EUROPEAN COMMISSION

Information Society Technologies

A programme of
Research, Technology Development & Demonstration
under the 5th Framework Programme

2002 Work programme

www.cordis.lu/ist

Contents

1 INTRODUCTION

The Information Society Programme in the 5th Framework Programme of EU RTD (as defined in the Commission's proposal for *Creating a User Friendly Information Society*, hereinafter called the *Information Society Technologies (IST) Programme)* was agreed at the Council of Research Ministers on 22nd December 1998.

The IST Programme is implemented through a series of annual workprogrammes, each of which is developed in close co-operation with industry, academia and user organisations. Advice for the workprogramme is provided by the IST Advisory Group (ISTAG) and the Programme Committee. This advice helps define priorities which, with further specifications and consultations, result in the Action Lines described in the workprogramme. The consultation process for the 2002 workprogramme (WP2002) comprised also meetings and workshops that involved more than 400 IST experts from industry and academia. Reports of these meetings can be found on the Programme web site (www.cordis.lu/ist).

The workprogramme follows the structure of work as defined in Annex I to the Specific Programme Decision (namely "The General Outlines, the Scientific and Technological Objectives and the Priorities"). The WP2002 thus lays out the Action Lines for the Call for Proposals to be published in calendar year 2002 and structures them in a way that reflects the nature of the Programme and its Key Actions. A road map summarises the planned content and timing of the Call for proposals in 2002, though this always remains subject to formal confirmation through publication of the Call.

As a result of the first six IST Calls for Proposals between 1999 and 2001, over 7400 proposals were received, requesting funding of over 12.5 billion Euro. Following independent expert evaluation, around 1700 proposals were selected for support from an available budget of around 2.6 billion Euro. Detailed figures and statistics on participation and results of these Calls are available on the Programme web site including an integrated analysis of the Programme's portfolio of projects (The IPPA report, www.cordis.lu/ist). WP2002 builds on experience gained from these Calls and address' the future orientation of the Programme to be developed under the Community next RTD Framework Programme.

2 PROGRAMME OBJECTIVES, IMPLEMENTATION APPROACH AND STRUCTURE

2.1 OBJECTIVES

The social and economic impact of Information Society Technologies (IST) is far reaching and represents key opportunities and challenges for individuals, industry and governments. Beyond new forms of doing business and accessing services, the expectations of citizens for a better quality of life are high as they start to appreciate the wider range of possibilities that IST applications and products can offer. The ability of Europe to contribute significantly to progress in IST and their applications is critical for employment, growth, industrial competitiveness and the living standards of its citizens. As use for the Internet grows, greater attention must be given to social changes, to social inclusion and trust, security and privacy.

The policy framework

The European Union has set an objective for the next decade at the Lisbon European council in March 2000: *"To become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion."* The strategy and the initial implementation plan to reach this goal have been further developed at the Stockholm and Gotenburg Summits under the Swedish presidency in 2001. The *eEurope*[1] *initiative is a key component of the EU strategy* to attain this objective. It aims at allowing Europe to exploit its strengths and to overcome the barriers that are still holding back the uptake of digital technologies.

Building an all inclusive knowledge society

Despite the diffusion of IST and the growing use, especially in developed regions, of Internet at home and work, we are still far from taking full advantage of the potential of IST applications and services. Products and services are still hard to use and out of reach for many people.

Research is opening new avenues which will not only extend the scope, functionality and efficiency of IST applications and services, *but will make them available, in the most natural and trusted way, to citizens whoever they are, whatever their age, anywhere and anytime and in any language. They will bring solutions to major societal and economic challenges in areas such as health, inclusion of persons with special needs, environment, security, mobility, education, industrial competitiveness and employment.*

The focus of the IST Programme is on the future generation of technologies in which computers and networks will be integrated into the everyday environment, rendering accessible a multitude of services and applications through easy-to-use human interfaces. *This vision*[2] *of "ambient intelligence" places the user, the individual, at the centre of future developments of an inclusive knowledge-based society*.

The Programme builds on Europe's demonstrated strengths in critical sectors such as mobile and fixed communications, consumer electronics, general electronic appliances, embedded software, micro electronics, advanced service systems, digital broadcasting

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[1] *e*Europe web site: http://www.europa.eu.int/comm/information society/eeurope/actionplan/;
*e*Europe+ site:http://europa.eu.int/information_society/international/candidate_countries/action_plan/index_en.htm

[2] ISTAG reports on (WWW.cordis.lu/ist/istag.htm) *"Orientations for WP2000 and beyond"*

ISTAG with the help of the IPTS institute (Institute for Prospective Technological Studies) of the Joint Research Centre has also developed a set of "scenarios" for Ambient Intelligence in the next 10 years.

and rich content provision. *The aim is to ensure European leadership and industrial competitiveness while fostering the development of an all inclusive knowledge society.*

The IST Programme and *e*Europe have inter-linked objectives and operate at complementary time scales to achieve the Union goals. The time frame of the current *e*Europe Action Plan ends in 2002 whilst *e*Europe+, its extension to the Newly Associated states, ends in 2003.

The Programme will reinforce the *e*Europe and *e*Europe+ objectives in the long term beyond 2002 by providing support for a sustainable development of the Information Society while achieving the Programme's vision of the ambient intelligence landscape.

Projects that resulted from the first calls of the Programme as well as those supported in the previous Framework Programme, are contributing to the *e*Europe and *e*Europe+ action plans by providing innovative solutions for businesses and public services. The GEANT project and related test-beds are enabling the upgrade of the research networking infrastructure as proposed in the Action plans and the Programme dissemination activities, take-up and demonstration actions are fostering the broad adoption of IST in several sectors including persons with special needs, health, education, transport, electronic commerce and smart cards.

2.2 IST AND THE NEXT COMMUNITY FRAMEWORK PROGRAMME

The Commission's suggestion for the next Framework Programme (2003-2006) of Research and Development (FP6)[3] was proposed to the European Council and parliament in February 2001 and the related specific programmes proposed in May 2001. IST is an important thematic priority area of the FP6 proposal. The year 2002 will be a transition year towards the next Framework Programme.

FP6 will be a major instrument for the realisation of the European Research Area (ERA)[4]. The IST Programme in 2002 will reinforce its effort to articulate the RTD at a European level with initiatives in the Member and Associated States in all relevant fields and will include in particular activities to encourage collaboration between research programmes.

2.3 PRIORITIES FOR WP2002

The activities in 2002 are selected so as to consolidate the research effort in areas of the Programme that require further support, and to start preparing for the next Framework Programme. The planned budget for WP2002 is 370 M Euro which is about 37% of the yearly budget for the IST Programme in the three previous years.

Support will be provided to consolidate, complement and extend FP5 activities and results in the technology fields that help realise the vision and that contribute to reinforcing *e*Europe objectives beyond 2002. These include:

- Network management, interoperable networks and distributed systems
- Micro and opto-electronics design and production processes
- Systems for heath and systems for the elderly and disabled
- Take-up activities in e-commerce, e-work and security and privacy.
- Dissemination activities in education, learning and for cultural heritage.
- Development and testing of GRID technologies.

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[3] Proposals for Council Decisions concerning the specific programmes implementing the Framework Programme 2002-2006 - 30.05.01COM(2001)
Proposal for a Decision of the European Parliament and of the Council concerning the multiannual Framework Programme 2002-2006 - COM (2001) 94 Final - 21.02.2001

[4] http://www.cordis.lu/rtd2002/era/era.htm

The Programme will also support the Community policy on Third Generation Mobile Communications, as presented in the recent Commission Communication[5] on the subject. For that, an intensified effort is foreseen on the development and testing of innovative 2.5-3G mobile applications and services and on fostering the roll-out of IPv6. It will also support the extension of the research networking infrastructure to make Europe the central player for the global interconnection of research networks.

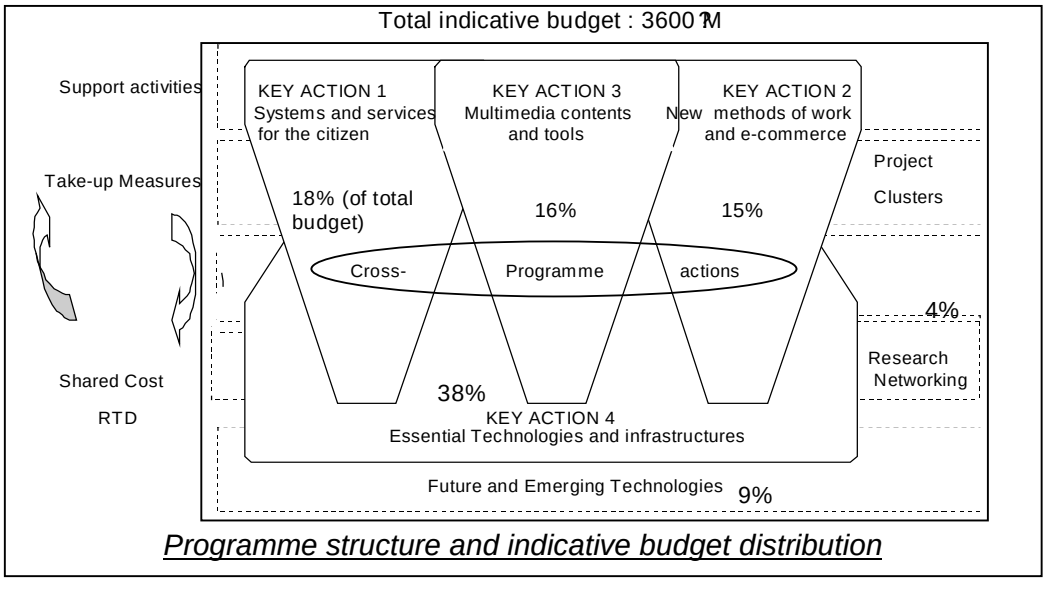
In preparation for FP6, the Programme will bring together and concentrate on activities proposed to be reinforced in the next Framework Programme. Work will concentrate on:

- New paradigms for *e*business, *e*work and trust and confidence solutions
- New concepts for knowledge and interface technologies.
- Cognitive vision techniques and distributed control
- Adaptable and reliable software and on fostering the development and use of open source software.
- Systems to improve security and for more efficient crisis management.
- Next generation mobile systems and networked audio-visual systems.
- Sensors and micro-systems at the nano-scale and using new materials.
- investigating future and emerging technologies in the fields of quantum scale processing and advanced cognitive sciences.

Specific actions are also foreseen for the preparation for FP6 that are devoted to mobilise the research communities, identify research objectives and prepare research roadmaps in the areas of transport, environment, trust and confidence, *e*commerce and *e*work, learning and cultural heritage, and knowledge and interface technologies.

2.4 A SINGLE INTEGRATED PROGRAMME ARCHITECTURE

The IST Programme is structured around four interrelated Key Actions (KAs), an activity on Future and Emerging technologies in all IST fields and an activity supporting Research networking. The Programme consists of a set of complementary activities that are derived by grouping together the technologies and applications with the greatest affinity or interdependence. In this, each Key Action has, as appropriate, a balance of the complete range of RTD activities from basic research to demonstration and take-up



Programme structure and indicative budget distribution

5 The Introduction of Third Generation Mobile Communications in the European Union: State of Play and the Way Forward COM(2001)141 of 20/3/2001

actions.

For the purposes of the workprogramme, the KAs are sub-divided into Action Lines. Each Action Line has clear monitorable objectives against which proposals for EU support will be evaluated.

Integration at the Programme level is a key feature of the IST Programme. Therefore specific measures are also included to further strengthen Programme integration:

- The Programme supports cross-programme actions that focus on a limited number of specific themes relevant to the entire IST Programme.
- Project Clusters aim to facilitate synergy between projects that want to undertake part of their work in close co-operation with one another. This means that projects may decide to co-ordinate aspects of their ongoing work, because they have complementary objectives and see added value e.g. to enrich the capabilities of a group of projects because of complementary know-how and skills or to create a critical mass of resources focused upon issues of strategic importance.

The architecture of the workprogramme should therefore not be perceived as representing rigid boundaries but rather as an opportunity to combine expertise in proposals which span more than one domain of application or integrate in an innovative way a set of heterogeneous activities.

Work in the IST Programme is conducted in close co-operation with the other specific programmes in FP5, notably the "Competitive and Sustainable Growth Programme", the "Energy, Environment and Sustainable Development Programme", "Quality of Life Programme" and the Programme on "Increasing Human Research Potential and the Socio-Economic Knowledge-Base". This close relationship also extends to issues relating to SMEs and entrepreneurship and to Community initiatives such as the eContent initiative and the Internet Action Plan. The aim is to ensure that complementary areas are addressed adequately across the programmes and initiatives. Examples of such areas include nano-technologies, micro-systems, Intelligent Manufacturing Systems, digital content, cultural heritage, smart organisations, health, transport and environment.

In addition, the Programme encourages multi-disciplinary research combining IST with other fields such as socio-economic research, biology, genetics and chemistry. It is therefore open to consortia that bring together complementary skills from different research domains.

2.5 TYPES OF ACTIONS SUPPORTED

The IST Programme is implemented through the indirect actions provided for in Annexes II and IV to the 5th Framework Programme. These indirect actions comprise: shared cost actions, which is the principal mechanism for implementing the specific programmes, as well as support for networks, concerted actions, accompanying measures including take-up actions and training activities. An efficient interaction between these actions is sought in the IST Programme and mainly between RTD actions and take-up actions which are the main implementation instruments of the Programme. Take-up activities in 2002 include Trials, Best Practice, Assessment and Access actions. For more details the reader should refer to Annex 1 to the workprogramme or to the documents entitled "G*uide for Proposers"* of the IST Programme. Annotations are included at the bottom of each Action Line description to indicate what type of actions can be used for the relevant Action Line and the possible links with the workprogramme for 2001 (WP2001).

Innovation in proposals can be in the form of novel products, services or applications. It can range from the development of novel techniques, systems and environments to the

integration of state of the art technologies in original ways. It can include development of novel business processes, new organisational practices or, more generally, novel forms of interaction between people and information, whether at work or in daily life. Innovation depends on the area that is covered in a proposal as well as on the type of action addressed. Additional aspects of innovation that are specific to the areas covered in a Key Action are included in its description.

Consortia can propose long term projects with an expected time to market beyond the 5 years or shorter term research and/or demonstration projects. The projects' workplan, management plan, internal review mechanisms etc. must be appropriate to the particular type of project. Furthermore, the consortia should clearly identify the conditions required to maximise the exploitation of successful results. The shorter the time to market, the more precise the exploitation plan should be.

