Coordination action proposal

IST call 3
FP6-2004-IST-3

FOrmal REasoning NETwork

4eNET

Date of preparation: September 2004

Participant no.	Participant name	Participant short name
1 (coordinator)	Universidad Rey Juan Carlos	URJC
2	Ministerio de Educación y Ciencia	MEC
3	Centre National de la Recherche Scientifique	CNRS
4	Institut de Recherche en Informatique de Toulouse	IRIT-CNRS
5	Bundesministerium für Verkehr, Innovation und Technologie	BMVIT
6	Technische Universität Wien	TUWien
7	Istituto Trentino di Cultura - Centro per la Ricerca Scientifica e Technologica	ITC-IRST
8	Istituto di Scienze e Tecnologie della Cognizione - Consiglio Nazionale delle Ricerche	ISTC-CNR
9	Servizio Università e Ricerca Scientifica de la Provincia Autnoma di Trento	PAT
10	Slovenian Ministry of Education, Science and Sport	MESS
11	Jozef Stefan Institute	JSI
12	Deutsches Forschungszentrum für Künstliche Intelligenz	DFKI

Name of the coordinating person: David Pearce
Coordinator organisation name: Universidad Rey Juan Carlos
e-mail: d.pearce@escet.urjc.es
fax: +34 91 855 1490

Table of contents

Proposal summary page

FOrmal REasoning NETwork
4eNET

Strategic objective(s) addressed

(If more than one objective , indicate their order of importance to the project. The main (first) Strategic objective <u>must</u> be one included in this call:

> *2.3.6.3 To progress towards the achievement of the objectives of ERA in a given IST field)*

Proposal abstract

This coordination action will provide a forum in which managers of national research programmes together with leading scientists and policymakers in Europe can exchange information and experience on national and regional funding programmes and policies, centres of excellence and research trends and challenges, in order to formulate and implement joint actions and activities to promote the European Research Area in the field of Formal Reasoning. The technologies of Formal Reasoning cover such topics as software verification, model checking, automated deduction, foundations of agent technologies, constraint satisfaction, axiomatic ontologies, logical bases and reasoning tools for the semantic web, formal aspects of software security, declarative programming languages and tools, software synthesis from specifications, logic for knowledge representation, logical methods for learning and data-mining, and foundations of information integration.

Activities of the CA will include: maintaining national information desks for the six participant countries of Austria, France, Germany, Italy, Slovenia and Spain; developing and maintaining a central information service and web portal; the use of state-of-the-art information extraction and analysis tools to chart the landscape of European research in Formal Reasoning and map research excellence; the development of a Joint Action Plan for long-term cooperation between national research programmes; development of pilot schemes to enhance cooperation between research centres and create (virtual or physical) European "laboratories of excellence" in the field; actions to open up the network to other EU countries including new member states, as well as to accession and third countries; and carry out foresight and policy studies to formulate long-term RTD challenges and programmes.

4eNET aims to establish itself as a reference point for the scientific community in all areas of Formal Reasoning.

B.1 Scientific and technological objectives of the project and state of the art

1.1.1 Overall Objectives

The coordination action will provide a forum in which managers of national research programmes together with leading scientists and policymakers can exchange information and experience on national and regional funding programmes and policies, centres of excellence and research trends and challenges, in order to formulate and implement joint actions and activities to promote the ERA in the field of Formal Reasoning. More specifically the coordination action will assist the co-ordination of national and European fundamental research in Formal Reasoning in order to:

- Coordinate national research programme activities; analyse best practices in project evaluation, selection, management, etc.; help evaluate programme actions.
- Provide an adequate support for development by means of information portals, clustering of national projects at an international level, roadmaps, strategic planning and technology foresight activities.
- Identify centres of excellence in the field and build upon their shared labs, joint platforms, application demonstration centres, etc.
- Make available to the industry new advances in the field.
- Help to define long-term shared visions for research and exploitation and work towards the possible establishment of joint RTD programmes in the area, where Article 169 could be employed.

1.1.2 Formal Reasoning and the European Research Area

The proposed research area embraces all aspects of formal representation and reasoning especially those related to fundamental research in the area of Computer Science including Artificial
Intelligence and Software Development. The relevant research topics include:

- software verification
- formal methods in software development
- model checking
- problem solving
- automated deduction
- foundations of agent technologies
- constraint satisfaction
- axiomatic ontologies
- logical bases and reasoning tools for the semantic we
- formal aspects of software security
- declarative programming languages and tools
- software synthesis from specifications
- logic for knowledge representation
- logical methods for induction, learning and datamining
- foundations of information integration
- non-monotonic reasoning.

1.1.2.1   Background

While the Information Society demands more and more computer applications and the Ambient Intelligence paradigm supports new services for the people, it is clear that many fundamental aspects of these developments are not yet solved. Among others, we can mention: reliability of software, software validation, software security, problem modelling, complex system design and management, reasoning in the semantic web, information integration, learning and knowledge discovery, bio-informatics and biological systems, and so forth. Extensive mid-term as well as long-term research is acutely needed to fill these gaps. On the other hand, it is important to achieve significant results that can be included in the everyday development of software and ambient intelligence systems. The disciplines mentioned have reached a level of maturity that allow them to be included in the software development process.

The recent draft report of the ISTAG Working Group on "Grand Challenges in the Evolution of the Information Society" identifies *trust, security and privacy in ubiquitous mobile communication networks* as *the top ICT priorities for the European population*. Besides Cryptography, **Formal Reasoning** is the core technology contributing to this complex socio-economic challenge. The potential impact of the CA in Formal Reasoning will be enormous, since eight out of eleven *Grand Challenges* identified in the above mentioned report are related to trust, security and privacy concerns. Also, to give a national example, the German Federal Ministry for Education and Research (BMBF) will set the focus of its upcoming research programmes in the security and safety area on the following Formal Reasoning topics:

- Integration of formal software development methods (formal specification, transformation and verification) into a uniform engineering model.
- Development of formally verified application software.

1.1.2.2   State of the art and RTD at a European level

Formal reasoning disciplines lie at the origins of computer science. Much theoretical work has been carried out, and the maturity of progress in the different topics shows that the current state of the art should support a wider exploitation of these techniques by industry. Currently, relevant results are appearing in many workshops, conferences, journals and books addressing successful experiences in applying formal reasoning techniques to develop practical applications.

Fundamental research involving Formal Reasoning at a European level is covered in part by the FET initiative. The FET Open domain has included projects in areas such as inductive databases and information integration, while the FET proactive initiative Global Computing has supported several projects developing formal reasoning methods for P2P, global computing and multi-agent systems. Some of the existing documents discussing the creation of the European Research Council address formal reasoning topics (for instance fundamental research for software reliability). Europe has a very strong position worldwide in the field, but this is at risk due to a reduction of the resources devoted to fundamental research in the area. There is a clear need to leverage the funding available at all levels.

Many national programmes cover the topics mentioned and there are a few very specific ones. We now discuss briefly the main programmes running or forthcoming in participants' countries.

Participants' national programmes

Spain traditionally does not have a specific programme dedicated to the topic of Formal Reasoning, but a broader one on Information and Communication Technologies. Recently a new R&D Plan has been developed for the period 2004-2007 that splits the area into three programmes: Informatics Technologies (TIN), Communication and Electronics Technologies (TEC), and Services for the Information Society Technologies (TSI). Formal Reasoning is part of the TIN programme into the priority areas of Software development technologies and Intelligent Systems. The TIN programme has a budget of around 12m EUR per year. Additionally, the national programme of Mathematics also covers the more theoretical aspect of Formal Reasoning.

In **France**, the topic of formal reasoning is supported by the STIC department of CNRS via several programmes. All of them bear an interdisciplinary character and are shared with other departments. The main programmes are the following:

* "Cognition and information processing"(`Cognition et Traitement de l'Information'). The overall aim of this program is to investigate the cooperation of humans and artifacts. The main topics are:
     - the basic cognitive functions;
     - perception and action;
     - semantic, semiotic, and temporal processing.
Funding: 620 k€ in 2003

* "Information society" (`Societe de l'information'). The main actions here are:
     - archives and document heritage;
     - document, new technologies, communication and cognition;
     - management of knowledge and multimedia contents;
     - interaction between man and information systems;
     - building of an economy and a society of information.
Funding: 915 k€ in 2003 + 915 k€ in 2004

* ``Robotics and artificial entities (`Robotique et entités artificielles', Robea). This programme aims at covering the following aspects:
     - artificial entities acting physically or by communication, alone,within networks, or integrated in a team;

    - taking decisions autonomously and depending on previous experience;
    - learning passively or actively from interactions with the environment;
    - knowing their state in order to vary their behaviour.
Funding: 1067 k€ in 2003

* "Processing of knowledge, learning, and New Technologies of Information
and Communication" (`Traitement des connaissances, apprentissage et NTIC',
TCAN). The main topics here are:
    - methods and tools of knowledge modelling;
    - automatic or assisted processing of data, languages and knowledge;
    - learning processes and associated tools.
They are related to cognitive science, humanities, and economics.
Funding: 700 k€ in 2003 + 700 k€ in 2004

The area of formal reasoning is also related to the programme ``Complex systems in the human and social sciences"
(`Systèmes complexes en SHS') through the latter's scheme ``epistemology of the modelling of complex systems".
Funding: 300 k€ in 2003 + 300 k€ in 2004

The French "Ministry of Research and New Technologies" (`Ministère délégué à la Recherche et aux Nouvelles
Technologies', MNRT) has launched in 2003 a 6m EUR programme ``Joint inititative action on huge data" (`Action
Concertée Incitative Masses de donnees', ACI), which investigates all aspects of the handling of large amounts of data
(acquisition, transmission, processing, modelling, representation, structuring, indexing, retrieval, classification, fusion,
and learning).

In **Austria** FIT-IT (see: www.fit-it.at), short for Research, Innovation, Technology Information Technology, is a research
programme that focuses on high-quality research in the area of information and communication technology. As an
initiative of the Austrian Federal Ministry of Transport, Innovation, and Technology, the programme offers more than 8
mEUR in 2004. FIT-IT has been running since 2002 and continually searches for challenging topics likely to become an
important part of our IT future. Currently, there are two programme lines: "embedded systems" and "semantic systems
and services" as well as plans for another line on "systems-on-chip".

Semantic systems and services (short: Semantic Systems) has been selected as the second programme objective. This is
also a field with significant existing strengths in the Austrian scientific community. A number of spin-offs and start-ups in
this area also indicate sufficient economic potential for innovative research. The programme covers aspects of semantic
technologies but includes agent technologies, natural language and adaptive systems as important technologies for
intelligent web services and systems.

In **Italy**, the MIUR (Ministero dell'Istruzione, dell'Università e della Ricerca) supports national research via two main
kinds of actions: Progetti FIRB (Fondo Investimenti per la Ricerca di Base) and Progetti COFIN (Progetti Co-
finanziati).

In 2004 MIUR founded 177 Projects in the following strategic areas post genoma, medical engineering, neuroscience,
Information and Telecommunication Technologies, nanotechnologies, and microtechnology. ICT projects account for
about 22% of funding. In the same year the MUIR has funded 88 projects in the area of Ingegneria industriale e
dell'informazione, for as total amount of 14,077 KEUR with 8 projects (with a total amount of 960 KE about 7 %) in
projects related to formal reasoning.

In **Trentino** the regional government supports local research via the following actions " Fondo provinciale per i progetti
di ricerca", "Accordo di programma con l'Universita'" and "Politiche di cooperazione internazionali" In particular the
"Fondo provinciale per i progetti di ricerca" (provincial fund for the research projects) is the main action of the Local
Government to support medium and long term scientific research.

In recent years the Provincia Autonoma di Trento constantly increased the investment in R&D. In particular in 1999
investment in research was about 25.000 KEuro, in 2000 63.000 KEuro, in 2001, 107.000 KEuro, and in 2002 102.000 K
Euro. ITC-IRST and LOA-CNR and University of Trento are three of the main research actors in the area and they
participate in more that 50% of the funded projects. Some of the projects which are relevant to the formal reasoning area
are:
EDAMOK - Enabling Distributed and Autonomous Management of Knowledge.
MOSTRO - Modeling Security and Trust Relationships within Organizations
TICCA - Cognitive methodologies for agent interaction and cooperation.

In **Slovenia**, the Office of Science within the Ministry of Education, Science and Sport is responsible, in co-operation with other ministries, for most public programmes in the fields of sciences. A new round of 5-year research programmes started in 2004. Among 260 research programmes selected for financing, the following relate to the field of formal reasoning:

-   Computer systems, methodologies and intelligent services
-   Information systems
-   Knowledge technologies
-   Artificial intelligence and intelligent systems
-   Applied mathematics, theoretical physics and intelligent systems

In addition to the financing of the 5-year research programmes, MESS also finances research projects (2-3 years), which are selected on a competitive mode by annual calls. On-going research projects include several related to the formal reasoning area. Research and development activities supporting the development objectives of Slovenia are carried out through the third mechanism of targeted research programmes, which is form of inter-ministerial cooperation.

