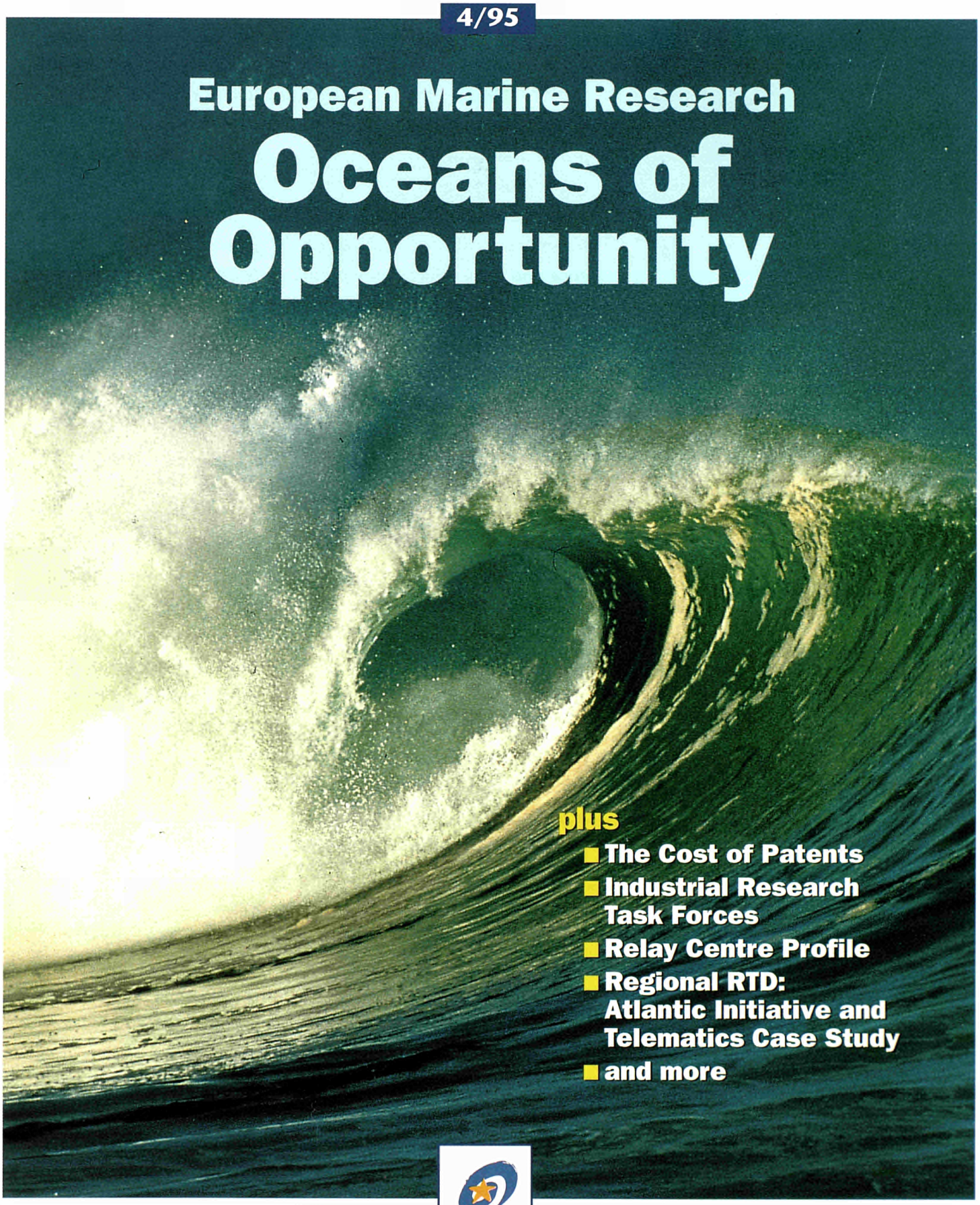
Innovation & Technology Transfer

4/95

ISSN 0255-0806

European Marine Research

Oceans of Opportunity



plus

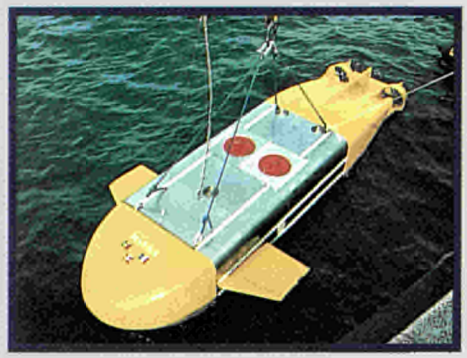
- The Cost of Patents
- Industrial Research Task Forces
- Relay Centre Profile
- Regional RTD: Atlantic Initiative and Telematics Case Study
- and more

PUBLISHED BY THE EUROPEAN COMMISSION

CORDIS

DIRECTORATE GENERAL XIII-D • JULY 1995

CONTENTS



The MARIUS intelligent underwater vehicle - see Dossier, page 12.

POLICY NEWS 3-6
Bangemann/Cresson Task Forces ■ EPO Study: Cost of Patents ■ RTD and the 'Atlantic Arc'

INNOVATION PROGRAMME NEWS 7-11
VRC Profile: Southern Germany ■ RTOs in Europe ■ Press Service relaunched ■ Value Management Handbook ■ TII Annual Conference ■ Call for proposals: Science Parks ■ Innovation Programme Exhibitions

DOSSIER: 12-18
EUROPEAN MARINE RESEARCH

CASE STUDY 19
Transcending Borders Electronically: Linking public administrations together via telematics

PROGRAMME BRIEFING 20-22
Calls for Proposals Preliminary Results: ICT Programmes ■ Telework Stimulation ■ Bridging the Gap Between Medicine and Engineering

PUBLICATIONS & CONFERENCES 23-24

Cover photo: Benelux Press.

INNOVATION & TECHNOLOGY TRANSFER
Newsletter published by the European Commission
DIRECTORATE-GENERAL XIII
Telecommunications, Information Market and Exploitation of Research
DIRECTORATE XIII-D
Dissemination and Exploitation of RTD Results, Technology Transfer and Innovation
ADDRESS
DG XIII-D-2 ■ JMO B4-082 ■ L-2920 Luxembourg
Fax: +352 4301 32 084
For subscription, fill out the coupon on p.24 and return by mail or fax to DG XIII-D. Orders, changes of address, etc. will only be accepted in writing (include address label, if possible).
WRITTEN AND PRODUCED BY
European Service Network - Brussels.
Fax: +32 2 646 53 57
PRINTED BY
Ceuterick ■ Tel: +32 16 22 81 81
Catalogue No CD-AJ-95-004-EN-C

The European Commission and Innovation

An innovation-friendly environment

Put simply, the European Commission *is the executive branch of the European Union. It puts forward proposals, and is responsible for ensuring that decisions, taken through procedures involving the other European institutions, are effectively implemented.*

The European Commission is very active in science and *technology. This is natural, given the general consensus that science and technology figure prominently among the policy areas where decision-making at the European level has many advantages. It is also natural that the European Commission wants to see today's scientific and technical research implemented in ways that best benefit the citizens of the European Union.*

This is why the dissemination and optimisation of research *results have such a high profile amongst the four "Activities" of the European Commission's current research and technological development and demonstration Framework Programme. In a nutshell, the aim of this "Third Activity" is to improve the climate in Europe for innovation and the diffusion of new technologies.*

The full formal title of the Third Activity is however *quite a handful. For convenience, it will from now on often be shortened to "the Innovation Programme". The section of Innovation & Technology Transfer which up to now has been headed "Third Activity News" will from this issue onwards carry the heading "Innovation Programme News".*

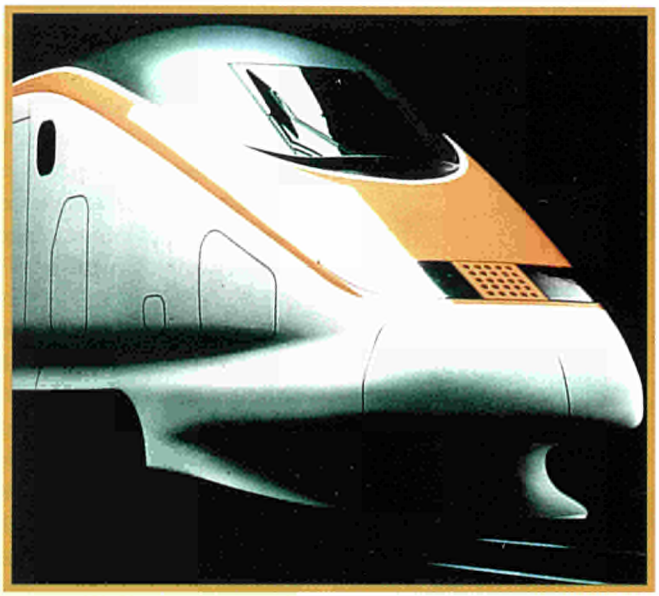
Innovation & Technology Transfer is published by the In*novation Programme, and reports on the Programme's activities as they develop. It also covers other news relevant to the work and objectives of the Innovation Programme, under the headings Policy News, Programme Briefing (reporting on the activities of other programmes), Case Studies, and Publications and Conferences. Each issue includes a Dossier focusing on one topic in depth. This issue's Dossier, for example, looks at the opportunities and challenges offered by European marine R&D.*

Subscription to Innovation & Technology Transfer is free. *A request form is located on the back page. Beginning with the next issue (September 1995) it is planned to publish Innovation & Technology Transfer in German and French as well as English.* ■

► RESEARCH FOR INDUSTRY

Task Forces Established

The European Commission has established five Task Forces to spearhead research efforts on joint projects of industrial interest. They should lead to greater coordination between European and national research programmes.



Announced on March 10, the Task Forces are the joint initiative of Mrs Edith Cresson, the Commissioner responsible for Research, Education and Training, and Mr Martin Bangemann, the Commissioner responsible for Industrial Affairs, Telecommunications and Information Technologies. The two Commissioners will ensure that the expertise and resources of their respective departments will be pooled. Mr Neil Kinnock, Commissioner for Transport, is also involved, as many of the Task Forces deal with transport issues.

The Commission feels that "it is crucial that Community research should help enhance the competitiveness of European companies and produce results visible to the ordinary citizen." For this reason the Task Forces deal with technologies which are simultaneously important to major industries (e.g., transport, information technology) and quality of life (e.g., medicine, environmental protection). The five Task Forces are entitled:

- the car of tomorrow;
- educational software and multimedia;
- the plane of the next generation;
- vaccines for viral illnesses;
- the train of the future.

Greater Coordination Across Europe

The stimulus for the Cresson-Bangemann Task Forces comes from the White Paper on Growth, Competitiveness and Employment[1], which underlined the necessity for better coordination of research activities and policies across Europe. Increasing Europe's capacity to convert scientific advances and technological progress into industrial and commercial success lies at the heart of the initiative, because new technologies are seen as the key to future jobs and prosperity.

It is therefore essential to harness all the necessary expertise, and target the budgetary resources available more effectively, to face up to international competition. The tasks assigned to the five Task Forces are therefore to:

- **set research priorities** on the basis of wide-ranging consultation with industry and users. Preliminary preparatory meetings have already been held between Mrs Cresson, Mr Bangemann and the heads of the European aeronautical industry. This builds on the 'Association Agreement', signed last October by seven European aeronautics establishments, to carry out joint research and technology acquisition projects[2];
- ensure, together with industry and the Member States, **effective coordination of available resources**, in particular under the Fourth RTD Framework Programme, which has a budget of 12.3 billion ECUs. This budget may be increased by 7% due to the recent addition of the three new EU members, and may also be boosted by another 700 million ECUs after June 1996. This coordination will entail making use of articles of the "Maastricht" Treaty on European Union which have so far remained unused, such as Article 130h, which calls for coordination with the Member States' RTD policies, Article 130l (participation in Member States' initiatives), and Article 130k (implementation of supplementary programmes). Clearly, resources available under other Community policies (training, cohesion policy) could also be called upon, where appropriate. Similarly, efforts will be made to ensure complementarity with initiatives launched in the context of international cooperation, in particular with EUREKA[3].
- encourage the use of **additional financial resources** for the implementation of the projects selected and facilitate cooperation between interested companies. The financial resources could be similar to the risk capital solutions adopted in the United States.

The Task Forces' work programmes are currently being developed. "The plane of the next generation" - the Task Force on the aircraft industry - is perhaps the most advanced at this stage, because the European industry is highly coordinated and organised. This Task Force will cover issues like aircraft efficiency, environmental dimensions, safety and operability and passenger friendliness.