2.6 LINKS TO OTHER EU POLICIES

The IST Programme reflects and supports emerging policy issues, notably fostering the convergence of information processing, communications and media, and the need for interoperability and coherence at a global level[6, 7]. The Specific Programme therefore foresees "*close articulation between research and policies needed for a coherent and inclusive Information Society*". All Key Actions will link new technology and service developments to policy goals aimed at improving the employment possibilities and living conditions of Europeans and in ensuring economic and territorial cohesion.

In addition, the Programme will support EU policy developments related to sustainable development and to consumer protection in an Information Society. The strategic focus will be on bringing together technology developments and EU policy areas, such as: transport[8] and tourism; enterprise policy, in particular in favour of SMEs; coherence and competition within the single market, employment and social inclusion policies, especially those aimed at potentially excluded groups such as women, older citizens and disabled persons, public health, public procurement, media, education and training, security, protection of privacy and personal data[9], convergence and telecommunications regulation; and EU enlargement. To this end, IST analysis and projects may generate particular inputs to policy making both at Community level and within Member States and Associated States.

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6 The convergence policy issues were addressed in the Commission's Communication Green Paper on the "Convergence of the telecommunications, media and information technology sectors, and the implications for regulation" in December 1997 (COM(97)623). See also on http://www.ispo.cec.be/convergencegp/greenp.html

7 The global coherence issues are addressed in the Commission's Communication on "Globalisation and the Information Society - the need for strengthened international co-ordination" adopted by the Commission on 4 February 1998 , as well as in the Communication on the Competitiveness of European Enterprises in the face of globalisation (COM(1998) 718,20/1/99).

8 Commission white paper on European transport policy for 2010: time to decide, COM(2001) 370, 12/09/2001

9 Directive 95/46/EC of the European Parliament and of the Council of 24 October 1995 on the protection of individuals with regard to the processing of personal data and on the free movement of such data, OJ L 281, 23 November 1995, p. 31, and Directive 97/66/EC of the European Parliament and of the Council of 15 December 1997 concerning the processing of personal data and the protection of privacy in the telecommunications sector, OJ L 24, 30 January 1998, p.1.

3 DETAILED OBJECTIVES AND RTD PRIORITIES

The following sections of Chapter 3 define the 2002 IST workprogramme content for:

- The Four Key Actions (KA I-IV)
- Cross-programme Themes
- Future and Emerging Technologies (FETs)
- Research Networking (RN)

Each section starts by *reminding* the objectives given in the IST Specific Programme and is followed by work described in terms of Action Lines.

The Commission will publish the *Call for Proposals* that will refer directly to the workprogramme Action Lines or specific topics/measures contained within the Action Line description. The Call for Proposals will cover only some of the full set of Action Lines in this workprogramme. **Proposers are advised to check carefully** that their intended work is included in the Call for Proposals and to take careful note of the *Guide for Proposers* prior to preparing and submitting proposals.

3.1 KEY ACTION I - SYSTEMS AND SERVICES FOR THE CITIZEN

"The aim of this work is to foster the creation of the next generation of interoperable general interest application systems to meet user demands for flexible access, for everybody, from anywhere, at any time. Work encompasses RTD in the following fields: health, special needs (including ageing and disability), administrations, environment, transport and tourism.

The needs and expectations of the typical users in all fields will be addressed and special attention will be given, in particular, to the usability, acceptability and cost-effectiveness of the new application systems, including the security and privacy of information and the socio-economic and ethical aspects."

Objectives and priorities

The priority for KA I is to enable European users (citizens, businesses, public authorities) to take advantage of the recent advances in ubiquitous computing, ubiquitous communication and intelligent interfaces to improve access to and delivery of general interest services. This approach directly supports the longer term policy perspective of *e*Europe beyond 2002 and the achievement of new ambitious targets in a 2010 timeframe.

Of the five Actions Lines proposed for 2002, two on Health and one on Special Needs are more rooted in FP5 consolidation. Specifically:

- Research on minimally invasive personal health systems and knowledge technologies form the basis of the *"Intelligent systems for the monitoring of health status"* action line. This is a re-focussed Action Line of the WP2001.
- Research on knowledge management technologies and navigation tools applied to the area of *"Intelligent systems for health professionals"* will help create a *"Health knowledge info-structure".* This represents an extension of work commenced in 2001.
- Research on innovative assistive systems combined with work on disability compensating interfaces are at the heart of the *"Systems for independent living and full participation"* AL, which also follows on from WP2001 work.

Two Action Lines in environment and transport include an explicit FP6 prospective orientation:

- The Action Line in environment addresses civilian and environmental crises management. Work will help consolidate the effort in this field and analyse the requirements for future research.

- In transport, Take-Up actions on Intelligent Transport Systems will contribute to *e*Europe objectives and clustering activities on "Intelligent Mobility Systems" will prepare for FP6.

In technology terms the only proposals that will be considered will be those that take due account of the paradigm shift towards the emerging concept of "Ambient intelligence" landscape in which computers, interfaces and networks will be more integrated into the everyday environment and will render accessible, through easy and effortless interactions, a multitude of services and applications.

The Action Lines are summarised in the following table .

Overview	**Action Lines for 2002**
I.1 Health	• Intelligent systems for the monitoring of health status • Systems for health professionals: creating a "Health knowledge info-structure"
I.2 Persons with Special Needs,	• Systems for independent living
I.3 Administrations	• Not included in WP2002
I.4 Environment	• Intelligent systems and services for civilian and environmental crises management
I.5 Transport, Tourism	• Systems for mobility: take up and clustering activities

Action Line Descriptions

I.1. Health

IST 2002 - I.1.1 Intelligent systems for the monitoring of health status

Objectives: To improve early illness detection and medical intervention by carrying out medium to long term multidisciplinary research on IST health application systems. The aim is to foster closer collaboration between research activities in areas such as health telematics, biomedical engineering and advanced communication technologies. Longer term work is also expected on new systems that take into account the results of functional genomics research. Activities will complement the existing clusters on "Ambient intelligence-based systems for health promotion, illness prevention and patient treatment".

Focus:

- minimally invasive personal health systems for illness prevention and/or for health status monitoring of patients including systems based on flexible and smart technologies adaptable to the human body and integrating the possibilities of electrical, optical, chemical, & mechanical sensors. These systems monitor various parameters (bio-signals, location, etc), and when needed, communicate securely with health professionals as well as with intelligent support systems. The focus is on development of new sensor technologies as well as intelligent decision support systems.

- research on knowledge technologies for access and delivery of *personalised* health promotion material based on the current health status and including, where appropriate, health and genetic profile. The problems to address include interoperability of databases containing individual's health information, semantic based knowledge representation, knowledge capturing and retrieval which facilitate compliance with data protection, electronic signature and other information society related legislation.

Types of actions addressed: Research and Development, Demonstration and Combined projects
Links with WP2001: Expansion and continuation of Action Line IST2001 - I.1.1

IST2002 - I.1.2 Systems for health professionals: creating a "Health knowledge info-structure"

Objective: To allow health professionals timely interaction with heterogeneous, distributed, medical and other health related databases. Work will consist of medium to long term research on the development of more efficient and secure "Health Knowledge Info-structure", (i.e. a network of interactive and secure medical and health systems). This will complement the existing cluster on "Ambient intelligence-based system for health professionals"

Focus:

- Advanced navigation tools for health professionals for timely retrieval of vital information including health info-structure tools such as user friendly systems and interfaces as well as mobile systems for ubiquitous, timely and secure access to medical data at the point of care. A midterm strategy is the fostering of closer

collaboration between the bio-informatics community and medical informatics researchers in order to accelerate and validate the results of functional genomics and develop the future forms of clinical systems that will incorporate genetic information.

- Medical knowledge and evidence management, data mining, capturing and retrieval, intelligent interactive environments and interoperability of large health databases, using open source where appropriate. All systems handling person identifiable data must comply with the requirements of the information society related legislation.

Types of actions addressed: Research and Development, Demonstration and Combined projects
Links with WP2001: Expansion and modification of Action Line IST2001 - I.1.2

I.2 Persons with special needs, including the disabled and the elderly

IST2002 - I.2.1 Systems for independent living

Objective: To provide people with disabilities and their carers, and the elderly , with systems based on the ambient intelligence concept in order to facilitate employment, education, and full participation in society. Work will include innovative applications and services to facilitate citizens' civic involvement through enhanced remote access to general interest services (such as *e*-health, *e*-government, …). This will require the availability of new interoperable tools influencing the design, and content authoring of publicly accessible web sites. Medium and long term research and technological development will concentrate on the rehabilitative and interface aspects of advanced, systems that could be embedded in our surroundings or in the case of medical implants inside our bodies. Using a design-for-all approach, work will be undertaken principally with mainstream industries to find solutions to the needs of people with disabilities that can provide links and interfaces with assistive technologies.

Focus:

- The work will cover innovative IST-based assistive systems for supporting cognition, mobility, orientation, and sensory abilities, and secure living conditions in the home.

- Longer term research will address advanced interfaces for compensating the effects of impaired functionalities and individual performance using an up-to-date understanding of cognitive, behavioural, and sensory processes.

To meet the requirements of the target groups, within the research and development work, particular attention should be paid to covering the legal, regulatory, financial, ethical and societal aspects to understand better the pre-requisities for successful dissemination of results.

Significant industrial participation is sought to ensure commercial exploitation; the participation of relevant authorities is needed to promote good service delivery; and the commitment of both is required to ensure effective take-up of successful deliverables.

Types of actions addressed: Research and Development, Demonstration and Combined projects.
Links with WP2001: Expansion and modification of Action Line IST 2001 – I.2.1

I.4 Environment

IST2002 - I.4.1 Intelligent systems and services for civilian and environmental crises management

Objectives: The objective is to assist public administrations and emergency services in the management of specific emergency scenarios by funding research into intelligent decision support systems for the risk assessment and post crisis management of natural or man made risks , including their impact on the structural integrity of large infrastructures. .

A secondary objective is the improvement of the associated risk management systems dependent on the integration and management of multiple data sources (including the decision support systems cited above).

For many such applications, a combined access to, and a more intelligent use of heterogeneous, multi-source data, is required to reduce the risk and adverse economic or societal impacts related to environmental emergencies, and to deliver effective, sustainable, high quality information services. The more efficient provision of harmonised, accurate information combined with easy access across borders and nations, in line with the GMES objectives, is one of the main challenges for the services to be developed.

Focus:

- Intelligent systems combining data from earth observation, satellite positioning systems and in-situ sensors with geo-referenced information, and advanced methods and technologies for extracting knowledge from environmental data, that contribute to effective decision support in the form of improved risk and damage assessment, prevention and response actions including emergency telemedicine.

- In-depth analysis and comparative assessment of the performance, scalability and effectiveness of existing risk assessment tools, methods and systems to meet with the challenges foreseen over the next ten years.

- Pre-standardisation activities leading to harmonised data models, metadata, functional architecture and harmonised approach to services relevant to risk management.

Types of actions addressed: Research and Development, Demonstration and Combined projects; Accompanying Measures
Links with WP2001: New Action Line

1.5 Transport and Tourism

IST2002 - I.5.1 Systems for mobility: take up and clustering activities

Objectives: To facilitate the wider use of RTD results obtained in the Telematics Applications for Transport Sector (FP4) and in the "intelligent vehicle" and “intelligent transport infrastructure” clusters particularly in IST (FP5). This will be achieved through the definition and dissemination of a set of systems architectures covering various modes of transport, different types of user, communication means and protocols.

Complementary clustering and, where appropriate, Standardisation, Trials and Best Practice actions will be supported.

Focus:

Individual projects and organisations (both in the context of Community programmes and otherwise) have developed Travel and Transport information resources, infomobility systems, systems for intelligent infrastructure and intelligent vehicles. For the better exploitation of these developments, in many cases, it is necessary to bring them under a common architecture to ensure interworking, compatibility, user-friendly access, privacy, use of open standards and market take-up.

Possible examples include holistic approaches to road safety information systems needed for transport management, or logistics with infomobility and location-based services.

Complementary clusters are required to bring together the major actors, create engineering task forces, identify common issues and necessary standards, develop a programme of work, study the problems and publish the required architectural definitions and requirements for further RTD, taking into account previous and on-going work in Community and National programmes.

In the framework of support for the *e*Europe initiative, take-up actions for Intelligent Transport Systems for traffic management and the vehicle are required, and to support standardisation and benchmarking of progress.

Types of actions addressed: Thematic Networks, Trials and Best Practice.
Links with WP2001: New Action Line preparing for the next Community Framework Programme

3.2 KEY ACTION II - NEW METHODS OF WORK AND ELECTRONIC COMMERCE

"The aim of this work is to develop information society technologies to enable European workers and enterprises, in particular SMEs, to increase their competitiveness in the global marketplace, whilst at the same time improving the quality of the individual's working life. This will be done through the use of information society technologies to provide the flexibility to be free from many existing constraints on both working methods and organisation, including those imposed by distance, time and language. Specific attention will be paid to the social implications of new working methods, in particular their impact on equal opportunities and quality of life. Work will cover both the development and the trading of goods and services, in particular in the electronic marketplace, and takes into account the different requirements and capabilities of the individual worker, consumer and of businesses and organisations, and includes the related training. Considerations of the global context, in particular the rapid evolution of the marketplace, and socio-economic factors will guide the work, and the objective will be to develop and demonstrate world-best work and business practices, exploiting European strengths such as electronic payments, smart cards, mobile systems, software for business process modelling and enterprise management and consumer protection"

Objectives and priorities

Key Action II will reinforce European Union policies and priorities as set out in the Lisbon, Stockholm and Gothenburg summits, by ensuring that Europe plays a prominent role in shaping and capitalising on the next wave of work and business innovations.

Research priorities are based on the IST Programme's vision of exploring and validating novel solutions and practices for a global networked economy in which workers and organisations interact easily and dynamically through a secure and reliable ubiquitous ICT infrastructure.

The Action Lines for the Call for Proposals in 2002 aim to,

- Encourage visionary high risk/long term research in all Key Action II areas;
- Prepare the ground for future large-scale RTD activities under the next Framework Programme (FP6) by bringing together key actors to develop consensus on RTD challenges, their roadmaps, constituencies and implementation models;
- Support activities to progress the *e*Europe and *e*Europe+ initiative in areas related to Key Action II.