In Germany the results of more than 30 workshops, expert sessions and consensus discussions with over 300 experts produced the main areas of focus of the "IT Research 2006" programme for information and communication technology, run by the Federal Ministry for Education and Research (BMBF). The focus of the "IT Research 2006" programme will be aimed at the "megatrends" that are relevant for research. These include:
- Convergence
The convergence of information, communication and media technologies with networks, end devices, software solutions and applications requires high levels of interoperability, whereby the Internet Protocol (IP) plays an outstanding role as the dominant protocol.
- Complexity
The increasing complexity of IT systems demands new approaches in order to optimize functionality, reliability and security at design level. The trend for increasing complexity has resulted in design proceses becoming increasingly mathematical and IT becoming increasingly important.

The universal topics of security and durability will be given special consideration in all parts of "IT Research 2006".whose main areas are
- Nanoelectronics and systems
- Software systems
- Basic technologies for communications engineering
- Internet – basics and services
In particular, one should emphasize the outstanding role of software systems as a key and cross-application topic all programme areas.

Specifically within the area of Correctness, Security and Reliability of Software Systems, the topics of focus are
-   the integration of formal software development methods (formal specification, transformation and verification) into a uniform engineering model
-   the development of formally verified application software
-   requirements engineering, and
-   the development of real-time software systems.

In the area of IT Safety and Security, the main topics are:
-   innovative integrated IT security systems for secure development, installation, configuration and operation of IT-systems for personal security and trustworthiness of systems
-   security in new IT methods and technologies such a ubiquitous computing

Also in Germany, a second major research funding body, the Deutsche Forschungsgemeinschaft (DFG) currently supports a focused programme ("Schwerpunktprogramm") on the topic of Security: The DFG-Schwerpunkt programme "Security" aims at a global investigation of various aspects of security. Guided by a common scenario, it investigates and improves the effectiveness of security measures. In particular it concentrates on the following topics:

  1. Mechanisms, (formal) modelling, and supporting technologies for secure systems
  2. Secure systems (building blocks, infrastructure, architecture, protocols, hardware, software),
  3. Methodologies and techniques (in particular also formal methods) to develop, select and operate secure systems.

Existing cooperation between partners

Several partners and associates of this project, namely the IRIT-CNRS, the ISTC-CNR as well as the closely associated

University of Trento (Computer Science, Economy, and Cognitive Science Departments) are in the final stages of setting up the long-term European research consortium "Interdisciplinary Laboratory on Interacting Knowledge Systems" (ILIKS, already recognized and funded as a "Laboratoire Europeen Associe" by the CNRS), and the ITC-IRST will join the consortium soon.

European organisations

There are several relevant pan-European organisations and initiatives dealing with Formal Reasoning. Of special interest to 4eNET are CologNet, the FP5 thematic network on computational logic (2002-4) (www.colognet.org) , Formal Methods Europe association (www.fmeurope.org), and the International Masters programme in Computational Logic, run by the Technical University of Dresden and the New University Lisbon, and now maintaining a shared curriculum over six participating European Universities (www.cl.inf.tu-dresden.de/compulog/).

B.2 Relevance to the objectives of the IST Priority

In this section we consider the primary focus of the project, namely its contribution to the establishment of the European Research Area. Since the field of Formal Reasoning also comprises a core set of fundamental technologies for IST as a whole, we discuss also the relevance of the Action to the wider objectives of the IST priority.

B.2.1 Contribution to establishment of the European Research Area.

It is a basic tenet of official documents related to the European Research Area that any substantial progress towards the creation of an ERA requires the "coordination of national research programmes" (see eg. *Co-ordination of National Research Activities*, Version Spring 2004,..). To this end the five pilot projects of the CREST initiative reached the conclusion that four elements are essential to create a climate for cooperation: (i) information on "who does what"; (ii) mutual learning and understanding by exchanging "good practices"; (iii) defining and preparing "opening up"; (iv) the need for a frame for cooperation (*Co-ordination of National Research Activities*, ibid).

4eNET addresses all these elements. First, 4eNET will provide a platform for information collection and exchange regarding national research programmes. Initially this will concern primarily the programmes of the six participating countries together with relevant EU programmes. At a second stage it is planned to extend this to other EU members states and beyond by inviting managers of other research programmes to join the 4eNET forum. This will be carried out within a dedicated workpackage devoted to International Relations (WP5). Also the information services and data analysis tools developed in other workpackages (primarily WP1 and WP4) will be extended to include as wide a spectrum of national programmes as possible. Secondly, the Action will contribute to (ii) mutual learning and understanding by exchanging information on "good practice" in programme management, including different approaches to calling, evaluating, managing and reviewing projects and programmes. This constitutes a specific task within WP2. 4eNET also addresses item (iii), specifically within WP3, which foresees the development of a Joint Action Plan for cross-national cooperation between research programmes. It is planned to launch pilot schemes for cooperation already within the lifetime of the project. The same workpackage will also analyse barriers and potential problems for cross-national cooperation – a key tool here will be the data/text-mining methods from WP4 in identification of potential clusters of institutions and joint project topics. Lastly it is expected that the experience of creating within 4eNET a common information platform, discussion fora and initiatives for joint action will contribute to providing more permanent frameworks for cooperation in the future.

Another cornerstone of the European Research area involves the idea of identifying and networking of centres of excellence and of creating both virtual and physical centres:

"Mapping of centres of excellence would make for better transparency in this area. A very high level of performance could also be achieved by the networking of specialist centres throughout the countries of the Union." (*Towards a European research area*, Communication from the Commission to the Council etc, 18 Jan 2000, p.10)

It is hoped that 4eNET will make substantial contributions both to the mapping and creation or extension of centres of excellence. As Commission documents on the ERA lay down:

« The aim of mapping excellence is to identify existing research capacity in Europe precisely (down to the level of research units or teams). In particular, the aim is to identify, in a dynamic perspective, emerging capacities as they evolve, so as to make them more widely known among the scientific community and policy

makers and to promote the exploitation and dissemination of excellence. » (European Commission, http://www.cordis.lu/era/mapping.htm).

Commission-funded pilot studies have nevertheless indicated several problems in the methodology of mapping excellence. For example, the study devoted to nanotechnology indicates difficulties such as defining the field and its keywords, as well as problems of unstandardised data such as institute names, addresses etc (Mapping Excellence in Nanotechnologies, Preparatory Study, Dec 2001, pp.38-39, http://europa.eu.int/comm/research/era/mapping-excellence/nanotechnologies.html). The present Action will contribute to identifying centres of excellence in a dynamic perspective and at the same time helping to solve some of the methodological pitfalls. Specifically Workpackage 3 includes the task to develop formal ontologies for the subareas of Formal Reasoning in order to provide more precise characterisations of the field and its key concepts. This will feed into WP4 one of whose main tasks is to chart the landscape of European RTD in Formal Reasoning. This will use sophisticated data/text-mining techniques extending the existing Project-Intelligence Platform and developed by the task leader (Partner 11, JSI, see http://pi.ijs.si/). This includes special techniques for what is known as record linkage and object consolidation - in particular these take care of linking various surface forms of a single entity into one object – as in the case of an institution having several names.

Besides helping to chart European research and map excellence, a goal of 4eNET is to strengthen existing cooperation between leading research institutes. In particular it will explore various paths towards the creation of shared centres of excellence, research infrastructures and so forth, such as joint laboratories, shared software platforms or joint application showcase centres. One example of such a joint activity is the European Laboratory on Interacting Knowledge Systems (ILIKS) already being developed by several partners in the 4eNET consortium (and described in more detail below); but there are several other initiatives by the academic partners that indicate their commitment to breaking national boundaries and joining forces with other European partners on a permanent basis. In Workpackage 3, parallel to developing a Joint Action Plan for cooperation between national programmes, consortium members will explore new ways to share and exploit research resources, infrastructures and results by extending current initiatives and building new ones.

Effective science and technology foresight as well as policy matters going beyond the current framework programme are also key components in the ERA vision. 4eNET aims to contribute to these issues, specifically in WP4 that includes tasks for roadmapping as well as foresight and policy studies. The specific activities undertaken will be guided by external input from the Scientific Advisory Board together with the results of the information collection and analysis tasks carried out during the project.

B.2.2 Contribution to other objectives of the IST Priority

4eNET will mobilise programme managers, policymakers and leading research institutes to develop long-term shared visions in a field that relates closely to several strategic objectives of the IST priority. Specifically, the concepts and methods of Formal Reasoning are central to the area of ***Semantic-based Knowledge Systems***, a strategic objective in the IST Priority, FP6 Call1 (*2.3.1.7*), especially, but not exclusively, in the sub-area of foundational research on "new formal models, methods and languages for knowledge representation and reasoning under uncertainty, including learning models from data and multilingual and multimedia ontology infrastructure for the semantic Web." (*IST Workprogramme 2003-4*).

Concerning the strategic objectives in the IST Call 2, 4eNET addresses software development and verification issues related to *2.3.2.3 **Open development Platforms for software and services*** whose objective is to "build open development and run-time environments for software and services providing the next generation of methodologies, interoperable middleware and tools to support developers - through all phases of the software life-cycle,.." Especially relevant here is the sub-area focusing on "open platforms, middleware and languages supporting standards for interoperability, composability and integration."(*ibid*)

In addition 4eNET relates closely to *2.3.2.4 **Cognitive Systems*** whose objective is to "construct physically instantiated or embodied systems that can perceive, understand (the semantics of information conveyed through their perceptual input) and interact with their environment, and evolve in order to achieve human-like performance in activities requiring context-(situation and task) specific knowledge." In particular the objective focuses on "methodologies and construction of robust and adaptive cognitive systems integrating **perception, reasoning, representation and learning**, that are capable of interpretation, physical interaction and communication in real-world environments for the purpose of performing goal-directed tasks." (*ibid*, our emphasis)

4eNET also contributes to the objective *2.3.2.5 **Embedded systems*** aiming to develop the next generation of technologies and tools for modelling, design, implementation and operation of hardware/software systems embedded in intelligent devices. Especially relevant are "Concepts, methods and tools for *system design,* development of warrantable software components and implementation of systems, with emphasis on correct handling of complex *Real-Time* constraints." (*ibid*)

*2.3.2.8 **GRID-based Systems for solving complex problems*** is another strategic objective where Formal Reasoning

technologies are relevant for archectural and design issues but also for "*Enabling application technologies* for the solution of complex problems in domains requiring a Grid-based approach, including next generation tools and environments for modelling, simulation, datamining, visualisation, process control, remote operation; and collaborative working in dynamic virtual organisations." (*ibid*)

In the objective *2.3.4.2* concerning the **FET proactive initiative: Complex systems research** may benefit from logical models for representing real-life systems and for reasoning about complex system behaviour. Also for the challenges to "extract meaning from huge, unstructured, dynamically evolving sets of data.. Guide societies of heterogeneous agents — simulated or embodied — to develop shared knowledge systems or languages." (*ibid*)

B.3 Potential impact

B.3.1. General Benefits and potential impact of the action

4eNET mobilises key-players in the area of formal reasoning including programme managers, established consultants, policymakers and research institutes to provide a common forum to communicate, to link interests, to make recommendations for cross-national cooperation and develop long-term shared visions for research and exploitation.

As discussed in B.2.1, it will support the creation of the European Research Area by addressing several key factors needed for its development, In addition 4eNET will help to create a reference point for the R&D community in the field of Information Technology. According to the analysis done in IPPA-02, "These are often the fields where Europe has a weak industry or a non-structured research community. Examples are the areas of software technologies and knowledge engineering." (*IPPA-02. the IST programme Integrated Programme Portfolio Analysis, IPPA*, Calls 1 to 8 April 2002, http://www.rtr.at/web.nsf/lookuid/DB3222D60EFA2949C1256DC80034C171/$file/ISTProgramme.pdf). The impact of the 4eNet coordination action in this direction will be to further the coherence of the large European R&D community in these areas, formal reasoning being one of the main base technologies used both in software technologies and knowledge engineering.

Furthermore 4eNET will help in designing high risk RTD directions for the field of Knowledge and Information Management. The RTD fora created in 4eNet will be sufficiently rich in research experience and practice in order to suggest new challenging directions in the area of formal reasoning for Knowledge and Information with Management (KIM) with a large technological risk. This will contribute to inject new energy in the area of KIM, where, according to IPPA-02 "most of the research to date still seems to target incremental developments, building upon available components in an effort to minimise technological risks". (*ibid*).

Market impact

Since the early 1990's formal methods (considered as a sub-area of formal reasoning) have been successfully applied to software/hardware design and verification (se eg *An International Survey of Industrial Applications of Formal Methods Volume 1 Purpose, Approach, Analysis, and Conclusions*, Dan Craigen, ORA, Canada, Susan Gerhart, *Applied Formal Methods*. http://www2.umassd.edu/SWPI/FormalMethods/vol1.pdf).More recently, formal methods have been successfully applied in the areas of security protocols and similar success stories have been experimented in the area of Knowledge Representation and Reasoning, and planning.

New industrial needs are becoming more and more explicit in the Knowledge Society, which are not addressed by current research. The large connectivity available today requires secure and scalable applications capable of dealing with largely distributed and heterogeneous complex systems. Web services, bio-informatics, distributed knowledge management, are three examples of such applications. Well-established Formal Reasoning techniques have strong potential be successfully applied to these new application fields to provide valuable solutions, but in other cases new research should be done. The 4eNet action will contribute to the transfer of technology from research to industry and the transfer of needs from industry to research in the following way:

FROM RESEARCH TO INDUSTRY: One of the objective of the 4eNet project is to foster the creation of a map (based on the network) which will allow one to identify the competences associated with the research actors, the research topics associated with the possible applications, and the needs of the market. This thematic map will contribute to fill the gap between research and application, by facilitating contacts and links between research and industry, with the obvious impact on the market.

