SIXTH FRAMEWORK PROGRAMME
PRIORITY 2
INFORMATION SOCIETY TECHNOLOGIES

NETWORK OF EXCELLENCE

Detailed Joint Programme of Activities, first 18 months

Network acronym: *Knowledge Web*
Network full title: *Realizing the Semantic Web*
Proposal/Contract no.: 507482

Detailed joint programme of activities (JPA) – first 18 months

1 Introduction - general description and milestones

The goal of Knowledge Web is to promote and further develop the semantic web. It is set within the 6th Framework Programme whose goals are to strengthen and spread excellence and to integrate activities. These goals motivate the organization of Knowledge Web's joint Programme of Activities. To these we add another motivation which is the competitiveness of the European knowledge economy through that of its companies, its workforce and its research.

The Joint Programme of Activities, as presented in section 6.B, aims at achieving these goals through actions simultaneously targeted towards industry, research and education. The first 18 months of the network will set this up. The main objectives of these first months are:

- to gather a number of industrial and service provider parties as a means of expressing needs and evaluating existing technologies and resources for the semantic web and semantic web services;
- to gather a significant number of European researchers (even outside the network boundaries and Europe boundaries) for tackling the main scientific challenges identified by the network;
- to set up the (administrative and software) structure for housing our virtual institute for semantic web education.

Of course, these activities are not an end in themselves and, beside outreach, these first months will be the occasion to do real work: start evaluating available technology and expressing needs, pursue research and establish the framework for research questions raised above, and create educational resources or work with existing ones.

We present, area by area, the first Joint Programme of Activity and its outcome before considering the work packages individually.

In the first months of the network, the outreach to industry activity will focus on setting up a group of companies (industrial board) to be involved in the network, building on the OntoWeb effort. (WP1.1) This will be the ground for building accurate requirement analysis that can be then used in the further tasks of (WP1.2) evaluating the currently available technology and providing input requirements for research oriented activities. Selected technologies will be integrated within a coherent Semantic Web Framework in which the interoperability between tools will be actively sought. The output of this evaluation activity will provide input for continuing technology recommendation (WP1.3) and promotion (WP1.4) activities.

Along with the three main areas of Knowledge Web, there will be two particular tasks worth mentioning. The cross-field (WP1.5) activity will actively seek connections with other efforts, mainly networks of excellence, in order to find seamless trans-border integration. This activity will involve setting up common meeting points that can be either workshops or the delivery, by one network, of requirements for the technology of the other (this can be, for instance, requirements for rule language extension in connection with a query language or the provision of alignment formats for transformation technology). This can also be the design of common courses. The semantic portal infrastructure activity (WP1.6) will create a common infrastructure for all the Knowledge Web areas.

The goal of the Research program is to lay the foundation of the semantic web (and especially that of the part of the semantic web that we identified as our target). This work can be started right away - without waiting for industry input - because of the awareness of these challenges in the research community. These activities will start with selective open meetings during which researchers can express the actual state of the art and the direction to be taken in common by the network. These meetings will allow us to start integrating potential active researchers outside of the network. Moreover, various benchmarking tasks will enable the evaluation of the current state from which our goal is to break the log-jams in this technology.

More precisely:

- *Scalability* (WP2.1) will produce state of the art methods to be used for ensuring scalable semantic web performances. It will define a benchmarking methodology for evaluating the scalability of these methods and of tools.
- *Heterogeneity* (WP2.2) will work at gathering together people working on alignment technology and prepare the assessment of alignment technology following the methodology introduced by WP2.1.
- *Dynamics* (WP2.3) will survey existing techniques for dealing with the evolution of ontologies such as versioning, integrated workflow and process modeling, and meaning negotiation in agent systems.
- *Semantic web services* (WP2.4) will lay the basis for building semantic web services by providing the requirements for such services that will feed research on the other areas. It will also attempt to bridge the gap between actual agent-based systems and web-services by establishing connection with other communities.
- *Semantic web language extensions* (WP2.5) will consider the extensions needed to existing web ontology language and contact the relevant bodies (W3C, US/EU ad hoc committee, other network) in order to work on the specification and development of such languages.

The part of these activities in charge of creating state of the art products or syntheses will also output to WP3.2 in order to provide new educational content on these subjects. The Virtual Research Centre will be set up for monitoring the progress of the research and revising the research programme accordingly (WP2.6). It will also establish an exchange programme for researchers to spend some time at other institutes.

The goal of the Education programme is the definition of the first integrated curriculum in semantic web. In order to achieve this, an organizational task (WP3.1) will be carried out in order to define the shape of VISWE. It will investigate comparable efforts, negotiate with contributors' administrations and lay the plan for development of VISWE. This will result in a clear plan on the part of the universities and institutes that will be involved. (WP3.2) Efforts to gather and format educational content will also begin right away in order to provide a first version of the material after year one and to diagnose the missing courses that will need to be developed. A summer school will be organized taking advantage of the work already done in preparing the first OntoWeb summer school on Ontology engineering. (WP3.3) Before organizing this content we will investigate the possible architecture for a delivery platform taking advantage of semantic web technologies. A first version of this platform will be demonstrated after 12 months (an advanced platform will be incrementally built from this prototype). Old content will then be converted and new content will be produced for this platform.

The management activity (WP4) will first have the difficult task of building a consortium agreement acceptable for all and to setting up the financial and administrative infrastructure for the network. This will involve project management meetings for monitoring the Joint Programme of Activity progress and evolving it in light of the first results. After one year, the programme for the next 18 months will be designed by taking into account the outcomes of

the first 12 months. It will be presented at the first technical audit of the network. The management activity also takes care of accounting, reporting and the day-to-day life of Knowledge Web.

The activity of the work packages is easily verifiable through their tasks which must issue deliverables at deadlines that do not necessarily fall at 18 months (see diagrams below). Moreover, our Project Management Board can decide, when revising the Joint Programme of Activities (this will happens after one year) to extend or reduce the span of a work package.

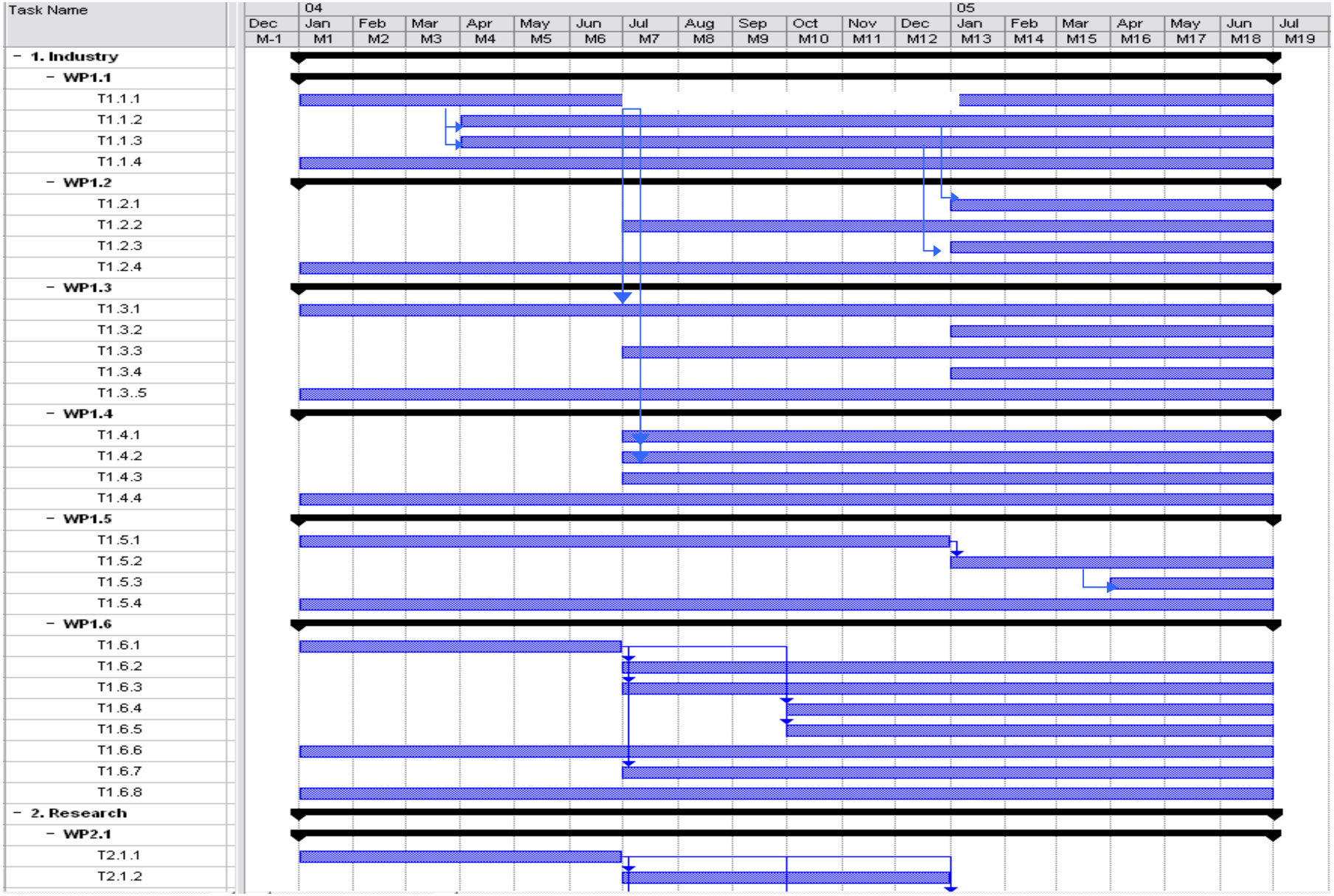
2 Phase one planning and timetable

Below we present four Gantt charts that represent:

- Gantt chart of the outreach to industry work packages;
- Gantt chart of the research work packages;
- Gantt chart of the education work packages;
- Gantt chart of the management work package.

