

Innovation & Technology Transfer

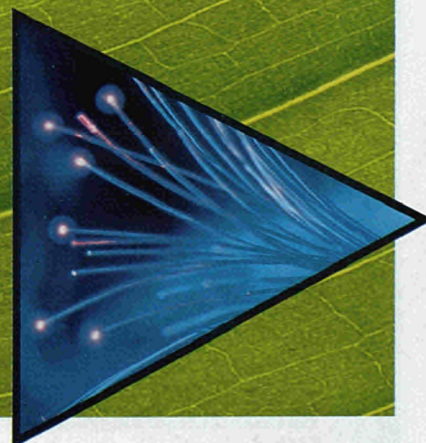
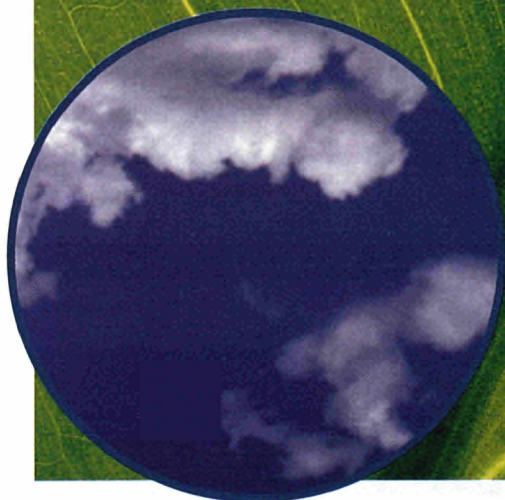
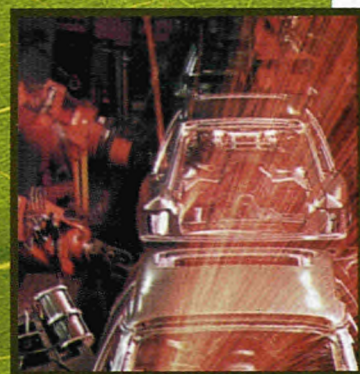
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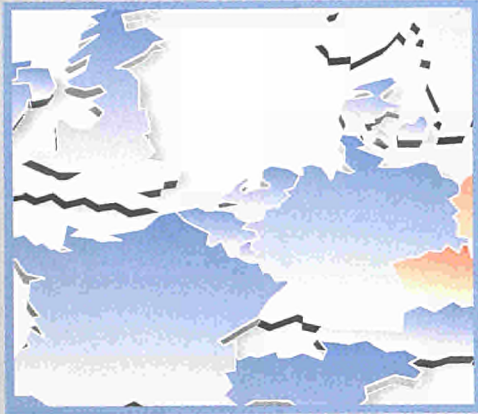


Innovation Relay Centres

Your Window on European Innovation



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European Research Policy

The future shape of European research policy has become clearer with the adoption by the European Commission on 9 April of its draft proposal for the next research Framework Programme.

This, the Fifth Framework Programme, will cover the period from 1998 to 2002. In announcing the adoption of the proposal, the Commission said it marks a break in approach to European research policy, by concentrating on fewer topics and by changing the way the programme operates.

This includes more coordination between the various activities within the programme, as well as with other European policies, to ensure that research responds to the EU's needs. The programme also has built-in flexibility so that it can react to emerging priorities.

The proposal includes a number of the recommendations made in the report from the Davignon Panel, which assessed the experience gained from previous programmes. The proposed programme comprises three 'thematic' and three 'horizontal' programmes. The thematic programmes embrace work on the resources of the living world and the ecosystem, a user-friendly information society, and competitive and sustainable growth. The horizontal programmes deal with international cooperation, innovation and participation of SMEs, and human potential (see pages 3-4).

Before it can start in 1998, the framework programme also has to be adopted by the European Parliament and the Council of the EU. ■

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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Promoting Innovation in Framework Five

EU research and innovation will be carried from this millennium into the next under the Fifth Framework Programme. The Commission's proposal for the Programme, adopted on April 9 (see next page), reflects in many ways the recommendations of the 'Davignon Report'. Innovation & Technology Transfer takes a look at the authors' views on innovation.

One of the clearest manifestations of Europe's less developed entrepreneurial culture compared with the USA lies in technology diffusion and transfer. Attempting to remedy this defect is the most important aspect of the Commission's implementation of the Fifth Framework Programme." This is the clearly stated view of the Davignon Panel on the role of innovation in the Community's future Research Framework Programme.

Unveiled at a major final debate on guidelines for the Fifth Framework Programme in Brussels, the Davignon Report makes clear its intention to gear its advice very much to the future rather than offering a detailed evaluation of the past. Viscount Davignon, Chairman of the Panel, is one of the 'founding fathers' of European science and technology policy.

Europe's innovation culture

As the Davignon Panel notes, comparative studies suggest that while research activity in Europe compares well with that in the USA and Japan, the innovation culture in Europe is weaker, and the development and exploitation of research through to commercial success is pursued with less vigour. Venture capital is less available in Europe, and there is a lower

rate of formation of high-tech SMEs.

The Panel believes that the European Union needs to move with the times. "It is time for a change because times have changed", they say. Today, there is much more caution about private and public investment in research in Europe than there was in 1984 when the Framework Programmes were launched. Then major European companies saw a business advantage in increasing their investment in research and development. Now, say the experts, market requirements prompt industry to focus on short-term results, despite the heavy investment in science and technology by competitor nations and businesses, especially in the Far East and the United States.

Flexibility

Such a change in emphasis requires flexibility of response. While Member State have altered their research and technology development (RTD) policies, policy instruments at the EU level remain unchanged since 1984. The Panel suggests that Europe is responding to the challenges of today with policy instruments tailored to the needs of a decade ago. Most national governments have dropped the 50% shared cost form of funding in ●●●



Etienne Davignon, who oversaw the creation of the First Framework Programme as Commissioner for Research and Industry.

The Davignon Panel

Viscount Etienne Davignon (Belgium)

Chairman of the Panel
President of the Société Générale de Belgique
Former European Commission Vice-President for Research and Industry

Prof. Angelo Airaghi (Italy)

Senior Vice President FINMECCANICA

Mr. Fernand Braun (Luxembourg)

Former European Commission Director-General for Internal Market and Industry

Prof. Nicos Christodoulakis (Greece)

Junior Minister of Finance

Prof. James Dooge (Ireland)

Former Minister of Foreign Affairs

Sir Robin Nicholson (UK)

Chairman, Pilkington Optronics Ltd,
Former Chief Scientist, Cabinet Office

Dr. Juhani Kuusi (Finland)

Senior Vice President, NOKIA

Prof. Frieder Meyer-Krahmer (Germany)

Director, Fraunhofer-Institut für Systemtechnik und Innovationsforschung

Prof. André Syrota (France)

Director of Life Sciences,
Atomic Energy Commission

Mr Johannes van Ruiten (The Netherlands)

Former Executive Director, NAGRON

Prof. José Viana Baptista (Portugal)

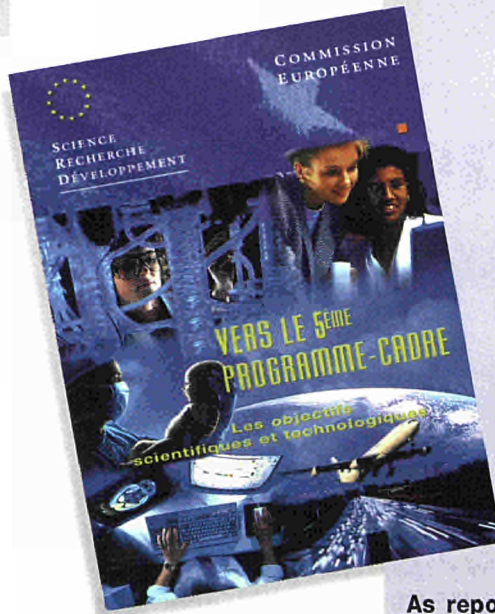
Chairman of ICAT
Chairman of EDIFER and Vice President of IRDAC
Former Minister of Transport and Communications

Dr Alan Calder (UK)

Rapporteur of the Panel
Segal Quince Wickstead Ltd

The Commission's proposals are spelt out in greater detail in 'Towards the Fifth Framework Programme'.

EUR 17531, available from the DG XII Communication Unit in English, French and German.



The Commission's Proposal

●●● favour of an increased emphasis on broader innovation policies. These focus strongly upon providing firms with the capabilities to make use of scientific and technological knowledge. "At a minimum the Framework Programme should have a much more integrated approach to support for RTD and support for innovation," the Panel recommends.

Technology diffusion

So how, in the Panel's view, should the Commission develop a more innovative culture? Technology diffusion is a key element here. US markets are more efficient at transferring technology from universities and institutes to firms. The Davignon Panel recommends that the Commission's Programme directors and managers have clear responsibility for ensuring the diffusion of the technology developed within their Programmes into the marketplace for commercial exploitation. "Whilst the most successful outcome is one in which project participants commercialise their own findings, other avenues of exploitation need to be vigorously pursued with non-participants when this does not occur. In such circumstances, Programme directors and managers need to have contact with the venture capital community," the Panel maintains.

SMEs and innovation

The support and development of SMEs is also considered crucial. The Panel believes that SME participation in the Framework Programme would be more effective if SMEs received more help with the financial and legal issues related to exploiting research, particularly in the area of intellectual property issues. One suggestion was to examine whether the existing CRAFT scheme could be further developed as a vehicle for this.