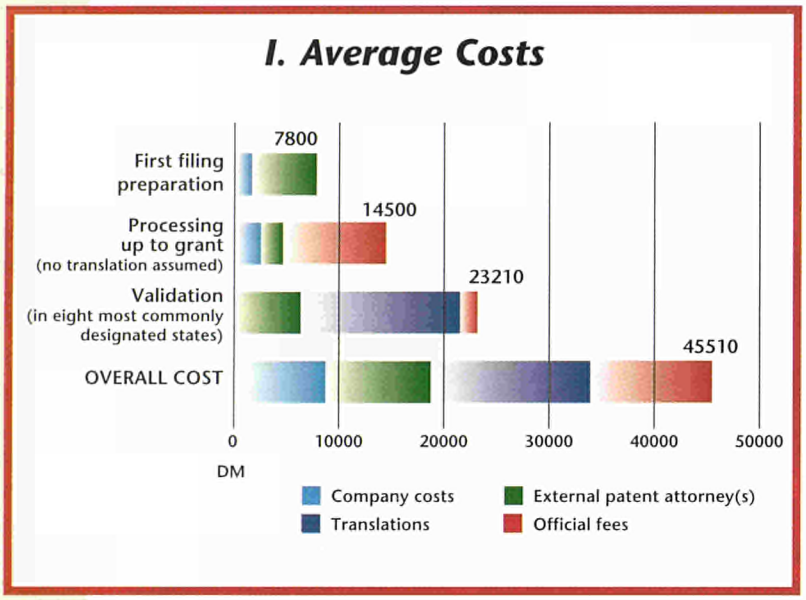
Contact
Mr C. Filori, Spokesperson for Mrs Cresson
Tel: +32 2 296 5660
Fax: +32 2 295 0143

(1) See Innovation & Technology Transfer, edition 2/94.
(2) See edition 1/95.
(3) See the Dossier on EUREKA in Innovation & Technology Transfer, edition 5/94.

► INTELLECTUAL PROPERTY

European Patents: The Bottom Line

In response to recent evidence that many European companies find the cost of patent protection too high, the European Patent Office (EPO) has conducted an in-depth study of the costs involved.



The overall cost of a standard European patent is about DM 45,500, with the largest contributions resulting from translation costs and official fees.

The European Patent Office offers a single procedure for obtaining patent protection throughout the 17 Member States[1] of the European Patent Convention (EPC). Besides the obvious administrative benefits - particularly attractive to SMEs, which rarely have their own patent departments - the introduction of this system 17 years ago offered its applicants cost advantages by:

- replacing multiple national procedures with one procedure for filing, searches, examination and grant;
- using only one patent attorney for one procedure, rather than many national ones;
- demanding fees at one office (the EPO) rather than many national ones.

Since its inception, a fundamental concept of the single European procedure has been that the full cost should be cheaper than the total cost incurred from using the national procedures in three large countries (the EPO cites France, Germany and the United Kingdom as examples). This is called the 'Three-State Theory'.

However, a study published last year, 'Utilisation of Patent Protection'[2], revealed that European industry is making less use of patent protection than its American and Japanese counterparts. The high cost of patenting was cited as one of the major reasons. The EPO, which considers patent protection as vital to European industrial competitiveness, is therefore keen to redress this imbalance.

Three Part Survey

Its initial response, a detailed cost study[3], was aimed at collecting and analysing as much cost information as possible. This, the EPO hopes, will contribute to an evaluation of alternative measures for reducing the cost of patent protection.

The study included data from surveys of:

- 128 patent attorneys from 12 EPC States;
- 88 companies, all with their own patent departments, from 11 EPC States;
- national patent offices and other sources.

A clear finding is that while the Three-State Theory is still valid, many of the original cost advantages of the EPC have been eroded. A particularly damaging problem seems to be that an ever-increasing number of EPC States require, by law, a translation of the European patent into their language in order for it to be valid in the national system. This results in considerable cost increases to applicants.

Over DM 5bn a Year

According to the surveys, European industry spent an estimated DM 5.3bn on patent protection in 1993. Most (DM 3.5bn) was for protection in Europe.

Around half of this figure (DM 1.6bn) was spent on the companies' infrastructure and costs incurred in preparing the patents for filing, with the rest being spent in roughly equal proportions on processing their applications and the annual renewal of granted patents.

Litigation costs, however, were not included in the survey. This is a significant cost - according to one estimation[4], litigation could add a further DM 3-4bn to the overall international cost.

The costs identified by the study include:

■ Internal Company Costs (e.g., patent department): DM 900m was spent on analysing competitors' patent activities, patent information research and documentation, advising researchers and innovators, dealing with oppositions to the company's patents and licensing.

■ Patent Attorneys' Fees: The survey of patent attorneys revealed that two thirds of the independent patent attorneys do not adjust their fees according to the size of the client company. This could deter many SMEs who, as relatively low users of patent protection at present, represent a large untapped potential for applications.

■ First Filing: This may be done through either the patent office of the country of residence or the EPO. However, in 1993, more than 90% of first filings were processed through national procedures. In total, companies from EPC States spent around DM 700m on first filings.

■ Large companies, it was found, spent an average of DM 110,000 on the basic preparation, filing in the country of residence and subsequent filings abroad. This latter point is important - for patents originally filed at a national office, protection must be extended abroad within 12 months to avoid the risk of refusal on the grounds of prior disclosure. In 1993 around 25,000 first filings were extended in Europe in this way, a process that cost European industry DM 225m, of which DM 60m was for translation.

Applicants using the EPO procedure, on the other hand, have to validate the granted European patent in each of the designated countries, incurring fees from each of the national offices involved. Around 70% of the costs incurred are for the translation, with attorney costs (20%) and official fees accounting for the remainder.

How Much Per Patent Application?

So how much, on average, does it cost to file a patent? The answer depends enormously on the nature of the application: countries covered, length of text and so on. The surveys of both companies and patent attorneys defined a 'standard application' as follows:

■ drawn up in the language of the office in which it is filed;

■ 20 pages of description;

■ 10 claims and 2 sheets of drawings totalling 6,500 words.

The surveys of both companies and patent attorneys gave very similar results. According to them, the costs are:

■ First filing: DM 7,800. This includes basic preparation, internal company costs and the use of external patent attorneys;

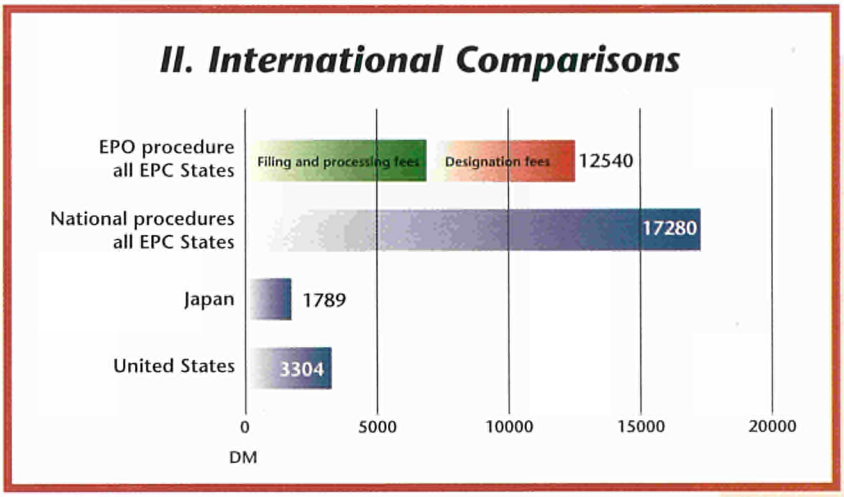
■ Processing: DM 14,500 through the EPO (official fees account for DM 9,900 of this) and about DM 11,700 through the offices in the US and Japan (with official fees of about DM 2,600). Processing through one national office of any EPC state, on the other hand, costs around DM 2,800 (official fees DM 850);

■ Translation: DM 15,200 for 6 languages (the minimum required for the 8 most commonly designated states). Both the EPO and national procedures incur translation costs.

As Graph 1 shows, the average cost for a standard European application is around DM 45,000. This includes basic preparation, processing costs and validation in the eight most commonly designated states. The study also shows that patent attorneys charge more for EPC activities than national ones:

■ Drafting and processing: on average DM 12,590 via the EPO and DM 9,310 for a national procedure in an EPC State;

■ Renewal fees administration: DM 180 for the EPO procedure and on average DM 140 nationally.



International Comparisons

The EPO's fee consists of DM 6,940 for basic filing and processing and an additional DM 350 for each country designated (with Switzerland and Liechtenstein counting once only). The total EPO fee to obtain a patent in all EPC States, therefore, is DM 12,540.

Graph 2 shows that this fee is significantly higher than that charged by the United States Patent Office (USPO) and the Japanese Patent Office (JPO). However, it is important to note that 2-3 patents may be needed in the US and Japan to equal the protection provided by the EPO. The JPO and USPO proceedings, of course, do not require translation fees and validation.

Another very important point is that the EPO is still building-up its revenue from patent renewal fees, 50% of which it must share with the national offices. As the EPO revenue increases, this may be reflected in reduced official fees.

Evidence suggests that if patenting costs can be reduced, then more European companies - particularly SMEs - could be encouraged to protect their innovations. This, in turn, could lead to further reductions in official EPO fees.

Although the Three-State Theory is still valid, the cost of patent protection in Europe is clearly too high. The EPO study identified three main areas in which costs should be cut:

■ translations;

■ attorney charges;

■ European designation fees.

Official fees to obtain a patent are much higher in Europe than in Japan or the USA, although using the EPO system does reduce costs and provide excellent protection.

(1) The EU 15, with the exception of Finland (expected to join this year) and the addition of Switzerland, Liechtenstein and Monaco. Extension agreements exist with Slovenia, Latvia and Lithuania. An extension agreement with Romania is expected to enter into force this year.

(2) See edition 2/95 of Innovation & Technology Transfer. For the report itself (EPOscript 3, ISSN 1021-9390, 79DM), send a fax to Mrs Emer (Fax: +43 1 521 26 24 91), specifying language (English, French or German).

(3) 'Cost of Patenting in Europe', see June/July 1995 edition of Patent World, pp 20-24.

(4) 'How much does British Industry pay for patents?', see Journal of the Chartered Institute of Patent Agents, No. 4, 1994.

Contact
Mr S. Andersen, EPO, Munich
Tel: +49 89 2399 1214
Fax: +49 89 2399 2573

► REGIONAL RTD COOPERATION

Atlantic Arc: Networking Research

The 'Atlantic Meeting for Technological Research and Development' was held last February to stimulate cooperative R&D projects throughout the 'Atlantic Arc'.

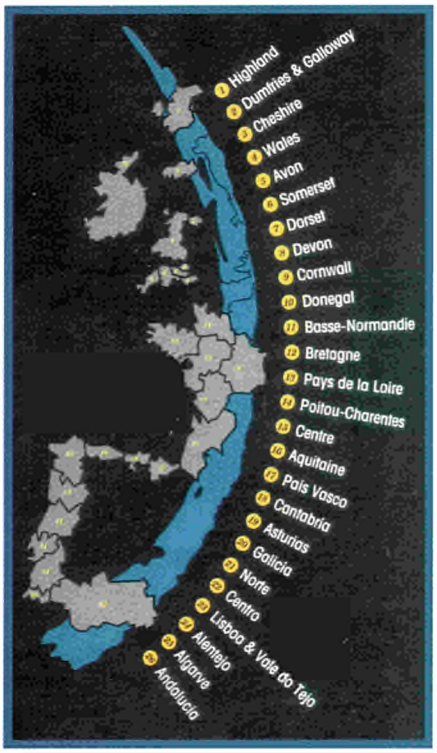
ATLANTIC STATISTICS

The Atlantic Arc's 26 regions:

- **stretch from Algarve to Scotland (see Map);**
- **boast 2,500km of coast and cover 625,541 km², or 28%, of EU territory;**
- **are home to 50 million inhabitants, almost 20% of the EU's population;**
- **together contribute 11% of the EU Gross Domestic Product, but have a level of wealth almost 20% lower than the European average;**
- **include major cities such as Glasgow, Dublin, Cardiff, Bristol, Nantes, Rennes, Poitiers, Bordeaux, Bilbao, Santander, Oviedo, Santiago de Compostela, Sevilla, Porto, Lisbon and others;**
- **include significant commercial harbours at Cork, Milford Haven, Nantes, Saint-Nazaire, Bilbao, Algeciras, Lisbon, Porto and others.**

Set up in 1989, the Atlantic Arc Commission represents almost 30 European regions bordering the Atlantic. It is an initiative launched, administered and financed by the regions themselves, with some of its programmes receiving financial support from DG XII (Science, Research and Development) and DG XVI (Regional Policies) of the European Commission.

It is a response to Europe's two already established 'economic axes': the lotharingian axis, which links the industrial areas from London to Milan; and the Mediterranean axis, stretching from the Rhône-Alps region to the South of Italy and Spain. The idea is to develop a third, Atlantic axis by stimulating inter-regional cooperation, common development projects and joint ventures between regional partners.



From the Highlands of Scotland to Andalucia in Spain, the Atlantic Arc spans a total of 26 regions.

The Arc's regions all share a common orientation towards primary industries such as fishery, agriculture, iron and steel. As all these sectors are in crisis the Atlantic Arc was set up both to promote the development of the regions' natural resources and to attract advanced technologies.