For each of the work packages, we have included the tasks the work package comprises:

The main milestones for the first 18 months should be considered as a measure of Knowledge Web's progress.


Task Name
04
05
Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
M-1 M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16 M17 M18 M19
1. Industry
WP1.1
T1.1.1
T1.1.2
T1.1.3
T1.1.4
WP1.2
T1.2.1
T1.2.2
T1.2.3
T1.2.4
WP1.3
T1.3.1
T1.3.2
T1.3.3
T1.3.4
T1.3..5
WP1.4
T1.4.1
T1.4.2
T1.4.3
T1.4.4
WP1.5
T1.5.1
T1.5.2
T1.5.3
T1.5.4
WP1.6
T1.6.1
T1.6.2
T1.6.3
T1.6.4
T1.6.5
T1.6.6
T1.6.7
T1.6.8
2. Research
WP2.1
T2.1.1
T2.1.2


Task Name
04
05
Dec Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul
M-1 M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16 M17 M18 M19
T2.1.3
T2.1.4
T2.1.5
T2.1.6
T2.1.7
WP2.2
T2.2.1
T2.2.2
T2.2.3
T2.2.4
T2.2.5
T2.2.6
WP2.3
T2.3.1
T2.3.2
T2.3.3
T2.3.4
WP2.4
T2.4.1
T2.4.2
T2.4.3
T2.4.4
T2.4.5
T2.4.6
T2.4.7
T2.4.8
WP2.5
T2.5.1
T2.5.2
T2.5.3
T2.5.4
T2.5.5
WP2.6
T2.6.1
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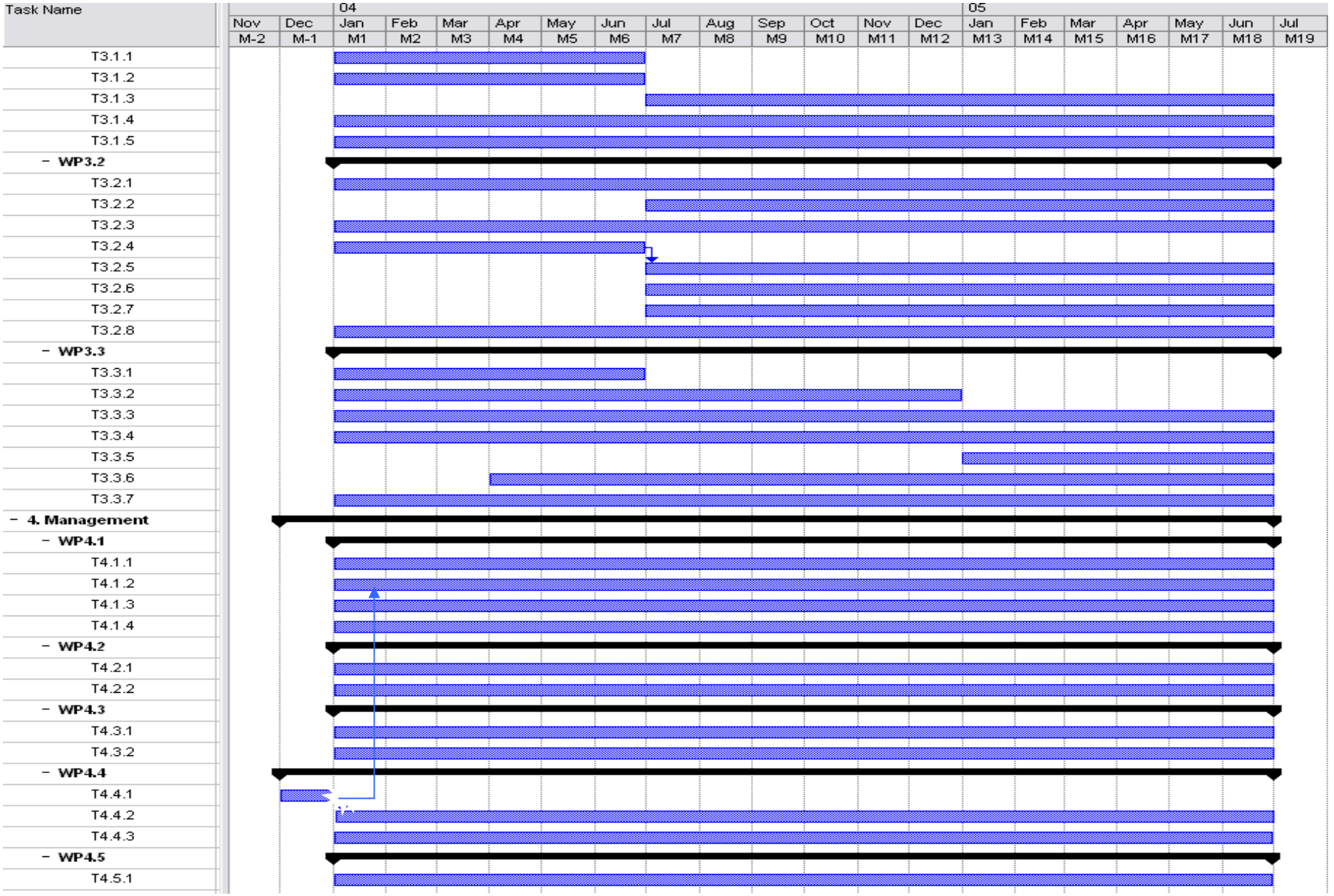
T2.6.3
T2.6.4
T2.6.5
3. Education
WP3.1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M-2 M-1 M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16 M17 M18 M19
T3.1.1
T3.1.2
T3.1.3
T3.1.4
T3.1.5
WP3.2
T3.2.1
T3.2.2
T3.2.3
T3.2.4
T3.2.5
T3.2.6
T3.2.7
T3.2.8
WP3.3
T3.3.1
T3.3.2
T3.3.3
T3.3.4
T3.3.5
T3.3.6
T3.3.7
4. Management
WP4.1
T4.1.1
T4.1.2
T4.1.3
T4.1.4
WP4.2
T4.2.1
T4.2.2
WP4.3
T4.3.1
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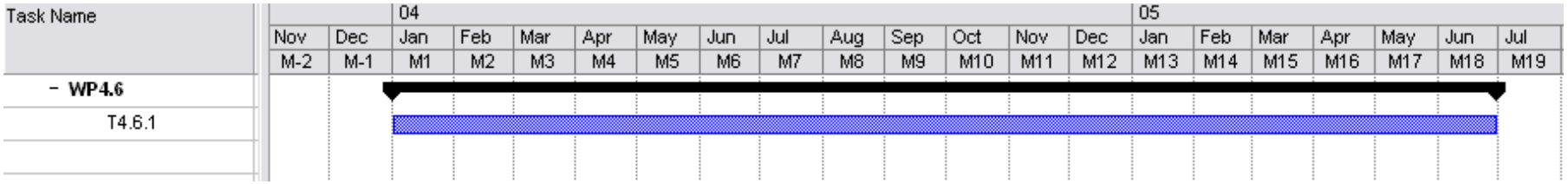
WP4.5
T4.5.1


Task Name
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M-2 M-1 M1 M2 M3 M4 M5 M6 M7 M8 M9 M10 M11 M12 M13 M14 M15 M16 M17 M18 M19
WP4.6
T4.6.1

3 Graphical presentation of phase one components

We have analyzed, in a PERT diagram the relationship between all the WPs, visualizing in a graphical way the relationships between WPs from different areas.

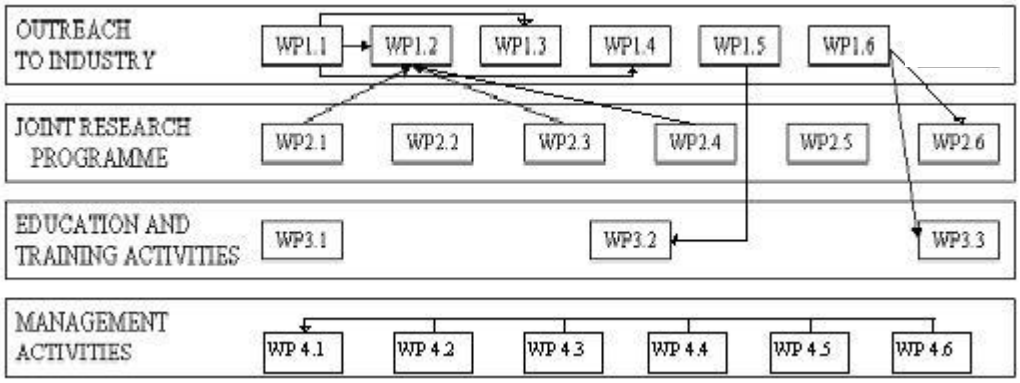

Fig. 9.1 Work packages

The following PERT diagrams represent a pert for each of the areas. For each one, we present the relationships between tasks of the same and different work packages of the same area. Bellow, we include:

- PERT for the outreach to industry work packages.
- PERT for the research work packages.
- PERT for the education work packages.
- PERT for the management work package.

