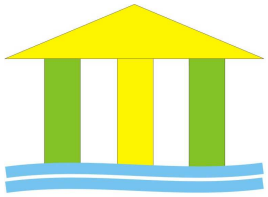

D-T-D2 Co-operation with REWERSE and other NoE

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Abstract.
EU-IST Network of Excellence (NoE) IST-2004-507482 KWEB
Deliverable D-T-D2 (WP1.5)
This deliverable reports on ways in which KnowledgeWeb can cooperate with REWERSE and other NoEs on industry specific issues. The focus hereby is on the industry and education area as both activities complement each other. As the main networks involved in cooperation efforts are KnowledgeWeb and REWERSE, for both networks current activities are listed and cooperation efforts are described. Cooperation possibilities with other networks such as Agentlink III, PROLEARN and KnowledgeBoard are also listed.

Document Identifier:	KWEB/2005/D-T-D2/v1.0
Class Deliverable:	KWEB EU-IST-2004-507482
Version:	v1.0
Date:	14/07/2005
State:	Final
Distribution:	Public

KnowledgeWeb Consortium

This document is part of a research project funded by the IST Programme of the Commission of the European Communities as project number IST-2004-507482.

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Changes

Version	Date	Author	Changes
0.1	24-05-2005	Jörg Diederich	Initial version compiled from REWERSE deliverable
0.2	06-06-2005	Jörg Diederich	Some more additions as outcome of Crete Meeting
0.3	27-06-2005	Alain Leger	Comments and corrections from KnowledgeWeb
0.4	28-06-2005	Jörg Diederich	Some more improvements according to Alain's comments
0.5	12-07-2005	Jörg Diederich	Comments from QA
0.6	14-07-2005	Diana Maynard	English corrections
1.0	14-07-2005	Jörg Diederich	Small addition about INTEROP

Executive Summary

This deliverable reports on ways in which KnowledgeWeb can cooperate with REWERSE and other NoEs on industry specific issues. The focus hereby is on the industry and education area as both activities complement each other. As the main networks involved in cooperation efforts are KnowledgeWeb and REWERSE, for both networks current activities are listed and cooperation efforts are described. Cooperation possibilities with other networks such as AgentlinkIII, PROLEARN and KnowledgeBoard are also listed.

Contents

1 Introduction

The aims of the Networks of Excellence KnowledgeWeb and REWERSE are to develop technologies for representing Web content in a form that can more easily be processed by machines and for automatically conducting inferences based on the Web content. These activities, being part of the Semantic Web effort, offer technologies which can already be integrated into the existing Web. A major goal of both networks is to boost the efforts of European Industry in taking up one of the essential fields of tomorrow's information technologies.
This report lists current activities in the Networks of Excellence KnowledgeWeb and REWERSE in order to show possibilities for cooperation regarding industry-specific issues, which include plans for a pan-European web of industrial competence centres (which may possibly be formed virtually on the Web) in the area of the Semantic Web. Cooperation possibilities with other networks such as AgentlinkIII and KnowledgeBoard are also listed.
The focus of this deliverable is on the industry and education area activities. Cooperations in the research area are not directly addressed as they would broaden the scope of the deliverable too much. Nevertheless, such cooperations can, of course, be of benefit for the industry.

2 Activities in REWERSE

The main objectives of REWERSE are:

- to network and structure the scientific community in reasoning languages for the Semantic Web and its applications; and
- to provide a tangible technological basis for industrial software development of Semantic Web applications.

Research in REWERSE is carried out through eight working groups whose goal is to develop a coherent and complete, yet minimal collection of interoperable reasoning languages for the Web, testing these languages on context-adaptive Web systems and Web-based decision systems, and bringing the proposed languages to the level of open pre-standards.
Results achieved within REWERSE are disseminated mainly through the following activities:

1. Education and Training (ET)
2. Technology Transfer and Awareness (TTA).

While the focus for the activity "Education and Training" is on the academic community, "Technology Transfer and Awareness" prevailingly addresses industry. Both activities complement each other and hence have to work closely together to achieve their respective goals. From a technology-transfer viewpoint, the contributions from "Education and Training" are vital for transfer activities as education and content also needs to be offered to industry. In the following paragraphs, these two activities are described in more detail. As cooperation efforts on the research level do not deal with dissemination and industry directly, this section is focused on "Education and Training" and "Technology Transfer and Awareness" activities.

2.1 Education and Training

The main goal of education and training is to establish an emerging research community in the short term, but also to introduce Semantic Web technologies into industry as the students taking courses at universities will later go to industry and use the acquired knowledge there. Specifically, REWERSE plans to

1. Develop a meta-curriculum about the Semantic Web which can be used further to create more specific curricula (e.g. a graduate curriculum for MSc or PhD students)
2. Adapt existing learning materials towards a graduate curriculum (together with TTA for an industrial curriculum)
3. Create and develop the educational infrastructure (in close cooperation with the TTA activity `industrial infrastructure')

Current activities have been focused on collecting available university courses on REWERSE-related topics. 26 courses were offered from REWERSE partners as a response to a questionnaire sent to all REWERSE members and from personal collections of educational materials from single REWERSE partners (cf. REWERSE deliverable E-D1). Most of the courses stem from university courses taught over a full semester (long courses), but some others are also short courses. A further activity is to decide about the educational infrastructure to be used for publishing the educational material on the Web. This is currently ongoing work together with the TTA work package (cf. the deliverable E-D4/T-D4 jointly written by both).