The Davignon Panel based their comments on a wide variety of sources including discussions with the Chairmen of the 5-year Specific Programme Assessment Panels. In the case of the Innovation Programme, comments were positive and supportive. "The Innovation Programme is seen as more relevant than ever to the Community's concerns about competitiveness and economic and social cohesion," the assessment experts stated. "Such is the importance of innovation that the activity should be expanded and based on new organisational arrangements within the Commission in support of a European innovation policy." □

As reported earlier in *Innovation & Technology Transfer* (see edition 1/97), the Commission is proposing just six programmes to replace the 18 running today. Three of these will be 'horizontal' in nature. These will promote, in all areas of research and development, international research cooperation, Europe's human potential, and innovation and SME participation. The latter programme will be where much of today's Innovation Programme's activities are continued.

The actual research and development will be carried out under three 'thematic programmes', each focusing on a critical area of science and technology. Apart from the 'traditional' activities devoted to basic research and developing generic technologies, each thematic programme will feature 'key actions', which aim to concentrate efforts on areas of European priority. Each will also focus on developing and optimising Europe's research infrastructure (large facilities, networks and centres of excellence).

The three thematic programmes are:

- **unlocking the resources of the living world and the ecosystem: key actions under this area will focus on: health and food; disease control; the 'cell factory'; management and quality of water; environment and health; and rural and coastal areas.**
- **creating a user friendly information society: key actions here will address services for the general public; electronic trade and new work methods; multimedia content; and essential technologies and infrastructure.**
- **promoting competitive and sustainable growth: key actions will focus on products, processes and organisation; sustainable mobility and intermodality; new perspectives in aeronautics; marine technologies; advanced energy systems and services; and the city of tomorrow.**

The Commission considers that the percentage of EU GNP allocated to the current Programme should be taken as a minimum for the new Programme's budget. It also proposes that the thematic programmes would each receive just over 20% of the overall budget.

INFO

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Bangemann Challenge goes Global

Global access is the key theme as Europe continues to promote the development of the Information Society.

The first stage of the Global Bangemann Challenge will be launched as part of the Stockholm IT Week at the end of May. Global Access, an international conference and exhibition will mark the event. "The Global Bangemann Challenge will pick up where the Bangemann Challenge left off," says Mats Hulth, Mayor of Stockholm.

The Bangemann Challenge, named after the European Commissioner responsible for information technology and tele-

communications, was launched by the city of Stockholm in November 1994. The challenge was for cities around Europe to present their best user-oriented IT projects in one or more of the ten application areas⁽¹⁾. In total 25 major cities from 11 countries participated with 110 projects. At the awards ceremony in January, 16 winners received prizes.

What effect has the Bangemann Challenge had? "It was a challenge to all of us to work together to reach the best

results," says Mats Hulth. "A project for improving services by exchanging experiences. What mattered most was user value. We were not concerned with who had the most advanced technology. Instead the focus was on user benefits."

Cities and regions take the lead

The aim of the new Challenge is to stimulate networking and the global sharing of Information Society projects and experience. "Almost all the winning projects were developed under the Telecities umbrella", says Telecities Coordinator Eric Mino. "So we have been asked to help define the content and criteria for the new Challenge."

Four key themes have already been identified: Improving the Business Environment, Investing in the Future, People at the Centre and Meeting the Global Challenge. "The public and private sectors are increasingly dependent on each other today," says Anette Holm, Project Manager for the Global Access Conference. "It is important to get them together. Both need new technologies, and to respond to real needs. The pressures on organisations to be more efficient are very obvious."

Global access

The Global Access Conference is being arranged by an international group of cities and regions under the umbrella of ANCARA (Advanced Network Cities and Regions Association). The conference will highlight key information



Mats Hulth,
Mayor of Stockholm

The Prizewinners

APPLICATION AREA	WINNING CITIES AND PROJECTS
Teleworking:	Neighbourhood Offices Network, Paris (CATRAL Agency)
Distance Learning:	Sofia Distance Education, Stockholm Virtual Campus, Barcelona SMART, Antwerp
University Networks: SMEs:	Eastman, Edinburgh EDIGO, Antwerp Manchester Multimedia Network
Road Traffic Management:	TELERING, Rotterdam
Air Traffic Control:	VAN, Bremen
Healthcare:	MAMS, Edinburgh Bedside, Stockholm
Electronic Tendering:	Stelha, Stockholm
Public Administration:	IPERBOLE, Bologna Electronic Village Hall Network, Manchester
City Information Highways:	MANAP, Antwerp Craigmillar Community Information Service, Edinburgh

(1) The ten application areas were identified by the report "Europe and the Information Society" (see edition 5/94) as crucial areas where 'trailblazing demonstration projects' should be launched as a matter of urgency.

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●●● Society themes and successful user-oriented IT projects worldwide (see page 22).

Like many of the other Bange-mann Challenge winners, Dave Carter, responsible for economic development in Manchester City Council, thinks it is important to keep the momentum going. "We welcome the opportunity to work with cities from across the world. We need to make sure that those from less well developed regions in the world can get involved too."

Mats Hulth agrees. "Of course

we want cities from America and from the fast growing far eastern economies, but we also want cities from other regions like Africa, Latin America and the Middle East. The Global Challenge should not be seen as competition between Europe, the US and Japan, but as a truly worldwide cooperation for improving our quality of life with the help of information technology."

The potential of the new Challenge is clear. "It gives us the opportunity to ensure that local initiatives go global and

helps put cities and regions on the Information Society map," says Eric Mino. Will it benefit industry too? "Yes, of course. For companies it is a good marketing tool. Private sector participation in these types of projects is an effective way of promoting technologies and products. Siemens-Nixdorf's involvement in the Stockholm teleworking project is a good example." □



► RESEARCH COUNCIL

Dutch Focus on Innovation

Under the Dutch Presidency the Research Council hopes to conclude the EU/US agreement on science and technology, and to reach definitive conclusions on the Action Plan for Innovation in Europe.

A comprehensive agreement on scientific and technological co-operation between the EU and the US should benefit both economies. The current negotiations, started last summer, form part of the New Transatlantic Agenda agreed at the 1995 Madrid Summit.

Mr Eddy Middeldorp, chairman of the Council Working Group on Research during the Dutch Presidency, says the Commission has been given a well-defined negotiating position. "We hope that the agreement will strengthen collaboration," he says. "But whether it really adds anything to the existing bi-lateral agreements will depend on the outcome of the negotiations. The Dutch Presidency would very much like to conclude the agreement before the May Summit in The Hague, but we will not retreat from our negotiating position in order to achieve this."

Through the Research Group,

Member States have been given detailed progress briefings by the Commission, and will continue to offer their advice on the points which remain to be resolved.

Gearing research to innovation

The Innovation Action Plan⁽¹⁾ sets out the Commission's programme for making good Europe's 'innovation deficit' when compared with Japan and the US. In responding to the Plan, Mr Middeldorp says that the Dutch Presidency hopes to contribute to the preparation of the Fifth Framework Programme⁽²⁾. "The Research Group will focus on Chapter Three, which deals with 'Gearing Research to Innovation'," he says. "But we have asked other Council groups to look at the parts which relate to their own areas of activity. We plan to incorporate their comments

with our own conclusions, and hope that the package as a whole will be approved by the Research Council in May."

The Research Group's initial discussion of the Action Plan led to the following conclusions:

- Innovation is important for all enterprises, and should not be focused exclusively on SMEs. High-tech innovation is often not appropriate to SMEs, but they nevertheless need special support in order to be able to access research programmes.
- Innovation is a key criterion for project selection, but scientific excellence must remain the overriding consideration.
- The value of demonstration projects varies between areas of activity. They are of particular importance in social and environmental areas where development is not driven by the market.
- Dissemination of research results should continue to be



A 52-page booklet describing the Innovation Action Plan is now available in ten languages from the RTD Help Desk (see the Subscription Form on page 24). Catalogue No. CD-02-96-488-XX - C (Where XX is the language code).

funded by specific programmes, but the option to fund diffusion through horizontal programmes in certain areas should be kept open. □

(1) See special edition of *Innovation & Technology Transfer*, December 1996.

(2) See this issue, page 3.

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Getting SMEs Connected

Structural obstacles still prevent European SMEs from fulfilling their potential, according to a recent Council Resolution⁽¹⁾. The Internet can help them to compete on equal terms, but to benefit they need support.

The Internet has created new forms of trading. The World-Wide Web offers businesses a simple means of acquiring market intelligence and presenting their own products and services to customers.

Smaller businesses should gain most, particularly those in less developed regions. For the first time they have access to cheap, world-wide communications, which until now have only been available to larger companies. But despite the benefits to businesses in remote areas, Internet providers have so far concentrated on developed regions.

Regional differences

Jointly funded by the European Commission's Directorate-General for Industry (DG III) and for Regional Policy (DG XVI), the WOLF project set out to assess the potential impact of Internet technology — both on the businesses which use it and on the economies of their regions.

David Horne of Octacon Ltd, who co-ordinated the project, says that awareness of Internet technologies was surprisingly low among business communities in all regions. Each partnership ran training programmes designed to show how the web can be used for business purposes.

But direct support had to take account of large regional variations in the existing infrastructure. "Access was limited in



Portugal, so we focused on installing ISDN links to get participants on-line," says Mr Horne. "In Northern Ireland there were already 14 providers, so we concentrated on preparing participants for electronic commerce."

Tendering Services Northern Ireland is one company which has been transformed by the project. The building supplies merchant has launched a subscription service giving its customers on-line access to a catalogue of regional public sector contract opportunities.

Slow payback

Although evaluation is not complete, it is clear that the Internet can help SMEs to win

new business. But Mr Horne says its power should not be over-stated. "In some niche markets, especially where services can be delivered electronically, it has great potential. But for most companies it is just one more marketing tool.