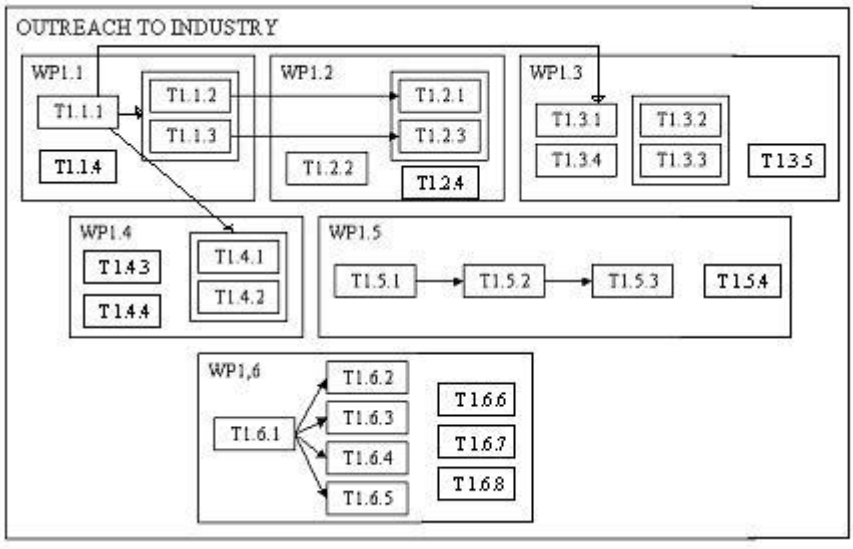

Fig. 9.2 Outreach to industry

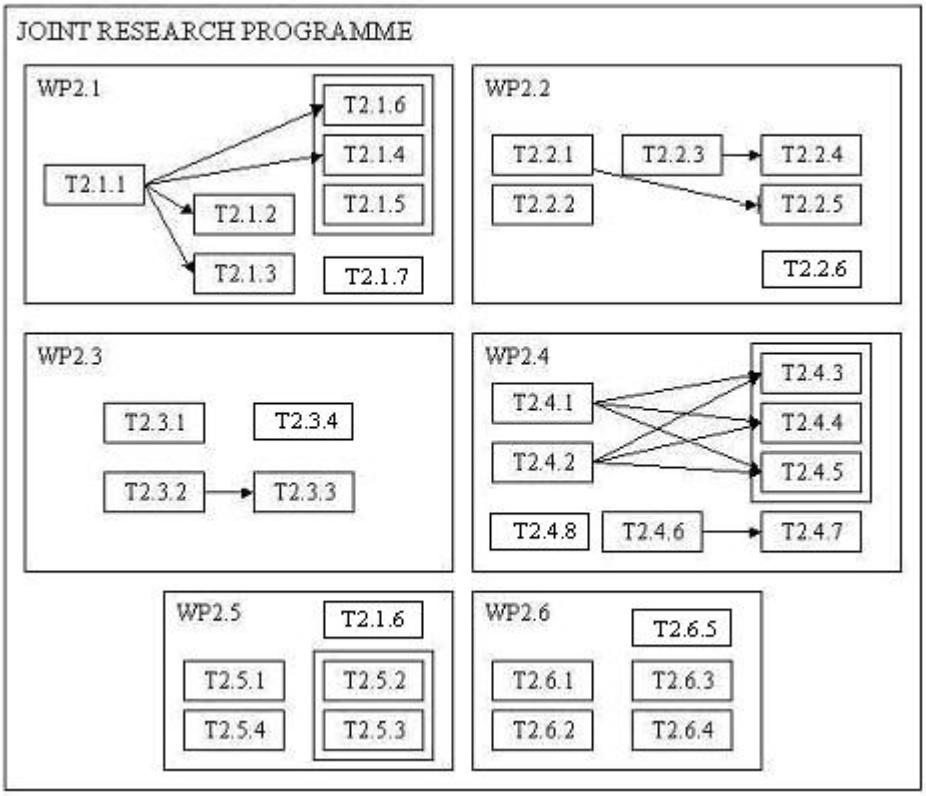

Fig. 9.3 Join research programme

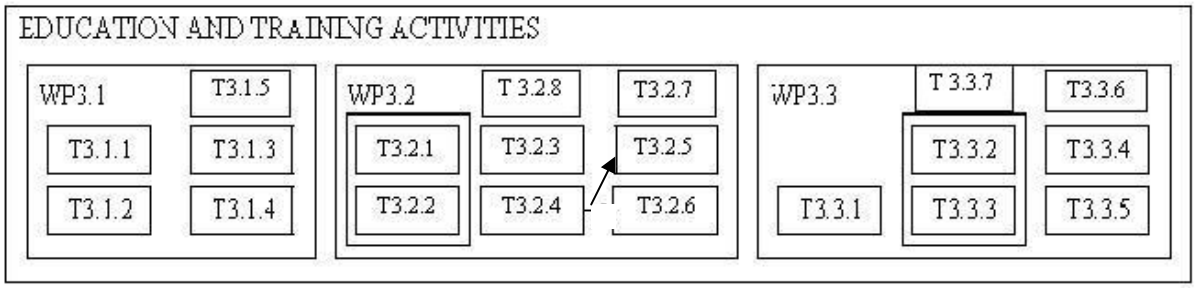

Fig. 9.4 Education and training activities

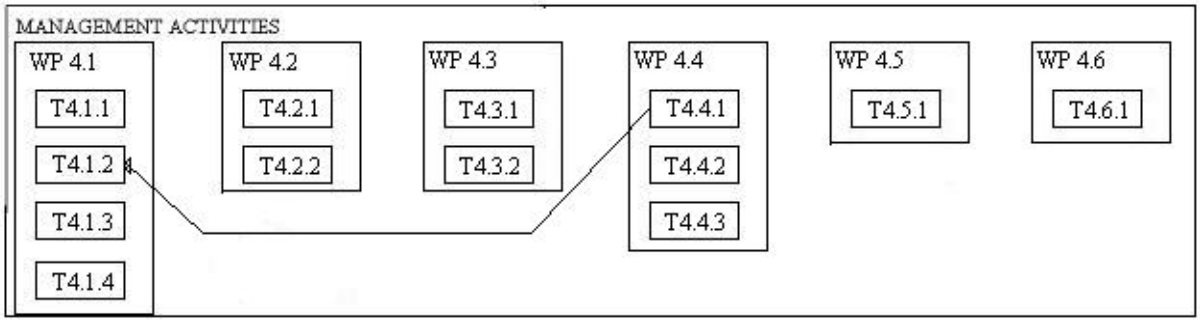

Fig. 9.5 Management activities

4 Workpackage list/overview

Work package list

Work-package No	Workpackage title	Lead contractor No	Person-months	Start month	End month	Deliverable No
1	**INDUSTRY**		**89**	**1**	**18**	
1.1	Industrial application needs	FT	11	1	18	1.1.1, 1.1.2, 1.1.3, 1.1.4
1.2	Evaluation for technology selection	VUB	16	6	18	1.2.1, 1.2.2, 1.2.3
1.3	Technology recommendations	VUB	13	1	18	1.3.1, 1.3.2, 1.3.3
1.4	Promotion of ontology technologies	UIBK	11	6	18	1.4.1, 1.4.2, 1.4.3
1.5	Cross-network cooperation	UIBK	26	1	18	1.5.1, 1.5.2, E-D2, T-D2
1.6	Semantic portal infrastructure	UPM	12	1	18	1.6.1, 1.6.2, 1.6.3, 1.6.4
2	**RESEARCH**		**171**	**1**	**18**	
2.1	Scalability	VU	30	1	18	2.1.1, 2.1.2, 2.1.3
2.2	Heterogeneity	INRIA	37	1	18	2.2.1, 2.2.2, 2.2.3, 2.2.4
2.3	Dynamics	NUIG	27	1	18	2.3.1, 2.3.2
2.4	Semantic Web Services	NUIG	49	1	18	2.4.1, 2.4.2, 2.4.3, 2.4.4
2.5	Semantic Web language extensions	VUM	15	1	18	2.5.1, 2.5.2
2.6	Towards a virtual research centre	UKARL	13	1	18	2.6.1, 2.6.2, 2.6.3, 2.6.4
3	**EDUCATION**		**59**	**1**	**18**	
3.1	Foundations for Virtual Institute for Semantic Web Education (VISWE)	L3S	13	1	18	3.1.1, 3.1.2, 3.1.3

3.2	Educational content and event provision	L3S	25	1	18	3.2.1, 3.2.2, 3.2.3, 3.2.4, 3.2.5, 3.2.6
3.3	Semantic delivery platform	OU	21	1	18	3.3.1, 3.3.2, 3.3.3, 3.3.4
4	**MANAGEMENT**		**41**	**1**	**18**	
4.1	Operational management	UIBK	10	1	18	4.1.1, 4.1.2, 4.1.3
4.2	Financial management	UIBK	4	1	18	4.2.1
4.3	Technical management	UIBK	15	1	18	4.3.1
4.4	Legal and knowledge management	UIBK	6	1	18	4.4.1, 4.4.2
4.5	Society and gender issues	VUM	3	1	18	4.5.1, 4.5.2
4.6	Self-assessment, risk analysis and market watch	UIBK	3	1	18	4.6.1
	TOTAL		360			