FROM INDUSTRY TO RESEARCH: A further objective of the project will be to suggest possibly promising research lines in the area of formal reasoning, which will be strategic for the development of industrial strength applications.

B.3.2 Additional strategic impact for new members and accession countries

4eNET will have an additional strategic impact for new member states and accession countries and will assist in their integration in EU programmes and the ERA, see especially Task 5.4a in the workplan. Specifically 4eNET will investigate the State of the Art and research programme situation in NMS and AC. It will make recommendations based on the experiences of consortium-member states and non-consortium member states, and for some some NMS and AC,

4eNET will explore thematic interests by bringing together key-players. The Action will also provide systematically the results of the task (in WP2) on best practice, selection and management to NMS and AC, and it will link NMS and AC to activities in WP3 devoted to cooperation between national programmes and research institutions.

In general, since Western Europe has a strong tradition in the area of formal logics and reasoning, the creation of a pan-European network will facilitate the integration and the exploitation of these results in the implementation of industrial applications.

B.3.3 Contributions to standards

It is not a primary aim of 4eNET to contribute to national or international standards. However, there are several areas in which the Action may have an impact on standards.

First, 4eNET will investigate and exchange ideas on best practices in programme and project management, and will disseminate results as widely as possible so as to contribute to debating these standards in the context of the European Research Area.

Second, 4eNET will undertake a study to build formal ontologies for the domain of Formal Reasoning which may contribute to standardising, eg the way in which this domain is represented and reconstructed. This in turn will assist in data collection and analysis, as will be exploited in other WPs of the Action, and can be more generally applied in any systematic studies of the field. The data extraction and analysis methods used by 4eNET could themselves become a model for other pilot networks.

Third, there may be an indirect impact on standards *within* the area of Formal Reasoning emerging via policy and foresight studies carried out within the Action, where best practices in the development and application of Formal Reasoning technologies may be highlighted.

B.4 The consortium and project resources

The consortium is composed of national and regional funding bodies working closely with key national research centres and institutes, committed to cross-national and European cooperation, who will implement the main specific actions of the workplan such as coordination and management duties, organising meetings and workshops, information gathering, portal and web dissemination, preparation of reports and deliverables. Countries represented in the consortium are Austria, France, Germany, Italy , Slovenia and Spain (coordinator). National funding bodies represented are: the Austrian Ministry for Transport, Innovation and Technology (BMVIT), the French national scientific research council, the CNRS, the Slovenian Ministry of Education, Science and Sport (MESS), the Spanish Ministry for Education and Science (MEC). At a regional level, Trento is represented by the main research funding agency of the autonomous province, the Department of Research and University. At the time of preparing the proposal efforts are being made to incorporate a major national IT research funding body from Germany; this will occur however after the submission deadline but prior to any contract preparation. All the partners are strongly committed to international cooperation and European integration. The research centres involved have a strong track record in RTD at a European level, including the management of networks and large project clusters. In several cases they have been involved in establishing joint labs and shared resources.

As mentioned in B.1, several partners and associates of this project, namely the IRIT-CNRS, the ISTC-CNR as well as the closely associated University of Trento (Computer Science, Economcs, and Cognitive Science Departments) are in the final stages of setting up the long-term European research consortium "Interdisciplinary Laboratory on Interacting Knowledge Systems" (ILIKS, already recognized and funded as a "Laboratoire Europeen Associe" by the CNRS), and the ITC-IRST will join the consortium soon. The primary scientific objective of ILIKS is to study the theoretical foundations of interaction among knowledge systems under a strongly interdisciplinary approach. Interaction among knowledge systems is the new paradigm for constructing the future society of intelligent agents. People, machines, and organizations are more and more interacting together by means of modern Information and Communication Technology (ICT), and the social nature of interaction and communication processes themselves needs to be recognized and addressed as such, if this pervading technology is to be effective and ultimately of benefit for the society. ILIKS will develop formal models of interaction among knowledge systems grounded on Cognitive Science, Linguistics, Philosophy, Economy, as well as Logics and Computer Science.

Several academic partners in the consortium have developed special expertise and technologies in the fields of information extraction, datamining and knowledge engineering that will be exploited in the project for the purpose of designing and implementing Information Services. Of special interest are the technologies for web-based automatic information extraction developed at the TU Wien, advanced data/text-mining methods and techniques developed at JSI for the analysis of research projects and programmes and already successfully applied to the contents of the IST programme itself; and experience of the two Trento research centres, ITC-IRST and ISTC-CNR, in developing formal ontologies for knowledge engineering and semantic web and grids.

Sub-contracted partners and associates: a company specialised in web data extraction and integration, and web portal design and maintenance will be sub-contracted for relevant tasks in WP1. Other research centres representing the Trento region, eg Università di Trento, may also contribute.

URJC
Rey Juan Carlos University was founded in 1996 and is the sixth public university based in Madrid. One of its main goals is to achieve the maximum level of quality in teaching and the development of activities to achieve excellence in selected research areas. 24 university degrees are offered, belonging to four areas: Health Science, Science and Technology, Communication and Social Science and Law. URJC is distributed over four campuses, for around 13.000 students with more than 1.000 teachers. Rey Juan Carlos University as a public research centre counts on the most advanced technology in its laboratories, and has built specific ones for the industrial sector in the Technological Support Centre. The university provides administrative and managerial support for the coordination of European projects such as 4eNET through its Research Services dept and through a special unit, CINTTEC, the Centre for Innovation Technology Transfer.

The scientific coordination of the action will be headed by **Dr David Pearce** who is a senior research fellow in Computer Science at the URJC, associated with the **Artificial Intelligence Group**. The AI Group was founded in 1999; activities comprise a variety of research lines with a strong emphasis on the intelligent agent paradigm. Topics include: Formal Reasoning and Knowledge Modelling, Learning, Artificial Sociality, Communication and Human Agent Interaction.

Research results are tested in a variety of domains and applications have been developed in areas such as Road Traffic Management, Emergency Management, Health Care and Tourism The AI group is currently involved in several European research projects and networks in the areas of Formal Reasoning, Multiagent Systems and Semantic Web. They include the FP5 Working Group WASP on answer set programming, the FP6 IP EVERGROW in the area of Global Computing, the FP6 STREP CASCOM (Context-Aware Business Application Service Coordination in Mobile Computing Environments) in Semantic Web, the FP6 Coordination Action AgentLink III: for Agent-Based Computing, and the FP5 NoE EXYSTENCE on Complex Systems.

In addition to his research activities Dr Pearce (D Phil, Sussex, 1980) has many years experience in network and project coordination and management. In particular, from 1994-2000 he was coordinator of the EU-funded European Network of Excellence in Computational Logic (Compulog Net), and from 2000-2002 he was directly involved in the management and supervision of EU research programmes. URJC will coordinate the Action and be involved in all the WPs.

Ministry of Education and Science (Spain)

The partner is the General Direction of Research (DGI) of the Spanish Ministry of Education and Science. The DGI is responsible for the design, management, and implementation of national R&D research programs involving public research centres as well as Universities and research centres with public funding. In particular, it is in charge of the programs related to the area of Information Society.

The participants are José Luis Martinez Peña (Deputy Director, DGI), Ramón López de Arenosa (head of department Technologies of production and communications), and Juan José Moreno-Navarro (responsible for European and international cooperation, IST area.

Spain, traditionally does not organise a particular programme on Formal Reasoning, but a broader one on Information and Communications Technologies. Recently a new R&D Plan has been developed for the period 2004-2007 that splits the area into three programmes: Informatics Technologies (TIN), Communication and Electronics Technologies (TEC), and Services for the Information Society Technologies (TSI). Formal Reasoning is part of the TIN programme into the priority areas of Software development technologies and Intelligent Systems. The TIN programme has a budget of around 12Meuros per year. Additionally, the national programme of Mathematics could also cover the most theoretical aspect of Formal Reasoning.

MEC will lead WP2 and in particular the task devoted to best practices.

CNRS is the prime public basic-research organization in France, and the largest in Europe, with a budget of 2.5 B€, representing one-fourth of total civilian research spending in France. It plays a key role in the French scientific research community, with 1,256 service and research units, spread throughout the country and covering all fields of scientific research. Most CNRS units are run jointly with universities, other research organizations, or industry. Its payroll of 26000 (43% women, with a ratio of 30% in research) represents approximately a quarter of the total personnel of the CNRS-affiliated laboratories. CNRS is under the administrative supervision of French Ministry of Research.

The topic of formal reasoning is supported by the STIC department of CNRS via several programmes. All of them bear an interdisciplinary character and shared with other departments. The main programs are the following four, discuss in more detail already in part B1.1.2.2 above.

- Cognition and information processing
- Information society
- Robotics and artificial entities
- Processing of knowledge, learning, and New Technologies of information and communication

The topic of formal reasoning is also related to the programme ``Complex systems in the human and social sciences" (`Systèmes complexes en SHS') through the latter's ``epistemology of the modelling of complex systems" area.

Finally, STIC also participates in the ``Joint intitative action on huge data" (`Action Concertée Incitative Masses de donnees', ACI), which investigates all aspects of the handling of big amounts of data (acquisition, transmission, processing, modelling, representation, structuring, indexing, retrieval, classification, fusion, and learning.

The STIC department of CNRS participates in all these programmes both via direct funding and via the allocation of postdoc positions to selected projects. CNRS will be represented in 4eNET by **Dr. Luis Fariñas del Cerro**, Deputy Director of STIC in charge of International and European Relations. CNRS will contribute to task mainly in WP2 and WP3.

IRIT

is one of the biggest computer science research institutes in France(about 300 researchers). It is affiliated with the National Research Council (CNRS), the Paul Sabatier University in Toulouse (UPS), and the National Polytechnics Institute (INP).There are two research groups working in knowledge representation and reasoning : Plausible Reasoning, Decision, and Proof Methods (RPDMP), and Logic, Interaction, Language, and Computation (LILaC). While the former mainly investigates theories of uncertainty, the latter focusses on formalization of reasoning in logic. LILaC investigates logical models of interaction following two lines of research. The first line focuses on logics for reasoning about knowledge, belief, time, actions and obligations. There, the integration of logics of belief with speech act theory and theories of action is currently investigated, together with its application to the formalization of services on the web. LILaC has expertise concerning the development of automated theorem proving methods for the resulting logics (in particular modal and description logics), and has implemented a generic theorem-prover (called Lotrec). A second line focuses on modelling the structure of interaction Here, LILaC has expertise on discourse representation theory (DRT), its segmented version (S-DRT), as well as on the theory of dialogue games. LILaC is involved in building up the common structure of an Interdisciplinary European Laboratory on Interacting Knowledge Systems (ILIKS) metnioned above. It is also involved in several national projects, in particular those of the "Cognitique" programme and the CNRS programme "knowledge, learning and newtechnologies of information and communication" (TCAN). IRIT will contribute mainly to WP2 and WP3.

Bundesministerium für Verkehr, Innovation und Technology (BMVIT) (Austrian Federal Ministry for Transport, Innovation and Technology)

The scope of activities of the Federal ministry for transport, innovation, and technology is defined by its responsibility for both tangible and intangible infrastructures that is road and rail networks, civil aviation, inland waterways, and telecommunications, as well as the networks of research and technology. In this context research, technology and innovation guarantee timely participation in new developments.

BMVIT initiatives are aimed at promoting innovation capacities and abilities in order to place Austria among Europe's leading high tech countries. As a partner of science and industry we facilitate the creation of new products and services which are the heart of economic competitiveness, social coherence and wealth.

BMVIT develops the strategies necessary for the implementation of measures designed to achieve those goals, including financing and evaluation. The guiding principles are the European dimension and achieving critical mass, for which purpose our instruments are designed accordingly.

In detail, BMVIT is responsible for
- funding of basic as well as industrial research
- the biggest non-university research institutions of the country
- key thematic priorities such as information and communication technologies, transport and mobility, aeronautics and space, sustainability
- exploiting new knowledge through start-ups
- competence centres as partners in European networks of excellence
- co-operation between national, European and other international RTD programmes
- the participation of the Austrian research community in EU Framework programmes.

Key personnel:

Reinhard Goebl graduated in mathematics (and sports) at the University of Vienna, finishing with a master of natural sciences in 1970. Until 1986 he established a research group for CAD/CAM at the University of Technology in Vienna, with numerous projects in geometry, computer graphics and teaching mathematics and CAD/CAM for application engineers (civil construction, mechanical design and production, flexible automation). He joined the BMVIT in 1986, being responsible for various fields of research coordination within information technology, including the management of several research programmes. He was AT delegate in the EU Programme IST. Today he is head of unit "IT, industrial technologies (incl. nano), aeronautics and space technologies". This unit is responsible among others for the Austrian IT-Research Programme "FIT-IT" (Embedded Systems. Semantic Systems and Services, Systems on Chip incl. Accompanying Measures) focusing on national strengths.