"We have shown that web advertising can generate enquiries from new customers. But converting enquiries into sales remains difficult for remote businesses, when physical products are involved. Internet access is not enough. It takes at least two years of support before you see a return on the investment." □

WOLF (<http://wolf.telepac.pt>): assessing the impact of the internet on less developed regions.

(1) OJ No. C 18 of 17/01/97, page 1.

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Your Window European



Each of the 52 Innovation Relay Centres exists to bring European research and innovation closer to the companies in their region, helping local companies both transfer technologies to and from the rest of Europe and access the EC's research programmes.

With 52 Innovation Relay Centres (IRCs) across Europe, the IRC network exists to link their clients - the businesses in their region - to the wider world of European research, innovation and technology transfer.

Each IRC acts as a broker, helping their clients market their technology around Europe, adopt new technologies from other regions, find partners for research projects, provide assistance in technology transfer negotiations and identify the latest technological trends and new funding opportunities.

While IRCs are there primarily for companies in their region, particularly SMEs, they are also open to universities, research institutes and other organisations involved in the transfer and dissemination of research results and technologies to industries. Two distinct types of organisations in particular can profit from IRC advice and support:

■ **Research performers:** Organisations with in-house research departments that participate regularly in EC or nationally funded research programmes. IRCs can help them find partners in Europe and advise them on exploiting their research results and transferring the technologies they have developed.

■ **Technologically-aware companies:** Organisations with few or no in-house research resources, but whose strategy is driven by the need to continually absorb new technologies. IRCs can help them identify and transfer useful technologies from around Europe, providing them with the tools they need to continually innovate.

Challenges and Opportunities

The network was established in October 1995 after a smaller, more narrowly focused pilot network had demonstrated the effectiveness of the idea. Each IRC is an independent business and technology consulting office partly funded by the EC's Innovation Programme. Staffed by professionals with experience in industry, business and technology, each Centre has been selected through an open competition to provide innovation services and has an in-depth knowledge of the technology needs of the industries in the region.

While the first months were spent establishing the network, it has recently



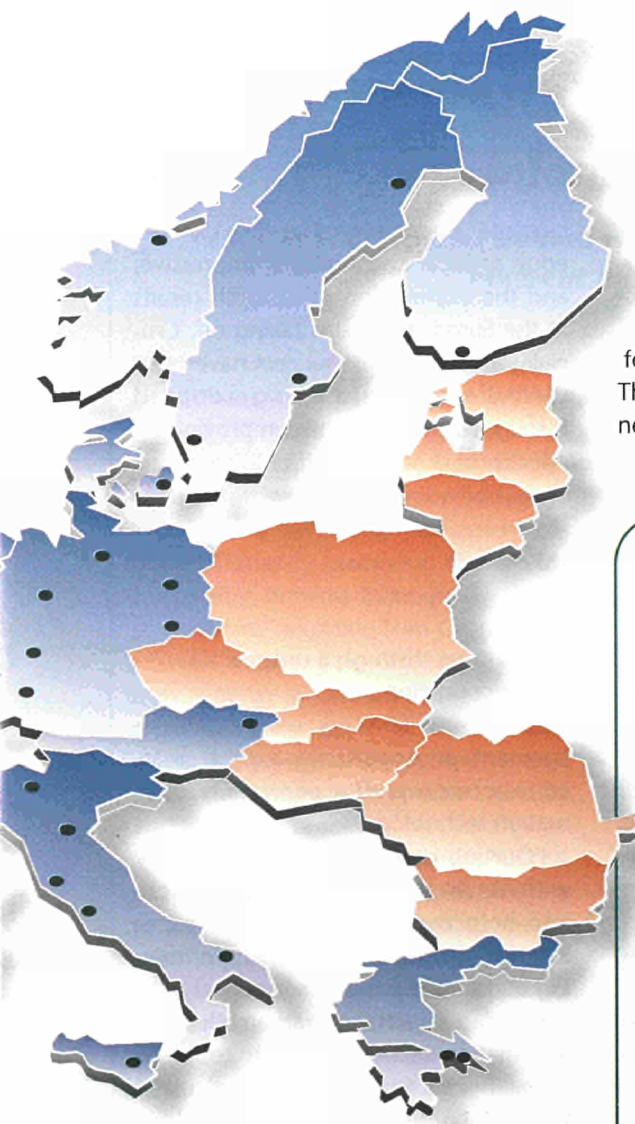
Consten Andersen

Seminars, such as this one held by EuroCenter, the Danish IRC, are frequently used to help local companies with EU research programmes and technology transfer opportunities.

IRCs can help you

- find organisations throughout Europe interested in accessing or licensing your technologies,
- find and transfer interesting technologies developed in other countries,
- identify, apply for and win funding from EC research programmes.

on Innovation



There are 52 Innovation Relay Centres across Europe. Some of them have extended the network further by 'twinning' themselves with a country in Central and Eastern Europe (shaded in red).

gathered momentum and started to deliver concrete results. It has identified best practices from among its members, begun exploring the use of the Internet in improving its operations and established relationships with the countries of Central and Eastern Europe.

I. Focusing on Results

The IRC network uses 'Performance Indicators' to assess its effectiveness. Data covering the first sixteen months of the network's operations are encouraging.

The idea behind the performance indicators is to focus the network's attention on results - signed technology transfer agreements, EC funding for new research projects, and so on. The resulting overview of the effectiveness of the network and its impact on

European companies will help spread best practices throughout the network and improve understanding of intra-European technology transfer.

Developing and implementing a performance indicator system is always a difficult task. In the case of the ●●●

IRC Activities

Behind the Indicators

Six of the technology transfer agreements signed in the second phase involved the IRC for Western and Southern Sweden, as do ten of the research project proposals. What did the IRC do to achieve these figures?

During this period (June 1996-January 1997), the Swedish Institute of Production Engineering Research (IVF), which coordinates the IRC in Western and Southern Sweden, took part in 13 seminars, workshops and fairs, **raising general awareness** of the IRC's existence to around 3,000 people.

This was then built upon in a series of company visits, IRC seminars and workshops and telephone contacts. This resulted in 770 'one-on-one' initial contacts, each involving analysis of the companies' needs and the provision of information on suitable research programmes and possible technology transfer opportunities. The IRC and its counterparts in Denmark and Germany, for example, established a technology exchange network focusing on the baking industry, an important part of each IRC's region. Meetings involving ten companies were held in each country.

These and other initial contacts led to **in-depth advice** regarding technology transfer possibilities to 75 companies. The technology transfer advice usually involved the IRC carrying out technology audits on the company's needs and an analysis of the technologies on offer from around Europe. Overall, 22 transnational technology transfer negotiations got under way, of which the aforementioned six have been signed. Two of them stemmed from the baking industry network.

The initial contacts also led to **in-depth advice** being supplied to another 76 companies regarding proposals for EC research funding. Similar assistance techniques - technology audits, partner search, etc. - were deployed. This resulted in 21 proposals being submitted for funding, of which half were approved during the period. Similar stories can be found in practically every IRC throughout the network.

●●● IRC network, differing national approaches to financing innovation and regional variations in innovation contexts added further complications. Nevertheless, almost all (50 IRCs) of the network provided performance indicators during the second eight-month phase of the assessment exercise.

Three Levels

The indicators measure activity on three levels: **Raising Awareness** (newsletters, brochures, Internet pages, mass mailings, etc.), **Initial Contacts**, which are usually 'one-to-one' contacts with clients who come seeking further information, and **In-Depth Advice**. The latter involves the development of close personal relationships with individual clients and the provision of 'tailor-made' advice and support, resulting in negotiations for technology transfer agreements or submissions to the EC's research programmes for project funding.

In all cases, the indicators measure

Performance Indicators

Results	Phase 1 (October 1995-May 1996)	Phase 2 (June 1996-January 1997)
Signed technology transfer agreements	114 (59% international)	116 (100% international)
Successful EU research proposals	309 (21% success rate)	359 (26% success rate)

The data for the first phase cover the first eight months of the network's existence and 41 of the 52 IRCs. The second phase was also eight months long, but included data from almost all of the network (50 IRCs).

success, not good intentions. Technology transfer agreements or successful applications for project financing, for example, do not appear in the figures until the ink on the contracts has dried.

Overall, the results (see Table) are encouraging. The good progress made in the first phase has accelerated into the second, with every indication pointing to similar improvements in the third,

currently under way. The IRCs' knowledge of local economies is impressive, and the exploitation of research results at the European level is taking off. Crucially, key factors for success have been identified and are being adopted throughout the network, improving its effectiveness.

II. Eastward Expansion

The network has already expanded to include 10 Central and East European countries through a unique "twinning" arrangement involving existing IRCs and the new partner countries.

The partnerships being forged between the IRCs and organisations in Central and Eastern Europe will open doors for businesses on both sides of the old Iron Curtain. These twinning arrangements between an IRC and a FEMIRC ('Fellow Member of the IRC network') usually build on already established links between the regions or countries concerned.

Links between a Dutch IRC and organisations in Hungary, for example, build on a Bilateral Memorandum of Understanding on education and culture, which was established in 1992. Adrian Van Paassen of the Innovation Relay Centre Nederland sees the relationship with Hungary as a two-way affair. By sharing knowledge about technology transfer and innovation man-

agement, an opportunity will be created to access expertise, particularly information technology.

"Our job now is to support Hungary with technology transfer know-how and help them become more 'Euro-literate'," he said. "We will help in training and at the same time connect with Hungarian experts in mathematics and information technology. This could be of real benefit to both sides, particularly when it comes to software development. Other promising areas include agriculture and food technology, and biotechnology."