5 Deliverables list

Deliverables list (18 month joint programme of activities)

Del. no.	Deliverable name	WP no.	Lead particip-ant	Nature[1]	Dissemina-tion level [2]	Delivery date[3] (proj. month)
	INDUSTRY					
1.1.1	Board members list, clustering and organizational and operational charter (MoU)	1.1	FT	R	PU	6, 18
1.1.2	Prototypical use cases, typical information system context and structure for migration into ontology-based structures, requirements for semantic web technologies, and typical high level migration requirements	1.1	FT	R	PU	12
1.1.3	Typology of ontology-based processing tasks and high level components needed to fulfil the prototypical application requirements	1.1	FT	R	PU	12
1.1.4	System requirements and knowledge processing requirements for prototypical applications and business cases	1.1	FT	R	PU	18
1.2.1	Evaluation of the utility of ontology development tools for different types of industrial application needs	1.2	VUB	R	PU	18
1.2.2	Report on Semantic Web Framework requirements analysis	1.2	VUB	R	PU	12
1.2.3	Methods for ontology evaluation	1.2	VUB	R	PU	12

1 Please indicate the nature of the deliverable using one of the following codes:
R = Report
P = Prototype
D = Demonstrator
O = Other

2 Please indicate the dissemination level using one of the following codes:
PU = Public
PP = Restricted to other programme participants (including the Commission Services).
RE = Restricted to a group specified by the consortium (including the Commission Services).
CO = Confidential, only for members of the consortium (including the Commission Services).

3 Month in which the deliverables will be available. Month 1 marking the start of the project, and all delivery dates being relative to this start date.

1.3.1	Best practices and guidelines for industry	1.3	VUB	R	PU	18
1.3.2	Identification of standards on metadata for ontologies	1.3	VUB	R	PU	12
1.3.3	Report on requirements of OOA	1.3	VUB	R	PU	18
1.4.1	Presentation of technology roadmap	1.4	UIBK	R	PU	12
1.4.2	Presentation of business cases and success stories in industry	1.4	UIBK	R	PU	18
1.4.3	Report on first international technology show	1.4	UIBK	R	PU	12
1.5.1	Project presentation and project showcase	1.5	UIBK	R	PU	2
1.5.2	Report on joint education and training activities with cooperating networks	1.5	UIBK	R	PU	18
E-D2	Co-operation with Knowledge Web/VISWE on graduate education.	1.5	UIBK	R	PU	18
T-D2	Co-operation with Knowledge Web and other NoE on industrial competence centres and VISWE	1.5	UIBK	R	PU	18
1.6.1	Portal requirements analysis and system design	1.6	UPM	R	PU	6
1.6.2	Portal ontology	1.6	UPM	D	PU	12
1.6.3	Portal versions	1.6	UPM	D	PU	18
1.6.4	Portal contents releases	1.6	UPM	D	PU	18
	RESEARCH					
2.1.1	State of the art on the scalability of ontology-based technology	2.1	VU	R	PU	6
2.1.2	Report on methods for approximate reasoning, using knowledge compilation, language weakening and approximate deduction	2.1	VU	R	PU	12
2.1.3	Report on modularization of ontologies.	2.1	VU	R	PU	18
2.1.4	Definition of a methodology, general criteria, test suites for benchmarking ontology building tools.	2.1	VU	R	PU	12
2.2.1	Specification of a common framework for characterizing alignment	2.2	INRIA	R	PU	6, 12
2.2.2	Specification of a benchmarking methodology for alignment techniques	2.2	INRIA	R	PU	12

2.2.3	State of the art on current alignment techniques	2.2	INRIA	R	PU	6
2.2.4	Description of alignment implementation and benchmarking results	2.2	INRIA	R	PU	18
2.3.1	Specification of a methodology for ontology syntactic and semantic versioning	2.3	NUIG	R	PU	12
2.3.2	Specification of knowledge acquisition and modelling of the process of the consensus	2.3	NUIG	R	PU	12
2.4.1	Semantic requirements for web services description	2.4	NUIG	R	PU	12
2.4.2	Definition of semantics for web service discovery and composition	2.4	NUIG	R	PU	12
2.4.3	State of the art on agent-based services	2.4	NUIG	R	PU	12
2.4.4	Guidelines for the integration of agent-based services and web-based services	2.4	NUIG	R	PU	18
2.5.1	Specification of coordination of rule and ontology languages	2.5	VUM	R	PU	6
2.5.2	Report on query language design and standardization	2.5	VUM	R	PU	12
2.6.1	Report on budget allocation	2.6	UKARL	R	RE	12
2.6.2	Report on research exchange and collaboration	2.6	UKARL	R	PU	12
2.6.3	Report on workshop and conference organization	2.6	UKARL	R	PU	12
2.6.4	Report on the research advance	2.6	UKARL	R	PU	18
	EDUCATION					
3.1.1	Specification of VISWE tasks and goals (as result of a requirements analysis)	3.1	L3S	R	PU	6
3.1.2	Document on organizational structure and legal form of VISWE to which all participating partners have agreed	3.1	L3S	R	PU	12
3.1.3	Memorandum of Understanding signed by participating partners, regarding commitment to organizational structure and legal form of VISWE	3.1	L3S	O	PU	18
3.2.1	Learning unit collection available	3.2	L3S	O	PU	6, 18
3.2.2	Report on educational events	3.2	L3S	O	PU	12

3.2.3	Report on core curricula in Ontology and Semantic Web	3.2	L3S	R	PU	6
3.2.4	Document describing M.Sc. curriculum on which all participating universities have agreed	3.2	L3S	R	PU	18
3.2.5	Memorandum of Understanding regarding curriculum and mutual course approval signed by participating universities	3.2	L3S	O	PU	18
3.2.6	Summer school on semantic web technologies	3.2	L3S	O	PU	18
3.3.1	Report on the agreed metadata standard for learning units	3.3	OU	R	PU	6
3.3.2	Basic infrastructure available, provides initial learning unit collection from task 3.2.3	3.3	OU	P	PU	6, 12
3.3.3	Prototype of advanced learning platform	3.3	OU	P	PU	18
3.3.4	Report on collaboration with IMS consortium and ProLEARN	3.3	OU	R	PU	12
	MANAGEMENT					
4.1.1	EC reporting	4.1	UIBK	R	RE	12
4.1.2	Report on Audit regime	4.1	UIBK	R	RE	12
4.1.3	Public report	4.1	UIBK	R	PU	12
4.2.1	Financial and accounting report	4.2	UIBK	R	RE	12
4.3.1	Technical report	4.3	UIBK	R	RE	12
4.4.1	Consortium Agreement (including resolution of conflicts)	4.4	UIBK	O	PU	-1
4.4.2	Setting up legal entities	4.4	UIBK	O	PU	12
4.5.1	Report on Gender Action Plan	4.5	VUM	R	PU	12
4.5.2	Report on public engagement activities	4.5	VUM	R	PU	18
4.6.1	Report on self-assessment, risk analysis and market watch	4.6	UIBK	R	RE	12

6 Workpackage descriptions

Workpackage description (18 months plan)

Workpackage number	1.1		**Start date or starting event:**			Month 1
Activity Type[4]	Other specific activities – Industrial Application Needs					
Participant id	**FT**	FU Berlin	UniTn	VUB	Total	
Person-months per participant:	3	2	2	4	11	

Objectives

The most prominent applications today of the semantic web and web services are typically in the e-work and e-business domains. The intention is to collect application requirements and their prototypical case studies, to anticipate opportunities for ontology technologies and applications, and to detail high level Ontology and Knowledge processing needs for existing and emerging applications in services and business scenarios.

This activity analyses the typical information or knowledge systems of the organizations and their current work practices and possible benefits from the use of semantic web technologies. It aims at a typology of profiles of IT systems that are prospective benefactors of the Semantic Web technology.

In summary its objectives are:

- The industrial board is to be set up as constant contact point for the industry-academia interaction within the consortium;
- System Requirements analysis;
- Knowledge processing requirements analysis.

Description of work

T 1.1.1

Industry board set up, which includes: Definition of potential user groups of ontology technologies, selection of representative industrial candidates, establishment of the board, and definition of regular activities and operational structure (MoU).

T 1.1.2

Systems requirements analysis, which includes: requirements analysis from concrete industrial and business context and practices, study of development and deployment of the existing or future ontology-based IT systems, and studying of reengineering methodologies for migration into ontology-based systems.

T 1.1.3

Knowledge processing requirements analysis, that consists of identifying the processing tasks of the system operations in the business context and the examination of types of knowledge components and processing required in business logic or operation.

[4] For Networks of Excellence each WP must relate to one (and only one) of the following two possible Activity Types: 'Other specific activities (which include Integrating activities, Joint Research Programme, Spreading of Excellence activities), and Management activities

T 1.1.4

Management and self-assessment

Deliverables

D 1.1.1

Industry board members list, clustering and organizational and operational charter (MoU)

D 1.1.2

Prototypical business use cases, typical information system context and structure for migration into ontology-based structures, requirements for semantic web technologies, and typical high level migration requirements

D 1.1.3

Typology of ontology-based processing tasks and high level components needed to fulfil the prototypical application requirements

D 1.1.4

System requirements and knowledge processing requirements for prototypical applications and business cases

Milestones[5] and expected result

Month 6

D 1.1.1 v1

Month 12

D 1.1.2, D 1.1.3

Month 18

D 1.1.1 v2, D 1.1.4

[5] Milestones are points where major results have successfully been achieved as the basis for the next phase of work, or are control points at which decisions are needed; for example concerning which of several technologies will be adopted as the basis for the next phase of the project.