In this fast-moving domain of IST it is important to maintain a long-term perspective so as to strengthen European leadership and to support activities likely to lead to exploitable RTD results in 5 to 7 years.

Action Lines in 2002

All Action Lines span Key Action II. They are complementary and open to international co-operation where there is clear European benefit. In addition, all Key Action II areas are open to RTD and thematic network proposals under the "Intelligent Manufacturing Initiative" (IMS)[10]. Work in Key Action II on IMS is complementary to the activities of Key

[10] In Europe, IMS is run jointly by the *Information Society Technologies* and *Competitive and Sustainable Growth* Programmes

Action I of the “Competitive and Sustainable Growth Programme “ in the area of “Innovative Products, Processes and Organisation”.

The following table provides an overview of the Action Lines that have been identified as priorities for the Call for Proposals in 2002. Proposals addressing interdisciplinary work that cuts across Action Lines are strongly encouraged.

Overview	**Action Lines for 2002**
II.1 Action Lines spanning KAII	• Exploratory high risk/long term research • Strategic roadmaps for applied research • Addressing *e*Europe and *e*Europe+ objectives
II.2	• Not included in WP2002
II.3	• Not included in WP2002
II.4	• Not included in WP2002

Action Line Descriptions

IST2002 - II.1.1 Exploratory high risk/long term research

Objectives: To explore visionary and interdisciplinary high risk/long term research challenges that combine significant technological innovation with novel practices (individual or organisational) and advanced business and work models.

Focus:

Novel and emerging technologies for trust and confidence (addressing in particular pluggable encryption, Grid/Peer-to-Peer computing), (mobile) business computing, new organisational models, organisational knowledge management and e-work.

Proposed exploitation plans will be evaluated, taking into account the longer-term, exploratory nature of work to be undertaken under this Action Line.

Types of Actions addressed: Research and Development
Links with WP2001: Continuation of Action Line II.1.4

IST2002 - II.1.2 Strategic roadmaps for applied research

Objectives: To prepare the ground for RTD activities beyond FP5 by investigating future research challenges, roadmaps and associated implementation models in the domain of e-business and e-work. This will require networking or the creation of constituencies of RTD stakeholders including researchers from industry and academia, technology providers, business and public administration end users, consumer organisations, policymakers, standardisation bodies, etc. Challenges may be identified in any of the following areas,

- **Technologies for key security challenges**, such as basic security mechanisms, advanced cryptography, privacy enhancing technologies, technologies to handle digital assets, technologies for dependability to support business functions in dynamic and mobile environments and security in Grid/Peer-to-Peer applications;
- Future **e-work systems,** such as new workplace concepts incorporating innovative technologies to facilitate creativity and collaboration, to increase resource-use efficiency and to extend work opportunities to all;
- **Organisations and e-business,** e.g. technologies to support organisational process management and decision-making, organisational agility and co-operation and workflow in highly dynamic and mobile networks of businesses and public administrations;
- **Organisational knowledge management** including context- and location-sensitive solutions for acquisition, sharing, trading, and delivery of knowledge to support worker and business innovation and entrepreneurship;
- Next generation **electronic and mobile commerce,** including dynamic market-driven value creation models, technologies and solutions for the development of highly customised products and services, and e-market mediation systems;
- **Models and scenarios** to shape future policies for a knowledge-based economy; technology development and deployment strategies, demand for new skills, competencies and associated training requirements; social and economic research on the transition to a knowledge-based economy, including support for achieving the social objectives of the Lisbon, Stockholm and Gothenburg strategies

Focus:

Activities will focus on the following tasks,

- Building and strengthening *RTD communities* that bring together research, business and user organisations with the aim of developing shared visions, scenarios and objectives and facilitating the integration of European research resources to address major future business and work challenges;

- Identifying *research tasks* for both objective-driven and exploratory research. Work should also help to identify and explore the set of complementary activities required to improve RTD impact. These include links to other research frameworks, innovation and take-up actions, training and mobility, standardisation, dissemination activities and the integration of international efforts.

Work will involve identifying the key actors in the field, stimulating interest and achieving broad-based consensus on the way forward to meet the research challenges. It could reinforce existing communities (e.g. clusters of IST research projects, national or industrial initiatives), or aim to build new constituencies. Work is expected to last up to 15 months.

Types of Actions addressed: Accompanying Measures (excluding take-up), Thematic Networks
Links with WP2001: New Action Line

IST2002 - II.1.3 Addressing eEurope and eEurope+ objectives

Objective: To support the broad adoption of IST solutions for e-commerce and e-work, including the security of on-line transactions, greater flexibility in work organisation and better access to e-work facilities for local and virtual communities, and for SMEs, thus contributing to the realisation of *e*Europe and *e*Europe+ objectives.

Focus:

- Best practice actions for trust, security, e-work, organisational knowledge management and process improvement (private and public);
- Best practice actions and trials aiming at the integration of European Early Warning Systems for network and information security.
- Demonstrations of cross-border interoperable security solutions, contracting, invoicing, taxation, dispute resolution, intellectual property rights, on-line services, accounting and privacy-enhancing applications;
- Helping SMEs to use Information Society technologies (“GoDigital”);
- Encouraging the participation of Accession States (*e*Europe+).

Types of Actions addressed: Thematic Networks, Demonstrations, Trials, Best practice and other non Take-up Accompanying Measures
Links with WP2001: New Action Line.

3.3 KEY ACTION III - MULTIMEDIA CONTENT AND TOOLS

"The aim of this work is to improve the functionality, usability and acceptability of future information products and services, to enable linguistic and cultural diversity and contribute to the valorisation and exploitation of Europe's cultural patrimony, to stimulate creativity, and to enhance education and training systems for lifelong learning. Work will cover new models, methods, technologies and systems for creating, processing, managing, networking, accessing and exploiting digital content, including audio-visual content. An important research dimension will be new socio-economic and technological models for representing information, knowledge and know-how. The work will address both applications-oriented research, focusing on publishing, culture and education and training and generic research in language and content technologies for all applications areas, and will include validation, take-up, concertation and standards."

Objectives and priorities

The effort in WP 2002 will aim at:

- Developing *knowledge technologies* to support the realisation of the EU objectives as set out at the 2000 Lisbon Council: "to make Europe the world's most dynamic and most competitive knowledge-based economy and society" ;
- Contributing to the realisation of the vision of an ambient intelligence landscape, by further advancing, in particular, technologies *for natural and intuitive human interfaces*;
- Contributing to the development of the objectives and ambitions of the *e*Europe and eEurope+ initiative, especially in the areas of *e-learning, cultural resources, digital content and cultural and linguistic diversity*.

In the course of FP5, KA3 has built a portfolio of over 300 actions covering research, application and take-up, addressing the processing and use of multimedia content in various application settings. In view of completing and consolidating said activities:

- Action Line 3.5.1 provides opportunities for aggregating the results emerging from KA3 actions launched in FP5 and to document and disseminate them widely so as to improve knowledge and best practice sharing, and accelerate technology take-up and roll-out, across Europe.

In preparation for FP6, an effort is devoted to the preparation and organisation of future research activities in KA3 areas, and to support RTD activities that link the current and future research priorities. It will include two types of actions:

- Action Line 3.5.2 intends to initiate a number of activities to prepare for RTD roadmaps and explore collaborative schemes that can be implemented using the new instruments proposed by the Commission for the next Framework Programme.

- Action Line 3.5.3 aims at future paradigms for next-generation knowledge and interface technologies.

To improve cohesiveness in the approach, all action lines are designed as "spanning" over all KA3 research areas. The table below relates these actions to their implementation modalities:

Overview of 2002 Action Lines	**Action Line Title**
III.1	• Not included in WP2002
III.2	• Not included in WP2002
III.3	• Not included in WP2002
III.4	• Not included in WP2002
III.5 Spanning actions	• KA3 specific Support Measures, • Preparing for future research activities, • KA3 pioneering research,

Action Line Descriptions

IST2002 - III.5.1 KA3 specific Support Measures

Objective: To consolidate and disseminate results emerging from recent and ongoing research activities established within the Fifth Framework Programme.

Focus:

Proposals are invited for the identification, analysis and documentation of research results, and their dissemination across and beyond the programme. The aim is to facilitate the exploitation of systems, tools and methods resulting from KA3 actions. In the case of de facto standards, emphasis will be on channelling them through relevant international and professional forums.

Types of actions addressed: *Accompanying Measures (excluding Take-up) and Thematic Networks.*
Links with WP2001: Continuation of III.5.3 "KA3 specific Support Measures", complementing those available under the Continuous Submission Scheme.

IST2002 - III.5.2 Preparing for future research activities

Objectives: To prepare for future RTD activities by developing research roadmaps and associated implementation models and by mobilising and bringing together all relevant actors. Work will address one or more of the following fields:

a) Knowledge technologies: New harmonised approaches addressing the knowledge life-cycle including acquisition and modelling, discovery and extraction, and visualisation and sharing/reuse. The aim is to enable the building of content- and context-aware Internet services and applications in a variety of knowledge-intensive areas.

b) Dynamic interactive content: Innovative forms and formats of digital content and associated development environments and processes, covering authorware, virtual and mixed realities, community formation, messaging, presentation and delivery, and integrating these into new services for an advanced European mediascape.

c) Multi-sensorial, multilingual interfaces and virtual environments: human-human communication and human-machine/object interaction, based on radically new

concepts combining language, speech, handwriting and other senses including vision, haptics, touching, etc.

d) Advanced digital libraries, culture and arts, preservation and digital longevity, involving generic architectures for creating and accessing heterogeneous repositories. This includes applications in virtual cultural and scientific events, and intelligent and creative cultural spaces as well as issues relating to carrier, content, context preservation and conservation.

e) On-demand and personalised *e*learning systems and services that are accessible any-time, anywhere and support individuals throughout their lives.

Focus

The work will be implemented through thematic networks, working groups and networks of excellence, or accompanying measures (excluding take-up), and includes the following tasks, as per topical area:

- Building and strengthening RTD *communities* by encouraging research, business and user organisations to develop together common visions and analyse research requirements. This should help Identify *common challenges and objectives*, based on analyses of market and technology evolution, of the current research efforts carried out in Europe and world wide, and of the skills, technical infrastructures and other resources, available or needed.

- Specifying the *research tasks derived from the above,* for both objective-driven and exploratory research. Work should also help identify activities required to improve the RTD impact including synergies with other research frameworks, contribution to international efforts, EU enlargement aspects, pre-normative standardisation, measurement and benchmarking, facilities such as pan-European data repositories as well as take-up, training, promotion and dissemination actions.

- Investigating effective *mechanisms* for managing future activities, including distribution of work and resources, admission and withdrawal of participants, engagement of additional parties, scientific guidance and monitoring, etc.

This Action Line is expected to give rise to at least one measure for each of the target research areas (cf. a - e above), bringing together key players, from industry and academia. Work will involve meetings with actors in the field so as to stimulate interest and achieve broadly-based consensus. Co-operative links between the activities to be supported in this Action Line will ensure knowledge and experience sharing. Work is expected to last up to 15 months. Background for the action line can be found on the Programme web-site.

Types of actions addressed: Accompanying Measures (excluding Take-up) and Thematic Networks.
Links with WP2001: New Action Line.

IST2002 - III.5.3 KA3 pioneering research

Objective: To lay the foundations for the future provision, access and management of knowledge and to develop advanced systems to improve multi-media digital content.

Focus:

Key areas of research are the modelling of very-large, scaleable and interoperable knowledge spaces, including tools supporting contextualisation and visualisation, and intuitive personalised interfacing with the user. Validation of the technology is expected in challenging applications in various business and societal contexts, in particular e-

commerce, e-media, e-learning and e-culture, with emphasis on anywhere, anytime services.

This Action Line is expected to yield a limited number of high-impact projects aiming to consolidate ongoing research efforts in emerging fields (especially advanced knowledge and interface technologies), to aggregate cross-disciplinary know-how and to develop exploitable software components. Application-driven work must strive to transform emerging technology breakthroughs into compelling showcases.

Types of actions addressed: Research and Development, Demonstration and Combined Projects .
Links with WP2001: Continuation of III.5.1 "x-Content futures"

3.4 KEY ACTION IV - ESSENTIAL TECHNOLOGIES AND INFRASTRUCTURES

"The aim of this work is to promote excellence in the technologies which are crucial to the Information Society, to accelerate their take-up and broaden their field of application. The work will address the convergence of information processing, communications and networking technologies and infrastructures. The focus will be on technologies and infrastructures common to several applications, while those specific to one application only would be addressed in the context of that application in other parts of the Framework Programme."

Objectives and Priorities for WP 2002

Key Action IV covers the development of the essential component technologies and integrated systems and networks underpinning today's converging industries and infrastructures. The Key Action is designed to build on today's European strengths in communications and network technologies, digital broadcasting, consumer electronics, software and embedded systems, and service concept innovation. In this context, the strategic focus of the Key Action is on enabling the widest possible access to essential and interoperable infrastructures and services to underpin the next generations of applications.

All developments emphasise generic building blocks and open platforms and are complemented where appropriate by take-up measures. The results will inform and guide EU policies developments related to issues such as convergence, telecommunication regulation, spectrum management, space applications and component interoperability. Work in the Key Action is complementary to and co-ordinated with work in national and European level programmes, in particular the FPV/Growth and EUREKA Programmes.

This year's workprogramme consolidates, completes and extends research launched and results generated in the context of previous phases of the IST Programme (cf. IV.2.3, IV.2.4, IV.4.1, IV.5.2, IV.7.1, IV.8.1, IV.8.2, IV.8.3 and IV.8.4, in particular). At the same time, it brings together and concentrates on activities proposed to be reinforced / introduced in the next Framework Programme (cf. IV.2.1, IV.2.2, IV.3.1, IV.4.1, IV.5.1, IV.6.1, IV.7.1, IV.7.2, IV.8.2 and IV.8.3, in particular).

Action Lines in 2002

The following table provides an overview of the Action Lines that have been identified as priorities for the Call for Proposals in 2002. Proposals addressing interdisciplinary work that cuts across Action Lines are explicitly encouraged.