The Hungarian FEMIRC is expected to be in full gear this summer. Mr Van Paassen hopes to see Hungarian participation in ESPRIT (information technology) projects involving the universities in Eindhoven and Amsterdam and local companies, for example. The real challenge, he says, will be to discourage a 'brain-drain' out of the country.

Twinning with Eastern Europe

FEMIRC	IRC
Bulgaria	HELP Forward, Athens
Czech Republic	Steinbeis-Europa-Zentrum, Stuttgart (Germany)
Estonia	IVF-EU R&D Council, Stockholm
Hungary	EG-Liaison, The Hague (the Netherlands)
Latvia	VDI/VDE, Berlin
Lithuania	RECITAL, Pisa (Italy)
Poland	BRIST, Paris
Romania	HELP Forward, Athens
Slovak Republic	VDI/VDE, Berlin
Slovenia	Forbairt, Dublin

Twinning arrangements between individual IRCs and 10 FEMIRCs in Central and Eastern Europe will help encourage the development of technology transfer beyond the EU's borders.

Building on Business

Similarly, another IRC - HELP Forward, based in Athens - is extending Greece's relationship with Romania and

Bulgaria. According to IRC consultant Nick Melanitis, this arrangement will build on the many ties that the Greek business world has with both countries. "In 1996 alone, around 1,100 Greek SMEs invested in Bulgaria, and there is a considerable amount of investment in Romania," he says. "By partnering with these countries, we can contribute a lot

to reviving the local economies and creating employment."

The countries represent very different markets. Bulgaria is a country of eight million people, while Romania has a population of 23 million and is located next to the Ukraine, a gateway to the Russian Federation. Both countries offer rich natural resources, with the food

sector looking very promising. Crucially, both countries have a reputation for having excellent scientists, and although many left for the United States, they are slowly starting to come back. The aim is to help create the right atmosphere for their return.

In Bulgaria, the creation of the FE-MIRC at the beginning of April is ●●●

Case Study

Finland-Ireland: A Current Affair

IRCs in Finland and Ireland were able to help two companies overcome the legal hurdles inherent in setting up a new joint venture company.

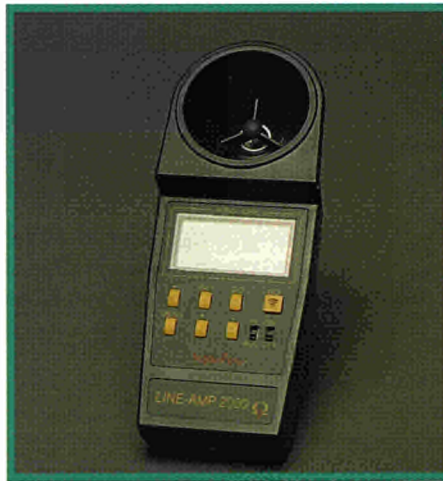
The story begins with POWEX, a Finnish company which develops and manufactures monitoring and control equipment for the energy production and distribution industry. "We wanted to develop equipment capable of directly measuring the electrical current flowing through overhead power lines," explains Tom Grönstrand, POWEX's managing director. "Up to now, energy distributors have simply calculated these currents. This, however, is not always very accurate, and doesn't always help locate short circuits and other line problems."

Actual direct measurements, POWEX reasoned, would enable the distributors to locate the faults with greater precision, improving network efficiency and lowering prices. They therefore wanted to develop a measuring unit which could be fitted into the utilities' service vans. However, they faced a problem.

Complementary Expertise

"We really felt that we should find a partner to work with, because we needed to get onto the market quickly," Mr. Grönstrand adds. "In particular, we wanted a partner with expertise in ultrasound ranging technology, around which our idea revolves."

After some research they found Superule Systems, an Irish company with the appropriate technology. The early contacts went well, resulting in agreement to create a joint venture in Ireland to develop and manufacture the new unit. The agreement also gave POWEX access to Superule's interna-



SUPAPOW's remote current meter should find markets around the world, particularly where electricity is distributed over long distances.

tional marketing network - which includes agents in North America, Asia and Australia - for its existing products.

That, however, was not the end of the story. SUPAPOW, the new company, would be the very first Irish-Finnish joint venture. And breaking new ground, Mr. Grönstrand confirms, is never easy. "We had absolutely no knowledge of the legal requirements for a Finnish company setting up a joint venture in Ireland, or even much idea of how to find out. This could have become a major headache."

They therefore contacted the Helsinki branch of the IRC and enlisted their help. According to Tuija Ypyä, the IRC's Finnish legal officer, "they presented quite a challenge. We needed to develop new relationships and understand a different legal system. But the most im-

portant aspect was helping the two companies to foster a climate of mutual trust."

Production Soon Under Way

Between them, the Finnish and Irish IRCs were able to guide both partners to the successful completion of the various contracts. SUPAPOW was duly created in September 1996. It employs 12 people and will begin production of the partners' *LINE-AMP 2000* remote current meter in the coming months.

"The IRCs saved both companies a lot of time, effort and money," Mr. Grönstrand concludes. "We've already received a lot of interest in the new meter, so we're confident it will be a commercial success. We expect to sell thousands to electricity utilities around the world, thanks in part to our partners' distribution system."

The two companies were not the only ones to benefit. "We learnt quite a bit ourselves," says Tuija Ypyä. "We now realise that mutual understanding is just as important as drawing up satisfactory agreements. We intend making sure others benefit from the experience, which is why we've produced 'Doing Business in Europe', a guide for other Finnish companies considering a similar strategy."

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●●● seen, according to Mr Melanitis, as "an oasis in a difficult situation." The privatisation process is still at a very early stage (many businesses are still state-

owned) but the necessary climate of cooperation does exist. The Romanian FEMIRC is also expected to be a catalyst for businesses to grow and become bet-

ter connected with EU companies and research institutes.

III. New Networking Tools

The Internet in general and the World Wide Web (WWW) in particular present new opportunities to the IRC network to add value to their services.

As more companies start using the Internet and Web, it will become an integral part of the innovation and technology transfer process. Part of the IRCs' basic business support strategy, therefore, is to encourage their clients to integrate the Internet and Web into their everyday business practices. Not only does this help each individual company, it also promotes a better context for innovation throughout the region.

It will also help the IRCs deliver their services. Around 60% of the IRCs currently have a presence on the WWW, with this figure rising to 100% before the end of the year. "Experimenting

with the Web is not easy — new services, technologies and techniques seem to be appearing daily," explains Francesco Surico from the IRIDE IRC of Italy. "Nevertheless, it has already become a vital tool for our network and our clients, providing them with a direct and rapid link to sources of information. But it is not the answer to every problem. It is not enough just to provide information - the client needs to know how to use it. That's why we're developing 'scenarios' on our WWW site to help users access its services."

Wiring the Network

The Internet is also becoming an important tool for the network itself. The IRC Coordination Unit in Luxembourg runs a WWW site with public information - an introduction to the IRCs, contact information for each IRC, etc. - and a set of password-protected networking tools destined solely for the IRCs.

Today, for example, any IRC can submit a 'technology offer' via the WWW interface. Each offer details a local company's technology that others may find interesting to license. Summaries are then e-mailed to every IRC at the end of the day. In this way, any IRCs which know of companies in their area who could be interested in the technology



The 'public information' available on the IRC Coordination Unit's WWW site provides contact information on each Relay Centre, as well as links to their Home Pages.

can go back to the WWW for more information. The information is also usually submitted to CORDIS for wider, less focused distribution.

The same can be done for 'technology requests', where companies with specific technological needs can broadcast their interests around Europe. The near future will see a partner search service launched along similar lines to help companies link up for EC research funding, as well as a series of bulletin board systems established for 'IRC thematic groups' - a subset of the IRCs particularly interested in, say, biotechnology.

IV. Networking the Future

The next two years will see the network both optimise its operations and prepare itself for the EU's Fifth Framework Programme.

The Innovation Relay Centre network is now well established, with the results of the Mid-Term Evaluation appearing by the summer. While the autumn will probably see a few adjustments to some of the IRCs, the next two years will essentially focus on making the network function as effectively as possible.

What of the medium-term future? The Commission's proposal for the Fifth

Framework Programme, which will run from the end of 1998 to 2002, is now firming up. It specifies an 'Innovation and SMEs' programme which will bring many of the activities of the Innovation Programme together with other SME-oriented actions, such as CRAFT (see page 4).

Some of this Programme's aims include the objectives of today's IRC Net-

Further Information

Contact information for the IRC in your region can be obtained from:

■ European Commission,
DG XIII/D-3

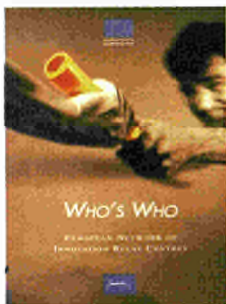
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Http://www.cordis.lu/irc/home.html

The WWW site also includes links to each IRC's WWW site and e-mail addresses, as well as a general introduction to the network.



Contact information for the entire network can also be found in the 'Who's Who' brochure, available in English.

work: to allow SMEs easy access to the EU's research programmes, to add a European dimension to national innovation systems and to provide SMEs with the necessary tools for transnational technology transfer.

Not that the IRC network will remain unchanged. The proposal also calls for

the "rationalisation and coordination at Community level of networks providing information and assistance on the Community's research and innovation activities, [and the] management, in concert with the programmes, of the support network for innovation and technology transfer."

What this will mean in concrete terms is still being discussed by the European institutions and the Member States. One thing, however, seems certain - the next six years will see the IRC network become an established, and possibly fundamental, part of Europe's innovation infrastructure. □

Case Study

A Breath of Fresh Air

Innovation Relay Centres based in Salzburg and Paris helped form an Innovation Project which is currently transferring innovative biofilter technology to various sectors and countries across Europe.