Lisbeth Mosnik is member of the unit "IT" in the BMVIT (see above). She received her degree in law in 2002 and is preparing a second master in business informatics. She is responsible for the national management of FIT-IT (see above) and is involved in the cooperation with international bodies (EU-programme IST, OECD-ICCP etc.).

Michael Wiesmüller received his degree in philosophy in 1993. Scientific director of an international research project dealing with multimedia. Since 1999 he is member of the unit "IT" of BMVIT (see above), currently being responsible for international co-operations including EU-programmes (AT ISTC delegate) and strategic planning work.

The main role of BMVIT in the project will be to lead the workpackage WP5 devoted to International relations. It will also support the effort of the TU Wien in maintaining a national desk for Austria.

Technische Universität Wien

The Vienna University of Technology was founded in 1815 as Imperial-Royal Polytechnical Institute, it was the first University of Technology within present-day German-speaking Europe. Today the university finds high international and domestic recognition in teaching as well as in research and is a highly esteemed partner of innovation oriented enterprises.Profound expertise and the large pool of specialists active at the TU in teaching, research and as partners in business and commerce, make interaction among disciplines a prerequisite for maintaining the TU's position as one of the best on the international scene. The students get a practice-oriented basic knowledge and have the possibility to participate in research programs. Because of this excellent education graduates of the TU are quickly employed in industry and business right from the university.

Not only in teaching but also in research the TU is involved in many different fields: from atomic and particle physics over material physicists, surface science, interface and thin-layer research, plasma technology up to the development of modern production technologies, the research of information and communication technologies and business and investment mathematics. The TU is also providing impetus for the continuing development of equipment using renewable energy resources. Furthermore, the TU research is an important contribution to the stimulation of the domestic economy. Currently, 3.127 persons are employed by the Vienna University of Technology (number of women in parentheses):

- 412 (26) Professors

- 542 (119) Associate and Assistant Professors

- 1.313 (199) Lecturers and other scientific personnel

- 860 (436) All other personnel

Institute of Information Systems

The Institute of Information Systems of the University of Technology Vienna specializes in knowledge and information representation, interpretation, distribution and manipulation. The department's research activities span a broad spectrum of topics reaching from theoretical foundations to implementation techniques of information systems. In particular, teaching and research activities of the department concentrate on intelligent web technologies, semi-structured data, databases and information systems, AI methods and logic, complexity, algorithm analysis, data modeling and object-oriented systems. Additional activities encompass formal and computational aspects of the AI, knowledge representation and inference, non-monotonic reasoning and deductive planning, mobile robots, theorem proving in non-classic logic and foundations of intelligent software agents.
The Database and Artificial Intelligence group (DBAI) of the Information Systems Institute of TU Wien has done substantial work on Web data extraction in the past, and has an excellent expertise in both theoretical and applied issues of data extraction and transformation.

Person in charge: **Prof. Georg Gottlob**

Georg Gottlob is a Professor of Computer Science at the Vienna University of Technology, Austria (TU Wien), where he currently chairs the Information Systems Institute. His research interests are database theory (in particular, query languages), Web information processing, constraint satisfaction problems, nonmonotonic reasoning, finite model theory, and computational complexity. On the more applied side, he supervises a number of industry projects dealing with expert systems and with multimedia information systems. From 1989 to 1996 he directed the industry-funded Christian Doppler Laboratory for Expert Systems.
Gottlob got his Engineer and Ph.D. degrees in Computer Science from TU Vienna, Austria in 1979 and 1981, respectively. He holds his current position since 1988. Before that, he was affiliated with the Italian National Research Council in Genoa, Italy, and with the Politecnico di Milano, Italy. During the spring semester 1999 he was invited McKay Professor at UC Berkeley.
Georg Gottlob was an invited speaker at many international conferences. He has received the Wittgenstein Award from the Austrian National Science Fund, is an ECCAI Fellow, and a full member of the Austrian Academy of Sciences. He recently chaired the Programme Committees of IJCAI 2003 and ACM PODS 2000.

TU Wien will be especially active in the information services tasks of WP1.

Istituto Trentino di Cultura - Centro per la Ricerca Scientifica e Technologica
ITC-IRST

ITC-IRST undertakes research in several areas of Formal Reasoning, mainly within the SRA Division (Sistemi per il Ragionamento Automatico). The main topics are

1. Model checking
ITC-IRST is involved in several industrial technology transfer projects aiming at the formal specification and verification of safety critical systems (e.g. Railways Interlocking, Automaitc Train
Protection systems). The main verification technology is model checking.

2. Planning
ITC-IRST researchers contributed to research in Automated Planning with a novel approach to the problem of planning, called planning via Symbolic Model Checking. This new approach to planning is based on the use of model checking techniques. ITC-IRST is also developing its own Planning platform called MPB.

3. Distributed Knowledge representation and reasoning
The aim of this ITC-IRST research line is to develop research in information technology and software tools that support the Distributed and Autonomous Management of Knowledge. Under this research line ITC-IRST has developed, both theoretical and experimental research, as well as industrial applications.

4. Contextual reasoning
Form the theoretical point of view the ITC-IRST's researcher invented a new formal framework for representing and reasoning about Distributed Knowledge, called Multi Context Systems. This approach has been successfully applied for the formalization of information integration, formal specification of multi agent system, and database coordination. and ontology integration. Industrial application mainly concerns design and implementation of methods for legacy database migration and coordination between heterogeneous databases.

5. Logical Methods for Semantic web
ITC-IRST researchers contributes to the deployment of an or Semantic Matching called CtxMatch. This algorithm has been integrated in an industrial strength platform for distributed Knowledge Management called KeeX (R).

6. Multi agent, and distributed systems design
In this area ITC-IRST proposes an Agent-Oriented approach to softwaredevelopment and defines AI-based methods and techniques for supporting decision-making during software development.

7. Formal methods for software engineering (formal-Tropos)
ITC-IRS is one of the main contributors to the development of the Formal Tropos Framework. Formal Tropos is part of the Tropos project, whose aim is to develop an agent-oriented software
engineering methodology,starting from early requirements.

ITC-IRST is involved in a number of local, national, European and international projects. Among them there are:

ASTRO: to develop research in information technology and software tools that support an effective, flexible, easy-to-use, low-cost and time-efficient composition of electronic distributed business processes in a service oriented architecture.

PROSYD: The goal of the PROSYD project is to significantly increase the competitiveness and efficiency of the European IT industry through the establishment of a standard, integrated property-based paradigm for the design of electronic systems

ISAAC (FP6-2002-Aero-1-501848) builds upon and extends the results of ESACS that has shown the benefit of using formal techniques to assess aircraft safety. The goal is to go a step further into the improvement and integration of safety activities of aeronautical complex systems. The ISAAC consortium comprises aeronautical industries (Alenia, AIRBUS, Saab, SIA, Dassault) and research centres leaders in formal verification, safety assessment, and tool development (ITC, ONERA, OFFIS, PROVER).

CALCULEMUS Excellence Network (FP5 EU Training Network) on the design of a new generation of mathematical software systems and computer-aided verification tools based on the integration of the deduction and the computational power of Deduction Systems and Computer Algebra Systems respectively.

ITC-IRST will contribute in particular to the running of the national desk for Italy, to data collection and analysis issues, and to developing a formal ontology. It will also be responsible for the self-assessment and for organising a f inal conference.

ISTC-CNR

The Institute of Cognitive Sciences and Technologies (ISTC) of the Italian National Research
Council (CNR) is the most important Italian research institution for Cognitive Sciences. It includes
more than 60 scientists involved in highly interdisciplinary research ranging from cognitive and
social sciences to linguistics, artificial intelligence, and knowledge engineering. The Laboratory for Applied Ontology
(LOA) is a centre specializing in the ontological foundations ofconceptual modelling. LOA-ISTC-CNR explores the role
of ontologies in different fields including:
knowledge representation, knowledge engineering, database design, information retrieval, natural
language processing, and the Semantic Web. The group is characterized by a strong
interdisciplinary approach that combines Computer Science, Philosophy and Linguistics, and
relies on logic as a unifying paradigm. On the application side, special emphasis is given to the use
of ontologies for legal information systems, medical information systems, enterprise modeling,
integration of lexical resources, electronic commerce, and information extraction.
The LOA is famous for its OntoClean methodology for ontology design, based on logical tools and formal ontology
principles, and widely applied to help developers in producing high-quality ontologies. One of the latest achievements of
the LOA is the development of a "Foundational Ontologies Library" as a result of the integration of most used ontologies,
lexical resources, data/metadata content standardization proposals. This library includes the "DOLCE" ontology
developed at LOA, which is increasingly being used by various research labroratories and companies worldwide. This
work is the result of the EU FP5 IST Project WonderWeb.

The main competences of the LOA can be summarized as follows:

1. Development of logical tools and methods for ontological analysis
2. Application of ontological analysis to the development of
ontology-driven information systems
3. Study of the relationship between ontology and natural language
formal semantics
4. Development of domain ontologies in specific areas:
- Ontology of physical objects
- Ontology of medicine and biology
- Ontology of information and information processing
- Ontology of social interaction
- Ontology of linguistic interaction
- Ontology of Law and legal entities
- Ontology of banking transactions
- Ontology of Web services

LOA-ISTC is currently involved in various ontology-related projects:

MOSTRO, Modeling Security and Trust Relationships within Organizations Project funded by the Provincia Autonoma
di Trento, with DIT - University of Trento, and Institut de Recherche en Informatique de Toulouse-CNRS, coordinated by
ISTC-CNR. MOSTRO aims at detecting and isolating security flaws at the very early stages of software design and
development.

Metokis, Methodology and Tools Infrastucture for the Creation of Knowledge Units.EU FP6 project (IST area "Semantic-
based Knowledge Systems"). The primary scientific objective of the METOKIS project is to make a substantial
contribution to the development of self-describing knowledge and content structures, by clarifying the relationships
between content and the knowledge that may be encoded in the content.

SemanticMining Network of Excellence - Semantic Interoperability and Data Mining in Biomedicine EU FP6 Network of
Excellence (IST areas "eHealth" and "Semantic-based Knowledge Systems"),

Nicola Guarino (1954) is a senior research scientist at ISTC-CNR, where he leads the Laboratory
for Applied Ontology. He graduated in Electrical Engineering at the University of Padova in 1978.
In 1979-1984 he was responsible for the data acquisition and monitoring system of a large nuclear
fusion experiment. He then joined LADSEB-CNR to work on knowledge representation. He has

been active in the ontology field since 1991 and has played a leading role in the AI community promoting the study of ontological foundations of knowledge engineering and conceptual modelling. He currently works on ontology design and ontology-driven conceptual modeling. He is general chair of the FOIS conference series, co-editor of the newly founded Journal of Applied Ontology, associate editor of the Semantic Web area of the Electronic Transactions on Artificial Intelligence and of the International Journal of Human-Computer Studies. He has published some 80 research papers and has been guest editor of several journal special issues devoted to formal ontology and information systems.

ISTC-CNR will contribute mainly to WPs 2,3 and 4. It will work with ITC-IRST in maintaining a national desk for Italy, collecting and disseminating information on national programmes and projects, exchanging information on best practice in programme management. In WP3 it will work on joint activities, in WP4 it will work on Task T4.1 to develop formal ontologies for the domain.

Servizio Università e Ricerca Scientifica

The objective of Servizio Università e Ricerca Scientifica (Department of Research and University) of the Provincia Autonoma di Trento (Autonomous Province of Trento, PAT) is to pursue, under the auspices of the Giunta Provinciale (the government of the province), all the actions necessaries for the qualification of the high studies, and research in the area of Trentino. It acts as connection between the public administration and the public and private research and technological organizations and is in charge of the management of a Fund for Research Projects ("Fondo Provinciale Progetti di ricerca"). The main objective of the fund is the promotion of scientific and technological research projects aimed at the social and economic development of the Province. The granted projects have been divided in three categories: R&D projects, postdoc fellowshisps and the creation of new research centres. Training of researchers, networking at national and international level (in particular bilateral agreement between Italy and Germany), and co-financing the participation of SME and industries in the R&D projects are the main features of the program.

The research areas have been chosen in agreement with the European strategic objectives of the VI° Framework Program. Formal Reasoning are part of the ICT and since three years after launching the program, many projects have been largely funded, eg. EDAMOK and FORPICS.

PAT will work with other Trento partners on the national desk and take part in cooperation activities in WP3.

SLOVENIAN MINISTRY OF EDUCATION, SCIENCE AND SPORT (MESS)

The Ministry of Education, Science and Sport was established in 2001 by merging of two ministries: the Ministry of Science and Technology and the Ministry of Education and Sport. MESS is responsible in accordance with the new Government Act for issues related to: research; university and postgraduate education of junior researchers, the programme Science for Youth and the promotion of science; the development, establishment and functioning of the infrastructure needed for research; scientific publications; the scientific information system, and communications and international cooperation in science.

The responsible ministries for the promotion of the FP6 are the Ministry of Education, Science and Sport, Ministry of Economy and Ministry of Environment, Spacial Planning and Energy. The coordinator of the activities is MESS. At MESS the following organisational structure regarding the 6th Framework Programme has been set up:
- National Co-ordinating Committee with the aim to shape and implement the strategy and national policy. The members are from relevant Slovenian institutions.
- NCP system: the NCP for the particular priority have been nominated and for the FP6 in general. NCPs with appointed experts from scientific sphere are members of priority configurations.
- Contacts points in relevant institutions.