2.2 Technology Transfer and Awareness

The Technology Transfer and Awareness activity of REWERSE is intended to achieve a higher awareness of Semantic Web technologies in the public and in the industry. The focus is in particular on the technologies related to interoperable reasoning languages for the Web. Furthermore, connections between the REWERSE community and potential deployers / appliers and researchers in the industrial area (technology-pull companies and where applicable also technology-push companies)[1] need to be established. To achieve the goal of awareness and exchange between industry and research in REWERSE, the following activities are planned:

1. Awareness-raising PR campaign
2. Creation of an educational infrastructure for industry
3. Creation of a set of training modules for industrial education
4. Running of awareness events on Semantic Web applications and their implementations, targeted at European industry
5. Cross-network cooperation focused on establishing European industrial competence centres offering industry-targeted training and education on Semantic Web topics

[1] cf. explanation in Section 3.1.1 in this document

2.2.1 Awareness Raising PR campaign

The starting point for this activity is the compilation of a list of potential awareness activities (cf. T-D1). In this list, an appropriate target audience has been identified, which is considered to be a good mixture of technology-push and technology-pull companies.
An important issue for cooperation between REWERSE and industrial partners are the incentives for the cooperation of industrial partners. The following incentives have been identified:

- Industrial partners can acquire specific and up-to-date knowledge in cutting-edge Semantic Web technologies and research advances (information advantage)
- Industrial partners can make use of educational material provided by the REWERSE community (education advantage)
- Industrial partners can influence research development by providing feedback to public research about necessary requirements for implementing / deploying Semantic Web technologies and by specifying use cases which are interesting for the industrial partner (research-cooperation advantage). This can also comprise a true research cooperation, for example, if the industrial partner has its own research group working in the area of Semantic Web, which wants to cooperate directly with REWERSE research groups.
- Industrial partners can achieve an innovative company image and can increase the awareness of the industrial partner within the REWERSE community and beyond (reputation advantage). This can be very important, for example, in order to be able to attract 'high potential' employees from the universities, who have experience in Semantic Web technology.
- REWERSE members can become consultants of industrial partners, for example, to demonstrate the profitability of employing Semantic Web technologies developed within REWERSE.

Furthermore, a work plan for promotional activities has been built up comprising how information about REWERSE shall be disseminated during the project. This is aligned according to the AIDA principle, which includes:

- raising **A**wareness during the first year,
- creating **I**nterest in addition to awareness in the second year,
- leading to a **D**esire for cooperation in the third year,
- and to **A**ctions (e.g. the application of REWERSE technology in concrete use cases) in the fourth year.

In order to have industry partners engaged in cooperative R&D projects in the 3rd or 4th year of the project, it is important to establish close contact and start a dialogue with industry as early as possible. Establishing contacts is primarily achieved through networking (see below) and the organisation of the awareness event in October 2005.
Besides identifying the appropriate target audience and necessary incentives for industry, the technology transfer and awareness activity has selected potential channels to disseminate information about REWERSE to create awareness for the project. The following preferred channels have been identified:

- Personal relationships (so-called networking) which presuppose the participation at IT related and for REWERSE relevant application focused events. In particular,

possible targets are business-focused events and seminars organised by companies.
- The use of newsletters provided by companies and IT organisations.
- Presentation of the project at fairs, such as the KMEurope 2004 in Amsterdam, where REWERSE presented demos of applications and organized a workshop on 'Web Data Management powered by Rules and Reasoning in the Semantic Web: Intelligent Solutions for Web-Data Extraction, Management & Accessibility'.
- One particular method for spreading awareness will be to run the above mentioned awareness events, the first of which is planned for October 2005. The goal of this awareness event is to bring industry professionals and researchers together at a rather early stage of the project.

To support the above mentioned activities and to reach a wider awareness, promotional material is created in the form of flyers, fact sheets (for the different working groups), and posters. Press releases and articles in magazines are issued. Visibility on the Web is supported by a Web presence and will be further pushed. Additionally, E-mail newsletters and webcasts are also planned.

2.2.2 Creation of an industrial educational infrastructure

This infrastructure is currently envisioned to be set up together with the education and training work package. It will take the form of a repository for learning materials and will provide means for authors to offer their learning materials and for consumers to download and use them. It is intended to become 'the' central repository for learning material around Semantic Web related topics. A first description of its characteristics and the requirements it has to fulfil will be included in the REWERSE deliverable E-D4/T-D4.

2.2.3 Creation of an industrial curriculum for education

The curriculum for industrial education is intended to comprise courses which cover the most interesting and important topics for people from industry, who want to implement Semantic Web technology for their business cases. However, the main difficulty is that most existing learning materials on Semantic Web related topics are targeted towards university education. Thus, they have to be adapted to the needs of industry. A first step in this direction is currently under way in the deliverable T-D3, which will comprise a first set of educational material being basically suitable for industry. However, the industry requirements on industrial educational material are not fully understood yet. Thus, a questionnaire aimed at people with experience in industrial education will be prepared, in order to compile a list of recommendations for those who want to adapt their university courses towards the needs of industrial education.

2.2.4 Awareness events targeted at the European industry

The awareness event in October 2005 (http://semantic-web-days.net) is planned as a face-to-face meeting between industry professionals and researchers. The aim is to provide the possibility to learn about new developments and talk with experts and

implementers. Presenters from research as well as industry will be sought though the focus is intended to be on Industry talks.

