T-D2

Cooperation with Knowledge Web and other projects

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Abstract

This deliverable reports on ways in which REWERSE can co operate with Knowledge Web 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 Knowledge Web and REWERSE, for both networks current activities are listed and cooperation efforts are described. Cooperation possibilities with other networks such as Agentlink III and KnowledgeBoard are also listed.

Keyword List

Cooperation, Industry, Education, Joint Activities

Cooperation with Knowledge Web and other projects

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Abstract

This deliverable reports on ways in which REWERSE can co operate with Knowledge Web 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 Knowledge Web and REWERSE, for both networks current activities are listed and cooperation efforts are described. Cooperation possibilities with other networks such as Agentlink III and KnowledgeBoard are also listed.

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Contents

1. Introduction

Most of today's Web content is only suitable for human consumption. Retrieving information is often a very time-consuming activity as one of the main obstacles at present is that the meaning of documents on the Web is not machine-accessible.

The aims of the Networks of Excellence Knowledge Web 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 already can be integrated in the existing Web. A major goal of both networks is to boost the 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 Knowledge Web and REWERSE in order to show possibilities for cooperation regarding industry-specific issues which includes plans for a pan-European web of industrial competence centres (which may possibly be formed virtually on the Web) in the area of Semantic Web. Cooperation possibilities with other networks such as Agentlink III 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 be, of course, of benefit for the industry.

2. Activities in REWERSE

The main objective of REWERSE is

- to network and structure the scientific community in reasoning languages for the Semantic Web and its applications and

- to provide a tangible technological b asis 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 inter-operable 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' addresses prevailingly the industry. Both activities complement each other and hence have to work closely together to achieve their respective goals. From a technology-transfer view point, the contributions from "Education and Training" are vital for transfer activities as education and content needs to be offered also to the industry. In the following paragraphs, these two activities are described in more detail. As cooperation efforts on the research level are not dealing 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 the industry as the students taking courses at the universities will later go to industry and use the acquired knowledge there. Specifically, REWERSE plans to

1. Develop a meta-curriculum about 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. E-D1). Most of the courses stem from university courses taught to be 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 inter-operable 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 targeted at the European industry on Semantic Web applications and their implementations

5. Cross-network cooperation focused on establishing European industrial competence centres offering industry-targeted training and education on Semantic Web topics

2.2.1. Awareness Raising PR campaign

The starting point for this activity is that a list of potential awareness activities has been compiled (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 which make industrial partners cooperate. The following incentives have been identified:

- Industrial partners can acquire specific and up-to-date knowledge in the 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 become 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 of the project, it is important to establish close contact and start a dialogue with industry as early as possible. Means for establishing

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

contacts is primarily 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 focus 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'.

- A special means for spreading awareness is to run the above mentioned awareness events, which is planned for October 2005. The goal of the first awareness event is to bring industry professionals and researchers together with researchers face-to-face 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 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 contained in the 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 industry needs. A first step in this direction is currently on the way in the deliverable T-D3, which will comprise a first set of educational material being basically suited for the industry. However, the industry requirements on industrial educational material are not fully understood yet. Thus, a questionnaire towards people with experience in industrial education shall be prepared to compile a list of recommendation for those people, 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 goal is to provide the possibility to learn about new developments and talk with experts and implementers face-to-face. Presenters from research as well as industry will be sought though the focus is intended to be on Industry talks.

Goal:

- Widespread awareness
- Exchange possibilities between researchers and industrials on ontologies and reasoning languages for the (Semantic) Web and its applications at an early stage of the projects which offers the possibility for participants of the event to learn about new developments and talk with experts and implementers face-to-face.
- Supporting the transition process of ontology and reasoning technology from academia to Industry

Target audience of the event are:
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

Although the focus is on attracting local companies, due to the characteristics of the target audience, representatives from non-local companies need to be also attracted.

The event is planned as a two-day event in Munich October 6-7th 2005. Offered are keynotes, 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 Knowledge Web, a 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, there is a software framework in Knowledge Web in work 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 how such competence centres can look like. It is not the goal of REWERSE and Knowledge Web 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 shall be defined within the next year to be able to have sufficient time for implementing them in the remaining project time.

3. Activities in Knowledge Web

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

The main objective of the education area is to coordinate the European universities' efforts in providing learning units on Semantic Web technologies. This way, Semantic Web technologies can be transferred from research to the 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 Knowledge Web in the area 'outreach to industry' 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)
- Cross-network cooperation (WP1.5)
- Knowledge Web portal (WP 1.6)

These activities are intended to view the problem of implementing / deploying Semantic Web technologies from the point of view of the industry, for example by providing recommendations on the "Best of Art" technology components and methodology to realize the concrete business cases of the 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 the industry. The basic idea from Knowledge Web'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 the industry. Potential members of the industrial board shall 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

(which are also pushing Semantic Web technologies by actively performing research and development on their own). Bo th groups are intended to be represented in the board. As a quite large number of companies is expected to join the consortium (200 members in 2007) because of the wide and universal applicability of Semantic Web technologies, a classification of the industry members according to economic sectors has been worked out.

