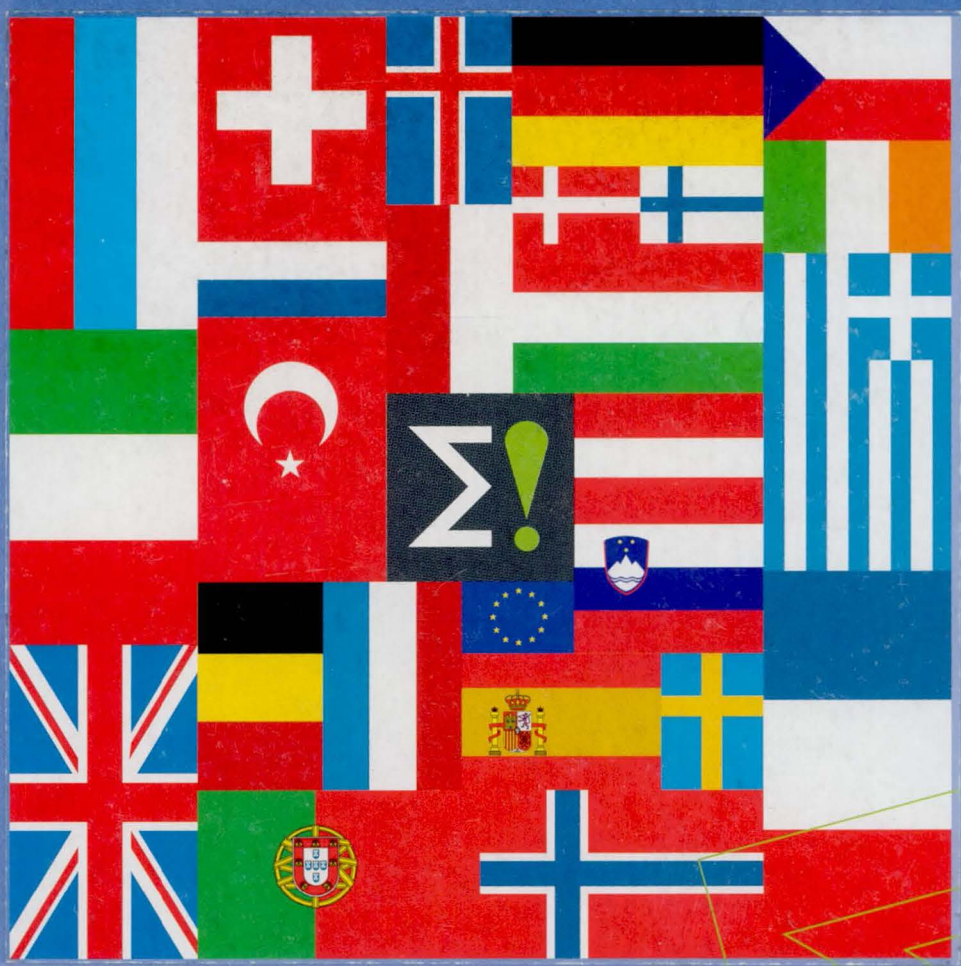
ANNUAL REPORT

1996



EUREKA

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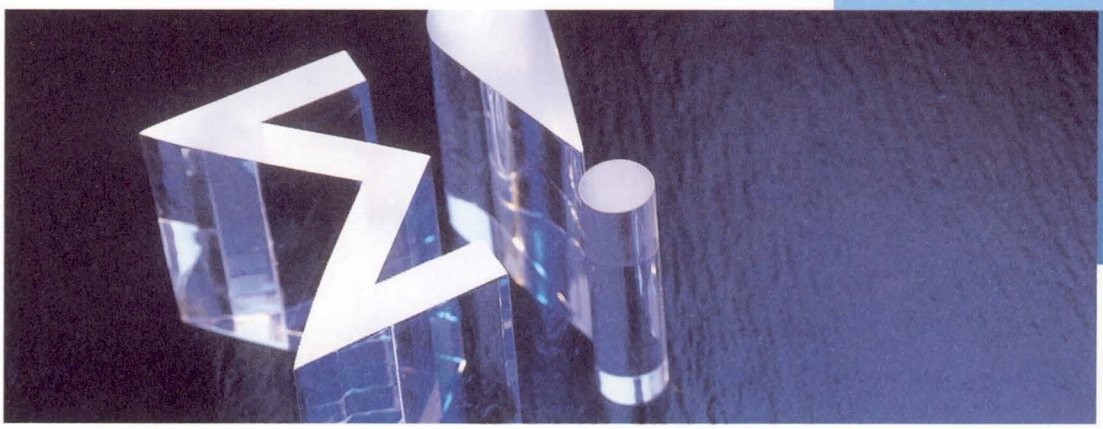
EUREKA - A PROVEN SUCCESS



EUREKA was launched in 1985 to help Europe's technologically oriented companies break down the barriers preventing them from working together in research and development. At the time, the argument driving this aim - the globalisation of the world's economy - was new. EUREKA's working methods, its decentralised structure and 'bottom-up' project concept, were just as novel.

Just over a decade later, of course, the effects of globalisation is widely understood. The positive impact of EUREKA in addressing these effects is equally recognised.

The EUREKA Project Portfolio

By December 1996, EUREKA's project portfolio - described in detail in the following pages - reached 666 running projects, worth a total estimated cost of around 10.5 billion ECU. Between them these projects involve some 3200 participants, of which around 1000 are large companies, some 1200 small and medium sized companies, more than 800 research institutions (including universities) and about 150 other organisations.

This report also gives a statistical overview of the more than 430 EUREKA projects which have already finished. The cost of these projects is estimated at 6 billion ECU, bringing the total cost of ongoing and finished projects to over 16 billion ECU. Nine of the finished projects are also described in this report.

The EUREKA advantage

"Bottom up" is EUREKA's ground rule. This approach provides participants with the opportunity to launch European R&D projects according to their own needs and on their own initiative, with a minimum of bureaucracy and a maximum of control and flexibility. This principle leaves the participants full responsibility for defining and implementing their project and ensures that all EUREKA projects are motivated by sound commercial and technological interests.

EUREKA's structure is built to mobilise 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 require the project to:

- include independent partners from at least two different EUREKA Members;
- be innovative in its sector;
- result in a marketable product, process or service;
- be aimed at the civilian sector.

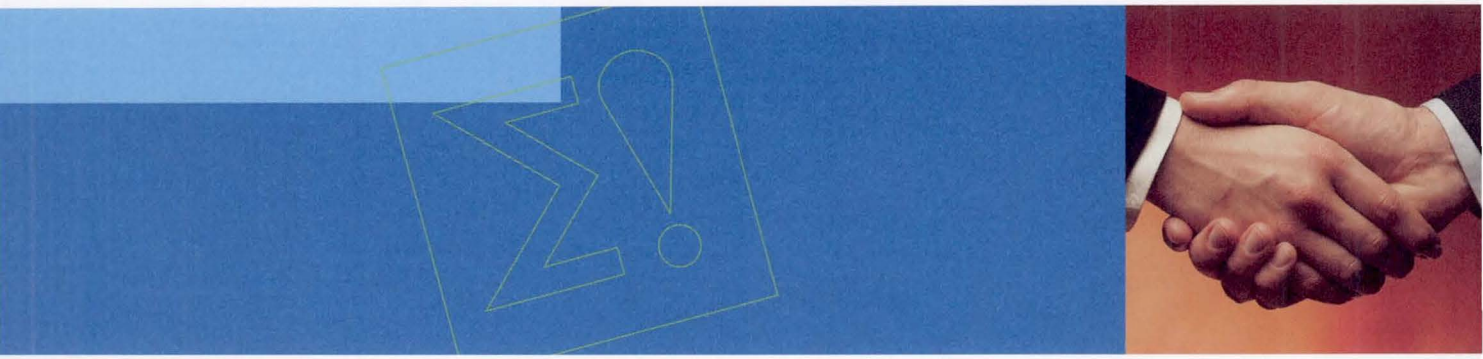
Any company or research institute in a EUREKA member country, which has a proposal meeting the EUREKA project criteria, is invited to contact the relevant National Project Coordinator (NPC). The application procedure to establish or join a EUREKA project is very simple and is constructed in such a way that a well founded project can be up and running relatively quickly.

EUREKA: A Flexible and Decentralised Structure

Members

EUREKA was launched in the mid-1980s with 17 Members. Since then it has expanded in all directions of the compass, reaching Iceland, Turkey and, particularly several countries of Central and Eastern Europe, bringing the total number of EUREKA Members to 25.

EUREKA's Members are: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Poland, Portugal, Russia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom and the European Union.