The objectives of this event are:

- Widespread awareness
- Exchange possibilities between researchers and people from industry on ontologies and reasoning languages for the (Semantic) Web and its applications at an early stage of the projects
- Supporting the transition process of ontology and reasoning technology from academia to Industry

The target audience of the event will comprise:
technology monitors + researchers in companies, CTOs, executives/managers/project leaders, open source community, technical journalists, professionals in technology transfer, solution software developers, technical consultants, senior researchers in academy.

The event is planned as a two-day event in Munich on October 6-7th 2005, and will offer working notes, workshops, an exhibition, a panel discussion, and a social dinner.

2.2.5 Cross-network cooperation on industrial competence centres

In order to take advantage of industrial contacts in the NoE KnowledgeWeb, cross-network cooperation is already established, for example, on the exact definition of industrial competence centres.
Currently, industrial competence centres are envisioned as:

- A platform to meet (face-to-face and virtual)
- An instance offering educational activities and "hands-on" technology-training courses
- A show room that shows the value of prototypical applications
- A website showing the competencies of people involved in Semantic Web research and development (including their contact data)

In the context of the educational activities, cooperation with the education and training work package is envisioned. Currently, KnowledgeWeb is working on a software framework which could offer tools for realizing Semantic Web applications.
This framework offers practical experiences to industry professionals.
Examples for industrial competence centres are the technology transfer center for computing technologies (http://www.tzi.de) or the Research Center for Information Technologies (http://www.fzi.de) which could serve as a role model for building up industrial competence centres. It is important to note, however, that the given examples of industrial competence centres only give a rough idea of what such competence centres can look like. It is not the goal of REWERSE and KnowledgeWeb to adhere to these models in their completeness. The question hereby is always what is feasible and can be achieved during the runtime of the projects. Consequently, only those parts and elements will be implemented which are in harmony with the possibilities and settings of the two

networks. The requirements for setting up the industrial competence centre will be defined within the next year, in order to have sufficient time for implementing them in the remaining project time.

3 Activities in KnowledgeWeb

KnowledgeWeb concentrates its efforts around the outreach of the Semantic Web technology to industry. Naturally, this includes education and research efforts to ensure the durability of impact on and support for industry. Therefore, the main infrastructure of KnowledgeWeb to facilitate this transfer is three-fold:

1. Outreach to Industry – Industrial area
2. Outreach to Education – Education area
3. Coordination of Research – Research area

The main purpose of the industry area is partly to promote Semantic Web technologies to interested industrial partners but also - and mainly - to get their concrete business needs and current bottlenecks illustrated through business use cases (feedback from them about requirements or possible use cases). Then after understanding and analysing their needs, KnowledgeWeb will answer each business need by providing possible solutions (or partial solutions when the research and technology answer is not yet known).

The main objective of the education area is to coordinate the efforts of European universities in providing learning units on Semantic Web technologies. In this way, Semantic Web technologies can be transferred from research to industry if students attend courses on Semantic Web issues and use this knowledge finally when they start to work in industry.

The research area is intended to tackle the remaining unresolved issues in Semantic Web technologies, focusing on the application scenario `Semantic Web Services'. The main idea is to accelerate gaining new research results by coordinating research among European researchers involved in this area.

3.1 Industry Area

The main activities of KnowledgeWeb in the Industry area are focused around the following topics:

- Industrial application needs (WP1.1)
- Evaluation for technology selection / technology recommendations (WP1.2, WP1.3)
- Promotion of ontology technologies (WP1.4)

And two KnowledgeWeb transversal activities:

- Cross-network cooperation (WP1.5)
- KnowledgeWeb portal (WP 1.6)

These activities are intended to view the problem of implementing / deploying Semantic Web technologies from the point of view of industry, for example by providing recommendations on the "state of the art" technology components and methodologies to realize the concrete business cases of industry.

3.1.1 Industry consortium

More specifically, WP1.1 has created a first proposal (D1.1.1v1) for an **industrial consortium** which is intended to become the main durable structure proposed to industry. The basic idea from KnowledgeWeb's point of view is to collect **application requirements and business use cases** in order to find out where Semantic Web technology can be transferred from academia to industry. The industry consortium will be formally constituted as an industry board, comprising current or potential adopters of Semantic Web technology in industry. Potential members of the industrial board will come from both pull-technology organizations (which are regarded as the 'clients' in the sense that they apply Semantic Web technologies) and push-technology organizations (who are pushing Semantic Web technologies by actively performing research and development on their own). Both groups are intended to be represented on the board. At M18, the core team comprises about 40 companies, with an additional possible 30 companies as newcomers. This results from a universal applicability of Semantic Web technology. However, during the year 2005, the Industry area will be consolidating the Industry Board and will give priority to the most promising sectors and business use cases (e.g. the health care domain).
In this way, a technological classification of the industry members according to economic sectors has been established. However, the number of board members is now envisioned not to become too large to make it manageable to keep contacts.
A first set of potential consortium members has been derived from existing contacts from the OntoWeb project, the predecessor of KnowledgeWeb. Currently, 35 companies have shown interest in joining the industrial board. An addendum to the KnowledgeWeb contract for setting up the industrial board has been signed by the KnowledgeWeb partners.

3.1.2 Outreach to Industry portal

A further activity is to implement an 'outreach to industry' portal on the Web, where the consortium members can exchange either data restricted to consortium members or that which is available to the public. The portal is available at

http://knowledgeweb.semanticweb.org/o2i/.

