

Proceedings of the

KWEPSY2007

Knowledge Web PhD Symposium 2007

**co-located with the 4th Annual European Semantic Web
Conference [ESWC2007]**

The logo for ESWC 2007 features the text "ESWC 2007" in a bold, black, sans-serif font. The "7" is highlighted with a green-to-yellow gradient. The text is set against a light green rectangular background.

June 6, 2007

Innsbruck, Austria

Edited by

Elena Simperl, University of Innsbruck, Austria
Joerg Diederich, L3S Research Center, Hannover, Germany
Guus Schreiber, Vrije Universiteit Amsterdam, Netherlands

© 2007 for the individual papers by the papers' authors. Copying permitted for private and academic purposes. Re-publication of material on this page requires permission by the copyright owners.

Table of Contents

| | |
|---|----|
| Foreword | 4 |
| Sponsors | 9 |
| The technical program included the following full papers: | |
| <i>Caching for Semantic Web Services</i> , Michael Stollberg, DERI, University of Innsbruck | 10 |
| <i>Towards Novel Techniques for Reasoning in Expressive Description Logics based on Binary Decision Diagrams</i> , Uwe Keller, DERI, University of Innsbruck | 15 |
| <i>Process Mediation in Semantic Web Services</i> , Emilia Cimpian, DERI, University of Innsbruck | 21 |
| <i>Scalable Web Service Composition with Partial Matches</i> , Adina Sirbu, Jörg Hoffmann, DERI, University of Innsbruck | 26 |
| <i>Improving Email Conversation Efficiency by Enhancing Email with Semantics</i> , Simon Scerri, DERI, National University of Ireland Galway | 31 |
| <i>Towards Distributed Ontologies with Description Logics</i> , Martin Homola, Comenius University | 36 |
| <i>A Framework for Distributed Reasoning on the Semantic Web Based on Open Answer Set Programming</i> , Cristina Feier, DERI, University of Innsbruck | 41 |
| <i>Logic as a power tool to model negotiation mechanisms in the Semantic Web Era</i> , Azzura Ragone, SisInfLab, Politecnico di Bari, Italy | 46 |
| <i>Improving the Usability of Large Ontologies by Modularization</i> , Anne Schlicht, University of Mannheim | 52 |
| <i>Inferential Ontology Learning</i> , Vit Novacek, DERI, National University of Ireland Galway | 57 |
| <i>Imprecise SPARQL: Towards a Unified Framework for Similarity-Based Semantic Web Tasks</i> , Christoph Kiefer, Department of Informatics, University of Zurich | 63 |
| <i>Semiautomatic Creation of Semantic Networks</i> , Lars Bröcker, Fraunhofer IAIS | 68 |
| The program was complemented by a poster session as follows: | |
| <i>Towards Cross-Media Document Annotation</i> , Ajay Chakravarthy, Department of Computer Science, Sheffield | 73 |
| <i>Semantic Business Process Modeling</i> , Yan Zhixian, DERI, University of Innsbruck | 75 |
| <i>Towards Open Ontology Engineering</i> , Katharina Siorpaes, DERI, University of Innsbruck | 77 |
| <i>Ontology-based Virtual Data Integration for E-Science Grids</i> , Andreas Langeegger, Institute of Applied Knowledge Processing, Johannes Kepler University Linz | 79 |
| <i>Research on collaborative information sharing systems</i> , Davide Eynard, Dipartimento di Elettronica e Informazione, Politecnico di Milano | 81 |
| <i>On the communication and coordination issues of Semantic Web Services using Triple Space Computing</i> , Omair Shafiq, DERI, University of Innsbruck | 83 |
| <i>Reasoning with Large Data Sets</i> , Darko Anicic, DERI, University of Innsbruck | 85 |
| <i>Towards a Semantic Wiki for Science</i> , Christoph Lange, Computer Science, Jacobs University Bremen | 87 |
| <i>Ontology-Driven Management of Space Middleware</i> , Reto Krummenacher, DERI, University of Innsbruck | 89 |
| <i>Intelligent Search in a Collection of Video Lectures</i> , Angela Fogarolli, Dept. of Information and Communication Tech., University of Trento | 91 |
| <i>A Collaborative Semantic Space for Enterprise</i> , Alexandre Passant, Laboratoire LaLICC, Université Paris IV Sorbonne | 93 |