In addition, projects involving participants from non-member countries continue to grow in number. This is particularly the case in countries where EUREKA National Information Points (see below) have been established.

The EUREKA Chairmanship and Ministerial Conference

The Chairmanship of EUREKA rotates on a yearly basis between the Members. The Chair is the main initiator and organiser of EUREKA activities and events. At the end of its term, each chairmanship hosts the Ministerial Conference.

The Ministerial Conference is the political body of EUREKA and the Initiative's highest authority. It is composed of Ministers from the 24 member countries and a Commissioner from the European Commission. It meets to lay down the political guidelines and officially announces the new EUREKA projects launched since its previous meeting.

High Level Group (HLG)

Each EUREKA Member appoints a High Representative to the HLG. It formulates general EUREKA policy for approval by the Ministerial Conference and generally meets three or four times a year. The HLG also endorses new EUREKA projects.

National Project Coordinators (NPCs)

The NPCs are the operational core of the network. They run the national EUREKA offices and form the interface between project participants and the EUREKA network. They are in close contact with the relevant national funding authorities as well as with their counterparts in the other EUREKA countries. The NPCs can assist participants in their search for additional partners and offer help in the actual setting up of a project. The NPC addresses are listed on pages 24-25 of this report.

National Information Points (NIPs)

In most European non-member countries a network of EUREKA National Information Points has been set up to provide industry and research institutes in these countries with an easy interface to EUREKA and facilitate participation of their industry and research organisations in EUREKA projects. The NIP addresses are listed on page 26 of this report.

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 and promotes the EUREKA concept in conjunction with national authorities. An overview of its publications and information on the EUREKA database are given on page 27 of this report.

EUREKA: Added Value

EUREKA projects and participants are eligible to carry the EUREKA Seal - an internationally recognised hallmark of excellence. Surveys consistently demonstrate that project participants value the impact the EUREKA label has on their image as a hi-tech, internationally oriented organisation.

EUREKA projects also have, in many cases, access to public financial backing from their national governments and the European Union, although the participants themselves are responsible for securing adequate funding.

Participants are included in EUREKA's project database, which lists by name and technological skills some 4000 of Europe's foremost companies and research institutes. Various national and European publications, as well as the participation at fairs and conferences, are only some of the tools used to promote EUREKA projects. 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.

Furthermore, EUREKA offers its projects various kinds of support in a wide variety of areas such as standardisation, contracts, venture capital etc.

EUREKA IN 1996

1996 was a year of consolidation for EUREKA, with another strong crop of new projects, a busy calendar of Brokerage Events and a number of new tools produced to help project participants.

The 1996 meeting of the Ministerial Conference in Brussels announced 156 new projects and 4 new umbrellas, making 1996 the fourth successive year where the number of new projects was well over the 100 mark. With another 170 new participants also joining ongoing projects this brought the EUREKA portfolio to 700 ongoing projects by June 1996 (see 'Project Overview, 1996, page 12). These projects are worth a total of over 11,000 MECU and involve more than 2,300 companies and 1,000 research institutes and other organisations. In addition, a record number of 122 projects finished last June, bringing the total number of finished projects to 360. Finally, another 60 projects were endorsed during the second half of the year.

SMEs account for over 40% of the participants in the new projects, so it is not surprising that the average cost of these projects - not including the two new 'strategic' projects (MEDEA and COMMEND) - is around 3.5 MECU. Nevertheless, this is significantly higher than the average cost of the projects announced by the Ministerial Conference in Interlaken (Switzerland) in 1995, possibly indicating an upturn in company investments in R&D as Europe lifts out of recession.

New Umbrellas

Umbrellas continued to prove their dynamism in generating projects throughout 1996, accounting for over one quarter (44) of the new projects. In addition, the Ministerial Conference announced four new umbrellas:

- MULTIMEDIA: bringing together the many different sorts of organisations required to create multimedia, focusing on stimulating projects in the fields of multimedia equipment, software, platforms and applications;
- FACTORY: reflecting the new priorities of manufacturing industry in the late 1990s, particularly the integration of hi-tech manufacturing with human resources;
- WOOD Initiative: encouraging international cooperation and R&D in Europe's wood industry;
- CARE: created from a project launched the year before, this umbrella aims to encourage recyclability and re-use in hi-tech products, processes, systems and services.

Brokerage Events

The latter three umbrellas all held their first Brokerage Events last year. 1996, in fact, saw a total of nine Brokerage Events in countries ranging from Iceland to Romania. Between them they covered a wide variety of subjects, including:

- *Oil and gas sector (United Kingdom):* over 20 different project ideas resulted in the fields of exploration techniques, drilling operations, and exploiting deepwater and difficult fields;
- *Wood engineering (Switzerland):* new proposals included, among others, advanced wood processing robots, a five-storey timber frame house and a model for automating the kiln drying process;
- *Romanian partnerships (Romania):* a two-day event was held to stimulate new projects involving Romanian companies and research institutes, focusing on energy and the environment, biotechnology and agrifood, and computer science and automation;
- *Food technologies (Iceland):* topics ranged from quality issues to environmental aspects. Almost half of the 45 ideas discussed at the meeting were identified during the follow-up phase as being particularly solid;
- *Manufacturing industry (Germany):* the first event held under the FACTORY umbrella focused on product development, advanced manufacturing systems, information and communication technologies, business process improvement, logistics and environmentally friendly products and production processes;

- *Transport technologies (Poland):* TransEast '96 addressed the 'technology demonstration' opportunities being provided as new transport networks are developed to link Western and Eastern Europe. It focused on intermodal transport, road safety, road pricing, transport management, road and rail maintenance, environmental protection and construction;
- *Environmental monitoring (United Kingdom):* over 100 delegates from 21 countries discussed data management and technologies for monitoring air, water and solids, generating around 25 new project proposals;
- *'Greening' the electronics industry (Germany):* the first Brokerage Event sponsored by the new CARE umbrella focused on the market for environmentally sound electronic products, technological developments, 'benchmarking' instruments (life cycle analysis, eco-labelling, etc.), training and education issues and more.
- *Advanced shipping technology (the Netherlands):* new technologies for ship design, construction and use were discussed, as were production and maintenance logistics, new ships for new requirements, improved safety and communication/navigational systems.

Medium Term Plan

EUREKA's third Medium Term Plan (MTP) was adopted in 1996 to guide the Initiative until the end of the century. Developed in consultation with industry, notably through an independent group of 10 industrialists led by Viscount E. Davignon, the Plan aims to help re-orient the Initiative to face the challenges posed by increased pressure on public R&D funding and the globalisation of markets.

The new Plan identifies seven key issues:

- *Improving EUREKA's Attractiveness and Project Quality:* Consistent, systematic project evaluation will help identify key factors for project success and innovation, which will then be disseminated as widely as possible. Projects will be supported through a range of services such as partner search, assistance with patents, legal issues and funding access.
- *Initiating Strategic Projects:* EUREKA is ideally placed to foster strategic collaborations such as JESSI and MEDEA (see 'Project Overview', page 12). The Initiative will therefore develop a dialogue between European industry, science, governments and the European Union (EU) to identify the areas requiring focused European initiatives and the conditions necessary for their implementation. Better coordination of the financial support from governments, financial institutions and the EU is a key aim.
- *Improving Funding Possibilities:* The MTP re-affirms that the Members' R&D funding authorities will continue to give project proposals high priority. They will also continue their efforts to improve the synchronisation of public funding, to encourage banks and financial institutions to support EUREKA projects, and to improve access to risk capital.
- *Enhancing Synergy between EUREKA, the EU and other European R&D Frameworks:* EUREKA should remain the principal vehicle for supporting 'near market' R&D activities, with funding appearing from the EU wherever projects meet the EU's selection criteria. When the EU identifies new thematic priorities, EUREKA could provide the framework within which business and industry can define and implement relevant projects.
- *Central and Eastern Europe:* Projects involving organisations from Central and Eastern Europe should be supported to further integrate EUREKA's new Members from the region, while the effectiveness of the network of National Information Points (NIPs) will be reviewed.
- *EUREKA and Worldwide Cooperation:* EUREKA's mechanisms will be examined to see whether increased flexibility regarding participation from outside Europe is warranted, while links with initiatives similar to EUREKA around the world will be strengthened.
- *Better Dialogue Across Europe:* The MTP's final point is to ensure that industry, research institutes, financial institutions and other organisations involved in innovation consider EUREKA to be the preferred framework for industry-led, transborder cooperative R&D projects. This will mean improving awareness of EUREKA's value, developing information flows between the Initiative and other national and European offices involved in coordinating R&D and innovation, and promoting the EUREKA label as a sign of quality.

