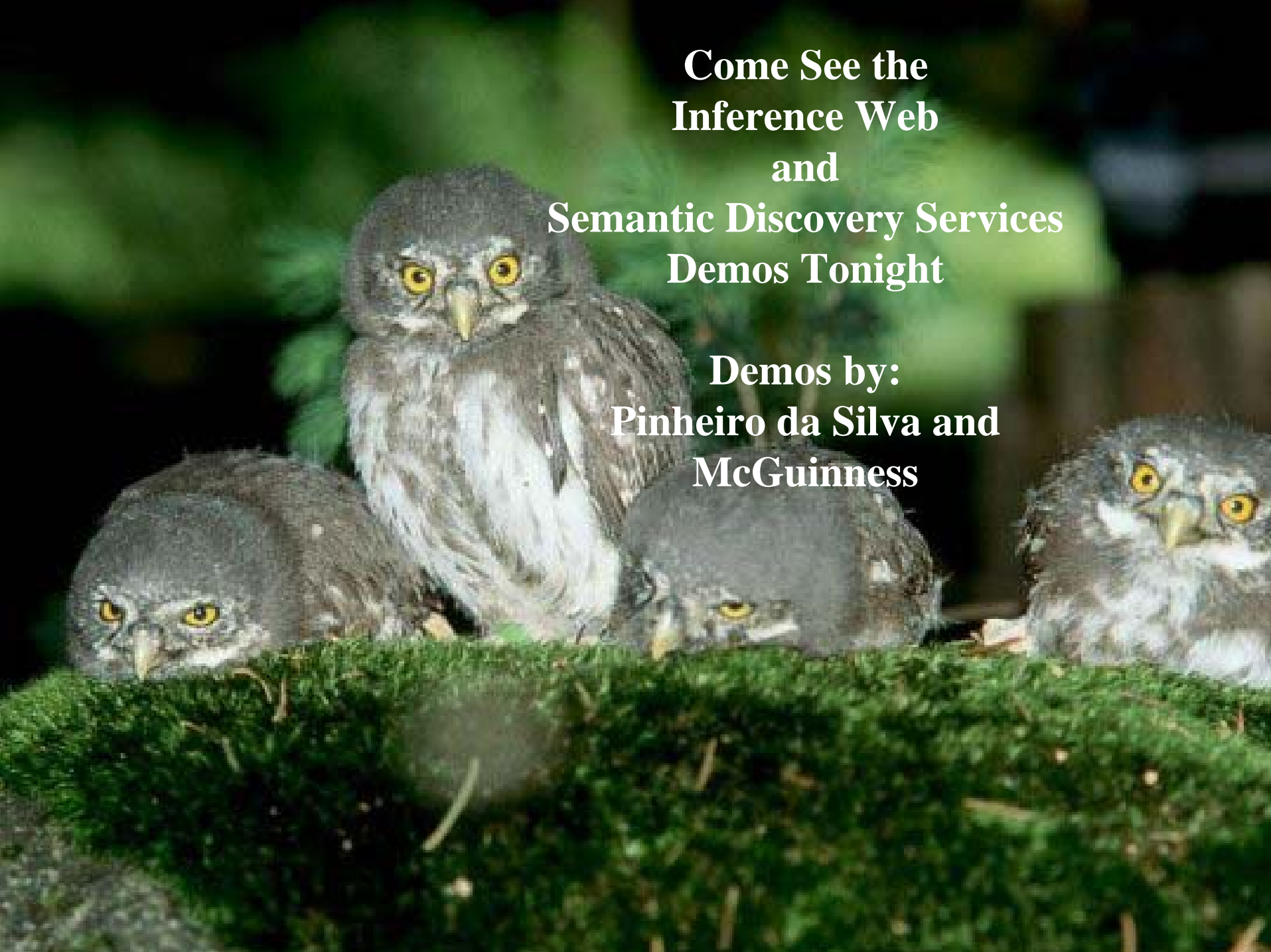
- ◆ PML publication, PML ISWC tutorial proposal, pattern language paper TM11/04
- ◆ Increased IW user base and functionality (PML Abstractor, distribution and proof generation services, integration with semantic web services, information extraction, improved integration with JTP for owl-based explanations)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

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**

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

A photograph of four young owls perched on a mossy surface. The owls have brown and grey mottled feathers and bright yellow eyes. They are looking in various directions, some towards the camera. The background is dark and out of focus, suggesting a natural habitat at night.

**Come See the
Inference Web
and
Semantic Discovery Services
Demos Tonight**

**Demos by:
Pinheiro da Silva and
McGuinness**