



**Knowledge Web**  
knowledgeweb.semanticweb.org

## **Knowledge Web – Realizing the Semantic Web**

The mission of Knowledge Web is to strengthen the European industry and service providers in one of the most important areas of current computer technology: Semantic Web enabled E-work and E-commerce. The project concentrates its efforts around frontline research to “realize the semantic web”. The consortium includes the key European players involved in setting up the existing semantic-web standards and is directly involved in defining extensions of these, e.g., for web services and for rules area. In addition, the network has a mission to disseminate this technology through the development of educational resources and an outreach activity to industry, targeting promising applications areas of this technology in both commercial and non-profit fields.

### **Impact**

Knowledge Web is organized around three areas for (1) supporting industry in evaluating and using semantic web technology, (2) providing educational resources for both initial and continuous education, and (3) performing research in the critical points for enabling the semantic web and semantic web services. Activities of Knowledge Web have a significant impact at the W3C and OASIS standardization bodies, and in the best conferences related to Semantic Web (ISWC, WWW). The industry board (IB) is currently formed by 63 companies, 15 countries, 14 economic sectors.

### **Knowledge Web’s main innovation**

- Methods for approximate reasoning (including first experiments)
- Benchmarking ontology development tools
- Run a first experiment ontology alignment algorithm evaluation
- Logical and categorical characterization of alignment
- Syntactic and semantic ontology versioning
- Participation in the WSMO/L/X efforts; Submission of WSMO/L/X to W3C;
- OASIS Semantic Execution Environment Technical Committee
- First semantic web rule language published to W3C (SWRL)

### **The project’s results**

During the first two years of the Network of Excellence the organizations of the network and its instruments have been completed and first results have been presented. These results comprise:

#### **Industry area**

- Setting up industry board
- Collection of business cases
- Defined policy in terms of evaluation of tools
- Ontology repository development
- Portal up and running and used for our reporting activities

- Active connection with other FP6 initiatives: SEKT, DIP, REVERSE, AgentLink

### **Research area**

- Methods for approximate reasoning (including first experiments)
- Benchmarking ontology development tools (including first experiments)
- Run a first experiment ontology alignment algorithm evaluation
- Logical and categorical characterization of alignment
- Syntactic and semantic ontology versioning
- Participation to the WSMO/L/X efforts ([www.wsmo.org](http://www.wsmo.org)); Submission of WSMO/L/X (<http://www.w3.org/Submission/2005/06/>) to W3C
- OASIS Semantic Execution Environment Technical Committee (<http://www.oasis-open.org/committees/semantic-ex/faq.php>)
- First semantic web rule language published to W3C (<http://www.w3.org/Submission/2004/SUBM-SWRL-20040521/>)
- Important amount of publications accepted in relevant conferences (WWW, ISWC and ESWC) and journals (Knowledge Engineer Review, JLC, etc.) some already due to the network, event organized and cooperative research
- T-Rex researcher exchange program is active

### **Education area**

- Set up a first collection VISWE Repository
- Running software for the Semantic Delivery platform
- Run two successful Summer schools building on Ontoweb experience

### **Management:**

- Set up workable reporting procedure
- Organized technical management
- PBM telephone conferences scheduled and held on a monthly basis
- Established mailing lists for each WP
- General Assemblies held every six months

### **More details**

The Knowledge Web portal is the main platform of the project. It provides an overview of the project, its objectives, structure, progress and management:

<http://knowledgeweb.semanticweb.org>

In the “Outreach to Business” part of the Knowledge Web portal detailed information about the Industry Area and its effort in promoting the transition process of Ontology technology from Academia to Industry can be found: <http://knowledgeweb.semanticweb.org/o2i/>

The “Outreach to Education” part of the Knowledge Web portal is the repository of the European Association for Semantic Web Education, an institution founded in the context of Knowledge Web: <http://rease.semanticweb.org/ubp>

### **Knowledge Web’s upcoming work**

#### **Industry Area Objectives**

- Continuous effort towards the growth of the Industry Board members –who are KW privileged partners - including both client companies and technology-provider companies
- Continuous collection of Business Needs from Industry Board and focus on selected business cases and areas
- KW Technological and Research answers to the Industry Business needs