Workpackage number	1.2			**Start date or starting event:**			Month 6
Activity Type[8]	Other specific activities: Evaluation for technology selection						
Participant id	FT	INRIA	L3S	UKA RL	VUM	UniTn	**VUB**	Total
Person-months per participant:	2	1	4	2	2	2	**3**	16

Objectives

The purpose is to compare empirically different types of tools with the same testing strategy and on the same test suite (as in WP 2.1). Special attention to tools interoperability will be examined. The utility of different types of ontology-based tools for carrying out given development tasks in the use cases and industrial scenarios identified on WP1.1 will be evaluated. Ultimately, a certification procedure will be defined for those ontology-based tools that have a consistent level of quality and thus acceptance by industry.

A proposal of a unified Semantic Web Framework (SWF) for testing interoperability of ontology based tools in the light of the results of the tool benchmarking activity and use case needs. The framework should ease the use of configurable tools for the use cases of industrial scenarios. The framework will cover all aspects of creating, applying, maintaining, evolving and using ontologies and semantic web applications.

Ontology content evaluation will analyze and compare the suitability of ontologies on the same subject matter for a particular type of application as described in the uses cases and industrial scenarios.

Description of work

T 1.2.1

Utility of ontology-based tools, which analyze reports on the evaluation of tools according to the industrial use cases and scenarios

T 1.2.2

Interoperability of tools and services, which includes:

- Requirements for a Semantic Web Framework and standards for interoperability;
- Definition of the architecture of the Semantic Web Framework;
- Definition of components needed to develop, maintain and deploy semantic web applications;
- Definition of Methodology for applying the Semantic Web Framework to industrial use cases.

T 1.2.3

Ontology content evaluation and usability, which includes the content evaluation and suitability of ontologies with the content needed in the industrial use cases

T 1.2.4

Management and self-assessment

Deliverables

D 1.2.1

Evaluation of the utility of ontology development tools for different types of industrial application needs *D 1.2.2* Report on Semantic Web Framework requirements analysis *D 1.2.3* Methods for ontology evaluation

Milestones[9] and expected result *Month 12* D 1.2.2, D 1.2.3 *Month 18* D 1.2.1

Workpackage number	1.3		**Start date or starting event:**				Month 1
Activity Type[8]	Other specific activities: Technology Recommendations						
Participant id	FT	FU Berlin	UPM	UKA RL	USFD	VU	**VUB**	Total
Person-months per participant:	2	1	2	1	2	2	**3**	13

Objectives

Recommendations are made as to how to develop and to deploy ontologies and semantic web applications in particular business cases and with regard to industrial needs for semantic processing. The work synthesizes the results from industrial requirements analysis and technology evaluation to make recommendations and advice on the suitability of ontologies in the industrial use cases. This task will capitalize on Ontoweb/SIG4 effort.

Definition of registries where ontology developers will be able to publish the structured metadata of evaluated and certified ontologies. Development of end-user methods with corresponding tools support to measure the usability and usefulness of ontologies on the registries for an application. Ultimately, Knowledge Web will strive to set up an alliance with several industry bodies in order to set up an Ontology Outreach Authority, certifying, and serving validated ontologies.

Standardization of structured metadata to describe the ontology field in contact with standardization bodies (W3C, ISO, IEEE, CEN, ...). In summary the objectives are:

- Best practices and guidelines;
- Ontology repository;
- Standards;
- Set up the Ontology Outreach Authority.

Description of work

T 1.3.1

Best practices and guidelines, which includes:

- Extract from the industry use cases analysis the top available best practices;
- Analyze feedback from usage of the ontologies and associated toolbox available in the SWF;
- Make recommendations on KR, Tools, development cycle methodologies, testing, deployment.

T 1.3.2

Ontology repository:

- Select evaluated and ultimately certified ontology for prototypical business domain use cases;
- Define and create the ontology registries;
- Make it public and analyze feedbacks.

T 1.3.3

Standards:

- Select and contact the standardization bodies;
- Contribute to the drafting of standards on metadata for ontology and interoperability needs.

T 1.3.4

Ontology Outreach Authority (OOA);
Detailed requirements analysis regarding the set-up of the OOA.

T 1.3.5
Management and self-assessment

Deliverables

D 1.3.1

Best practices and guidelines for industry

D 1.3.2

Identification of standards on metadata for ontologies

D 1.3.3

Report on requirements of OOA

Milestones[9] and expected result

Month 12

D 1.3.2

Month 18

D 1.3.1, D 1.3.3

Workpackage number	1.4	**Start date or starting event:**				Month 6
Activity Type[9]	Other specific activities: Promotion of Ontology Technology					
Participant id	**UIB K**	FT	NUIG	VUM	VUB	Total
Person-months per participant:	**4**	2	2	1	2	11

Objectives

A series of presentations to industrial associations, public institutions and major IT players will be organized to show the value of semantic web technologies. The aim is to create awareness on how, practically such technologies could help organizations deliver new products and services and create new business value.

The network will organize promotional events that aim at promoting the main achievements of the NoE to public and private institutions. These events will take the form of international Forums where technology shows at industrial session are organized. The main goal is to act as an efficient support to faster take-up in the industry. Main objectives are:

- Technology Roadmap;
- Business cases and success stories;
- Annual international technology show.

Description of work

T 1.4.1

Technology Roadmap, which includes: (a) overall vision on semantic web tools and potential impacts in industry, business and society, and (b) identification of the technology locks that the NoE has solved and is trying to overcome;

T 1.4.2

Business cases and success stories. We will select from the industry and business use cases the most illustrative examples and we will present success stories at technology show case.

T 1.4.3

Annual international technology show:

- To promote the relevance of semantic web technologies and create awareness of the goals of the NoE. The focus is on critical issues. Short term: 6/12 months.
- To promote the intermediate achievements of the NoE. The focus is on roadmaps that involve the critical issues. Mid term: 18/24 months.

T 1.4.4

- Management and self-assessment

Deliverables

D 1.4.1

Presentation of technology roadmap

D 1.4.2

Presentation of business cases and success stories in industry

D 1.4.3
Report on first international technology show

Milestones[9] and expected result
Month 12
D 1.4.1, D 1.4.3
Month 18
D 1.4.2

Workpackage number	1.5			**Start date or starting event:**							Month 1
Activity Type[8]	Other specific activities: Cross Network cooperations										
Participant id	**UIBK**	FT	FUB	CERTH	L3S	NUIG	OU	UKARL	LivUni	VUM	USFD	Total
Person-months per participant:	**6**	1	2	1	1	3	1	3	3	1	4	27

Objectives

The benefits of interweaving different but related research and technology fields are well known. The NoE will contribute to this cross-fertilization between R&D areas (like with other NoE) . The main objective of this work package is to organize the interweaved research between related fields to provide joint education and promotional efforts, both in academia and industry. This will be achieved by means of forums set up jointly with the following tasks:

- Co-organized workshops;
- Co-organized conferences;
- Co-organized summer schools;
- Co-organized education courses;
- Co-organized training courses for industry;
- Co-organized efforts on VISWE;
- Co-organized technology show cases.

Description of work

To achieve the objectives given, further negotiation will be accomplished to consolidate current negotiations with potential co-operators. Detailed tasks are given below:

T 1.5.1

Negotiation with identified potential co-operators

T 1.5.2

Detailed discussion about possible joined education and training activities. This task will include the exploration of the possibilities and forms of co-operation of REWERSE, MUSCLE, Aim@Shape, KB2.0 and Agentlink III with VISWE to reach suitable agreements.

T 1.5.3

Define a program of joint activities with each network

T 1.5.4

Management and self-assessment

Deliverables

D 1.5.1

Project presentation and project showcase

D 1.5.2

Report on joint education and training activities with cooperating networks

D E-D2 (joint deliverable by Knowledge Web and REWERSE)

Co-operation with Knowledge Web/VISWE on graduate education. The deliverable includes agreements and co-operation plans.

D T-D2 (joint deliverable by Knowledge Web and REWERSE)

Co-operation with Knowledge Web and other NoE on industrial competence centres and VISWE. The deliverable reports on possibilities and presents co-operation plans.

Milestones[9] and expected result

We will set up the required agreements and forums in the first 12 months, and the first report on joint activities will be provided in month 18.

Month 2

D 1.5.1

Month 18

D 1.5.2, D E-D2, D T-D2

Workpackage number	1.6	**Start date or starting event:**			Month 1
Activity Type[9]	Other specific activities: Semantic Portal Structure				
Participant id	NUIG	OU	**UPM**	Total	
Person-months per participant:	4	1	**7**	12	

Objectives

The Semantic Portal is a software infrastructure underpinning the integration of the activities of the Knowledge Web partners. It serves as portal for information access and a dissemination point for ontology researchers, engineers, application and content developers in both academic and industrial institutions. It will provide a common medium of presentation where the partners' development work is deployed, publicized and promoted, along with work on technology promotion, research and e-learning. Among other things, the portal will be used with the advanced learning platform to deliver semantically indexed learning units.

Our plan is to deliver the first prototypes of ontologies, infrastructure and content by month 18th. Updated prototypes will be produced once per year after that first period.