Biofilters, as their name implies, employ living organisms to consume unwanted pollutants. Unfortunately they are only as robust as the organisms inside them. Most are unable to operate outside quite limited temperature, humidity and pH ranges, and are vulnerable to changes in airflow and humidity. Many also use chemical processes, which can result in hazardous wastes which must be disposed of.

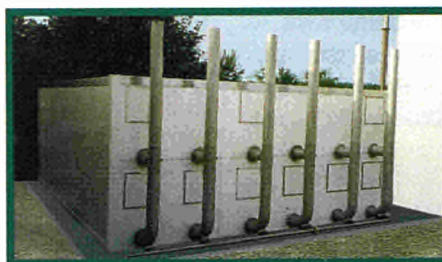
Applications have therefore been limited. The many industries which need to control odorous emissions, for example, have found biofilters simply too ineffective and costly.

The Actopentin Biofilter, developed and recently patented by the Austrian SME GLK GmbH, overcomes some of these problems. It is based on a purely natural process - the microorganisms are fed on a mixture of grape seeds, other natural additives and minerals - and produces no chemical wastes, while the equipment's modular design allows it to be used by companies of all sizes.

The Network Effect

GLK had already installed a system in a leather factory and were keen to adapt it to other sectors and countries across Europe and beyond. But having the technology is not always enough in itself, according to Franz Koeniger, GLK's Deputy General Manager. "Every young company with new technology has to be very careful when adapting to different markets and areas," he says. "It's simply not true that the world will beat a path to your door if you invent a better mousetrap."

Technologie Agentur, a partner of the



GLK's biofilter technology is being transferred to new sectors and new countries thanks to the partnerships formed through a number of IRCs.

Austrian IRC, encouraged them to come to BIOT95, a technology exchange event held in the framework of MIDE95, a major technology exhibition in Paris. "The IRC for the Paris region produced a catalogue for the event describing all of the participants' technology offers and demands," Vincent Kampschoer of Technologie Agentur explains. "Renault saw what GLK were offering and wanted to see whether our technology could treat the emissions from their lacquering operations."

Similarly, the Austrian IRC were able to put GLK in contact with Oil Equipment BV, a Dutch pollution control company, and Landsudvalget for Svin, an association of Danish pig farmers.

First Demonstrations

The various IRCs helped the partners assemble a proposal for an Innovation Project last year. "The EUROBIOFILTER project fitted all of the Innovation Programme's criteria, being both trans-sectoral - the filter is to be adapted to several different industries - and trans-

national," Vincent Kampschoer continues. "It was approved last October."

Oil Equipment has already begun testing the filter in a Dutch potato processing plant. The new biofilter controls the plant's odour problem so well that they have just ordered a second. Oil Equipment are also planning tests in other food processing plants, particularly in the fishfood sector.

Renault, meanwhile, began leasing a mobile test unit earlier this year, which will help GLK determine exactly what type of filter will best meet the car manufacturer's needs. Landsudvalget for Svin, finally, are now planning a measurement campaign for this summer, when the odorous emissions from pig farms across Denmark are at their peak.

"These pilot demonstrations are crucial," says Mr. Koeniger. "They show which industries could benefit the most from our technology. And of course, working demonstrations in a number of sectors are a very effective selling point. This project will play a vital part in helping us break into a large number of markets."

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► AWARENESS ACTIONS
THE INNOVATION PROGRAMME IN BRIEF

The Innovation Programme implements the Third of the four Activities of the Fourth Framework Programme (1994-1998). Run by DG XIII/D, the Innovation Programme encourages the exchange of research information and the absorption of new technologies by European companies.

Embracing Change

In the past, small businesses only had to deal with major change occasionally. Today, they must constantly adapt to revolution in their technological, legal, and market environments.

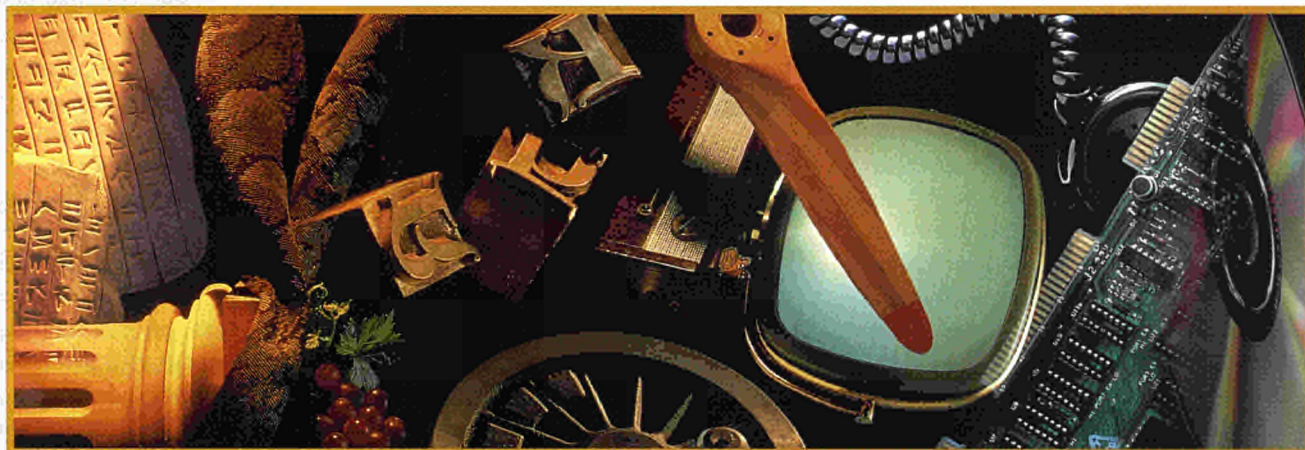
Too many small and medium-sized enterprises see change only as a threat," says Lars Karlsson. "We want to help them to develop organisational cultures which welcome innovation as a source of business opportunity."

Mr Karlsson is the coordinator of the European Con-

only create new jobs if it is able to deal with change. Many SMEs, and especially micro-enterprises, lack the capacity to absorb new technologies. Often, they need outside help to carry out the necessary training, restructuring and adjustments in management practice.

systems needed to mobilise the knowledge and skills of their employees, as a way of coping with change."

The two-year project will develop, translate and integrate the existing methods, and will make them available on-line, as well as in printed form, to organisations all over Europe.



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tinuous Improvements Circle (ECIC) project, one of four new Innovation Programme projects which have recently entered their implementation phases. The aim of the Training and Dissemination Schemes Projects (TDSPs) is to support the development of attitudes and behaviours which are receptive to technological innovation. The projects will build networks, and develop and test methods and tools, designed to spread best practice and create a culture of innovation in the workplace.

A toolkit for innovation

SMEs are the primary source of employment growth in Europe. But an enterprise can

The ECIC project's 10 partners are drawn from five Member States. Each is an established authority on modern management practice, with combined experience spanning a wide range of organisational types. ECIC will adapt methods and tools which have already been successfully tested by the partners in a national context, to create a comprehensive 'innovation toolkit'.

"Our approach is based on the Nordic study circle tradition and the concept of continuous improvement," says Lars Karlsson, "and the toolkit will encourage a participative approach. It will offer SMEs, local and regional authorities, communities and other organisations practical help to develop and maintain the internal

Practicing what you preach

Mr Karlsson stresses that the project will do more than just develop a methodology. "It is important that the project itself demonstrates the advantages of new information and communication technologies," he says. "An alarming number of new micro-businesses do not use computers at all. In a two-person business, the time it takes to maintain paper-based financial records is completely disproportionate to the time available for production. We hope that the opportunity to access ECIC's on-line support and advice services will help to overcome resistance to business computing by giving entrepreneurs

Innovation Home Page
<http://www.cordis.lu/innovation/home.html>

a first taste of some of its benefits."

The ECIC toolkit will function as an open system for communication, training and problem solving, creating regional innovation networks, and offering cross-border electronic conferencing and on-line consultancy. An ECIC World-Wide Web home page will create a shop-front for the dissemination of project information to the public at large.

Worker consultation on environmental problems

A collaborative approach is also central to a second project, Salud, Ambiente y Trabajo (Health, Environment and Work — SAT). The project plans to define and pilot new procedures, designed to secure the active participation of workers and trade unions in ad-

ressing the environmental impacts of manufacturing industry.

Drawing on methods successfully applied in the field of industrial health and safety, SAT will provide a framework for the training of workers, employers and consumers, as the basis for environmental problem identification and problem-solving.

The project will produce and distribute a manual, offering users:

- a framework for environmental awareness-raising campaigns in the workplace
- a guide to environmental hazards and their occupational and public health implications
- procedures for identifying environmental hazards and designing viable alternatives
- information on technical standards, sources of finance and eco-audit schemes

■ guidance on setting up collaboration and information exchange networks, and on collective bargaining as the basis for workplace agreements on environmental issues

The project's five partners, from Spain, Sweden and the United Kingdom, are all national organisations. A key objective is the adaptation of participative Swedish and British techniques for use in southern European countries.

Public awareness

The focus of the other two projects now entering the implementation phase is on raising public awareness of innovation. Fleximodo will pilot new methods and materials for scenario workshops at which citizens can participate in discussion of the technologies necessary for sustainable urban development. Science by Mail will develop and test methods for promoting the understanding of new science by creating direct links between individual scientists and secondary school pupils.