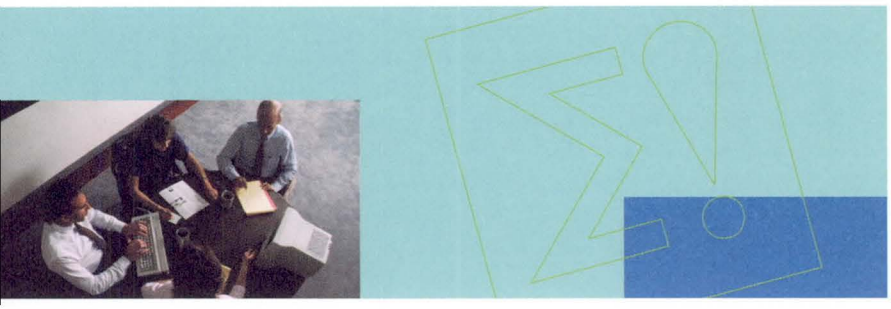
On the other hand, EUREKA must listen to European industry's point of view of how the economic and regulatory framework can be made more conducive to innovation and collaboration. The MTP therefore concludes by asking EUREKA to examine whether additional mechanisms are required to improve the dialogue between it and European industry.

Market Impact Analysis

Reflecting the priorities established in EUREKA's new Medium Term Plan, the 1995-1996 Belgian EUREKA Chair piloted a new method for evaluating the Initiative's impact on European industry. The new system builds on an improved Final Report which each project participant fills in when their project is completed. Under the new system, the industrial project participants also receive a two-page 'Market Impact Report' one, three and five years after their project is finished in order to assess the actual impact of the product or process on the market. Assuming this exercise is carried out every year, this will allow EUREKA to measure its impact consistently over the years for the first time, as specified in the Medium Term Plan. The results will help EUREKA 'fine-tune' its activities, deepen its understanding of European RTD and improve the accuracy of the EUREKA database. An Annual Impact Report will, each year, provide a synthesis of the results obtained by the EUREKA participants.

Communication Products

One of the central elements of the Belgian EUREKA Chair's work programme was to make information on EUREKA easier to access and use. The EUREKA WWW site (at http://www.eureka.be/), designed and implemented by the Belgian EUREKA Chair, improves the accessibility of the project database enormously and realises that aim. Users can search for projects by specifying project number or acronym, a 'Member/Technological Area profile' (e.g., find all Transport projects led by a French organisation with Spanish partners), the project's contact information and keywords. A fifth option allows users to search the database, using criteria such as keywords and Member, for all projects interested in new partners.



Apart from the database users can also access additional services. These were developed by the EUREKA Secretariat and include Frequently Asked Questions, files on each EUREKA Member and material culled from paper publications (EUREKA News, the Annual Report, Project Promotion Sheets, press releases, etc.). All of this additional material pertaining to projects is fully integrated with the database, allowing users to search the database for projects of interest and then access any journalistic material placed on the WWW site.

In late 1996, a Communication Working Group, chaired by the EUREKA Secretariat, was set up to develop a more structured approach to the promotion of EUREKA. Based on market analysis and other input from the Members, a coherent, overall communication strategy for the EUREKA network will be developed and implemented during 1997.

The EUREKA Toolbox

The quarterly newsletter EUREKA News was also relaunched, as were the Project Promotion Sheets, which are now written as each project nears completion. Probably the most important new publication, however, was a relaunched 'EUREKA Toolbox'.

The original toolbox was a set of seven independent guides aimed at helping project participants manage their collaborative R&D. The Belgian EUREKA Chair added two new booklets and a CD-ROM and, with the EUREKA Secretariat, updated and republished the entire series in a new format. The result is an integrated library for managing EUREKA projects.

The guides added in 1996 are 'Legal Forms of Collaboration', which briefly describes and illustrates the principal legally-recognised forms of industrial cooperation, and 'Key Factors for Success'. The latter guide is the result of a study which interpreted project management techniques from existing literature, applied them to the conditions found in EUREKA projects and then combined this with the results of project evaluations. It is supplemented by a multimedia CD-ROM featuring interviews and profiles of twelve successful projects which between them illustrate the seven Factors for Success.

STATEMENT FROM MR IAN TAYLOR, UK MINISTER FOR SCIENCE AND TECHNOLGY

Mr Ian Taylor, UK Minister for Science and Technology

As the first country charged with implementing the third Medium Term Plan, the United Kingdom is conscious of the responsibility placed upon it to ensure that EUREKA continues to meet the requirements of European industry. The service which EUREKA provides to its major customers has to be speedy and efficient to enable industry to respond to the quickening pace of technological change. To ensure that the Network continues to meet its customers' needs, the UK has inititated a major review of its operating procedures and activities. When it is complete we do not expect to have to make any radical changes to the functioning of EUREKA, rather we hope to ensure that the Network remains non-bureaucratic and becomes more efficient.

One of the observations of last year's Davignon Group report was that there should be greater clarification and cooperation between the various European R&D frameworks. Among key issues which the UK will seek to address is the relationship between EUREKA and the European Union's Framework Programme. With preparations for the Fifth Framework underway, it was felt that the time was right for EUREKA to put forward its views as to how the existing synergy between the two frameworks might be enhanced. The key factors for ensuring that this happens must be greater communication between the two initiatives, along with making it easier to set up projects, large or small, which contain elements potentially eligible for support by both.

Another theme which we will seek to develop is Globalisation. European businesses recognise that to be successful they must collaborate with the best partners wherever they are based. EUREKA has a part to play in ensuring that companies can harness the technology they need to maintain their competitiveness.

Traditionally, EUREKA has regarded collaboration with non-European countries to be the exception rather than the rule. During the UK Year, we will initiate an examination of the EUREKA rules in this area to see whether beneficial changes can be made.

The globalisation theme also extends to the countries of Central and Eastern Europe. Those that have already attained full membership have quickly demonstrated that they can make a positive contribution to EUREKA.
To help draw remaining NIP countries towards greater cooperation with the Network, the UK intends to provide them with practical help and assistance and to conduct a review to make sure the NIP network is as effective as possible.

In considering all of the above, the UK will not neglect the central area of EUREKA's operation, project creation. EUREKA has a deserved reputation for the quality of its projects which are delivering advanced products and processes for world markets. We are determined to maintain that quality status. At the same time, we will be discussing how EUREKA might catalyse more projects of strategic significance for Europe. These projects will have to be consistent with the "bottom-up" principle but there is a role for Governments to provide the necessary support during their formation.

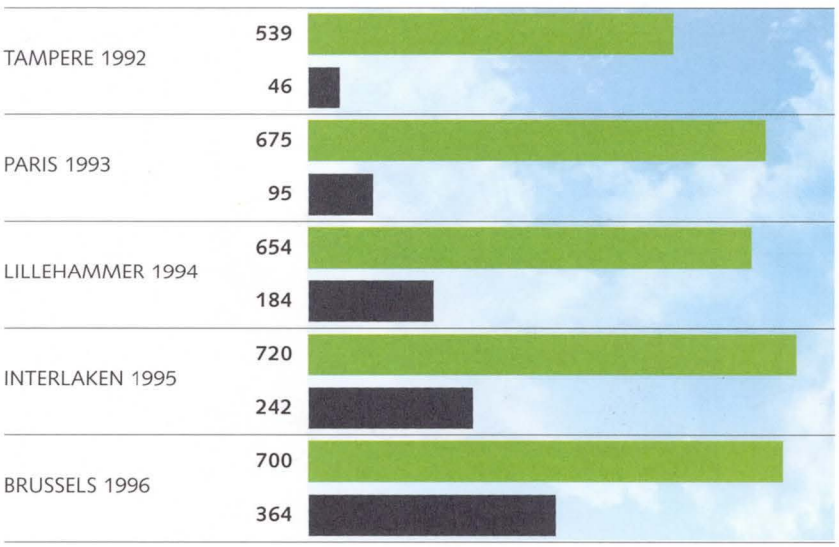
In total, a very busy programme for our Chairmanship, but one which the United Kingdom believes it should undertake if EUREKA is to maintain its position as Europe's premier initiative for cross-border collaboration in near-market R&D.

