The Environment: Opportunity *or* Threat?

Plus:

- European Research - Into the Next Century
- Case Studies: Improved Maintenance and Better Robots for SMEs
- Information Society and Global Development
- ESPRIT: Supporting Users, Technology Transfer, Electronic Commerce Conference
- Managing Intellectual Property

Cultural Barriers to Innovation: Software Testers Wanted

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Cover: ®Benelux Press

Sights set on 1999

The European Commission has published its initial discussion paper on the shape of the next research Framework Programme, due to start in 1999 when the current Fourth Framework Programme ends (see page 5).

The Commission stresses, however, that the Fifth Framework Programme should not be a straightforward continuation of the Fourth. Among other things, the new programme should be more selective about topics to be supported, so as to ensure a greater concentration of resources, and procedures for implementing the programme should be simplified and speeded up. As yet, the Commission has not proposed any figure for the programme's budget.

The Europe-wide debate which the discussion paper is intended to initiate is already well under way. At the time of going to press the European Science and Technology Assembly, the European Commission's Industrial Research and Development Advisory Committee, and the European Science Foundation had already issued views on the future programme. Member State position papers were beginning to appear.

Reports on the progress of the debate increasingly feature in the press, demonstrating the rising awareness of the importance of the European collaborative research effort, and of the issues involved.

The debate will step up a gear this autumn, when the programme is discussed in meetings of the Council of Research Ministers, and by the European Parliament. Thereafter, the Commission plans to issue a formal proposal for the Fifth Framework Programme in the spring of 1997. ■

► SMES

Encouraging Participation

Small and Medium-Sized Enterprises (SMEs) account for over 99 per cent of the European Union's firms and 65 per cent of its turnover. Measures to stimulate their participation in EC-funded research show encouraging results.

SME-targeted Technology Stimulation Measures were established under the EC's Fourth Framework Programme (FP IV, 1994-1998) for Research and Technological Development (RTD). They include:
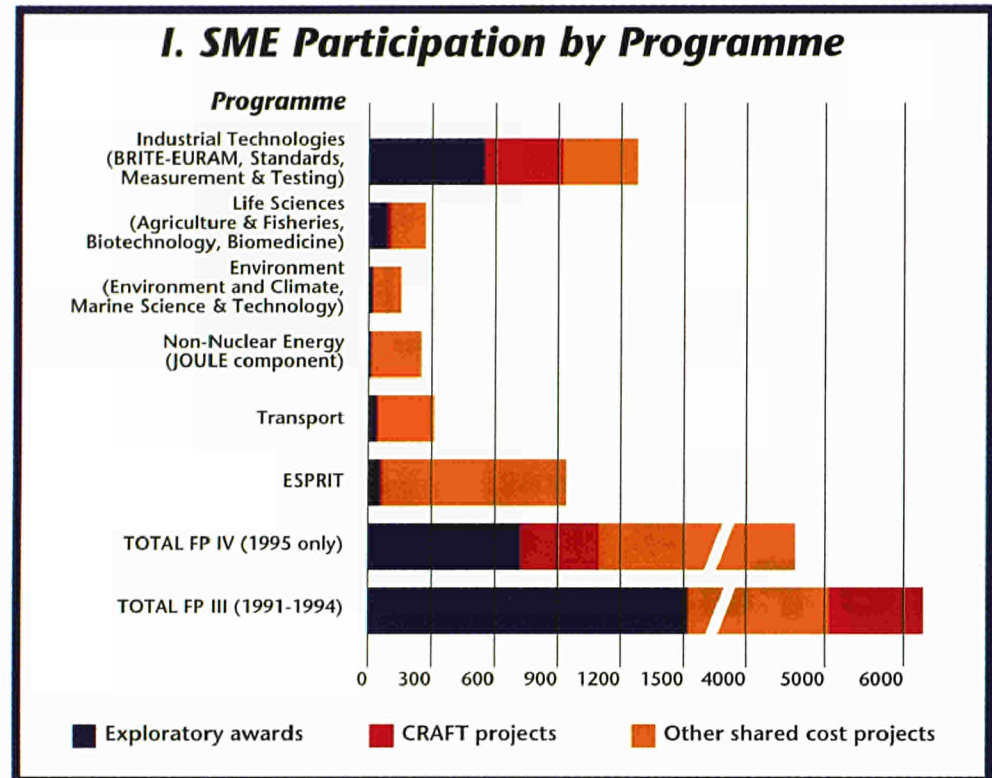
■ exploratory awards, providing SMEs with financial support for the preparation of project proposals (partner search, market and innovation surveys, feasibility studies, etc.);

■ 'CRAFT' projects, whereby groups of low and medium-technology SMEs with similar RTD needs but little or no research capacity can commission the work from a third party, such as a university or research organisation (see the Case Study on page 20).

In both cases, SMEs can submit proposals throughout the year rather than in response to a Call for Proposals with a single, fixed deadline. Moreover, the SME Co-ordination Unit, run by DG XII (Science, Research and Development), oversees the Network of Focal Points - a pan-European network of centres providing advice at the national and European level on participation in the Stimulation Measures in particular areas of EC research. Its services include partner searches and advice on preparing project proposals.

First Year Statistics

According to statistics prepared by the SME Co-ordination Unit, SMEs[1] have increased their participation in the EC's RTD programmes: 17% of all the participants in the entire Third Framework Programme (FP III, 1991-1994) were SMEs; this figure grew to 21% in 1995, the first year under FP IV.

Graph I, on the other hand, illustrates the part played by the two Technology Stimulation Measures in most of the EC's research programmes. Overall, these measures account for 25% of all participation in 1995, while the industry-oriented programmes account for around 75% of all SME participation.

Graph II shows that whilst the success rate for submissions for Technology Stimulation Measures is high for all SMEs, the participation of the smallest SMEs (less than 50 employees) is by far the greatest. According to the SME Co-ordination Unit, the majority of the larger SMEs (250-500 employees) belong to the more traditional sectors, such as construction, textiles and wood.

The Fifth Framework Programme - scheduled to begin in 1999 - may introduce new criteria to distinguish SME sizes more finely[2]. In the meantime, a conference in Brussels is being organised for 30-31 October this year to promote SME RTD activity (see page 23 for details).

Industrially-biased programmes accounted for around 75 per cent of all SME participation in the first year of the Fourth Framework Programme.

(1) Using the current definition of SMEs (no more than 500 employees, annual turnover of 38 million ECU or less, no more than 33 per cent ownership by an organisation larger than an SME).
(2) See edition 3/96.

I. SME Participation by Programme

Programme: Industrial Technologies (BRITE-EURAM, Standards, Measurement & Testing); Life Sciences (Agriculture & Fisheries, Biotechnology, Biomedicine); Environment (Environment and Climate, Marine Science & Technology); Non-Nuclear Energy (JOULE component); Transport; ESPRIT; TOTAL FP IV (1995 only); TOTAL FP III (1991-1994)

Axis: 0 300 600 900 1200 1500 4000 5000 6000

Legend: ■ Exploratory awards ■ CRAFT projects ■ Other shared cost projects

II. Technology Stimulation Measures: SME Submission and Participation by Size

Size of SME (number of employees)

Exploratory awards
- Submitted (dark navy)
- Selected (grey)

CRAFT projects
- Submitted (red)
- Selected (light red)
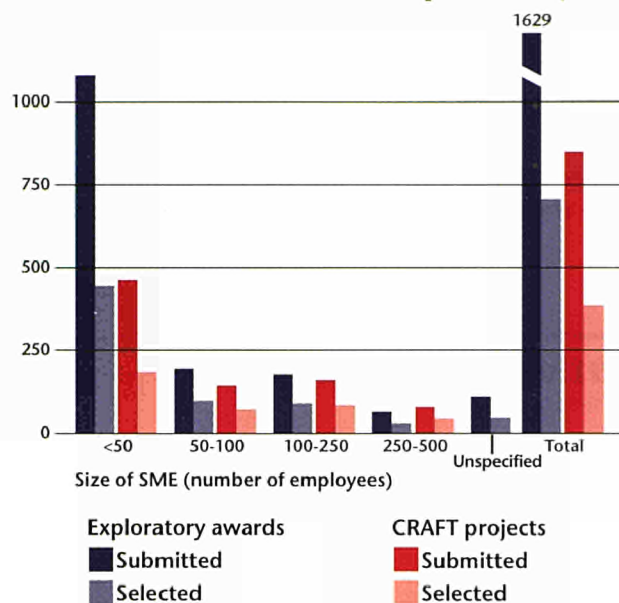
Encouragement for SMEs: the success rate is high (40-50 per cent) for applications for Technology Stimulation Measures.

▶ FOURTH FRAMEWORK PROGRAMME

More Funding Possible

As much as an extra 700 million ECU could be made available to the EC's Fourth Framework Programme for RTD.

If the funding can be found in the EU's budget it could become available in 1997, assuming the European Council ratifies the European Parliament's opinion of 19 June.

The redesign of the Fourth Framework Programme and expansion of financing was foreseen when the initial rationale and objectives were agreed in 1994. In their plans, both the European Commission and Parliament want to try to obtain critical mass in priority areas through concentrating on some strategic project areas.

Based on a report by MEP Rolf Linkohr, the Parliament decided to add two new special project areas: the location and destruction of land mines[1] and transport interoperability and intermodality[2].

In addition to these special projects, the Parliament wants three of the Task Forces to get funding for projects where there are gaps in important areas:

- New Generation Aircraft (production-efficiency, aircraft safety & performance, improving environmental impacts);
- Multimedia Educational Software (new prototypes and applications);
- Water-related Problems.

The Parliament decided on these particular priorities because of intense US competition. The Task Forces will try to balance this out by concentrating investment in the fields which can help some of the EU's largest industrial communities. In addition, there is likely to be significantly more effort given to dissemination activities in many EC programmes.

(1) See edition 3/96.
(2) See Dossier, edition 4/96.

New SME Programme

The Third Multi-annual Programme for Small and Medium-Sized Enterprises was adopted by the Commission on 20 March, 1996.

Proposed by Commissioner Papoutsis, the Programme ensures the continuity of Community enterprise policy, with 180 million ECU of funding for the period 1997-2000. Its approach - which is in line with the policy paper presented to the European Council in December 1995, 'A New Strategy for SMEs' - has three specific goals:
- encouraging an environment favourable for the development of SMEs;
- improving the competitiveness of SMEs in the context of the Single Market and internationalisation;
- improving consultation and SME policy development.

