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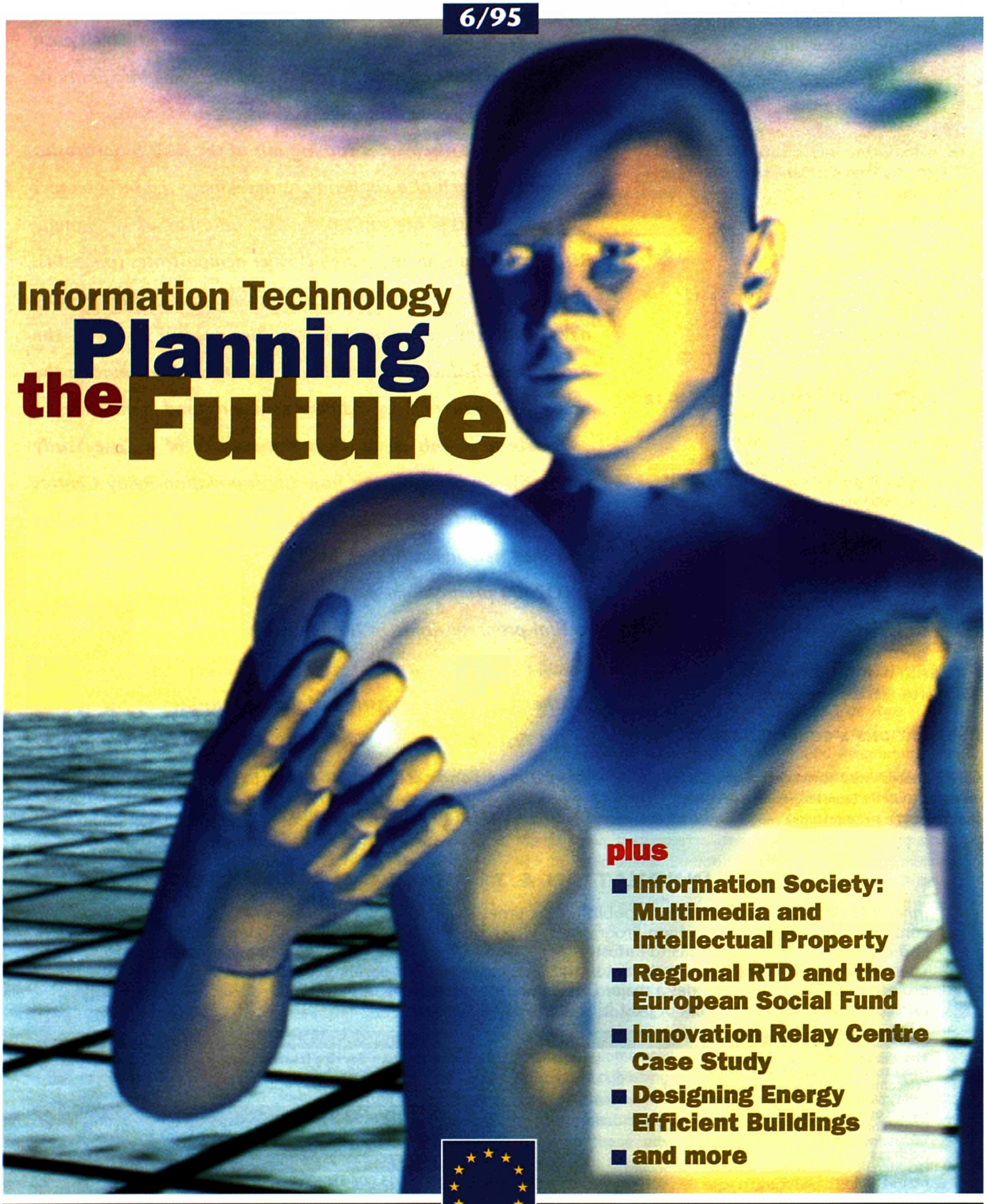

Information Technology
Planning the Future

plus

- **Information Society: Multimedia and Intellectual Property**
- **Regional RTD and the European Social Fund**
- **Innovation Relay Centre Case Study**
- **Designing Energy Efficient Buildings**
- **and more**

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INNOVATION PROGRAMME • NOVEMBER 1995

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Source: Mental Images/BUF Compagnie

Esprit - creating another kind of computer bug (see Dossier, page 14).

Cover photo: 'Virtual Human' created with software developed under the Esprit Programme (see Dossier). (Source: RTL Productions)

Innovating with IT

IT - information technology - continues to develop at a rate *that must one day outstrip previous technological revolutions. Almost every day, it seems, new ideas are generated which push back the horizons of what IT might achieve. Some imaginations are enthused by the possibilities - others are made anxious.*

Applying the discoveries coming out of the R&D laboratories *becomes as much of a challenge as developing the technologies themselves. This is not lost on the EU's Information Technology R&D Programme, as this issue's Dossier demonstrates (page 14). Based on the fact that Europe must make a success of the many new social and economic opportunities opened up by IT, the Programme includes a portfolio of measures to encourage the best exploitation of IT by industry, commerce and in daily life.*

Elsewhere in this issue, IT is the subject of a Case Study *(page 8), which illustrates how the Innovation Relay Centres can help transfer new IT applications across national borders and into new industries. In addition, articles on the EU's new INFO2000 programme, multimedia and the protection of intellectual property rights in the Information Society begin on the facing page.*

Other topics in this issue include a round-up of the results *of the first Call for Proposals under the 1994-1998 Framework Programme (page 21) and the latest news on the implementation of the Innovation Programme (page 8).* ■

ABOUT INNOVATION & TECHNOLOGY TRANSFER

Innovation & Technology Transfer is published six times a year in English, French and German by the European Commission's Innovation Programme, which aims to strengthen Europe's innovation infrastructure and disseminate research results to industry.
The emphasis is on timely news relevant to these objectives and in-depth 'Case Studies' of successful projects. Each issue also includes a major Dossier on one topic. Subscription is free - please fill out the request form on the back page and fax or post it back to DG XIII/D-2.

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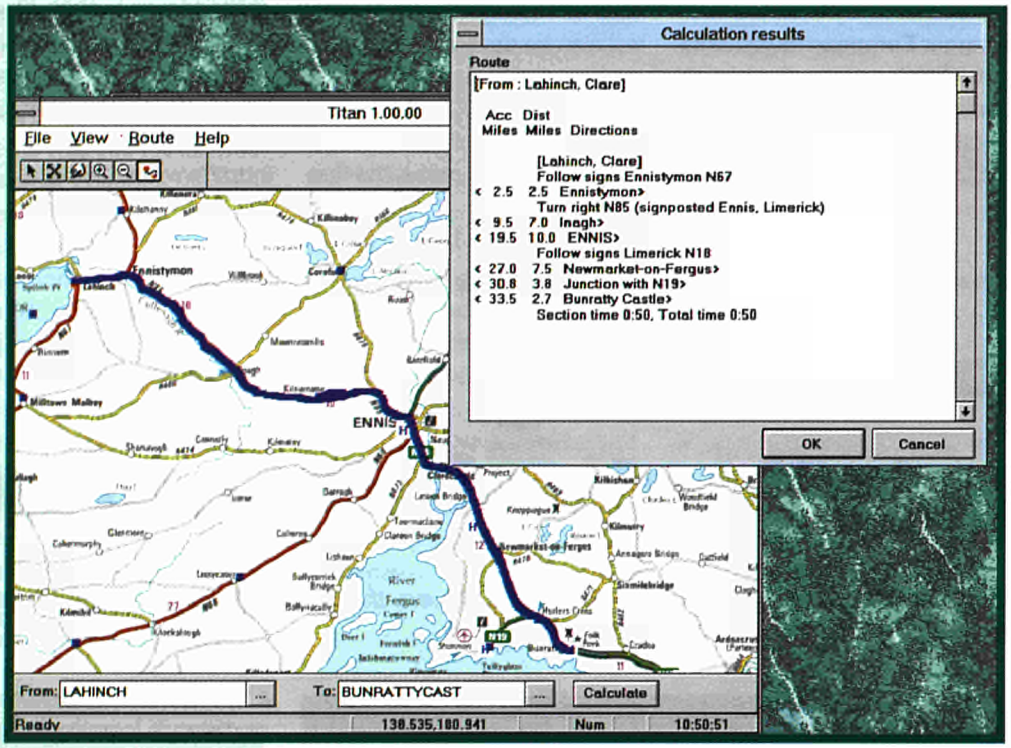
► INFORMATION SOCIETY

Focusing on Multimedia Content

The EC's new INFO2000 Programme was introduced at 'Multimedia Content for the Information Society', part of a joint EC/Austrian Information Day held in September in Linz.



One of the eight Geographic Information System (GIS) projects funded in 1993 by IMPACT II, the first edition of the Tourist Information and Travel Assistance Network (TITAN) combines a route-finder with information about accommodation, restaurants and places of interest in Britain and Ireland.

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The two-day event was co-organised by DG XIII/E of the EC and the Austrian government, and covered developments in the information society both at a European and Austrian level.

One of the main subjects of discussions was content. High-quality, multimedia content is as vital to the information society as rolling stock is to the railways - in both cases, there's no point having one without the other.

The European content industry is already very significant. It employs more than two million Europeans and had a 1994 turnover of 150 billion ECU. Information services are vital to improving Europe's industrial competitiveness, as information increasingly becomes a major factor in improving efficiency and productivity. The resulting improvement to the free flow of information will also support Europe's democracies and help develop the Single Market. Lastly, the industry is the key to maintaining Europe's cultural and linguistic diversity.

This diversity is itself one of the major assets which has kept the traditional European content industry strong. Other advantages include its overall market size and population, the presence of world-ranking information and media conglomerates, a long-established publishing tradition, a rich information content base and large established markets.

Despite these advantages, however, the European industry is lagging behind other countries in using advanced information content, such as multimedia. With the information society becoming a larger factor in all aspects of our lives, the industry's survival, both in its own domestic market and on a global scale, is at stake. Actions are needed at both national and European level if Europe is to exploit its advantages and confront growing global competition.

INFO2000: Stimulating Achievement

The EC has been working for a favourable environment for the European information industry for many years. Activities include liberalising telecommunications infrastructures and services, developing new technologies and creating a clear and stable legal framework (see page 4).

The EC's new 100 MECU INFO2000 Programme (1996-1999) was launched to complement these activities, and focuses on the transition from print to electronic publishing and the emerging interactive multimedia information services. Building on the results of IMPACT II and other relevant initiatives, INFO2000 aims to stimulate Europe's multimedia information industry - comprised mainly of small and often new enterprises - to recognise and exploit these new business opportunities. It will also contribute to the preservation and exploitation of Europe's cultural heritage and prevent the emergence of a two-tier society composed of the "information rich" and "information poor".

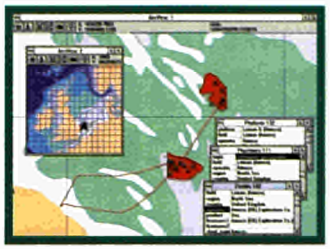
●●● INFO2000's three action lines will:

■ **stimulate demand and raise awareness:** various actions, including the establishment of a pan-European network of around 50 Awareness Partners, will make the market for multimedia information more transparent and help companies, particularly SMEs, make efficient use of it. The creation of European user groups will also be encouraged.

■ **exploit Europe's public sector information:** the information owned by the public sector could be valuable raw material for many information service providers. Policies will be developed to facilitate access to and exploit this data (under reasonable conditions), directories of these information resources will be linked up, inventories will be created and so on.

■ **trigger European multimedia potential:** the production of high quality multimedia content will be stimulated in three areas: exploiting Europe's cultural heritage, business services for SMEs and geographic information. Improved procedures for trading copyright licenses across Europe will also be developed, and the exchange of best practices supported.