Atlantis: Focusing on RTD

The Atlantic Arc Commission's first RTD Programme - Atlantis I - recently finished. It launched around 30 projects, involving nearly 100 organisations, with a combined budget of around 8 MECU. They focused on themes such as the environment, fishing, industrial technologies and business development.

Its 60 MECU sequel, Atlantis II, is currently in preparation, and will have six priority themes:

- infrastructures and communications;
- development of enterprises;
- water and environment;
- fishing and aquaculture;
- training and research;
- tourism.

'The Atlantic Meetings for Technological Research and Development', held last February in Bordeaux (France), was the starting event for Atlantis II. It brought together over 400 representatives from regional development organisations, research institutes and financial institutions.

They presented their respective research and technology transfer programmes and exchanged experiences in setting up innovation networks between enterprises. Initial results include a summary of the RTD situation in the various regions, a better understanding of the research needs throughout the Atlantic Arc and many ideas for project proposals under the Fourth Framework Programme.

The next step is a series of seminars, each focusing on a different technical theme and hosted by a different Atlantic Arc region. The first will be held this summer, while the rest, currently under discussion, will take place next year. Together they aim to develop new cooperation networks between research centres and enterprises in the regions and to launch new projects under the Atlantis II Programme.

The first, on Telecommunication Technologies in the Construction Industry, will be held on October 13, 1995, in Bristol (UK). Other seminars, currently under discussion, include:

- Civil Engineering in a Marine Environment: January 1996, Cardiff (UK);
- Aeronautic Industry - Spin-Off Technologies: 1st quarter of 1996, Lancashire (UK);
- Urban Passenger Vehicles: mid-1996, Porto (Portugal);
- Innovation and Technology Transfer in Agriculture: towards the end of 1996, France.

Contact

- **Mr O. Laruelle, Conseil Régional d'Aquitaine**
Tel: +33 56 90 53 90
Fax: +33 56 99 17 34
- **Mme D. Doumeingt, Matrice Technology**
Tel: +33 56 45 65 03
Fax: +33 56 45 73 79

► RELAY CENTRE PROFILE: SOUTHERN GERMANY

Technology Brokerage on a Large Scale

The Innovation Programme In Brief

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

Contact

■ Unit D-1: Technology transfer and validation projects, JRC liaison, intellectual property
Tel: +352 4301 33610
Fax: +352 4301 34129
■ Unit D-2: Community Information and Dissemination Service
Tel: +352 4301 32248
Fax: +352 4301 34989
■ Unit D-3: Relay Centres and other services
Tel: +352 4301 34533
Fax: +352 4301 34129
■ Unit D-4: Innovation policy, regional aspects, financing, EIMS
Tel: +352 4301 34180
Fax: +352 4301 34544

Contact

Dr A. Le Coore-Fresch, Stuttgart Relay Centre
Tel: +49 711 1234 010
Fax: +49 711 1234 011

The impressive success of a recent Relay Centre Conference devoted to environmentally friendly industrial technologies demonstrates the effectiveness of a well prepared, large scale technology brokerage event.

"New Environmental Technologies for Industry - Rational Production Techniques and Recycling" was organised by the Stuttgart Relay Centre last October. The two-day event brought over 110 companies and research institutes from 10 European countries together to do business, making it one of the largest "Vacro Days" ever held by a Relay Centre.

It was organised in collaboration with the Baden-Württemberg Agency for International Economic Cooperation and technology transfer partners from Lombardy, Rhône-Alpes, Catalonia and Wales. Given this inter-regional dimension, financial support was also received from the EC's Interprise Programme (DG XXIII - Enterprise Policy, Distributive Trades, Tourism and Cooperatives).

The Conference focused on environmental technologies in four industrial sectors - plastics, textiles, paper and metals. The results from some 50 national and EU-funded research projects were presented in a series of sectoral workshops. The majority (30) of these projects stemmed from the EC's BRITE/EURAM and Environment programmes.

Preparation began nearly a year in advance, with a mail shot to around 20,000 European companies in the field. After analysing the responses received, the projects were screened and matched to the technology needs of potential customers. Contractors involved in the most appropriate projects were then asked to present their research results to selected companies at the conference.

For Dr Hans Tümmers, Director of the Relay Centre, Innovation Conventions are the logical extension of the Centre's 'technology pull' strategy, which forms a central part of Stuttgart's downstream activities. "The crucial point is that we start with the companies' needs," he explains. "That way everything is demand-led, so we don't push unwanted technologies down the companies' throats."

The Stuttgart Relay Centre is hosted in Baden-Württemberg's Centre for the Promotion of Trade and Industry.

Building on Success

Some 330 pre-organised and spontaneous contact meetings took place between technology suppliers and companies from a broad variety of industries, ranging from the automotive to the computer and textile sectors. Recognising that the benchmark of the success of such events is measured by the number of contracts signed, the Stuttgart Relay Centre sent out a questionnaire in late January to 56 of the participating technology presenters and potential users.

The results thus far are impressive. From the 27 answers received as this edition went to press, 29 cooperative projects have either been signed or are in preparation. These cover financial agreements, further R&D, licensing agreements and demonstration projects.

Financial support was sought from the relevant Commission programmes for these contracts but the budget under the Third Framework Programme had already been exhausted. In the future, the Convention organisers hope that funding for such post-conference exploitation contracts will be made available under both the Specific RTD Programmes and the Innovation Programme.

The success of the Stuttgart Innovation Convention underlines the effectiveness of this type of event for the exploitation of RTD results. According to Dr. Tümmers, Innovation Conventions provide fertile ground for cementing the match-ups made by this technology "dating service".

"Companies are generally aware of the technologies being developed in their particular sectors," he observes. "Therefore, in addition to the simple presentation of RTD results, we must provide an extra facility for technology suppliers and companies to sit down and do business".

As a result of the success of the October event, the Stuttgart Relay Centre was asked by ANVAR, the French innovation and technology promotion body, to help organise an Innovation Convention on high performance laser applications in Strasbourg on 17 May. A much larger event, focusing on the real-time monitoring of products and production processes, is planned for early December in Stuttgart.

► INNOVATION POLICY

Facing Up To Competition

Research and Technology Organisations (RTOs) play a key role in Europe's innovation infrastructure. Two key challenges facing them are global competition and providing focused services to SMEs [1].

(1) This article is adapted from "The Future of Research and Technology Organisations in Europe", published by EUR-OP in 1994. ISBN 92-826-8451-2, EUR 15458, 66 ECU.
(2) See Policy News, issue 3/95.

RTOs support the technological development of Europe in general, and play a significant role in upgrading the technological capacity of less favoured regions. As such they form a central plank of the EC's innovation policy.

The overriding challenge facing RTOs today and into the future is competition. Many RTOs have traditionally enjoyed a quasi-monopoly for the delivery of certain services, usually to national or regional customers. Overall, this means that they are not very export minded - a 1987 EC report, for example, showed that only very few RTOs in all of Europe managed to attract as much as 20% of their income from foreign clients.

International competition is usually thought of as a significant threat to production facilities, with a large amount of employment flowing out to countries with lower costs. Today, however, globalisation also threatens RTOs, who must be aware that their work could be done by scientists and engineers elsewhere.

European multinationals have, for example, set up 250 R&D facilities outside their countries of origin. The figures for the American and Japanese multinationals are only 194 and 144. Moreover, both these countries are putting substantial resources into their RTO infrastructure: Japan now boasts 170 Kohsetsushi centres for technology diffusion, while the Clinton-Gore administration is strengthening the US's Technology Extension Services and increasing the number of Manufacturing Technology Centres to 170.

Of course many RTOs also face competition from within Europe, where the Single Market is ensuring greater competition and encouraging the harmonisation of standards. Will there be any room in the EU for all the 10-12 technical institutes in the footwear industry, for example?

Lastly, there is Central and Eastern Europe. The potential for competition is there, but the actual challenge is still some way off. The research capacity of Eastern European countries needs to be streamlined first to become market oriented and generate income.

Forming Strategies

Forming strategies to combat these challenges is vital. Some RTOs are already doing this, aiming to become genuine European "centres of excellence". Others are forging alliances and setting up networks, using them to observe what is happening in their partners' countries, developing synergies and complementary agreements to provide better services to a larger market at lower costs.

To formulate the right strategy, an RTO must assess itself according to context and location. Questions must be answered regarding the RTO's stance towards other centres - is it a matter of competition or collaboration, or competition and collaboration? What activities are commercial, and what public? And who should be the collaborators, and for what purpose?

There are no general answers because RTOs are not homogeneous. Despite these difficulties the fact remains that a strategic approach is essential for everyone.

Orienting Services to SMEs

SMEs often dominate an RTO's client list. They require two types of service:

- a Technology Support Point to diagnose short term problems promptly and point them towards the Technology Resource Centre(s) most likely to come up with the answers;
- for longer term R&D they need to embark on projects which, all things being equal, are similar to the multi-disciplinary teams formed by large enterprises when they embark upon innovation projects.

For the short term problems SMEs face, the RTO must decide whether they provide an "interface service" or act as a Technological Resource Centre - developing contacts with existing regional bodies to form a true network for serving businesses and providing access to a complete range of technology services.

The latter type of problem is specifically addressed by most of the current EC RTD Programmes. Their CRAFT projects[2] are specifically designed to bring SMEs with similar R&D needs together with an appropriate RTO. This formula should therefore be promoted by every RTO to the SMEs in their area in order to develop project proposals.

The March edition of the RTD Results supplement to CORDIS focus contains details of around 150 useful research results in fields as diverse as multimedia conferencing and environmentally friendly cooling liquids. Available from the RTD Help Desk: Fax: +352 4301 32084.

► RESEARCH INFORMATION

Press Service Expands

Being informed about the EC's R&D Programmes is not particularly easy for Europe's science and technology journalists. Unlike other European-level research initiatives such as CERN (particle physics) and the European Space Agency, EC research is not carried out at easily identifiable, centralised research centres.

Instead, with a few exceptions like the Joint Research Centre and the JET fusion facility, EC projects involve companies, institutes and universities the length and breadth of the European Union. Almost all Europeans, in fact, live or work near EC project participants. But they rarely hear about it.

This is because their media rarely mention European-level research. As a result people are 'under-informed'. As they are both the beneficiaries and paymasters, filling this gap is important.

An experimental press service was therefore launched in 1992 under the VALUE Programme (1990-1994) to provide science and technology journalists with information on newsworthy projects. VIPS (VALUE Information Press Service) sent around 350 journalists an average of 10 'factsheets' a month, along with a binder for filing them, and was warmly welcomed by its users.

Published in English and French, each of the 250 factsheets provided information on a project (or group of projects) and listed contact points for further information. The information was collected directly from and checked by the project participants themselves, ensuring its accuracy and providing the scientists with a way of communicating their results to society. Some of the factsheets were recently published in *Spotlight on European Research* (also published in French as *Regard sur la recherche européenne*).

With the VALUE programme over, a larger version of VIPS is being set up under the Innovation Programme. The new service will feature five languages and reach around 3,000 journalists. The possibility of adding an on-line VIPS service through the Internet is being investigated.

'Spotlight on European Research' presents 50 VIPS factsheets in a user-friendly, eye-catching format. EUR 16002, 13.5 ECU.

Contact

■ Mr O. Retout, Mediascience
Tel.: +32 2 649 9998
Fax: +32 2 649 5758
■ Mr P. Tomaszewski, DG XIII/D-2
Tel.: +352 4301 33798
Fax: +352 4301 32084

► PUBLICATION

Value Management Handbook

Whenever a management decision is taken, an industrial strategy formulated or a new product developed, the project's objectives must be clearly defined from the beginning in terms of the functions the final product or process is expected to fulfil.

Value Management (VM) provides the tools to identify these functions exhaustively and determine what performance they must have for the product to be successful on the market. It defines a product's value as the relationship between the resources spent in producing it and the benefits it provides to the customer.

VM can be used by all sorts and sizes of organisations, from public health services to manufacturers and service providers. Overall, VM encourages:

- better focused and more efficient management;
- a clearer understanding of customer needs;
- high quality business decisions;
- better measurement of the trade-off between performance level and cost, weight, resource consumption, social consequences, etc;
- the development of competitive products and services;
- lower operating costs;
- focused teams;
- greater project control.

The 180 page Value Management Handbook presents the fundamental methods and concepts of VM, along with the most recent developments. It covers:

- Value Analysis: the oldest and best known VM method, used for designing and redesigning products, services and procedures;
- Functional Analysis: a wide range of tools to rigorously identify and analyse a product's functional requirements;
- Functional Performance Specification: a precise definition of the needs the product must meet is created through the systematic elimination of all preconceived restrictions;
- Design to Cost/Design to Objective: a procedure for cooperation between industrial partners;
- Functional Cost: a useful tool for analysing problems rationally, helping those involved to communicate in precise terms and making choices.