3.1.3 Business use cases

Furthermore, WP1.1 has collected a first set of 14 business use cases (D1.1.2) from potential industrial board members, in which Semantic Web technologies are / could hypothetically be transferred to industry. These use cases are intended as input to the research area of KnowledgeWeb so that research can better be tailored to industry requirements.

3.1.4 Technology Evaluation

The mission of WP1.2 is to evaluate ontology-based tools and tool suites, which are needed for incorporating semantic web technology into IT systems, taking into account the industrial needs profiles identified from the business - uses cases and industrial scenarios (in WP1.1). During the first year preliminary work identified the high-level

components of ontology-based tools and services, as summarized in D1.2.2. Existing methods for ontology content evaluation have been surveyed and classified in deliverable D1.2.3. Upcoming work of the technology evaluation activity will include an analysis and comparison of the interoperability of different types of ontology tools. In short, the main goals are:

- To analyze the utility of ontology-based tools, in terms of interoperability, scalability and performance.
- To define the Semantic Web Framework architecture.

From a content perspective, this activity will cover:

- Construction of the KnowledgeWeb Ontology Repository
- Development of protocols and methods for ontology content evaluation and usability.

Either the repository or the methods will be inputs for the OOA activity in WP1.3.

3.1.5 Ontology Outreach Advisory

Another industry area activity (WP1.3) is to found an 'ontology outreach advisory' (OOA) which is intended to become the meeting place for interacting with interested industrial partners. This way, industrial partners can gain information about latest research results and tools for Semantic Web technologies. In the end, the OOA will be seen as the recommending body of ontologies. This will be achieved by organizing industry into domains/sectors; a committee will be set up for each sector, where each committee will consist of the most active (industrial + research) members in that sector. Each committee is expected to play a leading role in ontology validation and in recommending related activities within its sector. Currently, the requirements for founding this OOA are under development.

3.1.6 Promotion of Ontology technology

To create a higher awareness of the goals of KnowledgeWeb, at least 3 annual technology show will be assumed which also should promote the relevance of Semantic Web technologies (ESWC'2005, ISWC'2005, Semantic Web Days). A further goal of this event is to disseminate results of research conducted in the research area of KnowledgeWeb. The first technology show took place at ESWS'04 in Crete on 12/05/2004 and a second at ISWC'2004 (Hiroshima), a third one at ESWS'05 in Crete on 30/05/2005. One main result was that in industry there is currently a shift of the focus from Semantic Web tools to Semantic Web applications, whereby tools are used to create the Semantic Web applications. They are not necessarily making use of Semantic Web technologies themselves. The main identified problem in the area of tools and applications in the Semantic Web is that most people simply do not know about the existing tools and applications. Thus, it is planned to first provide a classification for Semantic Web tools and application and, second, build up a repository where information about the existing tools and applications is stored.

3.1.7 Network cooperations

A further activity of the industry area is to get in contact with other projects, such as the REWERSE Network of Excellence. In this case, the goal is, for example, to organize joint events between the networks. A specific focus is put onto events which bring together industry people and research people. Furthermore, joint deliverables are currently in progress (such as this deliverable, which is called T-D2 in REWERSE or the REWERSE deliverable E-D2, which is called D-E-D2 in KnowledgeWeb). In this context, the creation of educational material for industrial courses has been identified as being highly important. This should be one of the main topics within the industry area of KnowledgeWeb, but should also be developed in close cooperation with other NoEs.

3.2 Education area

The education area has the following main work fields:

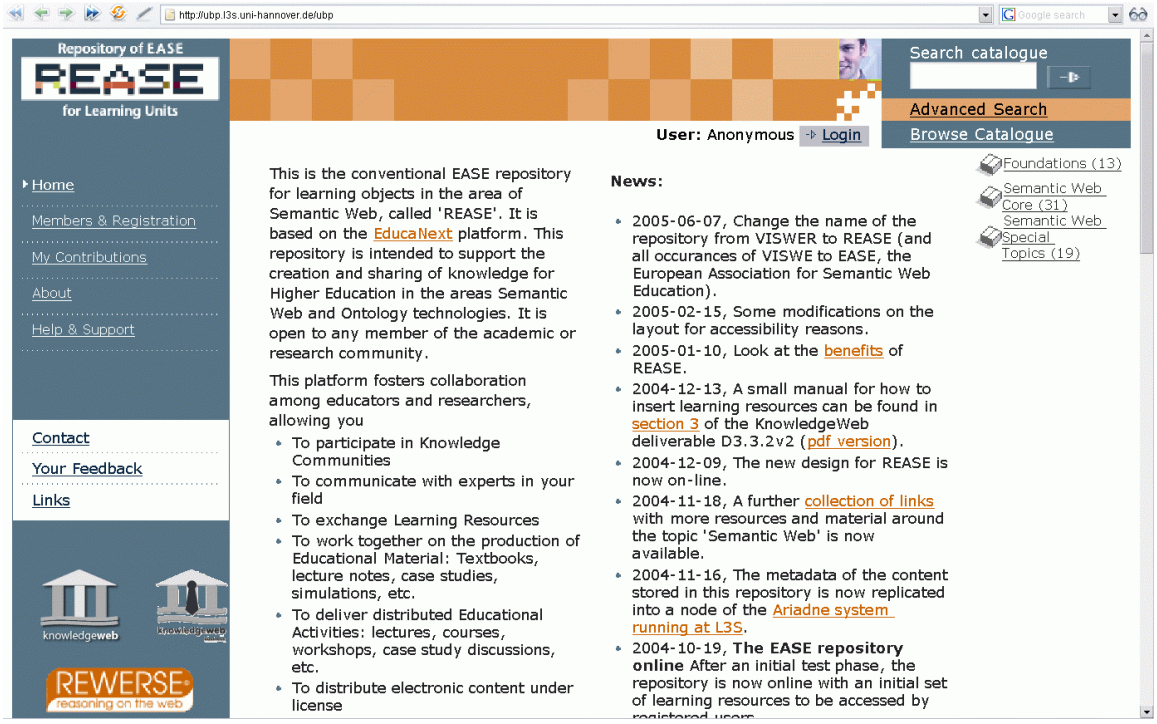
- To collect existing learning units in the area of Semantic Web from all participating universities
- To create the European Association for Semantic Web Education (EASE) which is intended to be the central point of interest for all educational activities (cf. D3.1.2 + D3.1.3)
- To set up an educational infrastructure where the collected learning units are stored (cf. D3.3.2v1+v2, D3.1.4). This infrastructure is called "Repository of EASE for Learning Units", abbreviated as REASE.
- To set up a joint European curriculum in the area of Semantic Web and ontologies
- To organize educational events