As *Innovation & Technology Transfer* went to press, the first Call for Proposals - aiming to set up the network of National Awareness Partners - was anticipated for early 1996. More details on INFO 2000 can be downloaded from I'M-Europe, DG XIII/E's World Wide Web Server on the Internet (http://www.echo.lu/). □

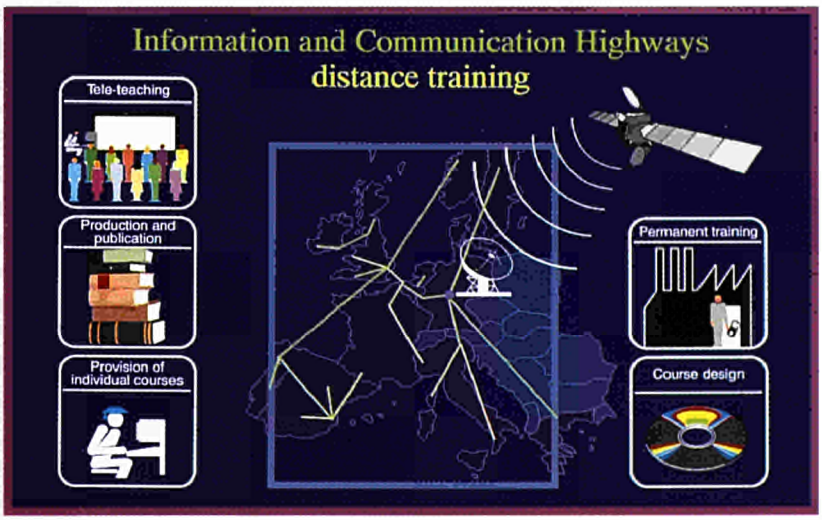


Other GIS projects developed under IMPACT II include the map-supported Area Information Service (left), the European Seabed Resource Geographical Information Service (middle) and a GIS for Elementary Environmental Education (right).

► INFORMATION SOCIETY

Protecting Intellectual Property

An EC Green Paper is stimulating debate on the protection of copyright and related rights in the information society.



New information society services such as distance training will only be launched by investors if they are sure that the right legislative framework is in place.

Adopted on July 19, the Green Paper[1] examines a range of issues arising from the impact of new technologies and the information society on copyright and related rights (e.g., of performers, phonograph producers and broadcasters).

Protecting these rights was one of the priorities identified at the G7 Conference on the information society[2]. This is because the successful launch of the information society requires substantial investment in infrastructure. This investment, however, will not happen if investors are not convinced that there will be a 'critical mass' of services, such as distance learning, entertainment and tele-banking.

Investment in these services depends in turn on a legislative framework that guarantees the free movement of these services. If the rules regarding these rights are not harmonised, the new services will not be able to circulate freely, crippling the information society.

In addition, these rights are fundamental to protecting Europe's cultural heritage, which is a 'gold mine' of material for information society products. A balance must be found between protecting cultural heritage and its economically viable exploitation if the information society and European culture are to develop in harmony and reinforce each other.

The EC has already begun taking steps to ensure a 'Single

Market' for information society services. Recent directives on the protection of personal data and databases were major steps forward, particularly as many of the new services will be offered from database sources. However, these Directives do not cover all the issues. The Green Paper aims to fill the gap. It does not, however, cover patents, trademarks, design rights, 'know-how' and business secrets.

New Relationships

As the Green Paper points out, the existing legal environment will have to be modified to reflect the way that the information society changes the relationships between certain groups of people:

- the authors of literary and artistic work, databases and computer programs;
- holders of related rights: performers, phonogram and cinema producers, broadcasters;
- publishers, producers of live performances, cinema distributors, etc.;
- the manufacturers of the material to be connected to the network, and the network operators, who have a large measure of responsibility for transmission;
- private, professional and institutional users.

The latter two groups are new to the field. If they do play a decisive role in the future, it will be because of the information society. The role played by the other groups will also change, while the work of the 'collecting societies' - which supervise the use of protected works and extract royalties from the users for the rightholders - will need to be rethought.

The Green Paper observes that the new technologies will not revolutionise certain basic concepts, such as what constitutes a 'work' and who is an 'author'. However the concept of 'originality' - accepted everywhere as a condition of the right to protection - may develop in a less personal, more relative direction. While there may not be any need to create a new category of rightholder, the number of rightholders may increase due to the increasing number of 'group efforts'.

The main consequence of the information society will be in the exploitation of these works, which will all be in digital form. This means that they can be endlessly copied without loss of quality, transmitted at the speed of light and manipulated by anyone with a computer. As multimedia works are often composed of borrowings from existing material, this raises serious problems for rightholders.

Digital piracy may require new techniques to limit copying, and the hitherto accepted criterion of 'strictly private use' may become impossible to apply. However, digital technology should also produce new mechanisms to aid the supervision and identification of protected works.

The Green Paper goes on to deal with questions such as:

- does the EC need to make it necessary to obtain prior authorisation from rightholders before digitising their work?
- where is the borderline between 'communication to the public', which requires authorisation by the rightholder, and 'individual communication'?
- are new initiatives necessary regarding the management of rights in the multimedia age?
- is the industry ready to agree on new techniques for identifying and protecting digitised works?
- as manipulating works (e.g., colouring a black and white film) becomes easier, should moral rights be harmonised at an EU level?

Future Actions

Consultations between the EC and interested parties based on the Green Paper will finish soon, and will be reflected in EC legislative proposals planned for next year.

The danger of the Single Market fragmenting under the pressure of diverging national regulations in this area is real. The EC therefore also intends presenting a Communication on a mechanism which will ensure regulatory transparency concerning the information society in the EU. Lastly, two more Green Papers - one on the legal protection of encrypted signals, the other on commercial communications - will be issued soon. □

(1) 'Green Paper on Copyright and Related Rights in the Information Society'. COM (95) 382 final. Available from EUR-OP Sales Agents.
(2) See edition 3/95.

► TRAINING INITIATIVES

1996: Year of Lifelong Learning

1996 will be the European Year of Lifelong Learning. The aim is to raise awareness among Europeans concerning the concept of lifelong learning and to stimulate debate on the role of education and training on the eve of the 21st century. There will be a focus on the impact of the information society on education and training (educational software, telematics, etc.).

National Co-ordination Units (NCUs) are currently being established to serve as information points and to work with the Commission in granting financial support to projects.

These projects must promote:

- personal development, individual initiative, the integration of people into working life and society, the participation of individuals in the democratic decision-making process and their ability to adjust to economic, technological and social change;
- the importance of a high quality of general education, open to all without discrimination, and vocational training for all young people;
- co-operation between education and training institutions and the economic world, particularly SMEs;
- awareness of the importance of creating new opportunities for lifelong learning;
- parental awareness of the importance of educating and training children and young people, and of the role that the parents can play;
- a European dimension to initial and continuing training and raising awareness of the EU's activities in the field.

Target groups include education and training institutes, organisations for youth, women and the elderly, SMEs, governmental and political decision-makers, regional and local authorities, professional organisations, trade unions and others. EC support will include providing event organisers with communication tools, expert assistance and - in some instances - direct financial support. □

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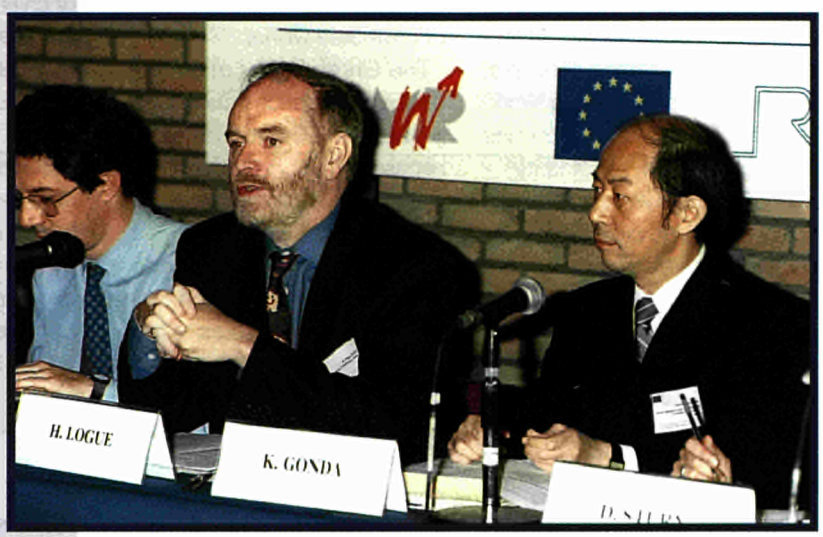
► CONFERENCE

Regional RTD and Innovation

'Managing Science and Technology in the Regions', a conference held last June in Belgium, surveyed the results of the EC's STRIDE Programme in promoting research and innovation in Europe's poorer regions.



Kinji Gonda (right) contributed the experiences of Japan's National Institute for Science and Technology Policy to the conference's first workshop.

STRIDE (Science and Technology for Regional Innovation and Development in Europe) aimed to strengthen the RTD and innovative capacity of Europe's Objective 1 and 2[(1)] regions. With a budget of 400 MECU from the EC's Structural Funds, it financed almost 1,000 projects between 1989-1994.

STRIDE projects fell into three broad categories:

- strengthening research facilities, including financing regional evaluations, improving RTD facilities, purchasing patents, etc.;
- promoting participation in international research programmes and networks;
- promoting links between research centres and industry.

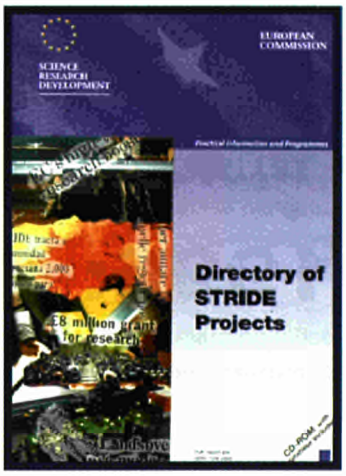
STRIDE's experiences in promoting and managing research and innovation provided the focus of much of the material presented at the conference, which was held in Brussels and Charleroi (Belgium) from June 8-10. Delegates came from around Europe, the USA, Japan and Southeast Asia to trade their experiences with STRIDE and national initiatives and analyse the latest studies on regional RTD policy.

Islands of Innovation

The conference demonstrated both the usefulness of STRIDE and the fact that, during the Programme's lifetime, the innovation model has been significantly revised.

The opening session included an overview of a recent STRIDE study into the RTD potential of Objective 1 regions, which demonstrated the enormous gulf in innovation capacity between the EU's core regions and peripheral areas:

- the vast majority of research activities within the EU are concentrated in a very small number of 'Islands of Innovation', distributed across Europe's traditional industrial core;
- up to 90% of the co-operative work is carried out within these Islands, and they account for 75% of public research funding;
- new 'horizontal' technologies will both help the core reinforce itself and marginalise the peripheries even more.



The 'Directory of STRIDE Projects' (EUR 16201). A CD-ROM version is also available.

(1) Objective 1 regions have a GDP per capita lower than 75% of the EU average. Objective 2 regions are affected by serious industrial decline.

As Tom Higgins of CIRCA, the Irish participant in a recent Innovation Programme study on evaluating regional innovation systems (see page 10), observed, the innovation process has never been satisfactorily modelled, and the difficulties faced by STRIDE and similar national programmes are not unique to Europe.

"In Japan," he pointed out, "a $26 billion investment in Tecnopolis regions has not so far produced any worthwhile differential in economic performance for the participating regions ... In the USA, despite more than 15 years of supporting lagging regions, the top ten States in R&D in 1975 are still the same today."

STRIDE, it was generally agreed, demonstrated the importance of RTD and innovation to regional development. It also focused attention on managing science, technology and innovation in firms, as distinct from promoting infrastructure projects. The result is a stronger emphasis on these themes in the 1994-1999 Community Support Frameworks (CSFs), which have a 4.6 billion ECU budget for Objective 1 regions alone.

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► TRAINING INITIATIVES

Experimental Training Projects

Following a Call for Proposals last year, the European Social Fund (ESF) is funding a total of 32 projects designed to improve vocational training initiatives.

The projects will explore fresh avenues in the field of training and employment policy and help develop a new approach for the EC's activities in these fields. Their emphasis - vocational training - is a direct result from the EC's Essen Summit in December 1994, where the importance of promoting investment in vocational training to improve the employment situation was explicitly recognised.

The projects involve a wide variety of new ideas, and include distance learning in Greece, a technology and consultancy centre for women in eastern Germany and a 'virtual' training project on machine tools in north-east England. The ESF will contribute about 18 MECU to the projects, funding up to 75% of project costs in Objective 1 areas and 50% in other areas.

The projects are designed to develop and test new thinking about the content, methods and organisation of vocational training and the promotion of employment. The lessons learnt will be applicable to both the ESF's 'mainstream' projects and EMPLOYMENT and ADAPT (see box).

More details on the ESF can be found in this 16 page brochure. Catalogue Number: CE-86-94-739-EN-C.