In addition the Handbook also introduces eleven other management tools which may be useful in the course of VM projects, ranging from Concurrent Engineering to Team Leadership Skills. It is published by the Office for Official Publications (EUR-OP) and is available from EUR-OP's Sales Agents everywhere (Value Management Handbook, EUR 16096, 18.5 ECU).

► CONFERENCE

Integrated Support Strategies for SMEs

"Integrated Innovation Support Strategies for SMEs", a conference organised by the TII in Lisbon last April, covered the latest ideas on how to help SMEs innovate.

Lisbon, site of the TII's Annual General Meeting and SME Support Conference.

The European Association for the Transfer of Technologies, Innovation and Industrial Information (TII) was originally launched by the SPRINT Programme and is now a self-sustaining non-profit organisation focusing on supporting innovation and technology transfer across Europe. It has 470 members in 32 countries.

The conference, which coincided with TII's Annual General Meeting, was co-organised by TII and INETI, the Portuguese National Industrial Engineering and Technology Institute. It attracted around 250 people and was supported by the Portuguese Ministry of Industry and Energy (PEDIP Programme).

The conference aimed to provide instructive examples of integrated innovation support strategies at work in Portugal and elsewhere in Europe. These support strategies systematically combine in a single package (or through a single intermediary) all or most of the elements necessary for successful innovation: good technical ideas, project management skills, risk capital, market knowledge, personnel training and technology transfer.

The sessions covered the following topics:

- Innovation Support as a Multidisciplinary Challenge;
- Regional Approaches to Integrated Innovation;
- European Networking Opportunities with Portugal.

A Question of Survival

Mr Jeff Martinussen of the Danish Technological Institute's (DTI[1]) Business Net Ltd, the UK subsidiary of the DTI's Business Network Centre, emphasised how essential it is for SMEs to network together.

"In the future few companies will be able to grow or even survive if they do not cooperate with others to exploit their strengths and overcome weaknesses," he said. "The successful development of new products and services, as well as their introduction onto the markets, is almost entirely dependent on the abilities of firms to innovate and sustain such innovations by adequate skills, technology resources and capacity."

This is a very difficult task for small companies, he pointed out. "Focusing on core skills and resources and cooperating with other firms is essential. SMEs are further constrained by the fact that they are operating in a day-by-day mode in national or even local markets. They must network to survive."

According to him, there are four characteristics common to all mature and successful networks:

- Joint solutions to common problems;
- Development and exploitation of mutually complementary strengths;
- Improving subcontracting links;
- Individual access to end markets.

The Danish Example

The conference showed that these characteristics can be found throughout Europe's successful technology transfer organisations. An insight into Denmark's highly developed SME culture, for example, was provided by Mr Ernst Max Nielsen of the DTI, which has recently launched a new "Technology Partnership" programme with Danish industry.

"Companies pay to join the Programme, and in return the DTI becomes more than a consultant - if necessary the DTI will share technological risk with the new customer," he explained. "There are three types of partnership. To begin there's the normal supplier relationship, where DTI simply provides a particular processing technology or service. Then there's the situation where a number of different companies join up with the DTI to share the costs associated with a particular joint technology project. Finally there is Technology Brokerage, where we help the company find the right technology partner anywhere in the world."

The DTI is linked into a worldwide network of research organisations to search for specific technical solutions to its partners' problems. Recently, for example, a Danish component supplier needed to improve the brakes used to maintain tension in paper and textile spools. The DTI found the necessary technology in an American research centre, which had developed the technology for NASA's space programme.

The next TII annual conference, planned for London in April 1996, will continue the focus on integrated innovation support services.□

(1) The DTI led the research project profiled in the Relay Centre Case Study in edition 2/95 of Innovation & Technology Transfer.

Contact
Ms C. Robinson, TII
Tel: +352 463035
Fax: +352 462185

► SCIENCE PARKS

Call for Proposals

Contact
DG XIII/D-4
Tel: +352 4301 34180
Fax: +352 4301 34544

A new Call for Proposals under the Innovation Programme announced on June 15 aims to develop a series of actions to support Europe's science parks.

Science parks play a key role in the innovation infrastructure of many regions. This is because many small firms need their source of new technologies and partners to be reasonably close at hand - SMEs cannot afford to travel long distances frequently, and nearby sources are usually more tailored to their specific needs. In addition, direct and personal contacts are almost always more effective.

The European Commission has been supporting science parks for many years, with the previous SPRINT Programme running a Science Park Consultancy Scheme from 1989-1994. The current Innovation Programme, which incorporates aspects of both the SPRINT and VALUE Programmes, is building on the success of the previous scheme with the new Call.

The Call, which has a budget of 3 MECU over 1995-1996, is for support actions for science parks to strengthen the professionalism of their operators, to encourage the exchange of know-how in science park management and to develop international relationships. It does not deal with science parks in a narrow sense - the term covers science, research and technology parks, local technology resource centres and business and innovation centres.

Setting Up and Evaluation

The support actions have two components:

- the Validation Scheme aims at improving the definition and setting up of both new initiatives and extensions to existing ones. It can also cover providing the promoters of these facilities with access to international expertise in order to improve networking;
- the Auto Evaluation Scheme, on the other hand, is addressed to mature initiatives. It is meant to help their managers introduce evaluation and monitoring techniques in their management practices. The aim is not only to help the managers better fulfil their objectives - this activity will also allow the dissemination of good science park management practices throughout Europe, as well as permit international comparisons.

Proposals can also include the provision of Accompanying Measures. These cover professional and methodological support to the whole scheme, such as international monitoring, the organisation of workshops on relevant issues and the introduction of relevant project management techniques.

More information can be found in the Information Package, published with the Call on June 15.

► EXHIBITIONS

The Innovation Programme On Show

The Innovation Programme takes part in a number of major trade and technical exhibitions throughout Europe in order to bring its work to the attention of the European innovation and technology transfer community. Visitors to the following exhibitions will be able to meet members of the Commission staff responsible for the Innovation Programme.

Spain	Bilbao	20-23 September	Forotech - new technologies forum (part of the CITA '95 exhibition on advanced technology and automation)
Italy	Milan	21-26 September	SMAU - information technologies, systems, data handling and so on for business
Ireland	Cork	26-28 September	IRCHEM - chemical, pharmaceutical and processing industries
Portugal	Lisbon	26-29 October	INFOPOR - information technologies and services for business and industry
Germany	Nuremburg	1-5 November	IENA - international exchange for ideas, innovations and new products
UK	London	5-7 December	On-Line/CD-ROM Information '95

CORDIS will be on show at each exhibition, allowing visitors to try out the information service for themselves and obtain information useful to their activities. CORDIS experts will be on hand for demonstrations and advice.

The Innovation Programme's stand at Forotech (Bilbao) and Irchem (Cork) will also feature some of the technology projects launched by the previous VALUE and SPRINT Programmes, now merged into the Innovation Programme.

An Ocean

Europe's offshore oil and gas industry needs a wide range of marine technology, from underwater robots to ocean forecasting systems.

Europe has more coastline, relative to its surface area, than any other continent on the planet. It also boasts the greatest concentration of ports in the world, through which 90% of European external trade passes. It is therefore not surprising that the sea has played such an important role in European history. This role is far from finished - the state of coastal waters and the deep oceans is directly relevant to both the local and global environment, our quality of life and industries ranging from tourism to fishing. All of these factors are creating new opportunities for innovative marine products and services.

European seas provide us with enormous quantities of resources, notably North Sea petrochemicals and food. Europe also uses its coastal waters as an important tourist attraction and playground. The seas around Europe have also been the recipients of large quantities of sewage, oil slicks, fertilisers and even some wrecked nuclear submarines. Concern regarding the interaction between these two very different marine roles, as well as specific problems such as overfishing, has translated into increasing pressure for change in all industries associated with the sea.

Taking a wider perspective, the waters that lap Europe's shores are part of a freely circulating system encircling the entire planet, and play a vital - if poorly understood - role in the global climate and biosphere.

Understanding the oceans and seas around Europe and throughout the world has therefore become a priority. The research effort itself represents one opportunity for high technology companies - marine analysis and monitoring requires an array of sophisticated and rugged sensors, from multi-system buoys to trace element detectors.

Other opportunities, as well as new challenges, will arise as increased knowledge is acted upon. A wide range of changes - from stricter anti-pollution measures to new fishing practices - are on the horizon. As companies adjust to new situations they will need new technologies and services.

I. Twin European Initiatives

Marine research is a multidisciplinary effort involving practically every scientific discipline, from physics and chemistry to ecological studies and computer modelling. It is made more complicated by the fact that no two seas are alike - Europe, for example, is flanked by two oceans (Atlantic and Arctic) and many different types of sea, from the 'closed' Mediterranean, Baltic and Black seas to the semi-closed North and Irish seas.

There are two European systems specifically established to promote research and development into marine science and technologies. MAST is the EU's Marine Science and Technology Programme, while EUROMAR is one of the earliest umbrellas set up under the EUREKA Initiative[1]. Together, they cover all aspects of marine science and technology - from investigating the fundamental processes within marine systems to developing sophisticated sensor packages.

They have similar aims - to develop the knowledge and technologies necessary to exploit Europe's seas and oceans sustainably - but their methods are complementary. MAST is a programme of basic scientific research into the marine environment, while the individual EUROMAR projects are run by their participants to develop products for the marine environment industry.

# of Opportunity

MAST: Past, Present and Future

The first MAST Programme was a 50 MECU pilot programme launched in 1989. The budget has risen steadily since then: MAST II, run from 1991 until the end of last year, had a budget of 118 MECU, while MAST III, which like many Programmes under the Fourth Framework Programme began with a Call for Proposals last December, will spend 228 MECU over the next four years. Together, MAST I & II supported over 140 projects.

MAST III is divided into four Areas:

- **Marine science:** studying the fundamental processes determining the dynamics of marine systems in the seas and oceans around Europe, improving both our understanding of the marine environment and our ability to forecast change. Sub-areas include Marine systems, Extreme marine environments and Regional seas research;
- **Strategic marine research:** studying the dynamics of marine systems for better managing the marine environment as a resource. Sub-sections are Coastal and shelf sea research and Coastal engineering and natural defences;
- **Marine technology:** developing Generic technologies and Advanced systems (platforms and instruments) for observing, monitoring and managing the marine environment and for exploiting marine resources;
- **Supporting measures:** a range of initiatives - from advanced training courses and fellowships to coordinating the use of research vessels and other facilities - will improve the effectiveness of national and international research programmes.

MAST: Major Projects

While the EC funding for most MAST projects is of the order of 0.8-1.5 MECU, there are three MAST II projects which between them received 18 MECU.

The first is 'Coastal Morphodynamics', which links together over 30 research institutes from twelve countries to develop numerical models for describing the effects of both human activities and natural marine processes (waves, tides, currents, sediment transport, etc) on the coastline. The result will be a sophisticated understanding of coastal morphology, of use to coastal management, pollution control, fisheries and more.

The other two major MAST II projects will continue on under MAST III's 'Marine Science' Area ('Regional seas research'):

- **The 'Atlantic Targeted Project':** The 7 MECU OMEX (Ocean Margin EXchange) project aims to investigate the exchange of water and matter from the continental shelf to the deep sea, and vice versa. This knowledge is essential to understanding how the oceans work and, by extension, to our understanding and prediction of the global climate and the impact of human activity on coastal zones.

OMEX will study these phenomena for the whole North Atlantic sea frontage of Europe, from the Polar Regions to the tip of Portugal. The project will provide an important model for the study of other parts of the planet, and was explicitly devised as one of Europe's contributions to the major international 'Global Change' programmes. In total 32 laboratories from 10 different countries are involved in the project.

- **The 'Mediterranean Targeted Project':** Unlike OMEX, which was submitted as a single project proposal, this is actually a cluster of ten individual projects, coordinated by the EC and totalling 11 MECU. Between them, they will improve understanding of all the physical processes and biogeochemical cycles throughout the Mediterranean.

Problems receiving special attention in the pilot phase (1993-1995) include seasonal and annual variations in water circulation and changes in the composition of water and of sediments due to atmospheric and terrestrial factors. Some 70 laboratories from 14 different countries are involved.

EUROMAR: Technologies for Markets

EUROMAR is an 'umbrella' within the overall EUREKA framework. It is devoted to creating and supporting projects which aim to protect, exploit and manage marine resources sustainably.

Like all EUREKA projects, EUROMAR projects are proposed and run by the participants themselves to develop marketable products and services. They also arrange funding, although being a EUREKA project greatly influences national public funding systems and is also very useful in approaching private financial institutions.

EUROMAR is a 12-member network composed of experts in each EUROMAR country(2) and the European Commission. This network runs workshops, partnering events and conferences to both find partners for organisations wishing to launch projects and help ongoing projects reach fruition. The umbrella can also put participants in touch with the international standardisation and regulatory bodies, whose work greatly

●●● influences most environment-oriented industries.