3.2.1 Collection of existing learning units in the area of Semantic Web

In order to provide the Semantic Web community with excellent learning units on topics around the Semantic Web and to avoid that these materials have to be created from scratch by every partner, one main task of the education area is to collect existing learning units from all partners. About 27 courses have been identified as being already available using a questionnaire which was sent to all KnowledgeWeb participants (cf. D3.2.1). This material covers many different topics around the Semantic Web, starting from foundation courses such as description logics or basic web technologies, and continuing to basic Semantic Web issues such as RDF or ontologies up to advanced issues such as adaptive hypermedia systems, human language technologies and the like.

3.2.2 Educational Infrastructure

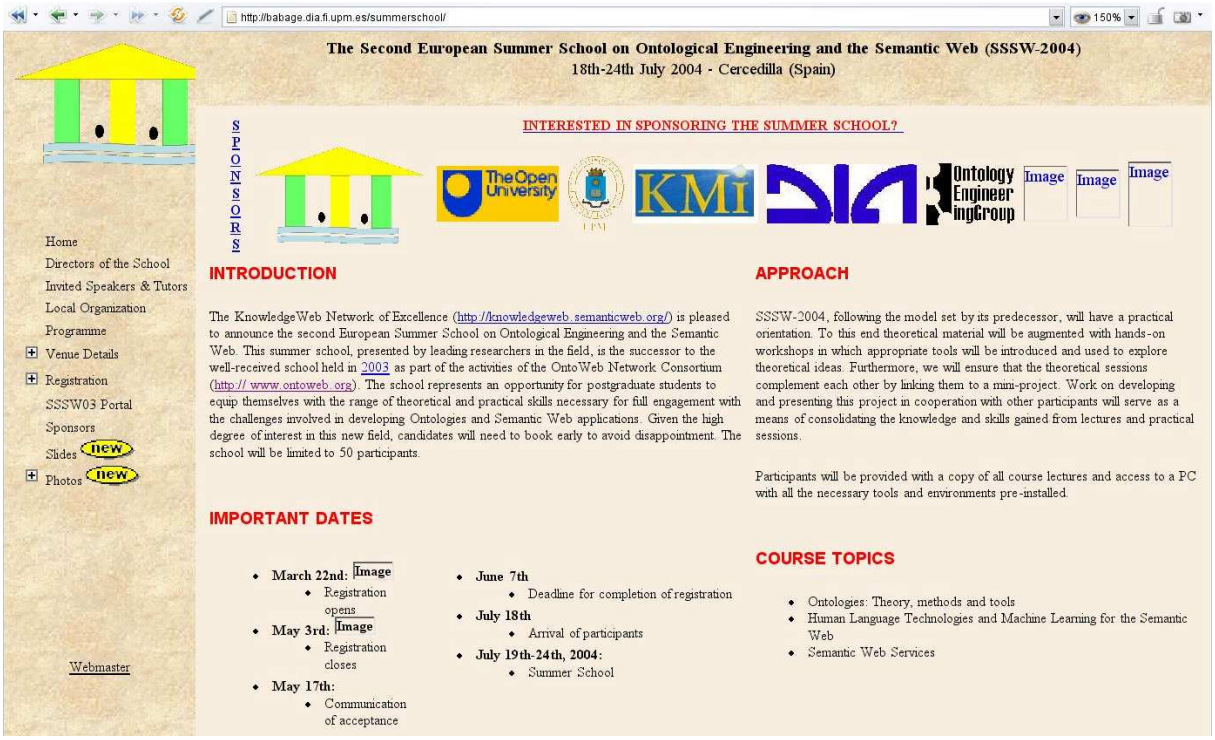
The collected resources should be stored in a central learning unit repository. A conventional version of the repository (i.e. not making use of Semantic Web technology itself) is already running at L3S in Hannover (cf. D3.3.2v1+v2) and an initial collection of learning units has already been inserted (http://ubp.l3s.uni-hannover.de/ubp).



A pilot implementation of semantic add-ons to the conventional learning unit repository is currently under development (D3.3.3).