The ESF In Brief

One of the EC's four Structural Funds(1), the European Social Fund (ESF) is the EC's main tool for developing human resources and improving the workings of the labour market throughout the EU. It is administered by DG V (Employment, Industrial Relations and Social Affairs).

ESF schemes get people into the labour market and improve the professional prospects of those already there. The overall goal is to tackle unemployment by:

- **making it easier for people to access the world of work;**
- **promoting equal opportunities in the labour market;**
- **supporting the development of professional skills and qualifications;**
- **fostering the creation of new jobs.**

Almost all (90%) of all Structural Fund resources are planned and allocated through the 'mainstream approach', where the Member States apply for funding from the EC for national projects. The rest of the funding passes via EMPLOYMENT and ADAPT, two Community Initiative Programmes which fund transnational and innovative projects for developing employment and human resources. The ESF also contributes to the EC's many regional initiatives, such as INTERREG II and the SME Initiative.

(1) The others are the European Regional Development Fund, the European Agricultural Guidance and Guarantee Fund (Guidance Section) and the Financial Instrument for Fisheries Guidance. The total budget for all four Funds is 156 billion ECU(1994-1999).

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THE INNOVATION PROGRAMME IN BRIEF

The Innovation Programme implements the Third of the four Activities of the Fourth Framework Programme (1994-1998). It is devoted to disseminating and exploiting research results, and selectively builds upon the earlier VALUE and SPRINT programmes (see Dossiers, editions 1/94 and 2/94). It is run by DG XIII/D. See edition 1/95 for a brief profile.

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► CASE STUDY: INNOVATION RELAY CENTRE

PROFITing from R&D

The Portuguese Innovation Relay Centre provided a vital link between Portuguese and German software SMEs and their users.

The Agência de Inovação's offices in Lisbon.

Contact Agência de Inovação for Inovação Tecnológica, the full-colour English/Portuguese newsletter they produce six times a year.

Despite their obvious potential for improving productivity, IT applications on the shop floor often fall short of expectations. One exception is 'PROFIT', a software solution resulting from ESPRIT[1] project 5478 - Shop Control. PROFIT is now being marketed by two of its partners - Tecnotron (Portugal) and Aesop (Germany). Both are SMEs specialising in IT systems integration, and themselves profited from the support of the Portuguese Innovation Relay Centre[2] Agência de Inovação.

PROFIT is a flexible, modular system for Computer Integrated Manufacturing Engineering (CIME). It provides accurate, graphical information on all shop floor areas. The PROFIT toolkit includes modules for:

- Monitoring - giving access to orders, machines, materials and timing parameters;
- Scheduling and Dispatching;
- Maintenance Management;
- Quality Assurance;
- Reporting production rates, resource occupation rates and comparisons of planned and real production.

"CIME applications like PROFIT usually fail due to a lack of sensitivity to user feedback during implementation," explains Dr José Távora, PROFIT co-ordinator at Tecnotron. "With Shop Control, the user is considered at every stage. Prototype machines are installed early, and then developed in close co-ordination with the user."

Finding New Markets

Tecnotron is keen to transfer PROFIT from the highly automated semiconductor and automotive industries - where it originated - to more labour intensive domains, such as textiles, garments and shoes. Portugal is rich in such industries and Tecnotron's marketing strategy was developed with the help of Agência de Inovação.

Like the other 51 IRCs throughout Europe, Agência de Inovação aims to promote its region's exploitation and generation of R&D results. Depth of local knowledge is one of the key factors for success in this respect and Agência de Inovação meets this criterion with 2 centres: one in Lisbon and the other in Oporto.

The IRC first organised a PROFIT workshop in Lisbon during February, 1994. "We invited 12 industrial contacts to come with other interested parties to meet Tecnotron," recalls Mr João Perdigoto, Head of the Portuguese IRC. "Our initial contacts were well-placed: there were about 120 participants at that event."

The IRC built on the success of this event with a CIME technology transfer day, held in March in Oporto. "PROFIT was certainly one of the best received and a number of direct national and European contacts were made at that stage," Mr Perdigoto adds.

This proved to be excellent grounding for Technotron's presentation at the European IT Conference in 1994 (see Dossier). One year on, the PROFIT system has established a strong market position in Portugal. It has already been purchased by 4 companies, namely Arjal, Inapal (both automotive), Growela (shoes) and Riopele (textiles), and is at an advanced state of negotiation with Corticeira Amorium (cork). □

1. The EC's IT R&D programme - see this issue's Dossier.
2. See edition 5/95 for an introduction to the new network of IRCs.

► CALLS FOR PROPOSALS

Managing and Promoting Innovation

The Innovation Programme is planning two Calls for Proposals for December 15, covering the techniques of innovation management and networks and services for innovation and technology transfer.

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To be successful, innovation requires a company to integrate several functions, combining technology with marketing skills, the management of human resources, organisation and finance. Its promotion calls for an integrated approach and its alignment with the overall business strategy. A number of structured techniques, including quality management, design, value analysis, technology watch and innovation marketing are helpful to this process.

The first Call - 'Promotion of Innovation Management Techniques' - is for projects and accompanying measures to strengthen the know-how of national and regional organisations in promoting these innovation management techniques among SMEs. Projects should include, among other activities, a number of innovation consultancy assignments to SMEs to build experience in the field, and a dissemination phase.

Networks and Services

The second Call is also aimed at existing organisations (and networks of organisations) that support innovation and technology transfer, such as regional technology centres, consultants specialised in technology transfer and university-industry interfaces.

As these organisations have developed they have often linked themselves together in regional or national networks. Projects answering this Call will either:

- add a European dimension to these organisations and networks, improving the diffusion of European technologies across national frontiers; or
- create co-operation between professions and services which have not yet begun working together, thus developing new 'combined services'.

The deadline for both Calls is March 15, 1996. □

► CALLS FOR PROPOSALS

Promoting Public Awareness

The Innovation Programme also launched a Call for Proposals on September 15 for projects which identify the best methods for increasing public awareness of science and technology and develop schemes to adapt and disseminate these methods to a wider audience. The deadline is December 15.

Priority will be given to methods already successfully developed in the Member States. They should secure the involvement of 'social actors' in the various aspects of the innovation process. Social actors are individuals and groups who can help address all aspects of a problem in a specific community, and include policy makers, technologists, private companies and citizens.

The emphasis on social actors results from the lessons learnt in the research/society Interface, run under VALUE II (1992-1994). The new Call is particularly based on the Interface's successful Awareness Scenario Workshops. These are highly structured events which bring together local residents, businesses and authorities with the scientific and political community to evaluate a variety of scenarios, based on different models of development, and choose those best suited to their social and economic problems.

Like this activity, the selected projects should result in a validated method and involve user groups - local and regional authorities, public groups, educational organisations and others. Multilingual training packages should also be produced to help these users raise awareness and make decisions regarding technology. □

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► EIMS

Evaluating Regional Innovation Potential

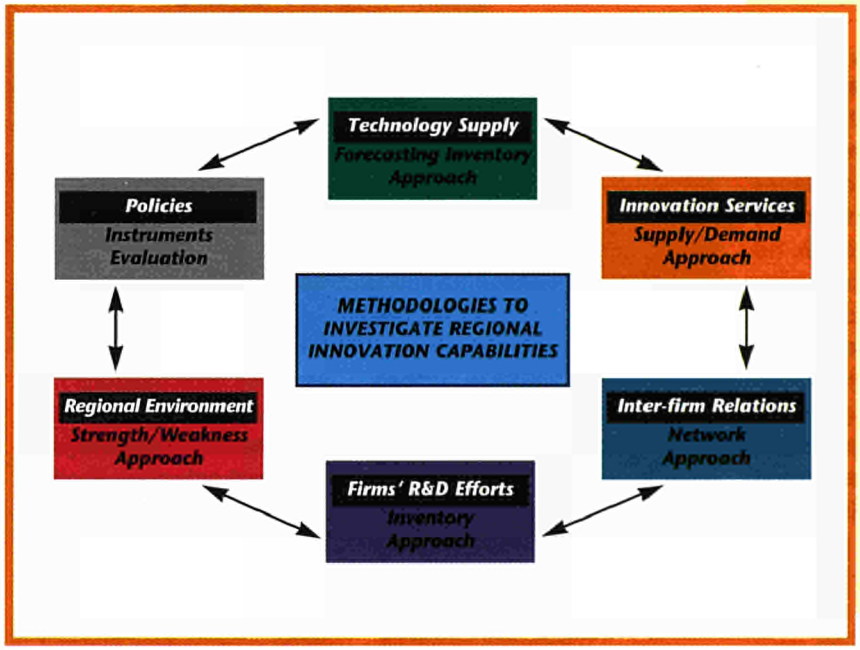
A report resulting from a European Innovation Monitoring System (EIMS) study provides a useful toolbox for regional innovation planners.

The EIMS project carried out a 'horizontal' inventory and a critical analysis of the methods used to measure and evaluate regional innovation potential - a key dimension to any region's competitiveness - in twelve EU Member States, Japan and the USA.

Emphasis was placed on methods for mapping and measuring a region's innovation infrastructure, which includes higher education institutes, public research centres, technical centres and innovation support organisations (ISOs), which provide services such as brokerage, consultancy, testing and training. The project also covered studies which have analysed how innovation support services interact with firms and other establishments on a regional basis.

The exact nature and role of ISOs in stimulating regional economic growth was a central theme. This raised a number of questions: what is the difference, if any, between an ISO and an 'RTD mechanism' (e.g., science parks, technology incubators, and so on)? Does the availability of skilled labour or access to modern communication infrastructure form an integral part of an ISO? Which is more important when evaluating an ISO: the installed capacity or the utilisation and performance of that capacity? A region's ISOs should be interrelated, reinforcing each others activities - but how can this be measured?

Finally, by defining and using the concept of a regional system of innovation (RSI), the project went one step further than previous research on innovation systems, which remained at the national level.



The main dimensions of an RSI and the associated evaluation methods.

A Practical Aid

The four studies resulting from the project have now been summarised in a book(1). It provides both a general synthesis and analysis of the horizontal review as well as more technical and specialised information, directly applicable to regional initiatives.

After a presentation of the current theories of evaluating RSIs, a number of representative studies from around Europe are presented and analysed. As one of the main results of the report is that there is no single 'best practice' methodology, the report then outlines six main methodological approaches, each corresponding to different domains of investigation and the level of development of the RSI (see figure). This is followed by more technical information regarding the types of indicators which may be useful to specific evaluation objectives.

Lastly, a number of conclusions and policy recommendations are made:

- the classical, 'linear model' of innovation, where research is assumed to lead directly to innovative products, processes and services, still dominates regional evaluations of innovation. The approaches suggested in the report - which are based on the more recent, systems-based model of innovation - are therefore unlikely to be adopted very quickly;
- planners need to adopt methodologies and indicators most suited to their region. Although adopting a systems-based approach is no small task for many regions, the tools set out in the report should enable regional planners to move towards new evaluation methods incrementally;
- greater resources should be allocated to building up robust, reproducible and comparable RSI data by both European and regional authorities.

Three more reports, closely linked to this EIMS study, are currently in preparation. □

(1) 'Innovative Regions? A Comparative Review of Methods of Evaluating Regional Innovation Potential'. A5, 160 pages. Available from the Technical Assistance Unit.

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► TECHNOLOGY TRANSFER AND VALIDATION

New Projects Underway

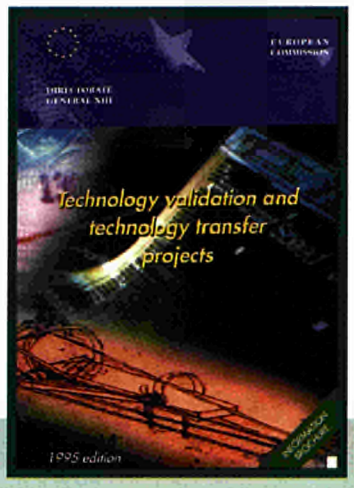
On March 15 the Innovation Programme launched a Call for Proposals for technology validation (TVP) and technology transfer projects (TTP). Both aim to improve the innovation process through either the validation and exploitation of RTD results or the transfer and dissemination of existing technologies.

Just over 500 proposals were received by the June 15 deadline. Requesting a contribution of almost 240 MECU - versus an available budget of 33 MECU - they are spread across all sectors. Just over half (55%) were for TVPs and there was a significant (25%) presence of partners from Objective 1 regions.

