Eureka 1992

ANNUAL PROGRESS REPORT 1992

INTRODUCTION

EUREKA: An innovative tool

Launched in 1985, EUREKA has already changed the face of Research and Development cooperation within Europe. It is an innovative tool helping Europe to master and exploit the technologies, which will prove decisive in the worldwide race for competitiveness and a better quality of life.

EUREKA interacts with companies and research institutes in EUREKA member countries and helps them pool their resources in the development of leading edge technology.

The Annual Progress Report 1992 provides a general picture of EUREKA's project portfolio as at 15th October, 1992. The more than 550 projects covered in this report have a total estimated cost of more than 8.7 billion ECU and involve some 3,535 participants, 1,620 of which are larger companies, 524 small and medium sized companies, 1130 research institutes including universities and 261 other organisations. 32 participants come from non-member countries. 22 of these are from other European countries.

EUREKA's members are:

Austria
Belgium
Denmark
Germany
Finland
France
Greece
Hungary
Iceland
Ireland
Italy
Luxembourg
Netherlands
Norway
Portugal
Spain
Sweden
Switzerland
Turkey
United Kingdom
Commission of the European Communities

EUREKA: An open initiative

"Bottom up" is EUREKA's ground rule. Participants have full responsibility for defining and implementing their scientific and technological cooperation projects. They are their own judges of the best course towards new markets for Europe.

EUREKA's structure is built to harness the dynamism and innovative strength in Europe's industry and research. The ground rule prevents unnecessary bureaucracy and provides a simple set of criteria for establishing EUREKA projects. The most important of these criteria requires the project to:

- involve at least two partners from different EUREKA countries
- aim at securing a significant technological advance in the product, process or service concerned
- aim at applications in the civilian sector.

Any company or research institute in a EUREKA member country, which has a proposal fitting the EUREKA project criteria is invited to contact the relevant National Project Coordinator (NPC) listed on pages 46-47 in this report.

The NPC will advise and assist the applicant and handle further contacts within the EUREKA structure, thus allowing industry and research institutes to concentrate on the content and business aspects of the proposed projects. The application procedure to establish or join a EUREKA project is very simple and only requires a few hours' work.

If the application is well founded the project can, in most cases, be up and running within two months.

EUREKA: Added value

EUREKA projects and participants are eligible to carry the EUREKA Seal - an internationally recognised hallmark of excellence.
The participants will also be included in EUREKA's open database which lists by name and technological skills some 3,000 of Europe's foremost companies and research institutes. As such, a EUREKA participant is marketed all over Europe and is likely to attract attention and contacts from partners searching for specific technological skills to develop new products, processes or services.

EUREKA also offers itself as a forum for direct dialogue between governments and standardisation bodies on the one hand and EUREKA participants who are in need of joint industrial standards or who are hampered either by technical obstacles to trade or by barriers to public procurement on the other.

EUREKA projects have in most cases access to government financial backing of their research and development activities. The participants themselves are, however, expected to raise adequate funding.

EUREKA also acts as a contact point and support for participants seeking access to private funding sources, such as venture capital.

EUREKA possesses considerable experience in crossborder cooperation and will assist participants who request help in drafting project contracts.

EUREKA:
A flexible decentralised structure

National Project Coordinators

The NPCs are the operational core of the EUREKA network.
They run the national EUREKA offices and are the interface between participants and the EUREKA network. They also form a link with the relevant national authorities and are in close contact with their counterparts in the other EUREKA member countries.
Through the NPC network, the national EUREKA offices will usually be able to find suitable partners for national industry or research institutes and help them create sound projects.

EUREKA Secretariat

The Secretariat is EUREKA's central support unit located in Brussels. It gathers and distributes information on projects and EUREKA as such, runs the project database, assists the various bodies of the initiative, facilitates contacts between partners and promotes the EUREKA concept in conjunction with national authorities.

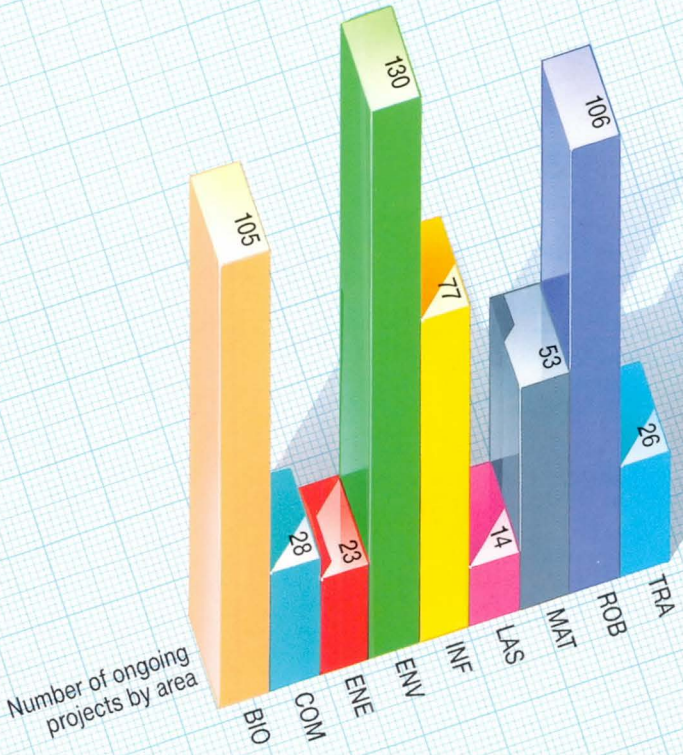
High Level Group

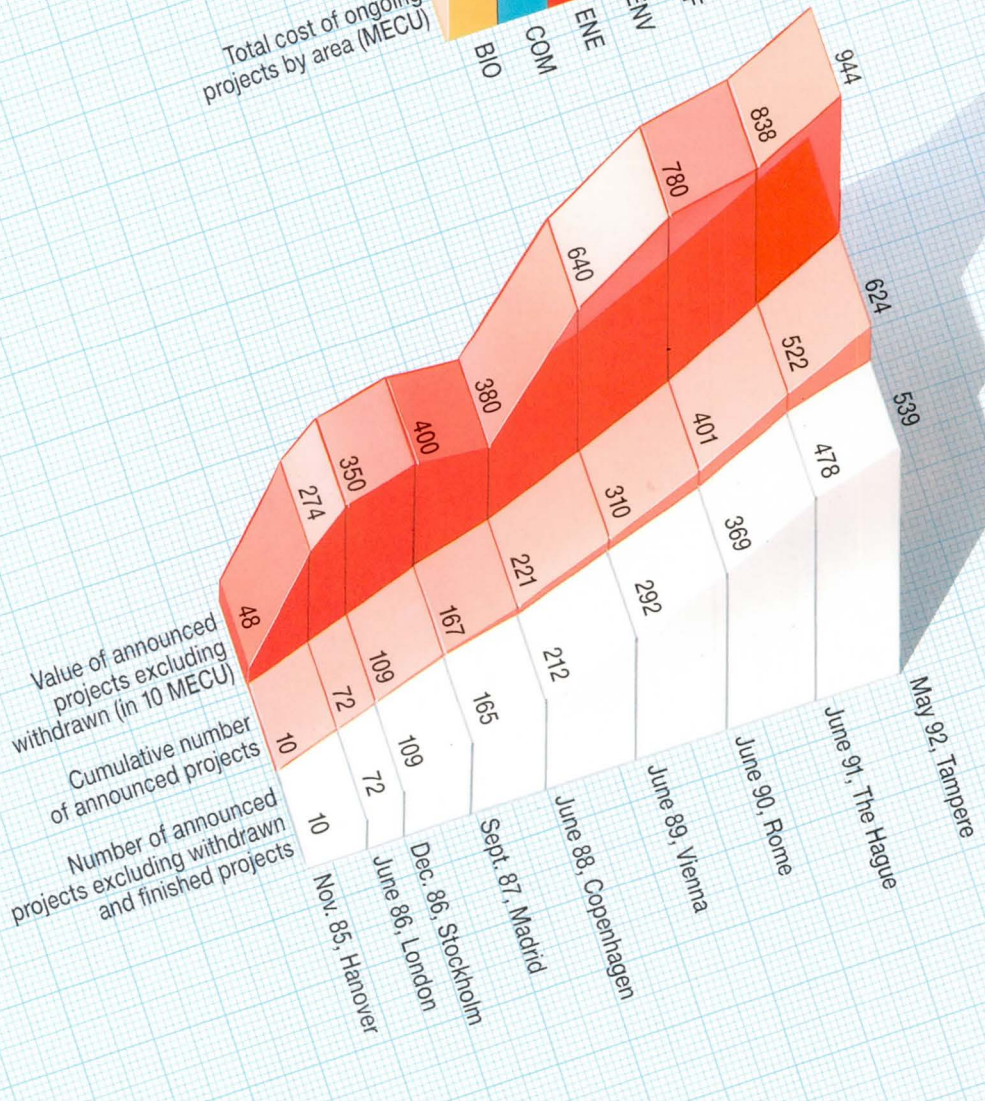
This Group is made up of High Level Representatives appointed by the EUREKA governments and the Commission of the European Communities. It formulates general EUREKA policy for approval by the Ministerial Conference. It also monitors the implementation of ministerial decisions.

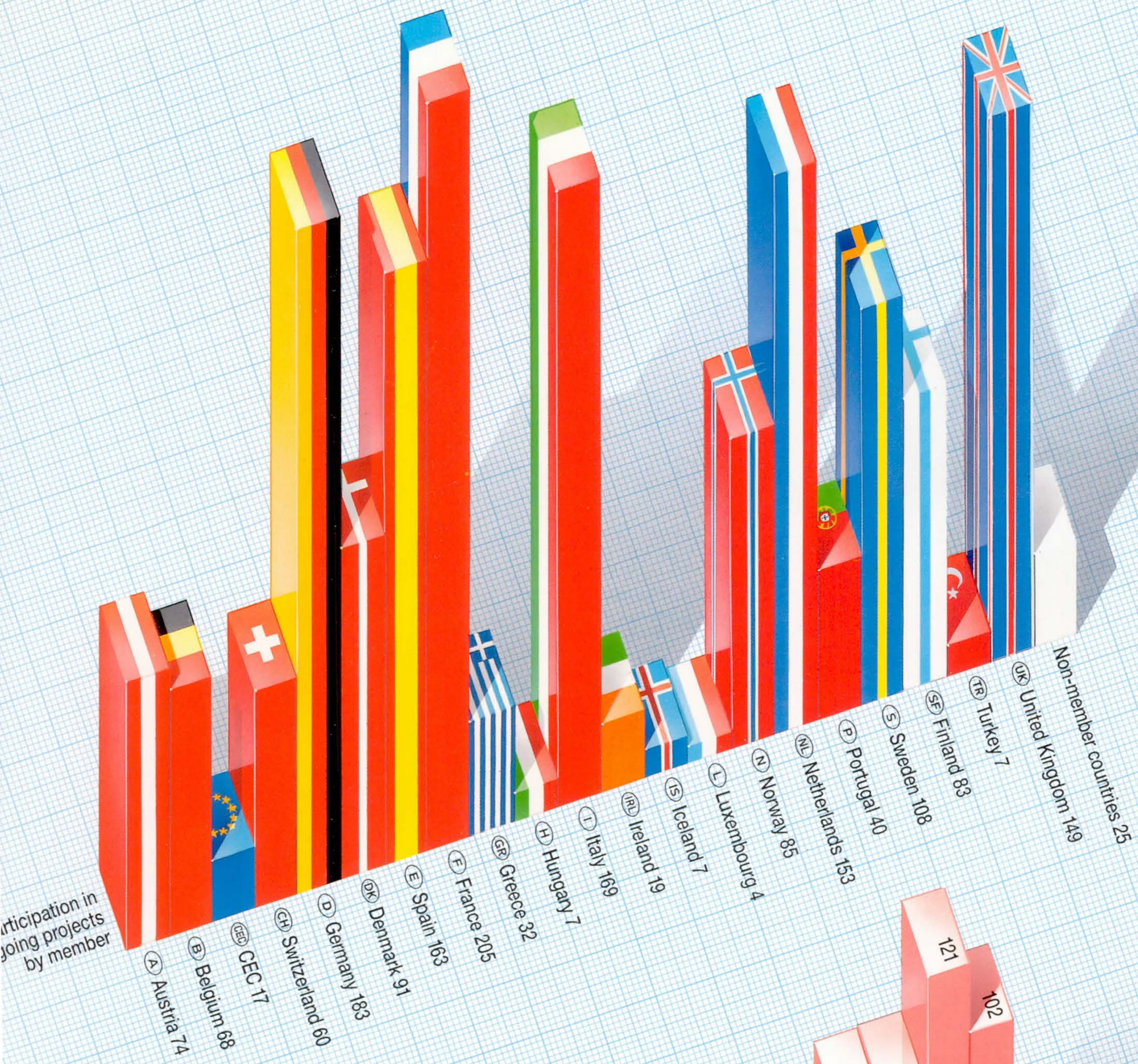
Ministerial Conference

The Ministerial Conference is the political body of EUREKA and is responsible for furthering the Initiative and its aims.
It is composed of Ministers from the 20 EUREKA member countries and a Commissioner from the European Communities.
It meets a minimum of once a year to lay down the political guidelines for EUREKA's work and officially announce the new EUREKA projects launched since the previous Ministerial Conference.

STATISTICAL TABLES



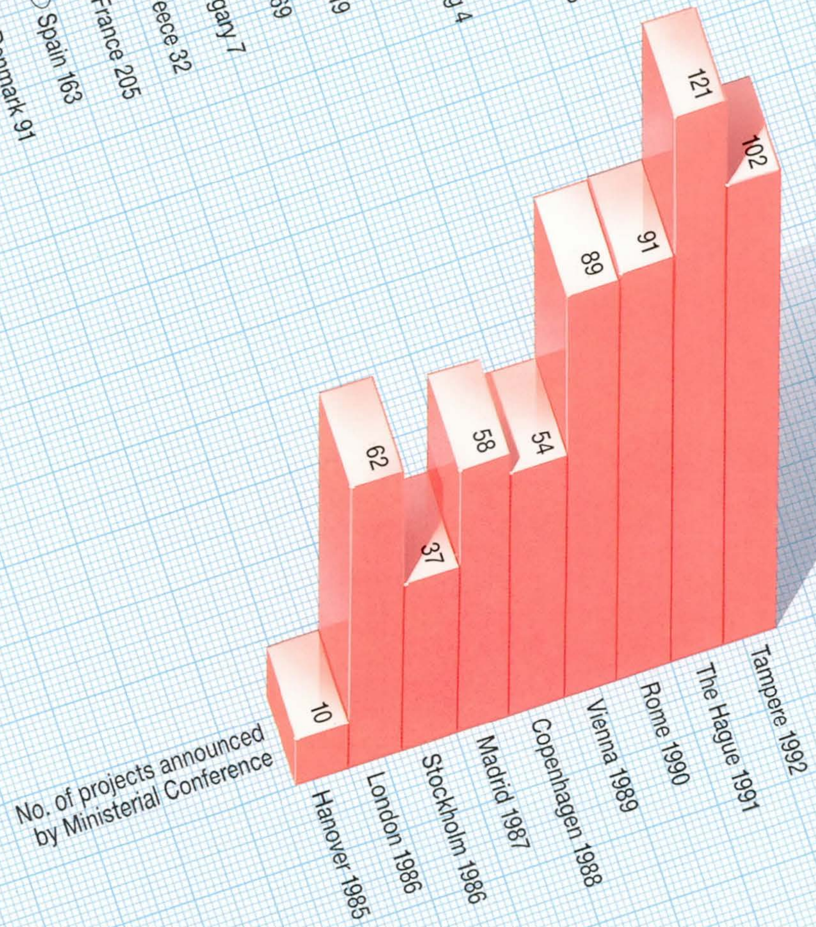




Abbreviations used in this report:

BIO	Medical and Biotechnology
COM	Communication Technology
ENE	Energy Technology
ENV	Environment Technology
INF	Information Technology
LAS	Laser Technology
MAT	Material Technology
ROB	Robotics and Production Automation
TRA	Transport Technology

Source of data in this report:
EUREKA database as at 15 October 1992



INTRODUCTION BY MR. PEKKA TUOMISTO

Mr. Pekka Tuomisto
Minister of Trade and Industry, Finland

During its seven years of existence EUREKA has shown great dynamism and ability to react to changes and the changing needs of European industry, economy and infrastructure. This was also the case during the Finnish Chair term. The positive development of project activities continued and cooperation within Europe was widened and deepened, in which the adoption of Hungary as a member of EUREKA formed a most important milestone.