3.2.3 Educational events

The education area also is responsible for the organization of educational events, in which the collected learning units are used to disseminate the existing Semantic Web knowledge. A major event in this area is the summer school on Ontological Engineering and the Semantic Web, which took place in Summer 2004 in Cercedilla, Spain (cf. D3.2.2) and which will take place again in Summer 2005.



3.2.4 Joint curriculum in the area of Semantic Web and ontologies

To foster cooperation among European universities and to be able to create synergic effects, a joint European curriculum in the area of Semantic Web and Ontologies is planned to be set up by a set of core European universities (cf. D3.2.3 + D3.2.5). This way, it will become possible to combine courses from several universities into a new curriculum without having to offer the courses at each university separately. This requires student mobility, which is also one of the major goals of the Bologna process (the main EU action plan for Higher Education within Europe).

3.2.5 European Association for Semantic Web Education (EASE)

EASE is intended as an umbrella for most of the education area activities within KnowledgeWeb, i.e. it is intended to be the organizational umbrella for the summer school and also to be responsible for the learning unit repository (cf. D3.1.2). It has been agreed that EASE shall be founded as an association according to German civil law (cf. D3.1.3), which ensures durability of the KnowledgeWeb educational activities even after the end of the project. EASE will, however, not take responsibility for the content being stored in the platform, as the copyright for these materials will remain with the authors of the learning units. Also EASE will not participate in the necessary negotiations for the joint European curriculum as they are necessarily to be performed among the participating universities.

4 Possibilities for Cooperation

The focus of cooperation work as depicted in this deliverable is on KnowlegeWeb and REWERSE. An essential criteria for cooperation is always that the gains from the joint work justify the efforts put into setting up and maintaining the cooperation. As cooperation activities involve a substantial amount of work, the technology-transfer team of REWERSE focuses their cooperation on the partner project KnowledgeWeb. However, where feasible, joint efforts have also been pursued with other projects. One of the possible cooperation partners for technology-transfer activities is Agentlink III. Additionally, there are cooperation ties with projects such as KnowledgeBoard 2.0.

4.1 KnowledgeWeb & REWERSE

4.1.1 Industry area cooperations

Cooperation efforts between the two networks are supported by monthly audio conferences. The representatives from the technology transfer area from REWERSE and from the industry area from KnowledgeWeb are participating in these audio conferences. The purpose of the audio conferences lies in exchanging experiences gained during their work with industry as well as the discussion of specific joint activities. In the following, a number of the specific planned joint activities (of which some are already in progress) will be explained more in detail.

One of the major achievements in KnowledgeWeb is that an industry consortium of significant size is already in the process of being created, taking advantage of existing industry contacts from the OntoWeb project. Cooperation between KnowledgeWeb and REWERSE on the industry consortium will be studied to increase the outreach to industry.

A further possibility for cooperation could be taken up in the industrial web portal, which is planned to be developed by both Networks of Excellence. For example, in KnowledgeWeb a basic semantic portal (the main KnowledgeWeb portal) is already up and running (work package 1.6). Furthermore, under the main portal there is a specific area for industry, which is part of work package 1.1. This is used as a privileged communication channel with industry. They could possibly be extended by personalization mechanisms which is part of the working group A3 in REWERSE.

Additionally, both networks require use cases and industry requirements as feedback to the research community in order to enable Semantic Web technology to move from academia to industry. Initially, both networks have decided to focus on different application scenarios:

- KnowledgeWeb: Semantic Web Services
- REWERSE: Reasoning on geographical / time-related data, Bioinformatics, personalized information systems

However, more use cases have been collected in KnowledgeWeb and more are expected so that this can probably be changed to some common use cases to work on in both networks. Also, experiences with certain technologies (‘best practices’) among the industry areas could be exchanged in order to avoid duplicate work.

For the creation of educational material, especially adapted for industrial requirements, a close cooperation could also be very helpful, especially since available courses are currently mainly intended for academic environments and were also created by academic people, who have little experience in creating / adapting industrial courses. Joint work in this area could be to set up a list of recommendations for the creation of industrial courses (a small 'howto') and to create a common flyer to advertise the courses to interested people in industry.
Cooperation could also take place in the form of joint awareness events for industry. KnowledgeWeb could contribute the industry contacts available in the industry consortium in order to reach as many industry partners as possible. A concrete plan exists for the awareness event 2005 which is planned as a joint event. A major part of the audio conferences held between REWERSE and KnowledgeWeb is currently dedicated to this aspect. Furthermore, REWERSE has participated with KnowledgeWeb as organizing-committee member in the industrial chair of ESWC 2005 in Heraklion.
As a further common channel for awareness generation, a joint flyer for both networks has been created, which is used to spread information about both networks on workshops, conferences, fairs, etc. Furthermore, cross-linking of the websites of both networks has already been performed and joint press releases and articles in magazines are planned.
Finally, both networks could cooperate in setting up the administrative infrastructure for industry contacts, the so-called industrial competence centres. These centres could include the Ontology outreach advisory (OOA) of KnowledgeWeb, whose main purpose was to certify and provide ontologies, but which was also said to become the 'meeting place for interacting with industry'. However, a more concrete definition of industrial competence centres and their tasks and objectives is currently underway. Contacts between KnowledgeWeb and REWERSE on this issue already exist.