ONGOING AND FINISHED PROJECTS (OVER 5 YEARS)

TOTAL NUMBER OF ONGOING PROJECTS

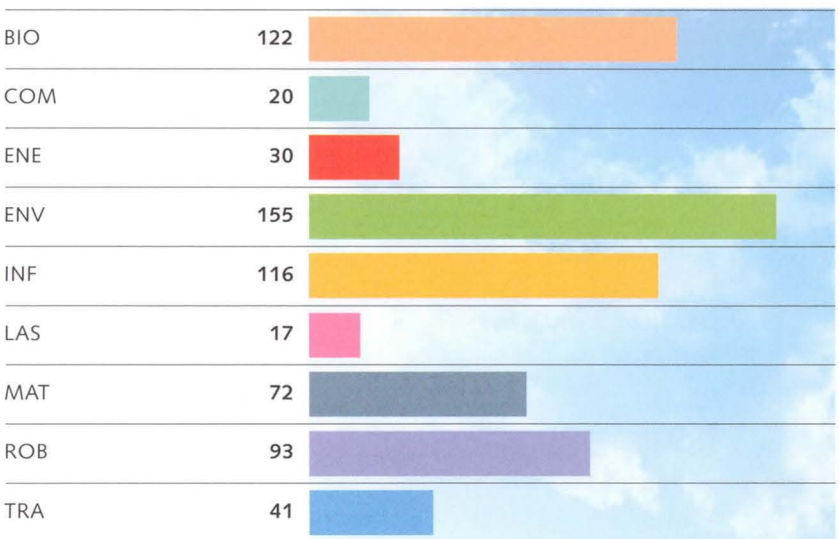
TOTAL NUMBER OF FINISHED PROJECTS

MINISTERIAL CONFERENCES



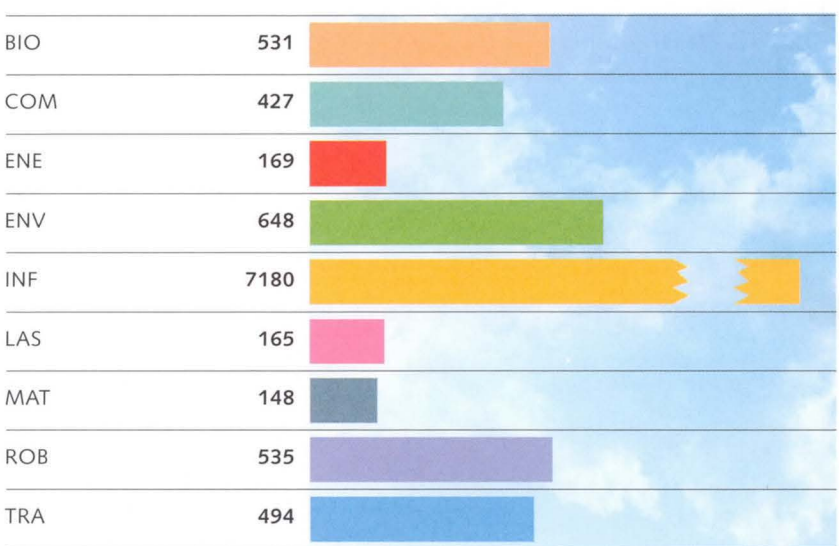
NUMBER OF ONGOING PROJECTS BY AREA

TOTAL: 666



COST OF ONGOING PROJECTS BY AREA

Total: 10297 MECU



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, 18 December 1996

G & E Decision Slip

Date:

Apr-08

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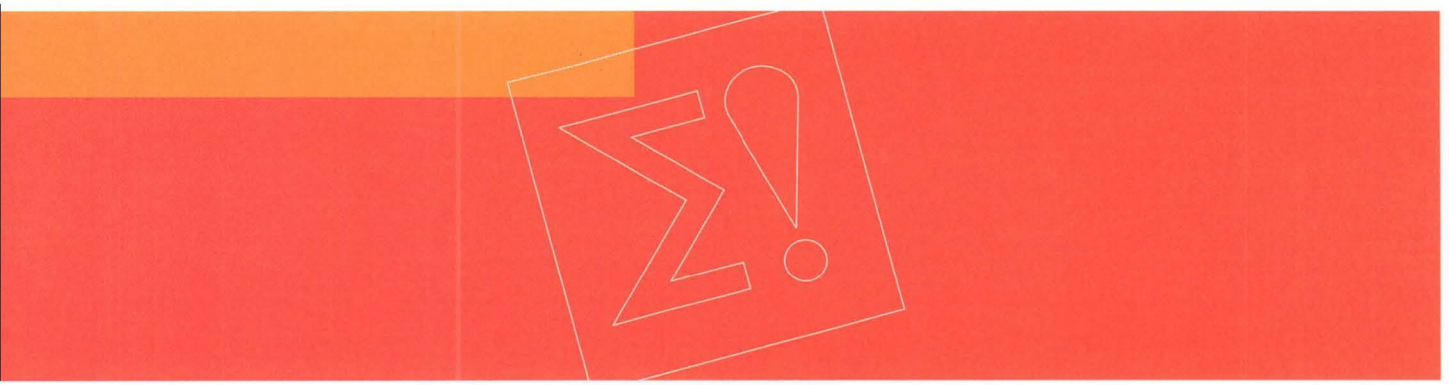
SATIONS

MEMBER	NUMBER OF ORGANISATIONS INDUSTRY all	INDUSTRY of which SME	RESEARCH INST. all	RESEARCH INST. of which Univ.	GOVT/ ADMIN	TOTAL
AUSTRIA	87	58	38	23	8	133
BELGIUM	85	48	27	17	1	113
CZECH REPUBLIC	19	16	12	5	—	31
DENMARK	83	49	22	10	5	110
FINLAND	94	48	25	10	5	124
FRANCE	369	184	110	32	14	493
GERMANY	290	136	125	54	9	424
GREECE	11	7	13	9	1	25
HUNGARY	18	12	25	11	3	46
ICELAND	9	9	1	—	1	11
IRELAND	10	7	6	6	—	16
ITALY	129	28	36	10	4	169
LUXEMBOURG	1	—	—	—	—	1
THE NETHERLANDS	189	110	49	25	8	246
NORWAY	71	40	18	4	10	99
POLAND	5	3	20	7	2	27
PORTUGAL	33	17	28	9	12	73
RUSSIA	18	10	20	2	—	38
SLOVENIA	12	8	13	4	1	26
SPAIN	143	89	45	19	11	199
SWEDEN	130	78	29	11	10	169
SWITZERLAND	141	98	83	40	6	230
TURKEY	11	4	9	7	2	22
UNITED KINGDOM	215	103	73	48	19	307
EUROPEAN UNION	—	—	4	—	1	5
NON-MEMBER COUNTRIES	13	4	18	10	—	31
TOTAL	2186	1166	849	373	133	3168

114
14
147
8
23

DURATION AND COST IN ONGOING PROJECTS



NUMBER OF PROJECTS BY PLANNED DURATION AND TECHNOLOGICAL AREA

PROJECT DURATION (PD) in months	Total	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
PD <= 24	137	10	8	8	27	28	3	22	23	8
24 < PD <= 48	342	72	8	17	74	61	7	32	51	20
48 < PD <= 72	134	26	2	4	43	19	3	15	12	10
PD >72	53	14	2	1	11	8	4	3	7	3
	666	122	20	30	155	116	17	72	93	41

NUMBER OF PROJECTS BY FINANCIAL SIZE AND TECHNOLOGICAL AREA

PROJECT COST (PC) in MECU	Total	BIO	COM	ENE	ENV	INF	LAS	MAT	ROB	TRA
PC <= 1	187	39	3	12	52	23	5	23	23	7
1 < PC <= 2	151	25	5	3	37	14	5	29	21	12
2 < PC <= 3	75	15	4	3	17	11	1	7	14	3
3 < PC <= 4	50	14	1	—	12	12	—	3	5	3
4 < PC <= 5	25	2	—	—	6	5	—	2	8	2
5 < PC <= 10	91	16	4	7	16	19	4	8	11	6
10 < PC <= 20	44	7	1	2	10	13	1	—	7	3
20 < PC <= 40	21	2	—	3	3	10	—	—	1	2
PC > 40	22	2	2	—	2	9	1	—	3	3
	666	122	20	30	155	116	17	72	93	41

FINISHED PROJECTS

As EUREKA entered its "main phase" a few years ago, the number of finished EUREKA projects accelerated dramatically. 1996 was no exception - by December 1996, there were 431 finished projects, of which 142 were completed during the preceding twelve months. The total cost of these 431 projects now amounts to 6 billion ECU.