Since its inception in 1986, EUROMAR has launched more than 20 projects, representing an estimated (private and public) investment of around 120 MECU. Results include:

● **Technologies for Industrial Users:** including an underwater platform (ROV) for fishery and pipeline inspection, pollution and environmental control; a multiple-beam acoustic system for making geological maps of the sea bed; and the design of a multi-purpose SWATH (Small Waterplane Area Twin Hull) vessel for monitoring the marine environment, emergency operations, combating pollution and oceanographic research.

● **Marine and Coastal Environmental Assessment and Management Technologies**: including integrated automatic marine surveillance systems for monitoring oceanographic data and estuarine pollution parameters; buoys for CO_2-measurement at the ocean surface; numerical modelling systems for marine management, forecasting and spill assessment.

● **Marine Research Technologies:** including high resolution video systems for analysing plankton distribution patterns; a unit which stays on the sea floor for a year, automatically taking and preserving biological samples; and a benthic lander for measurement of chemical fluxes through the water-sediment interface.

Other Initiatives

There are several other EC RTD Programmes involved in cross-border marine R&D:

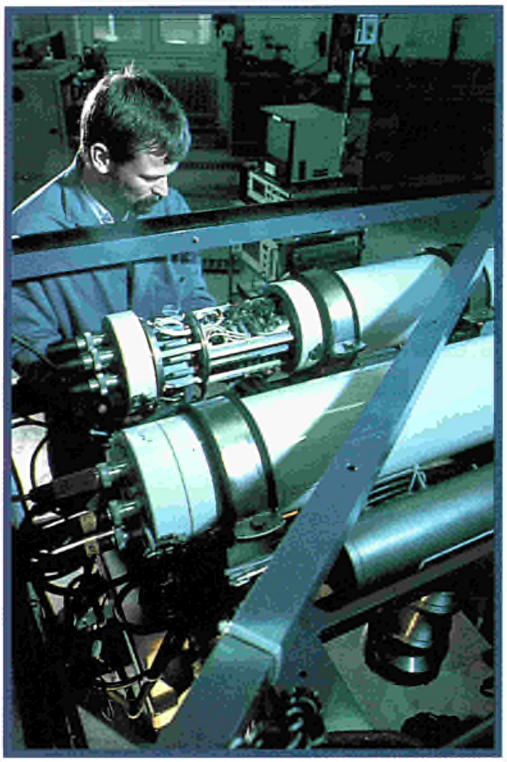
● **Environment and Climate:** There is generally close interaction with this 852 MECU RTD Programme, particularly in research concerning the coastal environment.

● **Agriculture and Fisheries:** This 684 MECU Programme is run by DG VI (Agriculture & Rural Development), DG XII and DG XIV (Fisheries). Area 5 - Fisheries and Aquaculture - concentrates on providing a sound scientific basis for the balanced, sustainable exploitation of Europe's fisheries resources and the further controlled development of aquaculture. This requires a better knowledge and understanding of the aquatic ecosystem, including the interactions between fishing activities, aquaculture and the environment.

● **Transport:** The most important areas relevant to marine science and technology within the 240 MECU Transport RTD Programme are:

Section 3 - Integrated Transport Chains;
Section 6.1 - Maritime Transport (Ships, Ports and Logistics);
Section 6.3 - Efficiency, Safety and Environment Protection in Maritime Operations.

● **Industrial Technologies:** BRITE-EURAM III has a section devoted to Technologies for Surface Transport.



MAST Marine Technology: advanced platforms and systems for managing the marine environment and exploiting marine resources.

Lastly, two other pan-European organisations focus on basic marine R&D:

● **European Committee on Ocean and Polar Sciences (ECOPS):** An advisory group established by the European Commission and the European Science Foundation, ECOPS focuses on long-term research priorities, and has formulated four 'Grand Challenges' for European marine and polar research: Ocean Forecasting, the Arctic Ocean, the Deep Sea Floor and Antarctic Ice Coring.

● **COST**[3]**:** The work under the recently finished COST Action 48, which focused on developing and utilising marine algae, is being continued under Action 49.

II. Market Issues

MAST and EUROMAR offer two avenues for European scientists and industrialists wishing to improve our knowledge of the seas and oceans, develop technologies for scientific research or reduce the environmental impact of industry on the marine environment.

They have been working closely together over the past few years. In March 1993, for example, they co-organised the First MAST Days and EUROMAR Market, a major conference held in Brussels. The title reflects their differing emphases - while the MAST element focused mainly on basic scientific research, the EUROMAR participants concentrated more on market issues.

By bringing MAST and EUROMAR participants and officials together the conference sparked a healthy debate on subjects such as priorities for basic research, enabling technologies for the environmental market, legislation and regulation, and opening up national markets.

The latter point, according to Jan Dahler Nilsson of the Norwegian Trade Council, is vital. Speaking at a special session devoted to marketing environmentally related products and the relationships between ecology and economics, he observed that "at the moment many countries exclude foreign technologies to support their own. If these borders fell it would stimulate competition and hone European technologies for the world market."

And the environmental market is lucrative, although divided along national lines. "The environmental market is growing at 5.5% each year, faster than any other market," Mr Nilsson says. "It is forecast that it will be worth more than 200 billion ECU before the end of the century."

How to exploit this market? The key to any environmental sector, according to Mr. Nilsson, is that investments in the field are long-term and driven by regulation. "However, new solutions can trigger new regulations - if you develop a better sewage treatment system, it would obviously help if your government or the EC enforced stricter sewage controls," he added. "This 'alliance building' is often a vital ingredient in an environmental project's success."

He defined a number of important steps companies in the field can ●●●

Case study: MAST/EUROMAR

An Intelligent Underwater Vehicle

A Danish SME will soon be marketing the world's first fully autonomous, long range survey submarine thanks to a series of MAST and EUROMAR projects.

Underwater surveys are currently carried out either by manned submarines or remotely operated vehicles (ROVs), which are connected to a mother ship via a cable. According to Dr Anders Bjerrum of Maridan Autonomous Underwater Vehicles, these are not perfect solutions.

"Both are very expensive and the mother ship tosses with the surface waves, messing up the ROV's results," he argues. "An autonomous vehicle would be both less expensive and more accurate."

The MARIUS unmanned underwater vehicle undergoing sea trials in 1993.

Dr Bjerrum originally began developing an autonomous underwater vehicle (AUV) under a EUROMAR project when working with COWIconsult, a Danish engineering consulting company. They soon found that more basic research was required, however, and launched the MARIUS project under MAST I in 1991.

The resulting MARIUS prototype can explore the water column itself, communicating with the surface acoustically. It has a range of up to 100km and special thrusters for sophisticated manoeuvres. This, combined with a special hull design, will allow it to dock itself onto a seabed platform for battery recharging and high-speed data transmission. The platform is not yet developed, but the designers are thinking ahead.

MAST: Intelligent Navigation

The Self-Organising Underwater Vehicle (SOUV) project, a follow-up under MAST II, was launched in late 1992. Soon afterwards Dr Bjerrum and another colleague formed Maridan AUV to commercialise the results. Together with their French partners, Thomson Sintra ASM and Orca Instrumentation - responsible for the mission management and underwater communications systems, respectively - Maridan AUV will use MARIUS to offer cheaper and better surveys and sell basic AUVs to research groups, allowing them to install their own sensors.

Coordinated by the Robotics Institute of the Superior Technical Institute in Lisbon, SOUV was necessary because most potential clients - from biologists to the offshore oil and gas industry - are interested in the one place MARIUS cannot go - the seabed.

SOUV's main challenge is to give MARIUS enough artificial intelligence to avoid the seabed's rocks and shipwrecks. The resulting Mission Preparation System first proposes a mission plan after analysing data such as environmental conditions, terrain profile, sites to be inspected and tasks to be performed. The plan is then loaded into the Mission Management System (MMS), installed on the AUV.

"Apart from directing the AUV systems to carry out the plan, the MMS must deal with unforeseen circumstances," Dr Bjerrum notes. "For example, it must recognise and get around obstacles, and then return to the planned route, compensating for stronger than expected currents."

In addition, the AUV's operating depth is being improved and more sophisticated manoeuvring devices are being added, along with a sophisticated 3D sonar from Reson A/S (see page 18) for detecting obstacles and surveying tasks.

EUROMAR: Commercial Developments

The new prototype is undergoing final sea trials off the Portuguese coast this summer. The MAST II project will end this year, but several consortia proposing projects under MAST III are interested in using the AUV. This will provide valuable testing experience and may involve developing the seabed recharging platform.

The partners have agreed to continue working together and hope to enter the market by 1997. By then, Dr Bjerrum hopes to see the results of a EUROMAR project that Maridan and Swedish company Kockums Submarine launched this year to increase the AUV's range from under 100km to over 500km.

"The batteries are an important limiting factor, because if you want more range, you need more batteries, meaning a bigger hull," Dr Bjerrum explains. "The EUROMAR-STIRLING-AUV project aims to adapt Kockums' highly efficient submarine Stirling engine. The onboard engine will recharge the AUV's batteries without producing high frequency noise, which would interfere with the acoustic equipment. And the engine's high pressure exhaust will dissolve in the seawater without producing bubbles."

Dr Bjerrum is confident in Maridan's prospects. "Our only competitors are adapted from military applications and so are less suited for commercial surveys," he concludes. "For a company like ours to outperform military technology, however, required a lot of outside expertise. It simply would not have happened without the MAST and EUROMAR projects."

Contact
Dr A. Bjerrum, Maridan AUV
Tel: +45 45 76 40 50
Fax: +45 45 76 40 51

MAST project 0057 developed an in situ probe for analysing marine sediments.

●●● undertake to make the marketing of their new technology easier:

- Consider marketing issues from the very beginning;
- Define the market: is it government-related? who will be regulated? and when?
- Involve an industrial partner from the outset to include user needs;
- A 'national reference installation' to demonstrate the product should be part of the project;
- Coordinate with your authorities and build alliances with regulators and users in your and other countries.

New Conference

The upcoming Second MAST Days and EUROMAR Market will be held this November in Sorrento (Italy). Again organised by both organisations, the Conference will bring together all those concerned with marine science and technology - policymakers, researchers, engineers and industrialists.

The Conference will cover all major relevant topics and intends to place particular emphasis on exchanging ideas across disciplinary boundaries. Being the result of discussions between the science-oriented MAST Steering Committee and the more market-oriented EUROMAR office, the Conference programme will cover issues ranging from priorities for basic research to opportunities for private investors.

All MAST II and EUROMAR projects are expected to be presented in poster form, while most will also feature in the scientific sessions, which will cover:

- Physical oceanography;
- Biology and Ecology;
- Biogeochemistry;
- Sedimentology and Geosciences;
- Coastal Engineering and Physical Processes;
- Sampling and Measurement Instrumentation;
- Enabling Technologies and Vehicles.

There will also be nine Discussion Meetings, each introduced by a keynote speaker:

- Operational Oceanography: Instrumentation, measuring and sampling techniques;
- Operational Oceanography: cost-benefit relationship of information systems and implications for research policy;
- Operational Oceanography: what has marine research and forecasting to offer customers and private investors?
- Design, Structure and Implementation of Mega-Sized International Marine Research and Operational Projects;
- The Mediterranean Sea: undiscovered issues of the 21st century;
- Marine Biodiversity: species inventory versus ecosystem property;
- Remote Sensing: from primary production to environmental monitoring;
- Biotechnology in Marine Science: can Europe play a significant role?

Lastly, the poster exhibition will be augmented with a selection of prototypes and products, featuring marine-oriented technologies such as underwater vehicles, computer modelling software and sonar sensor systems. □

(1) EUREKA, a non-EC initiative, was covered extensively in the Dossier of edition 5/94 of Innovation & Technology Transfer. There are 25 EUREKA Members, including the European Commission.
(2) The EUROMAR Members are Denmark, Finland, France, Germany, Greece, Italy, Norway, Spain, Sweden, the Netherlands, Turkey, UK and the European Commission. Russia and Croatia are Observers.
(3) COST (the French acronym for 'European Cooperation in the Field of Scientific and Technical Research') was covered extensively in the Dossier of edition 6/94 of Innovation & Technology Transfer.