Overview	Action Lines for 2002
IV.1	• Not included in WP2002
IV.2 Computing, communications and networks	• Cognitive vision systems • Advanced control systems • Networks and technologies for distributed services and applications • Computing, communications and networks - take-up measures
IV.3 Technologies and engineering for software, systems and services	• Composability and dynamic adaptability in software, systems and services
IV.4 Real-time and large-scale simulation and visualisation technologies	• Simulation and visualisation technologies
IV.5 Mobile and personal communications and systems, including satellite related systems and services	• Towards technologies, systems and networks beyond 3G • Validation of wireless and mobile systems and technologies
IV.6 Interfaces making use of various senses	• Networked audio visual systems and services
IV.7 Peripherals, sub-systems and microsystems	• Microsystems and miniaturised subsystem modules for portable applications • Integration of sensors and actuators for increased intelligence, interaction and networking
IV.8 Microelectronics – optoelectronics	• Microelectronics design and IP re-use • Microelectronics technologies - processes, equipment and devices • Optical and opto-electronic technologies • Industrial micro- and opto-electronic technologies – take-up / assessment actions

Action Line Descriptions

IV.2 Computing, communications and networks

IST2002 - IV.2.1 Cognitive vision systems

The objective is to develop robust cognitive vision systems acquiring and using knowledge for decision making. The focus is on adaptive systems, real-time platforms and vision architectures permitting the development of novel computational frameworks, integrating multiple cues for scene modelling and capable of recognising large numbers of different objects. Approaches to achieving cognition such as temporal reasoning and incremental learning should be addressed.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Thematic Networks, Accompanying Measures (excluding Take-up).
Links with WP 2001: Priority topic of IST2001-IV.2.1.

IST2002 - IV.2.2 Advanced control systems

The objective is to support the development of high performance, distributed control systems that are composable and meet stringent real-time requirements. The focus is on novel scientific and technological concepts, algorithms, methods, architectures and tools for the design, implementation, validation/verification, testing and integration of robust and fault tolerant, distributed, real-time controls for complex uncertain systems.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Thematic Networks, Accompanying Measures (excluding Take-up).
Links with WP 2001: Priority topic of IST2001-IV.2.1.

IST2002 - IV.2.3 Networks and technologies for distributed services and applications

The objectives are:

- To further develop technologies and architectures for all-optical networks, exploiting advances in optical transmission, switching and routing, with the aim of developing terabit capacity and WDM optical networks which are capable of supporting heterogeneous, multi-protocol services and applications. The work will ensure the interworking in the physical layer of optical core/metropolitan networks and heterogeneous WAN, LAN and access networks (mobile and fixed).
- To increase the bandwidth capacity, Quality of Service and functionality of communications networks, and to support seamless interoperability among heterogeneous networks (including access networks and LANs). The focus of the work is on network devices and protocols to support the full range of advanced (Internet, nomadic and interactive TV) services and applications.
- To increase network agility and functionality, and to support service interworking and management. The focus of the work is on active and dynamically reconfigurable network technologies, methods and tools.
- To develop and assess models, technologies and tools for sharing and interactive use of applications and resources in geographically dispersed locations, in the context of heterogeneous components and architectures. The focus of the work is on development environments to support application service provisioning, peer-to-peer computing and other distributed applications.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Thematic Networks, Accompanying Measures (excluding Take-up).
Links with WP 2001: Priority topics of IST2001-IV.2.1, IV.2.2 and IV.2.3.

IST2002 - IV.2.4 Computing, communications and networks – Take-up measures

The objectives are:

- To assess, compare and improve the performance, systems applicability and interoperability of optical networking equipment.
- To conduct trial actions aiming at the adaptation and introduction in new services and/or industrial applications of mobile and intelligent agent technologies and middleware for distributed applications with shared resources.
- To conduct trials and best practice aiming at the provisioning of applications as services over the network and the use of dispersed computing and storage resources for inclusion in applications and services.

Types of actions addressed: Assessment Actions, Trials, Best Practice Actions.
Links with WP 2001: Refocusing of IST2001-IV.2.4.

IV.3 Technologies and engineering for software, systems and services

The objective is to offer a joint entry point for work addressing the robustness, scalability and versatility of systems of distributed software applications and innovative services. A focus is introduced on some critical enablers of these desired properties. The continuity of actions on open source software is ensured through an emphasis on open source middleware and tools.

IST2002 - IV.3.1 Composability and dynamic adaptability in software, systems and services

The objective is to develop and experiment with software technology for composability and dynamic adaptability in systems and services, and to stimulate actual application through proof of concept, demonstration and accompanying measures.

The focus is on architectures, semantic frameworks and languages, platforms and tools for:

- Integration and/or development of distributed components, including (intelligent) software agents, and associated co-operation mechanisms. This includes self-description of databases, components and agents and composition of heterogeneous software and application service elements with predictable impact on the properties of the resulting system.
- Dynamically re-configurable and self repairing systems and systems that adapt themselves to growth, inclusion or withdrawal of components and devices and to other events that may occur during its lifetime.

Implementation of service creation environments could particularly be demonstrated in nomadic wireless services or application and knowledge discovery services on the internet.

It is encouraged to consider implementation of middleware and tools as Open Source software.

Proposals for Accompanying Measures are particularly invited for preparation and building of partnerships and for development of research roadmaps for future work in this domain. Such actions can extend the above focus and address software technologies, services and distributed systems in general, as appropriate.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Trials and Accompanying Measures (excluding Take-up).
Links with WP 2001: Refocusing of IST2001-IV.3.1, IV.3.2 and IV.3.3.

IV.4 Real-time and large-scale simulation and visualisation technologies

Simulation and visualisation technologies are fundamental tools enabling the ICT infrastructure and services designers and operators to tackle the high complexity of the emerging ICT architectures. The important benefits of having access to advanced simulation environments are cost-effectiveness, fast prototyping, high quality of service (including security) and efficient real-time testing and operation of systems and services. Dealing with complexity leads to the development of highly distributed, collaborative simulation environments, which require new approaches.

Work on visualisation with novel virtual and mixed reality technologies for information and communication applications (cf. IST2001-IV.4.2) are addressed in Action Line IST2002-IV.6.1.

IST2002 - IV.4.1 Simulation and visualisation technologies

The objective is to develop real-time, large-scale simulation and visualisation technologies, tools, applications and environments that, in turn, will support the design and development of highly complex and dynamic information processing and telecommunications infrastructures and services.

The focus is on simulation and modelling of (i) large-scale, real-time processes, systems and complex biological and geophysical phenomena, (ii) interactive and/or secure user services, and (iii) 3G mobile systems and services. Work on intelligent agents in discrete event, interactive simulation is included, as well as work on tools, such as data mining for the visualisation of large scale simulation results. Activities can address simulations of complex, possibly stochastic, systems and phenomena when these impact the design and dimensioning of the compute and communications resources and infrastructures. For large-scale simulations, the work covers the development of collaborative simulation environments.

Types of actions addressed: Research and Development, Demonstration and Combined projects.
Links with WP 2001: Priority topics of IST2001-IV.4.1.

IV.5 Mobile and personal communications and systems, including satellite related systems and services

The work is centred on the evolution of mobile/wireless systems and networks, with the longer term perspective of an integrated wireless multi-layer and hierarchical access network, allowing an ever growing number of wireless terminals and devices to economically use the scarce frequency resources. Enabling the distributed, dynamic and re-configurable access to network resources and facilitating the emergence of virtual environment for temporary personalised control of and access to the surrounding networks facilities and services by nomadic users is of significant importance in this context.

IST2002 - IV.5.1 Towards technologies, systems and networks beyond 3G

The objective is to advance research on architectures and underlying technologies related to the evolution of mobile/wireless systems, allowing the optimal use and control of network resources as a function of the available network/service context. Work will be conducted in the context of a unified wireless multi-layer environment, ranging from Body Area Networks (BAN), Personal Area network (PAN, W-LAN), cellular, broadcast, Fixed Wireless Access (FWA), up to satellite.

The work focuses on:

- *Architecture issues*, with the aim of offering secure, efficient and flexible usage and control of network resources in the context of symmetric or asymmetric multimedia

content delivery in an IP context. It covers typical interworking scenarios such as BAN/cellular/wireless, BAN/PAN, cellular/broadcasting, also taking into account the impact of the ever increasing storage capacity at the edge of the network or in the terminal, the requirements for real time/non real time reconfigurability, ad hoc connectivity and optimum routing across the various network platforms. The satellite related part of the work focuses notably on combined broadcasting/mobile Digital Multimedia Broadcasting (DMB) like architectures and content delivery networks for efficient multicasting delivery to terrestrial systems.

- *Service issues*, aiming at providing distributed access to personalised services with context dependent/temporary control of network resources allowing to create virtual private environments across a range of heterogeneous networks. In that context, key issues include IP autoconfiguration for seamless mobility, access control (AAA), security at storage, transport and access level, device/node and service discovery protocols as well as dynamic QoS management and trade off with cost/efficiency.
- Proposals for Accompanying Measures to prepare for future research initiatives through support to clustering of on-going activities, techno-economic and market studies, are particularly encouraged.

Types of actions addressed: Research and Development, demonstration and combined projects, Accompanying measures (excluding take-up).
Links with WP 2001: Refocusing on system aspects of IST2001-IV5.1, IV.5.2 and IV5.3.

IST2002 - IV.5.2 Validation of wireless and mobile systems and technologies

The objectives are:

- To consolidate research results in the field of wireless and mobile systems by bringing added value to results generated in the context of previous phases of the IST Programme through further validation of services (notably from a user perspective) and architectures as well as technology demonstrators.
- To enlarge the participation in such technology demonstrators to activities taking place in other contexts (e.g. National Programmes), with the aim of enhancing the development of consensus on key technological and service issues.

It addresses technological work related to optimised IP support by wireless/mobile systems, context aware service portability across heterogeneous environments, reconfigurable systems and networks, and underlying enabling technologies. It covers a number of wireless access systems including BAN, PAN/W-LAN, cellular, broadcast, FWA and satellites, to be demonstrated and validated in realistic application contexts and in typical user environments including home networks, in car networks, and office networks. The work is aiming at large scale technology demonstrators and testbeds, and must proactively address dissemination actions, consensus building, standardisation contributions as appropriate.

Types of actions addressed: Research and Development, Demonstration and Combined projects.
Links with WP 2001: Refocusing on validation aspects of IST2001-IV5.1, IV.5.2 and IV5.3.

IV.6 Interfaces making use of the various senses

The work targets the provision of an evolutive platform for an open market of audio-visual information and entertainment services – a platform on which service providers can reach all networked customers, and the customer can request services from any service in a secure and trustable way. The platform should enable state-of-the-art displays and sensors, rich media interactive and immersive content, transmission efficient rendering, and intelligent software for transmission protocols, and it should be easy to use.

IST2002 - IV.6.1 Networked audio-visual systems and services

The objectives are:

- To develop flexible, dependable and predictable network independent platforms, integrating heterogeneous elements in home and public networks, wireline and wireless, for seamless open interactive services, including broadcasting.
- To develop new displays, actuators, sensors and essential multi-modal hard- and software information processing building blocks for advanced audio-visual communication and distribution services for wearable, mobile, stationary and e-cinema applications.
- To improve the quality, affordability and usability of these systems and services to continually attract users of all ages and social backgrounds, especially with respect to the conflicting design requirements in wearable, mobile and large audience applications.

The focus is on:

- High quality audio-visual representation, coding and delivery of interactive immersive environments (with e.g. 3D displays) promoting synergies between natural image, computer vision and graphical spaces. This will include Mixed Reality technologies, digital storytelling, production tools, as well as new imaging and sensory frontiers for immersive media suitable for both distribution and peer-to-peer transparent communication.
- Particular issues regarding the hardware of audio-visual systems interfaces including displays for high performance and low power portables, endurance and flexibility for smart-cards, *e*-paper and wearable terminals, affordability and high resolution for larger sizes, multifunction integration.
- Standardised interfaces, storage and buffers (DVB, MPEG, IETF, TV-Anytime etc.) for end-to-end delivery of audio-visual services accessing open networked consumer platforms and applications with strong requirements on reliability, timeliness, scalability and interoperability
- Trusted free choice environments for more intuitive and natural navigation and interaction with advanced content and services. Work is expected on personalisable, location, access and delivery independent services supported by intelligent audio-visual customer platforms, metadata and portals.
- Standards compliance, technical, service provider and user centred evaluation of new services.

Type of actions addressed: Research and Development, Demonstrations and Combined projects.
Links with WP 2001: Concentration of essential elements of IST2001-IV.4.2, IV.6.1 and IV.6.2

IV.7 Peripherals, sub-systems and microsystems

Intelligent miniaturised modules are essential to provide easy-to-use mobile access to Ambient Intelligence and to an open, information-rich space. They are also key components to systems that are intuitive or that work and communicate independently. They make machines more intelligent and more communicative, and they can act in a networked fashion and interface intelligently - with each other, with their surroundings and with the individual. This offers social and economic benefits in several application areas and drives several new types of services.

IST2002 - IV.7.1 Microsystems and miniaturised subsystem modules for portable applications

The objective is to develop microsystems and miniaturised subsystem modules for portable applications, with the aim of consolidating/completing/enhancing results generated in the context of previous phases of the IST Programme.

The work addresses the development and integration of microsystem and subsystem technologies, devices and modules. It covers design, processing techniques, system architecture, packaging and technologies for the use and integration of microsystems and subsystems in miniaturised portable products. The development of e.g. microsystem devices and subsystem modules for RF, micro and mm wave applications, including the necessary interface circuitry, integration of antennas, of passive devices, etc is also included. The work will emphasise a SIP (system-in-a- package) approach.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Trials, Best Practice Actions, Access Actions, Accompanying Measures (excl. take-up), Thematic Networks.
Links with WP 2001: Refocusing of IST2001-IV7.1, IV.7.2 and IV7.3.

IST2002 - IV.7.2 Integration of sensors and actuators for increased intelligence, interaction and networking

The work is targeting interoperable 'smart' products that can be networked and that can interact, in an intelligent manner, with their surroundings. The aim is to extend the use and availability of these products in an increasing number of applications.

The focus is on distributed microsystems integrated in a global network; microsystems integrated in 'smart' products operating in local networks (car, home, etc.), as well as multi-sensor microsystems networked internally in the product or system itself (microsystems in or at the body, microsystems in handheld equipment, µTAS, etc.). The work should include application-driven microsystems technology development, with a mid-term application potential.

