

Innovation & Technology Transfer

5/97

Reinforcing Europe's Regional Innovation Fabric

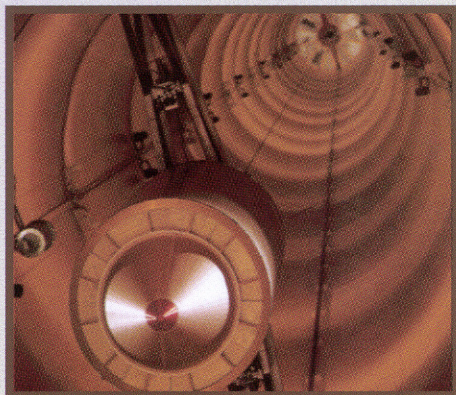
Plus:

- Promoting university spin-offs
- Networking national R&D databases
- Pilot benchmarking projects
- and more...

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Cultivating the Regions

Innovation cannot be decreed. It is fostered, first and foremost, by a certain state of mind and a particular form of business culture. It is not, however, sufficient for this culture to flourish only in fields of dynamic growth. It must feed society as a whole in order to reach, in particular, the millions of SMEs which make up the vitality of the European industrial fabric. The economic and social cohesion of the European Union demands it. The creation of new jobs and the quality of life of our fellow citizens depend upon it.

The importance of the regional level in economic and social processes is constantly growing. But the gaps between the various European regions in terms of prosperity and growth remain considerable. There is still a long way to go before a strong culture of innovation is diffused throughout Europe. That is why, in close collaboration with the regions' innovation strategies, the Innovation Programme provides specific support for the development of local infrastructures to help SMEs carry out the necessary technology transfers.

Clearly, regional frameworks are particularly well-adapted to this approach. It is on this level that solidarity is most effective and that needs are best expressed. This is a key element of the Innovation Action Plan for Europe, launched by the Commission at the end of last year to direct Community efforts in this field. It will also be one of the central themes and one of the main aspects of the 5th Framework Programme.

Edith Cresson

INNOVATION & TECHNOLOGY TRANSFER



The European Commission's Innovation Programme is under the responsibility of Edith Cresson, Member of the Commission responsible for Research, Innovation, Education, Training and Youth.

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► FIFTH FRAMEWORK PROGRAMME

Majority Voting for 5FP?

The recent European Summit in Amsterdam should make developing Europe's research programmes a simpler, faster process ... sometime in the future.

The terms of the Maastricht Treaty on European Union meant that approving the current Fourth Framework Programme required more than 20 separate legislative decisions, each involving the European Commission, Parliament and Council. With unanimity required at the Council level, it took the best part of a year to get the Framework Programme and its Specific Research Programmes under way. The Fifth Framework Programme has a simpler structure, but will still require twelve decisions.

The European Council, however, agreed in Amsterdam that the adoption of future Framework Programmes will be on the basis of qualified majority voting, rather than unanimity. Apart from accelerating the ac-

tual adoption process, this will mean that the Community's research programmes will better reflect Community research priorities, rather than reflecting national and sectoral interests.

Unfortunately, the process of ratifying the Amsterdam Treaty by each Member State could take as long as two years. By then, of course, the Fifth Framework Programme should be under way. To avoid missing the chance of having the Fifth Framework Programme adopted through majority voting, Viscount Davignon - who chaired the panel that, among other things, recommended the move to majority voting - has suggested that the Council could anticipate the ratification of the treaty. Whether the Council will adopt this course

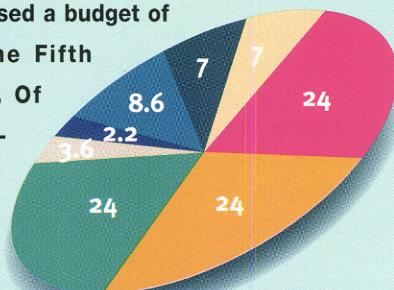


and adopt majority voting for the Fifth Framework Programme should become clearer later this year.

More information on the Amsterdam Treaty can be found on the European Council's WWW server (<http://ue.eu.int/Amsterdam/en.htm>). □

16.3 billion ECU Budget Proposed

In late July the EC proposed a budget of ECU 16.3 billion for the Fifth Framework Programme. Of this total, ECU 14.833 billion will go to research under the EC Framework Programme, with the remaining ECU 1.467 billion going to research in the nuclear field under the Euratom Programme. This represents an increase of 3% in the proportion of Community GNP allocated to research, in comparison to the budget of the 4FP. The Parliament and Council will now examine the proposal.



Thematic programmes:

- Living world and ecosystem: 3,925 MECU
- Information Society: 3,925 MECU
- Competitive and sustainable growth: 3,925 MECU

Horizontal Programmes:

- International cooperation: 491 MECU
- Innovation and SMEs: 350 MECU
- Human Potential: 1,402 MECU
- Joint Research Centre: 1,141 MECU
- Fusion and Fission: 1,141 MECU

The Fusion and Fission Programme is funded by the Euratom Programme, while the JRC budget is funded by both the Euratom and Framework Programmes.

► BUSINESS ENVIRONMENT FOR SMES

A Blueprint for Cutting Red Tape

SMEs are widely recognised as key sources of employment and innovation, yet their formation and growth is frequently hampered by excessive regulation and a disproportionate administrative burden. Now the Commission is asking Member States to adopt best practice in this area in order to mobilise entrepreneurial dynamism.



Cutting red tape will help SMEs grow.

(1) Commission Recommendation of 22 April 1997 on improving and simplifying the business environment for business start-ups, OJ L145 5.6.1997 p.29ff. An introduction and full text can be found at the WWW site.

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The Commission Recommendation⁽¹⁾, prepared by DG XXIII (Enterprise Policy) following two years of consultation with Member States and business organisations, paints a worrying picture of the current situation.

The numerous regulations with which all businesses must comply have a powerful cumulative impact, the Recommendation says, obstructing efficient operation and reducing competitiveness. Small enterprises, lacking human and financial resources, are particularly hard hit. Over-complex regulations are a disincentive to the creation of new enterprises, and drive others into avoidance. The Commission acknowledges that regulation is necessary, but believes that the cost and complexity of compliance should be sharply reduced.

Reflecting the high priority given by business representa-

tives to improvement of the regulatory and administrative environment, the Recommendation makes a powerful case for simplification by Member States of the laws which affect small enterprises. In particular, it urges Member States to encourage the establishment of new businesses by simplifying registration procedures, and by lightening the burden of taxation and paperwork on young companies.

Good Practice

Although it identifies problems, the tone of the Recommendation is positive. The argument for simplification is illustrated throughout by national success stories, and Annexes identify best practice in the areas of policy co-ordination, company registration, tax and regulatory administration, and labour market flexibility (lowering barriers to recruitment). Existing or planned arrangements which match best practice are identified for each Member State.

Key recommendations include the following:

- New legislation should be introduced only after careful consideration of its impact on SMEs — 'think small first';
- Reporting requirements should be reduced for businesses which fall below defined size thresholds;
- Business formation should be made easier by establishing single points of contact, by using single registration forms,

and by adopting single business identification numbers;

- In order to stimulate growth in the start-up phase, the burden of direct taxation, non-wage costs and VAT should be reduced for SMEs.

Evidence of Progress

How soon will these recommendations be adopted, producing a real easing of the situation for small businesses in Europe?

The regulation of business is the responsibility of Member States. But although the Commission has no power to impose good practice, it is engaged in a programme of follow-up activities designed to maintain momentum towards change. And the business community can take hope from the fact that the Recommendation arose out of detailed discussion with the Member States themselves.

In fact new legislation, in line with the best practice identified by the Commission, is already being introduced. Belgium has recently adopted an impressive package of measures, and the new British and French governments are both expected to introduce fresh rules by the end of the year. □

Benchmarking the Business Environment

In a free market, competition takes place between companies and not between countries. Nevertheless, a company's competitiveness is in part determined by the external conditions in which it operates. The Commission is now responding to demand from industry for comparative assessment of trading conditions in each Member State.

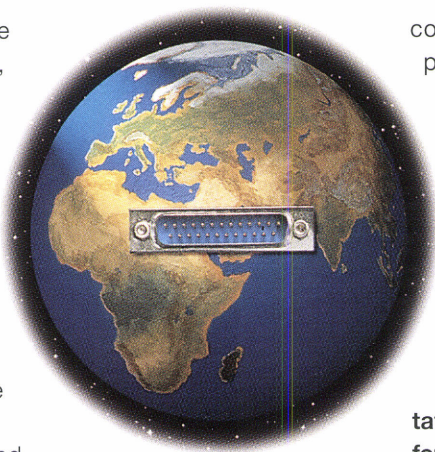
Factors such as the relative ease of access to capital, the quality of communication and distribution infrastructures, and the availability of technically competent labour can give manufacturers located in one region a comparative advantage over competitors elsewhere — or may place them at a comparative disadvantage.

The Commission's second Communication on benchmarking⁽¹⁾ describes the three levels at which benchmarking techniques can usefully be applied. It makes clear that benchmarking at the levels of the enterprise and the sector is the responsibility of industry itself, although the Commission will continue to support the development and diffusion of appropriate methodologies.

The Communication focuses on the third level, that of the framework conditions within which industry operates, and it provides the basis for four pilot benchmarking exercises whose announcement was in preparation as *Innovation & Technology Transfer* went to press.

Four Pilot Studies

With a very limited budget, DG III (Industry) has worked closely with Member States to define pilot projects which address industry's highest priorities, and where effective policy action appears feasible.