The network of ministries has organised in the co-operation with the European Commission services, IRC Slovenia, Chamber of Commerce Slovenia, Universities in Ljubjana and Maribor, Euro Info Centres in Slovenia, KOWI offices in Brussels and Bonn, BIT Austria, Enterprise Ireland a series of activities for example some info days, some brokerage conferences, home page: www.rtd.si , www.mszs.si , meetings, workshops, seminars, different kind of guidelines and leaflets for project proposers in Slovenian language, partner searches. MESS has been involved in following ETI and Accompanying measures project in FP5: THNAPFP (ICA1-CT-1999-50007), IRESA (ICA1-CT-2000-50002), TRAIN NET (QLG7-CT-2001-30212), IST MENTOR (IST-2001-34841), BESTAS2 (IPS-1999-950076), Fellows for Industry (IPS-1999-950064), IN WOOD (IPS-1999-950064).

MESS finances 260 research programmes of which the following include the field of formal reasoning:
- Computer systems, methodologies and intelligent services
- Information systems

- Knowledge technologies
- Artificial intelligence and intelligent systems
- Applied mathematics, theoretical physics and intelligent systems

In addition to the financing of the 5-years research programmes MESS is also financing research projects (2-3 years), which are selected on a competitive mode by annual calls. Among on-going research projects there are also those, which are related to the formal reasoning. Research and development activities supporting the development objectives of Slovenia are carried out through the third mechanism of targeted research programmes, which is form of inter-ministerial cooperation.

Effort in the Coordination Action

Information Society technologies are considered as one of the thematic priorities of Slovenian national research. Significant number of our researchers from this thematic priority is active in certain topics, which relate to the field of formal reasoning and are achieving the top quality in their work. Nearly half of the 5-years research programmes from the thematic priority of information society technologies are dealing with research problems interesting for formal reasoning. Therefore MESS is interested to participate to this ERA pilot to support Slovenian researchers in this field.

MESS would like to contribute to the systematic information exchange on research priorities, programmes, rules of participation. Further it would like to participate to the strategic activities by sharing best practice and would like to explore the possibilities for joint activities like transnational participation and sharing of facilities. However, due to lack of human resources we are not able to participate substantially with working hours of our personal in this regard we are counting on the other Slovenian partner.

'Jozef Stefan' Institute, Slovenia (JSI)

J. Stefan Institute (http://www.ijs.si) (founded 1949) is a research organisation for pure and applied research in the natural sciences and technology. At present the Institute, totalling about 700, has a research staff of nearly 450: about 200 of them are post graduates temporarily employed while obtaining their degrees, almost 260 have doctorates, and 100 have permanent professorships or temporary teaching assignments at the Universities (Ljubljana and Maribor).

The Department of Knowledge Technologies of the J. Stefan Institute (http://www-ai.ijs.si) consists of 20 researchers, the head of Department is Prof. Dr. Nada Lavrac. It was founded in 1979, initially as the Artificial Intelligence group. In the first ten years, the emphasis was on theoretical research that provided a solid background for later application projects. The research work has been performed within projects funded within European research projects, as well as by the Ministry of Science, Education and Sport of Slovenia. The following project were funded as European research projects: Sol-Eu-Net IST-1999-11495 (2000-2003), 5FP project cInQ: Consortium on Discovering Knowledge with Inductive Queries (2001-2004), 5FP project ECOGEN: Soil ecological and economic evaluation of genetically modified crops (2002-2006), 5FP Network of Excellence KMForum: European Knowledge Management Forum (2000-2003), 5FP Network of Excellence KDNet: European Knowledge Discovery Network of Excellence (2002-2004), 6FP Integrated project: SEKT: Semantically Enabled Knowledge Technologies (2004-2008), 6FP Integrated project ECOLEAD: European Collaborative networked Organizations LEADership initiative (2004-2006), 6FP Integrated project SIGMEA: Sustainable Introduction of Genetically modified organisms into European Agriculture (2004-2006), 6FP Strategic targeted research project ALVIS: Superpeer Semantic Search Engine (2004-2006), 6FP Network of Excellence PASCAL: Pattern Analysis, Statistical Modelling and Computational Learning (2004-2006), 6FP ERA project CEC-WYS: Central European Centre for Women and Youth in Science (2004-2007), INCO Copernicus - Concede (1998-2000), COST-258 The Naturalness of Synthetic Speech (1997-99), TELRI, Trans-European Language Infrastructure (1995-98), ESPRIT III and IV Network of Excellence in Computational Logic (1991-99) ESPRIT IV LTR Inductive Logic Programming II (1996-98), MULTEXT-EAST, Multilingual Texts and Corpora for Eastern and Central European Languages (1995-97), ESPRIT III and IV European Network of Excellence in Machine Learning (1992-97), ESPRIT III Basic Research Project Inductive Logic Programming (1992-95), PECO92 Inductive Logic Programming Pan-European Scientific Network (ILPNET) (1993-96), a Copernicus Network of Excellence in Inductive Logic Programming (ILPNet2) (1998-2001), COST-233 Prosody in Synthetic Speech (1989-95).

Description of staff involved in the project

Dr. Dunja Mladenic works at the J. Stefan Institute, Ljubljana, Slovenia since 1987, first as an undergraduate student and since 1992 as a researcher. Most of her research work is connected with the study and development of machine learning and data mining techniques with particular interest in learning from Text and the Web and their application on real-world problems from different areas. She was at Carnegie Mellon University, USA, as a visiting researcher and faculty in 1996-1997 and 2000-2001 respectively. She coordinated EU 5FP RTD project "Data Mining and Decision Support for business competitiveness: A European virtual enterprise" (2000-2003). She has published papers in refereed conferences and journals, co-edited book, served in the program committee of different international conferences and organized several international events. She is co-editor of the book "Data mining and decision support : integration and collaboration", Kluwer Academic Publishers, 2003.

Marko Grobelnik works at the J. Stefan Institute since 1984, first as a student and since 1997 as a researcher. Most of his research work is connected with the study and development of Data Mining techniques and their application to different problems in economy, medicine, manufacturing, and game theory. His current research focuses on Data Mining with particular interest in learning from text applied on large text data sets. He has published several papers in refereed conferences and journals, served in the program committee of different international conferences, co-organized several international events.

Dr. Nada Lavrac has been a senior research associate at the J. Stefan Institute since 1978 and a visiting professor at the Klagenfurt University, Austria (since 1987). Her main research interest is machine learning, in particular inductive logic programming, relational data mining and intelligent data analysis in medicine. She was the co-ordinator of the European Scientific Network in Inductive Logic Programming ILPNET (1993-1996). She is co-author and co-editor of several books, including Inductive Logic Programming: Techniques and Applications, Ellis Horwood, 1994, and co-editor of the book Relational Data Mining, Springer, 2001 and the book Data mining and decision support : integration and collaboration, Kluwer Academic Publishers, 2003.

JSI will lead the workpackage on mapping, foresight and policy activities and will be active in several other key parts of the workplan.

DFKI profile

Founded in 1988, DFKI today is one of the largest nonprofit contract research institutes in the field of innovative software technology based on Artificial Intelligence (AI) methods. DFKI is focusing on the complete cycle of innovation - from world-class basic research and technology development through leading-edge demonstrators and prototypes to product functions and commercialization.

Based in Kaiserslautern and Saarbrücken, the German Research Center for Artificial Intelligence ranks among the important "Centers of Excellence" worldwide.

An important element of DFKI's mission is to move innovations as quickly as possible from the lab into the marketplace. Only by maintaining research projects at the forefront of science DFKI has the strength to meet its technology transfer goals.

The key directors of DFKI are Prof. Wolfgang Wahlster (CEO) and Dr. Walter G. Olthoff (CFO).

DFKI's six research departments are directed by internationally recognized research scientists:

- Image Understanding and Pattern Recognition (Director: Prof. Thomas Breuel)
- Knowledge Management (Director: Prof. Andreas Dengel)
- Intelligent Visualization and Simulation Systems (Director: Prof. Hans Hagen)
- Deduction and Multiagent Systems (Director: Prof. Jörg Siekmann)
- Language Technology (Director: Prof. Hans Uszkoreit)
- Intelligent User Interfaces (Director: Prof. Wolfgang Wahlster)

Furthermore, since 2002 the Institute for Information Systems (IWi) (Director: Prof. August-Wilhelm Scheer) is part of the DFKI.

The mission of the Transfer Centers is to transfer DFKI's research results to commercial application:

- AICommerce – "Intelligence for eBusiness"
- SISO – "Towards Secure Software"
- smartLab
- TransLect – "Language Technology at Work"

There are currently three Competence Centers that bundle know-how, skills, and technologies of DFKI to tackle important questions in:

- e-Learning
- Language Technology
- Semantic Web

At DFKI, all work is organized in the form of clearly focused research or development projects with planned deliverables, various milestones, and a duration from several months up to three years.

DFKI benefits from interaction with the faculty of the Universities of Saarbrücken and Kaiserslautern and in turn provides opportunities for research and Ph.D. thesis supervision to students from these universities, which have an outstanding reputation in Computer Science.

The formal Methods Group of DFKI is located at the Deduction and Multiagent Systems department. The central vision of the Formal Methods Group is the development of an overall environment which facilitates the development of software using formal and informal methods. In order to establish formal reasoning for the development of software as an engineering science, we develop tools which aim at a thorough support in all phases of a formal development methodology. This includes in particular an adequate management of software developments including the reuse of developments, an efficient proof support, and a sophisticated user interface.

Within our Transfer Center SISO we are applying our formal reasoning tools und methodologies to the development of commercial products in different areas. Among these are
- embedded systems in the automotive sector,
- e-payment in the commercial transaction sector,
- e-signatures in the business process sector, and
- e-voting in the democratic participation sector.

While working on these subjects we have accumulated strong experiences in
- proving safety properties of reactive systems,
- verifying security protocols, and
- formalising security policies.

DFKI will be active in maintaining a national desk and in cooperation and policy initiatives. It is hoped to be able to add to the consortium a relevant German research funding body before the contract preparation stage.

CA Project Effort Form
Full duration of project
(person-months for activities in which participants are involved, * = not charged to the project, **= assistant to the coordinator)

Project acronym – **4eNET**

	Partner 1 URJC	Partner 2 MEC	Partner 3 CNRS	Partner 4 IRIT-CNRS	Partner 5 BMVIT	Partner 6 TUWien	Partner 7 ITC-IRST	Partner 8 ISTC-CNR	Partner 9	Partner10 MESS	Partner11 JSI	Partner12 DFKI	TOTAL PARTICIPANTS
Co-ordination activities													
WP 1	2 + 7**					7	2				2		20
WP 2	2**	3	1*	3	1	5	2.5	2.5	1*	1*	4	2	28
WP 3	1 +2**	1	1*	2	2	1	1	1	1*	1*	1	1	16
WP 4	1 + 2**					2	3.5	2.5			6		17
WP 5	1 + 2**				6+ 1*		1						11
WP 6	1 + 3**						1						5
Total co-ordination activities													
Consortium management activities													
WP name													
WP name													
WP name													
etc.													
etc.													
WP6	12												12
Total consortium management													
TOTAL ACTIVITIES	18+18**	4	2*	5	9+1*	15	11	6	2*	2*	14	3	109

Overview of resources and budget

Coordination activities

All partners in the consortium will carry out coordination activities involving human resources, equipment and travel. In the case of national and regional funding bodies, some agencies will take direct responsibility for tasks or workpackages and therefore require a larger share of human resources, while others will delegate substantial parts of the work to the corresponding national research centre or university. Specifically, the Spanish and Austrian ministries, MEC and BMVIT, besides helping to run their national desks will take charge of the task of best practices in programme management in WP2, and the WP5 on international relations, respectively, with appropriate human resources. On the other hand the French participant CNRS will delegate activities to IRIT, the Province of Trento will delegate to ITC-IRST and ISTC-CNR, and the Slovenian ministry MESS will delegate to JSI. These three funding organisations are accordingly assigned fewer person months which will not be charged to the project.

The remaining workpackages are assigned as follows. WP1, devoted to the central contact point and information services, will be led by the coordinator, URJC. The main items of expenditure are (i) effort in designing and specifying the central information services (undertaken by partners 1,6,7,8 and 11); (ii) design and maintenance of the web portal. (ii) does not appear in the Project Effort Form, since this task will be subcontracted to a professional company, via a suitable tender. WP2 involves collecting, exchanging and disseminating information at a national level. For each national desk roughly 6 person months is assigned in total; in some case divided between two partners. WP3 is devoted to cooperation activities and planning, and will involve all partners. It will be led jointly by ITC-IRST and ISTC-CNR. WP4 is devoted to mapping, foresight and policy activities based on data analysis carried out primarily by partner 11, JSI, who will lead the workpackage.

4eNet will organise two main conferences. One, within WP5, will be directed to national programme managers and policymakers; the other is a closing conference for the Action as a whole, which will present the main outcomes and results and policy recommendations for the future.