Contact information

MAST III
Dr. Jean Boissonnas,
DG XII, EC, Brussels
Tel: +32 2 295 6787
Fax: +32 2 296 3024

EUROMAR
Dr. Peter Seifert, EUROMAR Office,
GKSS Forschungszentrum Geesthacht GmbH, Germany
Tel: +49 4152 87 1991
Fax: +49 4152 87 1913

Environment and Climate

- Ms L. Klemchen, Secretariat, Environment Technologies (DG XII/D-1)
  Tel: +32 2 295 04 15
  Fax: +32 2 296 30 24
  E-mail: l.klemchen@mhsg.cec.rtt.be
- Ms Marina Vereertbrugghen, Secretariat, Climatology & Natural Hazards (DG XII/D-2)
  Tel: +32 2 295 16 86
  Fax: +32 2 296 30 24
  E-mail: m.vereertbrugghen@mhsg.cec.rtt.be

Agriculture and Fisheries
Mr W. Brugge, DG XIV
Tel: +32 2 295 5137
Fax: +32 2 295 7862

Transport
Transport Programme Help Line
Tel: +32 2 295 43 00
Fax: +32 2 295 43 49

BRITE-EURAM
Help Line
Tel: +32 2 295 23 45
Fax: +32 2 295 80 46

ECOPS
Mrs P. Pirra
Tel: +33 88 76 71 41
Fax: +33 88 37 05 32

COST - Actions 48 and 49
Mr Masson, COST Secretariat, EC
Tel: +32 2 296 5547
Fax: +32 2 296 4289

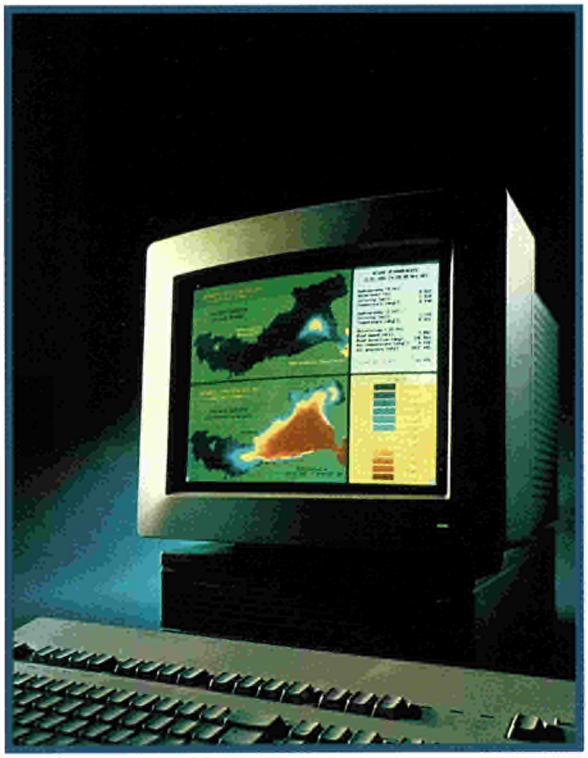
Case study: MAST/EUROMAR

Numerical Modelling: A Developing Market

German SME Hydromod's experience in several MAST and EUROMAR projects is crucial to developing their innovative products and services.

Hydromod's first EUROMAR project was OPMOD - Operational Modelling of Regional Seas and Coastal Waters. The OPMOD software receives data from marine monitors and uses numerical models to 'fill in the gaps' between them and provide forecasts of oil slick spread, storm surge hazards and other phenomena. The 6 MECU project brought together 16 companies and research centres from eight European countries.

According to Klaus Pfeiffer, Hydromod's Managing Director, this range of experience was vital. "Different approaches are needed for predicting and modelling marine processes such as storm surge hazard, current patterns, salinity distribution and pollution spills," he says. "We have integrated different models, combined them with user-friendly tools and now have an entire range of products on the market, ready for user-defined applications."



OPMOD marine modelling software - on the market.

MAST Research with EUROMAR Products

According to Mr Pfeiffer, there are two ways EUROMAR and MAST projects can interact. "We are subcontractors in a number of MAST II projects and MAST III proposals, providing operational modelling of physical and dynamic processes to support marine research," he explains. "This qualifies our models, products and services with our customers, and ensures external and independent quality control. This is vital for a scientific service provider."

On the other hand, MAST can generate knowledge for new products. Hydromod, for example, was an active partner in the recently finished MAST II project MEDCOAST. Launched in 1992, MEDCOAST focused on the 3D hydrodynamic modelling in Mediterranean 'deep coastal areas'. The circulation and thermodynamics are very complicated in these areas due to the local interaction of coastal and deep sea processes, and so represent a challenge for modelling and forecasting.

MEDCOAST aimed to create guidelines for the monitoring and modelling of such regions. Hydromod both contributed and gained valuable modelling experience, and intends translating the experience and guidelines into ongoing improvements of models and systems like OPMOD. "Maintaining high technological standards is only possible through research programmes such as MAST," Mr Pfeiffer explains. "Active participation is therefore vital for innovative SMEs like Hydromod."

Marketing Survey Services

Hydromod launched another EUROMAR project in June this year. MICSOS (Micro-Structure Ocean Sonde) involves French and German companies and research institutes and the Joint Research Centre's Institute for Remote Sensing Applications.

It aims to develop a probe for providing data on turbulence-related processes at micro-scales. "These turbulent processes are very important to many large-scale ocean processes," Mr Pfeiffer explains. "Today's commercially available instruments do not have the sensitivity to measure them."

The MICSOS solution is a free-falling or rising probe equipped with both classical oceanographic and high-resolution sensors capable of registering turbulent processes down to millimetre and millisecond scales. A fibre-optic cable relays gigabytes of data to a portable on-line control unit.

"Users, however, may only need a few bytes of information, which is why we're developing sophisticated measurement, control and interpretation software," Mr Pfeiffer says. "It will present users with easily understandable readouts at whatever level of analysis they choose."

As the entire system will cost thousands of ECUs it faces a rather limited market. Most users will probably contract out the work to Hydromod's MICSOS Measurement Services Group (MSG), established specifically for small budget users, such as a small research institute doing an environmental impact assessment on a local lake or river.

"Crucially for us, many organisations proposing MAST III projects have requested MSG services," Mr Pfeiffer notes. "So we're following the same strategy - developing products through EUROMAR and testing and refining them through MAST. As a result, sophisticated environmental technology is becoming available to all sorts of users."

Contact
Klaus Pfeiffer, Hydromod
Tel: + 49 4 103 13057
Fax: + 49 4 103 3317
E-mail: hydromod@hydromod.de

Case study: MAST II

Focused Acoustics

Reson A/S have developed crucial knowledge of underwater acoustics through no less than seven MAST II projects.

Reson A/S is a Danish SME specialised in underwater acoustics. The seven MAST II projects they have helped launch since mid 1992 are answers to two factors they see as crucial to their future markets.

"To begin with, offshore oil and gas companies are now considering much greater operating depths," notes Reson's R&D manager Steen Bruun. "A few years ago 500 metres was considered deep. Today they're planning for up to 3 kilometres."

The general environmental movement is also important, generating new surveying business. In addition, current research may show that some acoustic signals distress marine mammals, forcing Reson and others to use new, more difficult operating frequencies.

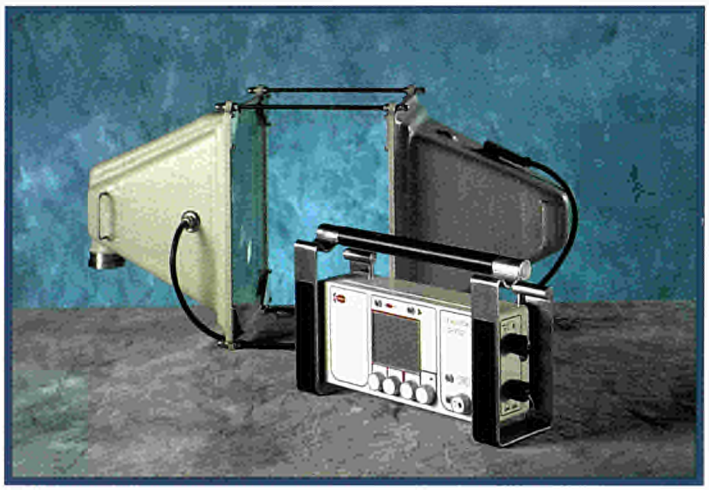
New Techniques, New Skills

Between them Reson's MAST projects tackle these challenges. The earliest project (LOFTOMO), for example, focuses on developing new components for ocean acoustic tomography.

"Tomography measures the state of the oceans by transmitting a low frequency acoustic signal halfway across the planet," Dr Bruun explains. "The travel time tells scientists a great deal about the ocean's temperature profile, for example. The transducer - the component which transmits and receives the signal - has to be very low frequency and capable of standing high pressures. We're producing prototypes at the moment. We learnt a lot about ocean acoustics and transducer design to get this far."

Another project (SEA CURSOR) focuses more on designing arrays of transducers to improve performance. For Reson this has helped improve a range of products, from a simple sensor to help fishing trawlers monitor their nets to sophisticated seabed mapping systems. Similar benefits are expected from REFHYDRO, where the quest to build super-sensitive hydrophones has honed Reson's design skills and introduced them to new transducer materials.

Reson A/S are also developing a 3D sonar system for autonomous underwater vehicles (AUVs) in the SOUV project (see page 15). Another key AUV technology - acoustic communication technology - is under investigation in the AIDA project, which aims to transmit 20 kbit/s underwater for up to 3km.



The SEALOOK 9000 underwater camera, used to optimise fish farming, incorporates Reson's sophisticated acoustic/optical technology.

On the more theoretical side, the VERIPARSE-2 project is developing models on acoustic signal scattering. The results will enable Reson to test their systems much more quickly and cheaply. "It also represented a huge boost to our computing and modelling capability, skills essential for a company like ours," Dr Bruun observed.

This expertise is certainly required for SAMI - Synthetic Aperture Mapping and Imaging. Analogous to synthetic aperture radar, the idea is to combine signals transmitted by the transducer from different points, creating a 'virtual' transmitter inside the system's computer which is much more accurate and precise.

"It's possible in principle, but the instability of surface platforms and the variability of underwater transmission speed may make it impossible," Dr Bruun says. "Sea trials under the preceding project, ACID, showed that it could work given the right transmitting platform. SAMI aims for a prototype system."

Reducing Technological Risk

Working within MAST has been crucial for Reson A/S. "To begin with, the financial support reduces the technological risks to the point where a small company like us can go ahead," Dr Bruun explains. "SAMI is a good example - it's easily the largest technological risk we've ever taken, and MAST support is vital."

"Just as crucially," he continues, "is the knowledge transfer from the other partners. There's simply no way that a 70-strong company like ours could muster the resources to generate all of this knowledge and experience."

The company has worked with around 20 research institutes and companies through the projects. One of them - the Industrial Acoustics Department of the Danish Technical University (DTU) - appears in several projects.

"We work very closely with the DTU," Dr Bruun confirms. "Apart from working together in MAST we help them develop specialised courses that we feel reflect industry's requirements. These courses allow industrialists to tap the university's knowledge very effectively. It's an excellent relationship."

Contact
Dr S. Bruun, Reson A/S
Tel: +45 4738 00 22
Fax: +45 4738 00 66

► TELEMATICS AND REGIONAL DEVELOPMENT

Transcending Borders Electronically

Three local authorities on opposite sides of the Irish border have taken a decisive step towards the "Information Society". Through the ERNACT project they and their Benelux partners are tackling peripherality and promoting economic development through telematics technologies.

Contact
Mr S. O'Donnell, ERNACT EEIG
Co. Donegal, Ireland
Tel: +353 74 41634
Fax: +353 74 41638
X.400 E-mail: C = IE, A = EIRMAIL400, O = ERNACT, S = EEIG

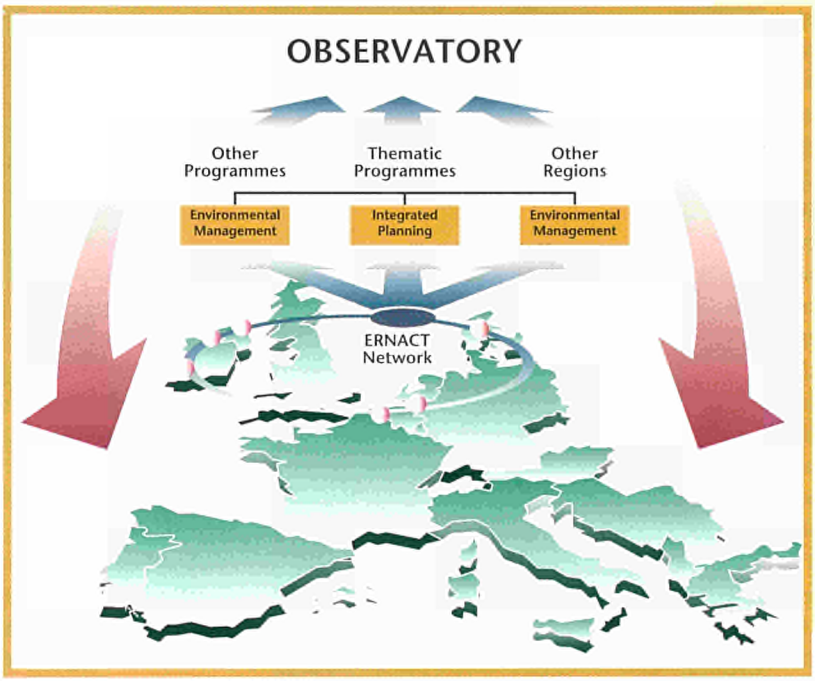
According to Mr John Keanie, Manager of Derry City Council in Northern Ireland, the altered political and security situation in Ireland means that cross-border cooperation there is entering a new era. "This cooperation should be rooted in the 'Information Society' concept," he says. "European support for such work is important. That's why it's so appropriate that the pilot phase of the ERNACT project should finish just as the situation here makes such cooperation easier."