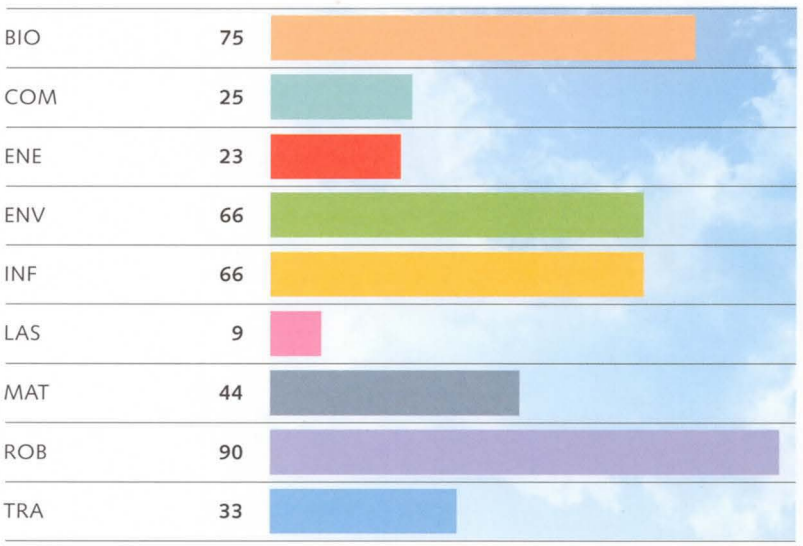
While each finished project represents the end of one story, it is frequently the beginning of another. The partnerships, friendships and business networks established as project partners work together usually live on well after the new product or service has reached the market place.

In more and more cases, in fact, participants in finished projects are launching new ones to expand their horizons further.

One of the most significant of EUREKA's achievements, therefore, is the intangible yet important web of networks and relationships established between companies, research institutes and universities in different European countries. In many cases it is the EUREKA network itself that provided the 'first contact'. This is a service that is becoming more and more important as small companies, in particular, join and launch EUREKA projects.

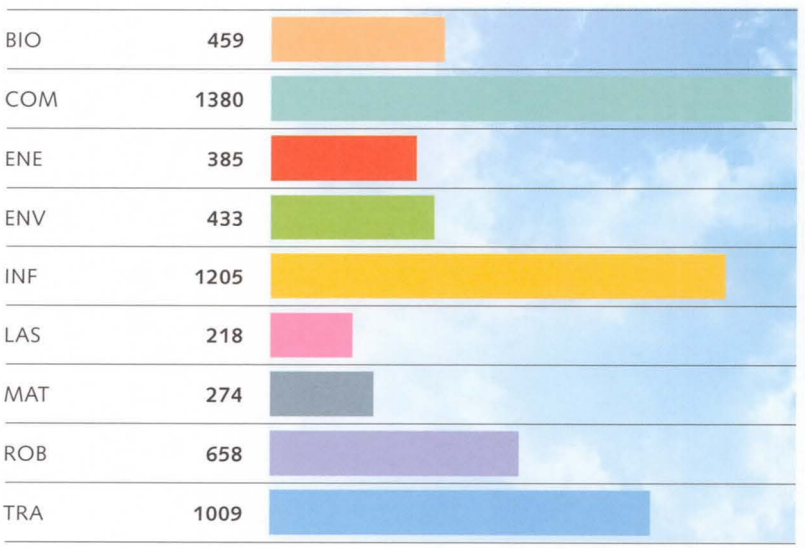
NUMBER OF FINISHED PROJECTS

TOTAL: 431



COST OF FINISHED PROJECTS

TOTAL: 6021 MECU



PROJECT OVERVIEW, 1996

As in previous years, a large proportion of the 156 new projects announced in 1996 fall into four technological areas: Information Technology (31 projects), Medical and Biotechnology (28 projects), Robotics and Production Automation and Environmental Technology (26 projects each).

Medical and Biotechnology

Most of the new projects in this area focus on either agricultural or medical applications, although some agricultural projects are driven by human health considerations. The EUROAGRI umbrella, as in previous years, has contributed significantly - this year there are ten new projects under this umbrella. Between them, these projects illustrate the diversity of the sector, and involve the development of a hi-tech, environmentally friendly trout farm, improved processes for producing healthier eggs and meat, and new industrial strains of yeast for frozen dough products.

On the medical side, the single large project is GENEPREP (EU 1466), a 3-year, 16 MECU effort aiming to develop new DNA production and purification processes for gene therapy. Other medical subjects addressed include new methods for planning cranio-maxillo-facial surgery, artificial legs and pathology management systems involving advanced telematics for the healthcare sector.

Communication Technology

The seven new Communication Technology projects, as is typical of the sector, cost more than the average project. The largest is SIGMA-1 (EU 1529), a 17.5 MECU project developing manufacturing processes for building silicon-germanium chips for mobile communication applications.

Other projects cover digital broadcasting, international payment systems, parallel computing and improved fax servers.

Energy Technology

The eight Energy projects are split roughly equally between energy production (wave energy, hydrocarbon prospecting and coal waste) and energy management. The largest project in this area is MOBIT (EU 1485), a 21-partner, 7 MECU effort which aims to develop a wide range of modular products for the construction and building rehabilitation industry, including multi-house heating systems and passive and active solar energy.

Environmental Technology

Of this year's 26 new Environment projects, eight were generated by the EUROENVIRON umbrella, including most of the large ones. These include ELLCA-PREPARE (EU 1312), a 34 MECU, 7 country project examining Life Cycle Assessment for complex products, HYDROSLUDGE (EU 1501), which aims to install pilot sewage waste treatment plants in several countries and SILENTPORTS (EU 1514), aiming to reduce noise pollution from ports.

This sector also saw the creation of two new umbrellas in 1996: WOOD INITIATIVE, which aims to generate projects in the wood products and processing industries, and CARE, which will promote projects aimed at improving the environmental friendliness of electronic products through the three R's (recovery, recycling and re-use).

The latter umbrella generated two projects in 1996:

- LINK (EU 1272), which is developing software tools, organisational structures and logistics systems which allow distribution and waste return systems to be integrated together;

- DISASSEMBLY FACTORY (EU 1592), which aims to build a disassembly factory for Printed Circuit Boards (PCBs) and demonstrate how future PCBs can be developed for easier disassembly.

Another significant project is EUROTRAC-2 (EU 1489), a 13 MECU, 16 country follow-on to the original EUROTRAC project. Like its predecessor, EUROTRAC-2 focuses on the transport of air pollution. Its principle results will be a set of tools and models with which the perturbed atmosphere and its impact on the environment can be understood.

Other projects include developing methods for recycling heavy metals from batteries, generating 'greenhouse-neutral' energy from organic waste, sewage and energy crops, and reducing the environmental effects of processes and products ranging from dairy herds to electronic components.

Information Technology

The two largest projects launched in 1996 are both found in the Information Technology (IT) sector. Both are strategic efforts by European industry to tackle some of the toughest (and most lucrative) global markets:

- Microelectronics Development for European Applications (EU 1535 - MEDEA), a 2 billion ECU effort designed to turn the technologies developed under the JESSI project (finished at the end of 1996) into market share throughout Europe's IT industry. MEDEA, which began selecting its first subprojects at the end of 1996, focuses on developing six 'core competences' in European industry: multimedia and communications technologies, automobile and traffic applications, design techniques and libraries, CMOS-based technology platforms, and manufacturing technologies.

- Digital Consumer Multimedia Networks (EU 1549 - COMMEND). Involving most of Europe's consumer electronics companies, this 200+ MECU project aims to develop the necessary standards for delivering digital multimedia applications into the home. The partners are examining physical networks, communication protocols, security issues and service standards so that they can develop applications that work together seamlessly.

This sector also gained the MULTIMEDIA umbrella which focuses on three general technology standards: Digital Versatile Disc (DVD), Internet Protocal (TCP/IP) and Digital Video Broadcast (DVB).

The rest of the IT projects follow the same overall profile as the rest: well over half are worth less than 5 MECU, with the remainder costing no more than 20 MECU each. Trends among the smaller projects include advanced healthcare systems (ophthalmology, nutrition, dentistry), simulation and management software packages for manufacturing industry and multimedia and internet publishing. Many of the medium sized projects, on the other hand, focus on networking technologies and computer hardware. Examples include MATISSE (EU 1424), a 14 MECU effort aiming to develop an intelligent, high-performance multimedia data server, REMOD (EU 1505), a 20 MECU, four year project investigating a new, high density optical disc with multiple recordable information layers, and HIGHLANDER (EU 1437), which is designing a radically new type of videographics chip for consumer PCs, set-top boxes and intelligent TVs.

Laser Technology

The two Laser projects launched in 1996 are startlingly different, demonstrating how laser technologies are finding new applications in more and more fields:

- EUROLASER-PROTAL (EU 1472) is developing an industrial demonstrator for a new short-pulse laser for the aerospace and automotive industries. The beam, carried by optical fibre and with a pulse duration of some nanoseconds, will be used before and during the thermal surface preparation of oxidation-sensitive materials, such as aluminium.

- EUROCARE-SOLON (EU 1541) will develop a prototype excimer laser system for cleaning paintings. The method will be demonstrated on a 17th Century 'old master', with the entire process digitally recorded to provide documentation for future conservation and art history studies, material for a TV documentary and proof of the system's effectiveness to the international art restoration industry.

