



Information Society Technologies

Creating
a user-friendly
Information Society





This brochure provides an overview of the programme on the User-friendly Information Society (more commonly known as the Information Society Technologies (IST) programme), one of seven sectors of the European Union's Fifth Framework Programme for Research and Technological Development for 1998-2002.

The IST programme features four key actions, each focused on technologies, issues and objectives of strategic importance to Europe. In addition the programme supports work on Future and Emerging Technologies, Research Networks and Cross-Programme Themes. The objective is to ensure that all European citizens and companies benefit from the opportunities of the emerging Information Society. After an introduction outlining the importance of research in this area for Europe, and an overview of the programme, the brochure describes each Key Action in turn, highlighting in schematic form its main priorities and concepts. A description of the Future and Emerging Technologies and support for infrastructure included in the programme follows, while a history of related research and some case studies are presented in parallel. The brochure also provides an overview of the whole Fifth Framework Programme and details of where the reader can obtain further information.

European Commission

A great deal of additional information on the European Union is available on the Internet. It can be accessed through the Europa server (<http://europa.eu.int>).

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An Information Society for Europe

The developed world is in the midst of a transformation from an industrial to an information society. A European effort is required to ensure that Europeans both develop and benefit from this revolution.

The last few years have seen a transformation in the industrial landscape of the developed world. Telecommunications liberalisation, the explosive growth of the Internet and a growing tide of mergers between computer, media and telecommunications companies all point to one thing - the computing, communication and content industries are converging. The Information Society is being born as a result. By its very nature, this society is global. If Europe is to ride the crest of this wave, it will need to pool all its resources - human, technological, financial - to create technologies and companies that can outcompete the best that the rest of the world has to offer. But this is not just about creating jobs in the computers and communications industries. While the potential for new, world-conquering products and services is enormous, the impact on the way manufacturers make and supply their goods, on how public administrations operate, on how doctors work and on how people live will be just as profound. The Information Society could also mean new opportunities for isolated regions and new solutions to environmental and social problems. But none of this is guaranteed.

A Global Society

The power of these technologies must be harnessed to improve the lives of all Europeans. This requires work on many fronts, from telecommunications deregulation to intellectual property, from technological development to venture capital. Europe is active on all these fronts for one simple reason - a fragmented approach would fail. To compete in the global marketplace, European industry will need the financial strength of an integrated Single Market, the technological strength stemming from a balanced mix of European competition and cooperation, and the human resources of the entire continent.

Much of this is falling into place - telecommunications deregulation began in earnest in 1998, for example, the same year which saw the establishment of the euro-zone and the growth of new European venture capital markets. But this world never stays still. Now, more than ever, Europe needs to assemble its resources to win tomorrow's battles.

One Industry, One Programme

This is not a new problem - the European Union has been helping European industry work together since the mid-1980s, while the mid-1990s saw the European Commission invest well over three billion ecus in three research programmes tackling information and communications technologies and telematics applications.

The same period, of course, saw these three sectors merge. Reflecting this, the EU's Fifth Framework Programme for 1998-2002 (see page 14) features just one, integrated Research and Development and take-up programme: the Information Society Technologies (IST) programme.

Unlike previous Framework Programmes, the Fifth Framework Programme focuses on today's socio-economic problems, rather than research for its own sake. For this reason the IST programme will do more than simply develop technologies - it will help ensure that all of Europe's citizens and companies benefit from the opportunities the emerging Information Society will provide.

An Integrated Approach

The Information Society Technologies Programme is structured around four Key Actions, each focusing on a tightly interrelated set of technologies, issues and objectives of strategic importance to Europe.

Like all the thematic research programmes under the Fifth Framework Programme, the Information Society Technologies programme features a small number of key actions. Each key action encompasses the complete range of Research and Development (R&D) and take-up activities - from basic research through to demonstration projects.

Apart from ensuring better links between basic research and market needs, this will encourage a closer relationship between research and public policy. This relationship is not only vital to the successful introduction of new technologies and services - it will also ensure that the resulting Information Society is cohesive and socially inclusive.

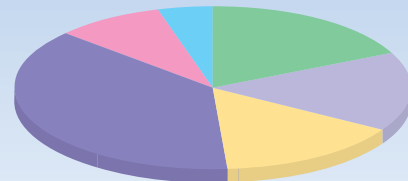
The programme is much more than this, however. To begin with, research into areas which are common to more than one key action - the development of new man-machine interfaces, for example, or the exploitation of satellite-based communications - will be co-ordinated. The aim here is to reinforce the commonality and complementarity of projects, creating a critical mass of resources focused on issues of strategic importance and avoiding duplication of effort across Europe.