A first set of potential consortium members has been derived from existing contacts from the OntoWeb project, the predecessor of Knowledge Web. Currently, 35 companies have shown interest to join the industrial board. An addendum to the Knowledge Web contract for setting up the industrial board has been worked out and is in the process of being signed by the Knowledge Web 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 either exchange data restricted to consortium members or to the public. An first version of 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 six 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 Knowledge Web so that research can better be tailored to industry requirements.

3.1.4. Ontology Outreach authority

Another industry area activity is to found an 'ontology outreach authority' (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 sh all be achieved by organizing industry into domains/sectors; set up a committee 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 validating and recommending related activities within its sector. Currently, the requirements for founding this OOA are under development.

3.1.5. Promotion of Ontology technology

To create a higher awareness of the goals of Knowledge Web, an annual technology show is planned which also should promote the relevance of Semantic Web technologies. A further goal of this event is to disseminate results of research conducted in the research area of Knowledge Web. The first technology show has taken place at ESWS'04 in Crete on 12/05/2004. 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 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 are stored.

3.1.6. 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 worked out (such as this deliverable, which is called D-T-D2 in Knowledge Web or the REWERSE deliverable E-D2, which is called D-E-D2 in Knowledge Web).In this context, the creation of educational material for industrial courses was identified as being highly important. This should be one of the main topics within the industry area of Knowledge Web, but also in close cooperation with other NoEs.

3.2. Education area
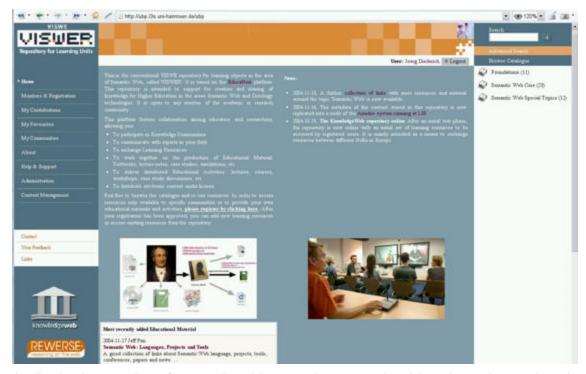
The education area has three main work fields:

- To collect existing learning units in the area of Semantic Web from all participating universities

- To set up an educational infrastructure where the collected learning units are stored

- To create a Virtual Institute for Semantic Web Education (VISWE) which is intended to be the central point of interest for all educational activities.

- 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 at 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 Knowledge Web 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.
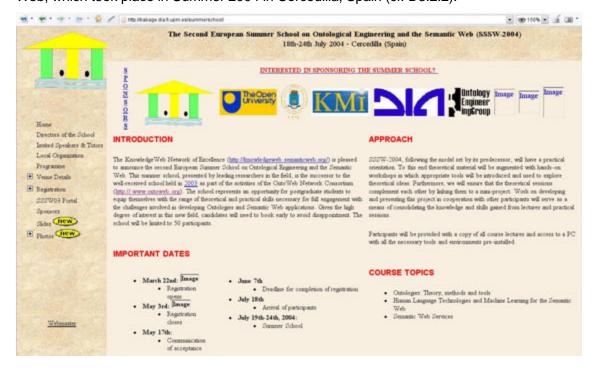
3.2.2. Educational Infrastructure

The collected resources should be stored at a central learning unit repository. A conventional version of the repository is already running at L3S in Hannover (cf. D3.3.2v1) 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.

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).

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 synergetical 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. This way, it becomes possible to combine courses from several universities into a new curriculum without the necessity to offer the courses at each university separately. This requires student mobility, which is also one of the major goals of the Bologna process.

3.2.5. Virtual Institute for Semantic Web Education (VISWE)

VISWE is intended as an umbrella for most of the education area activities within Knowledge Web, 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 VISWE shall be founded as an association according to German civil law which ensures endurability of the Knowledge Web educational activities even after the end of the project. VISWE will, however, not take responsibilities for the content being stored in the platform, as the copyright for these materials will retain with the authors of the learning units. Also VISWE 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 Knowledge Web. However, where feasible, joint efforts have been pursued also with other projects. One of those possible cooperation partners for technology-transfer activities is Agentlink III. Additionally, the project REWERSE also has cooperation ties with projects such as KnowledgeBoard 2.0 and CologNet.