ERNACT stands for European Regions Network for the Application of Communications Technology, a pilot project that local and regional authorities from Northern Ireland, the Republic of Ireland, Belgium and the Netherlands ran from 1991-1994.

It aimed to enable the participating authorities to take advantage of new communication technologies to combat peripherality, to change and improve their role in regional development and improve administrative efficiency. For this reason the EC's support came from DG XVI (Regional Policies), and amounted to 3.5 MECUs, 75% of the total project cost.

A Europe of Regions

It was managed by the initiators of the project - Donegal County Council (Ireland) and Derry City Council (Northern Ireland) - through the creation of the first ever European Economic Interest Group set up by local authorities. It also involved Aalbourg Kommune (Denmark), Leiedal Intercommunale (south west Flanders, Belgium) and Provincie Zeeland (the Netherlands).



One of ERNACT's central objectives was to set up an Observatory to gather and disseminate the experiences gained, both within ERNACT and throughout Europe, in inter-regional communication.

Together they have developed a commonly defined information and communication platform within their organisational structures. The result is a sophisticated inter-regional communications network.

"This has altered the communication infrastructure of the participating administrations from being a closed internal administration system to one that is open and primed for external communications with other national, regional or inter-regional organisations," Mr Keanie explains. "It has improved the way in which these authorities use communications technology in their day to day activities. And by exploring how these technologies could be used to facilitate cooperation between regional and local authorities at the Community level, it has generated valuable experience for a 'Europe of Regions'".

One of the technologies introduced into the authorities' structures, for example, allows the exchange of information from databases in different regions. "This allows the local authorities to communicate directly by electronic means," Mr Keanie adds. "The contents of a database on companies local to our Danish partner, for example, could be examined by the Irish local authorities. The usefulness of this in promoting economic cooperation is obvious."

ERNACT implemented a variety of sub-projects on themes ranging from economic life to environmental protection. A tourism-focused sub-project, for example, developed an interactive, multimedia information system covering County Londonderry (Northern Ireland) and two of the neighbouring counties in Ireland (Galway and Donegal).

Plans for a second ERNACT project are well advanced. This aims to overcome bottlenecks preventing the application of telematic technologies at regional level and demonstrate the advantages the information society can provide to Europe's regions. The proposed project, which will also involve the Wirral region in the UK, will include inter-regional pilot actions focused on three themes: Public Information Systems, Integrated Planning and Environmental Management.

"We also intend building upon the innovations developed by the educational institutions in our partners' areas, including new software and technologically-orientated secretariat facilities," Mr Keanie concludes. "We think ERNACT will come to be seen as a prime example of bottom-up innovation of the type that will create jobs and services as we move into the Information Society."

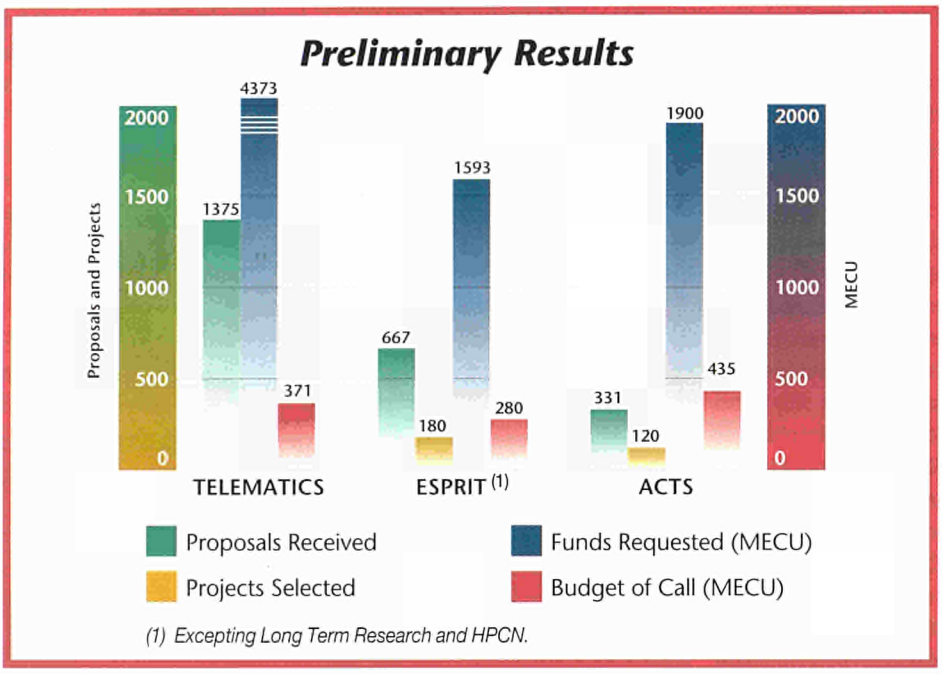
► INFORMATION & COMMUNICATION TECHNOLOGIES

Over 2,600 Proposals

The response to the December 15 Calls for Proposals for the three Information & Communication Technologies Programmes has been overwhelming. Almost eight billion ECU of EC funding has been requested.

December 15, and the month that followed, saw the first Calls for Proposals for practically all of the Specific RTD Programmes under the new Fourth Framework Programme for RTD (1994-1998). Most Calls closed on March 15. As Innovation & Technology Transfer went to press most Programmes were still evaluating the proposals, with final selection to be completed in July or later.

Preliminary results from the Calls of three related Programmes - Information Technologies (ESPRIT), Advanced Communication Technologies and Services (ACTS) and Telematics Applications - show that European industry sees these as vital areas for cooperative research across Europe.



ACTS: Advanced Technologies, Advanced Call

There were 331 proposals for the first ACTS Call for Proposals, requesting a total of 1.9 billion ECU of EC funding - over four times the finance available for this Call. Just over one third (120) of these proposals were selected.

The most striking feature about the Call was its use of the advanced communication technologies it aims to develop. Three quarters of the proposals were submitted by secure electronic file transfer over public telecommunications networks. These proposals were uploaded by bidders to servers established in 13 different countries, using both modem-telephone connections and the Internet.

The successful use of telecommunications technology for this Call is not only appropriate, it is also highly significant, because the confidentiality of the information transmitted using these technologies is a major issue in their widespread acceptance.

Therefore using these technologies for a Call, which always requires strict confidentiality, shows that electronic tendering is viable in the EU, at least for work supported by the Commission. This is a crucial issue for the EC's plans for a "European Information Society", so using the Call to demonstrate the feasibility of these technologies is an excellent first step.

ESPRIT: Rolling Calls

The December 15 Call for the 1,700 MECU Information Technologies (ESPRIT) Programme attracted over 900 proposals. The breakdown by sector was as follows:

- software technologies: 161;
- technologies for components and subsystems: 181;
- multimedia systems 92;
- the open microprocessor systems initiative: 52;
- technologies for business processes: 88;
- integration in manufacturing: 93;
- high performance computing and networking (HPCN): 111;
- long-term research: 131.

A total of 180 projects were selected from the 667 proposals received for the first six areas. Proposals for the last two areas, however, were made in two stages to reduce the cost of making proposals. The first low-cost 'light' proposals had a deadline of February 15. The best of these were then invited to submit a fuller version by May 30, and so were still being evaluated as *Innovation & Technology Transfer* went to press.

A second Call was published on March 15. There will be more - the current scheme envisages up to four Calls per year, with each Call having a particular focus. This 'rolling system' of multiple, focused calls allows for greater flexibility and responsiveness to technological and market change.

Telematics Applications

The Telematics Applications Programme also introduced an (optional) outline proposal scheme in order to make submitting proposals easier, with comments from Commission staff sent back to each proposer.

The total budget of the Programme is 834 MECU, of which just under half (371 MECU) was allocated to this Call. 1,375 project proposals were received, requesting a total of 4,373 MECU - an oversubscription rate of almost twelve.

As described in the Programme Briefing of issue 3/95 of *Innovation & Technology Transfer*, many consortia submitted proposals concerning two or more areas, for example distance learning courses for medical practitioners. The concept of 'Telematics Application Sites' - where one site hosts the validation phase of several projects - also seems to have struck a chord.

Areas covered by this Call were:
- Administrations;
- Transport;
- Research;
- Education and Training;
- Urban and Rural Areas;
- Healthcare;
- Environment;
- Other Exploratory Actions;
- Language Engineering (pilot applications and research);
- Programme support actions, excepting feasibility grants for SMEs (Call to be launched this year).

One of the most popular areas was telematics for training and education. This part of the Call, which had a budget of 34 MECU, received a total of 279 proposals. The total investment involved in these proposals amounted to 1 billion ECU, of which 627 MECU was requested from the EC.

Most had education and training as their primary sector, while 50 quoted these applications as secondary. The quality of proposals received was also very good, with a high level of user involvement and good European coverage.

The same can be said of all the Programmes, in fact. All Programmes worked closely together, with some proposals being transferred from one to another according to topic. ESPRIT and Telematics carried out joint evaluations of proposals for advanced networks between universities and research centres across Europe. Lastly, all Programmes reported excellent participation rates for SMEs and user organisations. □

Contact
■ **ACTS Central Office**
Fax: +32 2 295 0654
e-mail: raco@postman.dg13.cec.be
■ **ESPRIT: Gerda Colling**
Fax: +32 2 296 8388
■ **Telematics: Franka Colberg**
Fax: +32 2 296 8398
e-mail: telematics@dg13.cec.be

► ACTS EXPLORATORY ACTIONS

10,000,000 Teleworkers by 2000?

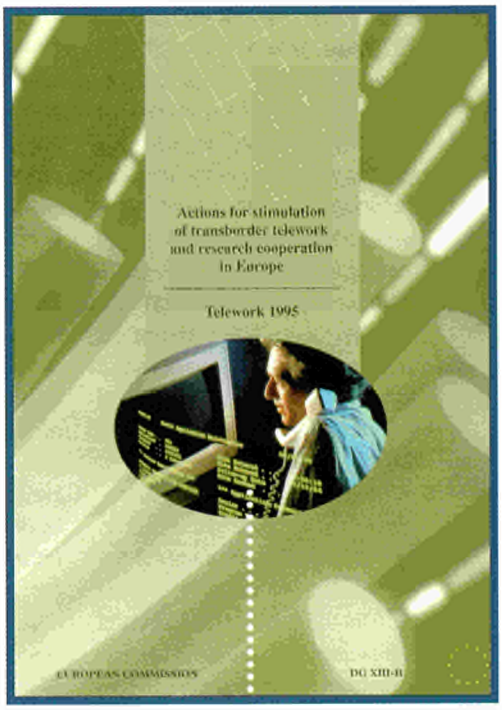
Successfully introducing new technologies requires more than just the technologies themselves. Exploratory actions already under way into teleworking, for example, will help smooth the way.

Teleworking is a broad term, covering many new ways of working made possible through new telecommunications technologies. Its results range from individuals setting up 'telecottages' to major corporate restructuring.

The Bangemann report on the Information Society identifies teleworking as a strategically important technology with the potential to improve everything from industrial competitiveness to the environment. The report sets the following targets:
- 20 European cities to have 20,000 teleworkers in recognised programmes by the end of this year;
- 2% of Europe's white-collar workers to be teleworking by the end of 1996;
- 10 million teleworkers in Europe by the end of the decade.

According to the results of the TELDET (Telework Development and Trends) project, there are already around 1.25 million teleworkers in Europe, indicating that the 10 million target is achievable.

TELDET is one of over 30 projects launched around the beginning of last year under 'Telework Stimulation', a Preparatory Action for the ACTS Programme. They are not RTD projects themselves - rather, they aim to encourage teleworking, examine its practical problems, evaluate technological requirements, analyse its impact and provide support to regional and national teleworking initiatives.



'Telework 1995' details all of the telework stimulation actions completed in 1994 and still underway.

Results range from a Code of Practice for managing the contractual arrangements between the teleworking employee and the employer to a set of practical guidelines for companies to use in realising transborder teleworking systems. The guidelines outline a 'core set' of hardware and software platforms and covers the economic efficiency of networks and services.

Telework Reviewed

In addition, "Rethinking work. New concepts of work in a knowledge society: The telework option reviewed (RACE 1994)" has recently been published[1] as a result of a project run in cooperation with RACE II, the previous Communication Technology Programme (1990-1994).

The project began in 1992 to contribute to the development of positive new ideas and approaches in the area of work. A number of joint projects, publications and meetings resulted from this initiative. The new working paper is the latest in the series, and is presented as a "thinking exercise".

