E-D12

Final Report on Summer Schools

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Abstract

This deliverable according to the revised JPA combines two previously planned deliverables E-D10.2 and E-D12. It consists of three chapters.

Chapter 1 reports on "Reasoning Web 2007", the third REWERSE Summer School.

Chapter 2 presents in detail the programme of "Reasoning Web 2008", the first Summer School after the end of REWERSE.

Chapter 3 describes the final plans for organising Summer Schools after the end of the REWERSE funding period.

Keyword List

semantic web, reasoning, education and training, summer school

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Final Report on Summer Schools

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Contents

Chapter 1

Reasoning Web 2007

The Summer School "Reasoning Web 2007" (see `http://reasoningweb.org/2007`) took place at the Technical University Dresden in Germany from Monday 3rd September 2007 to Friday 7th September 2007.

1.1 Programme

A detailed description of the programme of Reasoning Web 2007 was given in deliverable E-D10-1 [Eisinger and Małuszyński, 2007] and is not repeated here. An overview of the programme can be found at `http://reasoningweb.org/2007` and in the table of contents of the summer school proceedings [Antoniou et al., 2007].

1.2 Proceedings and Teaching Material

As described in deliverable E-D10-1 [Eisinger and Małuszyński, 2007], each course was accompanied by a full paper in the summer school proceedings [Antoniou et al., 2007] published in the "Lecture Notes in Computer Science" series by Springer. An online version is available at `http://www.springerlink.com/content/g9662427711j/`, publisher information can be found at `http://www.springer.com/east/home/computer/lncs?SGWID=5-164-22-173756105-0`.

The lecturers of Reasoning Web 2007 uploaded their slides and similar material used in giving the courses to REASE (`http://rease.semanticweb.org`). REASE is the "Repository of EASE", the joint KnowledgeWeb and REWERSE educational infrastructure described in more detail in deliverable E/T-D14 [Diederich et al., 2008].

Like in previous years, the Reasoning Web 2007 courses were classified according to the Semantic Web topic hierarchy (`http://ontoworld.org/wiki/Semantic_Web_Topic_Hierarchy`). Deliverable E-D11 [Małuszyński et al., 2007] gives a detailed account of the topic hierarchy's initiation, history, structure, and present range of usage.

1.3 Participants

The selection process for participants was the same as in previous years (for a description see deliverable E-D8-1 [Eisinger and Małuszyński, 2006b]).

The number of persons who applied for participation was 79. The selection committee initially admitted 45 applicants, 18 of whom cancelled after being admitted. The cancelled places were then filled from a reserve list, such that altogether 45 + 18 = 63 applicants were admitted. The reasons for this exceptionally high number of cancellations are not quite clear. But the total number of applications was enough to be able to compensate for the cancellations.

5 participants chosen by the selection committee presented their PhD work at the Summer School.

The percentage of REWERSE related people was 21% of all applicants and 24% of the accepted applicants. These figures continue the trend that could be observed already in the previous year. They indicate that Reasoning Web seems to have emancipated itself from REWERSE and to attract sufficient external interest to enable its durability beyond the end of REWERSE (see also Chapter 3).

1.4 Evaluation

The participants were asked to provide feedback by filling in a questionnaire. It asked the same questions as in previous years, but unlike in previous years it was distributed on paper during the last day of the Summer School and not by email after the event.

The purpose of distributing the questionnaire on the spot was to see whether this would influence the return rate. In fact it did not. The number of completed questionnaires was 33 and thus almost the same as in the year before (34). However, the answers are likely to reflect more spontaneous reactions and not the lasting impression after the participants had some time to digest the information they learned and to study the lecture notes more thoroughly.

The ratings were as follows.

Scale:	1 = very good, ..., 3 = acceptable, ..., 5 = very bad
avg, dev:	average and standard deviation taken over all participants
diff:	changes compared to 2006/2005 (negative values mean better than previously). Changes between −0.3 and +0.3 are not shown.

		avg (*diff*)	*dev*
1.	Summer School Programme		
1.1	lecture subjects:	1.8 (−0.5/)	0.5
1.2	number of lectures:	1.8 (−0.4/−0.4)	0.9
1.3	PhD presentations:	2.1 (−0.8/−0.4)	0.5
1.4	feedback to PhD presentations:	2.3 (/−0.4)	0.7
2.	Lectures		
2.1	level of details:	2.0	0.6
2.2	examples:	2.5	0.8
2.3	application aspects:	2.5 (/−0.5)	0.8
2.4	theoretical aspects:	1.7	0.5

		avg	(*diff*)	*dev*
3.	Lecture Notes			
3.1	size:	1.6	(−0.6/)	0.5
3.2	text quality:	1.5	(−0.5/)	0.5
3.3	relationship between lectures and lecture notes:	1.7	(−0.5/)	0.5
4.	Local Arrangements			
4.1	technical facilities (lecture hall, computers):	2.8	(+0.8/+0.8)	1.6
4.2	catering facilities (lunches, coffee break):	1.5	(−0.4/−1.0)	0.5
4.3	bus transfer **not applicable**			
4.4	social programme (excursion and banquet):	1.8		0.9
4.5	recommended hotels:	2.1	(/−0.9)	0.8
	Total average:	2.0		