By the time *Innovation & Technology Transfer* went to press external evaluators had drawn up a list of 100 proposals for consideration, with final selection planned for September/October. The definition phases of many projects are likely to begin in December, less than six months after the Call deadline.

The definition phases will vary in scope from project to project. A small number of the 100 recommended projects will only need a short planning workshop before moving on to their main phase, while most will probably take a few months to draw up a work programme, study the market and consider intellectual property rights. Planning workshops to launch the partnership are offered and recommended by the Innovation Programme.

Definition phases reduce the risks associated with starting up a project. This is an important factor for SMEs, who make up just over half of the 500 participants in the 100 proposals. Nearly all (85%) of the consortia, in fact, involve at least one SME. ▭



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► COMMUNICATION PRODUCTS

A Growing Portfolio

The Innovation Programme has recently released a number of paper and electronic publications for Europe's technology transfer community.

To begin with, four more of the series of 'country-specific' **guides to innovation support** are being released. Following on from 'Profit from Innovation'(1), which was the first in the series and focused on the UK, the new editions cover Greece, Ireland, Italy and the Netherlands. A second edition of 'Profit from Innovation' has also been published, and a guide for Spain will be published over the coming months.

The Dutch guide, **'Waarom het wiel opnieuw uitvinden'** ('Why Reinvent The Wheel?'), illustrates these publications' scope. Designed to help Dutch companies innovate by detailing relevant sources and services at both national and European levels, it covers research in the Netherlands, the Fourth Framework Programme, EUREKA and Dutch and European patent procedures.

Mystified by ECSC, JET and JOULE? The recently released **'EU R&D Acronyms'**(2) provides instant explanations to all acronyms associated with European research and innovation. Compiled from the CORDIS RTD-Acronyms database, the 300 page reference tool explains almost 5,000 acronyms and abbreviations in a user-friendly format.

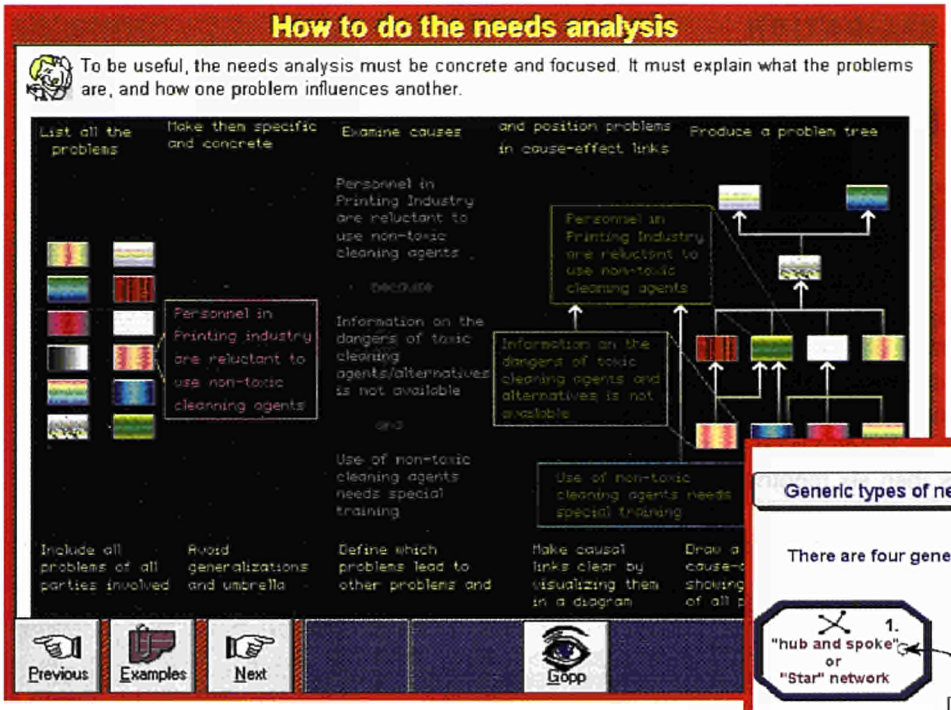
Second in a series: the new Dutch 'Innovation Guide'

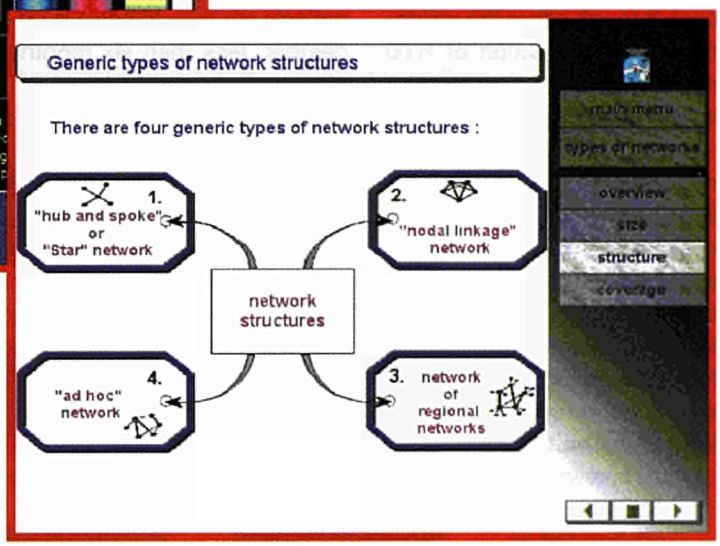
Managing Technology Transfer

The Innovation Programme and the preceding SPRINT Programme built up a great deal of experience in managing international technology transfer. These lessons have been distilled into a number of electronic products.

The first is a CD-ROM entitled **'Good Practices in Technology Transfer'**(3). As its name suggests, it is a step by step ●●●

(1) 'Profit from Innovation', was profiled in edition 2/95. For copies of these books, contact Mr E. Phillips, DG XIII/D-2, Fax: +352 4301 32084.
(2) Available from EUR-OP Sales Agents, EUR 17004, ECU 25.
(3) See the Dossier of edition 2/95.





Choose your structure: the new CD-ROM distils best practice in managing technology transfer networks.

Putting a proposal together using the 'Technology Transfer Projects' diskette.

guide to setting up and managing international technology transfer (TT) networks in five languages. Its three main sections cover:

- **The Basics of TT Networking:** introduction, types of networks and partners, getting started;
- **Organising TT Networks:** establishing new networks, network leadership, interactions between partners, performance and conflict management, managing changes;
- **TT Network Activities:** defining network strategy, performance and monitoring, handling clients, TT matchmaking.

It is a very complete product, providing, for example, succinct explanations and examples of different project management techniques. Another section covers SME management, the major challenges facing SMEs today and the threats and opportunities these challenges imply for the four SME types (classified as global individualists, industrial district members, technical district members and subcontractors).

Other features include a User's Guide, details of a wide range of relevant reports and studies and a database of around 2,000 contacts within innovation support and technology transfer organisations throughout Europe. This database is also available separately on diskette **('European Innovation Infrastructure Database')**.

Another diskette-based product is now available for large-scale beta testing. Developed to help organisations plan and propose their technology transfer projects, **'Technology Transfer Projects'** is composed of three main sections: a tutorial outlining the key factors for successful technology transfer; seven case studies illustrating these principles; and a program for proposing projects. Future versions will also cover technology validation projects.

It features many context-sensitive examples: choosing the 'Example' button from the 'Project Planning' page displays a sample Project Design Matrix; the same button from a page on 'User Needs' produces short texts summarising two projects - one successful, one not - which demonstrate how taking account of user needs can 'make or break' a project.

It also includes a set of 'Methods' pages, which use animated sequences to teach the users how to perform Needs Analyses, prepare Objective Trees and complete their Project Design.

Videos and Watch CORDIS 2

These methods are also found in a video on **Goal Oriented Project Planning** (GOPP), a project management technique ideally suited to technology transfer projects[4].

The twelve minute video clearly spells out the difficulties and appropriate solutions in managing cross-border projects using animated sequences, footage of a GOPP meeting and interviews with experts and those learning and using the techniques for the first time. A second video on technology transfer projects is also available.

Lastly, a new version of the Watch CORDIS interface is currently being beta-tested. **Watch CORDIS 2** will enable users to interrogate both the CORDIS CD-ROM and the on-line databases by simply choosing the appropriate icon.

Thus searches can be refined and made on the CD-ROM and then updated with the latest information with one mouse-click, saving on-line expenses. Both can also be searched simultaneously, with the programme automatically choosing the most up to date of any duplicated records. The Innovation Programme hopes to release the new version as part of one of the 1996 CD-ROMs. □

Contact

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  Fax: +352 46 55 50
- **Watch CORDIS 2**
  CORDIS Help Desk
  Fax: +352 3498 1248

(4) See edition 5/94.

NON-NUCLEAR ENERGY

Teamwork Saves Energy

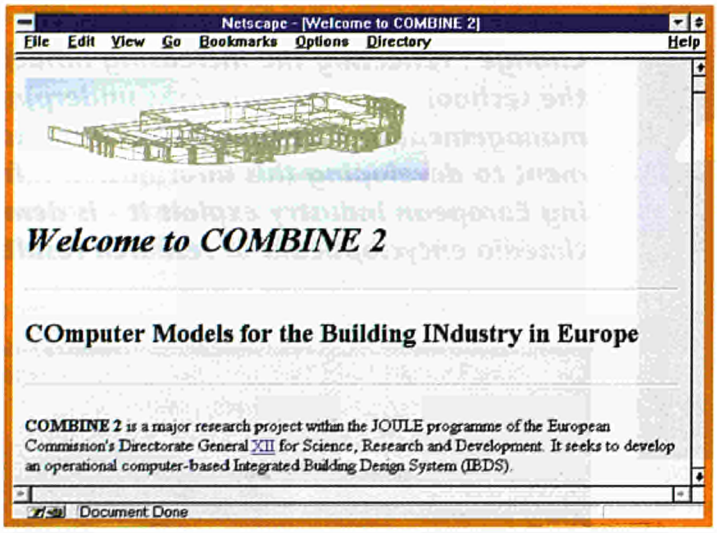
A recently completed JOULE project enables architects and engineers to work together to make energy efficiency a built-in feature, rather than an add-on compromise.

Building is a team effort in which the aims of the architect, the engineer and all the other players should merge into a seamless design. Until recently, however, this ideal has been difficult to achieve. Different teams working on the same project would see it from different perspectives and use different, often incompatible, tools. Each specialist therefore operates on an 'island of isolation' until the time comes to 'match and patch' with the other members of the design team.

The twelve partners in the COMBINE (Computer Models for the Building Industry in Europe) project have developed the solution. They are at the forefront in integrated building design systems (IBDS), software environments and tools which enable all the members of the building team to work around the same core design. COMBINE's aim was to develop an IBDS which made both the building process and the building itself more efficient.

Planning for Energy

"COMBINE was funded by the EC's JOULE [non-nuclear energy] Programme because the resulting IBDS specifically aims to help architects and builders build more energy efficient buildings," explains Dr Godfried Augenbroe of the Delft University of Technology (TU Delft), the Netherlands. "Improving energy efficiency requires the integration of a wide range of software modules and the input of all the building partners. In this way COMBINE gave the partners a particularly valuable and challenging application through which to demonstrate the power of their IBDS concepts. The project finished last June."



Using the Internet for dissemination: COMBINE 2 on the WWW

The result is a prototype Integrated Building Design System (IBDS), featuring modules covering building regulations, costing, component databases, daylighting and energy, EU standards, and two commercially-available computer aided design (CAD) systems.

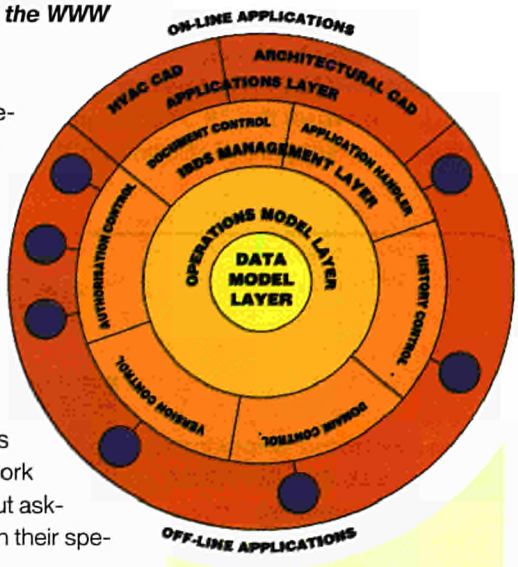
Most importantly, the new environment supports international and European standards for data exchange, known collectively as ISO-STEP. Users from different architectural and engineering backgrounds can thereby access and exchange information from a larger pool of data via a 'common format'.