Four highly focused 12-month pilot studies have been planned, all driven by industrial demand and designed to identify key obstacles to improved European competitiveness in global markets. In each case a number of participating Member States will conduct benchmarking exercises in their own countries, while the Commission will identify and benchmark global best practice.

In the area of the **development of human resources**, Spain will lead a project to identify skill bottlenecks affecting the information and communication technology (ICT) industries. The project will benchmark the skills creation capacity of global leaders such as Japan, and develop strategies for improving European performance — for example, through educational policy or the creation of incentives for vocational training by enterprises.

Denmark will lead a study of the **financing of innovation**, examining the availability and

costs of private risk capital, particularly for fast-growing, technology-based SMEs.

In the field of **logistics and transport**, Ireland will lead a comparative study of transport systems, from the perspective of their contribution to the efficiency of the industrial supply chain.

Finally, in the area of **adaptation of organisations to information and communication technologies**, Finland is to lead an initial study to define the key functional areas within enterprises or affecting supplier-chain relationships, which a full benchmarking exercise could most usefully tackle.

The four pilot projects are expected to do more than simply provide their participating Member States with a sound basis for policies to promote industrial competitiveness. They will also go some way towards establishing a robust methodology for the complex and largely untested discipline of benchmarking framework conditions. A more comprehensive follow-up programme will be considered. □

(1) COM(97) 153/2, April 1997. See edition 1/97 for more on Benchmarking.

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The Euro: Stay Informed

If all goes according to plan, much of Europe will adopt the Euro as its single currency in less than 400 working days. Preparation should be a high priority for any business engaged in cross-border transactions.

To ensure that enterprises know what is going on, and what they need to do, the Commission is sending a regular newsletter, *InfEuro*, to more than 200,000 trade, professional, trade union and consumer organisations across Europe. The newsletter, which contains the latest information about arrangements for the creation of the Euro in 1999 and the introduction of notes and coins in 2002, will be of particular interest to SMEs.

InfEuro is available on request at no charge, while an on-line version is available on the Europa WWW server (<http://europa.eu.int/euro/>).

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► CALL FOR PROPOSALS

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.

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Innovation Support for SMEs

The Innovation Programme is announcing a new call for proposals under its European Networks and Services activity in mid-September. Its focus is on projects to promote the absorption of technology by SMEs.

The European Networks and Services (ENS) activity aims to support innovation in SMEs, principally through cross-sectoral and trans-border collaboration.

The new call is directed towards public and private providers of innovation support services, and will give priority to those who have not received ENS funding before. National and regional innovation agencies, regional development agencies, research associations, chambers of commerce, universities, research centres, venture capital funds and science parks are among the key targets.

The call's main purpose is the dissemination and transfer between Member States of schemes and methodologies whose effectiveness has already been demonstrated at national, regional or sectoral level. The Commission will fund up to 75% of the costs of an initial definition phase, to a maximum of 20,000 ECU, and up to 50% of the costs of the subsequent implementation phase.

The Commission will be looking in particular for schemes which complement new technologies with new logistics and support systems, and new routes to capital, in order to mobilise the innovative poten-

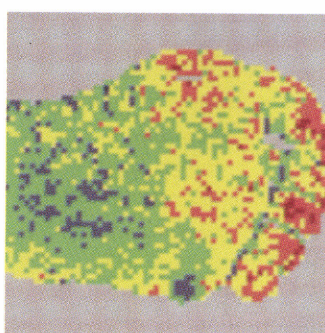
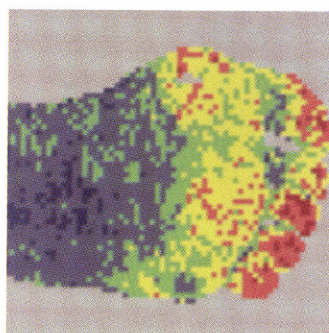
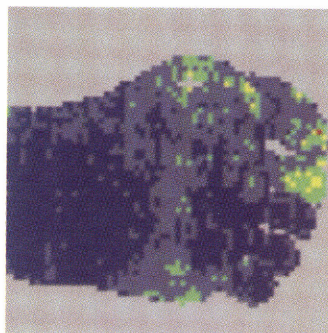
tial of SMEs and micro-businesses. Among the possible types of action are schemes to promote the creation of technology-based 'spin-off' companies (see page 9). □

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► INNOVATION PROJECT

More Reliable Diagnosis of Skin Diseases

The HIRELADO Innovation Project will develop medical and industrial applications of a new imaging technique. Accurate, inexpensive, and easy to use, High-Resolution Laser Doppler Perfusion Imaging (HR-LDPI) will revolutionise the diagnosis of skin cancers and allergies.



LDPI images from a patient with blood circulation problems, before, two minutes after and half an hour after, drug injection.

The reddening of skin, caused by changes in the micro-circulation of blood cells through the tiny vessels in and immediately below the skin, is an obvious indication of a variety of conditions. Perfusion, as it is known, is used to diagnose allergies and skin cancers.

But the full exploitation of this phenomenon as an accurate diagnostic tool requires very

precise measurement, since the blood vessels concerned range in diameter from 10 to 100 microns. To date, such measurement has relied on invasive procedures, involving the injection of dyes or tracers.

More often, diagnosis is based on visual inspection by an experienced dermatologist. In either case, interpretation is highly subjective. Controlled studies of patch testing, the increasingly important technique used to evaluate the irritancy of cosmetics and industrial and domestic chemicals, have revealed that 20% of positive results are false.

By contrast, High-Resolution Laser Doppler Perfusion Imaging (HR-LDPI) is fast, easy to use and objective, producing accurate and comparable results without even touching the subject. The current project will develop standardised procedures for its application in the patch testing of potential allergens, in cancer screening, and in the evaluation of skin care products.

Doppler Effect

LDPI is a new technique, developed in the early 1990s by the Biomedical Instrumentation Group of the Department of Biomedical Engineering at Linköping University⁽¹⁾, Sweden, under the leadership of Professor Gert Nilsson.

"LDPI employs the Doppler effect in exactly the same way that radar tells the speed of a plane by measuring the distortion of the reflected signal," Professor Nilsson explains. "It uses a low power laser beam, which scans an area of about 150 cm² in less than three minutes, measuring perfusion at several thousand points. The laser light, scattered within the tissue, is Doppler shifted by contact with the moving blood cells, and is captured by a photo detector in the scanner head as it bounces back from the skin. Measurement values can be compiled immediately and

displayed on a computer screen as a colour coded image of the tissue perfusion."

LDPI has been evaluated by a number of independent clinical centres, and its diagnostic value in applications such as wound healing and perfusion in internal organs is well documented.

Spin-Off

In 1991 a new spin-off company, Lisca Development AB, was formed to undertake further development and commercialisation of the LDPI technology, and has built up a European network of distributors.

Now Professor Nilsson's Group has developed HR-LDPI, a high resolution version of the instrument designed for detailed studies of wound healing and tumour growth. The Innovation project (IN178) will prepare the way for the widespread take-up of HR-LDPI by laboratories and hospitals, as a means of lowering costs and improving patient care.

"Its advantages over existing methods are clear," says Professor Nilsson. "Although experience is needed to interpret the results, the test itself can be administered very easily using the simple, interactive software which forms the core of the system. Results are fully user-independent, greatly reducing the cost and suffering which result from misdiagnosis. And because it involves no physical contact, the risk of infection and additional discomfort is completely avoided. But the medical community is conservative."

Working with Lisca Development, and with dermatology clinics and research laboratories in Denmark, Germany and Sweden, the Biomedical Instrumentation Group aims to validate the new technology in the fields of skin care product development, chemical irritant testing, allergy testing and skin cancer screening.



Optimisation

Six months into the three-year project, six prototype scanners have been built and shipped, and Professor Nilsson has delivered hands-on training to users at all six test sites.

"Now they are playing with the instrument themselves," he says. "We are going to carry out extensive inter-laboratory comparisons to check the comparability of results, and will prepare guidelines based on optimisation of parameters such as ambient light levels and distance to object."

Together, the partners will build a substantial body of experience in the use of the new technique, as well as a significant volume of test data. A central objective of the project is to document this experience, and to disseminate it in the scientific literature and at medical conferences ahead of a massive distribution effort.

Professor Nilsson predicts that the first take-up will be for the testing of skin cream, and to replace conventional patch testing for allergies. But he is confident that within five years leading hospitals will also be starting to use HR-LDPI. □

Screen test: HR-LDPI in action.

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(1) Linköping University is a partner in the UNISPIN project — this edition, page 9.

► INNOVATION RELAY CENTRE

Welding Together Technology Suppliers and Users

Based in a region once dominated by large car-makers, a British IRC has joined with other Centres active in the automotive sector to help small component suppliers reach markets in the car assembly plants of mainland Europe. The transfer of a new laser welding technology exemplifies the transnational impact of the IRC Thematic Groups.



The new PALW laser head developed with the support of Midlands IRC.

Laser welding is fast, and produces results of consistently high quality. But the equipment is expensive and the technique requires careful joint preparation and alignment, adding significantly to process costs.

Substantial improvements to conventional laser welding are offered by Plasma Arc augmented Laser Welding technology (PALW), developed by a leading UK engineering research team. PALW's ability to reduce the costs of high volume sheet metal welding makes it especially attractive to the car industry.

Up and Running

Midlands Innovation Relay Centre (MIRC), hosted by Cov-

entry University Enterprises Ltd, has been involved in the development of the plasma welding technology from a very early stage.