- Monitor the transfer success both direction Industry-Research
- Implement a very efficient communication channel with the Industry Board members
- Analyze the utility of ontology-based tools, in terms of interoperability, scalability and performance
- Definition the Semantic Web Framework architecture.
- Construction of Knowledge Web Ontology Repository
- Development of protocols and methods for ontology content evaluation and usability.
- Set up of OOA (Ontology Outreach Authority)
- Definition of standards on metadata for ontology and interoperability
- Report on OOA activities
- Creation of the Technology Roadmap
- Report of Success stories and Best Practices
- Organization of the annual international technology show
- Organization events between related fields to provide joint education and industrial promotional efforts, both in academia and industry
- Further development of the KW portal, focussing in content annotation and management
- Integration of REASE educational portal, the repository of EASE for learning Units (educational portal)

### **Research Area Objectives**

- Report on realizing practical approximate and distributed reasoning for ontologies
- Report on methods for modularization of ontologies
- Benchmarking of annotation tools
- Benchmarking of querying and reasoning services of ontology development tools
- Benchmarking semantic web service technology
- Analysis of knowledge transformation and merging techniques
- Implementation of knowledge transformation and merging tools
- Report on research on alignment techniques and implementations
- Implementing an OWL-light-minus and a first prototype of a WSMO-Core versioning system on top of the RDF versioning system
- Implementation of a Consensus Making Environment
- Prototypes of language dependent tools for ontology evaluation
- Report on negotiation/argumentation techniques among agents complying to different ontologies
- Definition of a Conceptual and Formal Framework for Semantic Web Services
- Theoretical and practical Integration of Web Service Discovery and Composition
- Analysis and implementation Web Service Invocation and Interoperation
- Technical and ontological infrastructure for Triple Space Computing
- Definition and implementation of Reputation Mechanism
- Analysis of Requirements for further language extensions
- Standardisation of RDF query language
- Continued cooperation with other EU and international initiatives on language development and extension
- Establishment of rules standardization activity
- Development of rules standard
- Established standard for rules language
- Coordinated activity on additional language extensions
- to coordinate and strengthen the research activities
- to facilitate the exchange of researchers between organizations
- to disseminate research results in academia and industry

- to organize the cooperation within Europe and with other international initiatives in America, Asia, and Australia

### **Education Area Objectives**

- Creation of the EASE statutes
- Monitoring and administration of the REASE infrastructure.
- Definition of a procedure for the shared masters program, version 2
- Report on PhD student network activity
- Report on Industry-education co-operation
- Prototype 2 of advanced learning platform (ASPL-2)
- Evaluation of Prototype 2 of advanced learning platform (ASPL-2) including its use within REASE to support learning and research
- Final version of the advanced learning platform (ASPL-3)

### **Management Area Objectives**

- reporting to the European Commission services and contacting them for administrative purposes
- Elaborating bi-monthly and semestrial project reports
- coordinating the yearly activity report
- Elaborating reports on participation in relevant conferences and concertation meetings
- Planning regular meetings with EC Project officer and elaborating reports on these meetings
- coordinating the final report
- Technical audits (including annual reviews)
- Financial audits (at least one such audit is required)
- Ethical and social impact audits
- financial accounting of the network
- monitoring of the Joint Programme of Activities
- promoting integration of activities at all levels
- to produce the yearly technical report of the network
- Monitoring Consortium Agreement (including resolution of conflicts)
- Setting up legal entities
- Report on Gender Action Plan
- Report on Public Engagement Activities
- Report on self-assessment, risk analysis and market watch

### **Administrative Details**

Knowledge Web is a 4 year Network of Excellence funded by the European Commission 6th Framework Programme. Knowledge Web started on 1-January-2004 and ends on 31-December-07. The overall budget of the project is roughly € 7.8 Mio. 18 partners from 11 European countries are involved in the project.