New Materials

Generally the 19 New Materials projects aim to improve a material for a specific set of applications. Several projects are developing new or improved ceramic materials, with applications including cutting tools (ceramic nano-composites), heat insulation (ceramic fibres) and kitchenware.

Other applications and products which will be improved include chemical processing (corrosion-resistant glass fibres), adsorbents (coal process byproducts), batteries (lead/silver anodes) and protective clothing (hi-tech fabrics). Other projects focus on improving production processes for stainless steel, aluminium alloys, thermoplastics and superconductors.

Robotics and Production Automation

Around one third of the 26 new Robotics and Production Automation projects were generated by the new FACTORY umbrella, which follows on from the highly successful FAMOS umbrella. FACTORY expands on FAMOS' theme of flexible assembly to encompass wider organisational issues of manufacturing industry.

For example, FACTORY MANUFUTURING (EU 1522) represents a 5-year, 30 MECU effort into agile manufacturing. The aim is to develop and implement a 'smart' factory capable of re-arranging its products, processes and organisational architectures in response to strategic changes in the market, society and technology.

Most of the other new projects launched under FACTORY are 5 MECU in size or less. While some examine generic manufacturing and assembly technologies, others - like most of the other 19 projects announced in this sector - focus on improving manufacturing processes. Sectors include wood processing, integrated circuit manufacturing and many in between.

Transport Technology

The nine Transport projects includes the third largest project of 1996 - AFS (EU 1403), a 6-year, 50 MECU project focusing on advanced car lighting systems. The project aims to improve road safety by bringing vehicle lighting systems, which have not changed much in the past 25 years, up to date with developments in traffic, car design, optical systems and non-optical sensors.

The other Transport projects are developing new vehicles (trams, container-handling trucks), vehicle components (two projects exploit piezo-electricity), driving simulators, production software, telematics and on-board computing.

HIGH POWER LASERS FOR MATERIAL PROCESSING

EU 205 EUROLASER-EXCIMER

EU 205

Acronym:
EUROLASER-EXCIMER

Title:
High power excimer lasers

Participants:
Participants from organisations in:
France
Germany
Greece
Hungary
Sweden
The Netherlands
United Kingdom

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Total cost: 52.8 MECU

Completed: November 1996

The use of lasers for processing materials was seen as one of the most exciting prospects for industry when the EUREKA initiative was launched in 1985. As a result, a EUREKA umbrella, EUROLASER, was quickly set up to coordinate laser research and development.

One project, EUROLASER-EXCIMER (EU 205), aimed to develop high power excimer lasers and applications. Excimer lasers are gas-based devices producing very high energy light ultraviolet (UV) pulses, rather than the continuous waves produced by some other types of laser.

The very short wavelengths, typically 308nm, 248nm and 197nm, allow precise material processing. The photons of the beam break down the molecular bonds of a material hit by the laser, and the resulting atoms disperse, instead of staying on the surface, vibrating and generating heat. An excimer laser can therefore remove material without burning it, making it suitable for drilling miniature holes in microelectronics, annealing flat film transistors for flat panel displays, as well as removing thin layers from plastics.

Upgrading Power

Although 50W devices were already available at the start of the project in 1987, the target was 1kW systems, as a more powerful laser can process material faster and reduces user's costs. This project was led by Fraunhofer-Institut für Angewandte Optik und Feinmechanik. The partners included the laser manufacturers Lambda Physik of Germany, Sopra and Laserdot of France, and Oxford Lasers and Exitech of the United Kingdom.

The 1kW target was reached in 1993 by Sopra, which produced a very large XeCl excimer laser aimed at various applications. Lambda Physics developed a commercially popular 200 watt excimer laser with outstanding long time stability and low running costs; Ultra-stable optical UV coatings were developed at the Fraunhofer Institut in Jena, Germany. The systems can drill holes as small as 1 micron in diameter, or about one hundredth of the thickness of a human hair, and can remove material as thin as 0.1 micron. They are used widely to drill the 35-40 micron diameter holes in ink jet printer heads, and holes in tiny medical probes. Beams can be positioned with an accuracy of 1 micron.

The partners have greatly improved excimer reliability. They can now be used in industry 24 hours a day, often under the control of non-specialists. The cost of a processing system has been reduced to about £500,000 - £1,000,000.

FLEXIBLE MANUFACTURING OF ELECTRONIC FUEL INJECTORS

EU 265

Acronym:
FAMOS-PLANET

Title:
Production line for automotive new electronic technologies

Participants:
France:
Fabricom Automation /
Magneti Marelli France S.A. (Chatellerault) /
Magneti Marelli France S.A. (Nanterre)
Ireland:
Advanced Manufacturing Technology Centre, University College Dublin
Italy:
Magneti Marelli S.P.A. (Pavia)
Portugal:
Investigacao e Desenvolvimento/ Divisao Engenharia Sistemas, Instituto de Soldadura e Qualidade
Spain:
Magneti Marelli Iberica /
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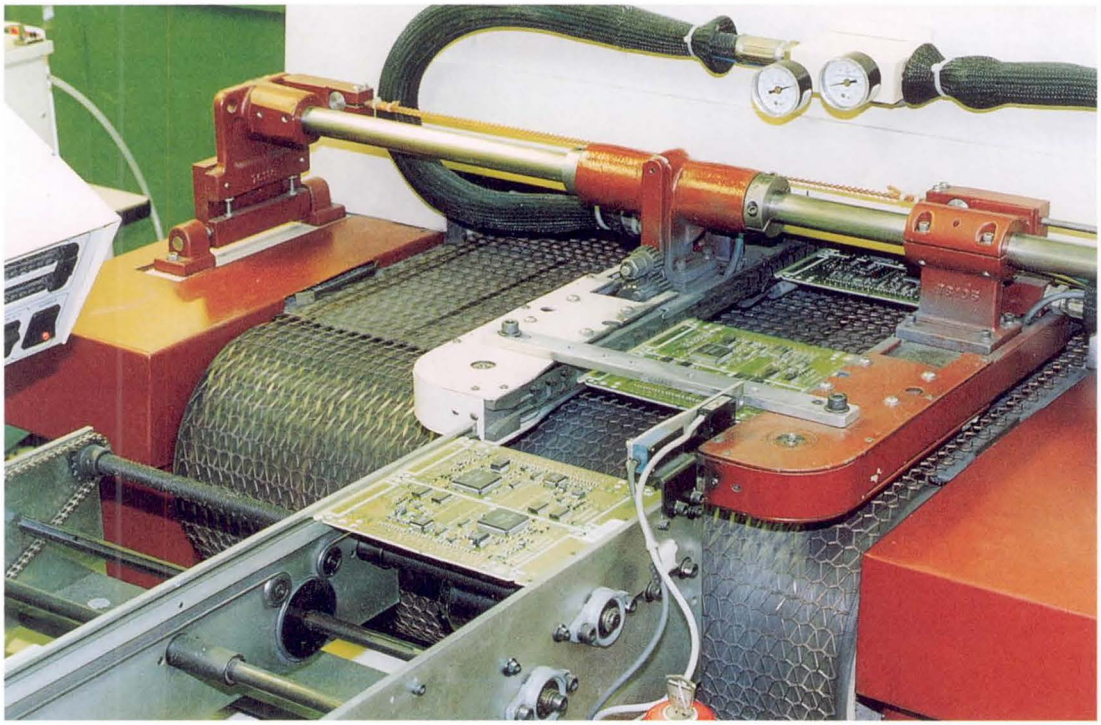
Total cost: 47 MECU

Completed in: June 1996



EU 265 FAMOS-PLANET

Electronic units for fuel injection systems improve automobile engine efficiency more effectively than electromechanical systems. Car-makers were therefore very keen to introduce these electronic systems, which control fuel delivery and engine ignition, into their models to help satisfy the EU's anti-pollution laws of 1992. Hence FAMOS-PLANET (EU 265), which was launched in 1988 to develop a new model able to satisfy the car-makers' needs in terms of reliability, cost and time to market. The project was developed by taking three strategic factors into account: product/technology integration, job organisation and decision-making systems, and market dynamics.
It was led by the Magneti Marelli of Italy (Fiat group). The partners were Magneti Marelli companies in France and Spain, the French assembly equipment firm Fabricom Automation, the Advanced Manufacturing Technology Centre of University College in Dublin, the University of Madrid, and the Wolfson Image Analysis Unit at Manchester University in the United Kingdom.