Results on the Web

A recent workshop demonstrated the power of the new software. "We wanted to show potential users that the architectural and engineering tools are just as powerful because the system features a series of 'project windows' which can handle highly specific support functions," Dr Augenbroe continues. "In this way the system allows skilled experts to work within a team without asking them to abandon their specialist tools."

Several organisations now plan to use COMBINE results in their own projects. The UK's Building Research Institute, for example, is planning some field testing, while Bentley Systems, one of the major CAD vendors, will incorporate and acknowledge COMBINE facilities in their systems.

The COMBINE team are also using a World Wide Web (WWW) site on the Internet to spread the word. "The WWW is perfect for this task," explains Dr Augenbroe. "The site provides background information, newsletters, brochures and project news. Most importantly, it features hyperlinks to the various tool developers, so potential users can contact them directly to receive evaluation software and discuss their requirements."



COMBINE's structure enables building professionals to use their own specialised tools, while working together through a generic IBDS kernel.

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A New Way to

Esprit, the European Union's IT R&D Programme, holds its conference, EITC'95, on 27-29 November. The theme is 'Managing Change', reflecting the increasing influence in today's society of the technologies and networks underpinning the dissemination, management and availability of information. Esprit's commitment to developing this Information Infrastructure - and to helping European industry exploit it - is demonstrated by a pilot multimedia encyclopaedia of research results.

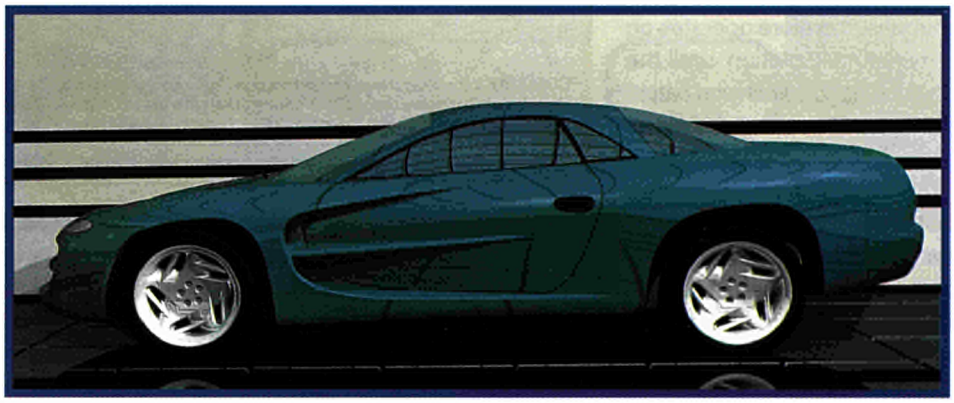


Image: Mental Images

A project named DESIRE. This is not a photograph - the image was produced using Mental Image's 'mental ray' software, developed in Esprit project 6173.

To be competitive in world markets, European industry needs to be at the forefront of the development - and use - of the latest IT. But rising costs, the investment risks involved, and the increasing globalisation of the market makes this a tall order for any single IT company. That is why the EC launched the European Strategic Programme for R&D in IT (Esprit) in 1984. Esprit focuses and co-ordinates precompetitive collaborative European IT projects - it is a catalyst for co-operation between SMEs, industry, universities and research centres.

Esprit recently completed its third phase under DG XIII (the EC's Directorate-General for Telecommunications, the Information Market and Exploitation of Research). Now under DGIII (Industry), and with a budget of 1,911 MECU, Esprit occupies an important position within the Fourth Framework Programme (1994-1998). A key goal is to improve the competitiveness of all European industry.

Esprit's focus on the Information Infrastructure was developed in close collaboration with industry and users. This is reflected in the strong market orientation of the current Work Programme. For example, a new system of multiple focused Calls for Proposals is bringing more flexibility and responsiveness to changes in both technologies and the market. In addition, Esprit aims to raise awareness amongst potential users of the possibilities for increased competitiveness offered by many of its project results.

EITC'95: Meeting the Challenges

These issues are reflected in EITC'95 (European IT Conference) which will provide an opportunity for all interested parties to 'explore the latest informa-

Do Business

tion technologies and debate the wider issues and future directions of the Information Society'. The three day Conference - to be held at the Brussels Congress Centre - will highlight the challenges facing:

- **Individuals:** making the most of technologies such as interactive and 'intelligent' interfaces, multimedia and portable computing;
- **The Public Sector:** exploiting services for information provision and for the management of energy and environmental resources;
- **Enterprises:** managing information and using intelligent interfaces for professional applications. The Conference will look at the way in which IT is transforming enterprises through, for example, the use of mobile computing and communication.

The conference will also include special sessions dedicated to the key issues of intellectual property rights and the role of SMEs in the global Information Society. It will culminate on 29 November, with an IT Forum involving key political and industrial leaders. Amongst the issues to be addressed will be European multi-culturalism in the global Information Society, the redistribution of labour and the roles of trade unions, computer literacy and the effects of IT on education, security of information, and issues of equal access to IT.

Following the Forum, Martin Bangemann (the European Commissioner responsible for industrial affairs and information and telecommunication technologies) will host the presentation of the IT European Awards (ITEA'95). The theme of the award is 'novel products with high IT content and evident market potential'. The winners - Europe's three most innovative and competitive IT products of 1995 - will each receive a Grand Prize of 200,000 ECU.

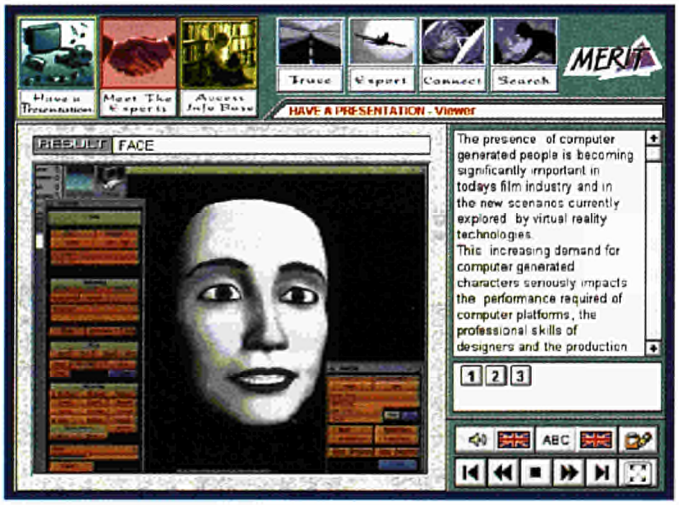
Building the Infrastructure

In its fourth phase, Esprit focuses on **8 domains** of co-ordinated research - the 'building blocks' of the information infrastructure. Only one of the domains, **Long Term Research (LTR)**, does not stipulate industrial participation. A further 3 domains deal with the underpinning technologies of the Information Infrastructure:

- **Software Technologies (ST)** aims to maintain a strong base of high quality and relevant skills, capabilities and key technologies within the European software industry. This is of strategic importance, since software is the major cost component for the majority of IT-based systems and is increasingly a source of added value.
- **Technologies for Components and Subsystems (TCS)** - special sessions at EITC'95 will focus on 'Components Driving the ●●●

Multimedia Results

Esprit's commitment to the dissemination and exploitation of project results - and to the development of advanced interactive multimedia systems - is clearly demonstrated by its pilot of a results-oriented multimedia encyclopaedia. The MERIT (Multimedia Encyclopaedia of Results from IT) CD-ROM will be a multilingual platform aimed at improving Esprit's industrial impact via intermediaries such as technology brokers and Innovation Relay Centres (IRCs)[1].



MERIT will feature a sophisticated results-oriented search engine and in-built software demonstrations (shown: FACE).

Reflecting its focus, MERIT will present the user with a list of Esprit results, rather than actual projects. It will then be possible to filter the results according to particular domains or technological processes.

MERIT will include an innovative software demonstration feature - a good example of how multimedia can be used to disseminate Esprit's results more effectively. Using MERIT, an Innovation Broker can demonstrate, rather than try to explain, how the application of a software result can be used in industry. Interested parties will be able to make rapid contact via a 'connection page' offering fax, e-mail, CORDIS and WWW communications.

(1) The IRC network was outlined in edition 5/95.

Change' towards the Information Society. Particular attention will be focused on flat panel displays and 'open' (standardised) systems for European and International trade.

■ **Multimedia Systems (MMS)** encourages the development of the technologies and tools necessary for industry to implement multimedia end-user systems. Demonstration is obviously fundamental in this domain, so pilot schemes will be targeted at applications in industry, commerce, and the home.

Image: Mental Images

A virtual flea, produced with 'mental ray' software for 'The City of Lost Children', a feature film from France.

The remaining four of Esprit's domains are **'focused clusters'**, a set of projects and accompanying measures combined to achieve well-defined business objectives:

■ the **Open Microprocessor Systems Initiative (OMI)** pioneered the focused cluster approach during the previous phase of Esprit. Its strategic goal is to provide Europe with a recognised capability in microprocessor and microcontroller systems, and to promote their world-wide use. RISC (reduced instruction set computing) and open systems - both of which encourage greater flexibility, portability and lower prices - are hallmarks of Esprit's involvement in this domain and will be featured in EITC'95.

■ **Technologies for Business Processes (TBP)** is an entirely new initiative (the other domains continue at least some of the work of previous Esprit areas). TBP aims to support the competitive change and transformation of European enterprises towards the global Information Infrastructure - issues to be discussed at the Conference's IT Forum.

■ **High Performance Computing and Networking (HPCN)** addresses two areas:

• performing contemporary tasks more effectively than current practice permits;

• performing new tasks which were previously not feasible for economic or technical reasons.

Around 100 HPCN projects are currently running from previous phases of Esprit. Examples include photo-realistic ray tracing, pattern recognition, virtual humans (see Case Study, page 17), decision support and information management. The last two will receive particular attention at EITC'95, in line with its theme of 'Managing Change'.

■ **Integration in Manufacturing (IiM)** aims, through the development of innovative IT solutions, to encourage European manufacturing industry to exploit advanced IT developments and to integrate them in a strategic initiative for the manufacturing industries of Europe.

As well as focused clusters, the new Esprit programme encourages the formation of another established, successful initiative: **networks of excellence**, of which there are currently over one dozen in action.

A network of excellence is formed by a group of academic and industrial research teams, all sharing the same long-term goals and each representing a network node. These networks demonstrate the potential of the Information Infrastructure by employing common policies for research, training and dissemination, using standardised information systems for e-mail and database management and so on. This co-ordination ensures that the network makes greater scientific and technical progress than the individual nodes would have made in isolation.

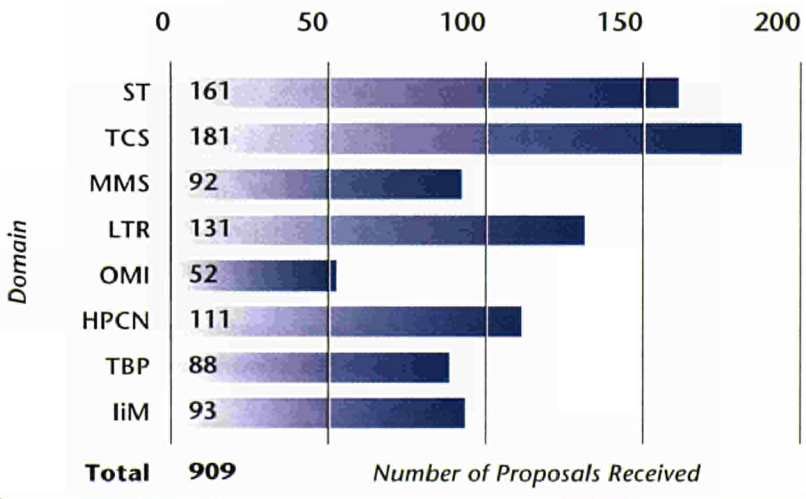
Supporting Technology Transfer

In addition to the core aspects of pre-competitive research, the Esprit programme contains supportive measures to maximise industrial involvement and benefits. **Accompanying Measures** are designed to support the main RTD work and to enhance

New Esprit Projects

The new Esprit programme published its first Call For Proposals last December and its second in March. The first Call attracted over 900 applicants (see Graph) and has been allocated 322 MECU. The resulting projects are due to commence before the end of Summer 1996.