Description of work

T 1.6.1

Semantic Portal requirements analysis and design in use case analysis and system/user functionalities for technology promotion, dissemination of research results and education

T 1.6.2

Semantic Portal ontology prototype development

T 1.6.3

Semantic Portal prototype development

T 1.6.4

Semantic Portal Unit and integration testing

T 1.6.5

Content annotation and management

T1.6.6

Hosting and running http://knowledgeweb.semanticweb.org/

T1.6.7

Hosting and running www.iswsa.org

T 1.6.8

Management and self-assessment

Deliverables

D 1.6.1

Portal requirements analysis and system design

D 1.6.2

Portal ontology

D 1.6.3
Portal versions
D 1.6.4
Portal contents releases

Milestones[9] and expected result
Month 6
D 1.6.1, D 1.6.2
Month 18
D 1.6.3, D 1.6.4

Workpackage number	2.1		**Start date or starting event:**					Month 1		
Activity Type[8]	Other specific activities: Scalability									
Participant id	EPFL	INRIA	CERTH	L3S	UPM	UKARL	VUM	UniTn	**VU**	VUB	Total
Person-months per participant:	5	1	1	2	3	4	3	1	**8**	2	30

Objectives

The main goal of this WP is to find out how knowledge processing and ontology tools can scale to the web.

One of the main objectives is to ensure that current storage and reasoning engines deal with the sizes of ontologies and meta-data expected to be deployed on the Semantic Web. This will require

- robust algorithms that can trade quality for time,
- information hiding through modularization, and
- methods to support ontology evolution (in order to keep track of huge amounts of rapidly changing information).

The other objective is to empirically benchmark different types of ontology-based tools with the same testing strategy and on the same test suite. The purpose for the first 18mm is to examine the ontology building tool and build a technical profile of the tools. Other tools (i.e., annotation, querying, reasoners) will be benchmarked later.

Description of work

T 2.1.1

State of the art on the technology participating on the scalability WP

T 2.1.2

Approximate reasoning with ontologies

T 2.1.3

Modularization of ontologies

T 2.1.4

Definition of a methodology and general criteria for ontology-based tools benchmarking

T 2.1.5

Construction of prototypes of tools for benchmarking ontology building tools

T 2.1.6

Benchmarking of ontology building tools according to the criteria and test beds produced

T 2.1.7

Management and self-assessment

Deliverables

D 2.1.1

State of the art on the scalability of ontology-based technology

D 2.1.2

Report on methods for approximate reasoning, using knowledge compilation, language weakening and approximate deduction

D 2.1.3

Report on modularization of ontologies

D 2.1.4

Specification of a methodology, general criteria and test suites for benchmarking ontology building tools

Milestones[9] and expected result

Month 6

D 2.1.1

Month 12

D 2.1.2, D 2.1.4

Month 18

D 2.1.3

Workpackage number	2.2		**Start date or starting event:**			Month 1						
Activity Type[8]	Other specific activities: Heterogenity												
Participant id	EPFL	FUB	**INRIA**	CERTH	NUIG	UPM	UKARL	VUM	USDF	UniTn	VU	VUB	Total
Person-months per participant:	4	2	**14**	1	3	2	1	2	1	4	2	1	38

Objectives

Aligning ontologies is an important task for ensuring interoperability in heterogeneous environments. The first task of this work package aims at coordinating and grouping research towards automatic alignment facilities, delivering and using alignment results, and certifying alignment results. The first 18 months will provide a common framework for European and international teams working towards alignment. This framework is based on two parts: how to characterize the alignment problem and how to express the alignment result. Our goal is that an alignment result can be expressed in a format that allows it to be used either as a merging or as a transformation operator. Within this framework, teams working on various alignment techniques (human language technology, statistical and data analysis, structural analysis, semantic analysis) will deliver their results which will be compared and integrated within the framework.

The following work, after the first 18 months, will be the integration of suitable techniques within the software framework and research on the processing of the alignment format: building merging and transformation operators for widely available ontology languages (e.g., RDF and OWL). This will be linked to activity 2.5.

Description of work

T 2.2.1

Definition of a common framework for characterizing alignment

T 2.2.2

Design of a benchmark suite for alignment

T 2.2.3

Synthesis of current alignment techniques

T 2.2.4

Research on alignment techniques and implementations

T 2.2.5

Definition of the format for delivering alignment

T 2.2.6

Management and self-assessment

Deliverables

D 2.2.1

Specification of a common framework for characterizing alignment
D 2.2.2
Specification of a benchmarking methodology for alignment techniques
D 2.2.3
State of the art on current alignment techniques
D 2.2.4
Description of alignment implementation and benchmarking results

Milestones[9] and expected result
Month 6
D 2.2.3, D 2.2.1 v1
Month 12
D 2.2.1 v2, D 2.2.2
Month 18
D 2.2.4

Workpackage number	2.3			**Start date or starting event:**			Month 1			
Activity Type[8]	Other specific activities: Dynamics									
Participant id	UIBK	FUB	INRIA	CERTH	**NUIG**	UPM	UKARL	LivUni	USFD	VU	Total
Person-months per participant:	6	1	1	1	**6**	3	4	2	1	2	27

Objectives

To generate the methodology for handling ontologies in a rapid changing world, where both the content and the structure of ontology is likely to have a high change rate. To adjust the current ontology languages, methods and technologies to such changing environments.

Description of work

T 2.3.1

Ontology versioning:

- Methodology for ontology syntactic versioning;
- Methodology for ontology semantic versioning;
- Test the methodology in the real-life business scenarios.

T 2.3.2

Process modelling of consensus:

- Survey of current workflow technology;
- Knowledge acquision of various ways of reaching consensus ;
- Modeling the process of forming consensus.

T 2.3.3

Patterns of ontology versioning:

- Identifying the patters of ontology versioning methods;
- Classifying such patterns;
- Managing these patterns in the library for easy access and reuse.

T 2.3.4

Management and self-assessment

Deliverables

D 2.3.1

Specification of a methodology for ontology syntactic and semantic versioning

D 2.3.2

Specification of knowledge acquisition and modelling of the process of the consensus

Milestones[9] **and expected result**

Month 12

D 2.3.1, D 2.3.2

Workpackage number	2.4		**Start date or starting event:**			Month 1	
Activity Type[8]	Other specific activities: Semantic Web Services						
Participant id	UIBK	EPFL	FU Berlin	**NUI G**	LivUni	VUM	UniTn	Total
Person-months per participant:	16	12	3	**10**	4	2	2	49

Objectives

- Providing problems to the other vertical activities (Scalability, Heterogeneity, Dynamics and Content);
- Defining additional layers of functionalities on top of the current web service standards;
- Providing scalable description and reasoning mechanisms for web services;
- Investigating a scalable semantic infrastructure for discovery and composition of web services;
- Identifying and covering semantic needs for web service invocation.

To achieve the objectives given, several main tasks have been identified. They will require a very close interaction with the other vertical areas of Knowledge Web. They include:

- Analysis of the needs and problems faced by semantic web services (tasks 2.4.1 and 2.4.2);
- Provision of a scalable semantic infrastructure for web services, including description, discovery, composition and invocation (tasks 2.4.3 to 2.4.5);
- Analysis of the relationship between agent-based services and web-based services and guidelines for the integration of the two (tasks 2.4.6 and 2.4.7).

Description of work

T 2.4.1

Survey on the state of the art of current semantic web services initiatives

T 2.4.2

Analysis of current initiatives to identify semantic needs not covered within existing research efforts

T 2.4.3

Define requirements for web service description

T 2.4.4

Define semantics for dynamic web service discovery and automatic composition

T 2.4.5

Define semantics for web service invocation and interoperation

T 2.4.6

Survey on the state of the art on agent based services

T 2.4.7

Guidelines for the integration of agent-based services and web-based services

T 2.4.8

Management and self-assessment

Deliverables
D 2.4.1
Semantic requirements for web services description
D 2.4.2
Definition of semantics for web service discovery and composition
D 2.4.3
State of the art on agent-based services
D 2.4.4
Guidelines for the integration of agent-based services and web-based services

Milestones[9] and expected result
Month 12
D 2.4.1, D 2.4.2, D 2.4.3
Month 18
D 2.4.4

Workpackage number	2.5	**Start date or starting event:**				Month 1		
Activity Type[9]	Other specific activities: Semantic Web Language Extensions							
Participant id	EPFL	FUB	INRIA	CERT H	L3S	**VUM**	VU	Total
Person-months per participant:	1	1	1	2	1	**8**	1	15

Objectives

The objective of this work package is to work with other members of the consortium to identify requirements for extensions to the existing layered architecture of semantic web languages, and to represent the interests of the consortium in international development and standardization efforts. This will be achieved via:

- the establishment and continuation of new and existing collaborations with international research and development activities, both within the EU and more widely;
- participation in international standardization activities.

Description of work

T 2.5.1

Cooperation and coordination with rule language development activities, e.g., within other EU initiatives, within the Joint US/EU ad hoc Agent Markup Language Committee, and within the W3C Semantic Web rules standardization working group (as and when chartered).

T 2.5.2

Participation in query language development efforts within the Joint US/EU ad hoc Agent Markup Language Committee.

T 2.5.3

Participation in any relevant query language standardization efforts.

T 2.5.4

Monitoring of and participation in efforts to design additional language layers or to extend existing languages.