Flexible Production On-Line

The project was very successful, with three Magneti Marelli plants (two in Italy, one in France) now producing more than 1.5 million electronic injection systems a year. The manufacturing lines can produce a unit, each containing 200 to 450 components, every 20 seconds. The lines can switch rapidly between 40-60 'system families' to supply car-makers such as Fiat, Renault, PSA and Volkswagen. This ability to switch between different products, several times a day, is essential to respond to daily customer demand. To optimise production, the electronic control unit was developed simultaneously with manufacturing processes and logistics. Standardisation led to the use of only three sizes of printed circuit boards (PCBs), while the one set of flexible surface mount machines can place different groups of components on the boards, with rapid switching of assembly programs before component soldering. Production is tracked by a patented system that involves bar coding the PCBs with information (final product number, date, etc.). As the PCBs move along a production line, cameras read the bar codes and ensure that the correct processes are carried out. By the end of the project, Magneti Marelli had succeeded in reducing time to market by 40 per cent, lowering labour costs by 50 per cent, and improving quality, with the number of rejects within the first warranty year dropping from 2000 to 300 parts per million.

The implementation of the new company model, the final results of this PLANET project, offers organisations the possibility of restructuring using a lean information approach which offers customer satisfaction through state of the art technology and quality.

BOOSTING FIRE SAFETY IN VEHICLE TUNNELS

EU 499 FIRETUN

EU 499

Acronym:
FIRETUN

Title:
Fire protection in traffic tunnels

Participants:
Participants from organisations in:
Austria
Finland
France
Germany
Italy
Norway
Sweden
Switzerland
United Kingdom

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Total cost: 6.67 MECU

Completed: January 1996

Countries around the world are pressing ahead with ambitious plans for tunnels to carry road, rail and metro traffic, with Europe alone expected to have more than 10,000 km of tunnels by the end of the century. However, high profile fires in tunnels have raised concerns about safety. Apart from the safety issues, fires can disrupt traffic links through serious damage to tunnels and vehicles.

To address the problem, the EUREKA project FIRETUN was launched to carry out experimental fire tests, backed up by theoretical studies. FIRETUN had partners from nine European countries, led by the German organisation Studiengesellschaft Stahlanwendung E.V.

The project's goals included a better understanding of the physics of fires in tunnels and the effects of ventilation systems, and the development of better firefighting, escape and rescue methods.

The researchers also considered the effects of different tunnel structures on fires and what action should be taken to re-open damaged tunnels.

Experimental Tests

The focus of the project was a series of 21 fire tests, using various road and rail vehicles and wood and liquid fuel, in an abandoned 2.3 km long mining tunnel in Norway. The fires were monitored by a large number of detectors to measure temperature, air velocity, visibility and the concentrations of gases such as oxygen, carbon dioxide, carbon monoxide and nitrogen oxides.

The tests reinforced the findings of previous studies that the damage to vehicles and tunnel linings depends on the type of vehicles. Aluminium and plastic roofs of vehicles were destroyed quickly by fire, while steel roofs resisted the heat for far longer. Although temperatures fall quickly as you move away from a fire in a tunnel, temperatures reach a typical 900° C when rail cars and buses are burning. A heavy goods vehicle loaded with 3 tonnes of modern furniture reached more than 1,300° C. The rail car fires released 15-20 MW of heat, while the heavy goods vehicle released more than 100 MW, according to calculations by the researchers. The studies also showed that all vehicle fires in tunnels develop rapidly within the first 10 to 15 minutes, raising questions about the best temperature curves to be used in design calculations.

Although the fittings of today's rail cars are much more fire resistant than those of the past, roof and wall linings can have a large effect on the severity of fires. Fibre glass reinforced, unsaturated polyester, for example, burned more strongly than material based on phenol resins which proved flame resistant. Following FIRETUN, consideration is now being given to changes to fire codes.

TAILOR MADE CHIPS

EU 579

Acronym:
JAMIE

Title:
Joint analogue microsystem initiative of Europe

Participants:
Austria:
Austria Mikro Systeme International GmbH (AMS) /
Joanneum Forschungs GmbH, Electronic Systems Design Institute /
Mikron GmbH
France:
Dolphin Integration
Portugal:
Instituto Superior Tecnico, Universidade Tecnica de Lisboa
United Kingdom:
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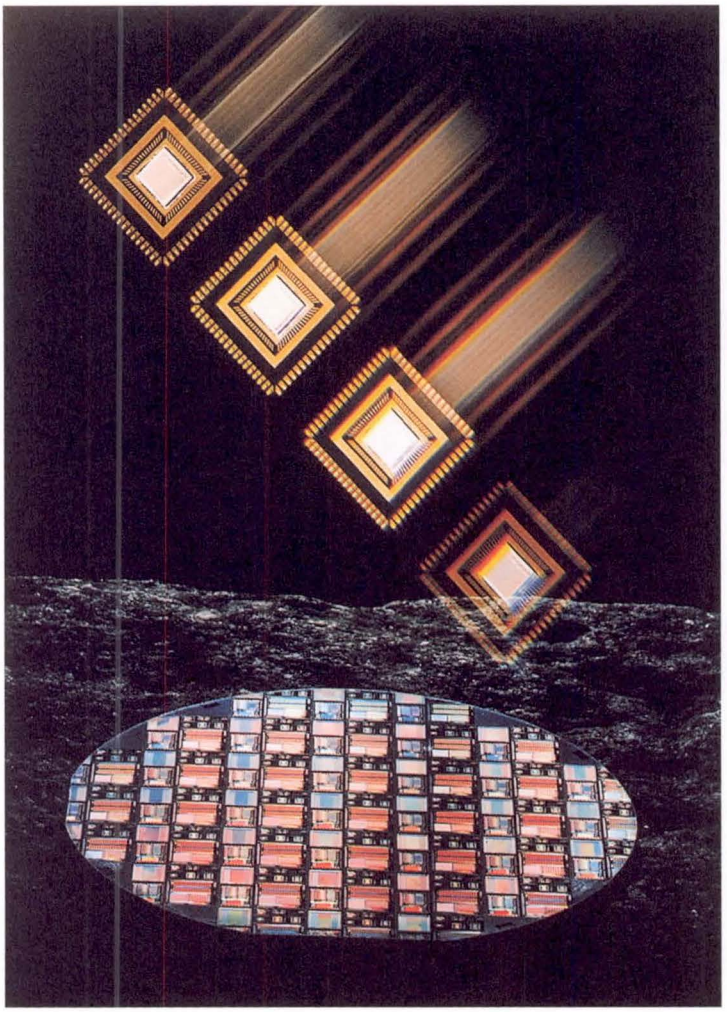
Total cost: 10.86 MECU

Completed in: June 1996



EU 579 JAMIE

Integrated circuits - microchips - can be made to order more quickly and reliably using the latest manufacturing processes, thanks to EUREKA project EU 579 - JAMIE.
Custom-made chips, known as ASICs (application-specific integrated circuits) are designed and manufactured to a customer's specification. They can be faster, more compact and more reliable than a device built out of standard, off-the-shelf chips, because they carry out highly specialised functions. Although they are more expensive to make than standard chips, there is a growing demand for ASICs in high-volume markets such as the motor industry.

The problem facing ASIC designers is the speed at which chip technology is advancing. Due to continuous improvement in manufacturing processes, the number of components that can be fitted on a chip has doubled every 18 months since the 1970s. The software needed to design new chips must be modified each time the process changes - a lengthy and expensive procedure.

Technology-Independent Design
Mikron, an Austrian firm experienced in the design of ASICs, teamed up with JAMIE partners in Austria, France, Portugal and the United Kingdom to create a set of computer-aided design tools that do not depend on the technology that will be used to make the chips. As a result, designs can be implemented rapidly using the most modern manufacturing methods. Mikron are using the new package to design ASICs for their customers, while other partners are marketing individual tools (such as SMASH™, Dolphin's 'mixed mode simulator') developed during the project.

New microchip designs that have come out of JAMIE include IST's analogue-to-digital converters (which change varying electrical signals into digital pulses) and a new kind of microprocessor devised by Joanneum Research.

But the most promising product is the 'universal sensor interface chip', designed by Mikron, manufactured by Austrian partner AMS and marketed by British partner ERA. This versatile device is designed to receive signals from many different types of sensors and process them using its own microprocessor. ERA expects the chip to have numerous applications throughout industry and is already talking to more than a hundred potential European customers.

MOBILE LABORATORY FOR SOIL ANALYSIS

EU 674 EUROENVIRON - MOBILE ANALYSIS LABORATORY

EU 674

Acronym:
EUROENVIRON -
MOBILE ANALYSIS LABORATORY

Title:
Mobile analytical laboratory
(development and evaluation)

Participants:
Denmark:
Danish Technological Institute (Taastrup) / Force Institute / Vandkvalitets Instituttet (Water Quality Institute)
European Union:
Joint Research Centre,
Environmental Institute
Finland:
Technical Research Centre of Finland (VTT) Chemical Laboratory
Italy:
Centro Informazione Studi ed Esperienze S.P.A. (CISE) / ISMES S.P.A.
Russia:
Analytec (Institute of Applied Geophysics)
United Kingdom:
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Total cost: 5.67 MECU

Completed: June 1996

Contamination of land by industrial processes, spillages of chemicals and accidents is one of the biggest environmental problems facing countries. However, before land can be cleaned up, the contamination must be assessed.