Existing structures, such as the European-wide network of information centres ('Euro Info Centres'), the business search networks and the partnership programmes, continue as prominent action-lines, simplifying the administrative environment and improving the framework for transnational operations by SMEs. There is also a marked development of new initiatives: promoting SME access to the information society, focusing on female and young entrepreneurs, and much more.

The Third Multi-annual Programme for SMEs fits into the framework of the recently updated Integrated Programme for SMEs, which provides a coherent structure for the enterprise policy actions for SMEs and other activities for SMEs in the areas of research, regional development, and so on. The Integrated Programme for SMEs is a direct follow-up to the European Commission's European Confidence Pact on Employment.

A free booklet giving details of SME-targeted initiatives in Europe - including a list of Euro Info Centres - is available from DG XXIII (Enterprise Policy). 'Doing Business in Europe' is available in all official languages of the European Union.

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► FIFTH FRAMEWORK PROGRAMME

Charting an Innovative Future

An initial discussion paper on the forthcoming Fifth Framework Programme (1999-2003) aims to make innovation and technology transfer one of the cornerstones of EC research into the next millennium.

The discussion paper, which is currently being circulated, sets guidelines on how the Commission sees its research efforts developing after the current Fourth Framework Programme, which finishes in 1998. It makes clear that the Fifth Framework Programme should address real market problems, moving away from the pre-competitive research strategy.
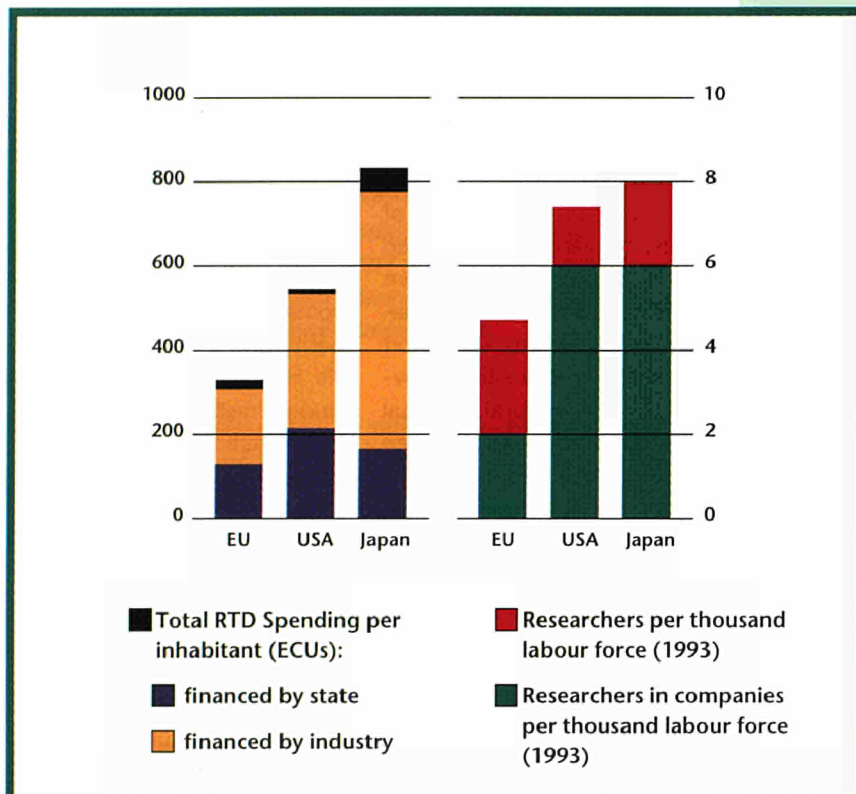
Societal needs and strengthening Europe's scientific base are to be the focus, programmes will be regrouped to obtain a better critical mass of efforts, and the delay between a Call for Proposals and actual funding will be cut.

Innovation and technology transfer form a cornerstone. New initiatives are proposed to attack problems in innovation and skills and technology transfer, as are new instruments to disseminate knowledge to needy parts of the EU. For example, the Commission wants to create Centres of Excellence - "MITs all over Europe" - and special activities to involve 'low-tech' SMEs in technology transfer and innovation schemes.

Six Preliminary Objectives

The blueprint proposes three 'Priority Topics', all focusing on research at the service of the people, and three Horizontal Activities:
1. Unlocking the resources of the living world and the ecosystem;

Key:
- Total RTD Spending per inhabitant (ECUs): (black)
  - financed by state (dark blue)
  - financed by industry (orange)
- Researchers per thousand labour force (1993) (red)
- Researchers in companies per thousand labour force (1993) (green)

2. Creating a user-friendly information society;
3. Promoting competitive and sustainable growth, in the fields: industrial manufacturing; energy production; transport; integrated rural development; fishery activities.
4. Improving human potential;
5. Innovation and participation of SMEs;
6. Confirming the international role of European research, e.g. more direct involvement of non-EU participants in projects, in particular from Central and Eastern Europe.

This is of course a preliminary proposal from the Commission, rather than concrete policy. More detailed proposals along these guidelines are expected in the coming months.

Major discussions on the Programme's scope and budget will get underway later this year - the October and December meetings of the European Council of Research Ministers will consider it, for example, while an evaluation of the previous five years of Framework Programmes is also being carried out. ☐

Future Commission strategy aims to improve the research capability and competitiveness of European industry by promoting more market-oriented innovation initiatives.

▶ INFORMATION SOCIETY UPDATE

Global and European Development

The last few months have seen a G7 conference on the Information Society in South Africa and the publication of a number of reports on plotting Europe's future.

A truly global information society cannot - by definition - exclude most of the world's population living in developing countries. Not enough, however, is being done about the ever-widening technological gap between the less developed and industrialised countries. The Information Society and Development (ISAD) Conference, held last May in South Africa, was held to tackle these problems of which, as Martin Bangemann, European Commissioner responsible for Industry, noted, the major one is lack of infrastructure.

"The themes of the Information Society and Development are, on their own, key issues for the future of all humanity," pointed out European Commission President Jacques Santer. "Nourished together, they can provide a fresh path, perhaps the only path to a sustainable, more equitable and prosperous world in the next century."

He said the EU is ready to upgrade and accelerate its efforts with the developing world, and announced that the Commission is planning to finance an 11 million ECU project to establish 'trade points' in Sub-Saharan Africa to gather and electronically disseminate trade information for SMEs. The main point of the conference, however, was to encourage private investment in extending the Information Society to the developing world, particularly after a proposal for an Africa 'backbone network' failed to attract enough private backing.

A People-Centred Approach

Back in Europe, progress towards the Information Society proceeds on a number of fronts, including the publication of the first annual report from the EC's 128-member Information Society Forum. The report sets out 12 propositions covering social, cultural, political and economic issues, and can be downloaded from the Information Society Project Office (ISPO) WWW site.

The report's essential conclusion was that "people are the initiators and are as important as markets in achieving a successful transition to the Information Society. If their needs as citizens, consumers and human beings are taken into account then Europe will strengthen its economic development and enjoy greater prosperity and a better quality of life. However," the Forum concluded "neither our people, nor our institutions nor most of our companies are really prepared for the new technologies."

The EC's High-Level Expert Group on the Social and Societal Aspects of the Information
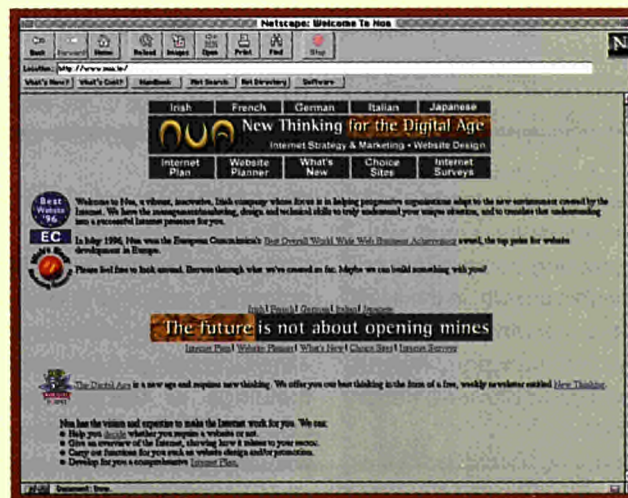
Irish company Nua (http://www.nua.ie/) won the 'Best Overall' European WWW Business Awards for 1996. The Awards, given to the best new or newly re-engineered businesses created in Europe using the WWW, were organised in the framework of "Business on the Web", the SMEs Forum held within the 5th International World Wide Web Conference (http://www5conf.inria.fr/), held last May with EC support. All twelve winners can be found at http://www.ispo.cec.be/EW3BA/ew3ba.html.

Society has also published a "First Reflections Report". It argues in favour of a European model of the Information Society based on solidarity, outlining and offering policy suggestions for issues such as employment policy, training, quality of life, social cohesion, health and democracy.

The Commission will launch a Green Paper on Social Policy for the Information Society at "People first", a colloquium on responding to the challenges of living and working in the Information Society which will be held in Dublin (Ireland) from 30 September to 1 October.

It has also amended the ADAPT Community Initiative to help build the Information Society. ADAPT, a Community Initiative of the European Social Fund, assists projects which contribute to adapting the workforce to industrial change and improve the workings of the labour market (see the 'Training for Industry' Dossier in *Innovation & Technology Transfer*, edition 1/96).

The new priority - entitled ADAPT-BIS - will receive 162 MECU from the Structural Funds for the period 1996 to 1999. Of this, 51 MECU will be allocated to Objective 1 and 6 regions.

● ● ●

> **"**
> *There are more telephone lines in Manhattan than in all of sub-Saharan Africa, and half of humanity has never made a telephone call.*
> **"**
>
> *South African Executive President Thabo Mbeki at the G7 conference on the Information Society, Brussels, 1995.*

Case Study: Information Society

Telling the STORY

The potential the Information Society holds for developing countries was underlined by the STORY project, demonstrated at the exhibition held in parallel to the Conference in South Africa.

"STORY is a heritage project for the Information Society - it stimulates young people to record and illustrate the heritage of their parents, grandparents and communities," explains project co-ordinator Marial Hannon from Shannon Development, the regional development agency for the mid-west of Ireland. "It stemmed originally from anthropological work I did with Australian Aborigines. Their way of dealing with stories, images and culture inspired me to develop a model through which local communities could contribute to a sort of 'European Dreaming' via the Information Society."