Esprit's December Call



Case study: HPCN

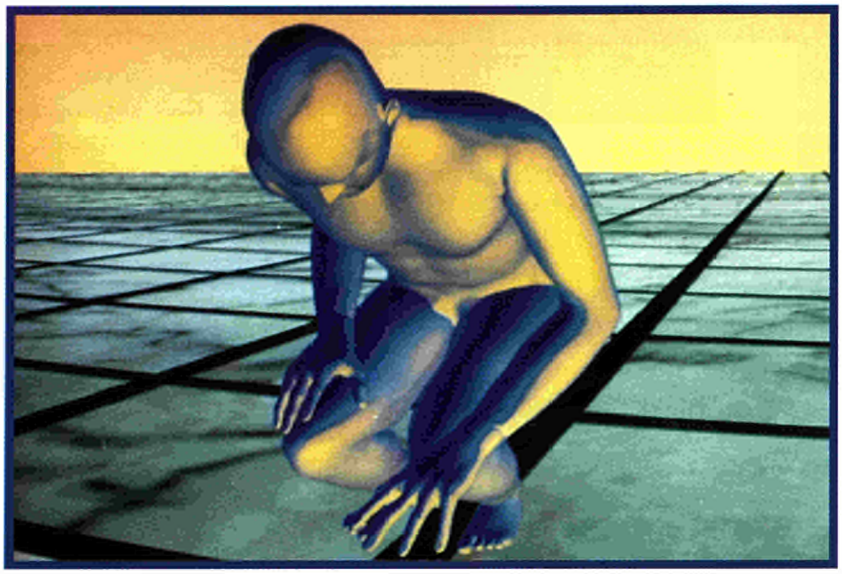
Virtually Human

When computationally intensive tasks on parallel computing hardware are combined with existing graphics workstations, the results can be eerily lifelike.

humanoid a. of human form or character. *Humanoid* n. ESPRIT project 6709: real-time system for the simulation of virtual humans.

The Humanoid project was launched as an HPCN project under ESPRIT III. Its consortium of 5 partners, from Luxembourg, Switzerland, Germany and France, has developed important tools for the design and manipulation of 'synthetic humans'. Once programmed, these 'Humanoids' can interact with characteristically human responses with their environment and various other stimuli - including fellow Humanoids.

"Virtual humans have an increasingly important role to play in the computer aided design process, where they can be used to evaluate ergonomic and safety features. In another, very useful scenario, a Humanoid might play the leading role in an animated film sequence," explains Humanoid's project manager, Mr Jean-Paul Thorn, of RTL (Radio-Télé Luxembourg) Productions.



Humanoid: bringing a human touch to virtual environments.

Character Acting

The Humanoid project has created 4 main modules, each addressing a specific human characteristic. They can be used independently, or integrated to create a walking, grasping, expressive and interactive virtual human.

Two of the modules provide general and facial design tools. The Sculptor module uses interactive carving and modelling tools that closely resemble those used in traditional sculpting. This allows scenes, objects and Humanoids to be designed directly in 3D, rather than from 2D images, which is more time-consuming.

The FACE module provides realistic animation of computer-generated human faces, such as those designed with Sculptor. Aimed at non computer experts, FACE reduces production time and costs in the film and virtual reality industries.

"The advantage of FACE over its competitors is that it is not restricted to a specific human model," Mr Thorn adds. "It can start with any Sculptor model and, by watching a user through a television camera, mimic his or her facial expressions in real-time." FACE uses algorithms based on underlying knowledge of facial expressions. The results are combined with a series of predefined graphical routines to reproduce characteristic emotional features, right down to skin and muscular detail.

Interactive Issues

Another two modules are concerned with autonomous animation. TRACK teaches Humanoids to walk, run and grasp. Within the TRACK environment, a Humanoid is given lifelike skeleton segments and joints. In addition, it inherits a certain degree of embedded decision-taking: a Humanoid may 'choose' to pinch or grasp a given object, depending on its surroundings, for example.

When evolved to the Collision Detection level, a Humanoid is able to detect and react to collisions between 3D objects - according to physical laws. By populating a virtual scene with Humanoids using the TRACK and other modules, and adding the Collision Detection algorithms for collision handling, it is possible to create autonomously interacting virtual scenes. In the film industry, virtual stages can be acted upon. In the architectural and engineering domains, the effectiveness of escape routes (in aircraft, buildings, etc.) can be evaluated.

The Humanoid consortium intends to create a new company to exploit its results. "At the state-of-the-art end, we plan to increase the degree of realism still further," says Mr Thorn. "We are also investigating the possibilities for cost-effective simulation of large, complex real life environments on lower-end machines."

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its effect through co-ordination and stimulation of innovation in industry. One group of Accompanying Measures in particular is dedicated to technology transfer:

- **trial applications** and **demonstration projects** are both concerned with user-supplier collaboration in the domain of Software Technologies. Trial applications address the suitability and viability of leading edge technologies containing an element of risk. Demonstration projects, on the other hand, aim to show how proven R&D results can be incorporated into new products, services and processes - a fundamental goal of all R&D programmes under the Fourth Framework Programme.
- **first user actions** are aimed at TCS projects. They facilitate access to new technologies and encourage their implementation in business practices, particularly by SMEs.
- **awareness actions** raise the awareness of the role and contribution of IT in industrial competitiveness and promote the uptake of OMI and HPCN results in industry. This can be done through training, implementation, testing, benchmarking, licensing technology, organising seminars, and so on.
- **best practice actions** address the appropriate use of proven technology in either development or real business. The idea is to improve a working process through the use of well-founded but insufficiently deployed technological solutions - a strategy that is being applied throughout the EC's RTD programmes. Clearly, this is more than a technological issue and involves changes to the skills and working practices of the professionals involved. EITC'95 will address these interpersonal and organisational issues.

Esprit has also launched a pilot scheme for a new dissemination initiative, the **IT Project Traineeships** scheme. This Accompanying Measure will help to train applications developers and end-users to exploit the results of a specific project. Traineeships represent a means of providing life-long training - ensuring that Europe's workforce keeps abreast of rapidly changing IT.

Trainees will be drawn from outside the project and will be able to use their new skills in environments not specifically addressed by it. A possible scenario might involve a consortium made up of the developers and the potential end users of a planning and scheduling technology, with trainees selected from an applications development organisation. The benefit in this case would be the attainment of a 'critical mass' of expertise in the technology prior to its market launch.

EITC'95's theme of 'Managing Change' will pick up on some of the issues raised by Traineeships. In the above example, for instance, the consortium might also include experts in change management. Their job would be to impart the skills needed to assess and implement the business processes and structural changes associated with the training.

Specific SME Support

SMEs have become an increasingly significant source of proposals with each phase of Esprit. In the previous Framework Programme, for example, SMEs participated in the majority of Esprit projects.

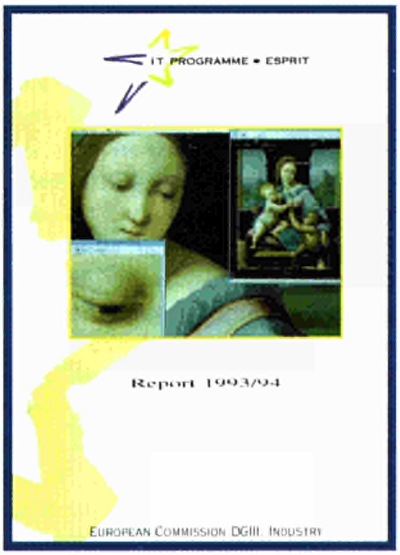
In common with other Specific Programmes under the Fourth Framework Programme, the latest phase of Esprit contains a number of measures to increase user friendliness - particularly for SMEs(1). In LTR and HPCN, for example, proposals are submitted in two steps to reduce the time spent by many (ultimately unsuccessful) proposers. In the first step, proposers submit an easy-to-prepare, reasonably short proposal. The successful applicants are then invited to submit a full proposal. If this scheme proves successful, it may be extended to other domains.

Esprit has also launched the **SME Exploratory Awards** scheme, a supportive action designed to encourage SME participation. Applications may be made at any time for the scheme, which can support up to 75% of the cost of preparing a proposal for industrial and co-operative research. This may be spent on developing a detailed RTD work programme, finding partners and performing market and feasibility studies.

Finally, a book of Esprit results is being published to coincide with EITC'95. The book features 101 commercial results arising from research funded by Esprit over recent years. All of the results have been, or are in the process of being commercialised by the partners involved. Results are taken from a broad range of applications, and each is presented as a one-page profile, with contact details for further information. An on-line version of the brochure will also be accessible on the World Wide Web (WWW), via Esprit's 'home page'. □

(1) See edition 3/95 for a summary of the SME support available through the Fourth Framework Programme.

Contact Information



The Esprit Report 1993/1994, available from the IT Information Desk.

■ Work Programme, Information Packages:
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Fax: +32 2 663 7200
World Wide Web: http://www cordis.lu/esprit/home.html

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■ European IT Conference:
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Case study: TBP

Bridging the Communication Gap

The Great Belt Link bridge symbolises the success of ESPRIT project 6155, EuroCODE, in enhancing collaborative work practices.

By the time EuroCODE is completed in late 1995, its consortium of 10 companies from Germany, Denmark, Norway and the United Kingdom will have contributed 92 man years' work. Together with a budget of 12 MECU, this makes it the largest CSCW (Computer Supported Collaborative Working) project launched under ESPRIT III.

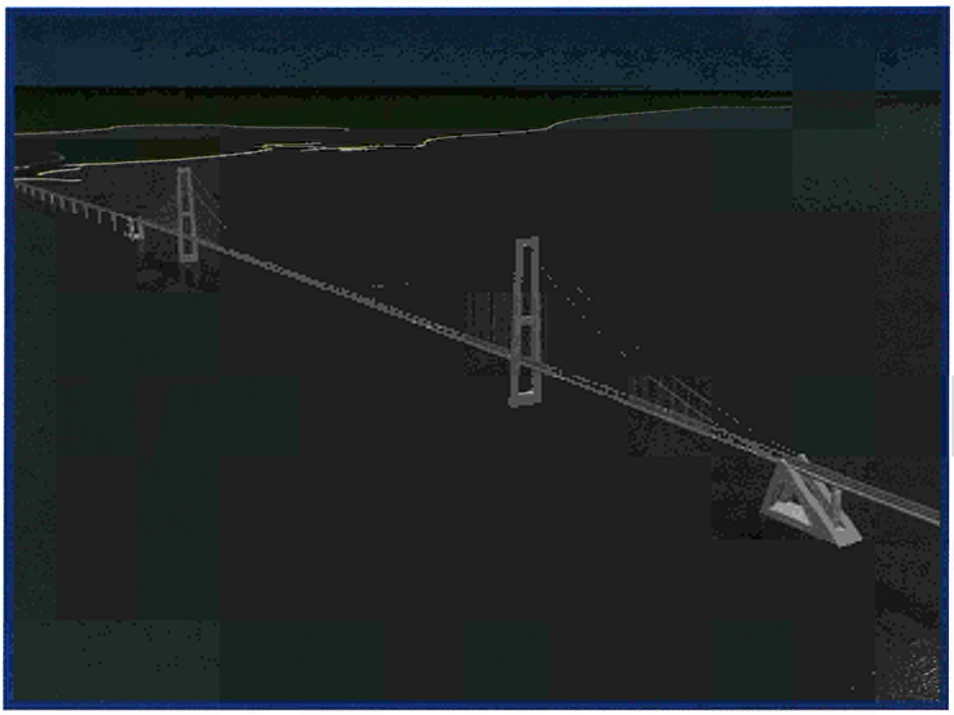
The project is a good example of how user organisations should get involved in Esprit projects. One of EuroCODE's main user organisations is Great Belt. They are building the Great Belt Link bridge between two Danish islands. It will span 17.5 km and involve three major construction projects on Zealand, Sprøgo and Funnen - a formidable logistical challenge which EuroCODE has met.