Activities with a longer term exploitation potential, aimed at the incorporation of micro-nano-technology for improved interaction of products with their surroundings, are also included, e.g. micro-fluidics, gas sensors, chemical sensors based microsystems or based upon innovative physical phenomena (optical, piezo-electric, …). Multidisciplinary work bringing together developments in different fields is encouraged (e.g. materials specialists, quantum physicists, biologists, chemists, medical staff, environmentalists, …).

Actions to prepare for future targeted research initiatives are encouraged through support to networking / clustering of activities and people; through studies on multi-disciplinary research priorities and techno-economic, socio-economic and market studies; through roadmapping exercises and working groups with a focus on user-supplier interaction or on specific application domains; and through stimulation of international co-operation and participation of non EU parties (in particular NAS participation).

Types of actions addressed: Research and Development, Demonstration and combined projects, Trials, Best Practice, Access Actions, Accompanying Measures (excl. take-up),

Thematic Networks.
Links with WP 2001: Further focusing of IST2001-IV7.2 and IV7.3.

IV.8 Microelectronics - optoelectronics

The objective is to improve the productivity of microelectronics design and test, push further miniaturisation, reduce power consumption, performance and cost effectiveness of micro- and opto-electronic devices and technologies, and integrate more system functions on chips.

The work is of a longer-term nature, focussing on critical technological issues such as re-use of Intellectual Property (IP) blocks, new solutions for nano-CMOS and opto-electronic components for all optical networks. The co-ordination with national and European level programmes (e.g. EUREKA/MEDEA+ and FPV/Growth) will be reinforced to ensure a good complementarity.

IST2002 - IV.8.1 Microelectronics design and IP re-use

The objectives are to stimulate the re-use and exchange of Intellectual Property (IP) blocks and to accelerate the use of configurable structures such as Field Programmable Gate Arrays (FPGA). The overall aim is to improve the design productivity. Configurable structures should allow the use of the same design for more than one application or allow to adapt the functionality during the lifetime of the product like for early prototypes.

Focus is on:

- Demonstration of methods for IP re-use (including the handling of IP across companies such as system houses, Electronic Design Automation (EDA) vendors, foundries) and exchange with involvement of design houses.
- Sharing experience on the methods and instruments for IP re-use and exchange and promotion of consensus building towards standardisation and/or business models.
- Best practice action for launching technical feasibilities with configurable structures such as FPGAs for innovative products incorporating new functionality.
- Providing researchers and SMEs such as design houses access to CAD tools, IP blocks with supporting methods and corresponding MPW (Multi Project Wafers) facilities. The added value compared to commercial offers should be demonstrated.

Types of actions addressed: Demonstrations, Thematic Networks, Best Practice and Access Actions.
Links with WP 2001: Refocusing of Action Lines IST2001-IV.8.1 and IST2001-IV.1.1.

IST2002 - IV.8.2 Microelectronics technologies – processes, equipment and devices

The objective is to drive the development of semiconductor technologies needed to make components and Systems-on-Chip, to enable selected application requirements – such as low power, high power, high frequency, low noise, high memory capacity, high data rate or others - at a cost/performance optimum.

Focus is on:

- New solutions for basic CMOS modules to realise 50 nm devices and beyond. The scope also includes work on Si, SiGe, SOI, compound semiconductors – for RF components - and on related equipment and material integration and work on alternative integrated devices down to nano-scale.
- Process integration of system functions on a chip, linked to innovative design approaches. Emphasis is on embedding of logic, processor cores, memory, RF, mixed signal and passive or sensor functions.

- Innovative industrial solutions in the areas of Next Generation Lithography to drive performance and keep processing costs at acceptable levels. Sub-areas encouraged are: sources, masks, metrology, defect inspection, process and maskless techniques.

Types of actions addressed: Research and Development, Demonstration and combined projects, Access Actions, Concerted Actions and Thematic Networks.
Links with WP 2001: Extension of priority topics from Action Line IST2001-IV.8.2.

IST2002 - IV.8.3 Optical and opto-electronic technologies

The objectives are (i) to further develop optical, opto-electronic and photonic materials and functional components, devices and systems, (ii) to stimulate research in generic and applied optical/optoelectronic technologies and their exploitation in the areas of information communication, processing and storage, and in other application areas, and (iii) to anticipate the needs of common optical technologies and related materials.

Focus is on:

- Low cost, manufacturability, scalability and optical packaging for optical and optoelectronic components. It includes active and passive component integration and hybrid and monolithic OEICs (Opto-Electonic Integrated Circuits), free-space and all-optical switching technologies, and optical or hybrid devices/subsystems. The industrial motivation must be clearly demonstrated through appropriate plans for the exploitation of the proposed activities.
- Advanced longer term optical science and engineering research activities with planned 5 to 10 year exploitation perspectives.

In addition to Research and Development activities, Thematic Networks and Accompanying Measures (excluding Take-up) around critical themes in optical science and engineering are encouraged for information exchange, co-ordination of research activities and preparation of technological roadmaps.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Thematic Networks and Accompanying Measures (excluding Take-up).
Links with WP 2001: Extension of priority topics from Action Line IST2001-IV.8.3.

IST2002 - IV.8.4 Industrial micro- and opto-electronic technologies - take-up/ assessment actions

The objective is to stimulate the rapid take-up of advanced prototypes by the user industry.

The focus is on user driven assessment of advanced prototype semiconductor, optical and optoelectronic equipment, of related OEM components and of materials for semiconductor and photonic device manufacture. Dissemination of assessment results is an important part of the action. The aim is:

- To assess and improve the performances of semiconductor ‘beta type’ equipment under close-to- production conditions, thereby creating reference centres at user sites.
- To have an early proof of concept for semiconductor ‘alpha type’ equipment or for innovative process concepts by adapting state-of-the-art equipment.
- To assess and improve the potential and performance of optical and optoelectronic devices and of the related manufacturing processes and equipment.

Types of actions addressed: Assessment Actions.
Links with WP 2001: Extension of priority topics from Action Line IST2001-IV.8.4.

3.5 CROSS-PROGRAMME THEMES

Objectives

Cross-programme themes are the most practical manifestations of both the integrated nature of the IST Programme and of the underlying convergence of information processing, communications and media. The objective of the Cross-programme actions and clusters is to ensure that topics associated with more than one Key Action are addressed in a coherent manner, with each Key Action concentrating on and contributing from its particular perspective. These activities add value by facilitating information exchange, consensus and co-ordination on themes that cut across the Programme.

Strategy and Architecture

Much of the value of IST Programme stems from the breadth of research subjects brought together as one programme and the potential for cross fertilisation and synergies that such integration creates. The strategy for facilitating the emergence of Cross-programme themes is twofold:

- On the one hand ***Cross-programme actions (CPAs)*** invite proposals on themes which span more than one Key Action. Cross-programme Action Lines are a strong integration mechanism that allows proposers the flexibility to address multidisciplinary and multi-purpose RTD related to more than one Key Action, in a coherent way. The projects arising from Cross-programme Action Lines should seek to work closely with the most relevant projects in the Key Actions. They are expected to be grouped into cross programme clusters once they are launched.

- On the other hand ***Cross-programme clusters (CPCs)*** will build a-posteriori links between ongoing projects throughout the Programme and provides the glue that reinforces the complementarity of these projects and the synergies derived from their work. Projects in a Cross-programme cluster, although located in several Key Actions, will share common topics and objectives. Cross-programme clusters are implemented using a support measure as defined in Action Line VIII.1.1

CPAs for 2002

The following WP2001 CPAs are NOT included in WP2002: CPA 1, CPA 2, CPA 3, CPA 4, CPA 5, CPA 6, CPA 7, CPA 8, CPA 11, CPA 12, CPA 13.

Four themes are proposed as Cross Programme Actions in WP2002 and are described in the following Action Lines.

IST2002 - V.1.9	CPA 9: GRID technologies and their applications
IST2002 - V.1.10	CPA10: Sensor technologies and applications
IST2002 - V.1.14	CPA14: Mobile applications and services
IST2002 - V.1.15	CPA15: Technology platforms for culture and arts

IST2002 - V.1.9 CPA9 : GRID Technologies and their applications

Objectives:

Development, integration and validation of Grid technologies and their applications in research, industry and for addressing societal challenges. Work will range from GRID

technology building blocks to Grid-related middleware and large scale applications. It will also include test beds.

The target Grid technologies and applications cover one or more of the following layers:

- Computational GRIDs which is the basic layer for harnessing processing power by distributing massive computational tasks to numerous resources (compute cycles and data storage) over matching communication links.

- Information and knowledge GRIDs allowing access to dispersed information, and knowledge discovery and extraction from spread knowledge resources. They make use of cognitive techniques and tools such as data mining, machine learning, content semantics, ontology engineering, information visualisation and intelligent agents.

Grid technologies are also to be interpreted in a broad sense including technologies for Peer-to-Peer Computing (P2P) using commodity hardware to enable the co-ordinated use of geographically distributed resources without central control.

Focus

- Development of large-scale applications where computing, data and/or knowledge intensive requirements justify a Grid approach (physics, meteorology, environment, earth observation, biology and health, aeronautics, automotive, e-business, e-learning, entertainment etc.). Implementation and integration problems as well as security, business and organisational issues are to be considered.

- Development or improvement of computing-, information- or knowledge GRID-specific toolkits including grid security infrastructure, software and system architectures that ensure performance and scalability of solutions together with usability and functionality. Programming methods covering the entire software development cycle could also be included.

- Solving of interoperability issues between Grid technologies and commodity middleware to facilitate integration with legacy systems. Promotion of standards and reusable elements of broad usability.

- Building test-beds “at scale” (international links are encouraged) to integrate and implement diverse underlying technologies for end to end service deployment in the context of full scale applications.

- Conducting trials aiming at the introduction of the “Grid at large” in industrial, commercial and societal applications. A trial would typically consist of two major steps: (i) integration of existing technologies and set-up of a prototype Grid environment responding to true industrial, commercial and/or societal requirements; (ii)preparation, execution and evaluation of a number of applications driven by real users and carried out in collaboration with the respective technology and service providers.
- The creation of advanced facilities for demonstration and training.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Trials and other non take-up Accompanying Measures .
Links with WP 2001: Reshaped Action Line IST2001 - V.1.9 on “GRID test beds, deployment and technologies”, also taking up issues related to Action Line IST2001 – III.4.1. on “Semantic Web Technologies”.

IST2002 - V.1.10CPA10: Sensor technologies and applications

Objective:

To develop intelligent interactive systems and multi-sensing technologies and their applications for health, mobility, security, comfort and environmental monitoring in the workplace, the car and at home.

The emphasis is on bridging the developments in micro-nano-sensors technology with research on innovative applications offering multi-sensorial and easy access to knowledge based services and applications at work, home, for people on the move and in relation to healthcare and environmental protection. Progress in lower cost sensor and actuator technologies, smart sensing systems, miniaturised networked modules, their integration with interfacing middleware and their applications plays a major role in realising the Programme vision of an ambient intelligence landscape.

Focus:

- Optimisation or development of new leading edge applications making best use of improved sensor technologies, their networking and improved communication capabilities. This includes also developments in the light of research on inter-personal interactions and behaviour.

- Customisation of the sensor, actuator, micro-system or miniaturisation technology to match the requirements of the envisaged applications as well as to fulfil their processing capability and networked functionality.

- Integration of sensors and actuators with intuitive interface middleware contributing to the use and development of intuitive systems e.g. interfaces capable of monitoring, understanding and interpreting presence, words, gestures and physiological parameters adaptive to user requirements and self-learning, as well as automatic personal identification and localisation for context sensitive tangible interfaces; and their use in related applications and services. In this perspective technology developments must be associated with social and behavioural research on personal interaction both with networked services and with other people through mediation.

Test-beds to assess and validate application-specific solutions are also addressed.

Work is encouraged to foster the interaction and convergence of different scientific disciplines including materials, electronics, physics, chemistry, medical and biological sciences and systems engineering with the goal to develop fully integrated sensor solutions and their application in the target areas such as health, medical, food, agriculture, environment, monitoring and control of natural resources as well as in professional equipment, and in industrial and communication systems.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Trials, Thematic Networks and Concerted Actions.
Links with WP 2001: Refocused Action Line IST2001- V.1.10 on "Next generation micro and nano-technologies for highly integrated miniature applications".

IST2002 - V.1.14 CPA14: Mobile applications and services

Objectives: To develop user friendly applications and services, for possible deployment at pan-European level, that take full advantage of the possibilities of leading-edge mobile and wireless technologies, including third generation mobile systems and wireless LANs, in the framework of a transition from IPv4 to IPv6 based service provisioning.

Focus:

The focus is on integrated solutions that combine advanced mobile and wireless technologies with multi-sensorial interfacing techniques to provide innovative secure value added services and applications. Inter-working and inter-operability of different solutions (e.g. 3G systems and W-LAN) can be considered in order to provide the most

convenient and efficient service provision as a function of the user profile, which may include the user location, with due account of security and privacy. Possible applications and services include but are not limited to:

- Applications and services for mobile commerce / business, work and advertising, also envisaging innovative business models and electronic payment solutions;
- Mobile entertainment, streaming (also in combination with compatible broadcasting techniques), mobile learning, mobile access to cultural heritage;
- location based, personalised and context-sensitive services including navigation and guidance, traffic and traveller information and management systems, electronic payment systems and virtual presence;
- Emergency assistance services and Mobile health applications and services.

Types of actions addressed: Research and Development, Demonstration and Combined Projects.
Links with WP 2001: New Action Line.

IST2002 - V.1.15 CPA15: Technology platforms for cultural and arts creative expressions

Objectives: To develop future generic platforms and tools for improving creative expression and facilitating access to inspirational material for artistic and cultural content creation. Applications include creative work in media production, cultural assets exploitation, artistic design, and facilitate contemporary arts and performance. Work will take advantage of, and develop technologies for virtual, augmented and mixed realities, new displays, and multisensory and multimodal interfaces.

Proposals should address medium to long term exploratory work with an emphasis on the discovery of novel ways to master traditional and new media, novel forms of creative and artistic expression, and novel forms of content, ultimately leading to a new «digital» expression.

Focus:

- Developing generic technology platforms and tools to assist the cultural and artistic community in its creative process in a simple, interactive and intuitive manner and without imposing restrictions.
- Benchmarking existing platforms, creating forums for the exchange of experience and networking centres of excellence where engineers and scientists work to support the artistic and cultural community,
- Involving the scientific and technical community active in the development of new media tools and not traditionally related to the cultural and artistic area, as well as independent artists, young talents, cultural designers and creators,
- Making available generic platforms and tools such as free / open source software and "open hardware" that can be easily used by artists, designers and creators for free and unlimited exploration.