4.1.2 Educational area cooperation

The educational areas are not directly connected to industry (and are in both networks mainly focused on university education). However, since students will take the acquired knowledge to industry after their studies, university education is regarded as a very important factor for disseminating knowledge on Semantic Web technologies to industry. Furthermore, it is expected that the educational areas will help to adapt existing courses from university education towards courses for industrial education.
One already initiated cooperation between KnowledgeWeb and REWERSE is setting up a joint infrastructure for the collected learning units (cf. REWERSE deliverables E-D4/T-D4 and KnowledgeWeb deliverables D3.3.2) so that all collected learning units (those in KnowledgeWeb and those in REWERSE) will be accessible over the same infrastructure, based on the 'Universal Brokerage Platform'. This platform has successfully been used for the EducaNext project also. A successful example for cooperation between REWERSE and KnowledgeWeb are the deliverables E-D1 / D3.2.1, for which learning resources have been collected jointly from all partners of KnowledgeWeb and REWERSE. The authors of the collected learning units can be reached via a single mailing list at kwebrew-lu@l3s.de.
There is one major difference between the courses collected in KnowledgeWeb and REWERSE:

- KnowledgeWeb was initially focused on providing material for a shared European curriculum on Semantic Web and Ontologies. This focus recently changed towards more material for industrial practitioners (cf. the new JPA of WP3.1)
- REWERSE is currently focused on providing a general graduate curriculum. Similar to KnowledgeWeb, another activity is to adapt existing university courses to industrial needs, as specified in the work plan of the TTA work package.

Therefore, the course contents might differ for both networks, but some basic material should be reusable between the partners.
KnowledgeWeb has already started to provide some material especially suited to practitioners and this has been uploaded to the REASE portal. Such industry-adapted courses could be very useful for setting up workshops for industry, which are planned for both, KnowledgeWeb and REWERSE.
A further already planned cooperation is in the organization of the summer schools in both networks. This is currently envisioned for the summer school 2007. More details about joint education and training events can be found in D1.5.2.
A joint organization of a curriculum could also be taken into account. Depending on the additional effort, partners from both networks may decide to participate in the curriculum of the other network, respectively. This is especially true for REWERSE partners joining the shared master activities of KnowledgeWeb.
The curriculum is currently also planned to be used as a basis for updating the catalogue topics in REASE and for creating a general Semantic Web topic hierarchy. This has already started and will be continued during this year.
Finally, it is planned that EASE becomes the main organizational umbrella for the administration of the learning-unit repository REASE with the provided learning units and for the summer school. As it is currently in the decision process to use a shared learning-unit repository for learning units from KnowledgeWeb and from REWERSE, it is expected that REWERSE will support EASE. For example, the REWERSE participants could become members of the EASE association (cf. joint deliverable E-D2 / T-E-D2)).

4.1.3 Cooperations involving industry area and education area

Because both networks include the creation of learning units especially suited for the industry, another possible point of cooperation is that these courses are also stored in the common platform, which is hosted by the EASE association. In this way, there is even cooperation among the education areas and the industry areas of REWERSE and KnowledgeWeb so that all educational material of KnowledgeWeb and REWERSE is available in a single infrastructure.
As there are two portals for storing material for industrial education (REASE (the **R**epository of **EASE**) and the O2I portal), we envisage classifying the material as follows:

1. High-level introductory material, which comprises fact-sheets and further information which needs to be easily accessible (very few mouse clicks, no registration), is intended to be kept in the O2I portal.
2. In-depth material (tutorials, courses, etc.) is intended to be stored in REASE to allow for an efficient search.

In this way, it is possible to have a single infrastructure for the in-depth material, which however requires a registration in order to be able to use it, while providing a simple access mechanism for high-level material directly on the O2I portal.
To alleviate the creation of industrial content from existing university courses, a joint workshop on Corporate Education Course Content took place at L3S on 25/04/2005. This workshop showed the requirements of industrial education using real-life use cases. This workshop was jointly organized with REWERSE and PROLEARN and is intended to be repeated in the autumn.

4.1.4 Summary of cooperation activities & possibilities

In the following table, an overview of the different cooperation activities between REWERSE and KnowledgeWeb is given. First, those topics are listed on which cooperation efforts are focusing. The leading network of the cooperation is the partner who is mainly in charge of the respective activity line. For efficiency reasons, it is in most cases necessary that one network is taking the lead. The status of the cooperation can be 1) ongoing (cooperation which has been started already and where concrete steps have been taken), 2) finished, 3) planned (concrete plans about the cooperation and measures to realize the plans have been taken) or 4) potential (there is potential for the cooperation, but no concrete steps have been taken yet). Lastly, there is the estimated start date of the cooperation activity.