Characteristics of these ratings:

- The total average is almost exactly "good" and marginally better than in previous years (2007: 1.98; 2006: 2.19; 2005: 2.17).
- For every single question the average rating is better than "acceptable" as it was in 2006.
- The single worst average rating (2.8) was given for 4.1 technical facilities. This obviously refers to the fact that in the lecture building availability and bandwidth of Internet access was rather limited. On the other hand this question also had a significantly higher standard deviation than any others, indicating a wider range of different ratings than for other questions.
- The best average ratings (1.5 to 1.7) were given on the one hand for 4.2 catering facilities, on the other hand for all points concerning the lecture notes and for 2.4 theoretical aspects. The focus of the Summer School had been announced to be foundation-oriented, and apparently the participants' expectations in this respect were satisfied.
- Changes with respect to 2006:
  1. Summer School Programme: better ratings
  2. Lectures: almost no difference
  3. Lecture Notes: uniformly better ratings
  4. Local Arrangements: one worse, one better, rest unchanged

  With the exception of question 4.1, in all cases rated worse than in 2006, the difference is less than 0.1.

The questionnaire also asked for free text comments. Recurring themes were:

- Practical hands-on sessions would be appreciated.
- The average lecturing time was too long, there should rather be more short breaks than few long breaks.
- The quality or difficulty of the lectures was too varying.
- The industrial session seems to have polarised the audience, comments ranging from "out-of-place advertising" to "interesting extension".

1.4.1 Conclusions from the Evaluation

The feedback was forwarded to the PC of the next Summer School (described in Chapter 2). The programme committee of Reasoning Web 2008 emphasised to the lecturers that they include hands-on sessions in their courses.

Concerning the varying quality or difficulty of lectures, part of the problem seems to have been due to the fact that so far the Summer School programmes have been relatively voluminous. In the future, there will be smaller programmes (for financial reasons, see Chapter 3), which will make it easier for the programme committee to ensure a more uniform level for all courses. Regarding the difficulty, the Summer School Board (see Chapter 3) is starting discussions on structuring Summer School programmes into a basic part and an advanced part building on the basic one, especially when the focus of the Summer School is more foundation-oriented, as it was in 2007. It is, however, not yet clear to which extent such a division is feasible.

Chapter 2

Reasoning Web 2008

The location and date of Reasoning Web 2008 will be San Servolo – Venice (Italy), 9th to 13th September 2008 (see `http://reasoningweb.org/2008`). The local organiser is Massimo Marchiori, Università degli Studi di Padova, Italy. The programme committee consists of

- Piero Bonatti (PC Chair), Università Federico II, Napoli, Italy
- Cristina Baroglio, University of Torino, Italy
- Jan Małuszyński, Linköping University, Sweden
- Massimo Marchiori, Università degli Studi di Padova, Italy
- Axel Polleres, DERI, National University of Ireland, Ireland
- Sebastian Schaffert, KIS, Salzburg Research, Austria

2.1 Teaching Material

Each course or talk will again be accompanied by a full paper in the summer school proceedings. Springer has again agreed to publish them in their LNCS series. The papers are submitted to and peer reviewed by the programme committee, which provides feedback to the lecturers and asks them to incorporate these into their final versions in order to ensure the quality standards required for this renowned series. At the time of writing this deliverable the reviewing process has just started and is still ongoing.

Also, like in the previous year, slides and other teaching material will be uploaded to REASE (`http://rease.semanticweb.org`).

2.2 Programme

At its fourth edition, the Reasoning Web summer school, traditionally focused on the foundational issues concerning the development and the use of rule-based languages into the Semantic Web, takes stock of the the actual use of Semantic Web rule languages by presenting the state of the art in research areas that constitute the current and the promising Reasoning on the Web application fields.

In 2008, besides laying out the basic foundational material, the school will also present a range of applications, helping students to find interesting topics for further research. Lecturers,

who are leading researchers in such diverse fields as Bioinformatics, Web Services, Multimedia, and Natural Language Processing, will point out which Semantic Web ideas and techniques have actually been adopted so far, which weren't (and why), and which application needs are still waiting to be tackled with semantic techniques.

The courses selected by the programme committee can be grouped into the following categories. The numbers in square brackets relate the courses to the Semantic Web topic hierarchy (`http://ontoworld.org/wiki/Semantic_Web_Topic_Hierarchy`).