Further Details on the Web

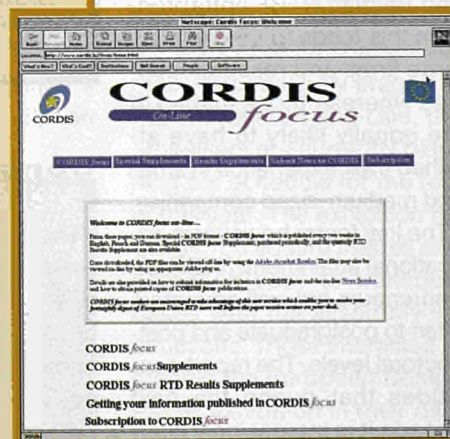
Further information on all four Awareness Action projects can be found in the 'Awareness Actions' page on the Innovation Programme's WWW site.

This page (http://www.cordis.lu/innovation/src/3baa_int.htm) describes all of the Programme's activities devoted to increasing awareness of science and innovation in Europe. Apart from the Training and Dissemination Schemes, the other main activity is the 'European Awareness Scenario Workshops: Sustainable Urban Living in the Coming Decades', covered in detail in edition 3/96.

Neither activity focuses on the general public's appreciation and knowledge of science - rather, they are oriented towards helping companies exploit technology and improving the way society is involved in the decisions regarding the technological developments which can change their lives.

New material is being added to the Innovation Programme's site all the time. As *Innovation & Technology Transfer* was going to press, for example, a synopsis of the projects selected under the Innovation Management Techniques action line had been made available. To keep up to date, the best option is to visit the "What's New" page frequently ([Http://www.cordis.lu/innovation/src/2w_intro.htm](http://www.cordis.lu/innovation/src/2w_intro.htm)).

Lastly, the CORDIS news service is now available in Spanish and Italian.



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Profiling Entrepreneurs in New Technology Based Firms

A recent review of new technology based firms (NTBFs) in Europe suggests that science doctorates and financial support are the keys to success.

Founders of new technology based firms (NTBFs) differ in several respects from European entrepreneurs in general, and show a higher educational attainment than that of the working population as a whole. They also feel that insufficient access to external finance is a major factor in constraining their capacity for business growth. NTBFs rarely achieve success without collaboration in some form with larger private sector organisations.

These are some of the key findings of a recently completed review of statistical data on the economic importance of NTBFs commissioned by EIMS, the Innovation Programme's European Innovation Monitoring Service. The report was carried out by a consortium coordinated by the University of Warwick (UK).

NTBFs are important for two reasons. As companies involved with leading edge technology, they play a key role in the innovation process. Often linked to universities and science parks, NTBF entrepreneurs are important agents in the dissemination and transfer of technological know-how. Secondly, NTBFs are generally perceived as key assets for future economic growth and employment.

Most studies of NTBFs have been carried out on a sectoral or regional basis. Problems

in defining NTBFs have made comparative cross-sectoral and transnational studies difficult to tackle. The aim of this new EIMS study therefore was to review the knowledge about the economic importance of NTBFs across Europe. The report is based on literature surveys and original research on national data, and covers information from sixteen countries.

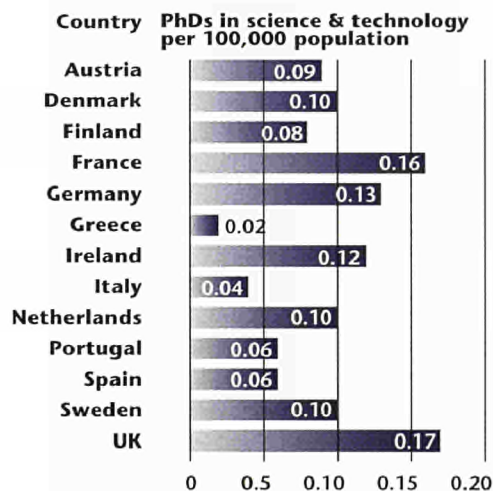
NTBF entrepreneurs

What kind of people tend to be NTBF entrepreneurs? The study found that founders of NTBFs in Europe were almost exclusively male. Aged between 30 and 50 years old, many have backgrounds in engineering. They also have substantial prior work experience. For French and Belgian NTBF entrepreneurs this tends to be gained in large firms and research centres whereas those in the UK are equally likely to have attained their experience in small and medium-sized companies.

The key factor however is educational attainment. NTBF entrepreneurs are well educated, often to postgraduate and post-doctoral levels. The report concludes that during the next decade it is increasingly likely that the only founders of NTBFs will be people who have served a PhD 'apprenticeship' in a

science-based subject. The highest number of these are to be found in the UK and France.

Completed Doctorates in Science/Technology/Maths



adapted from EIMS, Review of Statistical Data on the Economic Importance of New Technology Based Firms (NTBFs), 1997, Table 3.3, p.74

Constraints

The report found that NTBF entrepreneurs experience different constraints in different countries. Shortage of skilled personnel and market awareness are cited as constraints on NTBF start-ups in Austria. Administrative problems and credibility are key factors in France. Sometimes the cultural

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context plays a role. Entrepreneurs in Finland, for example, are not always interested in 'growing' their NTBFs.

But the one constraint common to NTBFs in all countries is that of finance. Technical entrepreneurs in Ireland are starved of risk capital. High interest rates and lack of capital and finance for investment are major problems for innovative companies in Greece. Even in the UK, where venture capital financing is more established, the most technologically sophisticated firms are the ones most likely to report financial constraints.

Supporting NTBFs

Addressing these constraints, the report found that the majority of EU countries do not have financial support policies specifically for NTBFs. This, suggest the authors of the report, is not a wise policy. "We believe there is a case for policies which focus exclusively and explicitly upon NTBFs. This is because the problems, particularly of financing, which NTBFs experience are very different from larger enterprises in the technology sectors or small firms more generally.

In short there is some justification for regarding NTBFs as a 'special case'. This is supported by the Dutch experience which provides quite clear evidence that policies which do focus exclusively and explicitly on NTBFs provide clear additionality," they conclude. □

► DESIGN

1997 European Design Exhibition

Following the award of the 1997 European Design Prizes last January, a travelling exhibition has been arranged.

An initiative under the Innovation Programme, the European Design Prize aims to spread 'best practice' in the use of design as a tool for innovation. Full details of this competition were given in the Dossier section on design in the last edition of *Innovation & Technology Transfer*. Eleven

companies received prizes out of a total of 64 finalists at the awards ceremony on 31 January, 1997.

Now a travelling exhibition has been organised featuring the work of all 64 finalists. Already successfully staged in Paris, Frankfurt and Lille, the organisers are currently planning the schedule for the rest of this year. The exhibition requires 150 square metres and comes in easy to transport cases with full assembly instructions. Those interested in staging the European Design Prizes exhibition in their own locality should contact the organisers. □



Part of the 1997 European Design Prizes Exhibition.



The awards ceremony in Paris.

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► **INDUSTRIAL AND MATERIALS TECHNOLOGIES**

Brite-Euram On-line on CORDIS

The new Industrial and Materials Technologies (Brite-Euram) web pages offer the research and business communities improved access to programme information.

It is now possible to find out about most aspects of Brite-Euram on-line through CORDIS. The new home page for the Programme is already proving popular. In the first two months after its launch at the end of 1996, 1,100 visitors to the Web site requested supplementary paper-based information.

Each potential participant can select and study the informa-

tion most relevant to their own needs — from a basic description of the programme to details about research project contracts. They can examine the work programme or browse through descriptions of existing projects. They can even download the application forms.

As well as improving the quality of its service to programme participants, the European

Commission expects web publication to save time and money by reducing both the volume of individual enquiries and demand for paper-based information. It will also simplify the updating of programme information.

Development of the Brite-Euram site on the CORDIS server will continue. Planned services include access to guid-

C o n t a c t
<http://www.cordis.lu/brite-euram/home.html>
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ance notes for accompanying measures, information on thematic networks⁽¹⁾, and links to related sites such as CRAFT and the programme for international cooperation with the countries of Central Europe and the New Independent States, INCO-COPERNICUS. □

(1) See edition 6/96.

► **INFO2000**

Multimedia: A Golden Opportunity

The launch of MIDAS-NET, Europe's new multimedia network, has attracted keen interest from businesses.

Launched in sixteen cities across Europe, MIDAS-NET, the Multimedia Information Demonstration and Support Network, is already proving a success. Martina Flynn, Coordinator of MIDAS-NET Ireland, says companies see multimedia as a golden opportunity. "We commissioned a survey and found that 63% of Ireland's top firms wanted to be better informed about the Internet. 59% of these wanted information on multimedia so that they could get the commercial benefits. We had over 130 companies at our launch. They were very excited about the potential. Our case studies showed how multimedia could really open up new markets." Maryse Collins, Marketing

Manager at Kenny's Bookshop in Galway agrees. "The Internet has transformed our business from a small local one to an expanding internationally trading company."

MIDAS-NET has 23 nodes in all EU Member States, plus Norway and Iceland. Part of the INFO2000 Programme, it aims to stimulate demand for multimedia by demonstrating new products on the market to business and other users. "Our focus is on providing practical advice and support to help people use multimedia information content and sources effectively and easily," says Martina. "Our help-desk will be a very valuable resource for local companies." □



INFO2000's 'Programme Contact Points' file on their WWW site covers all EC multimedia-oriented initiatives, ranging from MIDAS-NET to audiovisual training initiatives.

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► JOINT RESEARCH CENTRE

Satellite Data: New Projects Launched

The Centre for Earth Observation is promoting the use of environmental data collected by satellites by bringing providers and users together to develop cost-effective applications.

The volume and resolution of the data gathered by satellites and aerial sensors has been growing steadily since the early 1970s. The resulting data sets offer researchers and policy-makers a unique source of accurate, long-term information on subjects such as land cover, habitat change, and the marine environment. To date, however, this information has been underused. Data is dispersed in independent archives, and no single body is responsible for its analysis, storage, cataloguing and distribution.