Activity	Description of cooperation	Leading network	Status	Start Date
Industry area	Exchange of experience	REWERSE & KnowledgeWeb	Ongoing	April 2004 (first audio conference May 3 2004)
	Industry Consortium	KnowledgeWeb	Potential	
	Semantic Portal	KnowledgeWeb	Potential	
	Cross-linking of websites	REWERSE & KnowledgeWeb	Finished	July 2004
	Use Cases exchange	REWERSE & KnowledgeWeb	Ongoing	July 2004
	Creation of Educational material for industry	REWERSE & KnowledgeWeb	Ongoing (regarding list of requirements)	November 2004
	Industry workshops	REWERSE & KnowledgeWeb	Potential	
	Joint Flyer Education	REWERSE & KnowledgeWeb	Potential	
	Joint Flyer promoting both networks	REWERSE	Finished	November 2004 (joint flyer first time used at the KM Europe 04)
	Joint Event "Semantic Web Days"	REWERSE	Ongoing	September 2004
	Joint Event "Industry Forum at ESWC"	KnowledgeWeb	Ongoing	November 2004
	Industrial Competence Centres	KnowledgeWeb	Planned	No concrete actions taken yet, but discussions during audio-conferences
Industry area and education area	Educational Infrastructure REASE (E/T-D4)	KnowledgeWeb	Ongoing	June 2004
	Workshop Corporate Education Course Content	KnowledgeWeb, REWERSE, PROLEARN	Ongoing	April 2004
Education area	Collection of learning resources	REWERSE	Ongoing	March 2004
	Summer School 2006/2007	REWERSE	Potential	
	Joint organization of a curriculum	KnowledgeWeb & REWERSE	Ongoing	June 2005
	Joint infrastructure	KnowledgeWeb	Ongoing	June 2004
	EASE	KnowledgeWeb	Ongoing	November 2004

4.2 Cooperation with other projects

For specific actions, cooperation is also feasible and profitable with other IST projects. The following activities are suitable for such a cooperation:

- Joint usage of the learning-unit repository
- Contributions to newsletters of the partner
- Crosslinking of websites
- Exchange of experiences
- Profit from each others industry contacts
- Presence and contributions to events of the partner: this issue, however, has to be considered and evaluated in more detail. An important issue in this respect is to identify common topics and companies interested in the interfaces of the topics with which the networks are dealing. The range and confinement of topics offered to a particular target audience will have a strong influence on the degree of involvement of the other networks.

4.2.1 AgentLink III

The following cooperative activities have already taken place with the AgentLinkIII coordinated action:

- Cross-linking of the respective websites
- Usage of the KnowledgeWeb portal technology for the AgentLinkIII portal
- Presentation of KnowledgeWeb and discussion of the interface between Agents and Semantic Web at the AgentLinkIII Technical Forum on Towards Semantic Web Agents in Ljubljana, Slovenia, March1-2 2005
- Cooperation on the technology roadmap
- Collaboration Workshop for the Future Semantic Web at ESWC 2005, Heraklion, Greece, 29th-30th, May, 2005 (cf. http://www.agentlink.org/workshops/CFSW05/)
- Uploading of material from AgentLinkIII to the REASE portal.

The latter two are educational activities and are thus reported in more detail in D1.5.2.

The following activities are possible and should be followed during the coming months:

- Contributions to the AgentlinkIII newsletter
- Participation in each other's events. For this issue, common topics have to be identified. A topic for AgentlinkIII and KnowledgeWeb would be the interface agents / Semantic Web (semantic interoperability).

4.2.2 KnowledgeBoard 2.0

KnowledgeWeb is planning to co-operate with KnowledgeBoard 2.0 by providing necessary links and information for making KnowledgeWeb visible in the structures provided by KnowledgeBoard:

- Subscription to and distribution of the KnowledgeBoard Newswire.
- Cross-linking of the KnowledgeBoard 2.0 website.

- Plans: Presentation of KnowledgeWeb as the "Project of the Month" at the KnowledgeBoard 2.0 Portal. Expected benefits:
  - dissemination of knowledge and exchange of ideas
  - discover new dissemination channels
  - gain reputation with a broader audience

4.2.3 PROLEARN

KnowledgeWeb and PROLEARN cooperate on several levels:

- Joint organisation of the Workshop 'Corporate Education Course Content', which took place at L3S on 25/04/2005.
- Cross-linking of the web pages of PROLEARN and KnowledgeWeb.
- Usage of the same technology for the learning unit repository (the Universal Brokerage Platform)

4.2.4 AceMedia

KnowledgeWeb and the aceMedia IP are cooperating on multimedia aspects. More specifically:

- KnowledgeWeb has been invited by aceMedia to the EC day organized during the 1st EWIMT 2004 in London. EWIMT 2005 will be held in November 2005 and KnowledgeWeb will again be invited.
- A Multimedia Use Case coming from aceMedia has been presented in WP1 deliverables and will continue to be supported in future deliverables. Motorola, the coordinator of aceMedia, has just become a member of the KnowledgeWeb Industry Forum.
- AceMedia has co-organised the Multimedia and Semantic Web workshop during ESWC, and Paola Hobson from Motorola gave the presentation "Industry requirements for multimedia and the Semantic Web" during the Industry Forum of ESWC2005.

4.2.5 InterOp

KnowledgeWeb and the InterOp NoE are cooperating in the areas "Ontology" and "Education". More specifically:

- KnowledgeWeb was presented at the INTEROP ESA'05 (http://interop-esa05.unige.ch/)
- KnowledgeWeb and INTEROP are sharing efforts for creating a shared master (INTEROP in "Computational logics", KnowledgeWeb on "Semantic Web and Ontologies")

5 Conclusions

There are quite some opportunities to strengthen the industry areas of all mentioned Networks of Excellence / IPs if synergies among them are identified and implemented in a second step. This report is intended to provide a first overview on possibilities and ongoing activities for cooperation among the networks.

The focus of cooperation is on REWERSE, the main partner of KnowledgeWeb among the mentioned NoEs. Cooperation with other networks / IPs will be sought where suitable and are ongoing. Examples of such cooperation possibilities have been given in the chapters above, but may be extended to other projects.