Common Principles

Moreover, there are a number of themes running through everything the programme does. All the new technologies, for example, must be usable, interoperable, dependable and affordable. These four criteria are crucial to the

creation of a co-ordinated European effort capable of tapping the resources of the entire continent and competing in the global Information Society. All research will take into account social issues, ranging from Europe's ageing population to increasing the sustainability of industry and society, as well as a major effort to improve the number of Small and Medium-sized Enterprises (SMEs) participating in the programme and benefiting from its results. SMEs which are not research-oriented, for example, will find many opportunities to improve their use of innovative technologies in this programme - from taking part in demonstration projects to receiving training on how to integrate these new technologies into their businesses. Finally, the programme does not forget the longer term, financing a number of higher-risk research areas to reinforce Europe's scientific excellence in fields as diverse as quantum computing and nanotechnology, as well as improving Europe's basic research infrastructure.

Budget Breakdown



Key Actions

■ Systems & services for the citizen	€646m
■ Multimedia content & tools	€564m
■ New methods of working & electronic commerce	€547m
■ Essential technologies & infrastructure	€1363m
■ Future & emerging technologies	€319m
■ Research networking	€161m
TOTAL	€3600m

Programmes in Convergence

Each of the three programmes concerned with information and communication technologies under the European Union's Fourth Framework Programme (1994-1998) supported hundreds of research and demonstration projects in fields as diverse as integrated circuit design techniques and telecommuting in rural areas.

The three programmes were:

■ **ACTS (Advanced Communications and Technology Services):** ACTS has been a core element of the European Union's efforts to accelerate the deployment of advanced communications technologies and services. The ECU 630 million programme focused its research activities on areas such as interactive multimedia services, optical transmission technologies, high-speed networking and mobile communications. The pro-

History

An Integrated, Coherent Programme

Cross-Programme Themes co-ordinate research relevant to the entire Programme - and indeed the entire Information Society. Cross-Programme Themes are the most practical manifestation of both the integrated nature of the Programme and of the underlying convergence of information processing, communications and media technologies.



There are some Information Society Technologies which are important to several key actions - satellite communications and user interface design, to name just two examples, will both find applications in areas as diverse as personal communication systems, vehicle telematics, logistic management and environmental monitoring.

The Information Society Technologies (IST) programme will establish Cross Programme Themes to co-ordinate research into such fields. These Themes will not only ensure that the programme does not reinvent the wheel in several different projects - they will bring together people working on the same problem from different angles, foster the cross-fertilisation of ideas, results, tools and technologies and promote the interoperability of different systems. The result will be a stronger European industry promoting a co-ordinated, interoperable and user-friendly suite of technological solutions. There are two sorts of initiative: 'Actions', which call for projects that are themselves cross-programme in nature, and 'Clustering and concertation', which reinforce the complementarity of projects and the synergies derived from their work.

Cross-Programme Actions

- Home environments
- Multimodal and multisensorial dialogue modes
- Use of Geographic Information
- Towards dependable and survivable systems and infrastructures
- Smart cards
- Next generation networks
- Socio-economic analysis and indicators for the information society
- eLearning for European youth in a digital age
- Grid test beds, deployment and technologies
- Next generation micro- and nano-technologies
- Regional and sectoral pilot actions and demonstrations for the digital economy
- Application services provision
- Advanced signal processing systems and applications

gramme also provided 'testbeds' to help companies verify, demonstrate and test their technology with users, and invented two new programme structures: Domains, which brought together organisations working in a specific defined technical area; and vertically integrated Chains, linking enabling technologies to end applications.

■ **Esprit (Information Technologies):** With a budget of over ECU 1.9 billion, Information Technologies (Esprit) was the largest single research programme within the Fourth Framework Programme. It was dominated by four generic research domains (from long-

term research to software technologies), and another four business-oriented clusters: microprocessors, high-performance computing and networking, technologies for business processes and integration in manufacturing. There were also a wide variety of trial applications, demonstration projects, actions to stimulate the take up of project results by industry, training activities, studies of best practices, and much more.

■ **TAP (Telematics Applications Programme):** While Advanced Communications and Technology Services (ACTS) concentrated on the communication

technologies underpinning the information society, the ECU 843 million Telematics Application Programme focused on adapting current and emerging technologies into useful, user-friendly and cost-effective applications for companies, institutions and citizens. It focused on applying telematics to public services (administrations, transport), knowledge (research, libraries, education and training), improving employment and quality of life and a range of generic telematics technologies, such as language and information engineering.

Systems and Services for the Citizen



An increasingly broad cross-section of society is coming to depend more and more on information and knowledge-based systems, tools and services.