T 2.5.5

Management and self-assessment

Deliverables

D 2.5.1

Specification of coordination of rule and ontology languages

D 2.5.2

Report on query language design and standardization

Milestones[9] **and expected result**

Month 6

D 2.5.1 *Month 12* D 2.5.2

Workpackage number	2.6	**Start date or starting event:**				Month 1			
Activity Type[9]	Other specific activities: Towards a virtual research centre								
Participant id	FT	FU Berlin	FUB	INRIA	**UKARL**	UPM	UniTn	VUB	Total
Person-months per participant:	2	2	1	1	**3**	1	2	1	13

Objectives

The objectives of this activity are

- to coordinate and strengthen the research activities;
- to facilitate the exchange of researchers between organizations;
- to disseminate research results in academia and industry;
- to organize the cooperation within Europe and with other international initiatives in America, Asia, and Australia.

The main objective of this activity is to prepare the grounds for a Virtual Research Centre.

Description of work

T 2.6.1

Monitoring the research advance

T 2.6.2

Potential redistribution of budget to research tasks

T 2.6.3

Facilitating and managing the exchange and research collaboration

T 2.6.4

Organization of workshops

T 2.6.5

Management and self-assessment

Deliverables

D 2.6.1

Report on budget allocation

D 2.6.2

Report on research exchange and collaboration

D 2.6.3

Report on workshop and conference organization

D 2.6.4

Report on the research advance

Milestones[9] **and expected result**

Month 12 D 2.6.1, D 2.6.2, D 2.6.3 *Month 18* D 2.6.4

Workpackage number	3.1			**Start date or starting event:**					Month 1		
Activity Type[8]	Other specific activities: VISWE										
Participant id	FU Berlin	FUB	CERTH	**L3S**	NUIG	OU	UPM	UKARL	UniTrn	VUB	Total
Person-months per participant:	1	1	1	**4**	1	1	1	1	1	1	13

Objectives

The educational, industrial, and research communities which Knowledge Web addresses are in need of learning materials, services and events to support knowledge acquisition by their members. We strongly believe that all three communities should be supported in an integrated way. In our view, this can be done best by founding an institution dedicated to this goal, the Virtual Institute for Semantic Web Education (VISWE). This institute will become the central focus of all educational activities within Knowledge Web. The aim of this work package is to lay the foundations of VISWE by preparing all prerequisites for the formal foundation (which is planned for month 36).

Description of work

T 3.1.1

Conducting a detailed requirements analysis for VISWE

T 3.1.2

Investigation of prior attempts (e.g. IVIMEDS, BIT); legal implications/instruments; relation to Bologna Declaration for creating a "European higher education area"; lessons learnt from first OntoWeb Summer School

T 3.1.3

Negotiations among Universities – financial, copyright, personnel implications, mutual approval of course credit points, memoranda of understanding

T 3.1.4

Investigation of the feasibility of participating in other European development and training programs (i.e., Marie Curie, Leonardo, Athens, Socrates …)

T 3.1.5

Management and self-assessment

Deliverables

D 3.1.1

Specification of VISWE tasks and goals (as result of a requirements analysis)

D 3.1.2

Document on organizational structure and legal form of VISWE to which all participating partners have agreed

D 3.1.3

Memorandum of Understanding signed by participating partners, regarding commitment to organizational structure and legal form of VISWE

Milestones[9] and expected result
Month 6
D 3.1.1
Month 12
D 3.1.2
Month 18
D 3.1.3

Workpackage number	3.2			**Start date or starting event:**			Month 1					
Activity Type[8]	Other specific activities: Educational contents and event provision											
Participant id	FU Berlin	FUB	INRIA	CERTH	**L3S**	OU	UPM	UKARL	LivUni	VUM	USFD	VU	Total
Person-months per participant:	3	3	1	1	**5**	2	1	3	2	1	1	2	25

Objectives

Learning materials, whether selected and adapted or newly created, are the absolute sine qua non of a successful educational institute. Therefore, the main objective of this work package is to collect such material (or create new material, if necessary). The resulting learning units will be used in educational events, also to be arranged as part of this work package. A long term goal is to provide specialized university degree programs as joint activities of participating universities. In the first 18 months, preparations to achieve this goal will be performed, e.g., the development of curricula and a memorandum of understanding on curriculum and course approval.

Description of work

T 3.2.1

Adaptation or creation of learning units, e.g. course components, case studies, handbooks, tutorials, annotated readings etc. Collection and organization of these learning units.

T 3.2.2

Provision of training events and learning units specifically targeted to professionals

T 3.2.3

Organization of educational events, e.g. summer schools, day schools, intensive or refresher courses

T 3.2.4

Identification of core curriculum/a

T 3.2.5

Development of an initial M.Sc. course to be examinable within at least one of the partner institutions, and preferably more than one using some shared materials

T 3.2.6

Negotiations among Universities – course and degree requirements, mutual approval of course credit points, memoranda of understanding. These negotiations will be aligned with the VISWE foundation activity

T 3.2.7

Enhancement and promotion of the teaching materials provided by REWERSE, MUSCLE, Aim@Shape, KB2.0 and Agentlink III, and integration in the VISWE structure.

T 3.2.8

Management and self-assessment

Deliverables

D 3.2.1

v1 Initial learning unit collection available
v2 Extended learning unit collection available

D 3.2.2

Report on educational events

D 3.2.3

Report on core curricula in Ontology and Semantic Web

D 3.2.4

Document describing M.Sc. curriculum on which all participating universities have agreed

D 3.2.5

Memorandum of Understanding regarding curriculum and mutual course approval signed by participating universities

D 3.2.6

Summer school on semantic web technologies

Milestones[9] and expected result

Month 6

D 3.2.1 v1, D 3.2.3

Month 12

D 3.2.2

Month 18

D 3.2.1 v2, D 3.2.4,D 3.2.5, D 3.2.6

Workpackage number	3.3		**Start date or starting event:**			Month 1	
Activity Type[9]	Other specific activities: Semantic delivery platform						
Participant id	L3S	**OU**	UniTn	Total			
Person-months per participant:	6	**12**	3	21			

Objectives

The goal of this work package is to provide a delivery platform for the content collected and developed in work package 3.2. We will start with a conventional delivery platform, and then extend it with more advanced features (partly Semantic Web based). In detail, our objectives are:

- Provide conventional Learning Management System infrastructure;
- Define formats and metadata standards for learning units;
- Investigate the application of Semantic Web technology to e-learning and academic research;
- Develop concrete demonstrators of the added value that Semantic Web technology can provide in these areas, by enabling smart access, customization and interpretation of web resources.

Description of work

T 3.3.1

Agreement on formats, metadata standards, etc.

T 3.3.2

Setup of learning management system as repository for learning units

T 3.3.3

Setup of an advanced learning platform. This will be made up of non-semantic components (which may include webcasting, discussion spaces and a Learner Content Management System) and semantic components (which may include learner areas with personalized knowledge management, document enrichment and sense-making tools, brokers and semantic web services for knowledge sharing)

T 3.3.4

Collaboration with IMS consortium and NoE on e-learning (ProLEARN)

T 3.3.5

Development of additional demonstrators of the use of Semantic Web technologies to support learning and research (based on the advanced learning platform but not necessarily tied to it).

T 3.3.6

Common requirements analysis for e-learning infrastructure for REWERSE, MUSCLE, Aim@Shape, KB2.0 and Agentlink III

T 3.3.7

Management and self-assessment

Deliverables

D 3.3.1

Report on the agreed metadata standard for learning units

D 3.3.2

v1: Basic infrastructure available, provides initial learning unit collection from task 3.2.3
v2: Complete conventional infrastructure implemented

D 3.3.3

Prototype of advanced learning platform

D 3.3.4

Report on collaboration with IMS consortium and ProLEARN

Milestones[9] and expected result

Month 6

D 3.3.1, D 3.3.2 v1

Month 12

D 3.3.2 v2, D 3.3.4

Month 18

D 3.3.3

Workpackage number	4.1		**Start date or starting event:**			Month 1		
Activity Type[8]	Management activities: Operational management							
Participant id	**UI BK**	INRIA	UPM	Total				
Person-months per participant:	8	1	1	10				

Objectives

The role of operational management is to oversee the whole network so that activities are seamlessly integrated

Description of work

T 4.1.1

- reporting to the European Commission services and contacting them for administrative purposes.
- Elaborating bi-monthly and semestrial project reports
- coordinating the yearly activity report which will contain:
  - activity report and advancement;
  - identification of problems encountered and the corrective action taken;
  - update of the Joint Programme of Activities for the next 18 months;
  - report on the social issues related to knowledge web activities;
  - statement, certified by an independent auditor, of the costs incurred by the participants in implementing the JPA during the period.
  - Plan for using and disseminating knowledge
  - Raising public participation and awareness
  - Management and self-assessment

  A public version of the yearly activity report will be also coordinated and delivered, which will include updated fact-sheets.
- Elaborating reports on participation in relevant conferences and concertation meetings
- Planning regular meetings with EC Project officer and elaborating reports on these meetings
- coordinating the final report which will contain:
  - analysis of the extent, depth and potential durability of the integration realized;
  - assessment by the consortium of the impact of the network on strengthening and spreading excellence on the topic in Europe;
  - analysis of the impact of the network on the way that research is carried out in Europe on the topic considered compared to the situation described at the time of the starting of the project;
  - description of the network's activities relating to dissemination, transfer and exploitation of knowledge and of their potential impact;
  - assessment of the technological impact of the activities of the network;
  - assessment of the network's actions to promote gender equality;
  - plan for sustainable actions after the end of the network;
  - recommendation of further action by the European Commission.