| | |
|--|------------|
| <i>A Directed Hypergraph Model for RDF</i> , Amadis Antonio Martinez Morales, Universidad de Carabobo, Venezuela | 96 |
| <i>Applying Semantic Technologies to the Design of Open Service-oriented Architectures for Geospatial Applications</i> , Thomas Usländer, Fraunhofer IITB | 98 |
| <i>Pattern-based Ontology Construction</i> , Eva Blomqvist, Jönköping University | 100 |
| <i>Semantic Group Formation</i> , Asma Ounnas, School of Electronics and Computer Science, University of Southampton | 102 |
| <i>Combining HTN-DL Planning and CBR to compound Semantic Web Services</i> , Antonio Sanchez-Ruiz, Dep. Ingenieria del Software e Inteligencia Artificial, Universidad Complutense de Madrid | 104 |
| <i>Ontology Mapping Specification Language</i> , Francois Scharffe, DERI, University of Innsbruck | 106 |

The workshop Website is available online at <http://ontoworld.org/wiki/KWEPSY2007>

The Knowledge Web PhD Symposium Series

The [Knowledge Web PhD Symposium KWEPSY](#) aims at bringing together doctoral students within the Semantic Web community to open their work up to discussion in a European forum, and to obtain valuable feedback from leading scientists in the field. Participants to the symposium receive constructive comments with respect to topic-specific research issues and are assisted in formulating a coherent research narrative for their doctoral work. Though organized under the umbrella of [Knowledge Web](#), the symposium is open to all PhD students carrying out research on topics related to the Semantic Web, whilst priority is given to 1st/2nd year PhD students, because they are still in the process of defining the scope of their research.

Students submit an extended abstract, structured in accordance to a pre-defined template, which has been designed to highlight the key methodological components required for a sound research narrative. The submission needs to address the following aspects:

- Describe the research problem of the PhD thesis and argument its relevant for the Semantic Web area.
- Describe the state of the art, emphasizing the need for improvement and the feasibility of your approach.
- Summarize the expected contributions and outline the real-world use cases (applications, target audience) which will mainly benefit from your work.
- Sketch the research methodology that you have adopted (or you are planning to adopt), in particular your approach to evaluating/validating the results.
- Describe your proposed approach, clearly differentiating between the results achieved so far, the remaining work and the (planned) evaluation.
- Compare and contrast your approach with other existing approaches, in particular highlighting the shortcomings of other approaches, which your approach is planning to tackle.
- Conclude your summary with an outline of the planned future work.

Papers should not exceed 5 pages and are peer-reviewed by at least two members of the scientific advisory board. The submissions are reviewed against the following criteria (in this order):

- Conformance of the submitted abstract to the given template.
- Novelty and originality of the research work.
- Rigorousness and scientific soundness of the overall approach and of the results so far.
- Clarity of the presentation.
- Relevance of the work with respect to the Semantic Web field.

The selected participants are given the opportunity to open their work up to discussion in front of other students and an expert audience (either in a regular presentation session or in a poster session). Each accepted contribution is assigned to a scientific advisor who provides extended feedback to the presented research achievements and to the accuracy of the applied methodology. In addition to full papers, a limited number of papers is accepted as posters, for which the authors are required to submit a 2 page version of the original submission.

The symposium is scheduled as a full-day event, consisting of full paper presentations and a poster session. Each full paper is presented in a talk of 25 minutes (15 minutes presentation, 10 minutes discussion). As a general template for the presentations the speakers are recommended to use the following structure:

- Problem statement (1-2 slides)
- Research questions and expected contributions (1 slide)
- Proposed solution (4-6 slides)
- Evaluation or evaluation plans (1-2 slides)
- Future work (1 slide)

Best papers are selected by the scientific advisors and awarded during the symposium.

The Knowledge Web PhD Symposium has been held in 2006 and 2007 co-located with the European Semantic Web Conference ESWC.

KWEPSY 2007

The KWEPSY 2007 PhD Symposium brought together 40 researchers, be that doctoral students or senior researchers. The symposium program included 12 full paper presentations, a poster session and extensive discussions. In particular scientific advisors of the accepted papers were kind to give in-depth feedback of the work surveyed.