4.1. Knowledge Web & REWERSE

There are several areas in which Knowledge Web and REWERSE could cooperate towards joint industrial activities:

- Industry area
- Educational area

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 Knowledge Web are participating at these audio conferences. The purpose of the audioconferences 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 those specific planned joint activities (of which some are already in progress) will be explained more in detail.

One of the major achievements in Knowledge Web 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 Knowledge Web 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 Knowledge Web a basic semantic portal (the main Knowledge Web 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 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 make Semantic Web technology move from academia to industry. Initially, both networks have decided to focus on different application scenarios:

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

However, more use cases have been collected in Knowledge Web 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, which have little experience in how to create / adapt 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 the interested industry.

Cooperation could also take place in the form of joint awareness events for the industry. In this area, REWERSE has a specific strength in this area since a whole work package (the 'technology transfer and awareness' activity) is dedicated to this topic. Knowledge Web 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 audioconferences held between REWERSE and Knowledge Web is dedicated to this aspect. Furthermore, REWERSE is participating with Knowledge Web 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 the websites of both networks is already 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 authorities (OOA) of Knowledge Web, 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 not fixed yet and is currently underway. Contacts between Knowledge Web and REWERSE on this issue are already existing.

4.1.2. Educational area cooperations

The educational areas are not directly connected to the industry (and are in both networks mainly focused on university education). However, since students will take the acquired knowledge to the industry after their studies, the university education is regarded as a very important factor for disseminating knowledge on Semantic Web technologies to the 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 Knowledge Web and REWERSE is setting up a joint infrastructure for the collected learning units (cf. E-D4/T-D4) so that all collected learning units (those in Knowledge Web 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 Knowledge Web are the deliverables E-D1 / D3.1.1, for which learning resources have been collected jointly from all partners of Knowledge Web and REWERSE. The authors of the collected learning units can be reached via a single mailinglist at kwebrew-lu@l3s.de.

There is one major difference between the courses collected in Knowledge Web and REWERSE:

- Knowledge Web is currently focused on providing material for a shared European curriculum on Semantic Web and Ontologies. (It has also collected material for PhD courses and industry courses, but this is not the main focus).

- REWERSE is currently focused on providing a general graduate curriculum. An adaptation of existing university courses to industrial needs is part of the TTA work package

Therefore, the course contents might differ for both networks, but some basic material should be reusable between the partners. Also, the industry-adapted courses from REWERSE could be very useful for setting up workshops for the industry, which are planned for both, Knowledge Web and REWERSE.

A further already planned cooperation is the organization of a joint summer school in both networks. This is currently envisioned for the summer school 2006.

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 Knowledge Web.

Finally, it is planned that VISWE becomes the main organizational umbrella for the administration of the learning-unit repository 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 Knowledge Web and from REWERSE, it is expected that REWERSE will support VISWE. For example, the REWERSE participants could become a member of the VISWE association (cf. joint deliverable E-D2 / T-E-D2)).

4.1.3. Cooperations involving industry area and education area

Because the "Technology Transfer Area" of REWERSE also comprises 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 VISWE association. This way, there is even cooperation among the education areas and the industry areas of REWERSE and Knowledge Web so that all educational material of Knowledge Web and REWERSE is available on a single infrastructure.

As there are two portals for storing material for industrial education (VISWER and the O2I portal), we envision to classify the material as follows:

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

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.

In case the educational infrastructure for the industry-adapted courses is integrated with the personalized portal developed in REWERSE working group A3, it would become possible to have common personalization features even in Knowledge Web, which is currently not considered there.

4.1.4. Summary of cooperation activities & possibilities

In the following table, an overview of the different cooperation activities between REWERSE and Knowledge Web is given. First, the topic on which cooperation efforts are focusing is listed. The leading network of the cooperation is the partner who is mainly in charge of the respective activity line. Out of efficiency reasons, it is in most cases necessary that one network is taking the lead. The status of the cooperation can be 1) actual (cooperations which have started already and concrete steps have been taken), planned (concrete plans about the cooperation and measures to realise the plans have been taken) or potential (there is potential for the cooperation, but no concrete steps have been taken yet). Lastly, there is the average start date of the cooperation activity given.