To guarantee further positive development a new Medium Term Plan (MTP) for EUREKA covering the period 1992-1996 was created under the Finnish chairmanship and adopted at the Ministerial Conference in Tampere in May 1992.

The new MTP is - as was the first one adopted at the Ministerial Conference of Vienna in June 1989 - based on the general principles of EUREKA as stated in the Hannover Declaration. It integrates the experience gathered over the years, the information obtained through the formal assessment performed under the Dutch chairmanship and the recent political developments which have occurred in Europe.

In the new MTP the strategic priorities of EUREKA are highlighted by the following six principal result areas:

- Quality and diversity of EUREKA projects,
- Transparency and synchronisation of EUREKA procedures,
- Support for the successful implementation of EUREKA projects,
- SME participation,
- More integrated European research and development system and
- Openness of EUREKA to other European countries.

These priority result areas reflect the challenges the current and emerging development in Europe presents to EUREKA. These areas were also a main focus during the Finnish Chair term.

Projects are the core of EUREKA and thus the progress of the ongoing projects and the high number of new projects launched during the Finnish Chair term (102) are to be warmly welcomed. The fact that more and more results are emerging from the projects as indicated by the case histories presented to the Tampere Ministerial Conference, is to be noted with great satisfaction.

As far as project brokerage and supportive measures are concerned several types of activities were carried out taking into account the recommendations of the The Hague Ministerial Conference.

The National Project Coordinator (NPC) offices and the NPC network including the EUREKA Secretariat (ES) form the basis of all EUREKA operations. Through this, they have a major responsibility to maintain and further strengthen the bottom-up character of EUREKA. An efficiently and synchronously functioning network also contributes to the adequate involvement of all EUREKA countries. The measures carried out to increase the efficiency of the NPC network together with the adaption of the new database and the revision of the Memorandum of Understanding (MoU) on the EUREKA Secretariat between the members gave further impetus for the project activities.

In the field of supportive measures a thorough study on the implementation of High Definition Television (HDTV) related supportive measures in the various EUREKA countries served as a good pilot project to identify the potential problems connected with a strategic type of a project.

The SMEs have, over the past few years, attracted much attention in EUREKA project brokerage activities. They play a major role in industrial activity and employment in most European countries and are of utmost importance to the European economy. Nevertheless, they have a quite limited activity in R&D in general and their participation in EUREKA is not representative of their place in the economy. The study of the SME activation campaigns - procedures and results -in various member countries which was carried out and the activation seminars organised created a basis for more intensive SME participation. Much work is still to be done in this very important area.

The aim "to increase competitiveness of European industry and to improve the European infrastructure" is common to several European and national R&D programmes. To be successful in this to the greatest possible extent, the resources available in Europe should be used in a complementary way.

In the analysis carried out by the Finnish Chair an increasing trend in the positive interaction between EUREKA and EC R&D programmes was clearly noted. It is easy to agree with the wish of the Tampere Ministerial Conference to see significant and tangible further development in this regard. It was also recommended that this should be done whilst preserving the specific characteristics of both the EUREKA initiative and the community programmes.

To respond to the profound changes in Europe and to the recommendations of the previous Ministerial Conferences, extensive seminar activities were carried out by the Finnish EUREKA Chair together with the EUREKA Secretariat to distribute information on EUREKA and to assist in establishing a network of National Information Points (NIP) in European non-member countries. The information and cooperation seminars, held in Poland, Hungary, the Russian Federation, Czechoslovakia, Rumania, Estonia, Latvia, Lithuania, Albania and Slovenia were very important concrete steps in the process that would enable Central and Eastern European countries to become more closely connected with EUREKA.

A very welcome outcome of these activities was a positive response to the application for EUREKA membership from Hungary. The Tampere Ministerial Conference evaluated to its satisfaction Hungary's democratisation process and the stabilisation and market orientation of its economy, and the active interest and positive cooperation of Hungarian partners within the EUREKA framework, the presence of a functioning EUREKA National Information Point (NIP), the positive cooperation prospects in terms of appropriate intellectual and industrial property rights and export control arrangements.

The EUREKA chairmanship was a pleasant, challenging and rewarding task for Finland. The help and support from all of the EUREKA members and the EUREKA Secretariat deserve our warmest thanks. With a very great confidence we hand over the chairmanship to France - the initiator of EUREKA -wishing every success during the coming Chair term.

INTRODUCTION BY MR. HUBERT CURIEN

Mr Hubert Curien, French Minister of Research and Space

EUREKA: Towards a European technological Community

Consolidation is the term best applied to the French Chair. This encapsulates a number of concepts: the idea of continuity and the need to further pursue initiatives launched back in 1985, particularly those of the Dutch and Finnish Chairs; the idea of firmness and the upholding of EUREKA's founding principles, such as priority for initiatives from industry; finally, the idea of strengthening and development in line with the desire to see the emergence of large-scale projects able to give a new impetus to EUREKA and more concrete form to the whole concept of a European technological area.

The activities of the French Chair comprise five major thrusts:

- increasing the involvement of Small and Medium sized enterprises (SMEs) in EUREKA projects, in particular as project leaders;
- facilitating the emergence of new initiatives in four fields of strategic importance to European industry;
- making an initial assessment of the programme's industrial and socio-economic effects;
- strengthening relations with the EEC;
- developing relations with the countries of Central and Eastern Europe.

EUREKA is open not only to high technology SMEs, but also to those in the traditional sectors in order to enhance their research and development effort and thus allow them to achieve a high profile which will open the door to contacts with larger companies, whether as partners, suppliers or customers.

Although SMEs are well represented in the EUREKA programme (almost one third of participants), their role as project leaders is still too limited. There is no reason why an SME cannot be leader of a EUREKA project, even if it does not have its own research team. If a small firm joins forces with research laboratories and technical centres it can initiate highly innovative research.

Innovative and dynamic SMEs have already realised the benefits to be gained from co-operating with partners beyond their own borders:

- the opening up of markets and improved access to new know-how and techniques;
- the sharing of risks and resources;
- the achievement of significant economies of scale, allowing an effective response to market demands.

At European level, what is required is making these firms more aware of the opportunities available to them and helping them to work together. Such an effort should, for example, be based on the setting-up of a network of European bodies or agencies which promote the technological development of SMEs.

Special attention will also be devoted to the synchronisation of financing schemes for SME projects among the EUREKA member countries.

Projects already exist which bring together virtually all the European producers in a given sector: PROMETHEUS for the motor industry, JESSI for semi-conductors and HDTV in electronics.

During its chairmanship, France intends to organise industrial fora in order to promote the emergence of projects proposed by firms in four fields which have been judged to be of strategic importance.
Data processing: the main task is to develop the key elements for computer systems and application technologies and software in two areas: the language industry and medicine.
The motor industry: in this sector of great economic importance there is a need to promote the emergence of cooperative projects in which the subcontractors and SMEs must be closely involved. This programme could be based on the concept of the environmentally-friendly vehicle (clean, economical, intelligent and recyclable).
The factory of the future: faced with Japan's IMS programme and the American CALS operation, Europe must be equipped to play a major role in the international competition. The EUREKA initiatives in this field (EUROLASER, FAMOS and MAINE) will be supplemented by schemes concerning other aspects (organisational methods, communication protocols, production tools, training, etc.). Consistency between these technological, organisational and human elements is the basic rationale underpinning the concept of the "factory of the future", at the heart of industrial competitiveness.
Waste: In the field of environment protection, waste management and treatment is a very real challenge facing today's industrialised societies and the subject of ever hardening public opinion. There is more need than ever to develop technological partnerships in this field.

EUREKA has been running for seven years now and numerous projects have reached or will soon be reaching the production and marketing stage. A study of their industrial and socio-economic impact will make it possible to assess the results.
This assessment is being carried out by a network of national teams of independent networks headed by a coordination committee. The results will allow us to ensure that people are better informed of EUREKA and its effects on the daily life of Europeans.

The Dekker Report, drawn up under the Dutch chair, has shown that it was both possible and desirable to establish complementarity between EUREKA and the Community programmes, while being careful to respect their individual characteristics. The French Chair will therefore propose measures likely to promote a better relationship between EUREKA and the Community's R&D programmes.

Finally, it will maintain and further develop relations with third countries in order to allow the emerging democracies in Central and Eastern Europe to play a more active part in building our common house: Europe.

EUREKA's task is to help develop a genuine European community in the area of applied research. This must certainly include researchers from industry and the public authorities, but also and more generally all those who are responsible for technology in businesses and their chief executives in particular. Corporate heads must have a technological strategy for their company; the Europe of EUREKA is the basis on which they can found this strategy in order to develop at European level and face up to the world market.

EUREKA IN 1992

Hungary Joins EUREKA

EUREKA responded to the upheavals in Eastern Europe swiftly and positively from the beginning. In 1990 and 1991, changes to EUREKA's operating rules made it easier for organisations from these countries to contribute to EUREKA projects. This year, at the Ministerial Conference held in Tampere (Finland), Hungary joined the EUREKA family.

"Whilst other programmes we have joined recently are concerned with basic research, and are defined at high levels, EUREKA embodies market-based decision making, something we need in Hungary very badly," explains Minister Professor Ernö Pungor, President of the Hungarian National Committee for Technological Development. "EUREKA's bottom-up nature will encourage the idea that basic research should be developed into products, and that this is primarily the role of the private sector."

He thus sees EUREKA as an important tool for Hungary's restructuring process, and hopes that collaborations with foreign companies will result in keeping researchers in the country, in employment and developing marketable products.

Ministerial Conference

Besides welcoming Hungary as a new member, the 1992 Ministerial Conference announced 102 new EUREKA projects at a total value of 627 million ECU, thereby bringing the EUREKA project portfolio by 22 May to 539 projects at a total value of 8.840 billion ECU.

The Ministers also endorsed a new Memorandum of Understanding on the EUREKA Secretariat and welcomed the interest from EUREKA member countries to take on the EUREKA Chairmanships.

In addition to Norway, Switzerland and Belgium, which were appointed by the IX Ministerial Conference in The Hague to succeed France as chair countries, the X Ministerial Conference welcomed The United Kingdom as the chair country for 1996-1997, Portugal for 1997-1998, Turkey for 1998-1999 and Germany for 1999-2000.

Five French Priorities for EUREKA

In May 1992 Finland passed the EUREKA Chair over to France, whose Minister for Research and Space, Mr Hubert Curien, presented a 1992-93 action programme based on five priorities.

These are:

- the development of new projects of a "strategic" nature in challenging industrial areas. These include waste processing, information and communication technologies and advanced manufacturing.
- clarifying the relationship between EUREKA and the European Community's research programmes.
- promoting the participation of SMEs in EUREKA.
- further opening up EUREKA to organisations from Central and Eastern European countries.
- introducing a systematic method for 'taking stock' of EUREKA's effectiveness

Increased Synergy EUREKA - EC

The Vice-President of the Commission of the European Communities, Mr. P.M. Pandolfi, presented at the Ministerial Conference a discussion paper on interaction between the EC R&D activities and EUREKA. The paper underlined the fact that synergy between the two has already increased substantially in the past years. It further pointed to some new opportunities for interaction, such as further consultations to define some priority technology projects, specific Community funding for the financing of research and innovative projects for SMEs and strengthening, at all levels, of consultations and information exchanges between EUREKA and the Community.

The ministers welcomed the statements and suggestions on this matter by Mr. Pandolfi, and stressed the need to preserve the specific charcteristics of both the EUREKA initiative and the Community Programmes, while increasing the synergy between them.

New Medium Term Plan

A new Medium Term Plan for EUREKA's activities 1992-1996 was approved at the 1992 Ministerial Conference. The new Plan integrates the experiences gathered over the years, the information obtained from the assessment performed under the Dutch chairmanship and the recent political developments which have occured in Europe.
The Medium Term Plan points to six priority areas for EUREKA in the coming years:

- the quality and diversity of EUREKA projects,
- transparency and synchronization of EUREKA procedures,
- support for successful implementation of EUREKA projects,
- increased participation of small and medium-sized enterprises (SME),
- increase in synergy between EUREKA and EC R&D programmes and other European programmes
- increase in cooperation with the Central and Eastern European countries.

EUREKA Week, Tampere

A number of other EUREKA activities were held alongside the X Ministerial Conference. The EUREKA Seminar was held in collaboration with the Engineering Associations and the Association of Graduate Economists. The seminar was opened by the Finnish Minister of Trade and Industry and featured speakers from Finland, France, Germany and the USA.
A special course in HDTV broadcasting and technology was held in collaboration with the Tampere University of Technology and the European Association for Signal Processing, EURASIP.
Parts of the impressive new Tampere Hall housed a large EUREKA exhibition, where a number of EUREKA projects exhibited their products alongside a general EUREKA exhibition.
Finally, 40 specially invited journalist from all over Europe took part in an International EUREKA Press Seminar, which gave them the opportunity to attend all events in the EUREKA week and get a thorough information on EUREKA's activities.

Waste Processing Conference

As part of the French Initiative for developing projects of a strategic nature, the first Industrial Convention on Waste was held in Angers on 22-23 September. Four hundred participants from 25 countries, representing both industry and government, attended to discuss the problems and opportunities represented by waste disposal.

The meeting gave precedence to project presentations and individual meetings between firms, including many SMEs. Not counting informal contacts, over 350 private meetings were organised. There was also a specialists' debate on reducing waste, processing it and recycling it into raw materials.
Theme workshops were held on: physico-chemical and biological processing; inert methods; packaging, recycling and upgrading; soil rehabilitation; heat processing; recycling and upgrading. Each session was attended by an average of 100 participants.

The need for further simplification and harmonisation of regulations throughout Europe was also highlighted.

JESSI in '92: A New Approach for the Main Phase

Dedicated to closing the technology gap between the European semiconductor industry and its American and Japanese competitors, JESSI's first phase finished in December 1991. 1992 was the first year of JESSI's main phase, which has a budget of 3,800 MECU.

The experiences gained in the earlier phase have led to a basic restructuring of the JESSI programme. JESSI now focuses on a number of 'project clusters', each made up of several individual projects with convergent objectives. Most feature one 'flagship project', which defines the thrust of the cluster.

In addition, the overall programme is more clearly oriented towards direct applications. Main activities concentrate on HDTV, Digital Audio Broadcasting, Broad Band ISDN, Mobile Cellular Radio, and Automotive Safety Electronics.

EUREKA in South America

On 6-7 October this year, national EUREKA representatives held a meeting in Cayenne, in the French Department Guyana. Apart from discussing issues relating to EUREKA's future in Europe, the members were there to be introduced to two South American initiatives, both closely related to the EUREKA European experience.

- IBEROEKA: created in the broader framework of CYTED (Ciencia y Tecnología para el Desarollo), this multilateral scientific and technological cooperation programme brings together 19 Latin American countries plus Spain and Portugal. Aiming to increase the region's productivity and industrial and economic competitiveness through the cooperation of industries and research centres, IBEROEKA - as its name implies - has been set up with a structure strictly identical to EUREKA's.

- BOLIVAR-ENLACE: inaugurated in March 1992, this cooperation programme has the objective of achieving technological integration between South American and Caribbean countries. Also inspired by EUREKA, with which cooperation agreements have been concluded, BOLIVAR receives support from many international organisations, such as Latin American System and UNESCO.

EUREKA: Materials in Space

EUREKA helped organise a Symposium/ Workshop on "Advanced Materials for Lightweight Structures", 1992 in The Netherlands in late March with ESTEC (European Space Research and Technology Centre) and BRITE/EURAM. The three-day event concentrated on the use of new materials and manufacturing processes in this field.

New Publications

1992 saw no less than four new Project Folders, containing two-page articles on projects in the areas of Transport (19 projects covered), Biotechnology (58), Energy (20) and Information Technology (70) respectively.

In addition, new booklets were published to help Small and Medium Sized Enterprises (SMEs) take more advantage of EUREKA, and to explain and promote the value of Supportive Measures. Both booklets aim to help specific target groups understand what EUREKA offers, and how it is relevant to them. For a wider audience a new EUREKA Vademecum was published describing the EUREKA history and stucture and how to initiate or join EUREKA projects.

Two new books also saw the light of day: A new book looking back on EUREKA's first five years carrying spectacular pictures from the Event of Excellence, the actual Jubilee festivities, and a book telling the story of EUREKA's remarkably fast response to the demands for co-operation from countries in Central and Eastern Europe.

Finally a multivision show demonstrating EUREKA's success in bringing finished products to the market was created and is available on video.