Information and communication technologies are permeating every aspect of our everyday lives. Doctors are finding that the computerisation of medical infor-

mation and health records helps them to provide a better service for their patients, while advanced technologies are making cars safer and less polluting. New information systems are shedding new light on environmental change, whether it be a city's air pollution or deforestation in the tropics, while the World-Wide Web is being increasingly used in the interest of more open, democratic government. Hence this key action, which aims to provide a wide range of European citizens with easier access to high quality, easy-to-use systems and services which improve their overall quality of life. Apart from the technological priorities set out below, the key action will also address issues of concern to the typical user, such as the security and privacy of information and socio-economic and ethical aspects.

Administrations

- Intelligent environment for public sector workers at all levels
- Best practice and trials in administration systems

distance- and language-independent, multilingual, personalised, intelligent and multi-functional multimedia systems and services; virtual fora ...

Environment

- Best practice and trials in environment management

intelligent information systems, environmental data fusion, data mining and modelling, satellite imagery, remote sensing, sensor systems, communication networks ...

Persons with special needs, including the disabled and elderly

- Intelligent assistive systems for social inclusion

participatory design methods, multi-modal terminals and universal interfaces, communication tools, mobility support devices, robotics control systems, multimedia applications, new methods of service delivery ...

Case Study E S P R I T

Fashion Statement



Web applications can completely transform the way companies manage their internal operations as well as bringing them closer to their customers. Around 70% of the information flow at Italian clothing specialist CAL now uses electronic mail and Internet technologies, and the proportion is still growing.

Initially a clothing wholesaler, CAL expanded into design and manufacture in the early 1980s and is now a leader in high-quality sports and functional leisurewear. It has four eastern European production plants and a worldwide distribution network serving 1,200 independent specialist stores. However by 1996, its paper-based information system had become completely inadequate. The clothing business is driven by rapidly-changing fashions. Like its competitors, CAL launches two new collections a year. Each is designed, tested and refined over an 18-month period before it reaches the shops. The

Health

- Intelligent environment for citizen centred health management
- Intelligent collaborative environments supporting continuity of care
- Best practice and trials in e-Health

non-invasive diagnosis and therapy, intelligent medical assistants and personal medical advisors, advanced imaging, telemedicine, virtual hospitals, electronic health records and data objects, information systems for health education and awareness ...

Transport and Tourism

- Intelligent transport systems
- Integrated vehicle infrastructure systems
- Ambient intelligence based application systems for mobile users and travel/tourism business
- Take-up in transport and tourism systems

terrestrial and satellite communication and positioning, tele-payment, logistics management, traffic simulation and prediction, large-scale event and crisis management, vision enhancement, obstacle detection, crash-avoidance, personalised multimedia information ...

Key Action 2

New Methods of Work and Electronic Commerce

New information technologies will play an increasingly central role in our working lives in the years ahead. Small and Medium-sized enterprises (SMEs) are especially dependent on the latest technologies to help their employees get the most from their work in an efficient, cost-effective way.

This key action is designed to both give workers and enterprises a competitive edge and to improve the quality of everyone's working life. It embraces technologies and issues as diverse as teleworking, the virtual company, logistics management and trading goods over the Internet.

It aims 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.



Flexible, mobile and remote working methods and tools

- Intelligent workplaces for all
- Smart organisations

telework, networked co-operative working, mobile working, simulation- and virtual-reality-based methods, integrating new or re-engineered work methods, agile, extended, virtual enterprises, benchmarking and scenario planning, human resources and training; usability and ergonomics, workplace safety ...

speed and flow of information between the designers and the fabric suppliers, production managers, distributors, and retail stores has a direct impact on competitiveness.

Early feedback on new designs would help CAL match its offering to the needs of the market. Giving distributors and stores immediate access to accurate information about the technical specifications, price and availability of each garment would enable them to market the clothes more effectively.

A printed catalogue could not show all the different combinations of style, colour and size – and was always out of date.

Establishing a company website convinced CAL that a multimedia communications and data-management application was essential. A suitable system did not exist but support from the Information Technologies (Esprit) programme enabled the company to build the system itself. The 18-month project⁽¹⁾ was launched at the beginning of 1997 with CAL's Internet Service Provider, Onion, as technology supplier, and its Austrian distributor, Sportfreizeit, as end-user.

The technical challenge was to incorporate highly structured product and sales data with unstructured information such as dis-

tributors' requests and suggestions in a single easy-to-use application. A multimedia format was needed to show garments in full colour. And it had to be Web-based, so that design changes would be available immediately, anywhere in the world.

The resulting system allows CAL to give its distributors a detailed preview of forthcoming collections four months earlier than in the past. Sales are up, and stock levels have been reduced.