Satellite image of an EON2000 site - Glen Affric, Scotland.

Developing applications

Funded as part of the Environment and Climate programme, the Centre for Earth Observation (CEO) is a new organisation based at the European Commission's Joint Research Centre at Ispra in Italy. Its design and implementation phase, expected to last until December 1998, is now underway. The role of the CEO is to promote improved data standardisation and quality assurance, to coordinate the design and operation of data archives and delivery services, and to stimulate the creation of high level information products.

The CEO Programme recently launched 20 projects, each aiming to identify the information needs of one or more clients, including weather fore-

casters, power distributors and environmental protection agencies. The projects will work with these end-users to test the potential for earth observation data to add value to the information available from conventional sources.

Biodiversity

One of these projects is Earth Observation for Natura 2000, known as EON 2000. Launched in March, this is designed to support compliance with the EU Habitats Directive. This requires Member States to monitor the conservation status of a network of designated areas known collectively as Natura 2000. The project will develop a Geographic Information System which uses satellite imagery alongside field observation data. Changes to forest

habitats in pilot areas of Austria, Scotland and Finland will be monitored over a three year period. If the system proves successful, it will then be rolled out across the European Union.

According to Dr Michael Pooley of the UK's National Remote Sensing Centre (NRSC), the satellite data is crucial. "It offers a cost-effective way to measure habitat damage or regeneration accurately," he says. "The agencies which will use the system do not have the resources to mount large scale ground studies. Satellite data also ensures that evidence about the impact of their conservation measures is objective."

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► BRITE-EURAM

Easing the pain

Metallic/ceramic artificial joints developed by a Brite-Euram 2 project promise to substantially improve patient quality of life.

The field of human joint replacement surgery is well established but imperfect. The surgical procedures are complex and the design and materials technology of prosthetic joints need improvement. The most widely used materials in these joints have been metals

and polymers, but their use gives rise to problems, particularly due to wear. Current prosthetic components, such as artificial knee joints, rely on the use of ultra high molecular weight polyethylene (UHMWPE) as a low friction material. However, levels of wear and tear are poor. UHMWPE displays a distinct lack of abrasion resistance during use, releasing microscopic debris and causing painful inflammation around the joint, thus limiting its useful life.

these materials. Complicated designs required varying thicknesses and sharp edges, which led to mechanical failure. The AJOP project, part of the Biomaterials section of the Brite-Euram programme, looked at advanced metal-ceramic joining techniques to optimise low

friction knee prostheses. It has successfully tackled the problem by developing the technology necessary to produce combined metallic/ceramic replacement joints.

Targeted Research

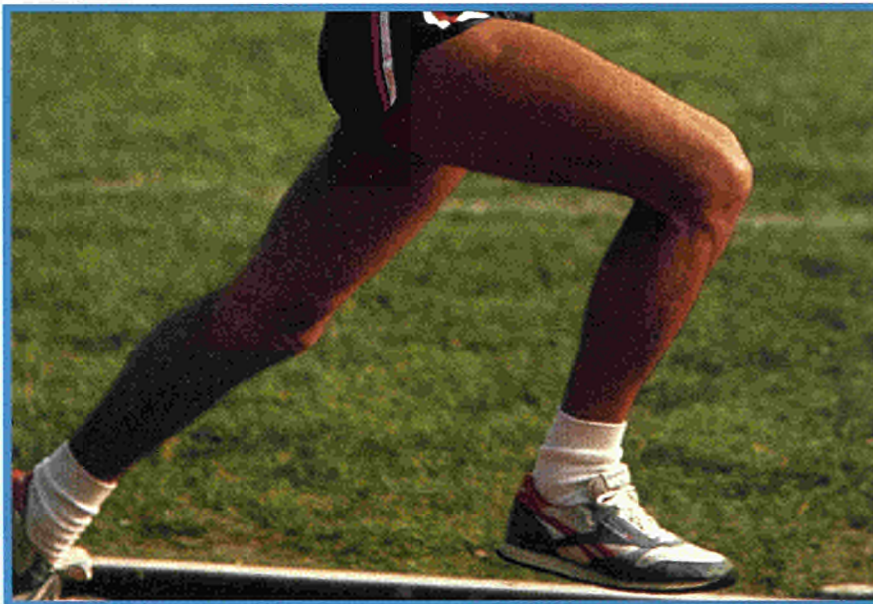
AJOP has brought together seven partners from five EU Member States - Italy, Germany, the Netherlands, Portugal and the UK. Alessandro Facchini, from the prime contractor LIMA-LTO, explains how they approached the project. "We decided that the best road to improved artificial knee joints would be to develop the mate-

rials and manufacturing techniques to enable them to be designed so that the sliding part is made from ceramics, while the load-bearing structural components rely on titanium alloys. The target was to reduce the wear and debris, and consequently double the useful lifetime of the joint, as well as to produce joints which would help the re-growth of bone."

Solving two technical issues was the key to the project's success. "We had to devise advanced active vacuum metal/ceramic brazing techniques to minimise stress damage during production. New biocompatible ceramic filler materials, with suitable mechanical properties, were needed," says Facchini.

Other tasks included preliminary prosthesis design and *in vitro* biocompatibility and mechanical testing. Prototype design and production were followed by mechanical and *in vivo* testing and an extensive analysis of production costs along with cost/benefit ratios.

As to the future, the next step in the process of advancing AJOP technology to the industrial level is imminent. "Clinical trials are scheduled during 1997. We are all very optimistic that the prostheses developed in the project will prove themselves in the real world," says Facchini. □



Previous attempts to improve prostheses focused on the substitution of UHMWPE with ceramics but failed due to the poor mechanical properties of

and polymers, but their use gives rise to problems, particularly due to wear. Current prosthetic components, such as artificial knee joints, rely on the use of ultra high molecular weight polyethylene (UHMWPE) as a low friction material. However, levels of wear and tear are poor. UHMWPE displays a distinct lack of abrasion resistance during use, releasing microscopic debris and causing painful inflammation around the joint, thus limiting its useful life.

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Libraries Get Wired

Information and communication technologies pose a challenge to libraries. But, as two recent projects demonstrate, they also offer them opportunities to streamline and extend their traditional services.

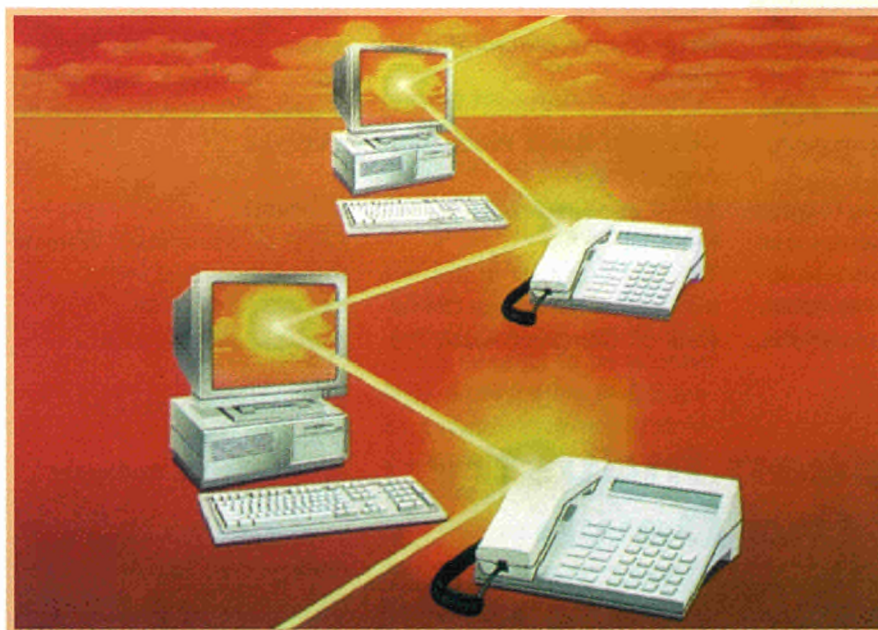
In the 500 years since the invention of the printing press, libraries have developed sophisticated systems for the storage and retrieval of paper-based information. But new technologies offer faster and more flexible means of accessing documents of all kinds. Increasingly, readers are using telematics to have more control over the retrieval of information, and to ensure its delivery direct to their desktops.

Town criers became redundant as literacy spread. Libraries must adapt to the information age if they are to avoid a similar fate. But they must also meet the needs of readers who are not 'computer literate'. Two projects funded under the Telematics for Libraries programme show how technology can help to achieve both these objectives.

Fax retrieval

The FastDoc system enables readers to retrieve documents instantly, at any time, from anywhere in the world. Ten academic and industrial test groups found it to be both cost-effective and easy to use.

Originally designed for a library of chemical research papers, FastDoc gives users access to an archive of two million articles, scanned and stored as image files. Reinhard Ecker of ABC Datenservice explains how it works: "A document is ordered using our Windows software, simply by tagging the entry in a catalogue.



Sprintel's voice-recognition system deals with routine enquiries automatically.

The user's PC automatically places the order via a dial-up link to the library's computer, which automatically processes it. The first page reaches his fax machine within five minutes, together with an invoice, also generated automatically."

FastDoc can easily be adapted for use with other document archives, and the partners plan to add an option to transmit both order and document via the Internet.

Voice recognition

Sprintel, on the other hand, is aimed at the many library-users who have neither the equipment nor the skills to retrieve information electronically.

Public libraries receive a steadily increasing volume of

telephone calls from readers. The vast majority concern matters such as reservations, renewals, and opening hours. Sprintel uses voice-recognition technology to handle these simple queries automatically. More complex requests are routed to the appropriate librarian or voice-mail box. A pilot installation in a large Belgian library recognised nearly 100% of users' commands.