1. Foundations of Knowledge Representation and Reasoning
   - Rules and Ontologies [1.1, 2.3, 2.4, 2.4.5]
   - Concepts and Techniques for Reasoning about Uncertainty [1.1.3]
2. Natural Language Processing
   - Attempto Controlled English for Knowledge Representation [1.1, 3.1]
3. Semantic Multimedia
   - Semantic Multimedia Management [2.7.4]
4. Social Networks
   - Applications of Semantic Web Methodologies and Techniques to Social Networks and Social Media Sites [3.3]
   - The KIWI Project and Comments on Writing FP7 Project Applications
5. Bioinformatics
   - Applications of Semantic Web Methodologies and Techniques to Biology and Bioinformatics [2.7.3]
6. Web Services
   - Semantic Web Services [3.10]

The following list is ordered by these categories. It does not include PhD presentations.

P 1 Foundations of Knowledge Representation and Reasoning

P 1.1 Rules and Ontologies

Authors/Lecturers:
Thomas Eiter (`http://www.kr.tuwien.ac.at/staff/eiter/`)
Axel Polleres (`http://www.polleres.net/`)

Abstract:

Rules and ontologies play a key role in the Semantic Web Layer Architecture, as they are used to ascribe meaning to data on the Web, and to reason about them. While the Ontology Layer of the Semantic Web is quite developed, and the Web Ontology Language (OWL) is a W3C recommendation since a couple of years already, the Rules Layer is far less developed and active area of research; a number of initiatives and proposals have been made so far, which have quite different properties and features. In particular, the issue of having rules on top or aside ontologies in OWL is an important issue that has not been completely settled yet.

This lecture aims at presenting rule-based approaches for the Semantic Web, in view of RDF/RDFS and ontology languages for the Web, in particular OWL and its dialects. To this end, the first part of the lecture will be devoted to present and illustrate some rule-based approaches in which semantic combination with expressive ontologies does not play a major role. The second part then considers such combinations, which have been/are currently developed. The goal is that the student is, on the one hand, informed about various approaches to rules for the Semantic Web, the features they have, and their properties and relationships. On the other hand, s/he should also know about the problems that come along with having such rules, and how this problems might be overcome; furthermore, issues for research should be pointed out. The focus will be on deductive rules languages approaches with a 2-valued semantics; probabilistic, fuzzy, dynamic (event-condition-action rules, production rules) approaches, etc. will not be considered in depth.

Contents:

1. Introduction

   This part will introduce briefly the Semantic Web Stack and, a bit more in detail, RDF and RDFS as needed for the rest of the lecture.

2. Rule-based approaches for the Semantic Web

   This part will mention and partially illustrate the main rule-based languages for the Semantic Web, where the focus is on the rule-based approaches, on top of RDF/RDFS, but not on integration with ontology languages. If possible (to be explored), a uniform syntax (e.g., RIF presentation syntax will be used). Among the candidate rule languages are RuleML, F-Logic, N3, and also SPARQL which may be viewed as a rudimentary rules language. Implemented systems such as Jena Rules, Sesame, Flora-2, OWL-IM, and dlvhex will be surveyed. The attendee/student should get some information not only about the theory but also pointers to systems and implementations so that s/he can experiment with them.

The ideas is that the different approaches are briefly presented and characterised according to criteria such as a) constructs that are supported (e.g. negation(s), direct RDF support, calls to ontology reasoners, disjunction, etc), or b) the kind of semantics (e.g. single canonical model, multiple canonical models, if applicable).

3. Combining rules and ontologies

   This part turns to the issue of rules in combination with ontologies like in OWL, and starts with recalling the differences/similarities between logic-based rules and ontologies in classical logic (noticeably, in OWL) so that one can understand the problem. Then, different generic settings for a combination (interfacing, tight integration, full integration) will be described.

4. Selected combination approaches

   The last part of the lecture then presents some approaches from the different settings in more detail, where the emphasis is on the more recent/important ones. Candidate approaches are SWRL, DL-safe rules, non-monotonic DL-programs, Quantified Equilibrium Logic, DL+log, Hybrid MKNF knowledge bases, from which a selection will be made.

5. Outlook and conclusion

   This part will report on current developments (e.g., emerging RIF results and implementations) and issues for research.

Presenter:

Prof. Dr. Thomas Eiter is a full professor (since 1998) in the Faculty of Informatics at Vienna University of Technology (TU Wien), Austria and head of the Institute of Information Systems. Before (1996-1998), he was an associate professor of Computer Science at the University of Giessen, Germany. Dr. Eiter's current research interests include knowledge representation and reasoning, logic programming, database foundations, knowledge-based agents, complexity in AI, and logic in computer science. He has more than 150 publications in these areas, many of which appeared in top journals and conferences. He has been involved in a number of national and international research projects, including the EU Networks of Excellence Compulog, CologNet, and REWERSE, and the EU Working Group WASP. He is a PC co-chair of RuleML 2006, and co-chaired in the past KI 2001, LPNMR 2001, FOIKS 2002, and ICDT 2005. He is on the advisory boards of the Journal of Artificial Intelligence Research (JAIR) and the Journal on Theory and Practice of Logic Programming (TPLP), and a former associate editor of the IEEE Transactions on Knowledge and Data Engineering (TKDE).