"The inventors originally approached us for assistance with intellectual property rights," recalls John Latham, MIRC's Director. "We arranged some of the novelty verification work, and helped them to prepare and submit both British and international patent applications. Then we needed to find partners to manufacture the new laser heads, and end-users willing to licence the technology."

A new engineering company was set up to build the equipment in the UK, and the IRC negotiated a technology transfer agreement with a German

manufacturer, which is producing the laser components. Negotiations with four major European car-makers were also initiated and carried out by the IRC. End-user licence agreements were signed in early summer 1997, and the PALW equipment will be installed in their assembly plants by the end of the year⁽¹⁾.

Fulfilling the IRC Brief

"It is gratifying to think that our work over the past 18 months has made a small contribution to the competitiveness of the European car industry," says Mr Latham. "But what pleases us most is to have demonstrated that the EU-wide network of IRCs can overcome the significant obstacles which still stand in the way of cross-border technology transfers, particularly for SMEs."

"The biggest hurdles have been the cost and complexity of securing adequate patent protection, and the confusion caused by differences between the legal systems of different Member States," he continues. "But with the support of colleagues in other IRCs we have succeeded in giving a small, local, technology supplier access to a large transnational market. This is precisely the kind of service which the IRC network was set up to deliver."

MIRC's close relationships

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with other IRCs also played a key role in making contact with potential end-users. Those with links to car-makers helped to arrange initial meetings, and one organised an on-site visit for a member of the MIRC staff during a one-week exchange placement.

Automotive Thematic Group

But since the start of MIRC's work with the PALW team, such sector-specific collaboration has been formalised with the creation of a number of Thematic Groups within the IRC network. MIRC itself is a member of the Automotive

Group, which brings together eight Innovation Relay Centres with particular automotive industry interests.

The Automotive Group has defined its objectives as:

- the exchange of best practice in technology transfers in the automobile sector;
- the implementation of two concrete technology transfers per participating IRC;
- the organisation of transnational events leading to closer collaboration between car-makers and their suppliers in each of the IRC regions;
- the establishment of a new Web site for the promotion of the technologies supported by the members of the Group.

The initiative has already borne fruit for MIRC. In June, the French IRC Bourgogne/Centre brought a group of 18 automotive suppliers from Burgundy to attend a special seminar and dinner in Birmingham, which MIRC hosted. "Over the meal," John Latham reports, "a local SME client who had presented his company's portfolio at the seminar was able to discuss it in greater detail with a representative from one of the French companies. Two months after the seminar, they are engaged in on-going face-to-face negotiations for a transnational technology transfer."

In November, AUTOTEC '97

will be staged at Birmingham's National Exhibition Centre. Around 30,000 automotive suppliers are expected to visit the event, and the eight IRCs from the Automotive Group will jointly present technologies from their regions on the 'Foresight Vehicle' stand. □

(1) Due to the commercial sensitivity of the technology transfer, the partners have asked for their names to be withheld, but are willing to be contacted through MIRC.

► REGIONAL INNOVATION

Liberating Universities' Commercial Potential

Over the past 20 years, 'spin-off' companies supported by the University of Twente have rebuilt a devastated regional economy. Now Twente and three other successful programmes are spreading their expertise to regions across Europe.

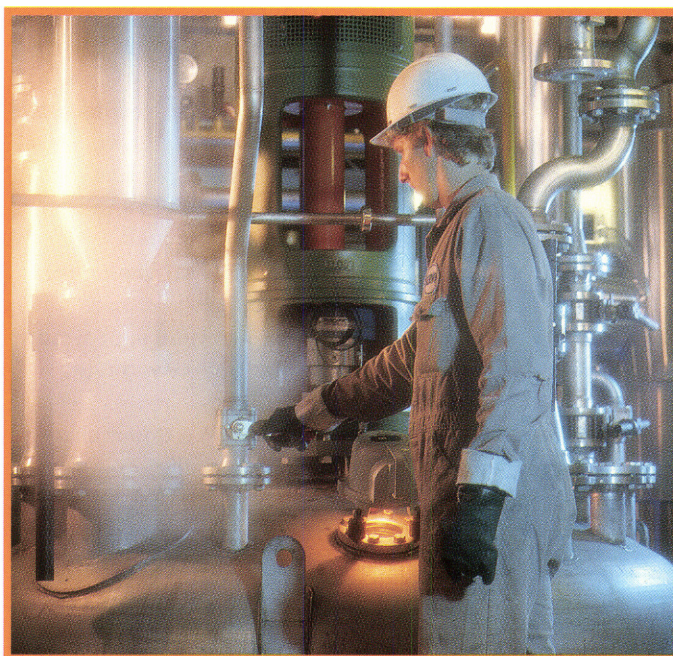
The economy of the Netherlands' Twente region was virtually shut down in the 1960s, when its textile industry collapsed with the loss of 50,000 jobs. Established at around the same time, the Technical University had by the late 70s begun to implement a conscious 'spin-off' policy, helping graduates and others to set up their own technology-based companies in the area.

Since then the scheme, which was formalised as the TOP programme in 1983, has supported the creation of 1,500 high-quality jobs, building a community of dynamic young firms which now forms the core of self-sustaining regional regeneration.

"We are supporting 20 new companies each year," says

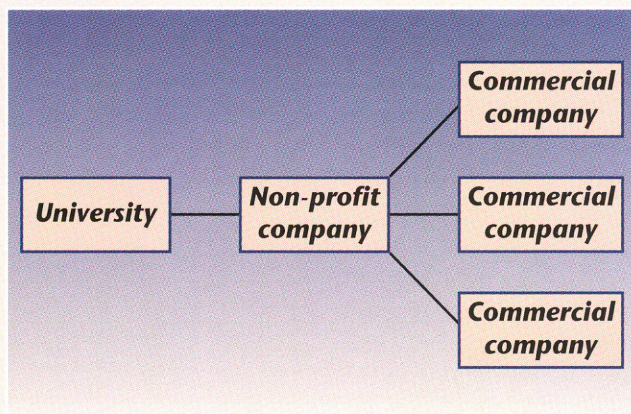
Dick van Barneveld of the University's Industrial Liaison Group. "We offer them management support and training, business premises, a soft loan, and access to the university's research facilities and equipment. 80% survive their first five years and the majority remain in the area, where they continue to create an average of eight new jobs every four years, plus another three indirect jobs. The scheme receives financial support from the public authorities, but for them it represents unbeatable value for money."

The Twente team is now leading the Innovation Programme's UNISPIN project, which will help other European regions to establish similar schemes. Mr van Barneveld



The University of Twente's spin-off programme offers new, knowledge-based companies office space and lab facilities in their first two years.

EIMS: Good Practice Guide



The EIMS report finds that when non-profit companies act as the link between universities and industry, the negotiation process is simplified and accelerated.

The Innovation Programme's European Innovation Monitoring System (EIMS) has recently published a 3-volume report on university-to-industry technology transfer (EIMS publication 26).

Volume 3 presents the 13 in-depth case studies on which the study was based. These include the University of Linköping, one of the UNISPIN partners. The good practice guide (volume 2) highlights six factors considered critical for the successful commercialisation of university technologies:

- **Appropriate interface structures are necessary for effective university-industry collaboration — companies find it easier to deal with semi-autonomous intermediaries (see diagram).**
- **A large portfolio of technology transfer services allows the university to meet the differing needs of different kinds of company.**
- **To attract a significant number of industrial partners, a university must actively promote the service to different target groups.**
- **Long-term partnerships offer a more effective way of exploiting technology transfer potential than project-based collaboration.**
- **Technology transfer to SMEs works best when combined with accessible financial support programmes.**
- **University spin-offs are most effective when supported by programmes of training, mentoring and networking.**

Key elements of the report are set out in a Comprehensive Summary (volume 1), which is available on-line at <http://www.cordis.lu/innovation/home.html>.

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stresses that UNISPIN will not just promote the Twente mode, pointing out that partners from successful regional programmes in Ireland, Sweden, France and Italy will also contribute.

"Our own programme focuses on graduates," he says. "The Irish scheme works with students while they complete their degree courses, and our Swedish partner extends its support into the second phase of company growth. What is really exciting about UNISPIN is that it brings these different approaches together. Participants will be able to choose the elements which best suit circumstances in their own regions."

Hands-on Support

UNISPIN is a two-phase, 30-month project. In the first phase, representatives from 60 regions will attend four two-day workshops, to be held in the autumn. As well as giving them an introduction to the mechanics and benefits of spin-off schemes, the workshops will help participants to prepare initial plans for their own regional programmes.

According to Mr van Barneveld, there are four key requirements for a successful spin-off scheme:

- **infrastructure** — a university, institute or company with research expertise and equipment, to act as the scheme's 'know-how centre';
- **business expertise** — to deliver the business training and mentoring needed by young knowledge workers;
- **finance** — to provide start-up capital on easy terms;
- **networks** — close links with institutions and companies in the region, particularly as a route to markets.

Free follow-up consultancy, designed to assist with the identification of regional partners, will be available to all participants following the first phase.

In phase two, between 10 and 15 regions will be given more intensive support in planning their regional schemes in full operational detail. By the end of the project, they should have established a regional partnership, finalised a detailed business plan, staged an inaugural seminar and set up an office. □

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Down in the Data Mine

The UNISPIN partner in Northern Ireland is NIKEL, one of the region's first university spin-offs and an active participant in the EC's research programmes and networks.

NIKEL - or the Northern Ireland Knowledge Engineering Laboratory - was founded in 1992 as a joint venture between the University of Ulster's Faculty of Informatics and International Computers Limited (ICL). Launched with the help of EU Structural Funds and with the Faculty's Dean as its director, its main goals are to equip local firms with the University's advanced technologies and to 'spin-off' new companies.