(1) ELEGANT, Esprit project 24047.

Management systems for suppliers and consumers

■ Dynamic value constellations

life-cycle support, design, maintenance, logistics and distribution management, quality control, customer interaction, mass customisation, packaging and trading, ordering, billing and payment, accounting and taxation, public and private procurement, decision support and planning, virtual and real marketplace management, on-line business information, protecting consumers' rights ...

Information and network security and other confidence-building technologies

- Trust in information infrastructures
- Enhancing security in electronic transactions

electronic signatures, certification and authentication techniques, representing product data, smart-cards, electronic commerce infrastructures, meaningful management of vast amounts of data ...

Spanning the key action

- Socio-economic analysis
- Knowledge management
- Mobile & ubiquitous e-Work & e-Commerce
- Exploratory high risk/long term Research
- High impact take up & dissemination
- Large scale demonstrators

Key Action 3

Multimedia Content and Tools



In the Information Society, the relevant unit of value is knowledge.

This key action concerns first and foremost the ways in which we interact with knowledge and information. It will bring new technologies and tools to support the pursuit of life-long learning, to stimulate creativ-

ity, to protect and exploit Europe's linguistic and cultural diversity and to improve the functionality of a wide range of knowledge-based products and services.

It will therefore involve an enormous variety of groups - from scientists working at the frontiers of knowledge theory to teachers in local schools; from museum keepers and archivists to linguists and human-machine software engineers.

There is room in this key action for both generic and applications-oriented research. Much needs to be done to improve the way computers understand and process language and represent information, for example, while there is still enormous scope for applying multimedia technologies to the worlds of publishing, audiovisual, culture and education and training.

Case Study ACTS

Maintaining Digital Quality

Digital television will be the vehicle for many of the high-quality information and entertainment services central to the Information Society. An ACTS project has achieved a breakthrough which will enable broadcasters to handle much more digital programming with only minor modification to existing networks and equipment.

The project focused on enabling television companies to use compressed video and audio right through the production and broadcast chain. Highly efficient MPEG-2 compression is already widely used to reduce demand on costly bandwidth and server storage capacity. But MPEG bit-streams are incompatible with existing equipment such as editing suites and continuity desks, signals must be decoded for processing and then recoded at each stage.



Spanning the key action

- x-Content futures
- Competence building
- KA III specific support measures

high-payoff breakthrough research; acquisition of multimedia skills; access to competence, technologies and services ...

Human language technologies

- Multilingual Web
- Natural and multilingual interactivity

multi-language design, authoring and publishing; automated translation; multilingual generation and delivery; speech recognition and synthesis; interpersonal and group communication; interaction with personal IC appliances ...

Information access, filtering, analysis and handling

- Semantic Web technologies

content coding and structuring; semantic attributes for multimedia indexing and categorization; knowledge discovery and filtering; visualisation of complex information ...

Education and training

- Self learning for work
- e-Learning futures

personal learning models; soft skills and informal learning; virtual communities; personal intellectual capital; next-generation e-Learning systems and services; multidisciplinary approach (technology, and cognitive, social and pedagogical sciences) ...

Interactive publishing, digital content and cultural heritage

- Publishing digital content
- Heritage for all
- Next generation digital collections

interactive authoring, editing and delivery; content management tools; e-publishing business models and workflow; creating local heritage; digitisation and archiving; library applications; adaptive scientific and cultural content; virtual heritage...

Key Action 4

Essential Technologies and Infrastructures

The Information Society is based around a set of core technologies, systems and infrastructures.

This key action focuses on these building blocks, promoting their development and introduction across Europe as well as broadening their field of application. It addresses the convergence of information processing, communications and networking technologies and infrastructures. It will therefore focus on technologies and infrastructures which are common to several applications.

Every recoding, however, causes a loss of quality. The compressed signal contains information about the decisions used to encode it, information which is normally lost during decoding. When the signal is recoded, the coding decisions are influenced by the errors introduced by the previous coding, and therefore differ from those made by the previous coder. With several generations of decoding and recoding, the errors in the signal get progressively greater and the signal quality deteriorates. ATLANTIC MOLE decoding – developed through an ACTS project⁽¹⁾ – retains the infor-

mation, hiding it in the non-compressed video and audio signal. An ATLANTIC MOLE coder can then recode the signal using the original decisions, re-creating the previously coded version of the signal and avoiding a loss of quality. The technology will allow seamless, transparent switching and editing of compressed signals. It is close to gaining approval as a world-wide industry standard and should then be very widely taken up. In the short term, special decoder and recoder units will give existing equipment the ability to handle MPEG bitstreams without restriction or

loss of quality. These offer significant savings for a relatively small outlay. Prototype hardware has generated huge interest. Equipment manufacturers anticipate a large demand with many requests to license the technology. Typical is a journalist's workstation, permitting near-real-time editing of MPEG-2 video on a low-cost machine. This reduces post-production costs, leaving television stations more to spend on programmes.