P 1.2 Concepts and Techniques for Reasoning about Uncertainty

Authors/Lecturers:

Umberto Straccia (`http://gaia.isti.cnr.it/~straccia/`)

Abstract:

There is currently a strong interest in using and extending AI techniques, systems, and concepts to the World Wide Web. In particular, managing uncertainty and/or vagueness is starting to play an important role in Semantic Web research.

We present the state of the art in representing and reasoning with uncertain and/or vague knowledge in the Semantic Web. Since web content and user requests are very likely to be

uncertain and/or vague, there is a strong need to deal with such forms of knowledge in the Semantic Web. This need to deal with uncertainty and vagueness Semantic Web has been recognised by a large number of research efforts in this direction.

Our aim is at making attendees familiar with the concepts and techniques for representing and reasoning with uncertain and vague knowledge in current Semantic Web ontology and rule languages (and their combination), which should help the attendees to get insights on main features of the formalisms and tools proposed so far.

Presenter:

Umberto Straccia was born in 1965 in Zurich (Switzerland), and holds a Ph.D. in Computer Science from the University of Dortmund (Germany), obtained in 1999. He is currently researcher at the "Istituto di Scienze e di Tecnologie dell'Informazione" (ISTI) of the Italian National Council of Research (CNR). He's main research interests include in the broad sense Knowledge Representation and Reasoning (KRR) and Information Retrieval (IR). In particular, he has interests in logics for KRR and the Semantic Web (in particular, logic programming and description logics), the management of uncertainty, and logic-based approaches to multimedia information retrieval. The activities have been mainly carried out in the context of EU funded projects he has been co-ordinated and/or has been involved in. He participates in the scientific committee of various conferences involving both research areas.

P 2 Natural Language Processing

P 2.1 Attempto Controlled English for Knowledge Representation

Authors/Lecturers:
Norbert E. Fuchs (`http://www.ifi.unizh.ch/rerg/people/fuchs/`)

Abstract:

Attempto Controlled English (ACE) is a controlled natural language, i.e. a precisely defined, tractable subset of full English that can be automatically and unambiguously translated into first-order logic. ACE seems completely natural, but is actually a formal language, concretely it is a first-order logic language with the syntax of a subset of English. Thus ACE is human and machine understandable. As a formal language, ACE has to be learned, which – as experience shows – takes about two days. ACE was originally developed to specify software programs, but has since been used as a general knowledge representation language. For instance, we specified in ACE an automated teller machine, Kemmerer's library data base, Schubert's Steamroller, data base integrity constraints, Kowalski's subway regulations, and several ontologies. ACE served as natural language interface for the model generator EP Tableaux, for a FLUX agent, and for MIT's Process Handbook.

To support automatic reasoning in ACE, we have developed the Attempto Reasoner (RACE). RACE proves that one ACE text is the logical consequence of another one, and gives a justification for the proof in ACE. Furthermore, ACE has found several applications within the semantic web. We have developed translations of ACE into and from OWL 1.1 that are implemented as a plug-in for the ontology editor Protégé. The tool AceWiki combines controlled natural language with the ideas and technologies of the semantic web and with the concepts of wikis. AceRules is a forward chaining rule system that offers three different semantics.

The course will give a concise introduction into ACE and its associated tools, and offer hands-on experience with all tools.

The course is self-contained and requires only elementary linguistic knowledge and some knowledge of first-order logic. More information can be found at `http://attempto.ifi.uzh.ch`

Contents:

1. Why Controlled Natural Languages?
2. Attempto Controlled English (ACE) in a Nutshell
3. From ACE to First-Order Logic
4. Reasoning in ACE
5. Semantic Web Applications: ACE $\longleftrightarrow$ OWL, AceWiki, AceRules
6. Overview of other Applications of ACE
7. Hands-On Experiences
   - ACE Parser & Paraphraser
   - RACE

- ACE Protégé Plug-In
- AceWiki
- AceRules

Presenter:

Norbert Fuchs is senior research fellow with the Department of Informatics, University of Zurich. His main research interests are requirements engineering, declarative and executable specifications, controlled natural language as specification language, logic program synthesis and transformation, and logic programming in general. His academic background is theoretical physics (MSc, PhD, University of Tübingen, Germany). He spent more than ten years in industry (IBM in Germany and USA, Siemens and Mettler in Switzerland) working on several large software projects. In 1984/85, he was visiting professor at the Department of Computer Science of the University of Southern California, Los Angeles.

P 3 Semantic Multimedia

P 3.1 Semantic Multimedia Management

Authors/Lecturers:
Steffen Staab (http://www.uni-koblenz.de/~staab/)

Abstract:
In this course we will deal with issues of semantics in multimedia management. Such issues involve:

1. the representation of multimedia metadata using Semantic Web ontologies;
2. the interpretation of multimedia objects by various means of reasoning;
3. the retrieval of multimedia objects by means of low and high-level (semantic) representations of multimedia;
4. the further processing of multimedia facts in order to determine provenance, certainty and other metaknowledge aspects of multimedia data.