Third Interparliamentary EUREKA Conference

The tradition of annual interparliamentary conferences was continued this year by the Parliament of Finland, which on 11-13 March hosted colleagues from other national parliaments and the European parliament.
The parliamentarians gave strong support to the six priority areas outlined in the new EUREKA Medium Term Plan, and they underlined the importance of using EUREKA to solve environmental problems.
The parliamentarians also expressed their wish that the Uruguay round negotiations in the field of public financing should not affect the public aid to the implementation of EUREKA projects.

EUREKA Day at EXPO '92

With the present EUREKA chairman Mr. Hubert Curien, French Minister of Research and Space, and his Spanish colleague Mr. D Claudio Aranzadi, Minister of Industry, Trade and Tourism leading a panel of EUREKA high level representatives, EUREKA made its mark on the World EXPO in Seville. The 20 member countries and the Commission of the European Communities nominated 7 September as "EUREKA Day" in Seville, and used it to both illustrate EUREKA's contribution to European high-technology and as a forum for discussing its future.
The EUREKA message was driven forcefully home in front of an invited audience of some 500 industrialists and researchers from all over Europe. "EUREKA's main priority is concrete projects leading to products or processes", concluded minister Curien.

NIP network

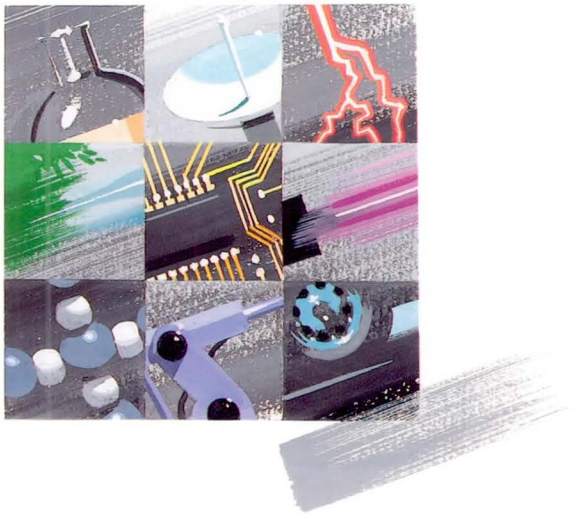
1992 saw the establishment of a network of EUREKA National Information Points in European non member countries. Special information seminars were carried out by the Finnish EUREKA Chairmanship assisted by the EUREKA Secretariat in Poland, Hungary, the Russian Federation, Czechoslovakia, Rumania, Estonia, Latvia, Lithuania, Albania and Slovenia. This network, which cooperates closely with the EUREKA National Project Coordinators, enables the Central and Eastern European countries to become more closely connected with EUREKA.

EUREKA members in Nantes

The biannual ANVAR Days in France took the occasion of the French EUREKA Chairmanship to invite all EUREKA members to exhibit their national EUREKA organisation at the ANVAR days. For the first time ever all EUREKA members were present as individual units in an exhibition, which made an impressive example of the diversity and flexibility which is the real strength of EUREKA.

TECHNOLOGICAL AREAS

In this section the 562 projects are classified into 9 technological areas.
Each area is described separately in a way which provides a short overview of the EUREKA activities in the area. It is not possible in this Annual Project Report to list all the EUREKA projects in each area, but a full list is available upon request from the national EUREKA offices or at the EUREKA Secretariat in Brussels.



SUPPORTIVE MEASURES

The successful development and implementation of the results of EUREKA projects may require certain "enabling conditions" to be met which are beyond the capabilities and influence of the project participants themselves.

In these cases the concept of "supportive measures" is an important one.
The process is "bottom-up", beginning with identification of the project needs. However, fulfilling the conditions may require action from governments and international bodies, initiated and supported by EUREKA bodies.

MEDICAL- AND BIOTECHNOLOGY

The term 'biotechnology' means different things to different people, evoking images as diverse as genetic engineering and agriculture. In itself it is not a science or industry like, say, the field of Lasers - it is more multidisciplinary, and has a much wider scope.

In fact the only common theme running throughout the EUREKA projects in this sector is the application of biological sciences, a broad term incorporating everything and anything relating to living matter. In this sector you will find university laboratories inventing artificial organs, agricultural industries developing better animal foods, and everything in between.

Human and Animal Health

Improving human and animal health is of course a very important part of this sector. Of the 112 EUREKA Biotechnology projects either beginning, underway or finished, almost half are devoted to developing better treatments, diagnosis systems and surgical and other hospital aids.

The main treatments are for heart attacks (3 projects), malaria (2), tumours (2) and animal diseases which can spread to humans (2). Another six deal with scavenging free radicals, improving wound healing and developing cures for meningitis, asthma and disorders of the central nervous system and digestive tract.

There are 20 projects developing new diagnostic methods and tests, including EU 798 - DIAGNOSTICS, an umbrella project for stimulating EUREKA projects in this field. Seven projects are disease-specific, whilst the others focus on new diagnostic tools and methods, such as non-invasive measuring and DNA probes.

Six more projects aim to modernise hospitals, from better blood management and screening to decision support systems for anaesthetists, whilst another seven are developing implants or improving orthopaedic design.

Improving Agriculture

Humans have been practising genetic engineering for centuries. Through cross-fertilising particular crop types, farmers have already produced a range of desirable characteristics such as size, disease resilience and productivity in crops as diverse as wheat and fruit trees.

Of the 31 EUREKA projects harnessing biotechnology to improving food production, 8 aim to improve crop and food product quality through techniques such as genetic and enzymatic modification. Crops vary from tomatoes to eucalyptus trees.

Another 12 will improve yields through better farming techniques and products. Developments range from expert systems to pest control methods using natural microorganisms.

Eleven projects concentrate on better processing and packaging methods for agricultural products, and include the first three projects launched under EUROAGRI, a new umbrella promoting R&D in the agrifood area.

Lastly, ten projects deal with animal farming. Over half are developing better animal feeds, whilst improved production processes and operational systems account for another three.

Biotech Production Processes

The 18 projects in this area include many 'cutting edge' applications of advanced technologies like genetic engineering and molecular biology.

Over a third of them focus on improving protein production, mostly for pharmaceutical purposes. Projects range from computer analysis of Nuclear Magnetic Resonance data to producing AIDS vaccines through recombinant DNA genetic engineering.

Another six are developing new production methods and uses for other substances, such as enzymes, globin, sacchrides, emulsifiers and so on. Many are of use to the food industry, whilst the others find applications in pharmacy and wood pulp production.

Biotechnology
At a Glance
- *Projects underway: 105, with total cost of 850 MECU*
- *Projects Finished: 7*

Announced in 1992:
22 projects with cost volume of 58 MECU, representing a growth of 28% in number or projects and 10% in estimated investment
% of total EUREKA portfolio:
19 % by number
10 % by cost

COMMUNICATION TECHNOLOGY

If Europe is going to maintain its position as a preeminent economic power it must overcome its internal boundaries. The continent's communications network plays a vital role in this effort, connecting people together across gulfs of distance, language and custom. Communication R&D in Europe is therefore well-suited to the trans-border collaboration found in EUREKA projects.

The communications industry is not just a supporter of European industry, it is an industry in its own right. As the world's disparate economies head towards a single world economy, this industry will become more and more important. A healthy R&D effort in Europe will ensure that European industries are suppliers, not buyers, in this rapidly expanding field.

Telecommunications and Computers

Telecommunication networks are becoming increasingly powerful, able to handle much more than just telephone calls. There are 12 projects devoted to either developing these future networks or high-powered applications for them.

One is COSINE, led by the Commission of the European Communities and aiming to develop and test new communications services between European academic and industrial research centres. Other network applications under development include: advanced computerised travel reservation systems (2 projects), aircraft-ground telephone services, transferring medical data and applications (accompanied by the development of specialised portable workstations), enhancing cooperation between European aerospace firms, improving cooperation between building and public works engineering companies, and improved energy usage management. Two more projects aim to improve the actual transmission speed and accuracy of tomorrow's networks by developing very fast optical systems and a synchronous digital transmission heirarchy. Other projects are developing open yet secure communication systems, hardware and software for real-time process and machine control by local area networks, and investigating the effects of high-powered transmissions (TV, radio, radar) on civil aircraft electronic systems.

Entertainment

The most important project is this area is HDTV, the second largest project within the EUREKA portfolio. The 30+ companies and institutes are developing a new TV satellite transmission format with high definition, 'cinema format' picture, digital sound and multilingual options.

Another 2 projects are developing systems to reduce the data needed for transmission for HDTV applications, with a third developing projectors for HDTV images. The superior sound of HDTV transmissions is motivating another project to develop stereo systems which adapt themselves to the local acoustic characteristics.

Two projects are developing high definition graphics. One is for film, publishing and data storage, with initial applications focusing on HDTV shows for large audiences, while the other will produce real-time synthetic scenery to reduce operating costs of TV stations and video production companies.

Lastly, one project is developing standards for digitalising radio signals, and another aims to develop a better terrestrial TV broadcasting standard compatible with the current PAL system.

Communication Technology At a Glance
- *Projects underway: 28, with total cost of 1442 MECU*
- *Projects Finished: 5*

Announced in 1992: 5 projects with cost volume of 85 MECU, representing a growth of 22% in number or projects and 6% in estimated investment. On average, Communications projects involve a higher investment than any other sector.
% of total EUREKA portfolio: 5% by number 16% by cost

ENERGY TECHNOLOGY

A reliable energy supply at a reasonable cost must rate as one of the fundamentals of modern society. Since the Industrial Revolution this energy has been supplied by some form of terrestrial resource, such as wood, oil, coal, water or uranium.

Recently it has been realised that these resources are finite, and that the conventional use of some of them damages the environment. Since we cannot live as we do without energy, new ways of producing and using it must be found. The EUREKA projects in this sector answer this challenge in typically diverse ways, from improving the energy efficiency of small generators to developing new forms of solar power.

More Efficient Production, Generation and Use

The 18 projects in this area all aim to improve the efficiency of the extraction, conversion or use of energy, and focus on traditional energy forms.

Five involve the more efficient production of energy from coal and gas. Two are developing new power station designs: a 300 MW 'clean coal' station and an innovative gas turbine/diesel engine combination that can produce up to 150 MW. The others are developing smaller generation units: two new gas turbine designs (one for cars, the other for fast ships and trains) and a more efficient mid-range diesel engine.

Another five projects involve hydrocarbons. Three are developing new technologies for offshore exploitation, particularly of small, currently uneconomical 'marginal fields': small, semi-autonomous platforms, better seabed-platform connectors and improving oil yield through biotechnology. Another project is developing full-scale gas storage areas within lined rock caverns, whilst the last aims to improve computer modelling of seismic data.

The last 8 projects involve improving a diverse range of technologies to make more efficient use of energy. Future developments include electric and gas air conditioning units, power control devices for electric engines, industrial heat pumps and transformers, uninterrupted power supplies, high efficiency hydrogen production for future transport needs and cokemaking technology for the steel industry.

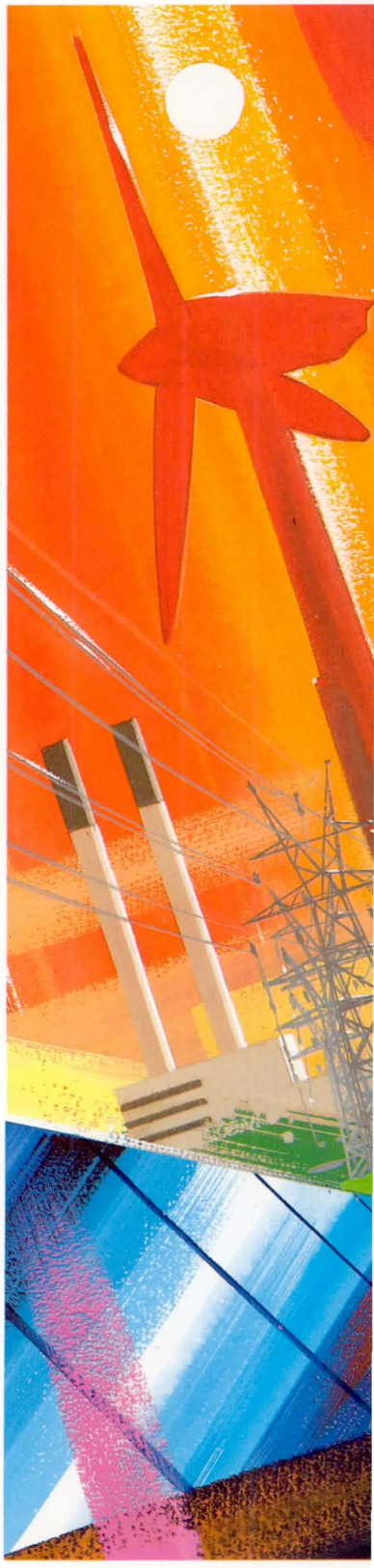
Renewable Energies

6 of the 7 projects in this field focus on extracting energy from solar radiation, and all but one of these use photovoltaic (PV) cells, where light falling on specially prepared silicon is directly converted into electrical current.

The latest of the five photovoltaic projects is EUROVOLTAIC, an umbrella project for generating projects developing PV products and systems. EUROVOLTAIC will help raise European competitiveness in this expanding industry. Two of the PV projects explore the development of 'amorphous silicon' for PV cells, and have begun demonstrating and marketing their research results. The last two focus on specific applications of PV technology: high latitude/altitude power plants, and combining PV with hydroelectric power for regions characterised by wet winters and dry summers.

The last solar energy project, PHOEBUS, is working on the development of a solar thermal plant, which concentrates sunlight onto a conventional turbine to generate electricity. PHOEBUS has successfully proved its feasibility and now aims to build a 30 MW plant in Jordan in the mid-1990s.

In the seventh renewable energy project, AEOLUS II, two 3 MW pilot wind power stations are to be developed and constructed. By making the 80m blades from carbon and glass fibre, the partners have reduced their mass to 40% of those of a 2 MW predecessor. They are also much quieter and easier to erect.



Energy Technology
At a Glance
- *Projects underway: 23, with total cost of 492 MECU*
- *Projects Finished: 3*

The industrial participation in these Energy projects is higher than for any other sector.
Announced in 1992:
5 projects with cost volume of 62 MECU, representing a growth of 29% in number or projects and 14% in estimated investment.
% of total EUREKA portfolio:
4 % by number
6 % by cost

ENVIRONMENT TECHNOLOGY

The sorry state of our environment needs little introduction. A massive technological effort is needed to repair the wounds already inflicted and prevent further damage being done.

Environmental issues are by nature international, so the EUREKA framework is particularly suitable. There are more projects in this sector than any other, clearly illustrating the Initiative's responsiveness to market demand.

Marine

The EUROMAR umbrella, focusing on monitoring and investigating marine environments, dominates this area. There are projects developing: sea surface monitoring equipment (2), devices for investigating underwater structures and the seabed (6), research vessels and laboratories (2), in-situ monitoring systems (4), marine environment models (2), field data standards (1) and programmes for determining the air-sea transfer of pollutants (1).

Land

EUROENVIRON addresses land-based environmental projects. Of the 32 projects, 5 are introducing recycling to various industries, 5 more are developing clean-up processes for contaminated areas, 3 focus on cleaner gas emissions and 4 on waste water.

Through computerised management, 2 projects will reduce irrigation and agricultural chemical use and 2 will handle river and city sewer systems better. Four are introducing cleaner industrial systems and processes and 2 more will help prevent industrial accidents. The last 5 range from developing cleaner cars to an environmental surveillance systems for the 1994 Winter Olympics.

Environment Technology At a Glance
- *Projects underway: 130, with total cost of 998 MECU*
- *Projects Finished: 6*

Announced in 1992: 16 projects with cost volume of 62 MECU, representing a growth of 16% in number of projects and 5% in estimated cost.
Almost half of all Non-Member Country participants are involved in Environment projects.
% of total EUREKA portfolio:
23% by number
11% by cost

The 4 non-EUROENVIRON projects are developing off-road vehicles for applications in difficult terrain (2), improving the health of European forests (1) and decontaminating soils and aquifers (1).

Monitoring

The 11 'ENVINET cluster' projects are developing better monitoring systems. Remote-sensing developments include airborne measurements (2) and a portable atmospheric aerosol concentration measuring system.

Other projects include: 3 sensor networks for monitoring local meteorology and precipitation onto crops and forests, 2 software management systems for water basins and river valleys and 3 geographic information systems for decision support and environmental impact evaluation.

Non-ENVINET projects involve airborne systems for measuring plant health and EUROTRAC, a 200 MECU effort to increase basic knowledge in atmospheric science and develop better instrumentation for environmental research.

Preservation

The EUROCARE umbrella aims to better preserve ancient monuments and modern buildings through new materials, technologies, standards and sustainable environmental policy.