Management of the consortium

Consortium management will be carried out within WP6 by the coordinator, URJC. The main costs involved are 9 person months for the project manager, 3 person months for the coordinator and 6 person months for a part-time junior assistant. 4000 EUR is assigned to travel. Audit certificates account for a further 6000 EUR for all partners taken together. For other coordination activities, the coordinator is assigned 6 person months and the assistant 12 person months.

Other costs

The A3 cost forms indicate the total costs for each partner. For participants other than the coordinator, these comprise person months, travel costs of roughly 9000 EUR per partner and overheads. For the coordinator the costs include management costs (no overhead), and other coordination activities (20% overhead) including travel costs of 15000 EUR and equipment costs of 10 000 EUR. Cost for partner 5 include 15 000 EUR for two international workshops. Costs for partner 7 include 10 000 EUR for the final conference. Other costs involved in the Action are formally assigned to the coordinator to be paid out to participants and subcontractors at the time of carrying out the tasks concerned. The main items are 75000 EUR for web portal design and maintenance (subcontract), a fund of 50 000 EUR for implementing pilot schemes within the Joint Action Plan, a fund of 30 000 EUR for supporting foresight and policy studies carried out partly by third parties, and 20 000 EUR for two conferences.

Budget allocation in K EUR

Person costs for coordination activities…… ..   455
Travel and subsistence…………...   105
Fund for implementing Joint Action Plans   ……   70
Fund to support policy and foresight studies ….   30
Subcontract web portal………………………...   75
Consortium management …………………………..   50.4
Other costs (workshops, equipment, materials) ………..   35

Total …………………………………………………………..775 620 EUR

B.5 Project management

The management structure of the project involves three different, cooperating units: the **project secretariat**, comprising the scientific coordinator and assistant, together with a project manager, is responsible for the day to day running of the project and management of the contract; a project **executive board,** comprising a senior representative of each of the consortium members, will be responsible for the launch, co-ordination and executive management of the proposed activities; thirdly, an external **scientific advisory board** will be set-up to give high-level scientific and legal guidance and input into the strategic planning and research policy activities. The composition and duties of these three units will be described in turn.

The project secretariat will be led by the scientific coordinator who coordinates all the technical activities of the CA at the consortium level helped by a junior assistant. For assistance in legal, contractual, financial and administrative management, he will be helped by a project manager, who will also assist in the organisation of meetings etc. The secretariat will act as a contact point for communication with the European Commission, for communication among consortium members, and as a representative of the project to the outside world, through a project office. The secretariat will set-up and maintain the basic channels of communication between members, such as email and telephone lists, a web page, and so forth. It will organise regular meetings of the Executive Board, initially at roughly 4-month intervals, but with the precise frequencies to be determined by the Board itself. The coordinator will maintain regular contact with workpackage and task leaders to monitor progress in implementing the workplan and to try to ensure that deliverables are prepared on time. Self-assessment of the progress made throughout the project will be a separate Task devolved to another project partner. The Coordinator also acts as an official representative and "ambassador" of the project in its relation to other organisations and outside events. This function may from time to time be delegated to other members of the consortium on the recommendation of the Board.

The Executive Board will be chaired by the Coordinator and comprises a senior member of each consortium partner to be nominated by that partner. In the case of a university or research centre the EB representative is a senior researcher in the field. In the case of national or regional funding bodies, the representative will be a senior programme manager and/or international relations manager at approximately sub-director level. Each member of the Board has one vote, except that to maintain a fair geographical balance between partners, the two Trento research centres should be considered as one member. Normally the EB member is also the Task or WP leader for those tasks or workpackages assigned to that member; but in some cases another task leader from the same node may be designated.

The first meeting of the Executive Board will be the project kick-off meeting. Thereafter the Board will be in frequent contact by email and meet physically at regular intervals, at least 3 times in the first year of the project. The Board is responsible for setting-out the fine details of the workplan and monitoring progress, for launching new actions and initiatives, and for approving the budget (in consultation with the project officer). It is also responsible for the internal approval of deliverables and for terminating any activities that are deemed to be unfruitful. Once the Board has approved the details of the workplan, responsibility for carrying out the specific activities lies with the individual task leaders. At the kick-off meeting the Board will recommend and later contact potential members of the Scientific Advisory Board.

The Scientific Advisory Board should be set up within the first two months to provide high-level strategic input into the project. Members of the SAB will be senior scientists in the field, as well as decision makers, policymakers, representatives of pan-European organisations, of industry and of national organisations, covering areas such as Formal Methods, Software Security, etc. It may also include experts to assist with legal issues related to cross-national cooperation. The role of the SAB is to give advice to the project on directions to explore with respect to issues concerning eg. information collection, roadmapping and foresight activities, pan-European cooperation, research policy. It may also help to provide the Action with suitable links to other organisations in Europe and beyond. Members of the SAB may also be invited to act as external consultants to the project to assist with evaluating progress. In general, recommendations given by the SAB may be considered as advice to the project that may, on approval of the EB, lead to changes and additions to the workplan. The precise manner in which the SAB will be set up and consulted should be determined by the EB at an early date in the project.

To carry out specific tasks such as those involving reports and studies, the Executive Board may form and later disband ad hoc Task Forces or working groups. These will normally be led by consortium members, but may include also members from outside the project whose expertise is required, eg in efforts such as S&T foresight.

Consortium agreement

[Proposal Acronym]

The partners will prepare and sign a consortium agreement. Although the members of the Action are committed to information exchange and cooperation, there is no intent or requirement to communicate all the proprietary information on national programmes. In addition each partner retains full freedom to define its national programmes and research agendas. Beyond this Action, competition between laboratories and industries remains.

B.6 Detailed implementation plan

a) Detailed implementation plan introduction
(explaining the structure of this plan and the overall methodology used to achieve the objectives)

The **executive board** will be responsible for launching, co-ordinating and managing the proposed activities. A **scientific advisory board** will be set-up to give high-level guidance and input into the strategic planning and research policy activities. The main instruments used will be information collection and dissemination via articles and web reports; meetings and exchanges between WP coordinators and participants; workshops and conferences; awareness seminars. In addition to the usual forms of information collection and analysis, the Action will employ advanced information management techniques based on formal reasoning methods developed by partners in the consortium. In particular, state of the art information retrieval techniques will be employed to power the search engine and informational analysis of the web portal. In addition, advanced datamining and decision support methods developed by the Slovenian research partner will be used to chart and analyse the current state of European research in the Formal Reasoning domain.

The **Workplan** will be divided into a number of tasks organised around 6 **Workpackages**. These are devoted to the following issues:

- Information collection and dissemination at a central level (WP1) and national level (WP2)
- Cooperation activities between programmes and members (WP3).
- Mapping, foresight and policy activities for European RTD (WP4)
- International relations (WP5)
- Coordination and consortium management (WP6)

In summary, the first two workpackages are devoted to collecting and disseminating information on national programmes as well as providing a web portal for the Coordination Action as a whole. The main expected outcomes are in WP 1 the establishment and management of a joint contact point for the Action together with a web portal with links to websites of national programmes and to other relevant sites. Since information collection, analysis and exchange provides a key component of the project, it is essential that this be carried out in a well-defined and effective manner so that results will be of real use for formulating joint actions and policy recommendations. To ensure this a Task Force comprising several of the participating research institutes will be set up to study the most effective means of collecting and disseminating information. The result of this study will be a report specifying requirements for an effective Information Service for the action as a whole. The study will make special reference to the various information retrieval, analysis and management technologies developed by the research partners themselves, so that an optimal use can be made of tools and expertise available to the partners. In WP2 the work will comprise establishing and managing national desks for each of the participating countries, preparing reports summarising and comparing contents of national programmes and exchanging information on **best practice** in project evaluation, selection and management, through meetings and workshops.

In the medium to long term it is to be expected that the ERA will be supported through instruments such as shared infrastructures, joint software platforms and application centres showcasing state-of-the-art European technology. Steps towards these goals will be taken in WP3 by identifying centres of excellence in relevant research areas and building upon shared labs and platforms that partners are already developing on a bilateral or multi-lateral basis. WP3 will develop a second major cornerstone of ERA support by identifying barriers to cross-national cooperation and making recommendations for joint activities between programes at cross-national levels. These will be formulated in a Joint Action Plan, parts of which may be implemented during the lifetime of the CA through pilot schemes.. WP3 should also help to support project clustering and technology awareness.

Workpackage 4 is devoted to activities that may assist in strategic planning and policy recommendations that go beyond the lifetime of the current framework programme and the ERA-Pilot. A first step is to create an accurate map charting the current state and development of European research. Information on national programmes provides only one input to this map and will often lack

specificity about work actually carried out in concrete sub-areas. The WP will use tools and expertise developed by one of the partners (IJS) and already successfully deployed in European Commission programmes to chart and analyse current RTD in Europe using advanced datamining techniques.

A second key component of WP4 will be a set of activities supporting foresight and planning to be initiated and guided by the Scientific Advisory Board. These may include identifying emerging areas and grand challenges, roadmapping in specific sub-areas, and so on. This work is intended to complement rather than replace studies and roadmaps undertaken elsewhere, eg by NoEs, thematic networks and other organisations.

Each of the above actions may help to evaluate existing programmes, including initiatives within FP6, as well as make research policy recommendations for the future. In summary the expected outcomes of this WP are: a map of the current state and development of European RTD , identification of emerging areas, visions and grand challenges, as well as roadmaps; assistance in the evaluation of current programmes (FP6 etc) and research policy recommendations for the future

This Coordination Action should aim at a wide coverage and representation of European RTD in the field. It should also act as a support mechanism to assist the integration of new members states and accession countries into European research and as a contact point for relations to third countries. WP5 will therefore host a number of tasks supporting international relations and integration, to include: opening the network to new members, especially managers of national research programmes; activities supporting the integration of new members states and accession countries into EU RTD programmes; actions assisting relations to third countries (China, Russia, US, Japan, Australia, etc); liaison with other organisations and projects such as NoEs, ERA nets, thematic networks, national agencies, international federations and societies

Workpackage 6 is devoted to coordination and management as well as some of the dissemination activities of the ERA-Pilot. Key responsibilities include setting up a project secretariat to include the technical coordinator, management assistant and secretarial support. This will function as the official joint contact point of the Action.
In addition in this WP an Executive Board will be formed and a kick-off meeting organised to set priorities and activities for the first 18 months and to nominate a Scientific Advisory Board. Regular meetings of the EB will be organised and dissemination and reporting activities throughout the period of the CA will be undertaken.

Data extraction, Analysis, and Information Management

4eNet will automatically collect project and research information from various relevant national and supranational portals or databases, extract the data, analyse it, and publish it in aggregated and queryable form on a Web portal.

The first step, consisting of automated data collection and extraction, requires a choice of relevant Web sources, the design and implementation of automated devices which continually monitor these sources and extract new information from them (data items, records, documents, text) and submit or load this information into a data analysis tool.

An important joint work of Workpackage 1 (WP1) is the identification of Web sources and databases whose content will be used by the overall system. In the scope of WP1, Trento, JSI and TU Wien will all participate in this identification process. Then TU Wien will design an integration model for Web information extraction consisting of a common XML schema and mappings between data or information patterns on the different source sites, and the common schema.

The Database and Artificial Intelligence group (DBAI) of the Information Systems Institute of TU Wien has done substantial work on Web data extraction in the past and has a highly qualified experience in both theoretical and applied issues of data extraction and transformation. In particular, DBAI has won the best paper award at the 2002 ACM Symposium on Principles of Databases (ACM PODS'02). Moreover DBAI has recently designed new data extraction mechanisms and the architecture of the first European portal of Computational Logic and the FP5 CoLogNet Project Website.

The data analysis part will be carried out by JSI. 4eNET will build on the top of the existing tool for

browsing, searching and analysis of FP5 and FP6 IST projects called "Project Intelligence"(http://pi.ijs.si/ developed by partner 11, JSI. "Project Intelligence" uses publicly available as well as EC administrative data about projects and along with analytic methods such as data-mining, text-mining, social-network-analysis and visualisation provides in-depth pictures of the content structure, dynamics and institutional and geographic participation of European projects. Technically speaking, the two main sources of the data are collaborative graph of institutions (institutions are connected if they collaborate on the same project) and textual project descriptions. Using this one can calculate many structural and content properties of the evolved network. Among others, the tool provides also functions for automatic consortium construction based on the past involvements in projects and an instrument for predicting possible consortiums for new strategic objectives (e.g. focus points in the IST workprogramme) in future project calls (this tool was actually used for projections of FP6 based on FP5 experience). Another aspect of the "Project Intelligence" functionality could be that it provides an OLAP (Online-Analytical-Processing) tool for unstructured (text) and semi-structured (networks/graphs) data. The current version of the "Project Intelligence" tool is freely accessible online at http://pi.ijs.si/ and is used by many people from all over Europe - on average it gets 10,000 queries per day.