Presenter:
Steffen Staab is associate professor for databases and information systems at the University of Koblenz-Landau, Germany, leading the research group on Information Systems and Semantic Web (ISWeb). His interests lie in researching core technology for ontologies and semantic web as well as in applied research for exploiting these technologies for knowledge management, multimedia and software technology. He has participated in numerous national, European and intercontinental research projects on these different subjects and his research has led to over 100 refereed contributions in journals and conferences. Dr. Staab held positions as researcher, project leader and lecturer at the University of Freiburg, the University of Stuttgart/Fraunhofer Institute IAO, and the University of Karlsruhe and he is a co-founder of Ontoprise GmbH. For more information visit http://isweb.uni-koblenz.de/ and http://www.uni-koblenz.de/~staab/

P 4 Social Networks

P 4.1 Applications of Semantic Web Methodologies and Techniques to Social Networks and Social Media Sites

Authors/Lecturers:
John G. Breslin (`http://sw.deri.org/~jbreslin/`)
Stefan Decker (`http://www.stefandecker.org/`)

Abstract:

Social networking sites such as `MySpace`, `Facebook` and `orkut` and content-sharing sites (that also offer social networking functionality) including `Flickr`, `last.fm` and `del.icio.us` have captured the attention of millions of users as well as billions of dollars in investment and acquisition. As more social networking services (SNSs) form around the connections between people and their objects of interest, and as these "object-centered networks" grow bigger and more diverse, more intuitive methods are needed for representing and navigating the content items in these networks: both within and across social networking sites. Also, to better enable user access to multiple sites, interoperability among SNSs is required in terms of both the content objects and the person-to-person networks expressed on each site. This requires representation mechanisms to interconnect people and objects on the Web in an interoperable, extensible way.

The Semantic Web provide such representation mechanisms: it links people and objects to record and represent the heterogeneous ties that bind us to each other. By using agreed-upon Semantic Web formats to describe people, content objects, and the connections that bind them together, SNSs can interoperate by appealing to some common semantics. Developers are already using Semantic Web technologies to augment the ways in which they create, reuse, and link content on social networking and media sites.

In this course, we will give an overview of various social networking and social media applications, list some of their strengths and limitations, and describe some applications of Semantic Web technology to address issues with social media sites and to enhance the current "Web 2.0" platform with semantics. We will demonstrate how the Semantic Web can serve as a useful platform for linking and for performing operations on diverse person- and object-related data gathered from heterogeneous social networking sites, and show that in the other direction, social media sites can themselves serve as rich data sources for Semantic Web applications.

Contents:

1. Introduction to the course
2. Motivation for applying Semantic Web to social networks and social media sites
3. Introduction to Web 2.0 and social media / social software
   - Overview of content sharing sites
   - Current methods for content syndication
4. Blogging

- Semantic blogging

5. Wikis
   - Semantic wikis
     - Semantic MediaWiki
6. Social networks
   - Object-centered networks
   - Semantic social networks
     - Friend-of-a-Friend (FOAF)
7. Semantically-Interlinked Online Communities (SIOC)
   - How social sites can be connected with SIOC
   - Applications and implementations of SIOC
8. Towards social semantic information spaces

Presenter:

Dr. John Breslin (`http://www.johnbreslin.com/`) was born in Dublin, Ireland. He received the BE degree with 1st class honours and the PhD degree from the National University of Ireland, Galway in 1994 and 2002 respectively. He is currently a researcher and adjunct lecturer at the Digital Enterprise Research Institute at NUI Galway, and is researching semantically-enabled social networks and community portals. He is also leader of the Social Software research group there. He is founder of the SIOC (Semantically-Interlinked Online Communities) project which aims to connect online communities. He worked as a lecturer to Electronic and Computer Engineering students at the Department of Electronic Engineering in NUI Galway from 2000 to 2004. Before that, he was a research officer and postgraduate student at the Power Electronics Research Centre there. He also worked as a visiting scholar at Virginia Tech in 1996. Dr. Breslin received an award for co-authoring the best paper in the IEEE PELS Transactions in 2000. He has received a number of awards for website design, including a Golden Spider for the Irish community website boards.ie, which he co-founded in 2000. The Irish Internet Association presented him with Net Visionary awards in 2005 and 2006. He also supervised the undergraduate runner-up project in the Institution of Engineers of Ireland Siemens Young Engineer of the Year awards in 2003. He organised the first workshop on FOAF, social networks and the Semantic Web in 2004, and the first WebCamp workshop on social networks in 2007. He is chair of the 2nd International ExpertFinder workshop (Finding Experts on the Web with Semantics 2007) and of the 5th International Conference on Social Software (BlogTalk 2008). Dr. Breslin is a member of the Institute of Electrical and Electronics Engineers.