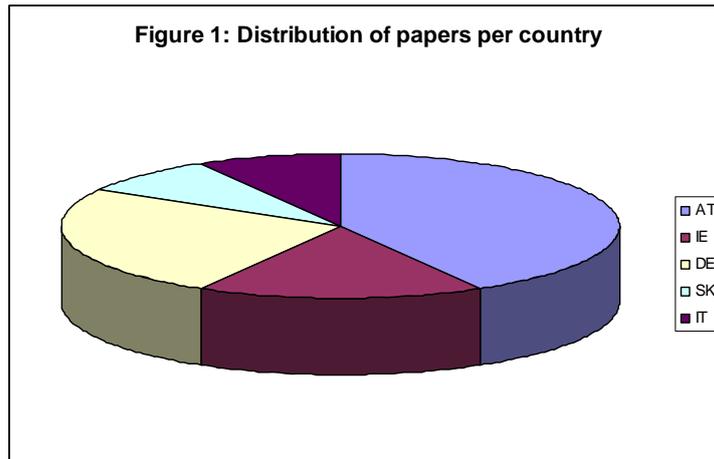
The symposium organizers, Elena Simperl, Jörg Diederich and Guus Schreiber, received 55 submissions of papers in response to the call for contributions. As a result of the peer reviewing process, 12 full papers and 17 posters of these were selected for publication in these proceedings. The program committee consisted of the following Semantic Web experts from industry or academia: **Alain Leger**, France Telecom, France, **Asuncion Gomez Perez**, Universidad Politecnica Madrid, Spain, **Anupriya Ankolekar**, University of Karlsruhe, Germany, **Axel Polleres**, University Rey Juan Carlos, Spain, **Daniel Omedilla**, L3S Research Center, Hannover, Germany, **Carole Goble**, University of Manchester, UK, **Diana Maynard**, University of Sheffield, UK, **Elena Simperl**, University of Innsbruck, Austria, **Enrico Franconi**, Free University of Bozen-Bolzano, Italy, **Enrico Motta**, The Open University, UK, **Fabien Gandon**, INRIA Sophia-Antipolis, France, **Frank van Harmelen**, Vrije Universiteit Amsterdam, Netherlands, **Guus Schreiber**, Vrije Universiteit Amsterdam, Netherlands, **Heiner Stuckenschmidt**, University of Mannheim, Germany, **Holger Wache**, Vrije Universiteit Amsterdam, Netherlands, **Ilya Zaihrayeu**, University of Trento, Italy, **Jeff Z. Pan**, University of Aberdeen, UK, **Jerome Euzenat**, INRIA Rhone-Alpes, France, **Jörg Diederich**, L3S Research Center, Hannover, Germany, **Sebastian Schaffert**, Salzburg Research, Austria, **John Breslin**, NUI Galway, Ireland, **Lora Aroyo**, University of Eindhoven, Netherlands, **Lyndon Nixon**, Free University of Berlin, Germany, **Marco Ronchetti**, University of Trento, Italy, **Martin Dzbor**, The Open University, UK, **Michal Zaremba**, University of Innsbruck, Austria, **Pavel Shvaiko**, University of Trento, Italy, **Peter Haase**, University of Karlsruhe, Germany, **Philipp Cimiano**, University of Karlsruhe, Germany, **Richard Benjamins**, Isoco, Spain, **Robert Tolksdorf**, Free University of Berlin, Germany, **Rose Dieng**, INRIA, France, **Sergio Tessaris**, Free University of Bozen-Bolzano, Italy, **Stefan Decker**, NUI Galway, Ireland, **Tomas Vitvar**, NUI Galway, Ireland, **Valentina Tamma**, University of Liverpool, UK, **Walter Binder**, Lugano University, CH, **Wolfgang Nejdl**, L3S Research Center, Hannover, Germany, **Yiannis Kompatsiaris**, Centre for Research and Technology Hellas, Greece, **York Sure**, University of Karlsruhe, Germany

Several members of the program committee agreed to become a scientific advisor of at least one of the student who were accepted to give a presentation in the symposium. They were **Diana Maynard**, University of Sheffield, UK, **Elena Simperl**, University of Innsbruck, Austria, **Enrico Franconi**, Free University of Bozen-Bolzano, Italy, **Heiner Stuckenschmidt**, University of Mannheim, Germany, **Holger Wache**, Vrije Universiteit Amsterdam, Netherlands, **Jerome Euzenat**, INRIA Rhone-Alpes, France, **Jörg Diederich**, L3S Research Center, Hannover, Germany, **Sebastian Schaffert**, Salzburg Research, Austria, **Peter Haase**, University of Karlsruhe, Germany.