(1) Advanced Communications Technologies and Services project AC078.

Essential Technologies and Infrastructures

Peripherals, sub-systems and microsystems

- Subsystems
- Microsystems
- Subsystems and microsystems - Take-up measures

content capture, storage and manipulation, advanced mass storage methods, optical-microelectronic interconnects, electro-optical circuit boards ...

Work spanning key action IV

- Design of networked embedded systems
- Multiservice networks - middleware for seamless access to services
- Development of skills in micro- and opto-electronics

Microelectronics - optoelectronics

- Microelectronics design and test & application specific microelectronics
- Microelectronics technologies: processes, equipment and devices
- Optical and opto-electronic technologies
- Industrial microelectronics technologies - Take-up measures

packaging and interconnect technology, hostile environment resistance, macrocells and support tools, new optical sources, optoelectronic integrated circuits, active and passive optical components, optical devices at new wavelengths, optoelectronic devices based on organic compounds ...

Real-time and large-scale simulation and visualisation technologies

- Simulation and visualisation
- Mixed realities and new imaging frontiers

visualisation and virtual reality, simulation validation, integrating simulation into industrial and business processes, interoperability of heterogeneous software and hardware, autonomous agents, avatars ...

Interfaces making use of the various senses

- Advanced displays and sensors
- Interfaces and buffers for seamless end to end services

image and auditory scene processing, understanding and synthesis, augmented and virtual reality, low-cost and low-power interfaces, new flexible materials ...

Technologies and engineering for software, systems and services

- Software architecture
- Functionality models and building blocks for end-user services
- Free software development: towards critical mass

dependable, survivable and scalable systems, integrating heterogeneous platforms and networks, knowledge-based methods and tools ...

Computing, communications and networks

- Real time distributed systems
- Network and services interoperability, interworking and management
- Terabit optical networks
- Computing, communications and networks - Take-up measures

sharing and interactive use of remote resources, concurrent activities in geographically dispersed locations, real-time handling of large volumes of data, embedded systems, terabit optical transmission, end-to-end optical transparency, all-optical networks, service-independent architectures and systems, intelligent network services, service management models ...

Case Study Telematics Applications

Information in Your Pocket



A Telematics Applications project has demonstrated the first step towards a pan-European travel information service, offering travellers up-to-date, personalised travel and traffic information not just at the planning stage, but at any point on their journey.

Manufacturers have already combined the mobile phone and the personal data assistant (PDA) into a single unit capable of accessing the Internet on the move. At the same time, more and more information about timetables, weather and road conditions is available on-line over the Web. A union is inevitable. The Promise project⁽¹⁾ demonstrated the power of such services, using a hand-held terminal, at test sites in six European countries. The benefits are clear – direct access to real-time traffic

Mobile and personal communications and systems, including satellite systems and services

- Reconfigurable radio systems and networks
- Terrestrial wireless systems and networks
- Satellite systems and services

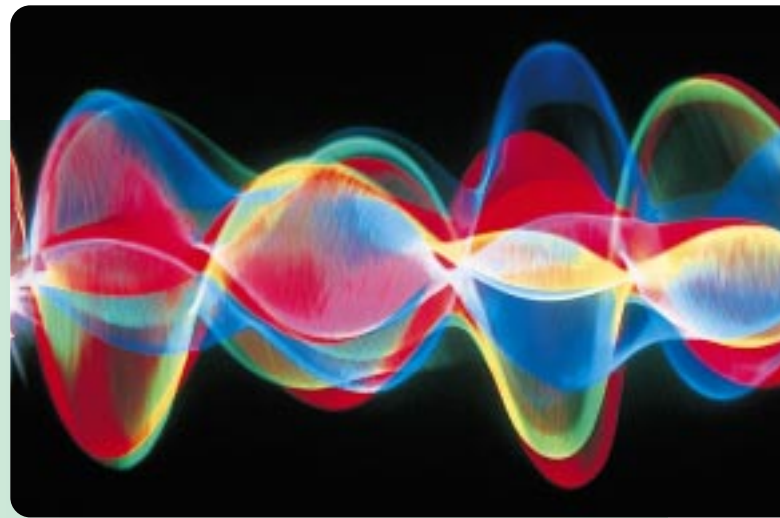
new spectrum frontiers, maximising spectral efficiency and network performance, full coverage through multi-layer, multi-dimension cell architectures, software-reconfigurable networks, systems and terminals, miniaturised, low-cost, low-power terminals ...