Each participating student receives a 'Black Box Archive folder' which guides the students in exploring and documenting the relationships between everyday objects and their community's 'living memory'. They then explore this further via drama, visual art, sport, music, computer networking and so on.

This results in a multimedia 'Story-Object History'. Each History links an object (say, a modern, industrial plough) to its antecedents (a horse-drawn plough) and all the memories the object evokes in the student's grandparents and other older members of the local community. These stories can then be linked to others through the 'International lifeSTORY Archive Network', creating a "multimedia information space of

Mme Cresson (centre), Commissioner responsible for research, examining the STORY project at the exhibition in South Africa with Marial Hannon (left) and Paul Sheane, chief executive of Shannon Development.

cultural and historical stories, created by local people for the entire world."

By the time STORY was selected to participate in the EU pavilion it had already received material from around 2,500 students from Finland, Germany, Greece, Ireland, Poland and the UK. This represents an enormous amount of multimedia material on Europe's cultural heritage and history, created by local people rather than academics. Next year they intend opening the initiative to all of Europe, and are hoping to launch an INFO2000 project to develop ways of helping communities commercialise their material.

Africa is the next target, as the project demonstrates how young people, with the support of their parents and grandparents, can nurture and rejuvenate interest in their heritage, enriching the Information Society in the process. Ms. Hannon's own experience at the exhibition confirms this vividly.

"We took our taxi driver

into the exhibition centre one day," she remembers. "It was his first visit inside a building that he'd spent many years delivering visitors to. He was extremely enthusiastic about STORY's potential which, as he put it, would allow African children to express themselves at the same level with children all over the world. So he took us to see some teachers at his local school in the Soweto township. We should receive around 50 Histories from them, and we expect dozens more schools across Southern Africa to follow."

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Innovation

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.
See edition 1/95 for a brief profile.

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▶ CASE STUDY: AUTOMATION FOR SMES

Putting the Pieces Together

An Innovation Project has cut robot programming times by up to 60 per cent. As a result, the advantages of robot welding - once confined to mass producers - have been transferred to small batch producers.
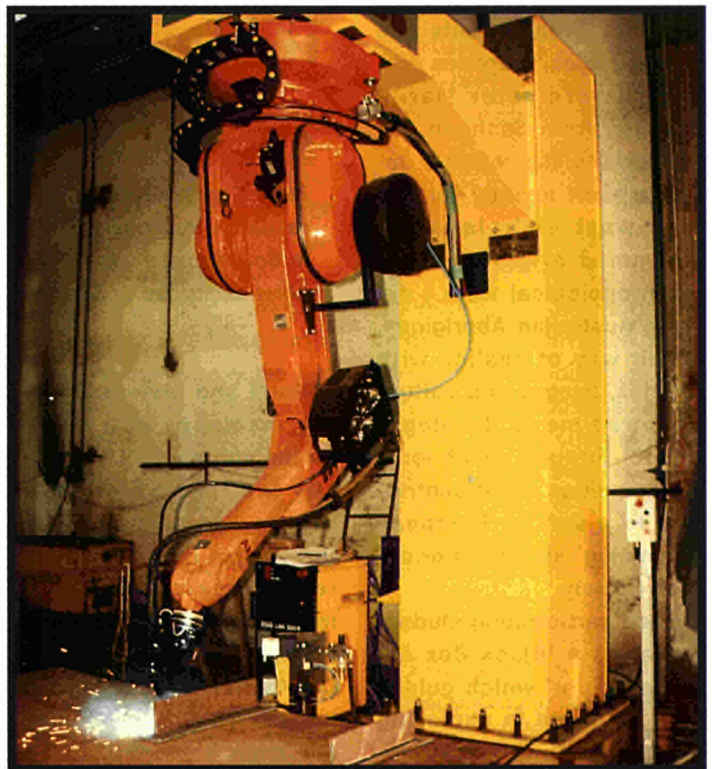
Welding robots are a familiar sight on mass production lines, where their use has helped to increase output and ensure consistent quality. Small batch producers - mainly SMEs - have not been able to benefit from the same advantages, however, due to the prohibitive time taken to program robots using established methods.

This is because traditional robot programming, known as 'teach in', requires the operator - usually an experienced welder - to guide the robot through the entire cycle, step by step. Given the trial and error nature of such an approach, the ration of programming to welding time is 20-30:1. This is acceptable when the same cycle will be repeated hundreds or thousands of times but it is clearly uneconomical for batches of 5-10 pieces.

Welding to design: the robot is programmed directly from the CAD system.

Transferring Established Technology

In response to this problem, welding and robotics experts APS GmbH of Germany - together with partners in Greece and Portugal - established SPRINT project SPI 235. The new, graphical off-line programming method that they developed capitalises on the increased use of computer aided design (CAD) by small scale producers.

In essence, they have produced a simulation and programming tool to convert the CAD files - which by definition contain the dimensions of the piece to be welded - into instructions that the robot can understand. As a result, the production methods of two Greek and two Portuguese companies have been rationalised and improved, helping them to maintain their competitiveness on the world market.

APS has been involved in a number of ESPRIT projects, dealing with the information technology aspects of robot control, and BRITE-EURAM projects, addressing materials and welding issues. The SPRINT project - which re-ceived 35 per cent of the 1.43 MECU costs from the EC - was an excellent opportunity to transfer techniques developed in previous projects to new countries and a new sector. It is also an example of how established technologies often need further innovation to cross sectoral barriers.

The EC's SPRINT programme - and its successor, the Innovation Programme - were established to promote such Innovation Projects and demonstrate the advantages that they can bring to European industry.

Saving Time and Materials

Using the new system, the welder indicates the points at which to weld and the material's thickness and nature from within the CAD program. The software then suggests the most appropriate procedure, selected from a knowledge database, which the welder can check using a computer-generated 3D representation of the robot performing the task. This cuts down on wasted materials - a more significant cost in small batch production.

This database is extended each time a job is performed. "For example, one of the Greek companies, Elvim SA, uses the system to weld transformer boxes, the volumes of which may change in batches as small as 20 pieces," explains Dr Günther Starke, head of the research department at APS. "The nature of the job is pretty much the same, whatever the volume of the box, so the operator can select the previous welding job and simply specify how the dimensions have changed; the rest of the job is programmed automatically by the integrated macro-programming technology. As a result, programming time can be cut by between 50 and 60 per cent, making it viable for smaller production runs."

Furthermore, because the robot is not required during the programming process, the operator can start preparing the next job before the current one is finished, thus minimising the idle time. "This is particularly beneficial for small producers who may have only one or two machines, meaning that production could be halved or even come to a standstill during the conventional programming process," says Dr Starke.

Robot Vision

The manufacturers have had to alter other aspects of their work practices to accommo-

date the new system. The project has encouraged manufacturers to optimise their pre-welding production processes: producing designs that use fewer parts that are more amenable to automation. The process also requires greater uniformity from piece to piece which has encouraged more consistent quality in the pre-welding processes.

Minor variations are bound to occur, however, and this can be a headache in conventional robotised processes. Another innovative feature of the new system is the integration of optical sensors on the robot arm. These can detect imperfections in individual pieces and adjust the welding path and parameters accordingly.

The project has also held training and information days as well as establishing an observer group - non-contractual partners who were keen to learn from the results. They consisted of Belgian, Dutch and Spanish robot suppliers and users, all of whom gained valuable information on the needs of small batch users.

APS has collected together the information accumulated by its first users in Greece and Portugal. "We have compiled a database of welding jobs based on their experiences," explains Dr Starke. "This is a valuable addition to the commercial version of the robot welding system." ☐

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On Test: 'Innovation Across Cultural Borders'
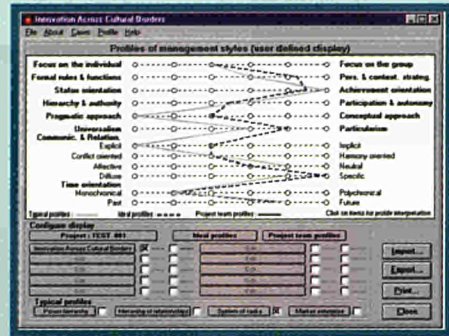
The management style profile generated for this project (blue) corresponds quite closely to the 'system of tasks' style (grey) - one of the reference profiles described in the tool: "...low centralisation and high formalisation of tasks and objectives... a tendency to rapid time management."

Intercultural communication and management are important 'soft factors' in transnational project management. To create better awareness of these issues, the Innovation Programme has produced an integrated advice and training tool in the form of a combined brochure and computer package[1] - 'Innovation Across Cultural Borders'.

The publication helps consortia running transnational technology projects to identify cultural differences in the management styles of team members and develops their capabilities to deal with these differences. The tool illustrates communication problems or other 'critical incidents' which can arise in a project and allows users to test their understanding of the intercultural factors that may have caused them.

By completing a questionnaire, the user can also generate charts of his or her typical personal management style and of the perceived management style in the project team. To identify areas of convergence and divergence, team members may overlay their individual profiles and pinpoint conflicts before they arise. The package also describes four typical profiles for reference.

The Innovation Programme is carrying out a large-scale evaluation of 'Innovation Across Cultural Borders' and invites teams from transnational technology projects to participate.

(1) The brochure is in English. The software is provided on 3.5-inch diskette and requires the Windows operating system.

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► CONSENSUS CONFERENCES

Consulting the Public

Three new Innovation and Biotechnology Programme publications describe how 'Consensus Conferences' can help to align RTD policy, projects and results with public demand.

The publications and a rush of events being organised around Europe demonstrate the effectiveness of Consensus Conferences for setting technology policy agendas.

Consensus Conferences were developed in Europe by the Danish Board of Technology as a means of informing Parliament and establishing public debate on new technologies. The technique's promise for providing a methodologically rigorous consultation of Public 'wants' from specific technologies has led to a series of studies, trials and applications by the EC's Biotechnology and Innovation Programmes, as well as a large number of recent and planned applications in Denmark, the Netherlands, Norway and the UK.

It is hoped that the EC's investment in Consensus Conferences will help spread the benefits of including the public in the technology policy making process.

Sensitive Issues

The authors of the Innovation Programme studies - 'Feasibility Study on New Awareness Initiatives'[1] and 'User Involvement in RTD. Concepts, Practices and Policy Lessons'[2] - indicate the problems involved in making decisions about appropriate directions for investment in new technology when ethical, social or environmental issues are particularly sensitive.