"Efficient collaboration is becoming an increasingly important measure of competitiveness, due to the speed and international dimension of modern business," explains EuroCODE's Project Manager, Mr Friedrich Dudda of debis Systemhaus GmbH (Germany). "EuroCODE addresses the needs of 2 types of user: people who constantly move among sites and those who remain at a single site, but must collaborate with others at different locations."

EuroCODE has developed a CSCW-based operating environment, or 'Shell' containing the functions and tools necessary for user organisations to develop their own CSCW applications. Like many ESPRIT results, EuroCODE's Shell is based on open IT - facilitating its uptake and use with a wide variety of networks, computers, operating systems and even non-CSCW applications. "And once in place, it won't become outdated in the face of continuing technological change," adds Mr Dudda.

Demonstrating Innovation

The three EuroCODE demonstrations highlight innovative CSCW Shell applications in low, medium and high bandwidths, respectively:



EuroCODE: bridging the gap between construction teams and architects on different sites.

- the **Low Road Demonstrator (LRD)** focuses on co-ordination and mobile communication. Its Organisation Browser, for example, offers the remote user a graphical means of identifying and accessing organisational objects (personnel, work groups, resources).
- the **Middle Road Demonstrator (MRD)** deals with 'distributed expertise'. Using the 'show, point, talk' application, Great Belt engineers on a local area network (LAN) can collectively view construction drawings and other images, indicate particular areas of interest, and discuss possible solutions.
- the **High Road Demonstrator (HRD)** includes a novel paper-electronic interface. At Great Belt, for example, engineers can integrate technical drawings, annotations, tape-recorded observations and video clips made at the construction site. When a drawing is placed on the HRD work surface, it is identified via a bar code. Digitised annotations - stored on the LAN - are then recalled and projected onto the surface. These annotations may be updated using an infrared light pen and stored, together with the recorded observations, to be activated by all users of the LAN via projected icons.

The Great Belt Link is due to be completed in 1998. In the meantime, a roadshow is being organised to disseminate EuroCODE's results further. According to Mr Dudda, "EuroCODE has a strong market advantage because it adapts to the needs of the user - not vice versa."

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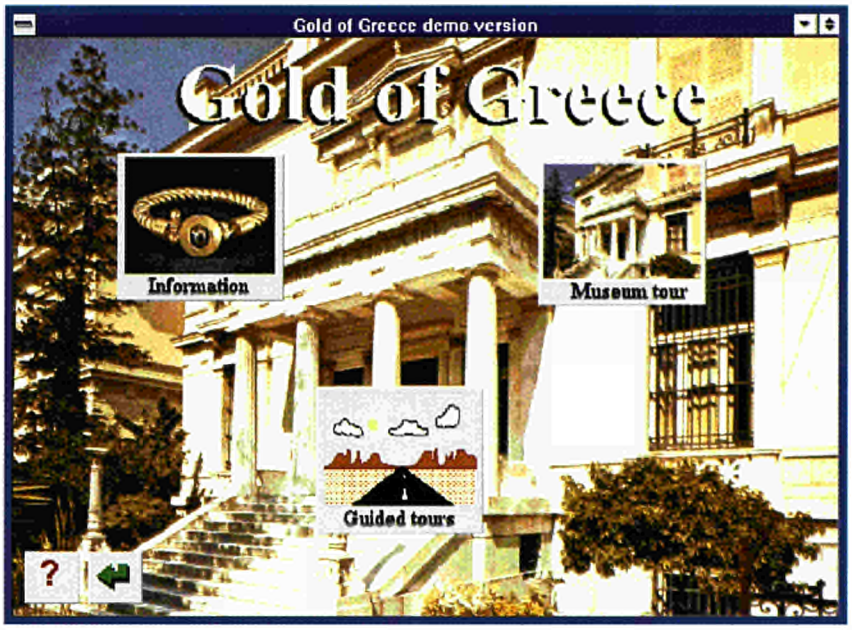
Case study: ST

Linking Good Ideas

Hypertext can make information management easy - at least from the user's point of view. HIFI (ESPRIT project 6532) has helped to simplify the software designer's life too.

Hypertext links, whereby the selection of a word, phrase or even an image within one computer file automatically links the user to a second, are the essence of modern, interactive information systems. Their logical and user-friendly connections mirror those in real-life scenarios, and have opened up the world of networking and multimedia computing to anyone with a basic understanding of graphical, 'point and click' software environments.



HI-FI: Bringing the Gold of Greece to the world.

Behind the scenes, designers use a conceptual method based on hypertext data models (HDMs) to construct these useful links. Conventional hypertexts are good at taking into account all the navigational and associative issues, but they neglect the proper handling of highly-structured content, as is usually found in information systems.

This makes conventionally designed hypertext applications unsuitable for the highly demanding information systems used in banks, hospitals, and other scenarios requiring interactive access to large arrays of data, such as museums and exhibitions. Hence designers are usually forced to use well established database techniques in such scenarios, despite the complex and limited navigational mechanisms - and poor user friendliness - that they entail.

HIFI provides designers with the right tools to design and implement hypertext-based navigation with conventional database management systems. Its consortium partners, from Italy, Greece and Germany, have successful pilot applications running in the banking, health and museum information sectors. 'Members of the HIFI consortium are already using a variety of HIFI-based applications,' confirms HIFI's Project Manager, Dr Umberto Cavallaro of Systems & Management S.p.A., Italy. 'We have witnessed dramatic gains in both productivity and flexibility and so we are confident of HIFI's market potential.'

Gold of Greece

A pilot application of HIFI is being developed for the Benaki Museum in Greece. The 'Gold of Greece' virtual exhibition, stored on a CD-ROM, enables the user to navigate between the museum's rooms and display information on its artefacts by pointing to digitised photographs displayed on the screen.

What the 'visitor' is really doing is accessing highly structured information stored in a relational database, which contains textual descriptions of artefacts, materials, techniques, periods, styles and origins, and a multimedia database, which contains the related sounds and images.

Gold of Greece uses two important results from the HIFI project:

- **Hypertext Data Model Plus (HDM+)** is an extension of the HDM used for traditional hypertext applications. Unlike its predecessor, HDM+ is good at defining both content and structure. Using HDM+, a designer can add user-friendly hypertextual interfaces on top of structured database information.
- the **Hypertext Engine** employs a unique architectural solution that allows relational and multimedia databases to be integrated through an interactive navigational database. The user is unaware of the complexities and technicalities of the underlying query languages. A user interface translates interaction into HDM+ operations which are subsequently translated into the proper sequence of database operations.

Both results are compatible with existing hypertext applications. This means that they can be assimilated rapidly by hypertext designers - a definite competitive advantage in terms of dissemination and exploitation.

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► NEW PROJECTS

European RTD: A Growing Phenomenon

Last December and January saw the first Calls for Proposals under the Fourth Framework Programme. The response - over 10,000 proposals - demonstrates the importance cross-border RTD now plays in Europe today.

As *Innovation & Technology Transfer* went to press most of the various Specific RTD Programmes[1] were finalising their 'first choices' for funding and beginning contractual negotiations with the proposers. The following statistics are, therefore, in most cases provisional.

Industrial Technologies

The December Call for Industrial and Materials Technologies (BRITE-EURAM)[2] covered the Programme's three areas - Production Technologies, Materials and Technologies for Product Innovation, and Technologies for Transport Means.

A total of 1,180 proposals were received, of which 283 have been recommended for selection by the evaluators. Over half (144) of these were classed as 'A1' proposals. Together these proposals request a total of 550 MECU funding, whereas the budget available for the Call is only 325 MECU, so the quality of proposed European industrial research far outstrips the resources allotted to it.

Over one quarter of the 8,553 organisations taking part in all of these proposals are SMEs. Another 3,000 participants are industrial companies, with national organisations and universities supplying most of the remainder. Seven industrial sectors dominated the proposals:

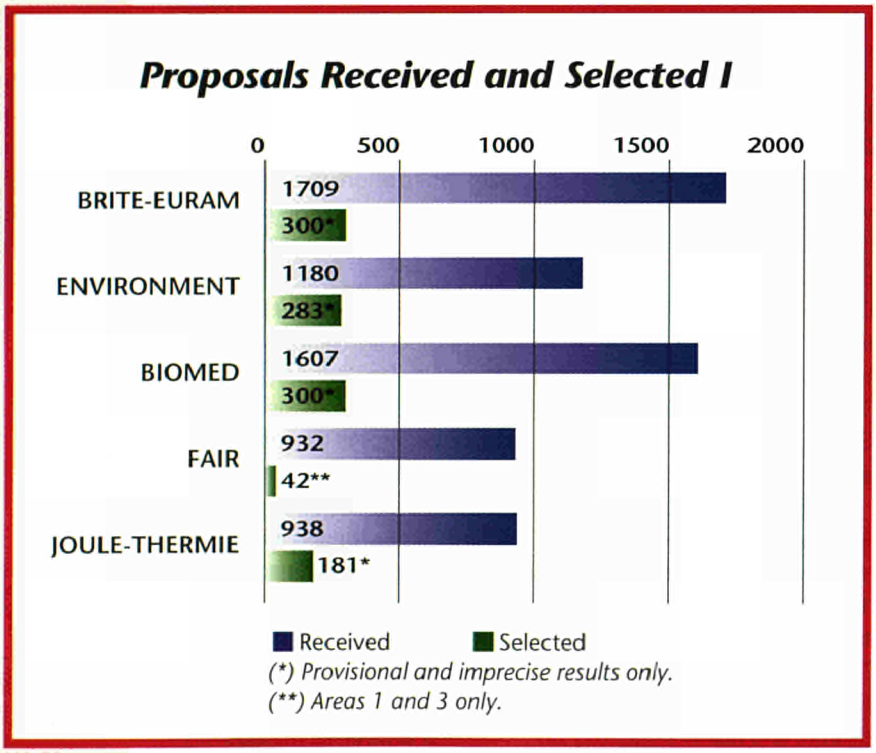
- Aeronautics and Aerospace (162 proposals);
- Automotive, Components and Parts (158);
- Materials Processing (150);
- Electrical and Electronic Industry (98);
- Chemical, Petrochemical (82);
- Mechanical Engineering, Machinery (75);
- Construction, Building, Civil Engineering (72).

The Standards, Measurement and Testing (SM&T) Programme also published a Call last December. Covering Theme 1 of its work programme - Measurements for Quality Products - it resulted in 177 proposals, requesting 120 MECU in EC funding. The actual budget for the Call was 27 MECU. Forty-four projects have been selected for funding. A second Call is now under way for the rest of the Programme (deadline: November 15).

Environmental Technologies

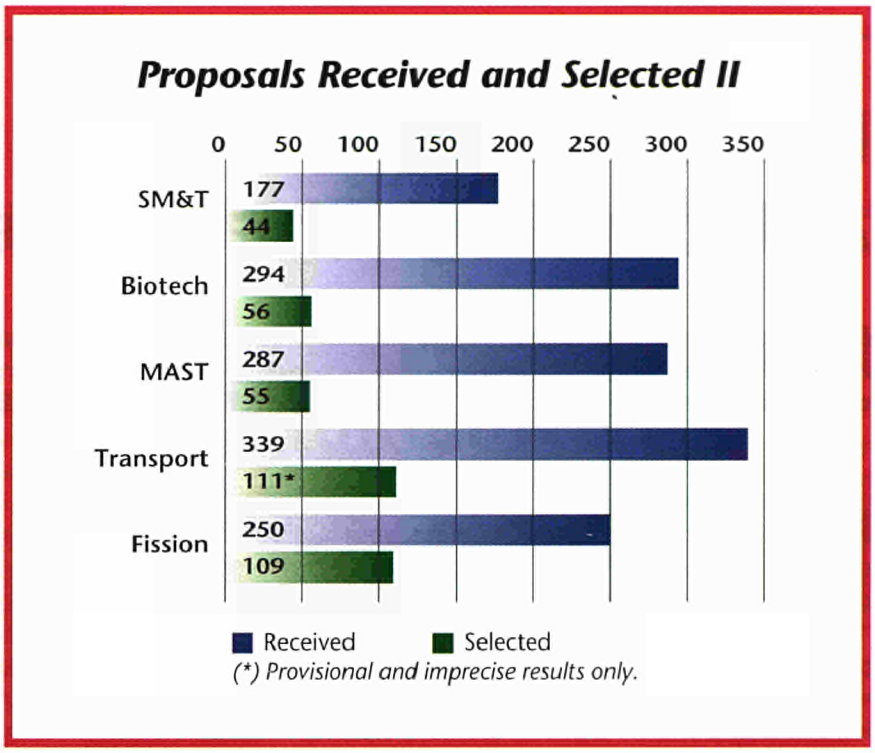
The Call for the **Environment and Climate** Programme was published on January 17 this year. By the deadline of April 4 over 1,600 proposals had been received for the areas covered by the Call. Most of them fell into two categories:

- Research into the Natural Environment, Environmen- ●●●



(1) Results from the December Call for the ESPRIT, ACTS and TELEMATICS Applications Programmes (information, communication and telematics technologies, respectively) were covered in edition 4/95.