Of the 27 projects, 9 aim to preserve specific materials: wood (4), granite (2), marble (1), copper alloy (1) and concrete (1). Five are protecting and restoring wall paintings, and 3 more study the durability and environmental impact of building materials. Another 3 are developing instruments to monitor material damage.

Cleaning Up Industry

There are 29 projects developing environmentally friendlier industrial processes, including industrial chemical replacements (5), gas emission reduction (3) and industrial plant monitoring systems (2).

Another 16 focus on waste management, treatment and recycling in areas from pig farming to oil/gas exploitation.

Other

Two projects are reducing noise pollution, a third is applying risk management to quality of life and the last is investigating natural rock caverns for public meeting places.

INFORMATION TECHNOLOGY

That the Information Technology sector is, in financial terms, the largest within the EUREKA portfolio is not surprising. The industry has not stopped growing since it was invented, and shows every sign of continuing to accelerate upwards.

A competitive Information Technology industry is vital to Europe not just for its own sake: all competitive industries rely on their products, so self-sufficiency in this area is a strategic, as well as an economic, goal.
The EUREKA Information Technology projects are playing an important part in bringing the many European centres of excellence together to meet the formidable challenges from the USA, Japan and the Far East.

Hardware

Although only about one third of the sector's projects are dedicated to developing hardware, these include JESSI, EUREKA's biggest project, which is pooling the resources of the European microelectronics industry to improve competitiveness in this vital field.
JESSI has four main 'project clusters': Technology, Application, Equipment & Materials and Basic & Long-Term Research.

There are another 12 projects focusing on chip manufacturing, from developing better products, such as ASICS (Application Specific Integrated Circuits), EPROMs (Erasable Programmable Read-Only Memories) and Gallium Arsenide chips, to specific processes and applications, such as ion projection, 3D wiring and using ASICs for image processing.

Ten more projects are devoted to computer peripherals. Two are developing fibre-optic sensors, and another 3 are applying sensors to industrial assembly, nuclear pulse spectrometry and underwater activities. Another 2 are developing better printing technology, while the last 3 focus on display systems.

Software

The other 65 projects are software-oriented. There are 14 projects developing software systems to enhance management processes. Projects include object-oriented business software, advanced data processing for management support, real-time control and support systems, process simulators, audiovisual production management software, improving communication between R&D partners, portable operational support systems and identifying the key factors in successfully managing international market-oriented R&D projects.

In addition, one of the most recent projects in this area is a new umbrella, EU 860 - INTO, which aims to assist European industries to better integrate new technology into their structure.

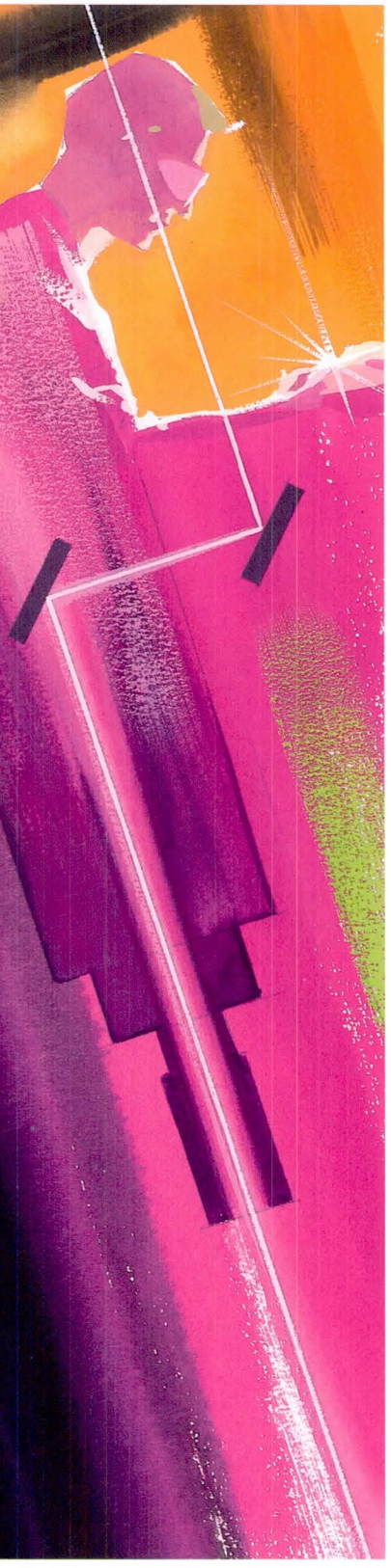
Of the 19 projects aiming to enhance engineering and programming methods, 14 projects aim to enhance software development through new methodologies, software environments and tools, including expert systems. The other 5 are developing general systems and specific software for enhancing engineering and design in industries ranging from construction to engine design.

The remaining 32 projects cover a wide range of products and applications, including multilingual text handling software (7), parallel computer systems and applications (3) and medical applications (3). Other projects involve improved software interfaces for factory automation, an expert system for welding engineering support, a database for distributed expert systems, applying neural networks to image identification, a high-powered server for computer networks, satellite-based location and message handling services, the automatic analysis of remote-sensing data, public information systems and digital television.

Information Technology At a Glance
- *Projects underway: 77, with total cost of 1905 MECU*
- *Projects Finished: 12*

Around one quarter of these projects have relationships of some kind with the EC and national R&D programmes such as ALVEY, COST, DRIVE, ESPRIT, IMPACT, RACE.
Announced in 1992:
20 projects
with cost volume of 277 MECU, representing a growth of 35% in number or projects and 15% in estimated investment.
% of total EUREKA portfolio:
14% by number
22% by cost

LASER TECHNOLOGY



When most people think of lasers, they see a beam of such intense energy, focused on such a small area, that it destroys whatever it touches. However the high-powered lasers of fiction are only fiction, and their real life counterparts are likely to be constructive, not destructive.

Current applications of low-powered lasers take advantage of their precision and accuracy: CD players and eye surgeons do not need high power. When they are fully developed, high-powered lasers will eventually have an enormous range of applications, particularly in industrial fabrication, and will join the 'toolbox' of the industrial world.

For this reason lasers represent a small but vital factor in future European industrial competitiveness. Their development is still a major technological challenge with important market potential, a potential many industries are realising through EUREKA projects.

Laser Development and EUROLASER

EU 6 - EUROLASER, dominates this sector. It aims to evaluate and develop industrial lasers for materials processing, and emphasises the role of lasers as an integral part of advanced flexible manufacturing systems. More than half of the EUREKA members are involved in this umbrella, and 10 out of the remaining 14 projects were formed under it.

The EUROLASER project coordinates the actual development activities of these laser projects. Seven of these 10 aim to develop better lasers, and three of these focus on CO_2-lasers. One aims for 25kW laser cells that can be combined to produce 100kW.

Laser Technology
At a Glance
- *Projects underway: 14, with total cost of 405 MECU*
- *Projects Finished: 1*

1% of total EUREKA portfolio:
2 % by number
5 % by cost
Laser projects have, on average, a larger number of participants than any other sector, including higher numbers of SMEs and industrial research units.

Another is developing a more compact 10kW cell, with emphasis on applications in automated manufacture. The third, apart from developing the lasers and related equipment, intends to perform demonstrations in welding, cutting and surface treatments.

Two more projects are developing excimer lasers of at least 1kW (ten times current level) without losing the characteristics (low divergence, uniform high frequency) which make them useful for high accuracy applications.

A further two laser development projects explore the possibilities of CO-lasers and solid-state lasers, respectively.

Laser Applications

One project is designing and building work stations for laser-based surface treatment, to be easily integrated into flexible manufacturing processes. The other is developing a database covering application knowledge and available laser and auxiliary equipment, to be consulted by the industrial user of laser applications. It also has the secondary goal of developing a 5kW solid state laser.

Of the three laser application projects not under EUROLASER, one was involved with manufacturing and assembly. This project, the only finished project in the sector, developed various lasers and disseminated knowledge throughout industry on welding, surface and heat treatment applications. Another project is applying lasers to vibration measurement, whilst the last is developing laser lithography techniques for the microelectronics industry.

Laser Safety

With the use of lasers increasing, safety issues have become particularly important. One laser safety project concentrates on improving the safety of laser medicine, to both practitioner and patient, by developing better procedures, devices and standards.

The other project in this area is another EUROLASER project, and addresses safety issues in the industrial application of lasers. The many participants come from 16 different countries, and are identifying and controlling risks, developing training and cooperating with standards organisation.

MATERIALS TECHNOLOGY

The science of new materials has been one of the driving forces behind human civilisation since its birth in the Stone Age, and there is every indication that it will continue to play a dominant role in our lives.

There are only a few EUREKA projects in this field which are actually developing brand new materials - seemingly traditional materials, such as steel and aluminium, are also the focus of advanced research and innovation, as are new applications.

In addition, with the boundary between product development and the adjacent production process gradually blurring, many projects concentrate on manufacturing processes for new materials, rather than the development of the material itself.

New Materials

Of the 8 projects developing new materials, 2 are investigating the use of wollastonite to reinforce a wide range of materials, such as glass fibre composites and thermoplastics. Another 2 are developing advanced polymer fibres.

Two more projects are producing new materials for the clothing industry - shoe leather substitutes and clean room clothing, while the remaining two deal with aluminium matrix composites and high temperature fibres.

New Advanced Applications

31 projects, more than half the materials portfolio, aim to develop new applications.

Of the 13 projects directed towards mechanical industry, 8 are devoted to applying new materials in the automobile industry, and range from 'new steel' structures to engine ceramics. The other 5 include a new generation of centrifugal pumps, lightweight panels for aircraft and diamond-like carbon coatings for tools.

Another 9 projects are as diverse as the industries they target: the electrical and optical industries. They range from two applications of rare earth permanent magnets for motors to polymer-based components for optical fibre communications systems.

Five more projects relate to the construction industry. Two are involved in developing better materials for the offshore industry, whilst the other 3 improve cement, aluminium and plastic pipe structures.

The last 4 application projects aim to improve processes found in the pulp, aluminium, steel and precious metal industries.

New Fabrication Processes

Half of the 14 projects dealing with new fabrication methods deal with metals. One of these is EUROSURF, a new umbrella project aiming to catalyse projects in the field of surface engineering. Four deal with improving aluminium welding, casting or gluing, whilst the rest focus on improved methods of casting or pressing steel.

The other 7 projects include the other umbrella project in the New Materials sector: EUROBOND, which operates in the field of adhesive joining technology. Other projects range from harder road materials to synthetic rubber, via high power electron beam welding.

Testing Equipment, Design Codes and Standards

There are 4 projects aimed at developing new testing methods or equipment. Examples range from ultrasound scanning of material interfaces to portable neutron radioscopy for the industrial environment.

The last two projects concentrate on establishing design codes, one on polymeric composites, the other on high strength steel welding under demanding conditions.

Materials Technology
At a Glance
- *Projects underway: 53, with total cost of 316 MECU*
- *Projects Finished: 6*

The average New Materials project involves an estimated cost of less than 40% of the EUREKA project average.
Announced in 1992:
11 projects with cost volume of 18 MECU, representing a growth of 26% in number or projects and 6% in estimated investment.
% of total EUREKA portfolio:
9 % by number
4 % by cost

ROBOTICS AND PRODUCTION AUTOMATION

The competitiveness of Europe's manufacturing industry depends largely on the quality of its technology. The technology race does not have a finishing line: industries must continually improve their position on the world market.

Consequently Robotics and Production Automation is one of the largest sectors in EUREKA.

Advanced Manufacturing and Factory Automation

Of the 69 projects in this area, one of the most important is FAMOS, an umbrella project aiming to reverse Europe's decline in the manufacturing industries by promoting the development of flexible assembly systems.

Of the 29 projects developing flexible manufacturing systems, 28 are FAMOS projects. Ranging from shoes to printed circuit boards, the ability to assemble is a widespread theme. Manufacturers can then customise products to specific clients and respond better to changing demand.

Another 20 projects are improving existing production technologies. The range of industries is immense: from automatic mushroom farming to optoelectronics. Three of these are FAMOS projects.

Both Computer Aided Design and Engineering (CAD/CAE) projects, as well as 8 of the 17 Computer Integrating Manufacturing (CIM) projects, were also launched under FAMOS. The CAD/CAE projects aim to improve specific industrial processes through advanced computing. The CIM projects incorporate all aspects of advanced manufacturing into a single vision, and are defining the factories of the future in steel fabrication, shipbuilding, textiles, electronics, plastics and more.

Robotics and Production Automation At a Glance

- *Projects underway: 106, with total cost of 1212 MECU*
- *Projects Finished: 11*

Announced in 1992: 52 projects with cost volume of 17 MECU, representing a growth of 20% in number or projects and 4% in estimated investment

% of total EUREKA portfolio: 19% by number 14% by cost

Enabling Technologies and Special Developments

Of the 5 projects developing sensors, three focus on specific industries (oil/gas, textile, paper). Another is developing high accuracy, contactless sensors, and the last, a FAMOS project, is developing more flexible, intelligent sensor systems for robotic assembly.

Fourteen projects are developing software, of which five projects are developing aircraft manufacturing software modules in an architecture usable by all participants. The four FAMOS projects are developing software for real-time control, system and option evaluation, information management and more. The other 5 deal with industries ranging from pharmaceutical to aluminium extrusion.

Another 6 are developing specific tools and components, including ultrasonic pipe inspection devices and vibration testing systems. The sole FAMOS project is developing an artificial vision system for autonomous vehicles.

Robots

Only 2 of the 19 robotic development projects are in traditional robotic industries. Another six are involved in construction, whilst 4 more concentrate on agriculture and fishing.

Three projects are developing underwater robots, including submarines, remote-controlled vehicles and fully autonomous robots for long-range subsea surveys and installing, inspecting and repairing hardware.

Another three are using robots for activities in hazardous environments. Two are developing robots for industrial sites, incorporating artificial intelligence and 3D laser range finders. The third aims to automatically reline steel converters. The last project is applying new technologies to develop a remotely controlled camera crane.

MAINE: Improving Maintenance

A new umbrella project, MAINE, aims to promote projects which will reduce downtime and maintenance costs of capital equipment. The first subproject aims to establish an overview of technological processes in this field. The last two projects are both based on introducing automation to the construction industry, and deal with electric motors and electrical installation systems.

TRANSPORT TECHNOLOGY

An efficient transport system may be an essential factor to economic growth, but it has other, more direct impacts on our quality of life, providing personal liberty and opening up the entire world to its inhabitants. Until recently, however, the environmental impact has not been factored into these equations: urban pollution and global warming do not improve our lifestyle.

Tomorrow's transport system therefore faces the challenges of reducing environmental impact whilst improving speed and efficiency. This means developing new technologies and improving old ones. In Europe, the Single Market makes transport a particularly transnation affair, so it is not surprising to find all of these themes present in the EUREKA Transport portfolio.

Road Transport

Of the 20 road transport projects, 11 focus on infrastructure. One is PROMETHEUS, the largest project in the sector, which pools the experience and resources of car manufacturers, components suppliers, the electronics industry and basic researchers.

PROMETHEUS and a similar project aim to make road transport safer, cleaner, more user-friendly and efficient. Different areas focus on driver information and support, vehicle and fleet management, road network flow analysis, traffic management and more.

Another two are developing electronic geographical databases for use in navigational systems, while a third links cargo vehicles to their base via a satellite system for increased efficiency.

'Hardware' infrastructure projects include improving concrete road surfaces in cold climates, increased fire protection in tunnels and an improved Autonomous Guided Vehicle system for harbours.

Lastly, three projects are setting up public transport systems, including a new guided-bus concept, a demand-responsive transport service for rural/interurban areas and an environmentally friendly system for Lillehammer, able to handle both normal loads and the 1994 Winter Olympics.

Another 9 projects are developing new road vehicles or components. New vehicles include a fuel cell powered bus (no emissions, low noise), a vehicle for transporting prefabricated houses and two small electric urban cars. Vehicle components include on-board computers for route navigation and car status monitoring, miniature headlamps, gearboxes and engines with fully-integrated electronic controls and a truck loading/carrying system to reduce packaging weight.

Other Transport Forms

Of the 8 projects in this field, one is a road/rail system combining the best of both methods, and 5 are solely rail-based: a new generation of light metro trains, silent and efficient linear motors, improved power control devices, high-speed track and SKYCAB, which involves 4- or 8-seater driverless vehicles travelling on a special rail network, suitable for metropolitan areas and airports.

The other two projects are developing new aircraft. One is a tilt-rotor capable of vertical takeoff and landing, while the other is an amphibious aircraft suitable for search and rescue, firefighting, environmental control and other missions.