They identify Consensus Conferences as being suitable to tackle such problem issues as:
- management of nuclear waste;
- food irradiation;

- genetic engineering of animals;
- genetic screening;
- assessment of risks from chemicals;
- effects and strategies concerning oestrogen-like compounds;
- biodiversity;
- setting priorities in the health sector.

Consensus Conference organisers inform a selected lay panel which presides over a public hearing of technical experts and key developers. Together, they produce a profile of the technology, its pros and cons and possible solutions. The latter can involve regulation, investment or simple prescription of preferred market developments. A broader awareness campaign run alongside the event has the effect of winning broad backing from the eventual users for the chosen solutions.

Exploring Biotechnology

The EC's Biotechnology Programme has also promoted Consensus Conferences. In 1995 it awarded a grant to the British Science Museum to or-

ganise a conference to improve and disseminate the Consensus Conference technique.

As one of the organisers, PhD student Simon Joss, explains, "Our first task was to get everyone who was interested in the method together - to explain what Consensus Conferences are, how they are performed, and to pass on past experiences to those who might in the future want to use the technique. We also looked at how we could improve the evaluation of Conference outcomes. The second aim was simply to come up with a book which communicates these techniques, lessons and experiences."

The book - 'Public Participation in Science: the role of consensus conferences in Europe' - is published by the Science Museum's own publishing house, and distributed through major book shop chains. The two studies are available directly from the Innovation Programme.

(1) TeknologiRädet, STB/TNO and Roskilde University.
(2) STB/TNO, PREST, University of Twente, University of the Aegean.

The ethics of biotechnology: these mice, genetically engineered to develop cancer, are a boon to medical research. Strong opposition on moral grounds, however, has so far prevented a European patent from being granted since Harvard University applied in 1985. Since then, more than 300 other applications for patents on animals have been received.

Public participation in science
The role of consensus conferences in Europe

The recently published book, 'Public Participation in Science: the role of consensus conferences in Europe', ISBN 0-901805-85-8.

► INTELLECTUAL PROPERTY RIGHTS (IPR)

Managing IPR in Research and Industry

A conference on IPR management was held at the Innovation Relay Centre (IRC) in Catania (Sicily) last May.
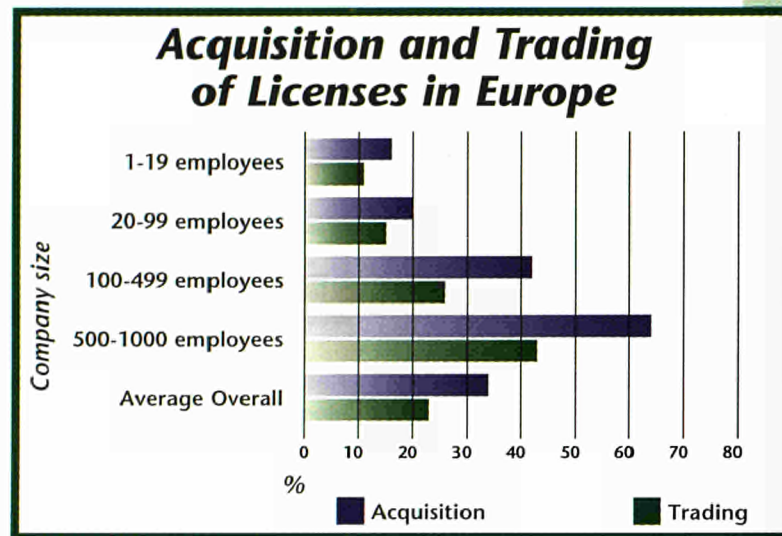
The conference, which focused on patent filing procedures and the associated employer-employee relations, was organised by the Industry-Research Interest Section (IRIS) within the European Association for the Transfer of Technologies, Innovation and Industrial Information (TII) and the MEDIA IRC - a network of centres in the southern Italian regions.

Amongst the many subjects under discussion were patent procedures and the rights of the employed inventor in different European countries[1]. Different approaches were presented and compared in detail from both industrial and academic points of view.

On IPR ownership in companies, the conference revealed a wide spectrum of attitudes across Europe. In Italy, an invention generally belongs to the employer, who has first option even when all requirements for ownership have been fulfilled by the employee. In France and the UK, an invention also belongs to the employer, although its inventor may be remunerated. In Germany and Denmark, an invention belongs to the employee and detailed regulations govern its use by the employer.

Expensive Protection

Mr Piero Capocelli, who directs European IPR for multinational microelectronics manufacturer SGS Thomson, spoke on industry's attitude to filing patents. He remarked that during 1994, European industry

Acquisition and Trading of Licenses in Europe

Company size:
- 1-19 employees
- 20-99 employees
- 100-499 employees
- 500-1000 employees
- Average Overall

% (axis 0 to 80)

■ Acquisition ■ Trading

spent the same amount of money - 1.8 billion ECU - on legal expenses to prevent or prosecute patent infringement as it did on filing and maintaining patents. "Enforcing the right is as expensive as obtaining the right," he said.

Nevertheless, SGS Thomson sees its patents portfolio as an important 'intangible' asset. Mr Capocelli cited the positive influence of patents on the company's 'innovation culture' and their potential for paying-back R&D efforts. In fact, the company filed 421 applications for new inventions in 1994, bringing its portfolio to 9000 patents issued or pending world-wide.

On the role of IPR in higher education institutes (HEIs), Dr Thomas Gering - director of the Technologie-Lizenz-Büro (TLB) of the HEIs in the German Federal State of Baden-Württemberg - explained that patenting a research result can help to motivate technology transfer in industry and is therefore "often the best method of

making a new idea or technology widely available." He compared licensing activities by HEIs in various countries and concluded that European organisations still have much to improve in order to exploit their technology transfer potential as widely as possible.

Ms Jan Hilton described the activities of a company which is doing just this. Ms Hilton is Technology Transfer Manager for VUMAN Ltd., which is wholly owned by Manchester University (UK). The company - which Ms Hilton cited as an example of the UK's 'pro-exploitation' legal framework - is charged with protecting the university's intellectual property, exploiting its technology, managing major research contracts and maintaining an audit of the technology generated.

IRIS will be holding further IPR-related meetings in October on sponsorship of R&D, research contracts, software infringement and more. ▫

Just over 1,000 companies who had applied for a patent at the European Patent Office were surveyed on whether they had ever acquired or traded an IPR license. The largest companies evidently attach more importance to acquiring and trading IPR licenses. Smaller companies may be inhibited by the cost of acquiring - and defending - patents.
Roland Berger Forschungs-Institut, 1994

(1) For more details on the take-up and cost of patents in Europe, see editions 4/95 and 5/95 respectively.

► CORDIS UPDATE

Cultivating Innovation...

CORDIS has made it even easier to access information on European research and funding opportunities.

An important new information dissemination service has been launched by CORDIS, the Community Research and Development Information Service. **R&D News** - a key CORDIS service - can now be accessed via the World Wide Web (WWW): **http://www.cordis.lu/**.

R&D News provides information on everything from R&D policy and initiatives through announcements of calls for tenders, events and publications to funding opportunities. It is updated on a daily basis with an average of 50-100 news items being added each week. This average is expected to rise as more people become aware of the service through the WWW and start to use it as a communication tool as well as a strategic information source.

WWW access to R&D News is being offered, free and without the need for a password, in addition to the conventional dial-up access through ECHO, the European Commission Host Organisation[1]. As a result, many more potential participants and developers of new products will have access to core information about European research and funding opportunities. The service is available in English, French and German.

In the first six weeks of its launch on the WWW, R&D News was accessed over 23,000 times - more than 700 accesses per working day. The popularity of the service underscores the importance of the WWW as an efficient tool to disseminate timely EU R&D information to interested academic and business audi-

ences throughout Europe and the world.

Intuitive Information Retrieval

A particularly attractive feature of the WWW service is that it provides user-friendly query mechanisms - no specialist knowledge is required. The WWW interface has been designed to be clear and simple and looks similar to other major Internet search engines.

It also offers the choice between a generalised search, for those who are unfamiliar with the EU R&D programmes and structures, and a more detailed search, by particular subjects or programme names, for those who know where their information is likely to be.

Along with the free text and title search options, a 'clickable' index is included which enables the user to specify the appropriate time span, news category, programme acronym and subject index code from which information should be drawn.
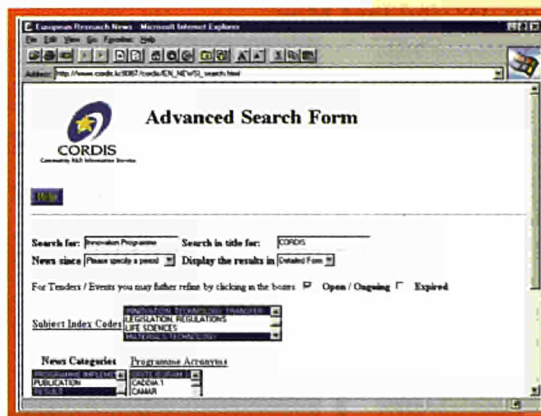
Results may be displayed in standard or detailed form.

R&D News is the first of the CORDIS databases to offer WWW access. It provides a good opportunity for new users to learn to navigate, in a user-friendly environment, through the volumes of information available. By the end of 1996, all the CORDIS databases are expected to be on the World Wide Web.

(1) See the 'Quick Reference Guide' in edition 1/96 for detailed information on CORDIS services and how to access them.

Intuitive access to the latest RTD News via the World Wide Web.

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WWW: http://www.cordis.lu/

... and Disseminating Results

Also from CORDIS, the Results Service is dedicated to publishing exploitable technology from Community and national RTD projects.

Most easily accessible online via Watch-CORDIS and soon to be available on the WWW (see above), the CORDIS Results Service contains a wide range of exploitable research results and technology

offers. It aims to make the vital link between innovative technology providers and developers closest to the market.

The CORDIS Results Service is one of the most comprehensive collections of research re-

sults and technology offers available in Europe. Along with individual entries submitted by research organisations, it includes timely, exploitable results and information collected from EU-funded research

Innovation

CORDIS has published new pamphlets on two of its services - Results and Partners (see edition 2/96) - as well as a trilingual introductory leaflet to its new WWW News service (see above).

projects as well as from a wide range of specialised technology transfer organisations and events from all over Europe, including Central and Eastern Europe.

For example, recent additions include new exploitable technologies from:

- the European Space Agency;
- the Innovation Relay Centre network[1];
- the Academy of Sciences of the Czech Republic;
- many independent technology transfer organisations, such as Technology Exchange in the UK.