Both FastDoc and Sprintel will improve efficiency by relieving librarians of routine tasks, increasing the time they can spend with readers who need expert help. ■

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► CONFERENCES

Stockholm IT Week: Global Access Conference 26-28 May, Stockholm (Sweden)

The Global Access Conference officially launching the Bangemann Challenge (see page 5 this issue) will address a wide range of current issues in the field of IT including new working environments, Internet and Intranets, ICT infrastructures, city nets and public services. Key themes of the programme are developing the Information Society and removing commercial, geographical and administrative boundaries.

Part of the Stockholm IT week (26-30 May), the Conference will include an exhibition focusing on the Internet, multimedia and communications.

Both events are being organised by ANCARA, an international group of cities and regions including Smart Valley and Orlando in the US, Osaka in Japan and Singapore. The Conference language will be English.

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Computer-Aided Production Engineering 11-13 June, Warsaw (Poland)

The host organiser of this, the thirteenth International Conference on Computer-Aided Pro-

duction Engineering (CAPE'97), is the Warsaw University of Technology, a partner in the FEMIRC (Fellow Members to the Innovation Relay Centres) recently established in Poland (see Dossier).

The conference will be conducted in English. It will address all aspects of the field, including CAD/CAM, decision support and expert systems for production management and engineering, flexible manufacturing systems, simulation techniques, concurrent engineering, rapid prototyping and more.

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European Congress on Biotechnology 17- 21 August, Budapest (Hungary)

The eighth European Congress on Biotechnology (ECB8), organised by the European Federation of Biotechnology, will provide an overview of the latest developments and future prospects in the rapidly developing field of biotechnology.

The scientific programme will present the entire spectrum of issues relating to biotechnology. In particular, obstacles to innovation in the scientific, educational and economic fields will be identified and discussed. In addition to plenary lectures, workshops, symposia and courses, there will be two half-day symposia from the Commission on its life sciences research programmes (BIOMED, BIOTECH and FAIR).

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Http://www.dechema.de/englisch/europa/biotec/pages/biotec4a.htm

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Technology Management Summer School 17-30 August, Leuven (Belgium)

The seventh European doctoral summer school in technology management, sponsored by the European Community's Training and Mobility of Researchers (TMR) programme, is aimed at doctoral students working in the field of technology management.

Participants will be required to present a paper on their research, and discuss this with the course members. In addition to the student presentations, a number of tutors from leading European institutions will give presentations and lead workshops. The programme will also include visits to companies and presentations from technology managers and consultants from a non-academic environment.

The school is open to participants from all over Europe, with applications from institutions in Central and Eastern Europe particularly welcomed. A limited number of participants from outside Europe may also be admitted. Some scholarships and subsidies may be available to assist participants in meeting the costs of attendance.

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European Industry at the Dawn of the 21st Century

27-30 October, Toulouse, France

The seventh European conference on industrial technologies is being organised by the Commission under the framework of the Brite-Euram (industrial and materials technologies) and SMT (Standards, Measurements and Testing) research programmes. The central theme is "Europe's research at the service of its people".

The conference will address three main areas through parallel sessions, invited papers, technical presentations and round-table discussions:

- Towards a better living and working environment
- The factory of the future
- New perspectives in aeronautics

The closing session of the conference will provide a synthesis of round-table debates and technical sessions, together with a presentation of European industrial RTD perspectives envisaged under the Fifth Framework Programme. There will also be an exhibition organised around the three themes presenting innovations resulting from EC-funded projects. Simultaneous interpretation will be provided in English, French, German and Spanish. A second announcement, including a registration form, will be available in May.

Contact:
DG XII - Science, Research and Development
Http://europa.eu.int/en/comm/dg12/dg12tst2.html

► CONFERENCES

Technology Policy and Less-Developed R&D Systems

17-18 October, Seville

The conference will focus on R&D systems in Europe, with particular reference to the technologically weaker economies. It will examine opportunities for, and obstacles to, the internationalisation of sci-

entific research systems. Its primary focus is policy-making in Southern Europe, but the results may also be relevant to developing countries, particularly in Latin America and the Mediterranean.

The conference is organised by the United Nations University - Institute for New Tech-

nologies (UNU/INTECH) and the EC's Institute for Prospective Technological Studies (IPTS), with funding from the EC's Training and Mobility of Researchers (TMR) programme. Themes include technology policy, innovation strategies, policy instruments and more. The deadline for submission of abstracts, and

for registration for the conference, is 14 June 1997.

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► PUBLICATIONS

Forming R&D Partnerships EUR 17253, 7 ECU

The European Commission has published the first in a series of practical guides to Community RTD entitled 'Technological Partnership Guide'. An initiative of the Innovation and Brite/Euram Programmes, the aim of the guide is to provide information on all aspects of technological partnerships between companies and laboratories. Topics covered include reasons for forming partnerships, different types of partnerships and their potential benefits and drawbacks. Useful information is provided about negotiating agreements, including financial arrangements and intellectual property rights. The guide also contains a list of further information sources and partner databases, along with a checklist of points which organisations need to bear in mind when forming partnerships.

Managing Technological Knowledge Transfer ISBN 92-827-9208-0, 25 ECU

These are proceedings of a workshop on "Managing technological knowledge transfer", held in Milan (Italy) in February 1996 as part of the COST A3 Action. This action aims to create a network of researchers from disciplines such as management, social

sciences and economics, concerned with the management of new technology.

The papers cover areas such as technology transfer within new innovation models, science parks and local technology infrastructures, academia-industry collaboration and overcoming barriers to technology transfer in SMEs.

Research and Development Strategies of Europe's Top Companies EUR 17244, 26.5 ECU

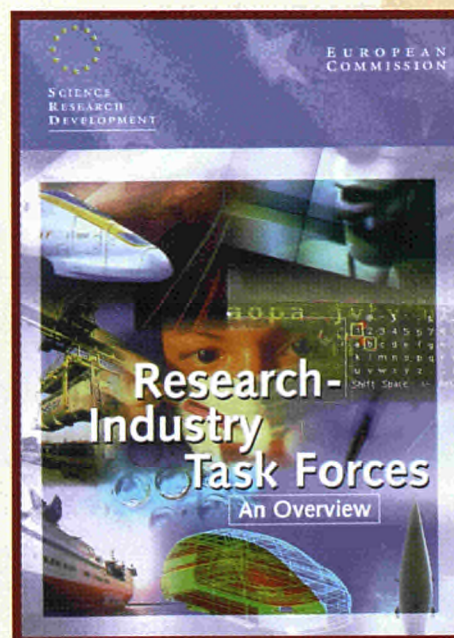
The European Commission has just published a report entitled 'RTD Strategies of the top 500 European industrial companies and their participation in the Framework Programme and Eureka'. The report looks at how the top 500 companies (selected on the basis of sales over the past five years) conduct their research and technological development (RTD) strategies. It shows that RTD plays a fairly minor role for Europe's major companies. They spend relatively little on research and do not give RTD a leading strategic role. Instead they use it mainly for cost reduction rather than expansion.

The report provides some interesting insights. On average, the top European companies spend about 1% of their total sales on research activities and about 3% on development activities. Coop-

erative research is increasingly being seen as the best response to budgetary and staff constraints. Cooperation is highest in those sectors where RTD expenditure is lowest. The report also outlines companies' perceptions of the benefits to be accrued from participating in European collaborative research initiatives like the Framework Programme and Eureka.

NOTE

If specific contact information for obtaining a publication is not supplied, refer to the 'Quick Reference Guide' (1/97). Publications are free unless otherwise stated.



"Research-Industry Task Forces - an overview", is available in three languages from DG XII's Communication unit (see page 4). 50 pages. Catalogue Number: CG-02-96-416-XX-C (XX=EN, FR or DE).

► PUBLICATIONS

Unexploited Patents from the Former GDR

DM100

TINA Brandenburg GmbH, one of the partners of the Innovation Relay Centre for North Germany, has recently published a double CD-ROM which contains information on over 4,000 patents from the former GDR.

The CD-ROM (German language only) has been compiled following the sifting through of over 40,000 former GDR patents. It contains information on products and processes in almost every area of technology, including environmental technology, machine construction, chemistry, biochemistry, energy technology, scientific equipment, measurement and analysis techniques, and more.

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RETI-NET Publications

RETI-NET, the network on innovation and technology transfer in the RETI regions (a group of 22 industrial regions in Europe), has issued two publications recently:

■ **ACTS meets the regions**

"ACTS meets the regions" was a workshop organised last November by the EPRI-Watch project. It aimed to form links between projects supported by ACTS (the EC's Advanced Communications Technologies and Services Programme) and Europe's regions, in particular with a view to focusing on regional needs in the field of communications services.

The proceedings contain summaries of introductory speeches outlining topics such as telecoms liberalisation, regional needs and priorities, the Information Society and cohesion and industrial change, and pilot projects with a regional fo-

cus. The remainder of the book contains details of presentations made by representatives of a number of projects supported by both ACTS and the Regional Information Society Initiative (RISI).

■ **Innovation, competitiveness and economic development**

This booklet outlines a number of regional projects and initiatives which aim to develop innovation, competitiveness and economic development. It is based on two RETI conferences which were held in December 1995 and June 1996, and contains summaries of a number of projects and initiatives conducted by RETI-NET members or in

RETI regions.

These projects encompassed areas such as university-industry cooperation, the needs of SMEs, technology transfer and innovation, regional innovation strategies and Information Society initiatives. In addition, the booklet also contains summaries of research projects into the innovation and technology transfer process in SMEs.

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