Generic Research and Infrastructures

Future and Emerging Technologies

The Information Society Technologies Programme is also supporting longer-term, higher-risk research.

Europe has always had an enviable record for scientific excellence - the problem has been translating that excellence into industrial results. The key actions tackle that problem by focusing on areas where the benefits to Europe's competitiveness and society are clear. Basic scientific excellence, however, must never be ignored. Even more so in the intensely competitive Information Society, where shrinking product development cycles mean that yesterday's 'blue sky' research is tomorrow's essential technology. Hence the Future and Emerging Technologies (FET) arm of the IST Programme supports longer-term and high risk research, nurturing the new research ideas that may become the mainstream topics of the future. An 'open domain', where simplified proposals can be presented in a 'bottom-up' fashion at any time, is complemented with a series of highly focused pro-active initiatives in strategic areas. The Proactive Initiatives consist of a set of autonomous but closely co-ordinated and networked projects. These may be reinforced with some shared research facilities if this provides an economy of scale. Proactive Initiatives have already



been launched in the areas of nanotechnology information devices, quantum computing and communications, and the 'disappearing computer'. The priorities for 2001 are to reinforce the nanotechnology initiative through a follow-up call on molecular computing, and to launch two new initiatives:

- life-like perception systems
- global computing.

information will, for instance, enable drivers to avoid congested areas by choosing alternative routes. But wider advantages are anticipated. The ability of individuals to optimise their journeys is expected to improve the overall efficiency with which transport infrastructures are used – reducing traffic congestion and increasing use of public transport.

The prospect of substantial economic and environmental savings has encouraged six municipal authorities to participate, alongside some of Europe's industrial leaders in the fields of telecommunications, car manu-

facture and geographical information systems. Validation tests, followed by full demonstrations, have taken place in Finland, Sweden, the United Kingdom, the Netherlands, France and Germany. Content providers – such as airlines, bus and train companies, road-users' associations and city authorities – make frequently updated information available to a value-added service provider. The service provider presents this data via a simple menu on the Promise homepage – and, as the service develops in the future, will be responsible for integrating it, and for adding interactive

and multilingual functionality. Finally, a telecommunications company provides Internet access. Currently, Promise uses the GSM network, but will be able to make use of faster systems without modification, as these become available.

Early feedback from test users has been encouraging – they are ready and willing to pay for a faster and more accurate service. Commercial services are expected to be launched in the near future.

(1) PeRsOnal Mobile traveller and traffic Information Service – Telomatics Applications Programme project TR1043.

Research Networking



State-of-the-art Internet-based applications, coupled with massive improvements in transmission capacity, will reinforce links between Europe's national research, education and training networks.

The Internet was once the preserve of academics, and the academic and industrial world remains a significant driver of advanced networking technologies. By developing trans-European broadband interconnections between national research, education and training networks, the IST programme will both encourage the development of the next generation of these technologies and improve Europe's ability to pool its human, scientific and industrial resources. A second objective is to support the provision of experimental interconnection of testbeds for the integration of leading-edge, collaborative activities from all key actions in the programme.

European Testbeds

The most advanced Information Society research facilities across Europe will also be linked together, creating a powerful resource for research into the most advanced technologies.

These facilities are where Europe's top academic and industrial scientists develop and demonstrate the fruits of their research, so the interconnections themselves will be a series of advanced experiments. The result will be much more than a series of interesting exercises in hooking up advanced research labs, however. Linked together, these facilities will provide a practical basis for collaborative research efforts into areas as diverse as photonic networks, service configuration protocols or mobile broadband services. More importantly, it will create the infrastructure Europe needs to test highly advanced, high bandwidth applications and services, such as remote high-volume data visualisation, meta-computing or networked immersive virtual reality. It will also enable Europe to play a leading role in defining, standardising and validating the next generations of network protocols and other emerging broadband services.

The new economy - a challenge and an opportunity

Information society policy has undergone extensive change in recent years in recognition of the extent of the challenge and the opportunities which new technologies represent for governments and business. New information and communications technologies have the potential to impact extensively on the economy, providing new jobs, changing existing work patterns and stimulating growth. This impact has already been felt in other regions of the world, especially the US. The new Commission which arrived in summer 1999 quickly realised that, in order to fully benefit from the potential of this so called 'new economy', a coherent and broadbased European strategy was required.

eEurope - An Information Society for all

This is why the European Commission launched the eEurope initiative in December 1999. This initiative, which provides a comprehensive strategy to bring Europe into the digital age, was welcomed by the Lisbon and Feira European Councils. At the latter, the eEurope 2002 Action Plan was endorsed, providing an extensive roadmap of all necessary actions to achieve the objectives of eEurope by 2002. The Action Plan focuses on three main objectives:

1. A cheaper, faster and secure Internet
2. Investing in people and skills
3. Stimulate the use of the Internet

Altogether there are eleven key areas for action under these three objectives addressing all aspects of Europe's Internet strategy for the coming two years.