An important feature of the CORDIS Results Service is that suppliers can choose what level of information to disseminate, thereby assuring confidentiality.

Free and Unlimited Coverage

An unlimited number of Results entries may be submitted to CORDIS free of charge, provided that all represent genu-

ine offers to establish collaborative exploitation agreements. They may be submitted using the CORDIS Result/Technology Offer Entry Form[2].

Alternatively, an electronic form can be completed on-line via the CORDIS WWW Home Page or downloaded and returned by electronic mail. Moreover, for larger volumes of data, it is not always necessary to complete an Entry Form for each offer: it may be possible for the CORDIS Results team to adapt existing data, particularly if it is already in an electronic format.

In addition to the Results database, the most promising technologies submitted to CORDIS are also published in a special quarterly 'Results' supplement of *CORDIS focus* and distributed to over 20,000 organisations.

(1) See edition 5/95.
(2) Inserted in this issue of Innovation & Technology Transfer.

Results in France and Hungary
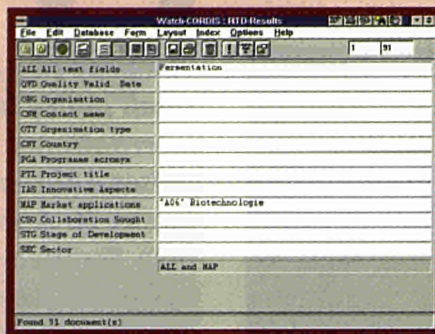
Watch-CORDIS - the user-friendly, on-line interface - makes it easy to search for information from the Results Service.

The CORDIS Results service has proved to be highly effective for technology transfer organisations across Europe. For example, in the past year, the Midi-Pyrénées branch of ARIST (Agence Régionale d'Information Scientifique et Technique) was contacted by 160 organisations interested in over 280 results and technologies communicated via CORDIS.

According to Jean Phillipe Mounier, director of Technology Transfer and Technological Development at ARIST Midi-Pyrénées, "CORDIS has been very useful for us in improving the dissemination of technology offers and helping to establish relationships throughout Europe. As the first contact point between different interested parties, CORDIS is one of our main development tools."

In Hungary, too, the CORDIS Results Service recently served as a key information source for a pharmaceutical company. Through it, GR - Chemical Works of Gedeon Richter Ltd. learned that a French research company had developed a new non-pathogenic fermentation process for the production of an active raw pharmaceutical material. The two companies are currently negotiating to establish the new process in Hungary.
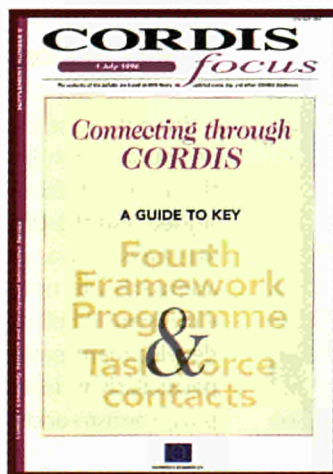
'Connecting through CORDIS - a guide to key Fourth Framework Programme and Task Force contacts' was published recently as a supplement to CORDIS focus.

The Environ Opportunity
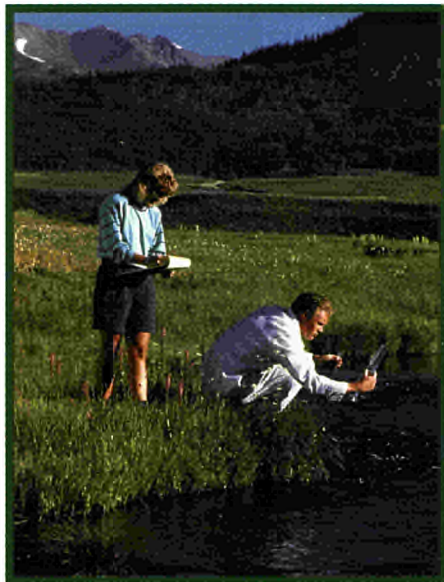
The past two decades have seen 'the environment' grow from a small policy add-on to an integral part of national, European and international law. While businesses can view the environment as either a threat or an opportunity, one thing is certain - they cannot ignore it. A wide range of EC schemes and programmes exist to help European industry develop, market and use environmentally friendlier technologies.

European Union

Financial instruments for the environment

July 1994

"EU Financial Instruments for the Environment" briefly summarises the various possibilities. Catalogue N°. CR-87-95-418-EN-C. A revised edition will be published next year.

Environmental problems do not recognise national borders. That, and the fact that the Internal Market needs a 'level playing field' in terms of environmental protection, has propelled sustainable development to the forefront of EU policy.

It was not always so. The need for a Community environmental policy was first proclaimed at the 1972 European Summit, a few months after the UN Conference on the Human Environment in Stockholm. The first European Action Programme for the Environment became operational the following year.

It and the three programmes which followed resulted in around 200 European directives, regulations and decisions, all designed to limit pollution, improve waste management, control and reduce dangerous substances, conserve the natural environment and so on. Around 50 international environment conventions were also signed.

A New Action Plan

By 1992 - the year the Fourth Environment Action Programme finished, the Treaty on European Union was signed and the UN 'Rio Conference' was held - it was clear that this legalistic approach was not enough. The EU environment is still deteriorating, and the development pattern in several sectors, particularly industry, agriculture, transport, tourism and energy - remains unsustainable.

The 1992 Treaty therefore commits the EU to promoting *"sustainable and non-inflationary growth respecting the environment"*, and places the notion of sustainability at the centre of all future European policy development.

The Fifth Environment Action Plan (5EAP), launched in 1992, reflects this, as well as the 'Agenda 21' commitments taken by the EU at Rio. Its basic premise is that environmental protection targets can only be achieved by involving the sectors causing environmental deterioration, and that the 'command-and-control' approach must be replaced with a sharing of responsibility.

Programmes and Instruments

Considering the sheer variety of environmental challenges - and that solving them is now central to all EU policies - it is not surprising that there are many relevant EU activities and programmes. The Structural and Cohesion funds for 1994-1999, for example, which have a combined annual budget of over 20 billion ECU, are placing environmental considerations higher and higher on their agenda.

While these funds are mainly administered by the Member States, the programmes covered in this Dossier[1] can be approached directly. These include programmes ranging from developing and demonstrating environmental technologies and protection to a number of schemes to stimulate the environmental market. A new approach to regulation which will both cut red tape and reduce the environmental impact of industry is also on its way.

(1) See Innovation & Technology Transfer, edition 3/95 for a Dossier on the EC's RTD programmes into renewable energy and energy efficiency, and edition 2/95 for a profile of the European Environment Agency (EEA).
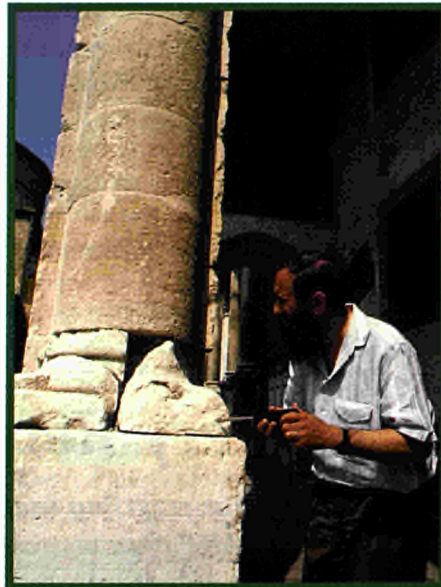
ment:
or Threat?

I. Research, Development and Demonstration

Environmental technologies begin in the laboratory. DG XII (Science, Research and Development) runs two research programmes specifically targeting the environment - Environment and Climate, and MAST (Marine Science and Technology - see *Innovation & Technology Transfer*, edition 4/95).

The Environment and Climate Programme's overall emphasis is mainly on basic research - there is no programme-specific technology transfer initiative, for example. Most of the programme's five themes focus on improving both our understanding of environmental change and our ability to assess the likely consequences.

One of the programme's objectives, however, is to help develop necessary technologies, paying particular attention to applied space technologies. Two themes, accounting for around 200 MECUs of the Programme's 500 MECU

budget, support research into:
- environmental monitoring and protection technologies (biosensors, waste treatment, etc.);
- restoring environmental degradation;
- managing natural hazards (forest fires, seismic and volcanic risks, flooding, etc.);
- applying space technology (both sensors and data processing) to Earth observation and environmental research. ●●●

The Environment and Climate Programme's work in developing technologies to protect and restore Europe's cultural heritage is the most complete in the world, and has fostered the development of many SMEs in the field.

Context

The Fifth Environment Action Programme

As its title 'Towards Sustainability' implies, the Fifth Environment Action Programme (5EAP) sets longer term objectives and focuses on a more global approach than previous programmes.

The Programme focuses on five 'Target Sectors': industry, the energy sector, transport, agriculture and tourism, and involves a wider range of instruments than ever before. It supplements the traditional legislative approach, still required to set environmental standards, with a number of other activities, including horizontal support measures (information, education, research) and financial support measures (such as LIFE and other programmes).

According to the Centre for Environmental Technology[1], however, *"the [5EAP's] market-based instruments are the most innovative. They are designed to internalise external environmental costs by alerting both producers and consumers to the need to use natural resources responsibly and avoid pollution and waste ... they are about getting the prices right so that environmentally friendly products and processes are rewarded in the marketplace."*

Refocusing

An evaluation published early this year on the 5EAP's progress notes that the integration of the environment into other policy areas ranges from advanced in the manufacturing sector (where legislation has existed for decades) to poor in the agriculture and tourism sectors.

Examining the Programme's progress by environmental issue, it also notes that while progress has been made in many areas (from ozone depletion to heavy metal emissions), particular attention still needs to be paid to climate change and acidification, urban issues and a comprehensive strategy for ground and surface water resources.

The findings of both this report and the European Environment Agency report on the state of the EU environment led to a slight refocusing of the 5EAP this year. The revised action plan is now available on DG XI's WWW site.

(1) See Eco-Management and Auditing, March 1995. ISSN 0968-9427.

•••

LIFE: Developing Environmental Protection

The largest programme run by DG XI (Environment) is LIFE, which finances demonstration projects in three main action lines:

■ LIFE-Nature: protecting endangered species and associated habitats;

■ LIFE-Environment: promoting sustainable development in industrial activities and land-use;

■ LIFE-Third Countries: technical assistance to third countries.