Activities on the data analysis side would include:

-collecting data from several different sources including Cordis, Web, national databases (such as Sicris or Cordis in Slovenia), bibliographic databases such as DBLP from University Trier (http://dblp.uni-trier.de/) or Citeseer from University of Pensilavanya (http://citeseer.ist.psu.edu/)

- data cleaning - cleaning the input data in the sense of transformation to standard formats,

- record linkage and object consolidation - this module links various surface forms of a single entity into one object - e.g. an institution can have several names (such as Jozef Stefan Institute, Institut Jozef Stefan, J. Stefan Institute, JSI, IJS) and these methods enable about consolidation of such diversity. The methods used will include fuzzy matching based on string-edit-distance etc. Methods will be based on the publication from the KDD2003 Workshop on "Data Cleaning, Record Linkage, and Object Consolidation" (http://csaa.byu.edu/kdd03cleaning.html)

- construction of collaboration networks/graphs - Based on cleaned data, the next step will be construction of the collaboration networks/graphs of persons (researchers) and institutions (departments, organizations). Networks/graphs will include additional data such as time stamps, textual content (project and publication titles and abstract).

- analysing of research networks - This set of techniques will analyse structural properties of collaborational networks based on the methods from social network analysis such as power-low properties, connectivity, community identification. We plan to use tools build in other Eu projects (such as package Pajek from http://vlado.fmf.uni-lj.si/pub/networks/pajek/)

- analysing the evolution of research networks - This set of techniques will analyse temporal behaviour of the collaboration graphs - the expected results will be indications for trends and activities in particular international and national communities.

- predicting future behaviour - This set of techniques will cover several aspects of predicting future behaviour based on the previous data. This will include predicting new consortiums, predicting new project topics and predicting amount of activities in certain area.

- multi-lingual matching of the research contents - Her we plan to use machine-translation tools to normalise textual content into a "language independent" representation. This kind of tool is developed in other FP6 IST projects such as (SEKT, Alvis and Pascal) and will be here reused.

- network and text visualisation - The goal of this task is to use network and text visualisation techniques to visualise collaboration graph and textual content on different levels of abstraction. Tools developed in other FP5 and FP6 projects will be used.

Upon completion of the specification, the data extraction mechanisms and the Web portal will be implemented by a subcontractor to be chosen. The portal will display both general (and more static) issues about research on formal methods and dynamic content generated from the extracted information through the "Project Intelligence" tool.

Dissemination

By its nature much of the work of 4eNET involves dissemination activities but these operate at several levels and therefore naturally take place within different workpackages. Therefore there is no single WP devoted to dissemination. However the general dissemination of the project will be carried out by the coordinator in WP6 together with the project secretariat. This work includes preparing and maintaining a project summary, preparing press releases and presenting the project at relevant events and conferences; it also involves coordination of the various other dissemination activities. In WP1, the central contact point disseminates the main results of the project mainly via the online Information Services, which will include regular news items. To gain wider impact efforts will be made to publish a regular 4eNET news column in one or more international publications in the field.

In WP2 the six national desks are responsible for collecting and disseminating information at a national level. This work will also involve presenting the overall results of the project at national or regional meetings and events. In addition, the consortium members representing national or regional funding programmes will be responsible for maintaining close contact with their NCPs and for disseminating 4eNET results in international and EU committees and conferences in which they are involved. Lastly, 4eNET includes a dedicated workpackage for international relations which will involve disseminating the ideas and results of the Action to other national programme managers and presenting 4eNET at suitable international events. Contact will also be maintained with other organisations and networks where the results of 4eNET can be disseminated via articles, talks, etc.

All the unrestricted reports of 4eNET will be made openly available online. If a publisher can be found it is hoped that some reports may also be published in paper form.

Measuring Success

Workpackage 6 includes the task of defining and evaluating progress. A self-assessment document will be produced at month 3, suggesting the main criteria for measuring success in each of the workpackages. At each control stage in the project, progress against these criteria will be assessed.

The main overall criterion of success for 4eNET will be its impact on helping to create the European Research Area. This impact will be hard to quantify, but there are a number of sub-goals and objectives that can to a certain extent be measured. The main (not necessarily independent) indicators of success could be:

- Use made of the information services and web portal (eg no. of hits)
- Breadth of coverage of the information services (eg no. of countries represented in the data presented and analysed)
- Depth of detail in representing the landscape of European research and in mapping excellence (eg. nos. of projects, researchers, sub-topics etc)
- Number and quality of long-term cooperation initiatives (i) proposed in the Joint Action Plans and (ii) implemented during the lifetime of the project
- Level of awareness reached through dissemination activities
- Extent to which the foresight and policy studies may influence long-term policymaking
- Overall level of "acceptance": extent to which the scientific community as well as governmental decision makers regard 4eNET as a trustworthy and representative forum for the domain.

Overview of 4eNET development over time

Since the various workpackages of the Action run largely in parallel, this sub-section will explain briefly how elements of the different WPs feed into each other and how the project will develop over

time, summarised graphically in charts (b) and (c). It is convenient to divide development into 5 phases.

Months 0-6. This foresees the kick-off meeting and approval of a detailed workplan, the setting up of a project secretariat and a central contact point, and the forming of national desks that will begin their data collection work. Two key technical tasks will be carried out: a study to build formal ontologies for the domain, and a (task force) study to identify of Web sources and databases whose content will be used by the overall system and to specify the information services and web portal.

Months 7-12. This sees the national desks operative. Based on the Task Force report, data analysis will begin to chart European research and map excellence. Work of the information services will begin and, following a subcontract tender, work on the web portal will start. A scientific Advisory Board (SAB) will be appointed. A series of consultation meeting will take place: with the SAB, between research labs and academic partners, and between research programme managers. The latter will include sessions devoted to exchanging information on best practices. Work will start on opening the net to programme managers and policymakers from other EU countries and accession states.

Months 13-18. Information services and web portal now functioning. Stage 1 of the data analysis platform now complete and data analysis will now be extended to other national programmes and projects. An international conference will be hosted for decision makers and programme managers. The results of the various consultation meetings will produce Joint Action Plans, both for research centres and for programme managers.

Months 18-30. Parts of the Joint Action Plans now implemented via pilot schemes. Initial results on charting European research lead to proposals for policy and foresight studies, now carried out. 2nd stage of information services now incorporating other national programmes. Work continues on consolidating international relations.

Months 31-36. This phase sees the consolidation, evaluation and publication of results. Information services are now at their final development stage. A final conference closes the Action and disseminates results.

b) Work planning, showing the timing of the different WPs and their tasks

TASKS

TASKS	0-6	7-12	13-18	19-30	31-36
T1.1	▓	▓	▓	▓	▓
T1.2		▓	▓	▓	▓
T1.3	▓				
T2.1	▓	▓	▓	▓	▓
T2.2	▓	▓		▓	
T2.3	▓	▓			
T3.1	▓	▓	▓		
T3.2	▓	▓	▓		
T3.3				▓	▓
T4.1	▓				
T4.2		▓	▓	▓	▓
T4.3			▓	▓	▓
T5.1		▓	▓	▓	
T5.2		▓	▓	▓	
T5.3			▓	▓	
T5.4			▓	▓	▓
T6.1	▓	▓	▓	▓	▓
T6.2	▓	▓	▓	▓	▓
T6.3	▓	▓	▓	▓	▓
T6.4					▓
Month	0-6	7-12	13-18	19-30	31-36

c) Graphical presentation of the components, showing their interdependencies

Information service and web portal ← Data extraction & analysis ← Projects, bibliographies , web sources, etc

National
desks

International
relations

**reports,
action
plans,
studies**

**pilot schemes, policy
reports and
recomendations**

advisory board
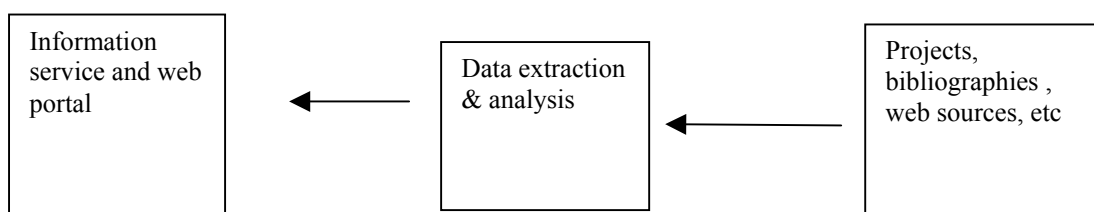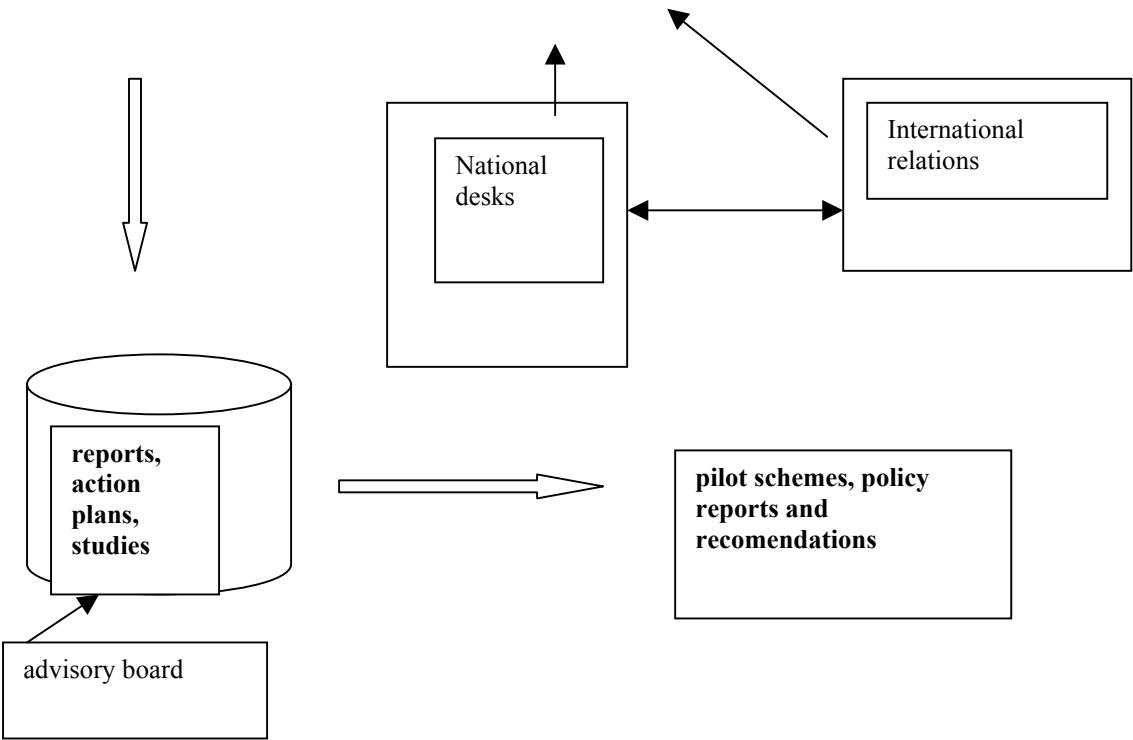
d) Detailed work description broken down into workpackages:

(Workpackage list, use Workpackage list form below)

Workpackage list

Work-package No[1]	Workpackage title	Lead contractor No[2]	Person-months[3]	Start month[4]	End month[5]	Deliv-erable(s) No[6]
1	Central information services and web portal	1	20	3	36	1,3,9,16,21
2	Information collection and dissemination at a national level	2	27	0	36	4,5,7,18
3	Cooperation activities between programmes and members	7,8	15	0	36	11,15,22
4	Mapping, foresight and policy activities for European RTD	11	17	0	36	2,8,13 14,19, 20
5	International relations	5	11	6	32	4,10,12,17
6	consortium management and dissemination	1	17	0	36	22,23
	TOTAL		107			

---

[1] Workpackage number: WP 1 – WP n.
[2] Number of the contractor leading the work in this workpackage.
[3] The total number of person-months allocated to each workpackage.
[4] Relative start date for the work in the specific workpackages, month 0 marking the start of the project, and all other start dates being relative to this start date.
[5] Relative end date, month 0 marking the start of the project, and all ends dates being relative to this start date.
[6] Deliverable number: Number for the deliverable(s)/result(s) mentioned in the workpackage: D1 - Dn.

(Deliverables list, use Deliverables list form below)

Deliverables list

Deliverable No[7]	Deliverable title	Delivery date [8]	Nature [9]	Dissemination level [10]
D1	Information Services and web portal specifications (task force report)	5	R	RE
D2	Ontologies for Formal Reasoning	6	R	PU
D3	Central contact point	6	O	PU
D4	National desks – short reports	6	R	PU
D4	Workshop for NMS & AC	9	O	PU
D5	National desk 2nd reports	10	R	PU
D6	Country reports for other EU and AC	11	R	PU
D7	Report on best practices	12	R	PU
D8	Data analysis 1st report	12	R	RE
D9	Web portal stage 1	12	R	PU
D10	Recommendations for NMS/AC	14	R	PU

---

[7] Deliverable numbers in order of delivery dates: D1 – Dn

[8] Month in which the deliverables will be available. Month 0 marking the start of the project, and all delivery dates being relative to this start date.

[9] Please indicate the nature of the deliverable using one of the following codes:

R = Report
P = Prototype
D = Demonstrator
O = Other

[10] 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).