The CPA could constitute the basis of a virtual European laboratory dealing with novel usage of information and communication technology. This may lead to new, still to be invented, forms of content and applications.

Types of actions addressed: Research and Development, Demonstration and Combined Projects, Thematic networks.
Links with WP 2001: New AL combining relevant activities in KA3 and KA4.

3.6 FUTURE AND EMERGING TECHNOLOGIES

"This specific activity on future and emerging technologies covers research that is of a longer term nature or involves particularly high risks - compensated by the promise of major advances and the potential for industrial and societal impact. Such research will typically be either transdisciplinary or in an emerging discipline. It will reinforce the link and flow of ideas, initiatives and people between academia and industry in the EU and in Newly Associated States."

Objectives and Structure

This area is implemented in two parts: the open domain and a limited number of pro-active initiatives.

The open domain ensures a seamless coverage of all Information Society technologies by keeping the door open to any new idea, with a potential for industrial or societal impact, in a bottom-up fashion.

The proactive initiatives have as objective the focusing of resources on a few key emerging visionary and challenging long term goals. The selection of Action Lines for proactive initiatives is based on their potential for long-term industrial and societal impact and their timeliness. Each initiative consists of a set of autonomous but closely interacting and appropriately networked projects that co-ordinate their research, reinforced with some shared research facilities when these provide economies of scale.

Networks of Excellence may also be launched to support a given proactive initiative in terms of cross-project co-ordination and of ensuring that research visions and results are shared with the broader scientific community.

RTD Priorities in 2002

In addition to the Open domain and Thematic Networks, the following proactive initiatives are identified as priorities for the year 2002:

(1) Quantum Information Processing and Communication

(2) Presence Research: Cognitive sciences and future media

Action Line Descriptions

Open Domain

IST2002 - VI.1.1 Open domain

Objectives: To nurture invention, creativity, and bright spark ideas. It is open to any idea that pertains to Information Society technologies, as long as the ideas are highly innovative, and the realisation of these ideas is either high risk or requires longer term research.

Work submitted must have the potential of leading to significant breakthroughs in industrial or societal terms. The domain is open to developing new technologies; exploring new ways of doing things; or creating new contexts and roles for emerging technologies. Funding is available for short assessment phases (typically for one year) and for full scale research projects. Proposals can be submitted through a continuous submission scheme (i.e. at any time) up to the closure of the scheme in 2002. This Action Line supports the Human Frontiers Science Programme (HFSP) - see section 5.1.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Accompanying Measures (excluding Take-up), Thematic Networks
Links with WP2000: Continues Action Line. IST2001 - VI.1.1

Proactive Initiatives

IST2002 - VI.2.1 Quantum Information Processing and Communication (QIPC)

Objectives: To develop novel systems and techniques for information processing and transmission by exploiting the properties of quantum mechanical operations. Medium-term goals are the development of elementary but scaleable quantum processors, quantum networks that interconnect a number of processing elements (e.g. through teleportation), new quantum algorithms that tackle problems of practical significance, simulators of quantum systems, as well as the development of novel few-qubit applications of quantum systems. Associated challenges include the control of decoherence and the development of methods for quantum information storage, retrieval and intermediate read-out.

Focus: Proposals should focus either on new approaches for addressing the above goals, or building on promising results already produced in the QIPC initiative. Basic research on the nature of quantum information that could lead to new insights in science can also be supported.

Work in the initiative consists of a balance of experimental and theoretical research, bringing together cross-disciplinary expertise in physics, chemistry, semiconductor engineering, photonics, computer science and mathematics, and potential applications.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Accompanying Measures (excluding Take-up), Thematic Networks
Links with WP2001: There has been a call for proposals for the QIPC initiative in 1999. The first projects have been launched in January 2000. This call is a follow-up and complementary to the previous one.

IST2002 - VI.2.2 Presence Research: Cognitive sciences and future media

Objectives: To develop novel media that convey a sense of "being there". A theory of presence, emerging through interdisciplinary research that explores the cognitive and affective roots of sensory perception is expected to give rise to the design of innovative systems that offer "richer" experiences than any current media and communication technologies.

Focus: Beyond understanding presence, defining appropriate degrees of immersion according to context, and developing a common reference model, research should explore the full potential of novel media from the perceptual perspective and identify their inherent characteristics.

This initiative is expected to attract a range of contributions from fields such as vision science, psychoacoustics, haptics, telecommunication engineering, computer science and artificial intelligence, hardware technologies, media and performing arts, psychology, phenomenology, as appropriate in specific projects.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Accompanying Measures (excluding Take-up), Thematic Networks
Links with WP2001: New action line

3.7 RESEARCH NETWORKING

Context, Challenges and Opportunities

The IST Programme is supporting crucial initiatives on research on networking and on the interconnection of European National Research Networks, in order to sustain European co-operation and cohesion, foster European competitiveness and engage new players from industry, academia and start ups.

To stay in the forefront, the IST Programme also promotes the integration and validation of future technologies that are not just gradual improvements, but rather constitute parallel development that may lead to replacement of present technologies.

Objectives

The upgrade of the pan-European infrastructure interconnecting the European national research and education networks to become a world-class Gbit/s backbone is being pursued by the Géant project. The ultimate goal is to provide the hundreds of Gbit/s connectivity necessary to support the deployment of World Wide Grid according to the objective of the *e*Europe and eEurope+ action plan and the *e*Science initiative.

Building on current achievements it is now necessary to complement the activities supported by the Géant project to reach the connectivity objectives of the *e*Europe and *e*Europe+ action plan and to reinforce international connectivity to allow the collaboration of European researchers with colleagues around the world on equal terms (Action Line RN1).

The second objective (Action Line RN2) is to support experimentation in next generation technologies, (e.g. terabit optical communications, new protocols, middleware and applications) as well as the use of advanced network features and test beds that are needed to test, integrate, validate and demonstrate new technologies and services in real-world settings. The practical experience gained by academia, industry and service providers in deploying emerging technologies in realistic settings will help Europe to play a leading role in defining the next generation of networking and application technologies.

Architecture and Implementation

The two action lines have the dual objective of providing infrastructure to support researchers, as well as providing infrastructure for research itself.

The focus is now to extend the reach of the current infrastructure (including connectivity to other parts of the world) and testbeds and to increase awareness. In action line RN1, the provision of further networking capabilities will be implemented in concertation with the National Research and Education Networks that will organise additional competitive tenders, according to the public procurement rules and in compliance with market regulation. Any legal entity participating in projects selected under the 5th Framework Programme may use and access the interconnection infrastructure. Usage and access costs should be supported in the framework of these projects.

These objectives will be implemented through RTD activities, Demonstration projects and Accompanying Measures (excluding Take-up), Thematic Networks, Concerted actions and complementary IST Support Measures.

Action Line Descriptions

IST2002-VII.1.1 Extending the reach of Research Networks

Objectives: To enhance the European Research backbone by providing complementary support, where necessary, to reach the connectivity objectives of the *e*Europe and *e*Europe+ action plan and to reinforce international connectivity.

Type of actions addressed: Research and Development, Demonstration and Combined projects, Accompanying Measures (excluding Take-up), Thematic Networks, Concerted actions.
Links with WP2001: Reshaped Action Line IST2001 - VII.1.1

IST2002-VII.1.2 Advanced experimental infrastructures

Objectives: To support experimentation in next generation communication technologies (e.g terabit optical communications, new IP protocols), middleware (e.g. for Grids) and applications (e.g. IPv6 enabled, supporting *e*Science and emerging application areas, enabling development of new business models). To encourage the establishment of partnership between academia, industry and service providers to facilitate the creation of advanced facilities for testing, demonstration, training and dissemination. To facilitate integrated initiatives aiming to exploit synergies between different technologies and/or testbeds.

Type of actions addressed: Research and Development, Demonstration and Combined projects, Accompanying Measures (excluding Take-up), Thematic Networks, Concerted actions.
Links with WP2001: Reshaped Action Line IST2001 - VII.1.2

4 IST SUPPORT ACTIVITIES

This section describes generic Action Lines, aimed at supporting RTD activities. Support activities which relate directly to specific research activities undertaken by the Key Actions, FET or Research Networking are defined as Action Lines in the related sections of this workprogramme.

IST Support Activities run in parallel with the RTD, and are employed to prepare (before), support (during) and facilitate the rapid adoption and transfer (after) of technologies, experiences and know-how gained in the execution of RTD. They also aim at increasing the integration of Newly Associates States in the Programme and at strengthening co-operation with developing countries.

Support activities may be submitted at any time (refer to the current *Call for Proposals*) and are evaluated in batches. The type of actions used are Thematic Networks and Accompanying Measures (excluding Take-up). Further detailed guidance on how to prepare and submit these type of proposal are contained in the *Guide for Proposers*. Support for conferences, seminars, workshops or exhibitions are part of a call for grants that has been already published.

IST2002 - VIII.1.1 Clustering of Projects

Objectives: To facilitate synergy between existing projects that see an added value in working together on common objectives. Clusters can address areas within one Key Action or cross-programme themes. Participation of relevant interest groups that may not otherwise be present in IST is specifically to be encouraged.

Types of actions addressed: Thematic Networks, Accompanying Measures (excluding Take-up).
Links with WP2001: Same AL VIII.1.1

IST2002 - VIII.1.2 Networks of Excellence and working groups in IST

Objectives: to facilitate the collaboration in an IST field between research groups from industry, academia and public organisations.

Focus:

- *Networks of Excellence*: aim at bringing together a critical mass of industrial and academic research groups to co-ordinate their research or other activities in order to advance towards common strategic goals. Networks of Excellence can be particularly beneficial for groups and organisations in outlying regions through the channel they provide for training, technology transfer, and access to expertise and resources.

- *Working Groups:* aim at improving the systematic exchange of information and the forging of links between teams, which share a common theme in RTD or take up activities.

  Networks of Excellence and Working Groups are also used to support co-operation in areas that are complementary to the RTD work such as fostering the entrepreneurship culture in academic curricula.

Type of actions addressed: Thematic Networks.
Links with WP2001: Same AL VIII.1.2.

IST2002 - VIII.1.3 Channelling of standardisation and interoperability initiatives

Objectives: To maximise the openness, balance, coherence and timeliness of contributions channelled towards specific standardisation and interoperability initiatives.

Focus:

Bringing together IST researchers and the competent technical committees of standards bodies and other open forums.

Type of actions addressed: Thematic Networks.
Links with WP2001: Same AL VIII.1.3.

IST2002 - VIII.1.4 Improving human capital in IT by competence building (IHC)

Objectives: To help build more professional competence in IT related disciplines by developing need oriented professional skills of academic graduates working in the IST fields. Activities will aim to reduce the - qualitative and quantitative - skills gap in IST. Various forms of co-operation and exchange between industry, academia and research centres will play an important role to this end, while at the same time improving the transfer of research results to industry.

Focus:

Measures for Improving Human Capital (IHC) in order to broaden and/or adapt expertise of senior staff including retraining, efficient use and transfer of knowledge from experienced to younger personnel, and building up need oriented skills of young graduates.

Actions may have various forms, i.e. preparation or carrying out of cross disciplinary co-operation on concrete subjects for providing training on the job, educational courses (learning or teaching), participation of professionals in activities of public research bodies or any other appropriate action.

Types of actions addressed: Training Accompanying Measures, training networks, fellowships (Marie Curie Industry Host Fellowships), Non Take-up Accompanying Measures.
Links with WP2001: Reshaped AL VIII.1.4.

IST 2002 – VIII.1.5 Bridging the IT skills gap through development of Training: Not included in WP2002

IST 2002 - VIII.1.6 Enabling RTD co-operation with Newly Associated States[11]

Objectives: To build awareness of IST and facilitate the formation of project consortia that include partners from the Newly Associated States. To better link the Newly Associated States' IST research base to that of the EU and vice versa. To support and develop more efficient means of co-operation with these countries.

Focus:

Support will be considered for working groups and thematic, information, and partnering networks, for regional information centres, facilities and web sites, for enhancing the

11 Newly Associated States are the States that are associated with the 5th Framework Programme and were not associated with previous Framework Programmes

scope of existing IST actions, for strengthening and networking IST Centres of Excellence and for the organisation of events with a view to integrate more closely the Newly Associate States into the European Research Area. Sub-regional activities (e.g. in the Balkan or the Baltic regions) are encouraged.

Types of actions addressed: : Research and Development, Demonstration and Combined projects, Thematic Networks, Accompanying Measures.
Links with WP2001: Reshaped AL VIII.1.6.

IST 2002 - VIII.1.7 Enabling RTD Co-operation with 3rd Countries

Objectives: To build awareness of IST and facilitate the formation of project consortia that will include partners from 3rd countries. To support and develop more efficient means of co-operation with such countries. To increase access to niches of excellence and skills in universities and research centres, and to market opportunities in emerging economies of the developing world.

Focus:

Support will be considered for working groups and thematic, information and partnering networks, for regional information centres, facilities and web sites, for enhancing the scope of existing IST actions with partners from countries with special arrangements[12], and for the organisation of events. Target activities should bring added value for the European industrial and research communities. Co-ordination with other major RTD frameworks via business partnership workshops and via international conferences and forums is encouraged.

Types of actions addressed: Research and Development, Demonstration and Combined projects, Thematic Networks, Accompanying Measures.
Links with WP2001: Reshaped AL VIII.1.7.

IST2002 - VIII.1.8 Dissemination and awareness of IST research results

Objectives: To stimulate and promote the dissemination and awareness of IST research activities and innovations and to help maximise the exploitation of results and their socio-economic and policy implications.

Focus

- Accompanying measures and thematic networks that help disseminate and exploit research results to a broad community of suppliers and users of information society technologies and their applications.

Types of action addressed: Accompanying Measure (excluding take-up) and thematic networks.
Links with WP2001: Same AL VIII.1.8.

IST2002 - VIII.1.9 Studies

Objectives: To provide both technology and market analysis to the research community, with a view to matching the research activities with international and socio-economic trends.

12 See guidelines for applicants for an update list of such countries

Focus: Projections and roadmaps of future development of information society technologies and applications and their socio-economic impact including benchmark studies and socio-economic analysis.