LIFE-Environment projects do not support research, but they are innovative in technology, methodology, collaboration or partnership structure. The proposed technology must be between research and commercial exploitation, and must promise environmental protection over and above today's EU environmental standards. The proposed result should also be reproducible in other sectors, geographical zones or for problems on a different scale, and should respect the polluter-pays principle.

For this reason LIFE-Environment projects are ideal demonstration vehicles for companies developing advanced environmental technologies and services. Ideally, projects should not simply involve demonstrating the technology - they should also involve local authorities, community groups, other companies in the area, and so on.

LIFE-Environment concentrates its resources on:

■ Innovative demonstration actions promoting sustainable industrial activities: introducing new technical methods or innovative approaches and carrying out experiments encouraging sustainable development. This can involve introducing clean technologies that save natural resources or reduce emissions, developing safer, longer-lasting products, and encouraging re-use and recycling;

■ Demonstration, promotion and technical assistance for local authorities which encourage the integration of environmental issues into land use development and planning. Projects should encourage cooperation in environmental management and widen the participation of all socio-economic actors;

■ Preparatory actions for implementing EU environment policies, with an emphasis on coastal zones, waste (particularly toxic and hazardous waste), water protection, air pollution, acidification and ozone. These actions promote joint initiatives, cooperation and transfer of know-how between government agencies, non-governmental bodies and other actors.
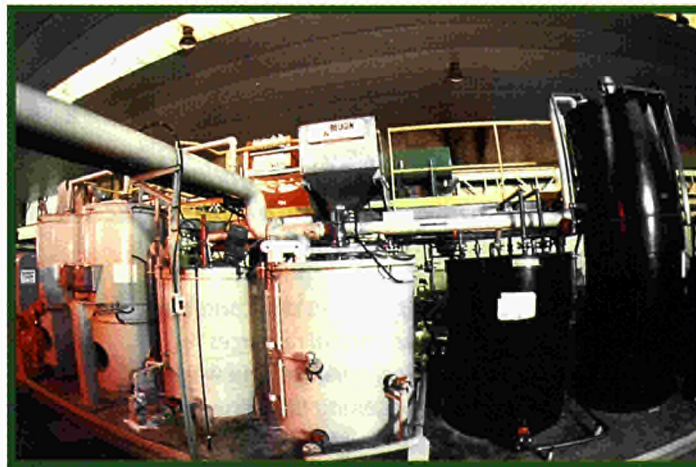

Case Study: LIFE

Cleaner Battery Recycling

An environmentally-friendlier process for recycling used batteries is attracting great interest following a LIFE demonstration project.

Recupyl's battery recycling pilot plant.

Discarded batteries are a serious environmental problem because they contain significant amounts of toxic heavy metals such as lead, cadmium, mercury and nickel. The high-temperature recycling systems used today, unfortunately, produce toxic gases and solid wastes.

A new process, however, now exists which operates at below 100°C, generates less waste and produces metal and salts pure enough for recycling. It combines mechanical sorting, chemical processing and electrolysis techniques, can handle all sorts of batteries and recycles its chemical baths in a 'quasi-closed cycle'. It can also be adapted to processing heavy metal-rich residues from waste incinerators.

Industrial Demonstration

The process was developed and patented by the Grenoble National Polytechnic. To transfer this new technology to industry, however, the laboratory work had to be demonstrated in a more industrial setting. RECUPYL, an SME set up to commercialise the process, received funds from the LIFE programme, Electricité de France and several French authorities and programmes to establish a pilot plant.

Tests began in September last year, and proved the process to be highly effective. Agreements for three industrial-scale installations are now under way with companies and local and regional authorities around Europe. If built, the new plants will be capable of recycling up to 3,500 tonnes of batteries between them each year - a significant part of Europe's total battery waste.

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II. Market-based Instruments

In 1993 DG XI launched the Eco-Management and Audit Scheme (EMAS), a voluntary scheme aiming to promote continuous environmental performance improvements in the industrial sector. In doing so, it helps both the companies' competitiveness and the environment.

Ten or even five years ago, of course, many industrialists considered this aim to be self-contradictory - any initiative for the environment, the reasoning went, could only harm business, unless the business happened to involve environmental technologies. Today, however, eco-management and energy auditing are becoming accepted management tools. EMAS has established these tools at the European level.

It works at the level of the industrial site. Companies successfully register their sites with the scheme - thereby winning the EMAS logo - by implementing a sound, relevant and recognised environmental management system and reporting their environmental performance to the public. Both the environmental management systems and the public reports are validated by independent environmental verifiers, nominated by accreditation bodies officially appointed in each Member State. The first EMAS verifiers were accredited in July 1995. One year later, there were 87 verifiers and 274 sites notified to the Commission.

A key benefit is that the public can trust the companies' environmental statement because they know it has been externally verified. In an age where consumers are cynical of corporate environmental claims, this is a significant advantage.

There are many other benefits, however, which are more visible on the bottom line, as these auditing systems can identify unnecessary wastage of energy and raw materials, locate possibilities for recycling and re-use and reduce company exposure to expensive clean-up operations and litigation.

They also help companies keep up with environmental legislation and standards. EMAS is in many ways 'tougher' than the draft international standard for environmental management (ISO/DIS 14001), which is likely to be ratified as this edition is published. Hence EMAS-registered companies should have no trouble qualifying under ISO 14001[2].
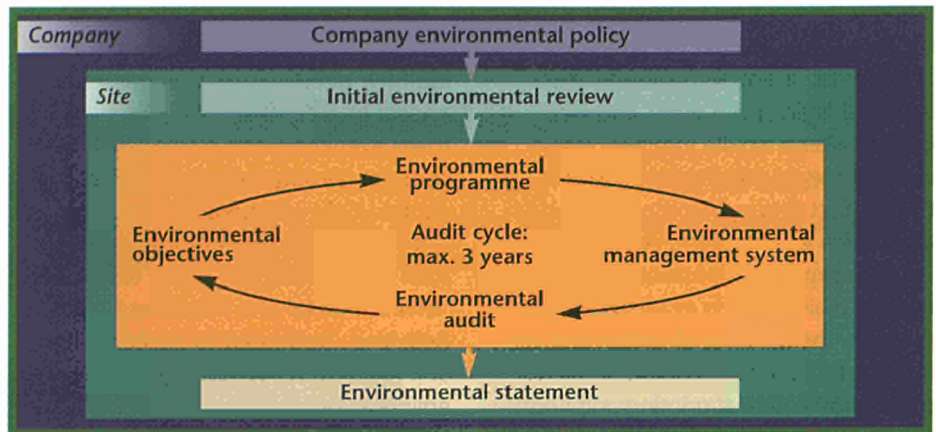

Registering an industrial site with EMAS requires a company to establish a general environmental policy, perform an initial review at the site, implement an environmental programme, management system and audit programme and regularly publish an environmental statement.

Supporting SMEs

Finally, the newly developed 'Eco Management Guide' is now available to help SMEs assess their own environmental management system and decide whether they should invest in registering for EMAS.

A short questionnaire helps the user identify the usefulness of environmental auditing to their company. The main
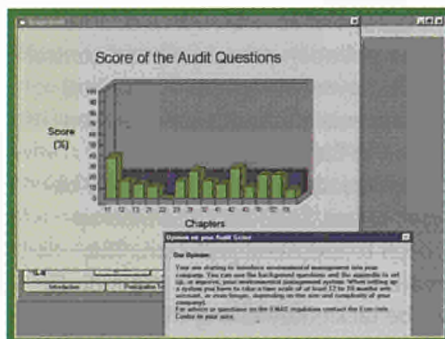
Users of the Eco-Management Guide for SMEs answer a simple questionnaire to determine the advantages to them of eco-management, displayed in graphical form. A similar process for the longer Audit leads to an analysis of how much work remains to be done.

section - 'The Audit' - takes between one hour and about one day, depending on the depth required, and results in an analysis of how much more the user's company will need to do to register with EMAS. The final section takes them through the EMAS procedure.

Staff at 95 'Euro Info Centres' around Europe have already been trained in helping SMEs use the Guide, which supplies both the documentation and software necessary. In 1997 a further 40 around Europe will have trained staff.

Eco-labelling

The Commission's eco-label system is the second voluntary market-based instrument established under the Fifth Environment Action Plan and run by DG XI. The key advantage is that it is European - manufacturers have to satisfy one set of standards to promote their products to the entire Single Market.

The scheme is gradually defining environmental criteria for all products excepting food, drink and pharmaceuticals. Companies wishing to use the eco-label on their products simply have to ensure their products meet the relevant criteria. Criteria for the first product groups (washing machines and dishwashers) were defined in mid-1993. Three years later, criteria are now available for 11 product groups, over 15 awards have been granted and the first upward criteria revisions (for washing machines) have been pub- ●●●

(2) One major difference is that while EMAS is site-specific, ISO 14001 deals with the entire organisation, requiring, for example, a greater focus on the supplier chain outside the site.

• • •

lished to account for technical and market evolution.

The most recent, for example, dealt with bed linen and T-shirts, and were defined after a 'cradle to grave' assessment of the environmental impact of the product group, involving full consultation with environment, consumer and industry experts. The assessment identified the main impacts as the use of pesticides in the growing of cotton and certain harmful processes during polyester production and final printing and finishing. The criteria, therefore, relate to pesticide residues, volatile organic compounds (VOC) emissions, and the use of antimony, detergents, bleach, dyes, pigments and formaldehyde.

The EC is now considering ways of revising the scheme, possibly creating a new body to draw up the criteria. Provisionally titled the European Ecolabel Organisation (EEO), it would be organised along the lines of CEN, the European standards organisation. The eco-label regulation would also be revised to bring it closer into line with future ISO standards and any rules from the World Trade Organisation.

Stimulating Awareness

Across Europe, thousands of hotel bathrooms feature a small note reminding their guests of the environmental impact of every hotel washing every towel every day, and asking them to consider leaving their towel to be washed only when really necessary.

If you've seen one of these notes, then you've seen one of the results of 'Environmental and Awareness Raising Activities'. Dedicated to encouraging and helping various groups reduce their environmental impact, this small (5 MECU/year) DG XI Programme is also behind the European Better Environment Awards for Industry. The sixth bi-annual awards were presented last July in Dublin. Some of the 14 winners included:
■ Osram (Germany), for its Na-Xe lamp which is mercury-free, recyclable and five times more energy efficient than a 100W incandescent lamp;
■ Rank Xerox (UK) for its photocopier recovery and re-use programme;
■ Sabroe Refrigeration, LEGO System and DTI Energy (Denmark), for the first process water cooling plant in the world which uses nothing except water as a primary and secondary refrigerant. The plant is now used to produce LEGO bricks.