These reports will be made public on the Knowledge Web portal.

T 4.1.2

The Network Consortium will follow a "collaborative" approach for avoiding conflicts. The team has already successfully used this approach during the proposal phase and in earlier cooperation. In the unlikely case there would be a conflict it will be addressed by the Project Management Board (PMB). If necessary, input from the EC Project Officer will be sought.

T 4.1.3

The Managing Director will be responsible for organizing, commissioning and monitoring the audit regime. This concerns all aspects of the network:

- Technical audits (including annual reviews);
- Financial audits (at least one such audit is required);
- Ethical and social impact audits.

T 4.1.4

The operational management activity will use the internal reports by other management entities to provide the appropriate assessment to guide the success of the project. It also will be in charge of assuring the expected degree of integration within the consortium.

Deliverables

D 4.1.1

EC reporting:

- annual public report: M 12;
- update of JPA (for coming 18 months): M12;

D 4.1.2

Report on Audit regime:

- Technical audit: M12;
- Financial audit (at least one within the auditable period);
- Ethical audits: M12.

D 4.1.3

Public report: M 12

Milestones[9] and expected result

Month 12

D 4.1.1, D 4.1.2, D 4.1.3

Workpackage number	4.2		**Start date or starting event:**			Month 1		
Activity Type[8]	Management activities: Financial management							
Participant id	**UI BK**	Total						
Person-months per participant:	**4**	4						

Objectives

The Executive Project Management and in particular the Management Director will be in charge of the project financial management, receive and transfer all payments by the European Commission to the parties and keep advance payments to Joint funds in a well identified account.

Description of work

T 4.2.1

(consolidation and getting certificates from contractors) The financial accounting of the network includes:

- Preparation of the provisional budget (according to the Joint Programme of Activities update): estimate of the costs to be incurred by each participant during the period, broken down by type of activity;
- Reporting costs to the European Commission (consolidating cost reports from participants): summary of cost statement, cost certificate, person-month-level justification, summary financial report by the coordinator;
- Reporting to the Project Management Board;
- Obtaining audit certificates from each contractor.

T 4.2.2

- Following the execution of provisional budget and obtaining of deliverables in the Joint Programme of Activities;
- Reporting differences to the Executive Project Management Board;

Recovery of due sum and reports.

Deliverables

D 4.2.1

Financial & Accounting reporting

Milestones[9] **and expected result**

Month 12

D 4.2.1

Workpackage number	4.3	**Start date or starting event:**	Month 1

Activity Type[8]	Management activities: Technical management									
Participant id	**UIBK**	INRIA	L3S	OU	UKARL	UPM	VUM	VU	VUB	Total
Person-months per participant:	**7**	1	1	1	1	1	1	1	1	14

Objectives

Technical management will be in charge of the monitoring of the Joint Programme of Activities in all the areas of the network (Industry, Research and Education). It will have the important task of promoting integration of these activities at all levels. In particular it will implement the dependencies between Industry, Research and Education as a flow of requirements and deliverables. This can be achieved through workshops, documents or software.

Monitoring and controlling the technical and scientific progress of the project will be achieved by means of biannual meetings, and intermediate teleconferences.

Description of work

T 4.3.1

Technical management will have to produce the yearly technical report of the network. This will be consolidated from the activity contributions. This activity report will be matched against the Joint Programme of Activities and will help measure the advancement of the Joint Programme of Activity. Proposals will be made about shortening, or expanding tasks, allocating resources or changing partnership.

T 4.3.2

Area managers will be responsible for suggesting changes in the Joint Programme of Activities and members able to carry out the planned changes. This includes proposing candidates outside the network to join the network membership.

Some aspects of this activity are prospective since they depend on the evolution of technological and social context.

Deliverables

D 4.3.1

Technical report: M12

Milestones[9] **and expected result**

Month 12

Workpackage number	4.4		**Start date or starting event:**								Month 1
Activity Type[8]	Management activities: Legal and knowledge management										
Participant id	**UIBK**	OU	Total								
Person-months per participant:	**4**	2	6								

Objectives

This activity concerns the legal aspects of the network activities. It involves setting fair rules for the network and monitoring them to everyone's benefit.

Description of work

T 4.4.1

This task aims at elaborating a consortium agreement acceptable for all parties and to monitor its application (including advising on FP6 protocol requirements). It will cover issues such as non-compliance issues, insurance, dissemination of information, secondment matters, etc. This agreement will define the liability of participants

- for the use of the Community financial contribution in proportion to its project share up to a maximum of the total payments it has received;
- for the debt that is owed by defaulting participants on the basis of each participant's share of expenses accepted and up to the amount of the Community financial contribution each participant is entitled to receive (with international organizations and public bodies solely responsible for their own debt).

T 4.4.2

This task will consist of supporting the definition and creation as legal bodies of spin-off efforts (such as the Virtual Institute for Semantic Web Education or the Ontology Outreach Authority as well as any relevant start-up company). Such actions could become necessary in order to ensure the self-sustainability and visibility of the network outcomes.

The task will set up a relationship agreement between these spin-offs, Knowledge Web and the Knowledge Web members (including intellectual property right negotiation) taking care of the interests of the network and network participants as well as the viability of the spin-off.

T 4.4.3

The network will produce intellectual properties whose rights must be properly stated. This task will define the intellectual property regime that will be part of the Consortium Agreement. It will monitor it especially when new legal bodies are created for exploiting some of the intellectual property provided within the network.

The criteria for dealing with intellectual properties are openness of the work produced with the money of European taxpayers and fair return of investment of those who invest in the network. More precisely:

- Research publication rights will be owned by those who produce them (either employers or

employees depending on their country's regime), diffusion within the network should be granted for free (decision of non-disclosure should be taken by the Project Management Board with adequate compensation to the partners).

- This regime also applies to courseware to be used within the Virtual Institute for Semantic Web Education. VISWE should be granted the right to use this courseware for educational purpose as long as this does not go counter to the interest of the right owners.
- Software eventually produced for the network will be the property of their producers. Again, right of use for research and education purposes within the network, should be granted for free to the network members.
- In addition to these measures applying to network members, favourable rules should apply for spin-off of the network (VISWE or any separately launched effort) so that their launching is viable.

Along these lines, the Executive Management Board will take appropriate action for protecting, sharing and developing patents, know how, and the intellectual property rights of the project. This will have to be achieved in compliance with the 6th Framework Programme rules and regulations on knowledge and intellectual property rights.

OU will provide appropriate tools for knowledge management to support the tasks included in this activity.

Deliverables

D 4.4.1

Consortium Agreement (including resolution of conflicts): M -1

D 4.4.2

Setting up legal entities M12

Milestones[9] and expected result

Before the beginning of the project

D 4.4.1

Month 12

D 4.4.2

Workpackage number	4.5	**Start date or starting event:**	Month 1
Activity Type[8]	Management activities: Society and gender issues		

Participant id	UPM	**VUM**	Total							
Person-months per participant:	2	**1**	3							

Objectives

We will set up an *observatory* for the social issues encountered during the span of Knowledge Web and raised by the outcome of research carried out in the network. Since semantic computing in general and ontologies in particular are nearing their entry into society, Knowledge Web will need to pay attention to its implication for society and will set up and coordinate the specific focus on this topic. These issues cover ethical, gender, culture, privacy, security issues and more generally all issues the observatory feels entitled to consider.

We will raise public awareness of the implications of the work fostered by Knowledge Web by a range of activities involving appropriately written documents and web pages; dissemination through the popular (science) press; and direct engagement by appropriate forums in each participant's country.

Promoting specifically gender equality within the network is part of the charter of all the Knowledge Web activities and is not taken as an independent task here. The observatory will scrutinize this action and appropriate recommendation could be added to the Joint Programme of Activities by the Management Board.

Description of work

T 4.5.1

Overseeing the science and society issues related to Knowledge Web. This will take the form of internal awareness actions, and of separate chapters in reporting both from the members and to the EC.

- Observation of the issues involved in Knowledge Web;
- Recommendations about the consideration of these issues; Report on the implementation of the recommendations and evolution of the issues;
- Ensuring that materials are available and appropriately presented for the public;
- Raise awareness through the popular media ;
- Activities to ensure that the public can engage with the issues involved in Knowledge Web.

Deliverables

D 4.5.1

Report on Gender Action Plan

D 4.5.2

Report on Public Engagement Activities

Milestones[9] and expected result
Month 12
D 4.5.1
Month 18
D 4.5.2

Workpackage number	4.6	**Start date or starting event:**	Month 1
Activity Type[8]	Management activities: Self-assessment, risk analysis and market watch		

Participant id	UIBK	INRIA	UPM	Total						
Person-months per participant:	**3**	0	0	3						

Objectives

This activity will focus on self-assessment during the life cycle of the project to ensure the achievement of the expected results. It will also include risk analysis and market watch.

A summary of these elements will be delivered to the operational management activity, which will evaluate the results and will include this summary in the yearly report of activity.

Description of work

T 4.6.1

Self-assessment, risk analysis and market watch. This task will include the following elements:

- Market and technology watch
- Risk assessment
- Contingency planning
- Self-assessment

Deliverables

D 4.6.1

Report on self-assessment, risk analysis and market watch

Milestones[9] **and expected result**

Month 12

D 4.6.1