The link with research

Ensuring that these objectives are reflected in the work of the IST programme is an important element of the Action Plan. In many key areas of eEurope research funding has the potential to support positive change and quicker dissemination. Already the IST programme is providing extensive support to the objectives of eEurope in areas like smart cards, more secure networks, health on-line, intelligent transport systems and educational multimedia tools. This successful integration of long term research with short term political strategy has shown that synergies between the two can be successfully achieved in spite of their different time horizons.

A simpler and more liberal Telecommunications framework

Another key element of eEurope is the revision of the current telecommunications regulations. The liberalisation of the Telecom sector was one of the major successes of the Commission in recent years, however, the resulting framework was complex. In addition, the changing nature of the telecommunications environment meant that the framework, successful though it was in delivering a liberalised market, quickly became out of date. The Commission proposals for the revised framework would simplify the situation extensively. eEurope has already stimulated the rapid adoption of this new framework with successful agreement on the unbundling of the local loop by the end of 2000 achieved in Lisbon.

Other key aspects of policy

The new economy requires a legal framework and common standards. Much progress has been made in ensuring that European business have legal certainty in relation to issues like e-commerce, data protection in on-line interactions, use and export of encryption technology and the use of new techniques like e-signatures or e-money. Stimulated by the momentum created by eEurope, the Commission, in co-operation with the Council and Parliament has made extensive progress in ensuring that an appropriate legal framework is in place to support the broader use of the Internet for business. In addition the development of European standards to ensure interoperability is progressively showing results on the marketplace. eEurope has put particular emphasis on the need for common standards in the smartcards area, but there are many other standardisation initiatives which contribute to the overall aim.



What is the Fifth Framework Programme?

The User-friendly Information Society, or IST, programme is one of seven interrelated research programmes run by the European Commission over the period 1998-2002. Together, these programmes form the Fifth Framework Programme for Research and Technological Development.

The future competitiveness of Europe's companies, the health and well-being of its population and the security of its environment depend on many factors. Underlying them all, however, is the requirement for world-class research and development to provide the knowledge and technologies that European industry and society need. With a budget of just under 15 billion euros, the Fifth Framework Programme will help generate that knowledge by focusing Europe's considerable research resources on problems which are better tackled at a European level. Projects must include partners from at least two EU Member States, or from one Member State and one of the 16 Associated States⁽¹⁾. Organisations from some 30 other countries also have the right to participate at their own expense, with many able to apply for financial support from other EC programmes dedicated to their region.

Four Thematic Programmes

The Fifth Framework Programme is composed of seven programmes, of which four - the "thematic" programmes - fund R&D to solve problems in four strategically vital areas:

- **Quality of life and management of living resources:** improving our health, developing "bio-industries" and making the use of Europe's natural resources more sustainable.
- **User-friendly information society:** developing information and communication technologies for European industry and society.
- **Competitive and sustainable growth:** tackling the key challenges facing European industry - sustainable transport, efficient and quality-based production, materials for the 21st century, measurement for quality control and more.
- **Energy, environment and sustainable development:** making Europe's energy system, industry and society "eco-efficient", helping solve global environmental challenges, and reconciling economic development with environmental sustainability.

These programmes focus most of their resources on a limited number of **key actions**, each concentrating on a specific set of social and economic problems and bringing together academia, industry, users, and political and economic decision-makers. In addition, the programmes also fund more generic, longer-term research and support the optimal use and development of Europe's scientific infrastructure.

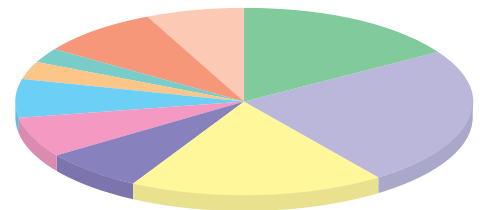
Three Horizontal Programmes

The thematic programmes are complemented by three "horizontal" programmes, which address issues common to all areas of science and technology.

- **Confirming the international role of Community research:** promoting cooperative R&D between EU companies and research institutes and Europe's partners throughout the world.
- **Promotion of innovation and encouragement of participation of SMEs:** strengthening Europe's "innovation infrastructure" and helping companies, particularly SMEs, get involved in and benefit from research.
- **Improving human research potential and the socio-economic knowledge base:** ensuring Europe makes the most of its human and scientific resources through research training, exchanges of scientists and research best practices, and linking research to society's needs.