Prof. Dr. Stefan Decker (`http://www.stefandecker.org/`) obtained a Masters degree in Computer Science in 1995 at the University of Kaiserslautern (awarded with distinction). From 1995 to 1999, he worked towards a PhD degree in Computer Science at the University of Karlsruhe (awarded 2002 with distinction). From 1999 to 2002, he worked as a postdoctoral and research associate in the Computer Science Department at Stanford University, and established one of the first Semantic Web research groups. From 2002 to 2005, he worked as a computer scientist and research assistant professor at the Information Sciences Institute of the University of Southern California, USA. In 2003, he was involved in setting up a new research institute (Digital Enterprise Research Institute), leading the Semantic Web research group as a senior

research fellow and adjunct lecturer responsible for ten group members within the institute at the National University of Ireland, Galway. In 2006, Stefan was appointed adjunct professor and director of DERI. His current research interests include the Semantic Web, metadata, ontologies and semi-structured data, web services, and applications for digital libraries, knowledge management, information integration and peer-to-peer technology. He has published around 70 papers as book, journal, conference and workshop contributions. He co-organised around 35 scientific workshops and conferences and has edited several special issues of scientific journals. He was editor-in-chief of Elsevier's Journal of Web Semantics, editoral committee member of the Electronic Transactions on Artificial Intelligence (ETAI) (the Semantic Web), the Journal on Internet Research and the Journal on Web Intelligence and Agent Systems (WIAS), and is recognised as one of the most widely cited Semantic Web scientists. His dissertation work was quoted as one of the inspirations for the DARPA DAML programme, which spans the Semantic Web effort.

P 4.2 The KIWI Project, a Showcase for Semantic Wikis and for Writing FP7 Project Applications

Authors/Lecturers:

Sebastian Schaffert (`http://www.salzburgresearch.at/contact/team_detail.php?person=109`)

Abstract:

The project KIWI (`http://www.kiwi-project.eu/`) is concerned with knowledge management in Semantic Wikis and funded by the European Commission under the Project Number 211932 in the EU Seventh Framework Programme (FP7).

The first part of the talk will give an overview of the project KIWI and its objectives, namely to investigate how knowledge management in highly dynamic environments can be supported using Semantic Wiki technologies, and how Semantic Wikis can be improved to satisfy the requirements of knowledge management.

The second part of the talk is intended to share experience and offer insight into the process of submitting applications in the framework of FP7 Call 3. The KIWI project will be used to exemplify what – in the author's opinion and experience – are "success factors" in a successful project proposal.

Presenter:

Sebastian Schaffert is a senior researcher at the unit for knowledge based information systems at Salzburg Research (`http://www.salzburgresearch.at`) since August 2005. Since October 2006 he is the scientific head of Salzburg NewMediaLab (`http://www.newmedialab.at`).

He studied Computer Science and Educational Sciences at the University of Munich, Germany. He graduated in 2001 as "Diplom-Informatiker" and in 2004 as "Doctor rerum naturalium (Dr.rer.nat.)" with a thesis entitled "Xcerpt: A Rule-Based Query and Transformation Language for the Web". From 1998 to 2000, he was working as system administrator at the University of Munich, and from 2001 to 2005, he was employed as a research and teaching assistant, also at the University of Munich.

Sebastian's research interests are in Web and Semantic Web research, (Semantic) Social Software, XML and semistructured data, as well as functional and logic programming. He has contributed to many scientific conferences as author and program committee member and has

several publications on the rule-based XML query language Xcerpt and on the Semantic Wiki IkeWiki. Besides this, Sebastian is interested in Linux and Open Source software.

P 5 Bioinformatics

P 5.1 Applications of Semantic Web Methodologies and Techniques to Biology and Bioinformatics

Authors/Lecturers:

Paolo Romano (`http://www.nettab.org/promano/`)

Andrea Splendiani (`http://www.sgtp.net/AndreaSplendiani/`)

Abstract:

Semantic Web technologies are extremely appealing for biomedical researchers since they promise to solve many of the daily problems they face while accessing and integrating biological information that is distributed over the Internet and managed by using tools which are extremely heterogeneous and largely not compatible. Otherwise, the complexity of biomedical information and its heterogeneity, together with the need of keeping current production services steadily up and running, make the transition from current semantic-less to future semantic-aware services a huge problem.

Up to now, little has been made for supporting semantic integration. What we need are shared definitions of knowledge domains, i.e. ontologies, association of biological concepts to existing data, metadata information describing information sources and search tools able to make the best use of this additional information. The definition of ontologies and their application to software and database tools may be seen as a first, needed attempt to organize the information, overcoming heterogeneity of data structures. But the problem of associating the information sources and the huge amount of data with concepts defined in these ontologies is a big one. The addition of semantic contents in current databases would give an essential contribution to the best integration of distributed biological information.

The development of metadata for biological information, on the basis of Semantic Web standards, and its definition for all information sources can also be seen as a promising approach for a semantic based integration of biological information. Text mining is of a fundamental importance since literature still is the most relevant information source in biomedical research. Moreover, it is the most clear example of an unstructured information source whose content should be integrated with structured data in order to be fully exploited.