Logistics and Management

Six projects are concerned with improving transport efficiency through better management. Half are developing management systems to help control material flow throughout Europe, whilst a fourth focuses on improving efficiency in the canal system linking seaports to inland factories. Another aims to set up a network of road transport information systems, including an international database for freight and haulage companies, and the last is developing mobile satellite-based location and communication systems.

Transport Technology At a Glance

- *Projects underway: 26, with total cost of 1128 MECU*
- *Projects Finished: 8*

Announced in 1992: 6 projects with cost volume of 38 MECU, representing a growth of 38% in number or projects and 4% in estimated investment
% of total EUREKA portfolio: 5 % by number 13 % by cost

STATISTICAL TABLES

FINANCIAL SIZE OF PROJECTS

Nº of ongoing projects by area

Project Cost (PC) in MECU	Total Nº of projects	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
PC ≤ 1	106	17	2	4	34	13	1	13	17	5
1 < PC ≤ 2	85	23	6	3	24	4	0	13	8	4
2 < PC ≤ 3	45	7	3	2	11	7	1	4	7	3
3 < PC ≤ 4	49	9	0	0	15	7	0	5	11	2
4 < PC ≤ 5	35	7	0	1	10	6	0	7	3	1
5 < PC ≤ 10	93	19	5	2	18	14	2	4	26	3
10 < PC ≤ 20	62	13	2	3	9	10	4	2	17	2
20 < PC ≤ 40	47	6	4	4	3	10	2	3	11	4
PC > 40	40	4	6	4	6	6	4	2	6	2

FINISHED EUREKA PROJECTS

Nº of projects by area

	TOTAL	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
Number of projects	59	7	5	3	6	12	1	6	11	8
Total cost	792,3	63,5	144,8	152,5	16,2	149,9	3,7	18,0	68,3	175,4

PLANNED PROJECT DURATION

Nº of ongoing projects by area

Project duration (PD) in months	Total Nº of projects	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
PD ≤ 24	102	13	5	4	33	11	1	7	19	9
24 < PD ≤ 48	285	50	13	12	68	44	3	31	55	9
48 < PD ≤ 72	136	33	9	6	19	17	7	13	27	5
PD > 72	38	9	1	1	10	5	3	2	5	2
Unspecified	1	0	0	0	0	0	0	0	0	1

EUREKA PROJECT PROPOSALS

Nº of projects by area

	TOTAL	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
Number of projects	113	23	1	2	22	17	4	6	25	13
Total cost	674,2	76,7	15,9	6,7	111,5	166,2	77,3	24,1	165,5	30,3

STATISTICAL TABLES

PARTICIPATING ORGANISATIONS IN ONGOING PROJECTS

Number of organisations

Member	Industry	of which SME	Research	of which University	Government/ Nat. Bodies & Others	Total
(A) Austria	67	21	29	18	12	108
(B) Belgium	63	18	23	17	3	89
(CEC) CEC	0	0	6	0	2	8
(CH) Switzerland	60	32	34	24	10	104
(D) Germany	256	71	183	93	19	458
(DK) Denmark	55	15	22	9	9	86
(E) Spain	152	46	72	34	13	237
(F) France	343	62	158	50	19	520
(GR) Greece	21	9	18	14	1	40
(H) Hungary	4	2	4	0	2	10
(I) Italy	214	38	111	58	10	335
(IRL) Ireland	8	2	7	7	2	17
(IS) Iceland	10	10	5	1	1	16
(L) Luxembourg	4	0	0	0	1	5
(N) Norway	82	25	41	9	17	140
(NL) Netherlands	182	56	51	20	17	250
(P) Portugal	23	7	31	18	9	63
(S) Sweden	90	35	37	14	14	141
(SF) Finland	89	32	20	6	8	117
(TR) Turkey	3	3	4	3	0	7
(UK) United Kingdom	222	57	89	55	28	339
Non-member countries	12	1	19	2	1	32
Total	1960	542	964	452	198	3122

JOINT PARTICIPATION IN ONGOING PROJECTS

(A) Austria																				
12	(B) Belgium																			
8	7	(CEC) CEC																		
17	10	5	(CH) Switzerland																	
43	21	11	26	(D) Germany																
17	13	10	14	33	(DK) Denmark															
22	26	11	15	48	25	(E) Spain														
24	31	13	28	63	30	73	(F) France													
13	10	10	9	19	11	18	20	(GR) Greece												
4	4	2	2	5	1	3	3	2	(H) Hungary											
36	22	11	25	64	26	73	83	21	4	(I) Italy										
9	5	4	4	10	9	8	9	5	2	14	(IRL) Ireland									
2	1	2	1	2	4	3	3	2	0	2	2	(IS) Iceland								
3	3	2	3	3	3	3	4	2	0	3	2	1	(L) Luxembourg							
16	10	12	13	31	27	22	26	12	2	26	8	5	2	(N) Norway						
26	31	12	18	50	27	43	52	16	3	47	12	2	4	35	(NL) Netherlands					
12	8	7	8	17	12	28	16	12	3	18	9	2	2	12	16	(P) Portugal				
26	16	12	16	44	31	30	30	13	2	31	9	2	3	39	30	13	(S) Sweden			
17	16	10	10	31	23	23	27	12	2	28	7	2	3	29	29	11	38	(SF) Finland		
3	2	3	3	5	2	4	4	5	2	4	2	0	0	4	5	3	4	4	(TR) Turkey	
28	20	12	19	49	35	52	63	16	2	51	12	5	3	29	47	17	39	30	5	(UK) United Kingdom
6	5	4	3	14	8	7	13	7	3	13	3	1	1	5	8	6	8	7	2	7 Non-member countries

SYNERGY WITH THE EUROPEAN COMMUNITY

The European Community is a member of EUREKA since its inception and contributes to its evolution. The EC R&D programmes and EUREKA converge towards the same goal: the reinforcement of the technological bases and the improvement of European industrial competitivity.

The Community participates in EUREKA through its own research capacity (Joint Research Centre), R&D programmes and financial facilities as well as through the creation of a suitable environment for technological cooperation and the development of enterprises.

Cooperation between the Community and EUREKA has been enhanced progressively. At project level, Community R&D results are taken into account in EUREKA projects. This and two-way transfers of information allow an effective distribution of tasks and the avoidance of unnecessary duplication of effort. The Commission funds EUREKA projects directly or indirectly and participates in some of their Management Committees. The Commission supports the implementation of supportive measures, for example standardisation and the valorisation of R&D results (e.g. VALUE programme) and participates in EUREKA fora and conferences, which receive considerable support from the Community.

Certain EUREKA projects with a high standardisation content are transferred to Community programmes, either totally or in part.

Developments in 1992, both in the Community and in EUREKA, open up new prospects and offer opportunities to enhance the synergy between Community and EUREKA actions, to optimise their complementarity and to reinforce concertation and the exchange of information, while respecting the specific features of each.

This was pointed out by the Vice-President of the Commission at the Ministerial Conference in Tampere in May 1992.

While taking into account the wishes and the needs of participants, this concertation and the funding of projects should be guided by the following principles:

Enterprises should express their needs to the Community and to EUREKA, and guarantee consistency between their proposals and their global strategies, particularly in terms of industrial exploitation.

Projects (or parts of projects) developed within the Community framework will aim mainly at the development of key generic technologies needed by industry or having a wide-ranging social impact. Projects (or parts of projects) developed within EUREKA will generally be applied research projects, near-market and aimed at specific products, production processes or services.

Activities related to the development of generic technologies could be financed by the Community following its own rules, and the application part within EUREKA.

This concertation between the Community and EUREKA is being organized in a flexible and pragmatic way and is based mainly on a case by case approach.

Reinforcement of the collaboration between Community programme managers and the EUREKA National Project Coordinators has already resulted in: (I) more rapid circulation of better targeted information; (II) the selection of some industrial projects that could benefit from common actions; (III) a better use, within EUREKA, of the R&D results coming from Community projects in their final phase.

Both EUREKA and the Community also agree that particular attention should be paid to the difficulties faced by small and medium-sized enterprises in financing their R&D efforts, and they intend to lend mutual support to their actions in this respect wherever appropriate and feasible.

PARTICIPATION FROM NON-MEMBER COUNTRIES

At the IXth Ministerial Conference in The Hague on 19 June 1991, the Ministers of the EUREKA member states and the Vice President of the Commission decided upon an action programme, also referred to as the "The Hague Statement". They invited the Finnish Chairmanship to prepare further steps to allow Central and Eastern European countries to become more closely connected with EUREKA and eventually become full members, in accordance with the philosophy and mechanisms of EUREKA.

In compliance with "The Hague Statement", which constitutes an extended information policy, expanded networking and a flexible application of the EUREKA rules, and with the invitation of the Ministerial conference to the Finnish Chair (July 1991-May 1992), information seminars were organised in most of the Central and Eastern European countries and in the Baltic states. Subsequently, a National Information Point network was established in Albania, Czechoslovakia, Estonia, Hungary, Latvia, Lithuania, Poland, Rumania, the Russian Federation and Slovenia.

As a result of these fruitful actions towards Central and Eastern European countries, the Hungarian Government applied for membership of EUREKA under the Finnish Chairmanship. At the Xth Ministerial Conference in Tampere on 22 May 1992, the Ministerial Conference evaluated the democratisation process, the stabilisation and market orientation of the Hungarian economy, the active interest and positive cooperation of Hungarian partners within the EUREKA framework, the presence of a functioning EUREKA National Information Point (NIP) and the positive cooperation prospects in terms of appropriate intellectual and industrial property and export control arrangements. In conclusion, the Conference unanimously accepted the Republic of Hungary as a member of EUREKA.

The Ministerial Conference in Tampere also welcomed the work programme presented by the French Chair (June 1992-July 1993) in which the continuing development of the relationship with Central and Eastern European countries is also emphasised.

Furthermore, the existing procedures which offer a flexible and pragmatic channel for specific cooperation, enables EUREKA to contribute towards the development of cooperative relations on a case-by-case basis with non-member countries in a diversified and highly dynamic international context.

32 companies or research institutes from non-member countries are already taking part in 25 different EUREKA projects.

Non-member Participation

EU No	Acronym	Country	Area
5	ULTRAMEM	Canada	ENV
7	EUROTRAC	Russia Poland Croatia Slovenia	ENV
8	COSINE	Slovenia	COM
20	EAST	Canada	INF
22	DIANE	U.S.A.	MAT
37	EUROMAR	Croatia	ENV
111	STABINE	Russia	ENE
113	CO	Russia	LAS
226	SOLID	Canada	LAS
294	BIOMATERIALS	ex.SFR Yugoslavia	BIO
316	COPAL	Czechoslovakia Russia	ENV
325	GALILEO	U.S.A.	COM
384	DYMECHROM	Argentina	BIO
417	MERMAID	Canada	ENV
419	DUMIP	Russia	ROB
447	EUROSILVA	Czechoslovakia	ENV
493	ELANI	Croatia Slovenia	ENV
496	EUROMARBLE	Russia	ENV
623	EUROPROTEINS	Poland	BIO
640	WETDRY-DEP	Czechoslovakia	ENV
642	STILMED	Israel Russia	LAS
643	SAFETY-INDAL	POLAND RUSSIA	LAS
674	MOBILE ANALYSIS LAB	Russia	ENV
759	USVA	Brazil	ROB
869	POLARIS	Canada	LAS
877	WOUND DRESSINGS	Poland	BIO

INTRODUCTION TO INDIVIDUAL PROJECT DESCRIPTION

In this section 14 individual EUREKA projects are presented as examples of what EUREKA projects actually involve. The projects have been selected to give a taste of the wide variety inherent in EUREKA projects. This variety is reflected in the technological span of the projects as well as the geographical distribution of the participants. Furthermore, the wide scope of project participants ranging from multinational corporations to very small companies and from dedicated production industries to university institutes serves to prove that EUREKA really does work as a catalyst in making European industry and research work together to improve European competitiveness.

In fact, although the Initiative is only seven years old, some EUREKA-developed products, processes and services, some of which can also be found in this section, have already been successfully launched onto the market.

CONQUERING CERVICAL CANCER

Cancer of the cervix is the second most frequent cancer in women, and every year roughly 450,000 women develop this disease worldwide. But the good news is that cervical cancer is completely curable if caught early. The participants in EUREKA Project EU 403 - HPV hope that their work will help to save even more lives by making it possible to recognise, at an earlier stage, the changes in cells which could lead to cancer.

The screening programmes in use today rely on the Papanicolaou or "Pap" smear test, in which a tiny scraping taken from the mucous membrane of the cervix, or neck of the womb is examined for evidence of cervical dysplasia. These "abnormal" cells are one of the early symptoms which sometimes signify cervical cancer. However, the smear test is not an ideal test because it is very labour intensive. In addition, because it relies on the knowledge and experience of the person viewing the slide, it is very subjective. Sometimes abnormal cells are missed and cervical dysplasia goes undetected. The HPV project aims to improve this situation.

New research leads to new solutions

New research into the causes of cervical cancer points towards a link between the presence of the human papilloma virus in the cervix and the development of abnormal cells. This suggested a new screening approach to the HPV partners.

The project bases itself on the fact that infection by certain types of Human Papilloma Virus (HPV) is strongly associated with the development of cervical cancer. With that knowledge it has developed rapid, user-friendly tests for the laboratory detection of HPV in cervical specimens, which might help to assess the risk of progression towards malignancy.

The new tests are based on gene probe and immunoassay techniques, respectively. The former detects type specific HPV DNA, whilst the immunoassay detects HPV protein. Both procedures represent highly sophisticated and sensitive technologies which have been simplified to a form that can be used in any laboratory. It is hoped that the two types of tests will yield different and yet complementary information.

Initially the HPV immunoassay will be used to test biopsy samples taken from women who gave abnormal smear test results. However, depending on further product characterisation, it may prove possible to apply the tests earlier in the patient evaluation process, in parallel with the existing smear test, as a means of increasing the ability to identify women who risk developing cervical cancer.

EU 403
Medical and Biotechnology
Acronym: HPV

Title: Diagnosis of Human Papilloma Virus infection
Announced at: Rome, 1990
Participants:
Germany:
Applied Gene Technology Systems GmbH
United Kingdom:
Mercia Diagnostics Limited /
Genome Analysis Laboratory /
Imperial Cancer Research Fund
Mammalian Mutation Laboratory /
University College /
University of Cambridge
Main Contact:
Dr D.H. Lewis
Mercia Diagnostics Limited
Tel: +44 483 505255
Estimated Cost: 1.3 MECU
Time Scale: 2 years

NEW FOODS FROM AN OLD SOURCE

EU 439
Medical and Biotechnology
Acronym: CASEIN

Title: Settling of a Casein and By-products Industrial Pilot plant
Announced at: Rome 1990
Participants:
France:
Safir S.A. (Societé Française d'Engenierie et Recherche)
Ireland:
Dairygold Cooperative Society Ltd
Main Contact: Mr F. Stack
Dairygold Cooperative Society Ltd
Tel +353 25 24 411
Estimated Cost: 2.5 MECU
Time Scale: 1.25 years

Not all breakthroughs burst forth at the frontiers of scientific knowledge. Some spring up beside a well-trodden track. In EUREKA project EU 439 - CASEIN, Irish and French researchers hope to extract a range of new and valuable products from one of humanity's oldest foods: milk.

Raw milk, fresh from the cow, is a mixture of water (87 percent), sugars, fat, proteins, and minerals. About a quarter of the protein is whey, and the rest is casein. Casein is one of the pillars of the dairy industry, used in products as varied as cheese and cheese substitutes, coffee whiteners, plastics, paints, wallpaper glazes. Though it only makes up about 2.5 percent of whole milk, dairies have a range of effective methods for producing it in bulk.

At least they think they do. Actually, in extracting casein from milk, dairies change it dramatically. The traditional processes used, such as fermentation and treatment with rennet or hydrochloric acid, modify the protein's complex molecular structure. The resulting 'denatured' casein has very different physical properties from the original or 'native' casein found in milk. It no longer dissolves in water, for example.

Better Extraction Processes

New physical properties open the door for new applications. Tantalised by that prospect, in 1990, the French biochemical company SAFIR invited Dairygold (a food-products giant with worldwide sales of over 590 million ECU per year) to take the first serious look at native casein's commercial possibilities.

Safir had been researching native casein for several years, but practical development was stalled because the substance had to be produced in the laboratory, gramme by gramme. To experiment on a practical scale, the companies would have to extract much more of it, using techniques that would not damage the molecule, such as membranes, centrifuges, ion exchange or some combination of these techniques.