"NIKEL was one of the University of Ulster's first spin-offs, and we're just about to spin-off a company with funds from the EU's Peace and Reconciliation Programme," explains Caroline Grant, NIKEL research officer and the region's representative in UNISPIN. "We need to put this formerly *ad hoc* approach on a firmer footing. UNISPIN will play a crucial role, helping us draw on best practices from around Europe in order to customise an 'enterprise incubator' here at the University."

A Local Pilot Project ...

NIKEL's recent technical focus has been on data mining - the use of sophisticated algorithms to reveal patterns previously hidden in very large data sets. Specifically, NIKEL is developing data mining for the on-line shopping market and, more recently, improving manufacturing yield and quality.

Data mining is widely used in the service sector. "A financial products group might use it to

profile the likely purchasers of a new product and to target existing customers," explains Maurice Mulvenna of NIKEL. "In a less complex business, you might use conventional database or statistical methods. But with multi-dimensional data sets, data mining is the most viable approach."

Data mining in manufacturing is very new, however. It depends upon the automatic collection of data at each stage of production. NIKEL has now successfully piloted data mining in the Northern Ireland plant of hard drive manufacturer Seagate Technologies.

In Seagate's plant, the changing values of every conceivable process parameter are recorded continuously. Most companies would only attempt to analyse and manage a small number of parameters at any one time. But NIKEL's pilot system was designed to monitor the plant as a whole, recognising causal links between specific parameters and fluctuations in quality or yield, and recommending adjustments.

"They have developed a unique participative approach which gives the system a seat at the table with the plant managers," Mr Mulvenna continues. "Its advice is considered alongside other options."

... Networked Across Europe

Now that the pilot implementation has been successfully completed, both companies, which share intellectual proper-



ty rights in the system, have just submitted a bid to the EU's Structural Funds for three years of further development funding.

Meanwhile, NIKEL staff and their colleagues at the faculty have also been involved in around ten ESPRIT projects and two ESPRIT networks of excellence (NOE). "These networks are very useful - in July we had Seagate Technologies present the results of our pilot project at a workshop we organised at the advanced summer institute of the Intelligent Control and Integrated Manufacturing Systems NOE," Mr Mulvenna comments. "Applying data mining to manufacturing is so new - few companies even have the data to begin with. But via these networks we can disseminate these early results to all of Europe, and get the ball rolling." □

The NIKEL research laboratories use data mining techniques to give local companies a competitive edge.

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Market-Oriented Innovation

Improvements in the efficiency of a production process can increase a company's competitiveness only if they help it to meet the needs of its customers. A UK-based project will encourage small European manufacturers to adopt a more holistic approach.

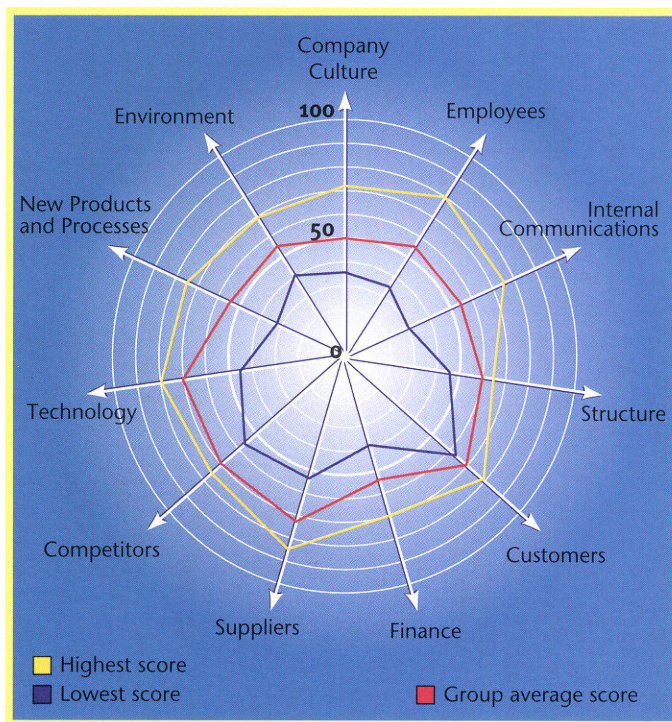
The PRISM project is one of a number supported by the Innovation Programme's Innovation Management Techniques initiative (IMT)⁽¹⁾, which offers SMEs direct innovation consultancy. Led by PERA Consulting Group, the PRISM partners will select and refine tools to help companies improve their management of innovation. They will then train 25 consultants, who will carry out 50 pilot assignments with small British manufacturers.

Six months into the two-year project, the partners have assembled a tool-kit of four techniques. Their choice was informed by PERA's experience of an earlier project, MINT⁽²⁾, in which it delivered innovation consultancy to nearly 200 firms.

"We found that manufacturing SMEs tend to measure performance in terms of internal efficiency, without reference to customer expectations," says Brendan Vickers of PERA. "Perhaps unsurprisingly, investing large sums in technological fixes designed to cut lead times, improve machine speeds or reduce down-time often fails to generate corresponding improvements in profitability."

PRISM will encourage firms to consider their operating environment, examining each link in the value chain which joins their suppliers, their own internal processes, and the needs of their customers. A wider view allows them to prioritise improvement projects, putting resources into those changes which will have the greatest positive impact on customers.

Profile Wheel



Wheel of Fortune: Company performance analysed using the Profile Analysis tool.

Tools of the Trade

Profile Analysis is a diagnostic technique which analyses performance in eleven critical areas and generates a profile diagram as the basis for a prioritised action plan. Its use in the MINT project was startlingly successful — 90% of the companies which used it implemented some or all of the findings, and 70% accepted the findings in full.

Customer Focused Manufacturing, based on research by leading authorities such as Warwick Business School, is designed to measure company performance against market requirements.

The **Benchmarking** tool will

help companies to innovate by closing the gap between themselves and the 'best of breed'. "In the past," says Mr Vickers, "this has been hard for SMEs because most benchmarking data is drawn from larger firms. But the UK Department of Trade and Industry has now launched a benchmarking index specifically designed to enable SMEs to compare themselves with the best companies of their own size."

Asset Marketing is aimed at firms in declining industries such as defence and mining. It helps them to diversify in a structured manner, maximising their use of existing skills and resources, and minimising risk.

Applicable Across Europe

Consultants often meet resistance to the recommendations generated by such tools. "Clients are rightly suspicious of the advice of outsiders," says Mr Vickers. "We make clear that these tools offer a way to capture their own perceptions about their businesses. Our job is to focus and reflect their expert knowledge as the basis for more effective action."

He is confident, too, that the PRISM techniques can be readily transferred to other Member States. The project's partners are already engaged in discussions with counterparts in six other countries about the possibility of training local consultants to use the Profile Analysis tool. □

(1) See edition 4/97.

(2) *Managing the Integration of New Technology*, an initiative of the SPRINT Programme, an Innovation Programme forerunner.

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► NETWORKING RESEARCH DATA

One-Stop Shopping for Research Information

The Innovation Programme's objectives include the goal of improving trans-border access to scientific and technical information services. Progress has not been easy, but the efforts of a special Working Group will soon bear their first fruit.

Your company has identified an opportunity to create an innovative medical application, using a new material developed by the aerospace industry. How do you find out whether anyone else is already exploring the potential for exploitation in this field?

You will probably start by asking personal contacts for ideas and information. You may conduct a literature search at national level. You will probably visit CORDIS to identify relevant EC-funded research projects. But you will almost certainly *not* attempt a full search of research databases in other Member States, even though most of these are now accessible via the Web.

Language is an issue. A much greater obstacle, however, is that each database must be interrogated separately, using a different user interface. Neither the user's queries, nor the results returned by the databases, are structured in a standard way.

Next year, the European Research Gateway On-line (ERGO) pilot project will for the first time give scientists, business people and journalists easy access to a comprehensive catalogue of European research information. By bringing catalogue data together in one place, it will enable users to identify relevant resources from 30 key research databases with a single query.

At low cost, making maximum use of existing resources, the ERGO pilot represents a pragmatic first step towards the 'one-stop shop' for European research information envisaged by the ERGO Working Group.

Cogito, ergo ERGO

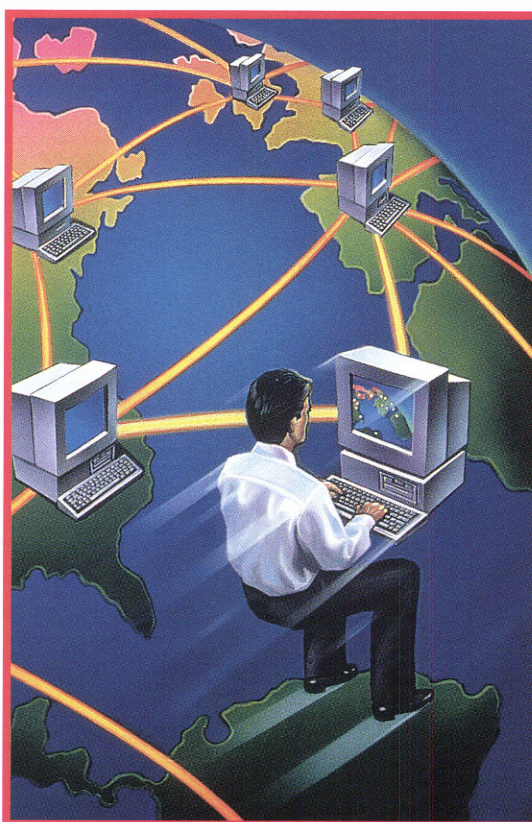
ERGO was conceived in 1995, when work started on defining a strategy for establishing gateways to Member States' R&D databases. In April of this year the Working Group, which includes representatives from almost all Member States, produced its recommendations.