Finnish company Plustech's walking forest machine won a High Commendation in the 'Eco-Design' category in the European Better Environment Award for Industry.

The next awards will be presented in 1998 in the Netherlands.

Lastly, there are a number of other DG XI programmes of a similar size (under 3 MECU/year) which target environmental non-government organisations (NGOs), improve environmental education, stimulate European cooperation in civil protection and combating marine pollution caused by accidents, and fund small environmental protection projects 'on the ground' (applied research, field activities, workshops, conferences, etc.).

Further Information

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III. Integrated Regulation

As stated earlier, the first four Environment Action Programmes generated around 200 European regulations on the environment. The draft proposal for a Directive on integrated pollution prevention and control (IPPC), however, represents a radical new approach to industrial pollution control at European level.

The Directive, which is currently being finalised, takes an integrated approach to industrial pollution. This means that pollution from big industry will be tackled by taking the whole environment into account, rather than each medium (water, air, land) in isolation. Authorities will balance the requirements of the different media, choosing the technique which provides the best overall solution for the site in question. Unlike centrally set controls, this will ensure that local environmental needs are met.

A second innovation is that emission limits are set based on the best available technologies (BAT), enforcing high levels of protection. The Commission will organise information exchanges in every sector to help industry meet these standards, which will also stimulate environmental technologies.

Finally, IPPC requires public participation in the granting of permits - a powerful form of environmental control that gives local communities the opportunity to voice their opinions on the environmental decisions that affect them most. But the benefits are not all one way - because there will only be one set of environmental regulations, a single permit application and a coordinated permit decision, IPPC will simplify the operator's work enormously. An IPPC Bureau is currently being established. ▢

Case Study: EMAS

Green Credentials: Proof is Everything

Shields Special Metals (SSM), a highly specialised British recycling SME, built on their environmental management system to qualify for EMAS. A higher international profile and more cost-effective processes resulted.

Shields Special Metals Limited

Environmental Statement

Shields Special Metals Limited
Purfleet Facility

This site has an environmental management system and its environmental performance is reported on to the public in accordance with the Community eco-management and audit scheme

Registration Number UK-S-0000014

SSM is a classic example of a profitable company in the age of recycling and re-use. Their staff of around 120 people includes 70 highly trained engineers who move electrical and electro-mechanical equipment from their clients' premises, dismantle them and channel different materials into different re-use, recycling and treatment chains.

According to Brian Pavitt, the company's environmental director, SSM processes around 15,000 tonnes of equipment every year. "The equipment contains base metals, plastics and precious metals, as well as a number of hazardous wastes," he explains. "So our work involves both collecting valuable materials - platinum and palladium for platinum group refiners, plastic for granulation - and treating and disposing of toxic waste. By coming to us, companies can be sure that their redundant equipment is recycled back into the supply chain while ensuring all environmental standards are being met. Only a little more than 1% of the non-recyclable material is landfilled."

The work requires both highly trained personnel and a number of different industrial processes - chemical, physical and electrical. Managing these processes is no simple matter, particularly when most of the company's clients have their own environmental policies.

"If we didn't make an effort our processes would have a heavy impact on the environment, particularly as redundant equipment can contain 'Special Wastes'," Mr Pavitt adds. "We are a service provider to large companies with environmental standards to meet, which is why we became certified to the British environmental management standard BS-7750 and the international draft standard ISO/DIS 14001."

Upgrading to EMAS

Despite the fact that they already had an environmental management system in place, however, SSM also registered with EMAS. One of the key differences, according to Mr Pavitt, is the independently verified public statement.

"Since the mid-1980s many compa-nies have made some quite misleading statements in order to make themselves look green. It's bad for the consumer, bad for the environment and bad for those companies which make a real effort," he argues. "EMAS statements, however, are verified by independent experts. In a commercial world polluted by too many green logos, EMAS is trusted. It has raised our profile right across Europe. We recently received enquiries from Germany, for example."

Publicity, however, was not the only benefit. When qualifying for EMAS the company took a good hard look at one of their laboratories, which was using nitric acid to recover platinum. The result was less than perfect, with atmospheric emissions of nitrogen oxide and the landfill disposal of copper nitrates. Although it was all legal, SSM decided to look at alternative processes and run cost/benefit analyses on each one.

After examining a wide range of possible techniques, they concluded that subcontracting the entire process to specialists in the field would actually save them money. In this way both environment and company benefit: the subcontractors' specialised equipment and processes have improved both the environmental impact of recycling the old equipment and SSM's bottom line.

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▶ BRITE-EURAM/CRAFT

Maintaining Foundry Production

To keep equipment running in tough foundry conditions, maintenance software produced by BRITE-EURAM project, TOMAS, is helping to pinpoint problems before they arise.

Avoiding the breakdown of foundry machinery is essential for the 'just in time' delivery of castings, an approach adopted by many European foundries. And in this inherently dirty and potentially dangerous environment, it is also a key factor in keeping pollution to a minimum and ensuring workers' safety.

By making regular automatic checks, preventive maintenance systems can pinpoint potential problems in machinery and alert foundry operators before a breakdown occurs. But according to Kenneth O'Reilly of the Irish R&D agency, Forbairt, the computerised maintenance systems currently on the market are not suited to foundry conditions. "Foundries have problems that clean industries don't have," he says. "Dust and grit can get into bearings and gearboxes and turn into grinding paste, and protection and safety systems have to cope with fumes and the pouring of molten metal."

EU foundries spend an estimated 4% of production, or 800 million ECU each year, directly on maintenance. Then there are the indirect costs such us lost production and poor quality. Mr O'Reilly and Daniel Richet, his counterpart at the French R&D organisation, ADEPA, were acutely aware of these problems through their involvement in the MAINE umbrella - a communication network organised under the EUREKA Initiative[1] to help industry develop maintenance improving projects.

Better preventive maintenance using software developed under the 'TOMAS' CRAFT project is helping Europe's foundries keep metal flowing

Forbairt and ADEPA therefore brought together nine foundries in France and two each in Belgium, Ireland and Spain, in a CRAFT[2] consortium to develop a more cost-effective foundry maintenance system. With 50 per cent of the one million ECU costs awarded by the EC, the 30 month TOMAS project began in February, 1993.

Surveying for Safety and Quality

"The partners performed a detailed survey of every piece of equipment in the foundries. Manufacturer, model number, location, person responsible, supplier, and specifications were recorded," explains Mr O'Reilly. "The maintenance systems were also analysed and audited according to the ISO 9002 international quality standard. Maintenance ratios were then developed to allow the foundries to compare their approach with that of 'best practice' companies."

Forbairt and ADEPA then developed dedicated maintenance management systems, based on systems used in the civil aviation and nuclear power industries. Failures were characterised to explain the effects on safety, availability and quality.

The resulting 'TOMAS DB' database can be used to determine the preventive maintenance needed for a particular machine. And the TOMAS consortium's maintenance software can be customised by each user foundry.

The consortium estimates that the project could lead to a saving of at least 10%, or 240 million ECU, in the total maintenance bill for EU foundries. "And what is more," says Mr O'Reilly, "the TOMAS project will lead to improved safety and environmental control across Europe."

▶ ESPRIT UPDATE

Support for Microelectronics Users

ESPRIT's FUSE initiative aims to accelerate the uptake of existing microelectronics by European industry.

FUSE - the First Users Action - is an 'accompanying measure' from the EC's information technology RTD programme, ESPRIT[1]. FUSE demonstrates to enterprises the competitive advantages that they can gain by implementing microelectronics in their products and processes.

At the heart of FUSE are its 'application experiments', in which enterprises gain first-hand experience in applying existing technologies to meet the specific needs of one of their products. For example, a company using an application-specific integrated circuit (ASIC) in conjunction with some analogue components in one of its products could perform an application experiment to produce a fully integrated circuit with reduced overall size and increased performance. New design methods or test procedures as well as in-house training could also be introduced.

Market-Driven

The initiative is market-driven: the technological heart of the application experiment is selected by the company concerned, acting alone or in collaboration with service providers of its own choosing. EC funding covers the marginal cost of the experiment (normally in the range 35,000 to 150,000 ECU) and the duration of a project is around one year.

In order to focus the resources where they will be most effective, FUSE is restricted to enterprises that are incorporating a technology for the first time. It is hoped that European companies will learn sufficiently from their FUSE experience to be able to conduct similar exercises themselves as new technologies come to fruition.

Unlike most EC-funded projects, proposals do not need to be submitted by multinational consortia: single companies and single-country consortia are also eligible. This is to make it as easy as possible for proposers with limited experience of international cooperation to familiarise themselves with new technologies. FUSE companies are obliged, however, to disseminate the results to organisations in other Member States who should be able to learn from first users' experiences and repeat similar experiments on their own initiative.

Technology Transfer Nodes

Supporting FUSE across Europe is a network of 26 'Technology Transfer Nodes' (TTNs) which were opened last January. The role of the TTNs is to help publicise the initiative, get application experiments under way and provide technical and commercial support to companies during their projects.

A TTN Support Centre has been established to help coordinate the TTNs and facilitate the exchange of experiences between FUSE participants across Europe. Its activities include administering the World Wide Web (WWW) 'FUSE Pages on Microelectronics', which provide a central information point for end-users and TTN consultants alike.

European industry's response to FUSE has been very positive: over 1200 proposals for application experiments have been received so far. Of these, a total of 290 projects have been selected for funding, with 75 under way. A Call for Proposals is continuously open. Evaluations are held on a three monthly basis; the next is in December.

Siduza Welding Technique, a Dutch company, was one of the first to complete a FUSE project. It has made its welding machines more flexible and easier to programme by incorporating microprocessors.

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esprit/home.html

(1) See the ESPRIT Dossier in edition 6/95.

▶ ESPRIT UPDATE

European IT in Business

ESPRIT is holding its annual European Information Technology Conference in Brussels on 25-27 November. Its main theme will be 'electronic commerce'.

Electronic commerce is an area of intense R&D activity for ESPRIT, which oversees a series of pilot schemes and workshops and publishes an inventory of electronic commerce initiatives on the WWW. Fittingly, speakers at EITC'96 include Christian Thommessen, General Manager of IBM's Global Network, and Tim Berners-Lee, Director of the W3 Consortium and inventor of the WWW. The electronic commerce parallel sessions will focus on IT applications, enabling technologies and major take-up initiatives. Commissioner Edith Cresson will speak on 'Innovation in a Networked Economy'.