In this paper, authors start by presenting the main characteristics of biomedical information and of related information services that make adoption of semantic web technologies both desirable and complex at the same time. They then present the tools and the applications that have been developed so far, including biomedical ontologies, RDF/OWL data stores, query systems and semantic-aware tools and browsers. Finally, they present current community efforts, such as the activity of W3C interest group, and the perspectives that can be sought for short- and mid-term developments in the field.

The course only requires basic knowledge of semantic web tools: RDF, OWL, SPARQL, GRDDL, Semantic Web Services. Basic knowledge of biological and medical data models is an advantage but is not necessary.

Contents:

1. Characteristics of biological information
2. Reasons for the adoption of semantic tools and related problems
3. From Biomedical Nomenclature to Biomedical Ontologies (incl. use of ontologies for functional profiling)
4. A review of Ontologies for biology and clinical information (incl. case studies, notes on expressiveness, use of URIs)
5. The problem of Life Science identifiers
6. Biomedical applications semantically aware and based on Semantic Web technologies
7. The activity of the W3C interest group on Semantic Web for Health Care and Life Sciences
8. Short- and Mid-term perspectives of a Semantic Biomedical Web

Presenter:

Paolo Romano graduated in Electronic Engineering at the University of Genoa, and got a PhD in BioEngineering at the Polytechnic of Milan. From 1988 to 1990 he has been a free-lance consultant and from 1990 to 1993 he has been Researcher at the Institute of Clinical and Experimental Oncology of the University of Genoa. Since 1993, he is a researcher at the National Cancer Research Institute of Genoa. Since 2004, he is working in the Bioinformatics Structure. His research interests have always been in the field of biomedical data management. He designed and contributed to the development of the Molecular Probe Data Base and of the Cell Line Data Base and its associated hypertext HyperCLDB. He is in charge of the CABRI (Common Access to Biological Resources and Information) network services, offering living resources from European collections. He has been involved in researches on network standards, technologies, tools and applications in bioinformatics. He designed and developed Biowep, the Workflow Enactment Portal for Bioinformatics. He is author of ca. 30 publications in peer-reviewed international journals. He taught academic courses "Bioimages" and "Bioinformatics" at the University of Genoa. He was the creator of Network Tools and Applications in Biology (NETTAB) workshops, that are running annually since 2001. He participated in many Programme Committees and has been a referee for bioinformatics journals. He coordinates the Italian National Network for Oncology Bioinformatics.

Andrea Splendiani graduated in Information Technology Engineering at the Polytechnic of Milan, and got a PhD in Computer Science at the University of Milano-Bicocca. He collaborated with the Department of Biotechnology and Bioscience of the University of Milano-Bicocca on the design and development of microarray databases during his graduation thesis and the first part of his PhD, where he addressed issues relative to microarray data standardization. He later joined the Systems Biology Unit of the Institut Pasteur, where he explored the use of ontologies in systems biology. During this time he collaborated with the BioPAX working group on the standardization of pathway ontologies. He is now a postdoc at the Medical Informatics Department of the University of Rennes 1, where he is working on the European Project Bootstrep. He is in charge of the enrichment of ontological resources to support text-mining.

P 6 Web Services

P 6.1 Semantic Web Services

Authors/Lecturers:
Jorge Cardoso (`http://dme.uma.pt/jcardoso/`)

Abstract:
Web services allow encapsulating an organization's functionality with an appropriate interface and advertising it in the Web. In many cases, Web services can be utilized in an isolated form, but their full potential is achieved through their composition to form Web processes. There is a growing consensus that Web services alone will not be sufficient to develop valuable processes due the degree of heterogeneity, autonomy, and distribution of the Web. Several researchers agree that it is essential for Web services to be machine understandable in order to support all the phases of the lifecycle of Web processes. One solution to create Semantic Web services is by mapping concepts in a Web service description to ontological concepts. Using this approach, users can explicitly define the semantics of a Web service for a given domain. Different approaches to specifying Semantic Web services have been proposed. Examples include OWL-S, WSMO, SWSO and SAWSDL. Using these specifications, the Semantic Web services deployed will allow the annotation, advertisement, discovery, selection, composition, and execution of inter-organization business logic, making the Internet become a global common platform where organizations and individuals communicate among each other to carry out various commercial activities and to provide value-added services.

Presenter:
Jorge Cardoso joined the University of Madeira in March 2003. He previously gave lectures at University of Georgia (USA) and Instituto Politécnico de Leiria (Portugal). While at the University of Georgia he was part of the LSDIS Lab, where he did extensive research on workflow management systems. Currently, he is the Director of SEED Laboratory, a group working Emergent Information Systems which has interests in Workflow Quality of Service, Semantic Workflow Composition, Web services, Web processes, Process Complexity, e-Commerce, and Groupware/CSCW.