### **List of Participants**

<b>Partic. No.</b>	<b>Participant name</b>	<b>Participant short name</b>	<b>Country</b>
1	University of Innsbruck	UIBK	Austria
2	École Polytechnique Fédérale de Lausanne	EPFL	Switzerland
3	France Telecom	FT	France

4	Freie Universität Berlin	FU Berlin	Germany
5	Free University of Bozen-Bolzano	FUB	Italy
6	Institut National de Recherche en Informatique et en Automatique	INRIA	France
7	Informatics and Telematics Institute	CERTH	Greece
8	Learning Lab Lower Saxony	L3S(UHAN)	Germany
9	National University of Ireland Galway	NUIG	Ireland
10	The Open University	OU	UK
11	Universidad Politécnica de Madrid	UPM	Spain
12	University of Karlsruhe	UKARL	Germany
13	University of Liverpool	LivUni	UK
14	University of Manchester	VUM	UK
15	University of Sheffield	USFD	UK
16	University of Trento	UniTn	Italy
17	Vrije Universiteit Amsterdam	VU	The Netherlands
18	Vrije Universiteit Brussel	VUB	Belgium

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### **Events in connection with Knowledge Web**

Prolearn Workshop: "Creating eLearning Courses for Use in Corporate Education"

25 April 2005

L3S Research Center, Hanover,

<http://www.l3s.de/~diederich/cecc/index2.php>

LREC 2006 - 5th Conference on Language Resources and Evaluation

24-26 May 2006

Genova, Italy

<http://www.lrec-conf.org>

The Third European Summer School on Ontological Engineering and the Semantic We  
(SSSW-2005)

10-16th July 2005

Cercedilla, Spain

<http://babage.dia.fi.upm.es/sssw05/>

The Second European Semantic Web Conference (ESWC05)

29 May-1 June 2005

Heraklion, Greece

<http://www.eswc2005.org/>

FOMI 2005 - 1st workshop Formal Ontologies Meet Industry

CASTELNUOVO DEL GARDA (VR) – ITALY

9-10 June 2005

<http://fandango.cs.unitn.it/fomi/>

Dagstuhl Seminar on Semantic Grid Convergence of Technologies

3-8 July 2005, Seminar N° 05271

Wadern, Germany

<http://www.dagstuhl.de/05271/>

The Third European Summer School on Ontological Engineering and the Semantic Web  
(SSSW-2005)

10-16 July 2005

Cercedilla, Spain

<http://babage.dia.fi.upm.es/sssw05/>

EUROLAN-2005: Language Resources and Technologies for Multilingual Semantic Webs

Venue: Cluj-Napoca, heart of Transylvania, Romania

25 July-6 August 2005

<http://www.cs.ubbcluj.ro/eurolan2005/>

1st International IFIP/WG12.5 Working Conference on Industrial Applications of Semantic Web

25-28 August 2005,

University of Jyväskylä, Jyväskylä, Finland

<http://www.jyvaskyla.fi/international/>

Third International Conference on Business Process Management (BPM 2005)

6-8 September 2005

Nancy, France

<http://www.deri.at/events/workshops/bpm2005/>

FOnt 2005 - Foundational Aspects of Ontologies

11 September 2005

Koblenz, Germany

<http://www.aifb.uni-karlsruhe.de/WBS/phi/FOnt2005/>

Third International Conference on Knowledge Capture (KCap05)

2-5 October 2005

Banff, Canada

<http://www.kcap05.org/>

Semantic Web Days

Munich, Germany

6-7 October 2005

<http://www.semantic-web-days.net/>

2005 AAAI Fall Symposium Series

3-6 November 2005

Arlington, Virginia, USA

<http://www.daml.ecs.soton.ac.uk/AAAI-FSS05/>

4th International Semantic Web Conference (ISWC2005)

7-11 November 2005

Galway, Ireland

<http://iswc2005.semanticweb.org/>

"ECOWS 2005 - The European Conference on Web Services (ECOWS)"

14-16 November 2005

Växjö, Sweden

<http://wsc.info/ecows2005/>

SEMANTICS 2005 - Semantic Systems in the Knowledge Society - Challenges & Opportunities

23 – 25 November 2005

Vienna, Austria

<http://www.semantics2005.net/>

2nd European Workshop on the Integration of Knowledge, Semantic and Digital Media

Technologies (EWIMT)

30 November -1 December 2005

London, UK

<http://www.acemedia.org/ewimt2005>