It proposed a service which would initially cover project data, but could be progressively extended to include other R&D information. Using a distributed, flexible architecture allowing for a catalogue node in each Member State, it would nevertheless offer users a single point of entry, from which they could browse an aggregated catalogue on-line, filling a 'shopping basket' with the items they wanted. Their order would be processed automatically, and the requested documents would be delivered via e-mail within 48 hours.

Unfortunately, the Innovation Programme was unable to fund full implementation of these proposals. With only 5% of the requested funding, the Working Group had to revise its plans.

Market Study

The pilot service, which will be hosted by CORDIS, will adopt a centralised architecture, and will not offer automated delivery of selected texts. But the catalogue *will* contain project data from around 30 key databases. Users *will* be able to search the full catalogue with a



single query, and to access resources of interest using clickable hypertext links to the relevant data providers.

The ERGO pilot is intended as a market study, highlighting technical and cultural problems, and testing the value of the concept to the European R&D community. It will be carried out in parallel with work to update the CERIF 'common language'. But it seems possible that it will prove so useful that it may evolve into the European research information service originally envisaged by the Innovation Programme.

Users will have first sight of the new service on the CORDIS host, in spring 1998. □

ERGO: networking Europe's national R&D databases.

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Reinforcing Regional

Helping Europe's regions build a positive environment for innovation is a key element of the Commission's approach to developing European competitiveness.

“

Businesses, particularly SMEs, often get lost amongst the plethora of support services which have burgeoned at local, regional, national and Community level. Efforts to rationalise structures and coordinate initiatives need to be accentuated

”

First Innovation Action Plan for Europe

It is well known and understood that Europe must close the gap with both the US and Japan in the innovation stakes. However, this global disparity is also mirrored within Europe itself, with significant 'innovation deficits' existing between Europe's regions.

Tackling innovation at the regional level is vital. If a region has an 'innovation-unfriendly' environment, companies are less likely to remain successful and new ones are less likely to appear.

"Innovation provides the motor for change within a region," agrees David Charles, Principal Research Fellow at

the Centre for Urban and Regional Development Studies, University of Newcastle upon Tyne. Without innovation, he argues, "regions have to compete for inward investment to promote economic growth, which is simply a zero-sum game."

An innovation-friendly environment, on the other hand, enhances productivity and can support economic restructuring, vital to regions hit by decline in their traditional industries. According to Mikel Landabaso of DG XVI (Regional Policy), "innovation lies at the heart of the modification and diversification efforts which less favoured regions must face."

I. Role of the Region

So how can a region be made more open to innovation?

Small and medium-sized firms (SMEs) are the economic drivers of regional economies, yet they themselves rarely engage in original research, relying instead on (usually local) clients, other firms and sub-contractors for new ideas. Helping them adopt new ideas and techniques is therefore a critical part of reinforcing the regional innovation fabric.

Developing innovation support structures - ranging from technology parks to networking initiatives - is equally important. Hence improving innovation at the regional level requires an understanding of the inno-

vation process in general, experience of improving individual firms' approach to innovation, and a thorough understanding of each region's assets, potential and requirements.



Innovation is crucial to regions hit by decline in their traditional industries.

Regional Analyses

Regional economic analysis is now being used to try to understand how the innovation process may be converted into regional competitive advantage. Possibly the most important lesson is that an innovation gap between any two regions is not simply a question of different numbers of

scientists and research institutes.

Structural weaknesses in the economy

Europe's Innovation Fabric

Context

DG XVI In Brief

The Directorate-General for Regional Policy (DG XVI) is responsible for the management of one of the three European Structural Funds - the 70+ billion ECU European Regional Development Fund (ERDF).

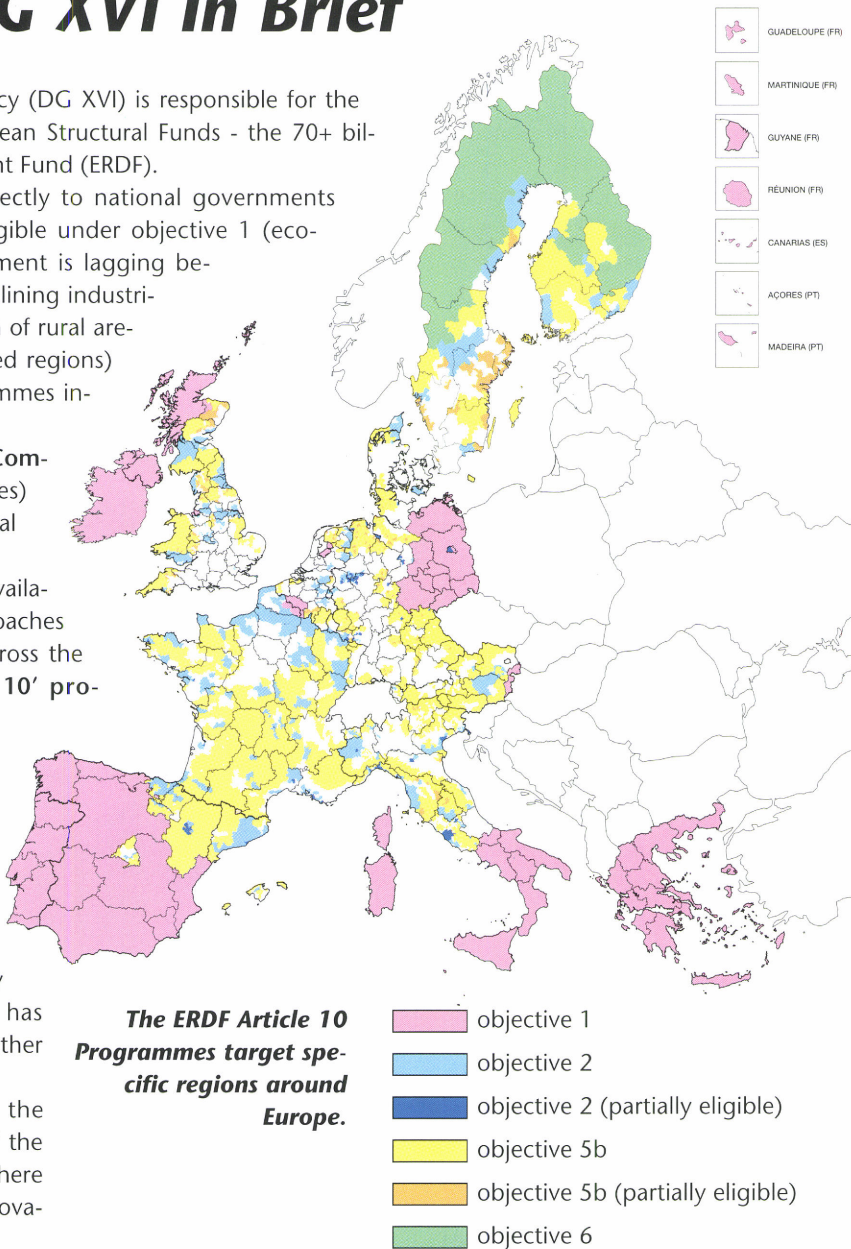
Most of this money (90%) is dispersed directly to national governments through **support programmes** in regions eligible under objective 1 (economic adjustment of regions whose development is lagging behind), objective 2 (economic conversion of declining industrial areas), objective 5b (economic diversification of rural areas) and objective 6 (developing underpopulated regions) of the Structural Funds. Some of these programmes involve promoting regional innovation.

DG XVI also supports and administers nine **Community Initiatives** (9% of total ERDF resources) although none of these currently target regional innovation explicitly.

The remaining 1% of the ERDF budget is available for the Commission to support new approaches to economic and social problems common across the EU. There are eight of these 'ERDF Article 10' programmes.

One of these is the 90 MECU 'Innovation for local and regional development' programme, which has four action lines: Information society, New sources of jobs, Economic development in the cultural field and Innovation promotion. It is the latter, 15 MECU action line which funds Regional Innovation Strategies and Regional Technology Transfer projects. The last Call for Proposals has closed, however, and it is unlikely that any further projects will be supported.

The lessons learnt will be integrated into the mainstream ERDF framework in the reform of the Structural Funds for the period 2000-2005. There is no indication that any specific regional innovation programmes will be funded in this period.



are crucial. Investment in the scientific base of an economy will not necessarily have any impact on economic development if the necessary links do not exist. The important factors here, Charles argues, are the existence of a learning culture, a climate of trust which encour-

ages the sharing of knowledge, institutional support and a supportive regulatory structure.

Wim Martens, of the Regional Economic Development Agency in Castille y Leon, Spain (see 'Building the Capacity of Local SMEs'), agrees that innova-

tion is a systemic process based on institutional factors as much as the initial R&D. "Regional success is a function of how regions are able to construct competitive advantage to facilitate the development and marketing of new products," he explains. "Filling the

gaps in the innovation support available to SMEs is one of the most important priorities for objective 1 regions in Europe."

"Everything is about people," adds Jean Severijns of the Regional Government of Limburg, the Netherlands. "The most important process is the adoption of new technology and production processes, and that requires

active management." And according to Wolfgang Schmidt, Senator for Economy, Small Business, Technology and European Affairs in Bremen, Germany (see 'Linking Research and Industry'), "the culture of a region has to be changed - it has to be opened up to new ideas and experiences, often from abroad."