Chapter 3

Summer Schools after the End of REWERSE

The first three instances of Reasoning Web, in 2005, 2006, and 2007, were – from the first preparatory discussions up to the last follow-up work[1] – completely within the life time of REWERSE. The next Summer School, Reasoning Web 2008 (Chapter 2) in a sense straddles the end of REWERSE: part of its preparation happened before the end, the rest of its preparation and the actual event and any subsequent work will happen after the end. From 2009 on all instances of Reasoning Web will be completely after REWERSE.

3.1 The Summer School Board and Future Summer Schools

In order to ensure continuation of Reasoning Web beyond the life time of REWERSE, the *Summer School board* was founded as an organisational structure. More details about the Summer School board are described in deliverable E-Dx1 [Eisinger and Małuszyński, 2006a], which also contains the *Reasoning Web charter*, the specification of the Summer School board's composition, regular renewal, and mode of operation. Moreover, the Reasoning Web charter defines responsibilities and an annual schedule for the Summer School board and for the people appointed by the Summer School board in order to organise an instance of Reasoning Web.

The Summer School board has been operational since February 2006 and has since then monitored the Summer Schools in the same way as it will continue to do after the end of REWERSE. The Summer School board approached, reached agreement with, and appointed the programme committee chair and local organiser for Reasoning Web 2007 (Chapter 1) and Reasoning Web 2008 (Chapter 2) and supervised preparations for these events to ensure that they remained on schedule. It will seamlessly continue this supervision for Reasoning Web 2008 beyond the end of REWERSE.

In compliance with its schedule, the Summer School board approached, reached agreement with, and appointed in January 2008, just barely before the end of REWERSE, the responsibles for Reasoning Web 2009: Enrico Franconi, Bozen-Bolzano (PC chair), Sergio Tessaris, Bozen-Bolzano (PC co-chair), Paolo Dongilli, Bozen-Bolzano (local organisation chair). These people are now starting to work on the formation of the full PC, the specification of the specific focus

[1] such as the one described in Chapter 1 or writing reports like this deliverable

of Reasoning Web 2009, etc. These decisions are then to be approved by the Summer School board. After that the PC approaches potential speakers, works out the call for participation and the final programme and keeps the Summer School board informed about the progress of this work.

The respective appointments and decisions for later instances of Reasoning Web will be made by the Summer School board analogously in due time.

3.2 Budget Aspects

The Summer School board is not a legal entity with a budget and can in particular not compensate any deficit of an instance of Reasoning Web. Therefore the Summer School board analysed the current and future financial situation of Reasoning Web.

During the life time of REWERSE, Reasoning Web benefitted from indirect financial support by the REWERSE project: REWERSE participants (students) paid the fee from a REWERSE budget, REWERSE lecturers paid their own travel cost from a REWERSE budget, and the number of non-REWERSE lecturers was restricted to about 3. All of this will no longer be possible for instances from 2008 on.

The major consequence of this budget analysis was that the number of lecturers will in the future be smaller than it used to be so far.

One aspect of this reduction has to do with additional co-authors, whose number had been steadily increasing and will be limited in the future. The more visible aspect, however, is a slightly smaller number of courses during each Summer School. This can already be observed when comparing the programmes of Reasoning Web 2008 (Chapter 2) and of Reasoning Web 2007 (deliverable E-D10-1 [Eisinger and Małuszyński, 2007]).

It should be noted that the smaller number of courses does not have to make the Summer School less attractive. Rather, it has the positive side-effect to avoid the problem of too dense time tables, which was repeatedly complained about by participants of Reasoning Web, and it simplifies the PC's task to define a clear focus and to ensure a uniform level of quality.

Apart from these considerations, the Summer School board is also pursuing possibilities to get funding for Reasoning Web by sponsors. But to be on the safe side, all financial planning was done such that Reasoning Web can sustain itself even if none of these possibilities should materialise.

3.3 Opening Reasoning Web beyond the REWERSE Community

From the very beginning, Reasoning Web has involved non-REWERSE people, especially members of former KnowledgeWeb, both as PC members and as lecturers, in order to avoid that Reasoning Web might be perceived too narrowly as "the REWERSE Summer School". The development of the composition of participants seems to confirm that this was successful (compare Chapter 1). For Reasoning Web 2009, even the PC chair and local organisation chair are not present or former REWERSE members.

The same principle is being applied to the Summer School board, the level above the annual PCs. Initially it almost coincided with the REWERSE executive committee, but its first renewal

is due just before the end of REWERSE. Half of its present members will leave the Summer School board, the remaining ones will vote on new members.

The discussion about approaching candidates for membership started during the last REWERSE annual meeting in November 2007, and the consensus was to ask non-REWERSE people to join the board, preferably people who have been involved in an instance of Reasoning Web as lecturers and/or PC members. Although at least half of the board will still consist of former REWERSE members, thus ensuring substantial continuity, the renewed board will nevertheless represent a wider community.

All in all one can say that REWERSE enabled the successful start-up of the Reasoning Web series of Summer Schools, and all evidence suggests that REWERSE also succeeded in raising Reasoning Web to independence.

Acknowledgement

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