Types of action addressed: Accompanying Measures (excluding Take-up)
Links with WP2001: Same AL VIII.1.9

IST2002 - VIII.1.10 Strengthening the European Research Area (ERA) in IST Domains

Objectives: To foster collaboration and to facilitate the exchange of knowledge and expertise between research funding and operational bodies.

Focus: Networks of Excellence, working groups, studies and other non take-up accompanying measures that help co-ordinate member and associated states research activities in IST, including statistics for IST, and stimulates the exchange of information and best practices.

Types of action addressed: Accompanying Measure (excluding take-up) and thematic networks.
Links with WP2001: New Action Line

IST2002 - VIII.1.11 "Exploratory awards" specific measure

Partners in already funded Exploratory Awards might not find in WP2002 an Action Line that corresponds to the award field.

This Action Line is designed specifically for these already funded "Exploratory awards". The objective is to enable partners to submit their full proposals prepared within these awards in any IST area even if it is not covered by WP2002. Such proposals can be submitted to this Action Line VIII.1.11.

Type of Actions addressed: Research and Development, demonstration and combined projects
Links with WP2001:New Action Line

5 CO-ORDINATION ARRANGEMENTS WITH OTHER EU RESEARCH INITIATIVES

To help prospective proposers situate their ideas in a wider context of opportunities, a number of related initiatives known to be taking place outside of the IST Programme are presented here. These are elsewhere within the 5th Framework Programme, or in related frameworks such as COST and Eureka.

5.1 INTERNATIONAL CO-OPERATION

The strategic objectives of this theme are to encourage the widest possible international co-operation to: achieve upstream global consensus for interoperability and standardisation; promote exchange of scientific information and best technological know-how worldwide; strengthen scientific and technological co-operation with the "accession" countries on their way to full participation in the European Union programmes; and to strengthen business co-operation, in particular in the future free-trade zones and the Balkan region, while protecting European IPR.

International co-operation activities will be implemented through the participation in the IST Programme of entities from non-EU countries, the co-ordination of activities with European and non-European schemes outside of the IST Programme, and dedicated Accompanying Measures.

Participation in the IST Programme is open to entities from Associated States, and countries with Science and Technology agreements with the EU in the area of Information Society technologies, and on a project by project basis to entities from other countries as well as international organisations[13]. Specific measures will be introduced, in certain areas, in 2002 for enhancing the scope of existing IST actions by adding partners from the Newly Associated States, or from countries with special arrangements, to on-going activities.

Cross participation in other major RTD frameworks (such as the ITR programme of the National Science Foundation and the ATP programme in the USA, and the Electronic Commerce programmes of MPT and MITI in Japan) on specific Action Lines in the Programme will be stimulated through the co-ordination or synchronisation of focused Calls for Proposals.

Considering the unique skills encompassed by the Human Frontier Science Programme (HFSP), a subvention will be made available for the whole duration of the 5th Framework Programme.

Actions for undertaking wider information exchange at the international level on the development of the global information society are also called for. This will include liaising with the programme “Confirming the international role of Community research”, Non-EU funding agencies and organisations, including for example: the Club of Rome; the inter American bank of development, the Smithsonian and Futures Institutes in the USA, and with other similar organisations in, for example, the Mediterranean partner countries, China, Japan, Asian members of ASEM (Asia-Europe Meeting), Russia and developing countries. Calls for tenders for a maximum of 500 kEuro related to assistance in the co-ordination with non EU programmes are foreseen in 2002.

13 The rules of participation are set out in the Council Decision of 22/12/98 (1999/65/EC), see also the "Guide to Proposers".

5.2 INNOVATION AND SPECIAL MEASURES FOR SMES

The IST Programme will place special emphasis on the dissemination, transfer, utilisation and/or exploitation of R&D results leading to innovation. To this end, the Programme will carry out activities in co-ordination with the Innovation and SME programme, inter-alia:

- To promote the transfer and exploitation of EC RTD results, for example through the organisation of technology brokerage events, workshops on exploitation issues and as IPR, mobilisation of risk and private finance, and publish specific Calls to this end.

- To provide information on EC RTD results, in the format agreed with the Innovation and SME programme, for inclusion in CORDIS (including an indication of those results that are suitable for third party exploitation or for EUREKA).

- To assist in preparing management tools to promote the exploitation of EC RTD results by the consortia (or their members) and to monitor with the help of adequate tools, such as the Technology Implementation Plan and technology audits, the further use of RTD results.

- To assist with the assessment of the efficiency and effectiveness of the network for technology transfer, of joint actions between the thematic programmes and the Innovation and SME programme, and of the Innovation Units or Innovation SME units.

In 2002, the Programme will issue calls for tenders for assistance in the implementation of the above activities including the annual publications of Programme achievements, brochures and multimedia productions as well as special information services to stimulate innovation. Continued support will be given to the European IST Prize scheme. The objective of the Prize is to promote European innovation and entrepreneurship in IST by providing public recognition to companies that excel in turning technology and research results into products for the market. The Prize scheme will be organised by the European Council of Applied Science and Engineering, Euro-CASE, building on experience they have acquired over the last six years. Euro-CASE status as a non-profit association of 17 European Academies allows it to ensure an effective and impartial evaluation of the applications received. The foreseen expenditure will include appropriate operation costs and a total of 700,000 Euro per annum to be handed out as monetary prizes.

The IST Programme will also implement special measures to facilitate and encourage the participation of SMEs in RTD and Demonstration activities in conjunction with the programme “Innovation and participation of SMEs”. These are in particular SME Co-operative research (CRAFT).

CRAFT projects will allow SMEs with limited or no in-house R&D capability, but facing technological problems, to entrust the necessary research to third parties (the RTD performers). In this context, the SMEs themselves may carry out part of the research.

CRAFT proposals must fall within the overall objectives of the thematic programmes. In other words, they do not have to relate specifically to the key actions, generic technologies and research infrastructure. As such, these measures allow for a bottom up character since proposals may be submitted for the objectives and priorities of the thematic programmes in their entirety.

The participation of SMEs in RTD projects will also be facilitated by support measures for partnership brokerage between ongoing projects and new SMEs active in related RTD, the so-called economic and technical intelligence measures.

The implementation of these specific measures will conform to the published Calls, procedures and criteria established for the horizontal programme “Innovation and the

participation of SMEs", in order to ensure full transparency for the beneficiaries. These rules include common contractual and proposal evaluation, a single complementary entry point for the reception of proposals for SME specific measures, common rules for eligibility and for scientific and technological evaluation; common legal and financial provisions as well as a harmonised and rapid feedback to applicants.

5.3 HUMAN RESEARCH POTENTIAL AND SOCIO-ECONOMIC KNOWLEDGE BASE

Assessments of social and economic trends and impacts will be supported as an integral part of Key Actions and will be co-ordinated within the IST Programme. They will also be co-ordinated with related activities in other programmes of the 5th Framework Programme, with work supporting EU policy development activities, and with research in other European and international frameworks.

Socio-economic research can be funded by both the thematic programmes, as well as by the Key Action on "Improving the Socio-Economic Knowledge Base" of the horizontal programme "Improving the human research potential and the socio-economic knowledge base". Taking into account the philosophy of the 5th Framework Programme, socio-economic research is present in the thematic programmes as an integral part of the technological research activities. The integration of the socio-economic dimension in the IST Programme is addressed in two ways: (1) through a number of Action Lines explicitly geared towards socio-economic problems, and (2) through encouragement to proposers to integrate a socio-economic dimension and socio-economic research in their projects.

Specific measures will be taken by the horizontal programme to ensure co-ordination of the socio-economic research to be implemented within the current programme. The horizontal programme will draw up an annual report on socio-economic research in the 5th Framework Programme (http://www.cordis.lu/improving/home.html). The work in the IST Programme will contribute in a consolidated form to this annual report on socio-economic research Information exchange between projects will be facilitated by a series of concertation workshops on specific themes related to EU policy priorities. In 2002, priority will be given to activities which can contribute in various ways to the *e*Europe and *e*Europe+ Action Plan.

Marie Curie Training Fellowships are aimed at supporting the training and mobility of researchers throughout Europe. In addition to the support provided in all scientific areas by the horizontal programme "Improving the human research potential and the socio-economic knowledge base", Marie Curie Fellowships are offered in the thematic programmes. The implementation of these fellowships will follow rules common to all the thematic programmes in order to ensure the consistent high quality and prestige of the schemes. These rules include a common definition of Marie Curie Fellowships, a Single Entry Point for proposals, common rules for eligibility and for evaluation, common legal and financial provisions as well as harmonised feedback to applicants and monitoring of the fellows. The IST Programme supports the following type of training fellowship: Industry Host fellowships.

Support for research infrastructures is provided by thematic programmes, as well as by the horizontal programme "Improving the human research potential and the socio-economic knowledge base". This horizontal programme will have responsibility of drawing up and publishing on a regular basis a map showing for all classes of research infrastructure to which specific programme(s) they may apply for support.

European policy development support in the IST Programme will be co-ordinated with the activities of the Commission's Forward Studies Unit (*Cellule de Prospective*), the relevant JRC's institutes and in particular the Institute for Prospective Technological Studies, as well as the Information Society Forum. Jointly organised workshops and conferences will complement co-ordination by an Interservice Group within the

Commission. In 2002, the IST Programme will support the exploration of priority themes to be selected in consultation with those bodies.

5.4 CONSENSUS AND STANDARDISATION SUPPORT INITIATIVES

International consensus and action in support of standardisation will be a priority in IST work and in international co-operation. In 2002, accompanying measures will be established within Key Actions to stimulate and co-ordinate European input to ETSI, CEN/CENELEC, ITU working groups, and to industry consensus frameworks (DAVIC, DVB, OMG, IETF, W3C, etc.). Measures are also to be established to support European involvement in the Global Business Dialogue focused on the global regulatory environment and common business guidelines for electronic commerce as well as in initiatives such as ISIS (Information Society Initiative on Standardisation), EISS-PUB (European Information Society Standardisation in support of Public interest) and ECOM-IS and ECOM-BS (Electronic Commerce Open Market place for Industry Sectors and for Business Services).

5.5 OTHER INITIATIVES

COST

Co-operation with Actions in the **COST framework** (see http://cost.cordis.lu) will be strengthened with links to all IST-related COST actions, including the established COST-Telecommunications set. Technical co-ordination of these actions will be ensured with the appropriate Action Lines related to their technical area. COST action co-ordinators will be invited to join related IST concertation meetings and RTD workshops. International co-operation activities may also be implemented through the modalities and objectives described in the workprogramme of the horizontal programme "Confirming the international role of Community research", including through subventions to the COST actions.

Ten-Telecom and Eureka

Co-ordination with the **EUREKA** (see http://www3.eureka.be/Home/ and **TEN-telecom frameworks** will also be used to encourage industrial co-operation in down-stream product and pan-European service innovation.

Co-ordination with other major RTD frameworks in emerging economies on sets of Action Lines in the Programme will be implemented through arrangements with funding agencies in the third countries. Support measures will be designed to maintain links with EU-trained IST specialists in third countries, which will target emerging economies, and will be launched in 2002.

6 AN INDICATIVE TIMETABLE FOR IMPLEMENTATION AND BUDGET

The Call for Proposals for a selected set of Action Lines in the current year's workprogramme will be published as indicated in the tables below in § 6.1. This will allow related Action Lines to be addressed simultaneously and proposals for related RTD to be evaluated as a coherent set. It will also allow the work involved in proposal preparation, evaluation, and RTD contract negotiation to be spread over the year.

The total indicative budget distribution for the IST Programme is as follows (in MEuro):

KA1: Systems and services for the citizen	646
KA2: New methods of work and electronic commerce	547
KA3: Multimedia content and tools	564
KA4: Essential technologies and infrastructures	1 363
FET: Future and emerging technologies	319
RN: Research networking	161
Total[14]:	3600

Of this, at least 10% is for cross-programme themes, and a minimum of 2% for integrated application platforms. The total includes 7.5% for staff and administrative costs.

The indicative budget allocation to Programme areas is as follows:

Area/year	WP1999	WP2000	WP2001	WP2002	Total
KA1	212	171	118	51	552
KA2	193	132	102	40	467
KA3	178	155	111	38	481
KA4	485	283	253	142	1.163
FET	80	89	75	55	300
RN	90	21	21	4	136
CPA	71	141	170	42	424
Total IST	1.308	992	849	373	3.522
Number of Programme calls	2	3	2	1	8

Notes:

(i) The budget allocation includes the contribution of EEA and other Associated States
(ii) Administrative expenditure (7.5%) has been deducted pro-rata
(iii) The number of Programme Calls correspond to the fixed deadline Calls and does not include the continuous submission scheme.

Year 2002 will include one call for proposals which is the eighth IST call.

Notes:

- The Director General responsible for the IST Programme may modify the date of publication of the Call for proposals by up to one month. In such cases, notice will be published in the Official Journal on the date initially foreseen.
- The Commission reserves the right not to commit in full the budget indicated for each Call.

[14] Total budget and budget distribution do not include contribution of EEA and other associated states

- An additional Call for proposals may be launched by the Director General responsible for the IST Programme, if the proposals resulting from a Call do not satisfy the objectives of the Programme.

6.1 THE CALL FOR PROPOSALS IN 2002

6.1.1 Eighth IST Call

The information on Future and Emerging Technologies (FET) in the eighth IST call is in a separate table on the next page.

Publication Date (indicative): 15 November 2001	Indicative Budget: 320 M Euro

Scope of the Call (Action Lines)

	KA1	KA2	KA3	KA4	Others
Deadline for Proposals (indicative): 21 February 2002					
RTD	**I.1.1, I.1.2, I.2.1, I.4.1**	**II.1.1, II.1.3[#]**	**III.5.3**	**IV.2.1, IV.2.2, IV.2.3, IV.3.1, IV.4.1, IV.5.1, IV.5.2, IV.6.1, IV.7.1, IV.7.2, IV.8.1, IV.8.2, IV.8.3**	**V.1.9, V.1.10, V.1.14, V.1.15** **VII.1.1, VII.1.2**
TAKE-UP (+)	**I.5.1**	**II.1.3**		**IV.2.4, IV.3.1, IV.7.1, IV.7.2, IV.8.1, IV.8.2, IV.8.4**	**V.1.9, V.1.10**
Support Activities (*)	**I.5.1, I.4.1**	**II.1.2, II.1.3**	**III.5.1, III.5.2**	**IV.2.1, IV.2.2, IV.2.3, IV.3.1, IV.7.1, IV.7.2, IV.8.3**	**V.1.9** **VII.1.1, VII.1.2**
Continuous Submission Procedures until 28 February 2002					
RTD					**VIII.1.6, VIII.1.7, VIII.1.11[X]**
Support activities(*)					**VIII.1.1, VIII.1.2, VIII.1.3, VIII.1.4, VIII.1.6, VIII.1.7, VIII.1.8, VIII.1.9, VIII.1.10**

- ([X]) Deadline for the Action Line VIII.1.11 is 14 June 2002
- (*) Support activities comprise thematic networks and concerted actions and non take-up accompanying measures (studies, dissemination and awareness actions and training actions).
- ([+]) Take-Up activities comprise Trials, Best Practice actions, Access actions and Assessment actions.
- (#) Demonstrations only

"Grant" applications to support conferences, seminars, workshops or exhibitions, which must be received at least five months in advance of the event for which support is requested, may be made at any time up to 14 June 2002.