It sets out a number of views, challenges and tentative conclusions to the debate on telework and the new flexibility in employment. In particular, the following issues are examined:
- Background to the debate;
- Telework as a harbinger;
- Work, technology and society;
- The changing shape of work;
- Recommendations. □

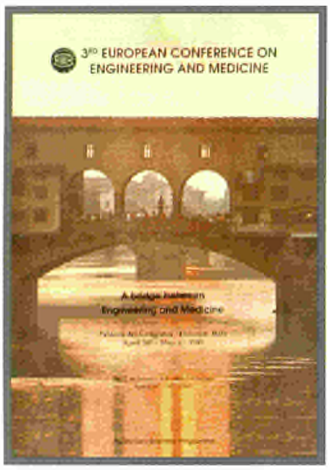
(1) CD-85-94-696-EN-C. English only, free of charge.

Contact
Mr P. Johnston, DG XIII/B-1
Fax: +32 2 296 2980

► BIOMEDICINE AND HEALTH

A Bridge Between Engineering and Medicine

The Third European Conference on Engineering and Medicine, held in Florence from April 30 to May 3, was organised by the European Society of Engineering and Medicine (ESEM) to bridge the gap between engineers and doctors.



Bridging the gap between engineers and doctors in Florence.

The medical and engineering disciplines have been traditionally kept well separated for many years, for reasons which are largely historical. In the last few decades, however, the technologies and methods of engineering science have made significant contributions to medical diagnosis, therapy, rehabilitation and health services. ESEM was established to form a bridge between these groups in order to improve and enlarge this contribution.

The Conference, which was co-sponsored by DG XII (Science, Research and Development) of the European Commission, therefore brought together researchers and specialists from areas as diverse as neurology and surface engineering. Technologies covered included microelectronics, informatics, telematics and mechanics.

In total around 600 medical doctors, engineers and scientists from 37 countries around the globe attended the Conference, which was opened on Sunday, April 30, by Professor Mario Condorelli, the Italian Vice-Minister of Health.

Education: A Key Issue

The preceding weekend, however, had already seen many attendees assemble for eleven pre-Conference 'Top Courses' - specialist courses and workshops for medical doctors and engineers. They were a practical demonstration of both the need for and interest in high-level training for doctors and engineers in a wide range of each others' fields.

Doctors were offered courses in medically-oriented robotics and neural networks, biomaterials, biomagnetism, signal processing and eye movement analysis. The engineers, meanwhile, were following courses in gastro-intestinal endoscopy, non-invasive optical sensor systems, reconstructive surgery and diagnosing and treating coronary lesions and respiratory problems.

There were also two major workshops and European Courses run after the main conference by ESEM, the European Society of Hypertension, and COMETT, the EC's Programme for promoting university-industry joint training programmes in advanced technologies.

Three Themes

Each of the three days of the official Conference were dedicated to one topic, and began with a series of invited lectures:

- **Bio-imaging techniques:** present and future applications of MRI spectroscopy, ultrasound, PET-SCAN and surgical endoscopy techniques;
- **Medical implants and artificial organs:** developments in heart, neural, bone and pancreas implants.
- **Biosignal processing, modelling and medical networks:** Emerging technologies and opportunities in health care telematics, cardiovascular modelling and signal processing, automated molecular cytogenetic analysis and biosensors.

Each day ended with a series of scientific sessions, workshops and round table discussions. The 28 scientific sessions featured around 200 oral presentations on the day's topic. The eight workshops and round-tables covered subjects as diverse as movement analysis, tissue banking and whether a relationship exists between electromagnetic fields and cancer. There were also three symposia, covering the economics of medical imaging techniques, bioengineering education and coordinating European research and health services.

One of the workshops focused on coordinating European-level biomedical research, and featured presentations of all the relevant EU Programmes in the field: Biomedicine and Health (or BIOMED), Standards Measurements and Testing, Telematics in Health Care, and Technology Initiative for Disabled and Elderly People (TIDE).

The leaders of the 40 biomedical engineering projects currently underway under the BIOMED Programme also met at the Conference to review their progress. By 1994 the Programme had grown to include around 400 Concerted Actions networking together over 6,300 research teams from 17 countries.

The results of the first Call for Proposals under the Fourth Framework Programme, launched last December, are currently being evaluated, and look set to fulfil the goal of the conference - to bring engineers and doctors together to make health care more efficient and effective. □

Contact
Mrs V. Thévenin, EC, DG XII, Brussels
Tel: +32 2 295 0034
Fax: +32 2 295 5365

► CONFERENCES

EUROPEAN QUALITY DYNAMICS
28-29 September, Luxembourg

Service quality is rapidly being recognised as the competitive differentiator for both manufacturing and service industries. This conference - 'Quality Management in Services and Manufacturing' - will emphasise the role of leadership in influencing people and processes to achieve total customer satisfaction. It is organised by the Luxembourg Ministry of Economics, with the support of the Innovation Programme

Contact: ITOC

Tel: +352 45 66 80; **Fax:** +352 25 01 51

FOURTH INTERNATIONAL CONFERENCE ON SCIENCE AND TECHNOLOGY INDICATORS
5-7 October, Antwerp (Belgium)

Subtitled 'Performance at the National, Regional and Institutional Level', this conference is aimed at researchers in the field of science and technology indicators, policy makers and politicians interested in science and technology, private sector R&D managers, information scientists and science publishers and journalists. It focuses on the:

- design, development and use of science and technology indicators in science policy, focusing on their potential and limitations;
- relationship of indicator research to science and technology studies in general;
- advances in information systems on science and technology.

Contact: Mrs O. van Driel, Centre for Science and Technology Studies

Tel: +31 71 27 39 09; **Fax:** +31 71 27 39 11; E-mail: office@cwts.leidenuniv.nl

COST INTERACTION CONFERENCE 95
9-11 October, Basel (Switzerland)

Well over 1,000 participants are expected to this major multidisciplinary event, which aims to:

- promote the interaction and sharing of experience between researchers from different domains;
- demonstrate the scale and achievements of COST, its priorities and future plans;
- encourage further synergy with other European research initiatives (EU Programmes, EUREKA)
- draw lessons from the experience of COST for the future.

The focus will be on evaluating the contribution of science and technology - particularly COST's Concerted Actions - to the development of society and the improvement of quality of life. Themes will include the reasonable exploitation of the Earth's resources, the development of new processes, products and services, and the human and social relationship with science and technology.

There will also be a poster session of over 100 COST Actions and an exhibition of prototypes, products and services resulting from COST Actions. Bilateral meetings between participants will be organised through the use of a computer service provided by the Dutch EUREKA Office.

Contact: COST Interaction Conference 95

Tel: +32 2 295 46 17; **Fax:** +32 2 296 42 89;

E-mail: B.Reichert@mhsg.cec.be

LANGUAGE ENGINEERING CONVENTION 1995
16-18 October, London (UK)

Organised by the UK Department of Trade and Industry in collaboration with the EC, the convention aims to promote the transfer of emerging and current technologies in speech and language and to integrate new language-processing tools.

The EC will present the Language Engineering area of the new Telematics Applications programme (1994-1998). Technical papers presented will cover office systems, translation, multilingual interfaces, language aids for the handicapped, language training, multimedia publishing, standards and much more. A final day session will discuss subjects as diverse as social policy and the relationship between theory and technology.

Contact: Mrs. Linda Prior, DTI

Tel: +44 171 215 1256; **Fax:** +44 171 215 1966

EVALUATION OF NEW TECHNOLOGY FOR INDUSTRIAL APPLICATIONS
17-21 October, Prague (Czech Republic)

European Symposium Specialised in Evaluation of New Technology for Industrial Application, or ESSENTIA '95, is an international technology transfer conference covering 15 technological areas ranging from Agriculture to Electronics. The Programme includes:

- Technology Transfer Forum. Research centres from Eastern Europe will present the latest technologies, innovations, inventions and know-how;
- International Trade Fair. A large range of companies from industrialised countries will present their products and services to Eastern European visitors;
- Partnership Development Centre. SMEs will have the opportunity to present their activities and production programmes to potential partners seeking joint ventures, business contacts and collaborations;
- International Conference. A conference on innovation and technology transfer will include lectures and presentations on new technologies and new technology applications.

Contact: ESSENTIA '95

Tel: +42 2 24511498; **Fax** +42 2 325630

SECOND WORLD CONGRESS ON INTELLIGENT TRANSPORT SYSTEMS '95
9-11 November 1995, Yokohama (Japan)

One of a series of annual Intelligent Transport Systems (ITS) World Congresses, the conference is co-sponsored by the European Road Transport Telematics Implementation Coordination Organisation (ERTICO). The aim of the congresses is the mutual exchange of research results and cooperation in order to promote the use of ITS.

Executive sessions will consider recent developments, future visions, challenges and 'next steps' in realising ITS. Technical sessions will also be held on Generic and specific technology, Systems and applications and Architectural and institutional issues.

Contact: ERTICO S.C.

Tel: +32 2 538 02 62; **Fax:** +32 2 538 02 73

FISA-95: Fission Safety
20-22 November, Luxembourg

The Reinforced Concerted Action on fission safety (1991-1995) ended this June, and emphasised research on confining radioactivity under severe accident conditions in a Light Water Reactor. FISA-95 will address the three main areas of the Programme:

- accident progression analysis;
- behaviour and qualification of the containment system;
- accident management support.

Contact: Mrs L. Eisen, DG IX
Tel: +352 4301 33164; **Fax:** +352 4301 34851

NOTE

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

CD-AJ-95-004-EN-C

► PUBLICATIONS

■ Managing Innovative and Transnational Training Projects

Commissioned by ICOM (the UK federation of worker co-operatives) and funded by the EC, this £18 book is aimed at those initiating, promoting, delivering and funding vocational and/or professional training. It contains:

- an overview and analysis of the British participation in 256 projects in the EC's EUROFORM Programme of innovative and transnational training projects (1990-1994), grouped by sector and cross-referenced to transnational partners;
- a guide to good practice: finding suitable partners, planning exchange visits, a detailed phase-by-phase consideration of potential problems and how to overcome them, practical tips and traps, summary checklists and eleven detailed project case studies;
- a Transnational Partners Directory - a complete list of all transnational partners, grouped by country and cross-referenced to the relevant projects.

Contact: ICOM
Tel: +44 113 2461 737/8;
Fax: +44 113 2440 002

■ Health Technology and Informatics

A series of studies on health technology and informatics has been published describing projects supported by the EC's AIM Programme for health telematics (1990-1994). Recent titles include:

- Systolic and diastolic function of the heart (Vol. 21);
- Healthcare card systems (Vol. 22);
- Health information society and developing countries (Vol. 23);
- Health in the new communications age (Vol. 24).

Contact: IOS Press/Lavis Marketing
Fax: +44-1865-7470079; E-mail ib@ios.nest.nl

■ CD-ROM: EDI & ISDN for the Global Information Society

Published by DG III (Industry) in English, French, German, and Dutch, this free CD-ROM presents the results of the projects developed during 1994/1995 under the TEDIS Programme.

TEDIS was launched in 1988 to coordinate work on the development of trade electronic data interchange (EDI) systems in the EU. The second phase of the programme, launched in 1991, aimed to ensure that EDI systems were established to the best effect and to mobilise the necessary resources to achieve this at EU level.

The CD-ROM presents EDI and Integrated Services Digital Network (ISDN) projects whose purpose is the delivery of telecommunications services and applications combining the use of EDI and multimedia supported by Euro-ISDN. The projects presented are:

- EUROMED: Medical technologies;
- EUROPRODUCT: Furniture industry;
- COBODATA: Building sector;
- FORTIUS: Electronic commerce and intermediation;
- EDIRA: EDI naming;
- GEN-I-E: Study of the generalisation of EDI & ISDN.

Contact: Mr P. Husson, DG III, TEDIS Programme
Fax: +32-2-2990286; E-mail: patrice.husson@dg3.cec.be

■ AIR: NON-FOOD PROJECTS EUR 16206

DG VI (Agriculture), DG XII (Science, Research and Development), and DG XIV (Fisheries) have published this catalogue of 113 non-food projects resulting from the 1990-1994 AIR Programme (Agriculture and Agro-Industry, including Fisheries).

The projects concern alternative land use, production and processing of biological raw materials for bio-energy, chemicals, polymers and forestry products from renewable resources. It contains detailed information on each project, including objectives, content, type, duration and the name and address of the project coordinator and participants.

Contact: European Commission, DG XII/E-2
Fax: +32 2 296 43 22

SUBSCRIPTION FORM

INNOVATION & TECHNOLOGY TRANSFER IS FREE

- Keep up to date on all EC actions relevant to innovation and technology transfer: General Policy News, News from the Innovation Programme, Results and Activities of the Specific Programmes, Case Studies, Upcoming Conferences, New Publications.
- To subscribe to *Innovation &Technology Transfer,* fill in and fax this form to:

RTD HELP DESK: FAX: +352 4301 32 084

NAME: ..... ADDRESS: .....
....
ORGANISATION: ....
....

- For bulk quantities, state the number of copies you want to receive: .....
- Future editions will be produced in three languages. Please indicate your preference: ❑ English ❑ French ❑ German