D11	Joint action plan (researchers)	16	R	CO
D12	International Workshop	17	O	PU
D13	Data analysis 2nd report	18	R	RE
D14	Foresight/policy study recom-mendations	18	R	CO
D15	Joint action plan (programme managers)	18	R	CO
D16	Web portal stage 2	20	O	PU
D17	Third countries report	23	R	PU
D18	National desks 3rd reports	24	R	PU
D19	Data analysis 3rd report	24	R	RE
D20	Foresight/policy studies	32	R	PU
D21	Web portal stage 3	32	O	PU
D22	Report on pilot cooperation schemes	32	R	RE
D23	Final conference	34	O	PU
D24	Evaluation of results	36	R	RE

(Description of each workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	1	**Start date or starting event:**			Month 2
Workpackage title information servcies and web portal					
Participant id		1	6	7	11
Person-months per participant:		9	7	2	2

Objectives

This workpackage together with WP2 is devoted to collecting and disseminating information on national programmes as well as providing a web portal for the Coordination Action as a whole.

Description of work

Task 1.1. The coordinator will set up a joint contact point for the Action supported by the project secretariat (WP6).

Task 1.2. A web portal will be designed to extract, analyse and display information on relevant national research programmes, provide links to national programme sites, and offer news items. Materials provided by the national desks (WP2) will be uploaded or suitably linked to the portal.

Task 1.3. Prior to building the web portal an **Information Services Task Force** will be set-up at the start of the project to undertake a preliminary study to define effective methods for collecting, analysing and disseminating information and to define a specification for the information services.

Deliverables

D1 A study defining effective methods for information collection and dissemination (task force report) and Specification for information services

D3 A joint contact point for the Action

D9, D16, D21 Web portal with links to websites of national programmes and to other relevant sites (3 stages of development)

Milestones[11] and expected result

M5 central contact point operating

M5 specification of information services

M12 web portal stage 1 in operation

M18 web portal stage 2 in operation, addition of data for other national programmes

M32 web portal final stage

(Description of each workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	2	**Start date or starting event:**	0

---

[11] Milestones 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 title information collection and dissemination: national desks

Participant id	1	2	3	4	5	6	7	8	9	10	11	12
Person-months per participant:	2	3	1	3	1	5	2.5	2.5	1	1	2	2

Objectives

This workpackage is devoted to collecting and disseminating information on national programmes by setting up national desks for each participating country. In particular the contents of national programmes will be summarised and compared. A further focus will be on the exchange of information on **best practices** in project evaluation, selection and management.

Description of work

Task 2.1 national desk will be set up for each country by the academic node for that country together with participating funding agency. Information on regional and national programmes will be collected and exchanged.
Task 2.2 Reports will be prepared summarising and comparing contents of national programmes.
Task 2.3 Meetings will be organised to exchange of information on **best practice** in project evaluation, selection and management.

Deliverables

D4 National desks for each of the participating countries
D5 Reports summarising and comparing contents of national programmes
D7 Exchange of information on **best practices** in project evaluation, selection and management, through meetings, workshops etc.

Milestones[12] and expected result

M6 national desks start operating
M12 reports on best practices
M24 national desks fully operative; progress reports

(Description of <u>each</u> workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	3	Start date or starting event:			1

Workpackage title Cooperation activities between programmes and members.

Participant id	1	2	3	4	5	6
Person-months per participant:	3	1	1	2	2	1
Participant id	7	8	9	10	11	12
Person-months per participant:	1	1	1	1	1	1

Objectives

The aim of this workpackage is to support the ERA by helping to develop instruments such as shared infrastructures, joint software platforms and application centres showcasing state-of-the-art European technology. Steps towards these goals can be taken by identifying **centres of excellence** in relevant research

---

[12] Milestones 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.

sub-areas and building upon shared labs and platforms that partners are already developing on a bilateral or multi-lateral basis. Secondly the WP will help to identify barriers to cross-national cooperation and make recommendations for joint activities at cross-national levels. These will be formulated in Joint Action Plan which may foresee the implementation of pilot schemes. A third task is to help to support project clustering and technology awareness.

Description of work
Task 3.1 Studies to identify barriers to cross-national cooperation and make recommendations for joint activities in Joint Action Plan. Activities supporting the clustering of projects.
Task 3.2 Furthering the aim of establishing joint labs, application centres etc. Development of Joint Action Plan for research centres. Work may include exchanging information on existing partnerships, creating new forms and instances of shared resources or extending existing ones. Collect and exploit information on education programmes, such as European Masters programmes, summer schools etc.

Task 3.3 Implement pilot cooperation schemes

Deliverables

D11 Joint action plan (research centres)

D15 Joint action plan (programme managers)

D 22 Pilot schemes report

Milestones[13] and expected result

M10 consultation meetings between RC directors and programme managers

M16 joint action plan for research centres

M18 joint action plan for programme managers

M17-20 launch of pilot schemes for cooperation

M32 report on pilot schemes and take up of JAP

(Description of <u>each</u> workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	4		Start date or starting event:		
Workpackage title Mapping, foresight and policy activities for European RTD					
Participant id	1	6	7	8	11
Person-months per participant:	3	2	3.5	2.5	6

Objectives The aim of this workpackage is to assist in strategic planning and policy recommendations that go beyond the lifetime of the current framework programme and the ERA-Pilot.

To obtain an accurate picture of current research in the area, advanced datamining and decision support tools will be used. For planning and policy purposes the Scientific Advisory Board may recommend studies to identify emerging areas and grand challenges, or create roadmaps in specific sub-areas.

---

[13] Milestones 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.

Each of the above actions may be used to help evaluate existing programmes, including initiatives within FP6, as well as make research policy recommendations for the future.

Description of work

Task 4.1 A first key component will be the construction of formal ontologies for the main sub-areas of formal reasoning, including formal methods. These can be used as a basis for standardisation in the field, as an aid to information dissemination and analysis as carried out in the CA, and as a tool for roadmapping activities.

Task 4.2 A second step is to create an accurate map charting the current state and development of European research. Information on national programmes provides only one input to this map and will often lack specificity about work actually carried out in concrete sub-areas. The WP will use tools and expertise developed by one of the partners (JSI) and already successfully deployed in European Commission programmes to chart and analyse current RTD in Europe using advanced text/data-mining techniques.

Task 4.3 A third area will comprise activities supporting foresight and planning to be initiated and guided by the Scientific Advisory Board. These may include identifying emerging areas and grand challenges, roadmapping in specific sub-areas, and so on. This work is intended to complement rather than replace studies and roadmaps undertaken elsewhere, eg by NoEs, thematic networks and other organisations.

Deliverables

The expected outcomes of this WP are:

D2 Formal ontologies for key sub-areas of formal reasoning
D8, D13, D19 a map of the current state and development of European RTD through data collection and analysis by state-of-the-art datamining techniques (3 reports)
D20 reports identifying emerging areas, visions and grand challenges and research policy recommendations

Milestones[14] and expected result

M6 ontology studies completed

M12 first results of data analysis and charting of European RTD

M18 2nd data analysis report; recommendations for foresight and policy studies

M24 3rd stage of data analysis

M32 completion of foresight and policy studies

M34 evaluation of results

(Description of each workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	5	Start date or starting event:

---

[14] Milestones 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 title building international relations

○			
Participant id	5	1	7
Person-months per participant:	7	3	1

Objectives

In order to achieve a wide coverage and representation of European RTD in the field the CA should also act as a support mechanism to assist the integration of new members states and accession countries into European research and as a contact point for relations to third countries. Goals:

- o opening the network to new members, especially managers of national research programmes
- o supporting the integration of new members states and accession countries into EU RTD programmes
- o assisting relations to third countries (China, Russia, US, Japan, Australia, etc)

Description of work

Task 5.1. Opening the network to new members

- 4eNET will maintain contacts with policy level governmental groups and representatives. In addition 4eNET will regularly discuss progress mainly with CISTRANA, the ERA-net umbrella under IST, as well as with members of the EU Committee for Information Society Technologies (ISTC), especially with the working group on the ERA. The WP-Leader who holds also ISTC delegation will inform interested national representatives of the ISTC which includes member states and countries associated to FP6. Country representatives will be invited to Executive Board meetings.
- Collect information about the state of the Art in non-consortium member states and provide information to WP 2/3.
- Liaison with other organisations and projects such as EUREKA, NoEs, ERA nets, national agencies, international federations and societies.

Task 5.2. Supporting the integration of new members states and accession countries into EU RTD programmes

4eNET will have a strong focus on the integration of new member states, it will:

- Collect information about research and research policy (including strategies and programmes) in NMS and AC .
- Make recommendations for activities supporting NMS and AC based on experiences of member states. 4eNET will identify thematic interests by bringing together key-players (workshop).
- Provide systematically results of WP 2 (best practice in project evaluation, selection and management) to NMS and AC
- Provide input to WP 3.

Task 5.3. Building relations to third countries

4eNET will look into relevant policies and programmes outside Europe. Existing instruments and developments in the US such as those by DARPA and the NSF will be of particular interest. Developments in other interesting countries (e.g. Japan, Australia) will also be monitored, summarized, and reported to the Executive Board and WP-Leader 2 (best practice project evaluation, selection, management). An international workshop will highlight these findings (incl. Task 5.1., 5.2., 5.4)

Task 5.4. Information Interface with existing information brokerage services

This task will provide the necessary interface with existing information brokerage services such as IDEALIST network, the national contact points, innovation relay centres, the commission research and development information services. These contacts will be important especially for disseminating information about the pilot schemes (WP 3) and the results of WP 4. Information dissemination will happen using the consortium members which are also members of these networks or have good contacts with them.

Deliverables

D4 Workshop with key-players of NMS & AC and Executive and Scientific Advisory Board (including senior policy experts) "Thematic interests" (M9)

D 6 Country Reports on interested non-consortium MS, & on NMS and AC

D 10   Summary on recommendations for activities supporting NMS and AC (M14)

D 12 International Workshop (M17) (incl. all countries -NMS, MS, AC, 3rd countries)

D 17 Report on extra-EU activities (M 23)

Milestones[15] and expected result

M6 start contact with other national EU programmes; opening up of the network

M 9 Workshop "Thematic interests" of task 5.2

M17 International Workshop

(Description of <u>each</u> workpackage, use Workpackage description form below, one per workpackage)

Workpackage description

Workpackage number	6	**Start date or starting event:**		1
Workpackage title	**consortium management and disseminaton**			
Participant id	1	7		
Person-months per participant:	16	1		

Objectives

This workpackage is devoted to coordination and management as well as some of the general dissemination activities of the Action. A subtask is devoted to self-assessment.

Description of work

Task 6.1 Set up a project secretariat to include the technical coordinator, management assistant and secretarial support. This will function as the official joint contact point of the Action. Form the Executive Board and organise a kick-off meeting to set priorities and activities for the first 18 months and to nominate a Scientific Advisory Board. Set-up information exchange and dissemination mechanisms, e-mail lists, webpage, etc. Organise regular meetings of the EB and maintain contact with the SAB

Task 6.2 Dissemination and reporting activities throughout the period of the CA.

Task 6.3 Self assessment exercise. Preparation of progress indicators (month 3) and self-evaluation checks at control points

Task 6.4 Final conference

Deliverables

Project secretariat

D23 Final conference

---

[15] Milestones 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.

Self-assessment reports and D24: evaluation of project results

Milestones[16] and expected result

M1 project secretariat in operation

M34 final conference; evaluation of results

(

B.7 Other issues

No recommended length – depends on the number of such other issues which the project involves

B.7.1 Ethical and gender issues

4eNET will explore the possibility to carry out gender analyses in its data extraction and analysis work so that the charting of European research will consider the roles and participation levels of female scientists.

Ethical issues form

A. Proposers are requested to fill in the following table

Does your proposed research raise sensitive ethical questions related to:	YES	NO
Human beings		x
Human biological samples		x
Personal data (whether identified by name or not)		x
Genetic information		x
Animals		x

B. Proposers are requested to confirm that the proposed research does not involve:

Research activity aimed at human cloning for reproductive purposes,

---

[16] Milestones 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.

Research activity intended to modify the genetic heritage of human beings which could make such changes heritable[17]

Research activity intended to create human embryos solely for the purpose of research or for the purpose of stem cell procurement, including by means of somatic cell nuclear transfer;

Research involving the use of human embryos or embryonic stem cells with the exception of banked or isolated human embryonic stem cells in culture.[18]

Confirmation : the proposed research involves none of the issues listed in section B	YES	NO
	x	

(Further information on ethics requirements and rules are given in annex 1 and at the science and ethics website at http://europa.eu.int/comm/research/science-society/ethics/ethics_en.html.)

B.7.2 Other EC-policy related issues

(Are there other EC-policy related issues, and are they taken into account? Demonstrate a readiness to engage with actors beyond the research to help spread awareness and knowledge and to explore the wider societal implications of the proposed work; if relevant set out synergies with education at all levels.)

4eNET will consider several issues concerned with education and will develop contacts with eg European masters and PhD programmes.

---

[17] Research relating to cancer treatment of the gonads can be financed

[18] Applicants should note that the Council and the Commission have agreed that detailed implementing provisions concerning research activities involving the use of human embryos and human embryonic stem cells which may be funded under the 6th Framework Programme shall be established by 31 December 2003. The Commission has stated that, during that period and pending establishment of the detailed implementing provisions, it will not propose to fund such research, with the exception of the study of banked or isolated human embryonic stem cells in culture.