(2) See the Dossiers of edition 1/95 (BRITE-EURAM and SM&T), 3/95 (JOULE-THERMIE) and 4/95 (MAST).



tal Quality and Global Change: over 40% of the proposals (681) fell into this category, notably Biospheric Processes (234), Impact of Climate Changes and Other Environmental Factors on Natural Resources (161) and Atmospheric Physics and Chemistry (129);

■ Environmental Technologies: with almost exactly the same number of proposals, this area was dominated by proposals for Technologies to Protect and Rehabilitate the Environment (217), Methods for Estimating and Managing Risks to the Environment (190) and Technologies to Forecast, Prevent and Reduce Natural Risks (141).

The other proposals were for Human Dimensions of Environmental Change (223) and Space: Methodological Research (18).

Evaluations were completed by the end of the summer, and formal selection took place in two rounds in September and October. As *Innovation & Technology Transfer* went to press, around 300 projects had been provisionally selected.

The **Marine Science and Technology (MAST)**[2] Programme's Call, which covered most areas of the Programme, attracted almost 300 proposals. Over 50 projects were selected to receive 75 MECU in EC funding: Marine Science (27 projects), Strategic Marine Research (10) and Marine Technology (18).

Life Sciences and Technologies

The **Biotechnology** Programme's call was published on 17 January 1995 and closed on 24 March 1995 after receiving almost 300 proposals. Around 60 of these proposals have been provisionally selected for funding (73 MECU).

The largest sector is 'Cell Factories' (125 proposals received, 20 selected). This reflects the work programme's priorities, which in turn reflect the high industrial relevance of these technologies. Other areas include Genome Analysis (9 projects selected), Plant and Animal Biotechnology (8), Immunology and Trans-disease Vaccinology (7), Structural Biology (4) and Infrastructures (9).

The **Biomedical and Health Research** Programme's Call, which was published on January 17 and closed on March 31, attracted over 1,700 proposals. The Programme covers the entire spectrum of biomedical research, and builds selectively on previous Programmes to meet the challenges posed by rapidly emerging health technologies and new epidemics.

This is reflected in the response to the Call - over 40% of the proposals (701) were for Research on Diseases with Major Socio-Economic Impact. Over half of these were for Cancer Research (221) and Cardiovascular Diseases (151).

Other major areas included Brain Research (283 proposals), Research on Biomedical Technology and Engineering (237), Human Genome Research (150) and Pharmaceutical Research (129). Almost 50 proposals for demonstration projects were also received. Around 300 of these proposals are likely to be funded.

The **Agriculture and Fisheries** (including agro-industry, food technologies, forestry, aquaculture and rural development) Programme, or FAIR, issued its first Call on December 15. It covered most areas of the Programme. Of the 932 proposals received, 120 were rated as being of A+ or A quality. Forty-two were selected for funding under Areas 1 (Integrated Production/Processing Chains) and 3 (Nutritious Foods), worth a total of 42 MECU.

Transport and Energy

The **Transport** Programme (1994-1998) is the first Programme specifically launched for this field. Its first Call, on December 15, resulted in 339 proposals, of which 111 have been recommended for funding. Well over half of these projects fall into three action lines: Strategic Research (28), Waterborne Transport (21) and Air Transport (20).

The **Non-Nuclear Energy** Programme (JOULE-THERMIE) also published its Call last December. A total of 938 proposals were received for the research part of the Programme, requesting over 850 MECU in funding.

After evaluation, a 'priority list' of 181 were recommended for funding. Over half of these proposals deal with developing Renewable Energies (94 proposals). The other projects included Rational Use of Energy (47), Fossil Fuels (27) and Energy Research, Development, Demonstration and Dissemination Strategy (13).

Lastly, the **Nuclear Fission Safety** Programme received over 250 proposals following its Call on January 17. One hundred and nine research projects and concerted actions have been selected for a total funding of 86 MECU. These include Exploring Innovative Approaches (12 projects), Reactor Safety (19), Radioactive Waste Management Disposal and Decommissioning (34), Radioprotection (38) and co-operative projects related to Environmental Contamination and public issues linked to contaminated areas in the former Soviet Union (6). □

► CONFERENCES

RACE MOBILE TELECOMMUNICATIONS SUMMIT
22-24 November 1995, Cascais (Portugal)

The aim of this summit is to provide a major forum for the dissemination of the results of the EC's now finished RACE Programme (Communications RTD) on third generation mobile communications.
A plenary session on future mobile communications will cover market aspects, world-wide R&D and progress in standardisation. Individual RACE mobile/personal communications projects will also be presented, followed by a variety of workshops and discussions on a wide range of technical issues.
Contact: Mrs E. Pereira, CPR Marconi
Tel: +351 1 79 07 573; **Fax:** +351 1 72 07 149
E-mail: eepereira@cprm.pt

ENVIRONMENTAL BIOTECHNOLOGY
23-24 November, Brussels

Organised by EUREKA, the Environmental Biotechnology Brokerage Event is intended to generate both EUREKA and EC projects in which companies and research institutes work together to find biotechnological solutions for environmental problems. It will cover the following areas:
- biotreatment and bioremediation of water, soil and solid waste;
- biodetection and biomonitoring;
- bio-polymers, -fertilisers and -pesticides.

The aim is to provide a platform in which interested participants can exchange ideas and information on new developments, products and processes and find potential business partners to set up and finance R&D and demonstration projects. It will also provide hands-on information about national and international public and private funding possibilities.
Contact: Mr J. Vandenabeele, Belgian EUREKA Office
Tel: +32 2 238 35 23; **Fax:** +32 2 230 59 12
E-mail: vdab@smtp.belspo.be

Solar Energy in Architecture and Urban Planning

Berlin, 26-29 March, 1996.

Contact: WIP.
Tel: +49 89 720 12 32
Fax: +49 89 720 12 40.

European Research Conferences, 1996

The European Science Foundation's 1996 Programme of European Research Conferences - comprising around 45 events - is now available.

Contact: Valérie Allspach, ESF
Tel: +33 88 76 71 35
Fax: +33 88 36 69 87
E-mail: euresco@esf.c-strasbourg.fr
WWW Home page: www.esf.c-strasbourg.fr

ONLINE EDUCA BERLIN
24-25 November, Berlin

Organised with the support of Mr. Martin Bangemann, Commissioner for Industry, Information Technology and Telecommunications, and the Secretary General of the Council of Europe, this international conference on distance learning will provide an up-to-date assessment of recent achievements in telematics-based learning, as well as an in-depth look at the educational dimension of the information society.
It will bring together specialists in the field of distance education from around the world, including the countries of Eastern European and the Commonwealth of Independent States (in preparation for ONLINE EDUCA MOSCOW on 25-27 September 1996).
Contact: ICEF
Tel: +49-228-223086; **Fax:** +49-228-211944

INTERACTIVE TV MEDIA
5-7 December, Paris

The International Convention on Interactive TV Media (ITVM '95) will offer professionals from the audiovisual field and on-line technologies a forum where the budding interactive television market can take root. By comparing experiments, equipment, simulated or life-size tests of interactive programmes and services, ITVM '95 will help to assess market reactions to interactive supply and suggest methods of promoting services. It will cover three main themes:
- controlling terminals, return path technologies and market development;
- what marketing for what market?
- what products for what content and what distribution?

Contact: Daniele Cognez/Fabienne Roch, ORTECH
Tel: +33 1 45 23 08 16; **Fax:** +33 1 48 24 01 81

► PUBLICATIONS

■ GUIDE TO EUROPEAN R&D 1994/1995

HFL 75, 270 pages
The annual 'Guide to European Programmes for Research and Technological Development' from EG Liaison, a Dutch 'Euro Info Centre' specialised in R&D, is now available in English. It is divided into three parts:
- an overview and description of all European R&D programmes, including useful European and national addresses, information on how to write a successful proposal, how to set up partnership agreements, etc.;
- a summary of all new European R&D programmes under the Fourth Framework Programme;
- a list of useful addresses from which readers can obtain more specific information.

Contact: EG-Liaison
Fax: +31 70 35 62 811

■ RESEARCH AND REGIONAL DEVELOPMENT

Produced by DG XII (Science, Research and Development) and DG XVI (Regional Policy), this free 24-page brochure covers:
- the 'State of Play' of RTD in the EU's less developed regions, including RTD funding, the number

The French version is ready now, with other language versions on the way.

of people employed in RTD and the difficulties faced by these regions;
- the Fourth Framework Programme, including the experience of these regions in past Framework Programmes and measures aimed specifically at them in the current one;
- Research in the Regional Development Programmes, covering impact studies, EC initiatives, pilot projects and regional technology plans for both the 1989-1993 and 1994-1999 periods.

Contact: Ms D. Fasone, DG XII
Fax: +32 2 295 8865

■ **RESEARCH AND DEVELOPMENT: ANNUAL STATISTICS 1994**
ISBN 92-826-9198-5, 16 ECU
Produced by the Statistical Office of the EC, 'Research and Development: Annual Statistics 1994' contains current data on the level, structure and trends of research and development (R&D) activities in the EU and the EEA. The 1994 edition contains, for the first time, data on R&D personnel and R&D expenditure at national and regional levels for 1985-1991. In addition, data on R&D government appropriations for Austria, Sweden, Finland and Norway are also included.

NOTE

If specific contact information for obtaining a publication is not supplied, refer to the 'Quick Reference Guide' (1/95). Publications are free unless otherwise stated.

STOP PRESS
CORRECTION: The telephone number for the Press Service (see edition 4/95) is: +32 2 649 99 89.

Looking Eastwards: PHARE and TACIS

■ **PHARE**
PHARE is the EU's programme for co-operation with the countries of Central and Eastern Europe. A free booklet entitled 'How to work with PHARE' aims to help those interested in discovering what PHARE can - and cannot - do to involve them in the transformation of Central and Eastern Europe. It is available in English, German, French, Italian, Spanish, Romanian, Polish, Hungarian, Czech and Slovak, and explains:
- how PHARE operates;
- how it is organised in Central and Eastern Europe and in Brussels;
- what the principal areas of activity are and of what they consist;
- what the programme cycle is;
- what steps there are in the process;
- what roles each of the key players have;
- what documents are needed at each stage of the process.

Contact: PHARE Information Office
Tel: +32 2 299 14 00; 299 13 56; 299 16 00; **Fax:** +32 2 299 17 77

■ **TACIS**
TACIS is an EU initiative for the New Independent States and Mongolia which fosters the development of harmonious and prosperous economic and political links between the EU and these partner countries. TACIS does this by providing know-how and financial support to projects in a variety of fields, including energy, transport and telecommunications infrastructures, nuclear safety, the environment, food production, processing and distribution, and social services and education.
Recent publications on TACIS include:
- 'What is TACIS?' - a general, explanatory guide to the programme, outlining its areas of partnership and co-operation, its partner needs, priority sectors, techniques, action programmes, and organisation and management;
- 'How to work with TACIS' - aimed at public and private organisations seeking to obtain TACIS contracts, this publication explains the rules, processes and procedures which lead to the award of TACIS services and supply contracts;
- 'Contract Information Update No 4: July 1995' - provides an update of the TACIS Contract Information booklets which contain information about projects from TACIS action programmes for which the Commission organises restricted invitations to tender.
- 'TACIS Annual Report 1994' - reviews the work carried out under TACIS during 1994 with regard to each country and to the sectoral programmes in the fields of enterprise support services, agriculture and food distribution, human resources development, and networks for energy, transport, telecommunications and nuclear safety. It also covers TACIS activities in the fields of the environment, humanitarian aid, information, and multi-country programmes. Finally, it outlines the legal and operational aspects of the programme in 1994.

Contact: TACIS Information Office
Tel: +32 2 295 25 85; 296 60 65; 296 10 70; **Fax:** +32 2 231 04 41

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