By the end of 1991, Dairygold had built a 350-square-meter pilot plant and was working on the extraction process. Tests and experimental work already carried out indicate considerable progress on this project, but as in all R&D projects it takes time and money to reach the final objectives. It is foreseen that considerable further development work is required to achieve a commercially viable process.

The scope of the project is commercial research, with results difficult to predict. Ideally, the companies would like to develop products as diverse and profitable as those now based on classical casein. Safir holds the patents on any new processes developed, Dairygold the license to manufacture and sell the new products.

LINKING EUROPEAN RESEARCHERS TOGETHER

The EUREKA COSINE project was launched in 1987, with the purpose of enhancing collaboration between researchers in Europe by the use of computer networks. It aimed to improve not only the speed of communication between individual researchers, but also the range of partners, services and information accessible to (potential) participants in pan-European research.

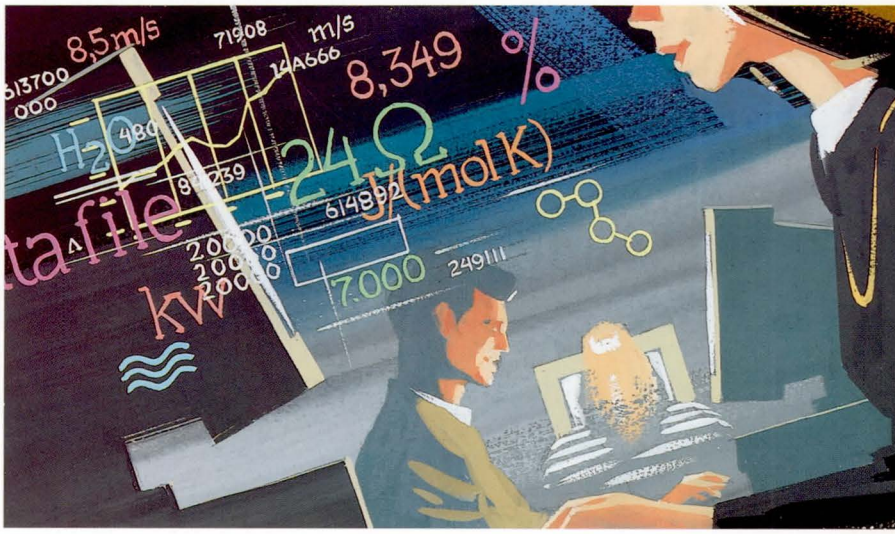
Computer networks are potentially complex structures, requiring the interplay of many thousands of elements, both human and machine. COSINE aimed to maximise the accessibility of its services, and so adopted the then-emerging standards for Open Systems Communication as its lingua franca.

COSINE has pursued a twin track approach of supporting and educating potential users of networks, while at the same time developing or coordinating new pan-European services. It has identified several groups of researchers who have a need to communicate across Europe, and provided them with the tools and support they need to accelerate their cooperation through the use of computer networks.

At the most basic level, user needs comprise access to information and exchange of information. COSINE has met the first need in two ways:

- a data repository, known as CONCISE, which contains a catalogue of information.
- an international directory, known as PARADISE, which allows a researcher to immediately obtain the coordinates of partners in Europe and beyond. The most remarkable feature of this directory is that it obtains its information not from a single central site, but by automatically routing enquiries around the world, before returning the reply to the individual enquirer.

COSINE has produced results beyond the purely technical arena. It has successfully demonstrated that cooperation between European national administrations and European RTD networks can successfully enhance both the range of services to the research community, and extend the audience for those services. Most importantly, it has created a momentum which should ensure that its services will be supported and enhanced by an association of national RTD networks, and that future development of cross-European research collaboration can be backed by common support of the funders.



Exchange of information takes many forms. The simplest is the exchange of textual information such as notes or documents. Computer users can do this through electronic mail, by which messages prepared using word-processors or other workstations are rapidly sent to correspondents around the world. COSINE has provided the management needed to ensure that messages can be delivered to their recipients anywhere in Europe.

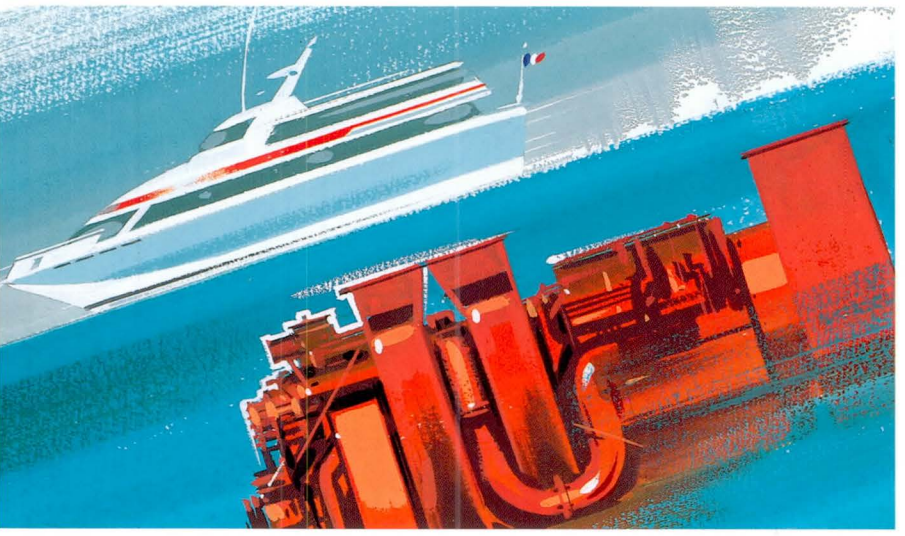
COSINE has also developed tools and services for those who are already using computers and networks in their daily activities Underlying these services is the data network IXI, the first pan-European research backbone, which was launched by the European Commission on behalf of COSINE in 1990. IXI has now been succeeded by the European Multi-Protocol Backbone, which can convey information at rates of up to 2 megabits per second, the equivalent of thousands of screenfuls of information.

EU 8

Communication Technology
Acronym: COSINE

Title: Cooperation for open systems interconnection networking in Europe
Announced at: Hanover, 1985
Participants: 20 countries and the CEC
Main Contact:
Mr Simon Holland
CEC - DGXIII
Tel: +32 2 296 85 70
Fax: +32 2 296 83 98
Estimated Cost: 37 MECU
Time Scale: 10.5 years

POWERFUL GAS TURBINES



EU 159
Energy Technology
Acronym: EURODYN

Title: High Technology Gas Turbine Demonstrators
Announced at:
Stockholm, 1986
Participants:
France:
Turbomeca S. A. / Turbines Terrestres et Marines
Norway:
Ulstein Turbine A/S
Sweden:
Volvo Flygmotor AB / United Turbine
Main Contact:
M.Y.P. François
TURBOMECA S. A.
Tel. +33.59.32.84.37
Fax +33.59.53.10.58
Estimated Cost: 57 MECU
Time Scale: 7 years

Gas turbines have already proven their worth in generating electricity reliably and in a manner less harmful to the environment than other fossil-fuelled plants as well as for other purposes in a modern world.

Gas turbine engines in the power range suitable for propulsion of high-speed craft or trains have shown, however, a relatively low rate of efficiency when constructed according to conventional designs. The most advanced high-speed diesel engines in this range, 2 to 2,5 MegaWatt, can attain efficiencies about 50 percent higher.

The three companies forming the EURODYN consortium, all of them having great interest and long experience in turbine construction for land, sea and aircraft propulsion as well as for other purposes, wanted to significantly reduce this competitive disadvantage: they set out to develop an advanced industrial gas turbine engine utilising a novel single cycle design and other new technologies as well as new materials. Their aim is to establish a technological basis for a new European engine industry, not dependent on any technology transfer from other continents and capable of building turbines which will match the efficiency levels of high-speed diesels at a fraction of the weight and volume and which are comparable or even superior in reliability and endurance. They are vying for a market for high-speed boats (e.g. ferries) and trains which are expected to take over from the aeroplane as the preferred mode of intercity transport in Europe. Whilst it is not intended to reverse the trend towards electric railway propulsion in Western Europe, there are regions in which the lines are not electrified, or where electricity is expensive, and in which, therefore, the new technology can open the door to high-speed travel without requiring massive trackside investment.

The goal of the present project is to develop the technology to the validation of the engine concept through technology demonstrator testing. They then aim to go on to manufacture and operate several specific mission-oriented prototypes for high-speed marine craft propulsion, for industrial applications such as turbo-generators, and for high-speed trains.

When these goals have been met, the feasibility of gas turbine engines reaching 35 percent efficiency demonstrated, and the viability of the engine validated in the various applications, the participants plan to continue co-operation in the ensuing production and commercialisation phase which is not part of the present EUREKA project.

The bulk of the design problems were solved at the end of 1992 after which six-to-twelve months of demonstration tests could start.

THE EIGHT STAGES TO PURE WATER

Clean drinking water is one of life's most basic necessities, and one of the most essential requirements for good public health. And yet, as a number of incidents in recent years have shown, accidents or bad waste management which pollute the water supply are becoming all too common.

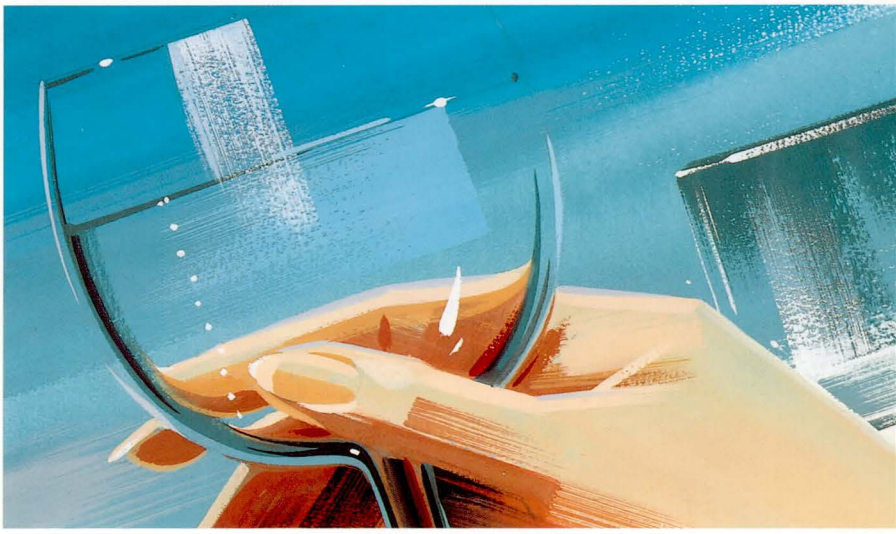
The EUROENVIRON-HOW project, operating under the EUROENVIRON umbrella, aims to help out when these problems arise. The aim of the project is to produce a reliable, portable unit which can purify heavily contaminated water in both everyday and emergency conditions.

The unit will be based on a new eight-stage filtration system which will guarantee crystal-clear drinking water from the worst of polluted sources. By using purely physical and mechanical processes, it does not involve the addition of any chemicals to the water. The system will be able to cope with chemical, biological and even radioactive pollutants. Each stage has already been well-tested in practice, but the combination is new.

The eight stages of the process are as follows. First, the effluent is spun in a cyclone (rather like a spin-drier) to eject the larger particles. Then, filtration through fine membranes removes particles as small as 0.2 microns, including radioactive fallout.

The filter is automatically cleaned by periodic pressure impacts from the 'downstream' side. One innovation is that whereas previous microfilters have relied on plastic and glass, EUROENVIRON-HOW uses ceramics for greater effectiveness. Next, reverse osmosis removes 95% of dissolved molecules, leaving only inorganic ions and some organic material.

In the fourth stage of the process, the positive and negative ions are replaced by harmless hydrogen or hydroxylions (those of which water itself is composed) in a bed of ion-exchange resin. Next, organic matter, including any bacteria and viruses, is oxidised - effectively 'burnt' - by treatment with ozone, before the final safety stage of filtration through an activated carbon bed is carried out. This combination of stages will deal not only with radioactivity and viruses, but also with nerve gases.



These processes avoid many of the disadvantages encountered using other methods: the plant does not need cleaning, and operates continuously. Whilst its modular design means that it can be put together in various ways to suit specific needs, in general it can be operated by unskilled staff.
It is extremely compact too, and will fit into a box that will fit on the back of a lorry. For use in the field, a 3,000 litre-per-hour plant can be run from a 20-kilowatt power supply.

The final goal is for the unit to automatically start whenever dangerous poisons from industrial waste water threaten the purity of raw water resources, such as rivers and lakes.

The overlapping stages of the new process, moreover, can bring about a much greater effectiveness than the established methods: for instance, over 99% reduction in certain nuclides, compared to 50% to 70% for conventional systems.

Further proof of the thoroughness with which this project attacks pollution, is a special innovative rubber container that is being developed for the removal of the solid residue. In this way EUROENVIRON-HOW ensures not only that water will be cleaned when the need arises but also that the pollutants will be permanently taken out of circulation.

EU 414
Environment Technology
Acronym:
EUROENVIRON-HOW

Title: Filtration and handling of waste water concentrates
Announced at: Rome 1990
Participants:
Sweden:
Griaq AB
Germany:
Dornier GmbH
Austria:
Gria GmbH
Main Contact: Mr Björn Litzen
Griaq AB
Tel: +46 86 61 50 44
Estimated Cost: 2.3 MECU
Time Scale: 3 years

RECYCLING OF PLASTICS POST-CONSUMER WASTE

EU 463
Environment Technology
Acronym: PCW

Title: Recycling of Plastics Post-Consumer Waste (PCW) into Packaging
Announced at:
The Hague 1991
Participants:
Belgium:
Neste Chemicals International n.v./s.a
Finland:
Neste Chemicals OY
The Netherlands:
Royal Packaging Industries Van Leer Services, R & D Division
United Kingdom:
Carnaud Metalbox Technology plc
Main Contact:
Mr. S.G. Panvalkar
Carnaud Metalbox Technology plc
Tel: +44 235 77 29 29
Fax: +44 235 77 20 20
Estimated Cost: 4.14 MECU
Time Scale: 3 years

The use of plastics in packaging is growing by at least 8% per annum throughout the EC. For the time being, 38% of 17 million tons of thermoplastics produced go into packaging. It is estimated that up to 1 million tonnes of thermoplastics is potentially recoverable from post-consumer waste (PCW). The objective of this project is to significantly increase the proportion of material to be recycled into packaging. In market terms, this can be viewed as a re-use of plastic packaging material. There will be a matching market for equipment used for classifying, separating, identifying and supplying plastic types.

Recycling of plastics from both domestic and industrial PCW back into packaging is currently inhibited by the lack of reliable and cost effective technologies for sorting, classifying, separating, identifying, preparing, modifying and converting the materials. It is not yet certain that many recycled plastics will convert as effectively as virgin material into packaging, while satisfying the stringent performance, economic and safety demands of the industry.

The project will determine selection, changes and treatment of the material together with conversion process developments which are required in order to create a wide range of packaging products which economically satisfy the above-mentioned customer demands.

Co-ordination and commercialisation of the technology with the incorporation of PCW into non-food packaging is expected in the third and fourth year of the project.

To provide a basis for the rest of the project, a study is being made to establish geographic variation in the packaging material mix from market data and sampling and proceeding with pre-sorted post-consumer waste from Belgium, Finland, Germany, The Netherlands, the U.K. and other European countries. Shredding, cleaning and separation techniques using hydrodynamic and other separation methods are being evaluated by analysing and processing samples of material from all available sources. The separated fractions have to be characterised for basic properties, i.e. density, melt index, colour, molecular weight distribution and contamination. Test methods for characterising polymers have been evaluated. Colour separation feasibility has been investigated and the maintenance of colour consistency explored. A number of significant contaminants have been identified, and methods of removing them are being investigated.

The impact on package making processes of the wider range of polymer parameters found in recycled material is being explored with a view to specifying more flexible operating conditions to permit the use of more variable material. Ways of minimising variation in material properties are also being investigated.

CONTROLLING WATER POLLUTION

Infiltrations from farming and stock-raising cause heavy pollution of soils and aquifers. They require a multi-disciplinary approach due to the large variety of farming methods, the diversity of products used, the limited knowledge of their behaviour in soil and water, the variability of the host media in space and time as well as the extensive areas covered by agricultural activites.