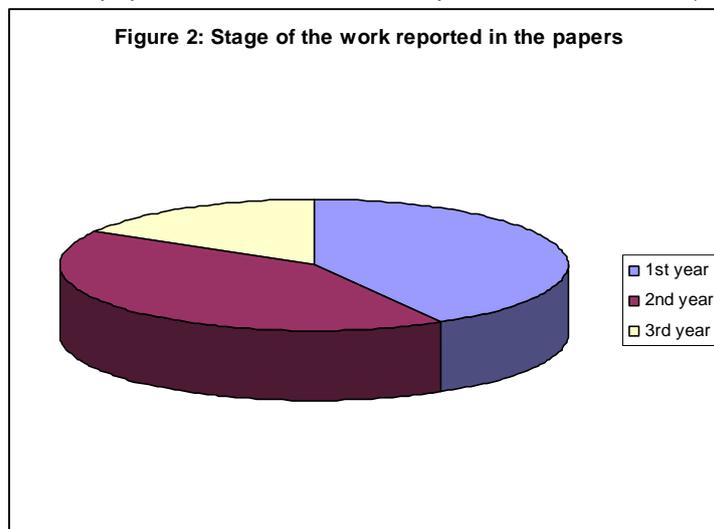
The organization committee would like to thank all PC members and in particular the scientific advisors for their thorough and substantial reviews, which were crucial for the success of the actual event.

At the beginning of the symposium Elena Simperl gave a short introductory talk, which outlined the motivation and objectives of the symposium, introduced the technical program and the best paper award. The technical program consisted of three sessions of paper presentations, a poster session, and a wrap-up session in which the attendees participated in a lively discussion on the general objectives, the format and the organization of the symposium.

The presentations held on this workshop covered the areas Semantic Web Services, languages and reasoning, ontology engineering, information extraction and ontology learning. The authors were affiliated to institutions widely spread across Europe, with a slight majority of Austrian institutions which can be traced back to the location of the event (Figure 1).



Further on, the work reported in the accepted papers was in various stages, from early to very advanced, while most of the papers did not describe completed PhD research (Figure 2).



The technical program included the following full papers:

- *Caching for Semantic Web Services*, Michael Stollberg, Digital Enterprise Research Institute, University of Innsbruck
- *Towards Novel Techniques for Reasoning in Expressive Description Logics based on Binary Decision Diagrams*, Uwe Keller, Digital Enterprise Research Institute, University of Innsbruck
- *Process Mediation in Semantic Web Services*, Emilia Cimpian, Digital Enterprise Research Institute, University of Innsbruck
- *Scalable Web Service Composition with Partial Matches*, Adina Sirbu, Jörg Hoffmann, Digital Enterprise Research Institute, University of Innsbruck
- *Improving Email Conversation Efficiency by Enhancing Email with Semantics*, Simon Scerri, Digital Enterprise Research Institute, National University of Ireland Galway
- *Towards Distributed Ontologies with Description Logics*, Martin Homola, Comenius University
- *A Framework for Distributed Reasoning on the Semantic Web Based on Open Answer Set Programming*, Cristina Feier, Digital Enterprise Research Institute, University of Innsbruck
- *Logic as a power tool to model negotiation mechanisms in the Semantic Web Era*, Azzura Ragone, SisInfLab, Politecnico di Bari, Italy
- *Improving the Usability of Large Ontologies by Modularization*, Anne Schlicht, University of Mannheim
- *Inferential Ontology Learning*, Vit Novacek, Digital Enterprise Research Institute, National University of Ireland Galway
- *Imprecise SPARQL: Towards a Unified Framework for Similarity-Based Semantic Web Tasks*, Christoph Kiefer, Department of Informatics, University of Zurich
- *Semiautomatic Creation of Semantic Networks*, Lars Bröcker, Fraunhofer IAIS

The program was complemented by a poster session as follows:

- *Towards Cross-Media Document Annotation*, Ajay Chakravarthy, Department of Computer Science, Sheffield
- *Semantic Business Process Modeling*, Yan Zhixian, Digital Enterprise Research Institute, University of Innsbruck
- *Towards Open Ontology Engineering*, Katharina Siorpaes, Digital Enterprise Research Institute, University of Innsbruck
- *Ontology-based Virtual Data Integration for E-Science Grids*, Andreas Langeegger, Institute of Applied Knowledge Processing, Johannes Kepler University Linz
- *Research on collaborative information sharing systems*, Davide Eynard, Dipartimento di Elettronica e Informazione, Politecnico di Milano
- *On the communication and coordination issues of Semantic Web Services using Triple Space Computing*, Omair Shafiq, Digital Enterprise Research Institute, University of Innsbruck
- *Reasoning with Large Data Sets*, Darko Anicic, Digital Enterprise Research Institute, University of Innsbruck
- *Towards a Semantic Wiki for Science*, Christoph Lange, Computer Science, Jacobs University Bremen
- *Ontology-Driven Management of Space Middleware*, Reto Krummenacher, Digital Enterprise Research Institute, University of Innsbruck
- *Intelligent Search in a Collection of Video Lectures*, Angela Fogarolli, Dept. of Information and Communication Tech., University of Trento
- *A Collaborative Semantic Space for Enterprise*, Alexandre Passant, Laboratoire LaLICC, Université Paris IV Sorbonne
- *A Directed Hypergraph Model for RDF*, Amadis Antonio Martinez Morales, Universidad de Carabobo, Venezuela
- *Applying Semantic Technologies to the Design of Open Service-oriented Architectures for Geospatial Applications*, Thomas Usländer, Fraunhofer IITB
- *Pattern-based Ontology Construction*, Eva Blomqvist, Jönköping University
- *Semantic Group Formation*, Asma Ounnas, School of Electronics and Computer Science, University of Southampton
- *Combining HTN-DL Planning and CBR to compound Semantic Web Services*, Antonio Sanchez-Ruiz, Dep. Ingeniería del Software e Inteligencia Artificial, Universidad Complutense de Madrid
- *Ontology Mapping Specification Language*, Francois Scharffe, Digital Enterprise Research Institute, University of Innsbruck

From the accepted full papers mentioned above the following three have been selected as best paper candidates based on the recommendations of the reviewers:

- *Caching for Semantic Web Services*, Michael Stollberg, Digital Enterprise Research Institute, University of Innsbruck
- *Towards Distributed Ontologies with Description Logics*, Martin Homola, Comenius University, Slovakia
- *Improving the Usability of Large Ontologies by Modularization*, Anne Schlicht, University of Mannheim, Germany

The best paper award was sponsored by the [BIT Joint School for Information Technology](#) and was won by Anne Schlicht from the University of Mannheim.

Conclusions and outlook

The feedback we received in the wrap-up session was similar to the previous edition of the event (especially mentioning this time the focus on 1st/2nd year students), even though the time for presentation and discussion was considered to be too short and also the poster session should have been longer. An introductory session for the scientific advisors was considered useful and will be re-introduced next year. Furthermore, some participants complained that the feedback they received from the reviewing process was very high level. This was because of the overwhelming number of submissions, which could not have been foreseen and which increased the workload for the reviewers considerably. A nice idea (though difficult to implement) was to actually make the mentors present the work of the student to deepen the discussion on the topic (though this will exclude the ability of the students to train presentations about their theses).

In summary, the Knowledge Web PhD symposium KWEPSY 2007 has been positively evaluated by both the mentors and the attending PhD students. The setup of the symposium was very successful and we plan only minor modification, such as the introduction of the mentors' introductory presentations or a higher number of scientific advisors to be able to accommodate a larger number of submissions expected for 2008.

Starting from 2007, the symposium has become an integral part of the European Semantic Web Conference (ESWC) which ensures that the symposium will continue to exist even beyond the end of the Knowledge Web project. This is also underlined by the fact that several institutions in the Semantic Web field such as the European Association for Semantic Web Education EASE and the Semantic Technologies Institute STI International decided to officially endorse the PhD symposium starting from next year.

*Innsbruck, Hannover and Amsterdam
August, 2007*

*Elena Simperl
Jörg Diederich
Guus Schreiber*

Sponsors

The PhD Symposium is supported by