Developing the innovation capacity of a region, therefore, is as much about

enhancing management skills, entrepreneurial culture and access to finance as it is about increasing the supply of research, development and scientific infrastructure.

II. Supporting Regional Innovation

There are many facets to regional innovation. The Innovation Programme and DG XVI therefore focus on helping both individual companies and the organisations established to help them.

The Innovation Programme's activities will be familiar to readers of *Innovation & Technology Transfer*. Practically every activity has an impact on innovation at the regional level, from the Innovation Relay Centres throughout the EU to the Innovation projects linking individual companies and research institutes (see page 6).

DG XVI (see 'DG XVI in Brief') also supports several relevant activities. Regional Technology Transfer (RTT) projects, for example, focus on the technology transfer process in the EU's less favoured regions by demonstrating new technologies and best practices. Seven such projects are currently being funded (see "Best Foot Forward"). Each involves a 'lead region', which already possesses a strong technological speciality and is in the forefront of research, and a number of partner regions with similar, but less advanced, industrial sectors.

Focus on the Fabric

Enhancing the capacity of individual firms to participate in innovative activity, however, is no longer seen as sufficient. Policy is now turning to encouraging the development of indigenous regional innovation capacity. Some of the most significant actions in this area are known as Regional Innovation and Technology Transfer Strategies and Infrastructures (RITTS) and Regional Innovation Strategies (RIS), two complementary actions jointly managed by the Innovation Programme and DG XVI.

Both activities, although administered and implemented somewhat differently, have broadly similar aims - to help

regional governments or development organisations thoroughly assess their regional innovation system. They cover management, financial, commercial training and organisational issues, as well as technological aspects, thereby reflecting a concern to broaden the scope of innovation development beyond a narrow view of regional competitiveness based solely on accessing



The Innovation Programme promotes design - an important innovation management technique - through the European Design Prize (see Dossier, edition 2/97).

and developing new technologies. The final goal is better regional innovation policies, developed in consultation with the companies and research institutes.

Regional Innovation Strategies, funded by DG XVI, are designed to create partnerships among the region's key actors so that an innovation strategy

can be defined in the context of regional development policy. As they are confined to regions where a significant share of the population is eligible for ERDF assistance, they focus particularly on improving the effectiveness with which EU Structural Funds are used for promoting innovation.

The Innovation Programme's RITTS, on the other hand, are located throughout the EU and the European Economic Area⁽¹⁾. They emphasise the use of consultants from other Member States and are 'self-standing', carried out without reference to the Structural Funds (funding levels can be higher, however, in regions qualifying for Structural Funds).

The regions involved in the more than 40 RITTS already launched have adopted a variety of approaches depending upon their particular circumstances, including promoting the development of particular industrial sectors and promoting innovation strategies in individual firms.

Innovation Management Techniques

In addition, the Innovation Programme is supporting national and regional organisations to promote structured Innovation Management Techniques (IMTs) to SMEs. To date, 24 IMT projects to help national and regional organisations have been funded (see page 12), with an overall budget of around 9 MECU.

Each IMT project involves the identification and refinement of appropriate techniques for innovation management,

(1) A Call for Proposals is planned for September - see edition 4/97 for details.

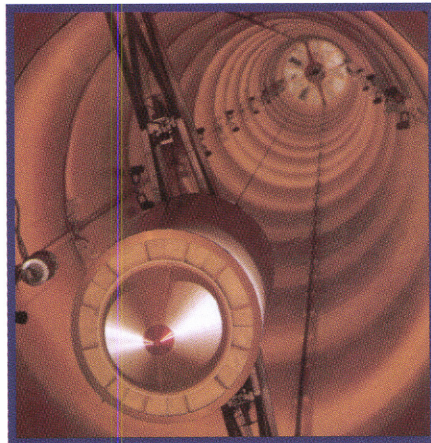
Case Study: RITTS

Linking Research and Industry

The German region of Bremen possesses a relatively rich R&D infrastructure but relies on a limited number of traditional industries, particularly steel processing and port-based activities, and has therefore been badly affected by the decline of ship building.

The impact on the science and technology sector has been limited, so the 'Project Bremen' RITTS initiative aimed to integrate the industrial and science sectors to support economic restructuring and innovation. The Danish, English, German and Greek consultants carried out a detailed analysis of the region's innovation fabric and identified four key objectives:

- emphasising demand-driven, rather than research-driven, technology transfer;
- improving the dialogue between universities, research institutes and companies to improve the identification of priorities;
- supporting networks linking academia and commerce;
- finding news ways to finance innovation.



Inside Europe's only microgravity tower, part of Bremen's Center for Applied Space Technology and Microgravitation.

According to Dr Volker Schäffer of Bremer Innovations - Agentur, a RITTS project promoter, "the European label, more than the EC funding, brought people together in a way that had earlier proved impossible."

The regional government obtained 3 MECU to launch 17 two-year pilot projects last July. Coordinated by Bremer

Innovations - Agentur, they are establishing an SME forum and an 'Innovation Round Table' of universities and research institutes to help identify technology transfer demand, reorganising public subsidy programmes, improving access to private capital and training students and entrepreneurs in technology management.

"We found that using external consultants was extremely useful, as they were independent of the Bremen scene - they had no particular vested interests," Dr Schäffer remarks. "In fact, we are retaining them to evaluate the pilot projects."

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Case Study: RTT project

Best Foot Forward

The footwear industry remains an important element of many regional economies in Europe. However, it tends to be dominated by small companies unable to adopt modern production techniques. There are many reasons for this, including a lack of awareness of new technologies, uncertainty over how these might benefit their own company or a simple lack of the resources necessary to take on any new and unknown risks.

The FOOTWEAR Regional Technology Transfer project aims to break this logjam. It will demonstrate the value of advanced Italian technology for the automated design and manufacturing of

lasts - the moulds used to form shoes - and transfer the technology to SMEs in the sector in six objective 1 regions of Spain, Portugal and Greece. Led by the Spanish region of Valencia, the project should help improve the time to market, productivity, employment levels and turnover within the industry of each region.

The design and conception phase, begun in February 1997, brought together the public organisations concerned with the development of the footwear industry, leading to a workplan for a two year implementation phase which, if funded, will begin as this edition goes to press.

The project already has five participating private companies which will act as pilot sites for technology demonstration, diffusion and commercialisation, and is in contact with 30 more. An ambitious training programme is planned to support the technical adaptation of the Italian technology and to facilitate its assimilation within SMEs.

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such as benchmarking, Total Quality Management, design engineering techniques and project management, followed by the selection and training of a number of experts in the use of these methods. Almost 1,000 company audits will be undertaken across Europe by these experts in order to develop practical experience in their use. Each audit will normally involve around 10 person-days and will result in an Action Plan for each company.

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Networking Best Practices ...

The final element of the IMT programme is a series of dissemination activities to help exchange experiences and develop good practices in promoting innovation management among SMEs.

Practically every EC activity in this field, in fact, involves a networking aspect where relevant best practices are transferred across Europe. Since September last year, for example, DG XIII and DG XVI have been supporting Regional Networks among the participants of the RIS and RITTS initiatives.

In addition, the Innovation Programme is just launching its second 'European Network and Services' Call for Proposals (see page 6). This is an experimental activity which aims to improve SME-oriented services by breaking down the barriers between the different professions in the field (technologists, bankers, promoters of social innovations, etc.), linking together the relevant national networks and facilitating the harmonisation of public support measures.

The first Call for Proposals, launched in December 1995, resulted in 23 projects going ahead with a total EC funding of over 7 MECU. They were highly diverse, ranging from BRIGIT, a project focusing on the chemicals industry⁽²⁾, to UTRANS (University Transfer), which links organisations strongly involved in SME creation through University spin-offs.

... and Companies

Of course, networks can also serve companies and research institutes themselves, rather than the regional authorities set up to help them. Reinforcing these networks is particularly important in many less developed regions in the Union, where local firms and research groups are poorly linked to existing national and international research networks.

The Innovation Programme's network of Innovation Relay Centres (IRCs)⁽³⁾ does exactly that. The 52 IRCs across Europe focus exclusively on bringing Europe to the doorstep of the companies in their region. Generally, their role is to help local companies get involved in and exploit results from the EC's research programmes, as well as find partners - for licensing, collaborative research and joint ventures - in other countries.

Each IRC, of course, focuses on their region's strengths and weaknesses, with IRCs from areas with similar industrial profiles forming Thematic Groups to concentrate on particular sectors (see page 8). Finally, the Innovation Programme also runs another network focusing on energy technologies⁽²⁾, in collaboration with the THERMIE Programme (non-nuclear energy demonstration).

Networks, however, do not have to be Europe-wide to be useful. Local and regional networks of partnership and co-operation are essential if a region is to have a climate conducive to innovation. It is through such formal and informal structures, linking firms, business services and the public sector, that new ideas and applications are developed and disseminated.

Where networks are poorly developed, as in many of Europe's less favoured regions, technology parks have often been established. The Innovation Programme supports studies examining the feasibility for technology parks and local technological resource centres which could help develop local capacity to support the creation of new companies, technology transfer and inward investment.

Looking to the Future

The past few years have seen the EC help build a comprehensive approach to tackling the problems of innovation in Europe's regions. In the future, these initiatives will focus on the themes of the Action Plan on Innovation⁽⁴⁾: fostering an innovation culture, establishing a framework conducive to innovation and gearing research more closely to innovation at both national and EU level.