The ISMAP project brings together participants from various backgrounds: water suppliers, chemical industries producing fertilizers and pesticides, water agencies, R&D organisations etc. The participants constitute a dynamic cross-section in order to achieve the following results for the improvement of a whole watershed area down to local sites where pollutants are being manufactured:

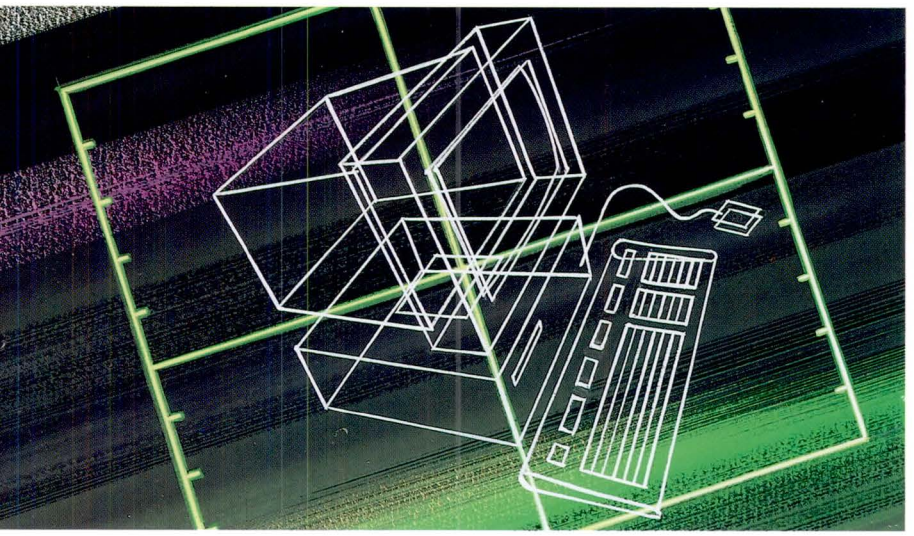
- to establish an exhaustive synthesis of the present state-of-the-art;
- to develop detection and measuring systems, including precise definitions, standardisation and automation of analytical methods;
- to understand the origins, development and transfer patterns of polluant elements in soil, surface water and groundwater;
- to define environment watchdog procedures, with identification of representative environmental parameters;
- to model the transfer that occurs during the hydrological cycle, with the idea of back-up, forecasting and management services;
- to evaluate the risks of infiltrations from farming for the environment, and draft proposals for common standards and products adapted to new requirements;
- to assess recent developments of information technologies in the environmental field;
- to optimise treatment methods for contaminated water.

The final aim of this project is to provide national and international watershed control and operating authorities, regional institutions in charge of water protection, farmers and professional bodies, water suppliers and manufacturers with an operational, combined information, monitoring and decision support system, by which pollution can be controlled starting from its agricultural source, i.e. a specific hydro-informatics system for computer assisted environmental management.
It will give fast and easy access to a comprehensive data base, including geological, weather, crop data, information on standards in force, measuring results and various analytical data. It will provide an understanding of pollution phenomena, control and follow-up of their development, risk forecasting and control, and finally it will allow for the desired coordination between the various parties concerned, as well as adequate information for the public.

EU 479
Environment Technology
Acronym: ISMAP

Title: Integrated System and Services for the Management of Agricultural Pollution
Announced at:
The Hague, 1991
Participants:
France:
Compagnie Générale des Eaux, Paris / Cemagref / Laboratoire d'Hydraulique de France / Rhône-Poulenc Agrochimie S.A / Société Chimique de la Grande Paroisse (Groupe Elf-Atochem) Ciba-Geigy / Agence de l'Eau
Italy:
Applied Information Technologies s.p.a. (Feruzzi Group)
Main Contact:
Mr. Grech
Applied Information Technologies s.p.a. (Feruzzi Group)
Tel: +39 2 62 70 9977
Fax: +39 2 62 70 9288
or
Mr. Vandevelde
Compagnie Générale des Eaux
Tel : +33 1 49243289
Fax : +31 1 44246959
Estimated Cost: 20 MECU
Time Scale: 4 years

MAKING CAD SYSTEMS WORK TOGETHER



EU 64
Information Technology
Acronym: CADAEC

Title: Computerised Engineering Unit
Announced at: London, 1986
Participants:
France:
Serete
Spain:
Sereland
Switzerland:
Elektrowatt Ingenieurunternehmung AG
Main Contact:
Madame DELCROIX
SERETE
Tel: +33 1 45 70 57 82
Fax: +33 1 45 70 50 12
Estimated Cost: 14.3 MECU
Time Scale: 4 years

During a major construction, project coordination between the various engineering specialists is essential. However, although architects, heating and ventilation engineers, structural engineers, etc. may all be using computer-aided design (CAD) systems, these are not necessarily compatible. To overcome such drawbacks, CADAEC has developed a centralised coordinated CAD system for use during construction projects.

The Director of the CADAEC Project of the French company SERETE describes the advantages of the project by saying:
"The CADAEC system enables all people working on the same project to feed data into a centralised filing system and extract the documents they need. The system allows each person to continue working with their own familiar CAD system, but data are fed into a coordinated system".

The CADAEC project began in 1985 with the aim of moving towards complete computerisation of the engineering process.

CADAEC involves a completely new method of working. New communication technologies have been introduced to link the various services and departments in the engineering company itself with each other and with other companies participating in a project. The CAD systems allow repetitive tasks to be achieved rapidly. Shared databases enable better coordination of a project, which reduces the time spent and ensures consistent data.

The unit can also be used by suppliers and manufacturers which are based away from the construction site. The system will allow for the standardisation of components and the availability of computerised specifications may lead to the introduction of computer-aided manufacture.

By 1989 the system had been sold for use in eight large construction projects. The first project to use CADAEC technology was the ELA-2 launch site for the European Space Agency at Kourou in French Guiana.

However, one of the most important projects is SEMAPA which is in charge of urban planning for Paris Austerlitz, the South East region of Paris. The system relates to many people involved in urban design, such as architects, SNCF (the French railway company), RATP (the Paris underground railways) and EDF (the French electricity authority). All produce documents about the re-development of the area which are transferred to standard format for submission to the system. This covers all areas in SEMAPA and allows coordinated drawings to be produced.

Once a construction project has been completed, the availability of standardised computerised drawings will help with maintenance. "Eventually it will become natural to produce computerised output. We feel that today in computerised exchange systems we are where we were ten years ago in CAD", stresses SERETE.

REMOVING THE LANGUAGE BARRIER FOR TRADE

MPD a comprehensive multipurpose product description and coding system

MPD is a unique, complex, authentic and always up-to-date system of standardised product naming and coding, specifically designed for the international business community and providing - for the first time - full compatibility for interfaces with public requirements, particularly in the area of customs and statistics. MPD is therefore particularly appropriate for computer application and electronic communication (EDI) between parties - public and private - involved in international trade transactions.

The first edition of MPD comprises approximately 27,000 items in six languages.

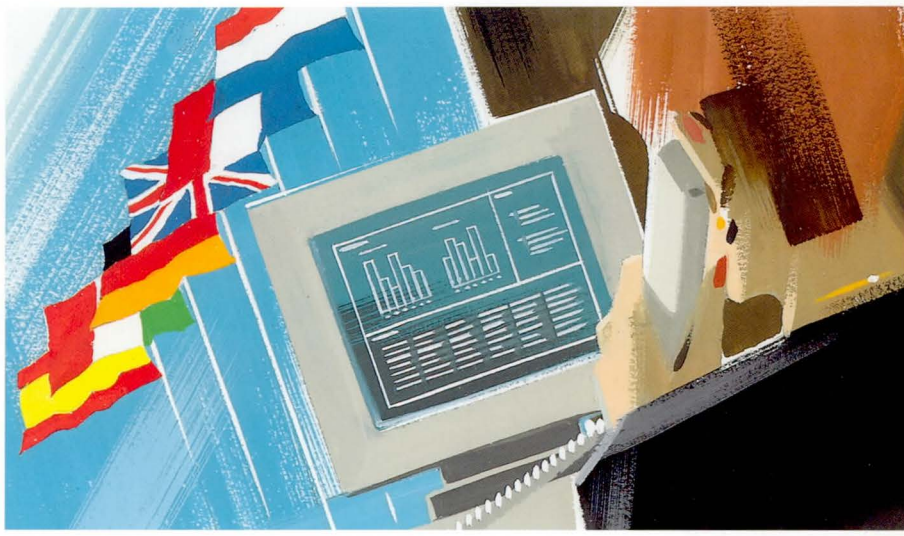
The product names are taken from the most recent and most common commercial usage of trade and industry. The terms have been harmonised in each of the six languages by competent experts, 'native speakers' who are doing their job in their respective countries under the guidance of national Chambers of Commerce and Industry (CCIs). Whenever uncertainties or ambiguities arise regarding certain products during the harmonisation work, these terms are checked with trade and sectoral associations.

The product codes are based on the international 'Harmonised Commodity Classification and Coding System' (in brief 'Harmonised System/HS') of the Customs Cooperation Council (CCC, Brussels).

Uniform access to company-related data a European exercise:

All of the national CCI organisations participating in the development and maintenance of MPD are committed to implementing MPD in their own data management systems. They have invested manpower resources of more than 50 man/years into the MPD project.

The Commission of the European Communities has realised the multipurpose potential of MPD and actively supported the start of this project. The project obtained EUREKA status in June 1988.



MPD will become the common denominator for CCI company-databases in Europe. The high degree of both geographical and production sector coverage, combined with actuality and reliability accounts of the specific strength and the high quality of company-related CCI databases. This permits the user to compare data of different countries with one product identification system, MPD. The asset of this system is that different areas of business administration can be integrated with MPD such as market research, international trade marketing, purchasing and managing individual trade transactions (including electronic customs clearance and trade data interchange/ EDI to form one complex management information system.

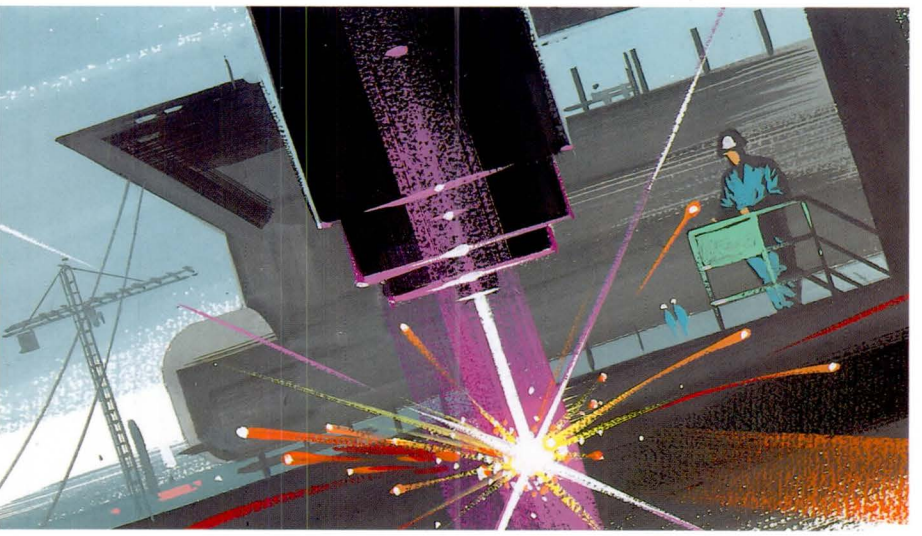
At present, language versions of MPD are available in Dutch, English, French, German, Italian and Spanish but more language versions will follow.

Main assets of MPD:
- Expert system dedicated to commercial purposes;
- Developed by trade experts for trade experts;
- Oriented to business practice;
- Descriptive and explicit;
- Based on 'HS' classification system (customs tariffs: international trade statistics) giving high level of compatibility;
- Accessible both numerically and alphabetically

EU 275
Information Technology
Acronym: MPD

Title: Multilingual Product Description (MPD)
Announced at:
Copenhagen, 1988
Participants:
Austria:
Bundeskammer der Gewerblichen Wirtschaft
France:
Assemblée Permanente des Chambres de Commerce et l'Industrie
Germany:
Deutscher Industrie- und Handelstag
Italy:
Cerved Spa
The Netherlands:
NV Databank
Spain:
Camerdata
United Kingdom:
Association of British Chambers of Commerce
Main Contact:
Bundeskammer der Gewerblichen Wirtschaft
Mag Helge J Schoener
Tel: +43 222 501 05 ext. 4380
Fax: +43 222 502 06 255
Estimated Cost: 4.6 Mecu
Time Scale: 65 months

BRINGING LASERS TO THE INDUSTRY



EU 249
Laser Technology
Acronym: LASMAN

Title: Solid-State Laser Based on Advanced Manufacturing Technology
Announced at: Copenhagen, 1988
Participants:
F Air Liquide SA, Centre Technique des Applications Soudage
Germany: Lumonics GMBH
Italy: Nuova OSAI
United Kingdom: Lumonics Ltd. European Headquarters / Nada Electronics Ltd. / Sifam Ltd. / Heriot Watt University
Main Contact: Lumonics Ltd. Mr. C. Ireland Tel.: +44 788 570 321 Fax: +44 788 579 824
Estimated Cost: 17 MECU
Time Scale: 5 years

High power lasers (solid state, carbon dioxide and excimer) will have an important impact on manufacturing technology over the next decade. Important developments are however necessary to make laser technology applicable in a large variety of industrial sectors and processes.

The participants in project EU 249 have considerable expertise in the field of machine tool manufacturing and on experience in the development and introduction of average power solid-state lasers in material processing.

The developments proposed are twofold. First, the partners put considerable effort into the extension of their know-how on appropriate and comprehensive combinations of state-of-the-art technologies necessary to maximise the effectiveness of laser processing. This has been achieved by developing a comprehensive authoritative database on effective industrial application of solid state lasers in the power range 0.1 - 5 kilowatts.

The complete information constitutes an ideal support tool which is now available to the project partners for the promotion of laser utilisation in industry as well as for consultancy services.

The second goal is to establish a complete system supply capability that can fully meet the needs of potential user industries. Developments on turnkey systems as stand-alone equipment or integrated into other production equipment are now well underway. Several potential users are collaborating in this process by giving the project partners an insight into specific industrial needs.

The programme involves important basic laser development to obtain the appropriate power range for solid state lasers. Special effort is being put into the design of beam delivery systems particularly for materials processing lasers, with emphasis on flexibility and reliability at powers up to 5 kilowatts. Significant attention has also been given to the use of gases both to aid materials processing and to generate entirely new processes.

Over the period of the project, three different demonstrator lasers have been assembled and used for process studies and application investigations with industrial companies. Fibre optic beam delivery being considered essential to the up-take of solid-state laser based manufacturing technology, all demonstrators have been equipped with this innovative delivery system.

At all development stages, special attention has to be given to upcoming international standards concerning construction and safety aspects of high power lasers.

Improved YAG laser heads developed under the project with a power of over 600 Watts can already be routinely manufactured and prospects for further gains in efficiency are good. The research will be finished by the end of 1993, strengthening the partners' commercial position in a highly competitive segment of the advanced manufacturing technology market.

HIGH PERFORMANCE MATERIALS FOR TOMORROW'S ENGINES

Improving internal combustion engine efficiency means increasing ignition pressure. However current materials, particularly the sliding surfaces of bearings, cannot handle mechanical stress at such higher pressures.

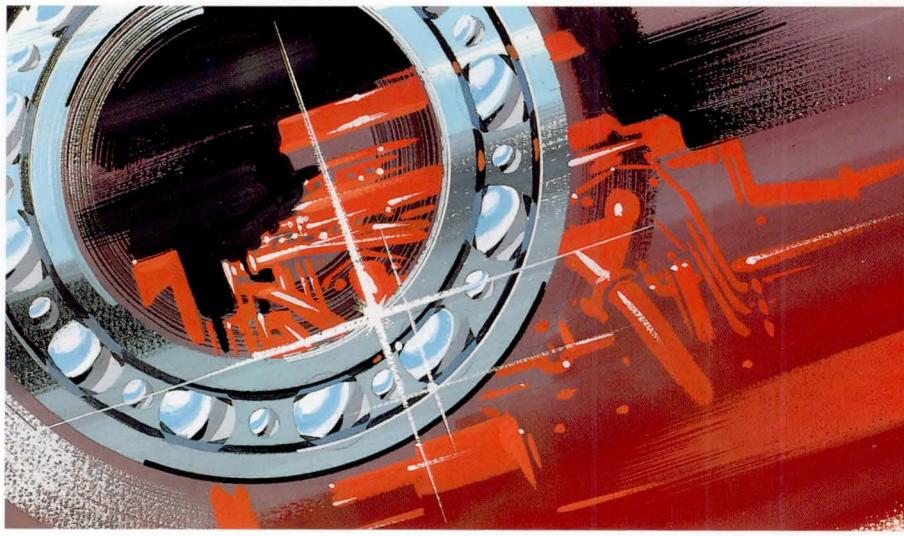
The standard technique for producing bearings uses electro-plating. However only a few metals can be deposited electrochemically, and the processes have serious environmental consequences.