Further parallel sessions will be held on the themes of 'access to financial markets', which will include an intensive tutorial for SMEs on 'approaching venture capitalists', and 'training and IT', which will feature case-study examples. Another feature of EITC'96 will be the 'Competing Visions' session in which a number of expert speakers will debate their views on the future trends in IT and society. The debate will be chaired by John Browning who is the executive editor of hi-tech magazine, Wired UK.

Exhibition and Awards

The conference exhibition will feature company-centred stands presenting leading-edge technologies and products stemming from work in ES-PRIT. It will also demonstrate the outcome and potential of

Paul Dinissen, of Dutch 'electronic money' company Digicash BV (left), accepting last year's EITC'95 grand prize from Commissioner Bangemann (right), while Professor Karlheinz Kaske, former CEO of Siemens and Chairman of the ITEA '95 and '96 jury, looks on.

The Digicash WWW site (http://www.digicash.com/).

ESPRIT'S technology transfer actions, such as PROSOMA (see box). The exhibition will also include a 'cyber-café' and a presentation of ESPRIT's Web for Schools initiative.

As usual, EITC'96 will host the award ceremony for this year's European IT Prize competition - ITEA'96 - which is organised jointly by ESPRIT and a non-profit making organisation, Euro-CASE. Extended this year to cover applicants from Central and Eastern Europe, EC President Jacques Santer will present up to three grand prize winners with 200,000 ECU each and 25 prizes of 5,000 ECU each to new, IT-rich products with business potential. Last year's three grand prize winners developed electronic currency for the Internet, a high-performance hard disk drive head and specialised ultrasound technology for the

medical sector.

The conference will be followed by around 15 workshops which conference delegates will be able to attend at no extra fee. ▫

PROSOMA: the Multimedia Results Showcase

EITC'96 will include a demonstration of the possibilities of the PROSOMA project, which aims to collect detailed information on ESPRIT results and store them in a multimedia database - or 'Showcase'. Contractual work on the project, which builds on the MERIT prototype[1], started in July and the package is due to be released by mid-1997.

Enterprises and entrepreneurs will be able to use PROSOMA to search for European IT results according to a wide variety of themes and access multimedia presentations and detailed contact information. The package will integrate CD-ROM and Internet facilities and archives.

Information collection is obviously a major task for the PROSOMA project and ESPRIT will work in close co-ordination with the CORDIS Results Service (see page 12). While CORDIS will continue to provide information on ES-PRIT results - as it does for all of the EC's RTD programmes - PROSOMA will provide an extra layer of detail for ESPRIT results.

(1) See the ESPRIT Dossier, edition 6/95.

CONFERENCES & PUBLICATIONS

▶ **CONFERENCES**

Outsourcing R&D
16 September, Middlesex (UK)

This conference will focus on European, UK and US perspectives on the challenge of intellectual property rights (IPRs). The conference will be held in English and topics for discussion will include:
- innovation and outsourcing of R&D;
- management of R&D and innovation;
- an industrial perspective on outsourcing R&D;
- intellectual property ownership and exploitation issues;
- case study: a university perspective;
- the problems and logistics of transborder outsourcing;
- case study: US experience.

Info. Conference Secretariat, ESC International Ltd
Tl. +44 171 386 93 22
Fx. +44 171 381 89 14

The Future of Biotechnology in Europe
26-27 September, Brussels

Organised by DG XII's Biotechnology research programme, the conference, subtitled "From research and development to industrial competitiveness", will examine:
- The development and role of biotechnology R&D in the European Union;
- Innovation in health care: novel pharmaceutical products;
- New crops from plant biotechnology;
- The "greening" of industry: clean products and processes;
- Biotechnology in European society: public perceptions;
- Industrial competitiveness and biotechnological innovation.

It will be addressed by both Mrs. Edith Cresson and Mr. Martin Bangemann, Commissioners for research and for industry respectively. There will be simultaneous interpretation from English, French, German, Italian and Spanish into English and French.

Info.
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European High Technology Market
17-18 October, Strasbourg (France)

This two-day European High Technology Market, organised by the Comité Michelieu, with support from the Commission, aims to encourage cooperation between small and medium-sized high-tech businesses and major European industrial groups. Over 150 SMEs, 18 European relay organisations and 22 large corporations from 18 European countries will attend to find new, competitive and innovative partners to participate in a wide range of European RTD programmes and find new customers and subcontractors.

Technological sectors covered will include robotics, telecommunications, teledetection, measurement and testing, optics, electronics, engineering and fluid physics, chemicals and energy, structural materials, simulation and security. Nine EC research programmes plus the EUREKA initiative, the European Space Agency programmes, the EUCLID/EUROFINDER European Armaments R&D programmes and a number of bi- and multilateral military and civilian R&D programmes will also be represented.

Info.
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First SME Technology Days
30-31 October, Brussels

Dedicated to increasing the participation of Small and Medium-Sized Enterprises (SMEs) in the EC's research programmes, the conference will feature analyses of the programmes' SME-oriented special measures (see pages 3-4 of this issue) and presentations of several 'success stories'.

SMEs with ideas for proposals will also benefit from a free 'pre-screening' offered by the Commission.

Info.
Conference Secretariat
ECCO
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International Conference on Technology in Distance Learning
13-15 November, Berlin

Part of the successful 'Online Educa' series, this conference - supported by DG XIII (Telecommunications, Information Market and Exploitation of Research) - is building on last year's Berlin event, which attracted over 600 delegates from more than 50 countries. It is aimed at the in-company training of executives, those engaged in professional development initiatives, academics and university administrators, network operators, technical service providers and course and training providers.

The event will examine and demonstrate a wide range of technical solutions for distance learning. Key topics will be:
- emerging trends;
- key challenges;
- inherent benefits;
- Europe compared to the rest of the world;
- costs.

The conference organisers are also compiling the 'International Who's Who in Distance Learning'. This new reference book will list distance learning practitioners, experts, content providers and their fields of specialisation from all parts of the world. Inclusion is free of charge. Interested parties should contact the organisers for a questionnaire.

Info.
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IT in Occupational Safety and Health Information, Training and Education
13-15 November, Brussels

Health and safety professionals must keep pace with the many new opportunities in the collection, screening and dissemination of information made possible by the Information Society. This conference, supported by the EC (DG V), aims to involve the participants in developing recommendations and guidelines on how new technologies can help information and training in practice.

Topics include:
- the possible effects of new information technologies on the production and use of information, education and training, particularly in regards to accessibility, flexibility, speed, productivity, etc.;
- the conditions necessary to achieve the greatest possible added value in the area of health and safety at work;
- the role of the various parties involved in realising this added value for the widest possible number of people.

Info.
ANPAT-NVVA
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► PUBLICATIONS

■ STATISTICS IN FOCUS: INNOVATION IN THE EU

The EC's Statistical Office, EU-ROSTAT, has published an edition of its "Statistics in focus" bulletin covering innovation in the European Union. The bulletin contains information taken from the SPRINT Programme's Community Innovation Survey held in 1993 across the then 12 EC Member States and Norway, with some 40,000 enterprises surveyed.

In particular, information is provided on the importance of financial barriers to innovation, the share of non-RTD expenditures in total innovation expenditures, and innovation by size of enterprise. Available in English, French and German for 6 ECU (or 240 ECU for a subscription to the series).

Info.
EUROSTAT
Tl. +352 4301 34567

■ THE SINGLE MARKET IN 1995

The EC's report on the functioning and implementation of the single market in 1995 is now available on the WWW.

Covering all areas of European Community policy other than external relations, the report includes details of developments in Community legislation during 1995, and evaluates the implementation of the four freedoms of the single market: free movement of persons, goods, services and capital. It also covers subjects such as the business environment, taxation and public procurement. Major policies treated separately include: transport, energy, telecommunications, the environment, SMEs, education and training, and research.

Info.
Internet. http://www.cec.lu/en/agenda/sm/sm95.html

■ R&D FOR SMES: LESSONS IN BEST PRACTICE

In 1992, a group of research and technology organisations (RTOs) from 13 European countries set about analysing what makes for successful cooperation between industrial RTOs and SMEs.

The Federation of European Industrial Cooperative Research Organisations (FEICRO) and the Danish Technological Institute, with support from DG XIII of the European Commission, undertook three studies, known as the RA280 projects, during the next four years. Over 130 case studies of cooperation between RTOs and SMEs were examined in detail in order to learn the lessons of best practice.

The first study took an overall look at how these organisations had worked with SMEs and identified best practice in relation to generating and carrying out successful projects. The second and third studies examined the questions of identifying relevant subjects and designing successful projects, and how to get the results put into practice by SMEs.

The Danish Technological Institute has published the results of these studies. Each costs 25 ECU:

■ "Cooperative research in Europe: Good practices from 13 countries on research collaboration between RTOs and smaller enterprises" (two volumes), 1992;
■ "Typical steps in starting up SME research projects", 1993;
■ "Dissemination of research results to SMEs", 1995.

Info.
Danish Technological Institute
Fx. +45 43 50 48 33

■ JRC COOPERATION WITH NATIONAL RESEARCH ORGANISATIONS AND UNIVERSITIES

The Joint Research Centre (JRC) carries out a number of cooperation activities with national research organisations and universities within the EU and the associated EEA countries by means of bilateral and multilateral agreements, Human Capital and Mobility Networks and EUREKA projects. A recently published report provides a general overview of JRC cooperation activities in 1996 stemming from its participation in institutional activities under the Community Framework Programmes, as well as its participation in Community programmes on a competitive basis.

Info.
Joint Research Centre
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Tl. +39 332 78 91 80
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■ ORDER PUBLICATIONS VIA THE WWW

DG XII (Science, Research and Development) has introduced a service allowing users of the Internet to order certain publications electronically. Publications available through this service include information brochures/booklets on:

■ research and technology: the Fourth Framework Programme (1994-1998);
■ technology stimulation measures for SMEs under the Fourth Framework Programme;
■ research and regional development;
■ industrial and materials technologies (BRITE/EURAM III);
■ standards, measurement and testing;
■ scientific and technological co-operation with Eastern Europe;
■ European Economic Interest Grouping (Guide to EEIGs and R&D);
■ environment and climate;
■ training and mobility of researchers.

Info.
Internet. http://www.cec.lu/en/comm/dg12/pub.html

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