Activity	Description of cooperation	Leading network	Status	Start Date
TTA (Technology Transfer & Awareness)	Exchange of experience	REWERSE & Knowledge Web	Actual	April 2004 (first audioconference May 3 2004)
	Industry Consortium	Knowledge Web	Potential	
	Semantic Portal	Knowledge Web	Potential	
	Cross-linking of websites	REWERSE & Knowledge Web	Actual	July 2004
	Use Cases exchange	REWERSE & Knowledge Web	Actual	July 2004
	Creation of Educational material for industry	REWERSE & Knowledge Web	Actual (regarding list of requirements)	November 2004
	Industry workshops	REWERSE & Knowledge Web	Potential	
	Joint Flyer Education	REWERSE & Knowledge Web	Potential	
	Joint Flyer promoting both networks	REWERSE	Actual	November 2004 (joint flyer first time used at the KM Europe 04)
	Joint Event "Semantic Web Days"	REWERSE	Actual	September 2004
	Joint Event "Industry Forum at ESWC"	Knowledge Web	Actual	November 2004
	Industrial Competence Centres	Knowledge Web	Planned	No concrete actions taken yet, but discussions during audio-conferences
TTA & ET	Educational Infrastructure VISWER (E/T-D4)	Knowledge Web	Actual	June 2004
ET (Education & Training)	Collection of learning resources	REWERSE	Actual	March 2004
	Summer School 2006	REWERSE	Potential	
	Joint organization of a curriculum	REWERSE & Knowledge Web	Potential	
	VISWE	Knowledge Web	Actual	November 2004

4.2. Cooperation with other projects

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

- 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 more in detail. An important issue in this respect is to identify common topics and companies interested in the interfaces of the topics the networks are dealing with. 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.

In the following, cooperation with Agentlink III will be explained more in detail.

4.2.1. AgentLink III

The following cooperative activities have already been taken place:

- Contributions of REWERSE to AgentLink III newsletter
- Crosslinking of the respective websites
- Distribution of "AgentLink UPDATE" newsletter to REWERSE community

The following activities are planned in the near future:

- Collaboration Workshop for the Future Semantic Web at ESWC 2005, Heraklion, Greece, 29th-30th, May, 2005 (cf. http://www.agentlink.org/workshops/CFSW05/)

  Goal: The objectives of the Workshop Framework 6 Collaboration for the Future Semantic Web will be to provide a forum where researchers within the European Semantic Web community who are working on synergistic technologies within Knowledge Web, AIM@SHAPE, REWERSE, MUSCLE, AgentLink III and KnowledgeBoard 2.0 to come together and collaborate by sharing knowledge and an awareness of each others research and technology, to facilitate an understanding and synergy of complementary technologies.

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

- Further contributions to the Agentlink III newsletter on the following topics:
  - existing review or survey articles (as deliverables) within REWERSE or Knowledge Web that might be suitable for summarising
  - report about existing reasoning tools within the Semantic Web community,
  - links to relevant reasoning tools, or points to any downloadable tools that were presented at REWERSE or Knowledge Web events
- Participation at each other's events. For this issue, common topics have to be identified. A topic for Agentlink III and REWERSE or Knowledge Web would be the interface agents / Semantic Web (semantic interoperability).

4.2.2. CologNet

An exchange with CologNet would be interesting for REWERSE out of the view point that CologNet dealt with computational logics as a research project and must have required experience regarding their dealing with industry during the lifetime of the project. REWERSE might be able to profit from such experience. Due to the fact that CologNet has finished, this is also the only feasible exchange possibility remaining between the two networks.

4.2.3. KnowledgeBoard 2.0

REWERSE is co-operating with KnowledgeBoard 2.0 by providing necessary links and information for making REWERSE visible in the structures provided by KnowledgeBoard:

- Attendance of KnowledgeBoard 2.0 meeting in Luxembourg (March 2004) to present the projects and define possible co-operations and contact-persons.

- Subscription to and distribution of the KnowledgeBoard Newswire.

- Cross-linking of the KnowledgeBoard 2.0 website.

- In progress: Announcement of REWERSE "Reasoning Web" summer school and other events (e.g. PPSWR 2005) on KnowledgeBoard 2.0 Portal.

- Plans: Presentation of REWERSE as the "Project of the Month" at the KnowledgeBoard 2.0 Portal in May 2005. Expected benefits:

  o dissemination of knowledge and exchange of ideas

  o discover new dissemination channels

  o gain reputation with a broader audience

5. Conclusions

There are quite some opportunities to strengthen the industry areas of all mentioned Networks of Excellence 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. As the industry areas / technology transfer areas of the different Networks of Excellence are still in an early stage (both networks run for about a year now), many cooperative activities only have started. A more detailed analysis is possible when more experience in cooperation is gained. The Knowledge Web deliverable D-T-D2 will build up on this deliverable and will include experience gained from the coming months.

The focus of cooperation is on the networks of REWERSE and Knowledge Web. Cooperations with other networks will be sought where suitable. Examples of such cooperation possibilities have been given in the chapters above.

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