EUREKA Project EU 338 - SOCOMAT, is developing and applying new, cleaner technologies to produce better bearing coatings. The improved materials will lead to more efficient, longer-lived engines, and a more competitive European industry.

Vacuum Deposition: A Step Forward

SOCOMAT is developing high-rate 'sputtering' vapour deposition techniques to coat a substrate with soft surface films. The technique involves bombarding the coating raw material with noble gas ions in a vacuum. The atoms of the material are ejected and then deposited onto the substrate.

The coating material can be practically any mixture of any elements, so that even elements immiscible in the liquid state are mixed at the atomic level. Hence an enormous range of surfaces are possible, including alloys only previously produced in zero-gravity.



An Integrated R&D Effort

SOCOMAT is a concerted effort shared by scientists, bearing producers and engine manufacturers. In this way know-how is effectively transferred between basic research to production processes, and engine design to material development.

The project has already implemented Al-Sn layers in industrial processes. They exceeded all expectations in terms of wear resistance and operational properties. And although current techniques use intermediate layers between surface and substrate, the negligible wear rate of these new surfaces will lead to direct substrate-surface deposition, with even higher mechanical durability.

The project is now optimising the processes and developing tailoring solutions for specific applications. This has led, as was intended, to further fundamental research into film growth mechanisms, which will then feed further applications.

EU 338

Materials Technology
Acronym: SOCOMAT

Title: Development of Soft Coating Materials for Tribological Applications under Extreme Mechanical Conditions.
Announced at: Vienna, 1989
Participants:
Austria:
Institute for Applied and Technical Physics, Technical University of Vienna / MIBA Gleitlager AG
Germany:
MTU Motoren und Turbinen Union
Hungary:
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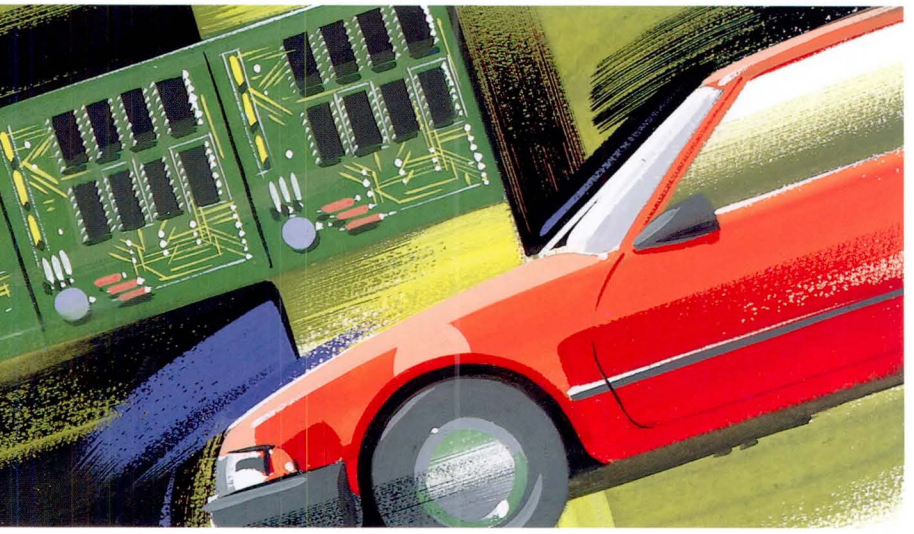
Estimated Cost: 3.6 MECU
Time Scale: 4 years

PRODUCING ELECTRONIC IGNITION SYSTEMS JUST-IN-TIME



EU 265
Robotics and Production Automation
Acronym: FAMOS PLANET

Title: Production of Electronic Control Units for Automotive Use
Announced in: Copenhagen, 1988
Participants:
France:
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Italy:
Marelli Autronica S.P.A. / CNR / Politecnico di Milano
Ireland:
A.M.T Centre, Dublin
Portugal:
Instituto de Soldadura & Qualidad
Spain:
Jaeger Iberica / Universita di Madrid
United Kingdom:
Wolfson Image Analysis Unit
Main Contact:
Mr F Fere
Marelli Autronica S.p.A.
Tel.:+39 382 599 571
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Estimated Cost: 72 MECU
Time Scale: 5 years

Over the last two decades, automotive component manufacturers have been exposed to important pressures. The industry, which supplies an increasingly concentrated car manufacturing sector, has to integrate into the "Just-In-Time" manufacturing concepts of its clients. Therefore, the ability to interface with the customers' CIM systems is one of the key factors of success for the coming years.

FAMOS PLANET is concentrating its efforts on the manufacture of electronic ignition systems. Whereas in the past these devices were mainly to be found in top-of-the-range vehicles, they are now more widely used.

Electronic ignition systems present a considerable advantage compared to the traditional mechanical devices. They are reliable and maintenance free and allow for precise control of the essential factors relevant to the proper functioning of the engine. Thus they also contribute to efficient fuel consumption and emission control.

Project EU 265 initially started with a feasibility study on computer integrated manufacturing techniques applied to these specific automotive components. All major stages of the production process, including product design, technological prerequisites for assembly line development and for factory floor management systems were considered.

The developments include specialised robots for the precise assembly of the electronic control units, vision systems capable of identifying different types of products manufactured on one assembly line, and a dedicated computer management system, the key to CIM technology.

The installation of plants in two countries and the integration in a common logistic system involving clients, suppliers, and R&D centers is planned for 1993.

AUTOMATING A DANGEROUS JOB

Fettling iron castings is a dirty, noisy and dangerous occupation, and, for the time being, improvements in the casting process are not significant enough to make the fettling operation superfluous or to have it considerably reduced.

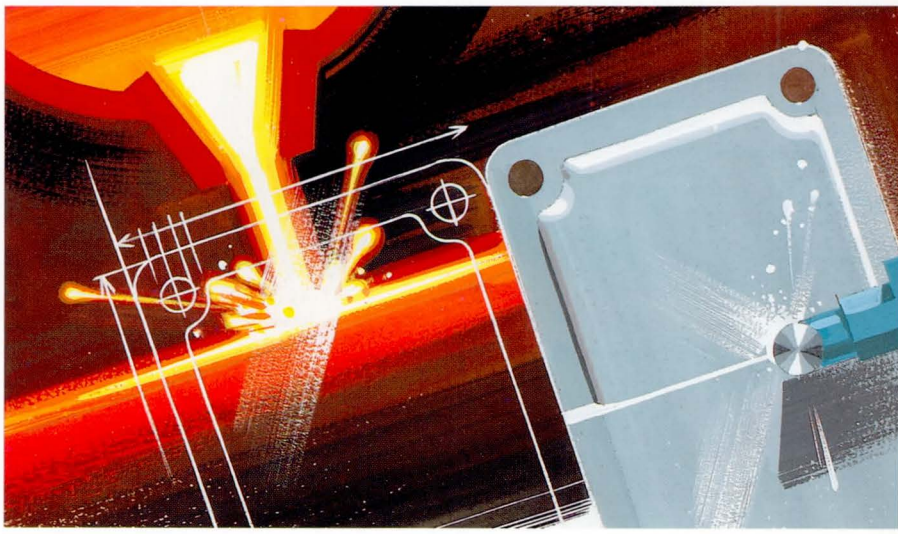
The casting process which offers many degrees of freedom in the design of a work piece, constitutes a prime technique for the production of complex parts in batches of all sizes. The fettling operation consists of removing excess material with an abrasive tool, and is applicable to castings of different alloys of iron, aluminium and brass, and also to forgings.

As every casting type requires individual fixtures and grippers it is difficult to develop a flexible fettling cell which can be used for a large variety of work pieces.

Great effort has been made in the past concerning the automation of the fettling process. Experiments with compliant tools or with force control have not been successful. The harsh environment of the foundry does not allow for the use of delicate machinery and equipment.

In project EU 456, two companies from Norway and Germany, and three research institutes have formed a consortium with the aim of developing an automated fettling cell on the basis of their large experiences in the fields of robotics, grinding and programming through specialised man-machine interfaces.

MultiCraft, has adapted an existing specialised robot to the specific needs of the fettling operation. The robot is equipped with a force-sensing system to adjust the appropriate feed and to compensate for individual differences on the castings. At programmable intervals, the wear of the abrasive material is checked. Additional sensors measure the work piece position, orientation and geometry.



Programming is based on a CAD model describing the final shape of a work piece. One important feature of the fettling cell is that the foundry worker can teach the robot in the fettling shop giving him the option to take over coordinates from the CAD model. Therefore a man-machine interface specialised in the fettling operation has been developed. With this system the foundry worker can rely on textual and graphical support during the whole teaching phase.

Various additional factors had to be taken into account in order to complete the fettling cell and to adapt it to specific needs without excessively limiting its flexibility. Thus the advantages and disadvantages of the use of different possible abrasive materials as well as their proper use in a machine had to be studied. In order to make processing of several types of work pieces possible in one fettling cell, a flexible gripper system allowing quick alterations and appropriate transport equipment had to be designed.

Finally special attention had to be given to overall safety, also taking into account the treatment of dusts released during the fettling process.

A basic automated fettling cell is now available while developments on further options are still ongoing.

EU 456
Robotics and Production Automation
Acronym: MULTICRAFT

Title: Automatic Fettling Cell
Announced in: Rome, 1989
Participants:
Norway:
MultiCraft / SINTEF / Nowegian University of Technology
Germany:
Greif Werke / Kernforschungszentrum Karlsruhe
Main contact:
Mr. Olavesen
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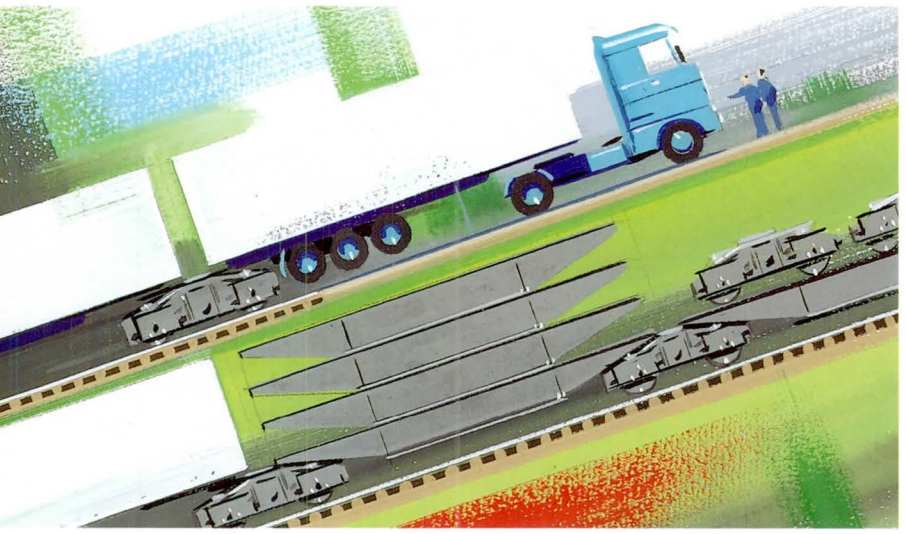
Tel.: +47 2 22 68 55 50
Fax: +47 2 22 68 55 90
Estimated Cost: 15 NOK (2.5 ECU)
Time Scale: 2 years

COMBINING THE BEST OF ROAD AND RAIL



EU 648
Transport Technology
Acronym: CODA-E

Title: Rail Road Transportation System
Announced at:
The Hague, 1991
Participants:
Stork Alpha Engineering
Nederlandse Spoorwegen
Centrum Voor
The Netherlands:
Stork Alpha Engineering
Nederlandse Spoorwegen
Centrum voor Technische Onderzoek
Sweden:
Swedish Railways
Main Contact:
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Estimated Cost: 3.87 MECU
Time Scale: 2 years

This project aims to create a new generation of a "bi-modal" road/rail system incorporating a maximum of advantages and a minimum of disadvantages of both rail and road transport.

The solution is to develop a cargo container that can easily be transferred between trucks and trains; effectively it should be a container that is both a road trailer and a train carriage.

Such systems already exist but there is one main problem with them. To transfer the transport unit from road to rail, or the other way around, requires several people and an expensive heavy duty crane.

In the case of the Coda-E system all that is needed is a road surface level with the track, something that is found in most freight stations around Europe. The driver raises the back end of the trailer using the pneumatic suspension system and reverses this end over the rails until it lies above the "bogie" - the part of the train that contains the wheel and brake systems and that connects the train carriages. The back end of the trailer is lowered onto and attached to the bogie.

The front end is then raised up and supported by a pair of legs, so that the truck can be driven away from underneath the trailer, allowing for a second bogie to be wheeled underneath and attached. The trailer has now become a train carriage, supported entirely by the two trainbogies. The whole process takes two people about five minutes per unit. The second bogie is then used to attach the back-end of the next trailer, and so on. This way a complete train can be formed.

There are a number of technical challenges to be met. The participants have to develop an air spring that extends slightly further than the typical system, and to introduce minor modifications to the train bogies in order to integrate the braking systems.
Furthermore the trailer must be sturdier, as it will experience greater physical stress when on the rails than trailers generally do on the road. There is also the coupling system between the bogie and the trailer which is to be developed.

The system is being tested in Sweden which is an excellent testing ground. Distances are long, the weather sometimes harsh, and the rail network does not reach all destinations, so extra transport by road and ferry is inevitable. Support is very strong in the Netherlands too, which is actively pursuing a policy of promoting environmentally positive solutions to Europe's growing transport problems, and are the first customers for the system.

The system is also bound to be very attractive to East European countries. They need to restructure their transport systems in an efficient and inexpensive way. The Coda-E system does not incur substantial start up costs, so there will most probably be a growing market not only there but also throughout Europe. Interest has been raised even in Japan and Brasil.

BIBLIOGRAPHY

For the interested reader, further material on EUREKA is available upon request from the respective National Project Coordinators or the EUREKA Secretariat (see addresses on Pages 46 + 47).

Material available in English, French, German, Italian and Spanish includes:
- Annual Progress Report.
- EUREKA News (published quarterly)
- EUREKA Brochure (containing a short general description of the Initiative).
- Vade Mecum (containing:
  - The Medium Term Plan.
  - Declaration of Hanover.
  - Procedures for EUREKA projects.
  - Memorandum of Understanding on the - EUREKA Secretariat).

Other publications only available in certain languages :

- Environment Technology Folder (English)
- Robotics and Production Automation Folder (English)
- Transport Technology Folder (English)
- Medical- and Biotechnology Folder (English)
- Energy Technology Folder (English)
- Information Technology Folder (English)
- Checklist for the Negotiation and Drafting of an International R&D Cooperation Agreement in the Framework of a EUREKA Project (English)
- GPTI-Guidelines For the Protection of Technological Information (English)
- Guide pour la protection de l'information technologique (French)
- Guide to standardization for Companies involved in EUREKA Projects (English)
- Guide de la Normalisation pour les Industriels impliqués dans un projet (French)
- CBI - Cross Border Innovation Booklet (English)
- Guide pour la préparation et la négociation d'un accord de coopération internationale dans le cadre d'un projet (French)
- Le Contrat modulaire d'assurance des project EUREKA (French)
- Assessment Report/Dekker Report (English)
- Jubilee Book (English)
- SME guide (English)
- SM Booklet/Supportive Measures Booklet (English)
- Open the door to EUREKA (English)
- EUREKA and Central and Eastern Europe (English)

The EUREKA Database

The EUREKA database, which is run by the EUREKA Secretariat, contains a wealth of information on announced or proposed projects. It can divulge the R&D fields covered in EUREKA, technological goals, the implementation schedule of projects,budget, participants' names and contact addresses. It is a contact tool for potential industrial and scientific partners.

The information contained in the EUREKA database can be:
- Supplied on request by National Project Coordinators or by the EUREKA Secretariat in Brussels (see addresses on Pages 46 + 47).
- Accessed directly via ECHO (European Commission Host Organisation) host computer in Luxembourg. This can be done through a standard terminal linked to ECHO via the X25 data network (international address 0270 448 112 or A9270 448 112 for users accessing from the United Kingdom) or via the international telephone network (+ 352 43 64 28 if you use a 300 bits modem and +352 42 03 47 if you use a 1200 bits modem: Password: EUREKA in both cases).
- Accessed via the TELETEL network in France using a Minitel terminal (code 3617-EUROBASE).
- Accessed via the French Transpac network (Code 3617) or via an international line (+33 36 43 15 15). Select EUROBASE service.

In addition, several brochures and newsletters are published at national level.

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