While the Community's measures can be financed from existing or planned budgets, the Action Plan makes clear that "the main effort must nevertheless be made at local, regional or national level." The Commission's main role is to develop links between the regions and ensure that those responsible for regional innovation can learn from their counterparts throughout the EU. □

⁽²⁾ Both the BRIGIT project and the OPET network are profiled in edition 2/97.

⁽³⁾ See edition 3/97 for a Dossier.

⁽⁴⁾ See Special Edition, December 1996.

- all material available on the WWW.

Case Study: RIS

Building the Capacity of Local SMEs

The objective 1 region of Castilla y Leon is the largest region in Europe and is heavily reliant on an indigenous SME sector which is dependent on local and regional markets. At present its 50 biggest companies - out of a total of 150,000 - account for 50% of all regional exports.

Recognising that this dependency could prove disastrous in the long term, the region decided to develop the innovative capacity of the local SME sector, concentrating on the region's traditionally strong sectors, such as food processing and automotive component supply. It was hoped that this could overcome two fundamental weaknesses of the region: its limited international orientation and the weak importance attached to innovation, technology transfer and R&D by local companies.

Two-Stage Study

Castilla y Leon was one of the first eight regions to develop a regional innovation strategy under DG XVI's Regional Technology Plan programme. The two-stage study was launched by the Agencia de Desarrollo Economico de Castilla y Leon in May 1996 and finished a year later.

The initial stage analysed the strengths and weaknesses of the regional entrepreneurial framework, regional technology supply factors, regional support infrastructure, the demand for innovation and technology by sector, and the interconnections between demand and supply in innovation and technology matters.

The second stage then developed a set of corresponding objectives and strategies. An inventory of relevant programmes and institutions was made and a strategy for the dissemination of information on innovation throughout the region was designed.

There was a strong degree of local support and consensus throughout the process and both Juan Casado and Wim Martens of the Regional Economic Development Agency regard the bottom-up approach adopted by the



Castilla y Leon intends to build on its strengths in sectors as diverse as agriculture and automotive component supply through five interlinked programmes, developed in consultations with almost 800 companies.

region as one of the strongest elements of the strategy. Overall, nearly 800 local companies participated in the development of the strategy, either by agreeing to a diagnosis of their existing production processes, answering a comprehensive questionnaire on the subject, or through attending a number of meetings organised around different manufacturing sectors.

Five Programme Plan

The resulting Plan is based on:

- an infrastructure programme to develop the technological and innovation structures in Castilla y Leon as a whole;
- an innovation programme to promote technological development and stimulate the diffusion of examples of good practice between companies;
- an apprenticeship programme to improve the professional training of the region's work force and help it adapt to new requirements;
- an awareness raising programme focusing on the importance of innovation;
- actions to promote cooperation between companies and the different agents of the region's innovation system.

The process has already begun. Funding is being made available for innovation audits of SMEs, the diffusion of best practices, the acquisition of technological equipment for SMEs and technology centres and consultancy support for companies wishing to participate in European and national programmes, which has increased applications tenfold. Research into local clusters to identify those which might be viable and the support services required are also being carried out.

The future will see the rationalisation of the regional network of technology centres, the development of apprenticeships and training opportunities in companies and support for technological co-operation and development.

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► THERMIE

Solar Energy - Saving Cash and Coal

Two THERMIE projects designed to demonstrate and spread the use of advanced solar and low-energy building technologies have developed new models for costing large-scale energy-efficient housing schemes.

Built as part of the European Housing Ecology Network project, this Danish housing development features 100 solar low-energy units.



"Municipalities, housing associations and builders right across Europe are more open to sustainable housing development," says Peder Vejsg Pedersen, Director of Cenergia, the Danish engineering consultancy leading both projects. The main obstacles are usually financial, although Mr Pedersen points out that investment costs and the value of energy savings differ widely from country to country.

"In Denmark we put a huge effort into energy-saving measures during the 1970s oil crisis," he says. "Since then we have maintained the incentive to save energy by taxing it. Although the price of electricity and heating fuel is twice that in the UK, for example, the average Danish household consumes only half as much."

In Denmark, the investment needed to achieve further sav-

ings is high. In Ireland and the UK on the other hand, where efficiency is still poor, a relatively small investment can secure dramatic energy savings, but the financial incentives are much lower. In both cases, the THERMIE partners believe there is potential for public authorities and energy suppliers to collaborate, establishing local energy-saving companies to attract finance for sustainable housing schemes on the basis of guaranteed energy savings.

30,000 Low-Energy Homes

The word 'guarantee' is crucial. The first project - the European Housing Ecology Network - was launched in 1993 by Cenergia, Metec Engineering (an Italian engineering SME specialised in building and

equipment design), the Spanish research organisation Institut Cerda, and Green City Denmark, a joint venture between the Danish Ministries of Industry, and Energy and Environment.

The project has carried out 11 new-build demonstration projects in seven Member States. Using energy-saving designs incorporating solar power, each has reduced space heating power consumption by 50-70%, and the use of electricity and water by 20-30%.

The partners launched European Green Cities three years later. It will pilot new energy-saving solutions for retrofitting existing buildings, as well as innovative new-build designs, and will affect 30,000 homes in 11 European cities. An important feature is the introduction of newly developed software tools for life-cycle assessment

of a design's environmental and financial benefits.

"Building Energy and Environment Assessment Model (BE²AM) lets you calculate a design's cradle-to-grave energy costs and environmental impacts - right down to the energy used to produce the building materials," says Mr Pedersen, "This allows planners, funders and residents to optimise a scheme's energy-saving features."

OPTIBUILD performs a similar function, but from a financial perspective. "OPTIBUILD can show that over the lifetime of a housing development, reduced power consumption outweighs the cost of investments in energy saving," Mr Pedersen explains. "Taken together, both projects involve a significant demonstration of long-term cost savings which we hope will stimulate real growth in the market for energy-saving building technologies." □

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► BRITE-EURAM

Europe's Research: Serving its People

Adopting as its subject the alignment of Europe's research and technological development with its social and economic objectives, the 7th Conference on Industrial Technologies will be held in Toulouse, 27 - 30 October 1997.

In an opening session, major figures from the European Parliament, the Council of Ministers and the Commission will present their views on research as an instrument of European policy. This will be followed by a roundtable discussion of the role of research in society by representatives of Europe's industrial and academic communities.

The Conference's technical sessions will present advanced technologies developed under Brite-EuRam III and related programmes, focusing on three main themes:

■ **Towards a better living and working environment** will explore new methods and technologies designed to support environmental and social sustainability;

■ **The factory of the future** will look at advanced production technologies and working methods, including 'intelligent' and 'virtual' manufacturing;

■ **New perspectives in aeronautics** will examine the design, construction and systems technologies needed to improve the competitiveness of the European aviation industry.

Throughout the Conference, innovative technologies generated by Community research programmes will be demonstrated in the exhibition area.

The closing session will include a presentation by Commission officials of the research objectives envisaged for the Fifth Framework Programme, in particular those relating to the conference themes. □



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► INFORMATION TECHNOLOGY

European IT Conference 97

Europe's IT, telecoms, publishing and broadcasting industries are converging — as consumers, creators and suppliers of digital data. The opportunities and the threats presented by convergence will be the theme of EITC 97, to be staged in Brussels, 24-26 November.

Participants will be given access to the latest thinking of leading experts concerning the technological, social and commercial dimensions of advanced IT development, as well as a preview of a large number of innovative technologies.

Highlights of the three-day event will include:

■ an opening address by Jormo Ollila, president and CEO of Nokia Group;

■ a keynote address by Nicholas Negroponte, director of MIT's Media Laboratory;



■ a presentation by the Commission of the proposed content of the forthcoming Fifth Framework Programme;

■ workshops, mini-conferences and forums on topics such as the Internet, research networks, multimedia content, mobility and the Web;

■ an exhibition of technologies and products emerging from recent ESPRIT projects

■ presentation of the 1997 European IT Prize Awards by Jacques Santer, President of the European Commission;

■ an 'Access to Finance' stream, including a one-day Investment Forum where selected IT companies looking for venture capital will meet investors. □

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▶ ESPRIT

Catching the ESSltrain

Training projects designed to help SME software producers active in quality improvement programmes are starting to make an impact.

The ESSI (European Systems and Software Initiative) programme⁽¹⁾ currently funds six training and awareness projects, collectively known as ESSltrain, which should benefit software producers in both Western and Eastern Europe.

The major ESSltrain objective is to promote cooperation in designing, developing and disseminating training for software producers. The projects are designed to encourage software developers to adopt "best practice" and attempt to increase the awareness of the benefits of using advanced software quality management techniques. The goal is to raise the skill levels of software development personnel and hence improve their productivity.

Networking Effects

The ESSltrain cluster promotes cooperation by bringing together individual projects, which might otherwise operate independently. This brings several advantages. Workers in similar fields become more aware of what is happening outside their particular speciality area, complementary expertise can be easily identified and duplication of effort can be avoided.

But for these potential benefits to become realities, project clusters need effective communication structures and must be coordinated effectively. To facilitate this, the first of a number of regular ESSltrain workshops was held in Brussels last April.