The Fifth Framework Programme also partly funds the **Joint Research Centre (JRC)**, which provides the EC with independent scientific and technical support for conceiving, implementing and monitoring EU policies.

Budget Breakdown



Thematic programmes

Quality of Life and Management of Living Resources	€2 413m
User-friendly Information Society	€3 600m
Competitive and Sustainable Growth	€2 705m

Energy, Environment and Sustainable Development

1. Environment and Sustainable Development	€1 083m
2. Energy	€1 042m
3. Nuclear Energy	€979m

Horizontal programmes

Confirming the International Role of Community Research	€475m
Promotion of Innovation, Encouragement of SMEs	€363m
Improving Human Research Potential	€1 280m

Joint Research Centre

Joint Research Centre	€1 020m
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TOTAL

€14 960m

(1) As Associated States contribute to the Fifth Framework budget, their organisations may receive Community support for their project participation, on the same basis as EU Member States. They comprise 11 countries preparing to join the EU (Bulgaria, Republic of Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia and Slovenia), the EEA countries (Iceland, Norway and Liechtenstein) and Israel. Switzerland will associate during the Fifth Framework Programme - until then the Swiss authorities supply equivalent funding.

Further Information

Further information on the Information Society Technologies programme can be obtained from:

**Information Society Technologies
Information Desk:**
Tel. +32 2 296 85 96
Fax. +32 2 296 83 88
e-mail: ist@cec.eu.int
<http://www.cordis.lu/ist/>

Information Online

The above home page is hosted by CORDIS, the Community R&D Information Service. The CORDIS home page (<http://www.cordis.lu/>) is a practical, integrated source of information on European research and innovation, providing:

- **home pages** for all research programmes;
- the information needed to prepare and submit **proposals** for research projects;
- information on **opportunities for SMEs** and services dedicated to promoting innovation;
- **databases** on R&D news, partners, projects, research results, programmes, publications, events and much more;
- **"partner search"** services to help organisations locate partners for project proposals;
- an **update service (RAPIDUS)** which e-mails you information matching your own criteria, from calls for proposals in a particular area to profiles of organisations looking for research partners; and much more.

General information on the Fifth Framework Programme is also available on the home page of Research DG (<http://europa.eu.int/comm/research>).

Networking across Europe

CORDIS also provides further information on the Europe-wide networks dedicated to bringing European research and innovation to your region:

- **the National Contact Points network** provides local, personal access to information about the specific programmes, and support for organisations which wish to participate:

<http://www.cordis.lu/fp5/src/ncps.htm>

- a separate network exists to support SMEs:

<http://www.cordis.lu/sme/src/sme-ncps.htm>

- **the network of Innovation Relay Centres (IRCs)** promotes innovation, encourages the exchange of research results across Europe, and provides advice, consulting and training support - mainly to SMEs.

European Commission, Enterprise DG

Tel. +352 4301 38070

Fax. +352 4301 34009

innovation@cec.eu.int

<http://www.cordis.lu/irc/home.html>

Publications

A range of magazines is available from the Research DG Communications Unit and the Innovation Help Desk (see below - the ★ or ☆ tells you which) to keep researchers and industry regularly informed on European research and innovation.

★ **RTD Info:** a regular update on programme activities, calls and events, as well as information on research results - quarterly, in English, French and German.

☆ **Innovation & Technology Transfer:** everything the EU does in research, with an emphasis on innovation and technology transfer - bimonthly, in English, French, German, Italian and Spanish.

☆ **Euroabstracts:** provides a round-up of new publications on research and innovation from around Europe - bimonthly, in English only.

☆ **CORDIS Focus:** the latest news on EU research and research-related programmes and policies from the CORDIS News service - fortnightly, in English, French, German, Italian and Spanish.

The Research DG's Communications Unit can also provide the following general brochures:

★ **The Fifth Framework Programme:** a thorough, 75-page introduction to the programmes and their key actions, as well as opportunities for involvement.

★ **Programme Brochures:** this brochure is one of seven. The other brochures cover:

- Quality of life and management of living resources
- Competitive and sustainable growth
- Energy, environment and sustainable development
- Confirming the international role of community research
- Innovation and participation of SMEs
- Improving human research potential and the socio-economic knowledge base

★ **Research DG Communication Unit**

Fax: +32 2 295 82 20

E-mail: research@cec.eu.int

Internet: <http://europa.eu.int/comm/research>

☆ **Innovation Helpdesk, Enterprise DG**

Fax: +352 4301 32084

E-mail: innovation@cec.eu.int

Internet: <http://www.cordis.lu/innovation-smes/src/help-inn.htm>

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