Eighth IST Call: Future and Emerging technologies

Publication Date (indicative): 15 November 2001	Indicative Budget: 50 M Euro

Scope of the Call (Action Lines)

FET

Deadline for Proposals (indicative): 13 March 2002	
RTD	VI.2.1, VI.2.2
Support Activities (*)	VI.2.1, VI.2.2

Continuous Submission Procedures until 28 February 2002	
RTD	VI.1.1 (FET Open, short proposals only)

Continuous Submission Procedures until 14 June 2002	
RTD	VI.1.1 (FET Open, all proposals except short RTD proposals)
Support Activities (*)	VI.1.1

(*) Support activities comprise thematic networks and concerted actions and non take-up accompanying measures (studies, dissemination and awareness actions and training actions).

7 GLOSSARY

3D	Three Dimensional
ACTS	Advanced Communications Technologies and Services (FP4 Programme)
AL	Action Line
Allowable costs	See **Eligible Costs**
"Ambient Intelligence"	A concept in IST that presents what should come beyond the current "keyboard and screen" interfaces to enable ALL citizens to access IST services wherever they are, whenever they want, and in the form that is most natural for them. It involves new technologies and applications both for the access to, and for the provision of applications and services. It calls for the development of multi-sensorial interfaces which are supported by computing and networking technologies present everywhere and embedded in everyday objects. It also requires new tools and business models for service development and provision and for content creation and delivery.
Assessments:	Type of **Take-up measure**. See definition in Annex 1.
ATP	Advanced Technology Program (US – NIST)
Best Practice actions	Type of **Take-up measure.** See definition in Annex 1.
Bursary: (international co-operation training bursary)	Granted for training activities only e.g. to allow the applicant to learn a new scientific technique or to work on a particular experiment or set of experiments where the host institution has particular expertise and which cannot be performed in the home institution of the candidate.
Call for Proposals	As published in the Official Journal. Opens parts of the workprogramme for proposals, indicating what types of actions (RTD projects, Accompanying measures etc.) are required. A provisional timetable for such Calls is included in the workprogramme
CATV	Cable Television
CEN/CENELEC	Comité Européen de Normalisation / Comité Européen de Normalisation Electrotechnique (www.cenorm.be)
Certification (of a proposal)	The process by which the Co-ordinator may apply a digital signature to the proposal, before it is submitted to the Commission.
Cluster	A group of **RTD** projects and/or other cost-shared actions and/or accompanying measures that address a common theme or area of interest.
CMOS	Complementary metal-oxide semiconductor
COST	Coopération européenne dans le domaine de la recherche scientifique et technique (http://cost.cordis.lu)
Concerted Actions	Type of actions supported by the Programme: See definition in Annex 1.
Continuous submission	One having no fixed closure date, but with a periodic **evaluation** of received proposals.
Contractor	a project participant who has a wide-ranging role in the project throughout its lifetime
Convergence	One of the driving socio-economic forces necessitating research under the Fifth Framework Programme. Generic term that covers: 1. Technological Convergence 2. Market Convergence 3. Regulatory Convergence 4. Policy Convergence
Co-ordinator (Co-ordinating contractor)	Lead **contractor** in a Community action, delegated by the consortium for the role of co-ordination with the Commission.
CPA or CPC or CPT	Cross-programme Action or Cluster or Theme (in IST Programme)
CRAFT (SME Co-operative research)	Projects enabling at least three mutually independent SMEs from at least two Member States or one Member State and an Associated State to jointly commission research carried out by a third party.

DAVIC	Digital Audio-Visual Council (www.davic.org)
DVB	Digital Video Broadcasting
EC	European Commission (europa.eu.int)
Eligible costs	Costs that are reimbursable in full or in part by the Commission, under the terms of the Contract that is the basis for the project.
ESA	European Space Agency (www.estec.esa.nl)
ESPRIT	FP4 Programme – European Strategic Programme for R&D in IT
ETSI	European Telecommunications Standards Institute (www.etsi.org)
EU	European Union
EUREKA	A Europe-wide Network for Industrial R&D (www.eureka.be)
Evaluation	The process by which proposals are retained with a view to selection as projects, or are not retained. Evaluation procedures are fully transparent and published in the Evaluation Manual. Evaluation is conducted through the application of published Evaluation Criteria.
FP	Framework Programme (EU – Fourth FP is FP4, etc.. – www.cordis.lu)
FPGAs	Field Programmable gate Arrays
Galileo	A constellation of 24 to 30 Medium Earth Orbit (MEO) Satellites supporting a Global Navigation service. This primary vocation will, in time, permit the developmemnt of various Value Added Services.
GIS	Geographic Information System
GMES:	Global Monitoring for Environment and Security - http://gmes.jrc.it/
GNSS	Global Navigation Satellite Systems
GPL	General Public Licence
GPRS	General Packet Radio Service
GSDI:	Global Spatial Data Infrastructure - http://www.gsdi.org
HFSP	Human Frontier Science Program (www.hfsp.org)
ICT	Information and communications technologies
IETF	Internet Engineering Task Force (www.ietf.org)
IMS	Intelligent Manufacturing Systems Initiative (http://www.ims.org/)
IP	Internet Protocol
IP	Intellectual Property (in the context of Micro- and Opto-electronics)
IPR	Intellectual Property Rights
IPv6	Internet Protocol version 6
ISO:	International Standard Organisation – http://www.iso.org
IST	Information Society Technologies. The 2nd Thematic Programme of FP-5, addressing research issues towards a user-friendly Information Society.
ISTAG	Information Society Technologies Advisory Group
ISTC	Information Society Technologies Committee
ITU	International Telecommunications Union (www.itu.org)
JRC	Joint Research Centre (EC)
JTC:	Join Technical Committee, an association between ISO and the IEC (Information Engineering Committee)
KA	Key Action (in FP5)
Marie Curie	Training fellowships supported by FP-5. Of these, IST itself only supports "Host" fellowships for young researchers.
MITI	Ministry of International Trade and Industry (www.miti.go.jp)
MPT	Ministry of Posts and Telecommunications (www.mpt.go.jp)
MOEMS	micro-opto-electro-mechanical
NIST	National Institute of Standards and Technology (www.nist.gov)
NSF	National Science Foundation (http://212.208.8.14/nsf.htm)
OECD	Organisation for Economic Co-operation and Development (www.oecd.org)
OEM	Original Equipment Manufacturer
OMG	Object Management Group (www.omg.org)
Pre – Registration	Procedure by which proposers notify the Commission of their intention

	to submit a proposal
Research Infrastructures	Facilities necessary for conducting research or for supporting the researchers. These may include research institutions, laboratories, test beds and other specialised research equipment, communications networks dedicated to research (including the Internet), libraries, learned bodies and other sources of knowledge.
Research Training Networks	Promote training through research especially of researchers at pre-doctoral and at post-doctoral level
RF	Radio Frequency
Roadmap	Part of the workprogramme indicating which Action Lines are opened in each Call for Proposals, and at which time. The roadmap provides a means of focusing attention on areas or sub-areas of the Programme in any specific Call, thereby optimising opportunities for launching collaborative projects and establishing thematic networks**.**
RDF	Resource Description Framework
RTD (R&D)	Research and Technology Development. RTD is also used to indicate one of the "types of actions addressed" in the Action Lines description. It then refers to R&D, Demonstration or Combined projects as defined in the Guide for Proposers.
SiGe	Silicon Germanium
SiC	Silicon Carbide
SME Co-operative research (CRAFT)	Projects enabling at least three mutually independent SMEs from at least two Member States or one Member State and an Associated State to jointly commission research carried out by a third party.
SOC	Systems on a- hip
SOI	Silicon on –insulator
Subcontractor	For specific tasks of a fixed duration, a proposal / project may include sub-contractors, who do not participate in the project and do not benefit from the intellectual property rights acquired through achievements of the project.
Submission Date	Equivalent to the closure date of a Call. The precise date and time by when proposals need to have been received by the Commission Services.
Take-up measures	Measures stimulating diffusion and utilisation of technologies developed under RTD projects. A specific form of Accompanying Measure
Trials (for users and suppliers)	Type of Take-up measure supported by the Programme: See definition in Annex 1
Ubiquitous	Refers to "anywhere any time"
UMTS	Universal Mobile Telecommunications System
S-UMTS	Satellite-Universal Mobile Telecommunications System
VR	Virtual reality
WAP	Wireless Application Protocol
W3C	World-Wide Web Consortium
WDM	Wavelength Division Multiplexing
XML	Extensible mark-up language

8 INDEX OF ACTION LINES

9 ANNEX 1: TYPES OF ACTIONS ADDRESED IN WP2002 – CONTRACTUAL INSTRUMENTS

The IST Programme is implemented through the indirect RTD actions as provided for in Annexes II and IV to the 5th Framework Programme. These indirect RTD actions comprise: shared-cost actions, which is the principal mechanism for implementing the specific programmes, as well as support for networks, concerted actions, accompanying measures and training activities. These actions are presented briefly in this annex. For more details the reader should refer to the document entitled "G*uide for Proposers"* of the IST Programme. The general rules[i] are as follows:

(a) Shared-cost actions

- **Research and technological development (R&D) projects**[ii] – projects obtaining new knowledge intended to develop or improve products, processes or services and/or to meet the needs of Community policies (financial participation: 50% of total eligible costs[ii,iii])
- **Demonstration projects**[ii] – projects designed to prove the viability of new technologies offering potential economic advantage but which cannot be commercialised directly (financial participation: 35% of total eligible costs[ii, iii])
- **Combined R&D and Demonstration projects**[ii] – projects combining the above elements (financial participation: 35 to 50% of total eligible costs[ii, iii])
- **SME Co-operative research projects (CRAFT)**– projects enabling at least three mutually independent SMEs from at least two Member States or one Member State and an Associated State to jointly commission research carried out by a third party (financial participation: 50% of total eligible project costs[ii])

(b) Training fellowships

Marie Curie fellowships are either fellowships, where individual researchers apply directly to the Commission, or host fellowships, where institutions apply to host a number of researchers (financial participation: maximum of 100 % of the additional eligible costs necessary for the action[iv]). The IST Programme supports the following type of training fellowship: Industry Host fellowships.

(c) Thematic Networks

Thematic Networks for bringing together e.g. manufacturers, users, universities, research centres around a given Science and Technology objective. These include co-ordination networks between Community funded projects. Support will cover a maximum 100% of the eligible costs necessary for setting up and maintaining such networks. The IST Programme supports the following types of Thematic Networks: IST project clusters, Networks of Excellence and Working Groups.

(d) Concerted actions

Actions co-ordinating RTD projects already in receipt of national funding, for example to exchange experiences, to reach a critical mass, to disseminate results etc. (financial participation: maximum of 100 % of the eligible costs necessary for the action).

(e) Accompanying Measures

Actions contributing to the implementation of a Specific Programme or the preparation of future activities of the Programme. They will also seek to prepare for or to support other indirect RTD actions (financial participation: maximum of 100% of total eligible costs). The IST Programme supports the following types of Accompanying Measures: Studies, Dissemination and Awareness actions, Training actions and Take-up Measures.

Take-up Measures

Take-up measures in the IST Programme are a special kind of accompanying measure and are always the subject of specific calls for proposals. They help to transfer leading edge as well as established but insufficiently deployed methodologies and technologies to industry and other organisations in order to achieve greater efficiency, higher quality and greater economy. Take-up measures in the IST Programme include:

- *Assessment actions:* (by users and suppliers) promote the use of innovative equipment and materials in industrial and service environments through evaluation of innovative products against user requirements and specifications.
- *Best Practice actions*, (for users) promote improvements in the practices, processes and operations in industry and services through the take-up of well-founded, mature and established - but insufficiently deployed - methods and technologies, so as to achieve greater efficiency, higher quality and greater economy (in the user organisation).
- *Trials:* (for users and suppliers) aiming at the adaptation and introduction of leading edge technology (promising but not yet fully established) in industrial/service applications and its joint evaluation (by supplier and user).
- *Access actions:* are designed to provide co-ordinated access to advanced, emerging technologies and services, knowledge and competence.

The IST Programme will not necessarily open all the above mentioned types of actions in all calls. Please refer to the road-map, the Call texts in the Official Journal and section V of the Guide for Proposers to see which actions are called for in the different calls.

Support to conferences, seminars, workshops or exhibitions are part of a call for grants[v] that has been already published. Application forms for these grants can be found on the Programme web site.

In addition to calls for proposals, calls for tenders are also expected to be published in Year 2002 on specific activities that the Programme will support, including the organisation of the IST2002 conference. Details will be provided in the texts of these calls for tenders.

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[i] In the Decisions adopting the Specific Programmes, there can be no derogation from the financial participation rates set out here, with the exception of duly justified special cases.

[ii] The rates may need to be adjusted in individual cases to comply with the Community framework for State aid for R&D (O.J. C 45, 17.2.1996) and with article 8 of the WTO Agreement on subsidies and countervailing measures (O.J. L 336, 23.12.1994). If the project is supported financially by a Member State or one of its public bodies, the cumulating rule applies, according to item 5.12 of the above mentioned Community framework.

[iii] In the special case of legal entities, which do not keep analytical accounts, the additional eligible costs generated, as a result of the research will be financed at the rate of 100 %.

[iv] In the case of industrial host fellowships, this will normally approximate to 50 % of the total eligible costs.

[v] Grant applications, which must be received at least five months in advance of the event for which support is requested, may be made at any time up to 14 June 2002