The workshop was attended by Commission ESSI Project

ESSltrain Projects at a Glance

The six projects clustered in ESSltrain are:

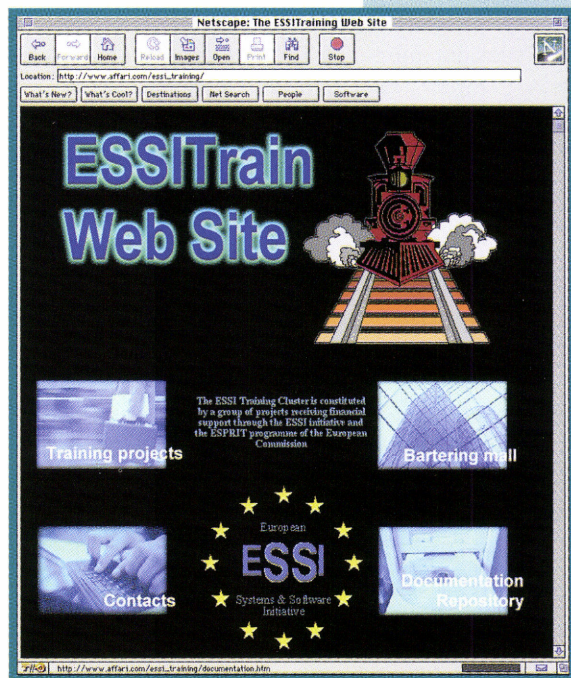
- **MURMUR** - a multimedia CBT (Computer-Based Training) package on managing user requirements;
- **RAPID** - training SMEs for the rapid development and implementation of ISO 9000 QMSs (Quality Management Systems);
- **SCATE** - which aims to make SPI (Software Process Improvement) expertise available to small software teams in English, French and Greek;
- **TAPISTRY** - which will make top SPI experts' knowledge and experience available to SMEs;
- **TRAPSP** - training in the Personal Software Process model, using multimedia and distance training;
- **INSPIRE** - which aims to promote all the above projects - and other proven Software Process Assessment and Improvement methods - in Central and Eastern Europe.

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■ VASIE: <http://www.esi.es/>
 VASIE



The ESSltrain WWW site contains details on the projects, a 'bartering mall', a library of software best practices and much more.

Officers and representatives from all the companies involved in the projects. One of the main results of this first event was clear agreement between the delegates that future workshops should address single themes of interest to all the partners.

The next workshop, in late September 1997, will be held concurrently with the CONQUEST-1 conference on Verification and Validation, Process Improvement and Quality Management, in Nürnberg. The theme of this workshop will be marketing and promotion issues. Future meetings could be an opportunity to invite expert speakers, on aspects such as training course evaluation and marketing.

Information Supertrack

The information collected by ESSltrain will be integrated into the VASIE (Value Added Software Information for Europe) WWW site in the form of training products, workshop activity information and reports. Furthermore, ESSltrain has set up its own web site, which allows users access to details of training projects, lists of contacts, a documentation repository and a library of best practice software. □

(1) ESSI aims to promote improvements in software development. See edition 3/95 for more information.

► CONFERENCES

Theory and Tools for Innovation Management

1-3 October, San Sebastián, Spain

SMEs face particular difficulties when trying to commercialise research, as they often do not have the knowledge and skills in Innovation Management Techniques (IMTs, see page 12). IMTs such as innovation marketing, technology watch, quality management, design and value analysis are often brought in from outside, through the use of consultancy companies and specialised promotion bodies. The XIth International Conference of the International Society for Professional Innovation Management (ISPIM) will review the current state of the art in this field. The event will be dominated by papers on research, innovation case studies and IMT methods and techniques, with the final plenary session considering a pan-European perspective for supporting innovation. The third day will be devoted to an ISPIM members' meeting and visits to local companies.

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INFOSYSTEM '97 - HI TECH

1-5 October, Thessaloniki, Greece

The eleventh international exhibition of information systems and high technology products will have parallel sections for Greek and international exhibitors. Products and services in fields such as integration, software, home computing, supplies, retail sales, office machines, wholesale firms, and education will be exhibited. A wide range of trade visitors will attend the exhibition, which will also be open to the general public. In addition to the exhibition, there will be a conference on the theme "Public sector re-

form and the role of Greek information technology companies". Speakers will include Greek government officials and representatives of the European Commission.

INFO: INFOSYSTEM - HI TECH Secretariat

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Second International Campus Companies Conference

5-6 November, Edinburgh, UK

This conference is organised by Technology Ventures (Scottish Enterprise) in collaboration with the Innovation Relay Centre for Scotland (Euro Info Centre Ltd.), Lothian and Edinburgh Enterprise and Coopers and Lybrand. It will consider the funding of university spin-out and high technology companies - companies often, though not always, located on university campuses or science parks, hence the term "campus companies" (see page 9). Particular attention will be given to how additional funding can be secured for these companies and how they can make themselves more attractive to the investor. A wide range of high-level speakers will discuss their experiences and participate in workshops. Mr. Javier Hernandez-Ros of the Innovation programme will present the EC's activities in this area. The conference is part of a larger "Technology Ventures" event, and will be followed by two related conferences:

■ The First Scottish Technology Forum - where potential investors can meet 25 of Scotland's new technology-based companies and projects and discuss the investment opportunities presented by them;

■ A conference entitled "Commercialisation, the post-research option?" - which is designed to give university research workers an insight into the commercialisation routes for their work, including licensing, joint ventures and

the setting up of spin-out businesses.

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ONLINE Information '97 9-11 December, London

This annual event, now in its 21st year, will embrace all aspects of digitally published material as well as electronic publishing services and technologies. This year, more emphasis will be placed on the online industry itself, with the programme covering all aspects of the information industry from practical business models to prospects for the next century. Two conference tracks, one academic and one commercial, will be developed. In addition to the conference, there will be an exhibition of online information products and services, including CORDIS.

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ECOparters - Finding Environmental Technology Partners

10-11 December, Utrecht, the Netherlands

EG-Liaison, the Innovation Relay Centre for the Netherlands, is organising this partnering event. It will be linked to the ECOTECH Europe '97 environmental technology trade fair, which runs from 9-12 December.

"ECOparters" will focus on five sectors: Air purification, Waste water treatment, Waste management, Soil decontamination and Specialist environmental services, such as energy management.

EG-Liaison aims to have at least five participating companies from each of the EU

Member States. Every company that submits one or more technology offers or requests, and attends the "ECOparter" meeting will be offered free admission to the ECOTECH trade fair. Technology offers and requests should be submitted by 1 December 1997 at the latest.

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European Telematics - Advancing the Information Society 4 - 7 February, Barcelona, Spain

Organised by DG XIII within the framework of the EC's Telematics Applications programme, this major four-day conference will showcase the results and achievements of the programme and explore visions of possible future developments in the field. The role of the Fifth Framework Programme for Research and Technological Development will also be examined.

The Telematics Application programme has brought together users, industry and researchers in shaping leading-edge technologies into applications for the European information society. The event is expected to attract some 2,000 to 3,000 of these participants, and will provide a platform for the exchange of information and experiences on the state-of-the-art in telematics technologies and applications. In order to meet the needs of a large and diverse audience, the event will run over three days of formal sessions and will include a large exhibition featuring hands-on demonstrations and presentations of recent telematics developments.

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CONFERENCES AND PUBLICATIONS

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.

CD-AJ-97-005-EN-C

► PUBLICATIONS

■ THE COMMISSION'S PROPOSAL FOR THE FIFTH FRAMEWORK PROGRAMME

The European Commission, DG XII, has published a public edition of the proposal for the Fifth RTD Framework Programme (1998-2002), adopted on 9 April 1997.

The booklet includes both the draft Decisions, for the Fifth Framework Programme and the associated Euratom Framework Programme, and an explanatory memorandum. It gives details of the Commission's proposals regarding the aims and objectives of Community research, and its proposals for the number and structure of the specific RTD programmes within the Programme.

The publication explains how, under the proposal, the Commission has maintained its earlier ideas on concentrating European research efforts. Six programmes are proposed: three thematic research programmes, covering the living world and the ecosystem, the information society and promoting competitive and sustainable growth; and three horizontal programmes, covering international coopera-

tion, innovation and SME participation, and improving human potential.

Copies of the booklet are available in English, French and German.

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PROCEEDINGS OF PATINNOVA

Subtitled "Strategies for the protection of innovation in new technologies", the proceedings are of the PATINNOVA '92 and PATINNOVA '94 conferences on innovation, management and patents, which were held in Lisbon and Copenhagen, respectively (see last issue for a Dossier on Patinnova '97).

The conferences were aimed at improving general awareness of the economic and marketing importance of the patent system, and exploring the relationship between research and the actual transfer of research results to new products.

INFO: DG XIII/D-2

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The European Innovation Monitoring System (EIMS) has recently published two reports, both of which draw on the Innovation Programme's 1993 Community Innovation Survey (CIS).

INNOVATION IN THE EUROPEAN TELECOM EQUIPMENT INDUSTRY

"Strategies for the future: Innovation in the European Telecom Equipment Industry", prepared for the European Commission (DG XIII) by MERIT (Maastricht Economic Research Institute on Innovation and Technology), evaluates the innovative activities of the European telecom equipment sector (including line telephony, radio communication, and TV and radio broadcasting equipment).

Part I of the report examines publicly available data on production, trade, patents and technological trends, while Part II presents the results of analyses of the 1993 Community Innovation Survey (CIS), part of which provides a snapshot of conditions in the European telecom equipment sector before the liberalisation and privatisation of telecom services in most European countries.

INNOVATION OUTPUTS IN EUROPEAN INDUSTRY

The CIS set out eight "innovation output indicators" intended to help provide indications of the innovative capacity of businesses in the European Union. "Innovation outputs in European industry" attempts, on the basis of these indicators, to map the structure and pattern of innovation outputs across European countries and industries, and to examine how variations in innovation output relate to firm size and export performance.

The role of industry-specific versus country-specific factors in shaping the rate and direction of innovation is also explored.

INFO: EIMS, DG XIII/D-4

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