It can be difficult to transfer samples of pollutants, such as toxic materials or volatile organic compounds (VOCs), safely or in their original state, to remote laboratories. It can also take a long time. Some measurements, including geo-chemical properties such as electrical conductivity of soil, are also best done in situ. To address these challenges, the Advanced Mobile Analytical Laboratory (AMAL) project (EU 674) was set up under the EUROENVIRON umbrella to develop a mobile laboratory for on-site sampling and analysis of contaminants in waste, soil, water and air. The laboratory was to be used for regular environmental policing as well as emergencies.

AMAL was coordinated by the Environmental Institute of the European Union's Joint Research Centre (JRC) and involved participants from Denmark, Finland, Italy, Russia and the United Kingdom.

AMAL fitted out five trucks which could be transported to a site. Three trucks - with organic, inorganic and microbiological analysis equipment respectively - are for determining water and soil pollution, and two trucks contain power generation and other support equipment.

Since AMAL ended in June 1996, the JRC has built air monitoring and waste water treatment trucks based on the AMAL work. The analysis equipment has been adapted from normal laboratory designs by fitting shock absorbers and temperature control systems that keep equipment within plus or minus 2°C. It includes a high-resolution gas chromatograph for analysis of VOCs, liquid and supercritical fluid chromatographs, and detectors for organic bonded carbon, nitrogen, hydrogen, sulphur and nitrogen. Trace elements are analysed by instruments such as atomic absorption and plasma emission spectroscopes. Conductivity and spectroscopic detectors analyse inorganic ions. Software was developed for the interpretation of data, including local environmental data, to international protocols, and the presentation of results in an easily understood format. Under AMAL the Danish Technological Institute adapted telecommunications systems to transfer data to a central laboratory by high frequency voice, digital or fax transmissions and ultra-high frequency digital transmissions. The JRC will install the systems in 1997.

The mobile laboratory has proved its worth in contracts carried out in countries such as Germany, Greece and Italy.

NEW FERMENTATIONS FOR BETTER BEER

EU 881

Acronym:
EUROAGRI-LACTIC FERM

Title:
The immobilisation of lactic acid bacteria

Participants:
Netherlands:
Bavaria B.V.
Finland:
Cultor Limited

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Total Cost: 0.66 MECU

Completed in: October 1994

EU 881 EUROAGRI-LACTIC FERM

The LACTIC FERM project showed how modern breweries can remain in harmony with Germany's ancient beer purity law, benefitting both brewers and drinkers.

Modern brewing is a scientific affair in which little is left to chance. Acidity, for instance, is important to the enzymes that produce fermentable sugars from the malt, so to ensure the best conditions brewers often acidify the 'mash' by adding lactic acid.

According to the German purity law the lactic acid must be made from malt in the brewery itself. This 'lactic fermentation' is normally done in batches, but the size and cost of the tanks needed to do this is a problem for many breweries. What the breweries really wanted was a continuous process for making lactic acid.

Immobilising Bacteria

Bavaria BV is a Dutch brewer that illustrates nicely how tradition can work alongside technology. Though the company has been run by the same family for seven generations, this is no cottage industry: Bavaria BV is the Netherlands' second-largest brewer.

The company also has 60% of the Dutch market for alcohol-free beer, a product that depends particularly on the use of lactic acid. They wanted to be able to export alcohol-free beer to Germany and decided to develop a continuous process for lactic acid.

The main challenge was to take the bacteria used for lactic fermentations and 'immobilise' them by attaching them to a rigid support. The company already had experience in immobilising yeast cells, and knew that this technology would yield a process with the compactness and controllability required to integrate successfully with the rest of the brewery. Bavaria BV enlisted the help of Cultor, a Finnish firm experienced in biotechnology for food production processes and a pioneer of immobilised yeasts. Together with Prof. Dr. Werner Bach, TU München Weihenstephan Institut für Technologie der Brasseries, the partners in LACTIC FERM designed a bio-reactor for the lactic fermentation, selected a suitable strain of Lactobacillus and persuaded it to grow on a rigid support.

The resulting process is compact, controllable and an economic route to lactic acid.

Since the end of the project the new process has been working very successfully, says Ing. Wim Swinkels of Bavaria. Although other brewers in Europe and the USA have studied Bavaria's research with interest they have not so far applied to license the process - but Mr Swinkels is confident that this is because they are developing their own versions. The new lactic acid process is ideal for alcohol-free beer but has also proved valuable for conventional beers. Bavaria is now extending the technology to develop new non-alcoholic drinks based on lactic fermentations.

For Bavaria, the project was a success, both technically and commercially. The Dutch brewer has improved his position on the European market and the project has given him better access to the German market. Bavaria particularly appreciated the help they received from the EUREKA network and the EUROAGRI umbrella.

DEGRADABLE FABRIC IS A WINNER

EU 963 DEPOSA™

The soft fabric used to line disposable nappies may be gentle on babies' bottoms but it is not so good for the environment. Made mainly from a web of polypropylene fibre, this 'non-woven' fabric does not readily decompose. Apart from dumping them in land-fill sites, the only practicable way of ridding the world of used nappies is by incineration. Companies from France and Finland, collaborating in EU 963, have invented a non-woven fabric that is purpose-made to decompose. It is made from polylactide fibre, a polymer previously confined to specialised uses such as surgical sutures.

The partners saw that it was an ideal material for environmentally-friendly fabrics. Polylactide is based on renewable resources such as cereals or sugars and is fully degradable and compostable, being broken down to carbon dioxide and water by the action of moisture and micro-organisms in the environment.

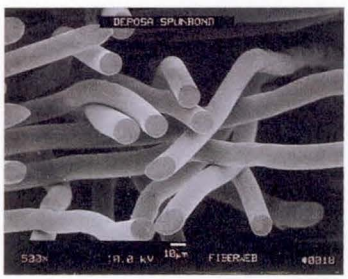
Finnish company Neste Oy first created a polylactide which could be spun into fine fibres. Fiberweb France, a leading producer of non-woven materials, then developed the technology to make the fibres into a non-woven fabric known as Deposa™.

Many Applications

Fiberweb are now testing three kinds of product: Deposa™ -lined nappies and other personal hygiene products which can be composted rather than dumped or burned, Deposa™ mulching to cover the ground around plants to keep down weeds, and Deposa™ filters, for gases and liquids, which will find uses throughout industry.

The third partner, Vetoquinol, is working on a new way to administer slow-release drugs to cattle. The drug is held in a small Deposa™ sachet, about the size of a tea bag, which is fed to the cow and lodges in the first of the animal's four stomachs. There the drug is slowly released over three to four months before the bag is digested.

Interest in Deposa™ is so intense that Neste Oy is building a new polylactide plant to cope with the demand. Fiberweb France expects the world market for the polymer and the fabric to rocket as more applications are found. Although a similar polymer is now being made in Japan, this EUREKA project has ensured that European companies have a strong lead in this new technology.



EU 963

Acronym:
DEPOSA™

Title:
Degradable polymers for spun-laid applications

Participants:
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France:
Fiberweb France / Vetoquinol SA

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Total cost: 5.00 MECU

Completed in: May 1996

A QUIETER WAY TO HANDLE THE REFUSE

EU 1086

Acronym:
COMPACAR

Title:
Electrical compactor recollector for difficult access areas

Participants:
Spain:
Fomento de Construcciones y Contratas / Iveco-Pegaso
Switzerland:
Iveco Motorenforschung AG

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Total cost: 1.17 MECU

Completed in: December 1996

EU 1086 COMPACAR

If the noise of city traffic is a problem during the day it can be doubly bad at night - the time when diesel-powered urban refuse collection trucks traditionally go about their business. An electric-powered truck that could cruise the streets quietly would help everyone sleep more peacefully, as well as reduce air pollution.

The COMPACAR project has developed a prototype refuse collection vehicle that can run on electricity in city centres, with a diesel engine to recharge its batteries during the daytime. Like most 'hybrid vehicles' - which use both electric motors and internal combustion engines - COMPACAR also relies on supplementary charging using electricity from the mains.

The prototype is currently being tested and the project partners expect to have a commercial version available soon, providing an effective, energy efficient and environmental alternative to collecting waste in city centres.

Reducing Weight, Conserving Power

As a result of the limitations of existing batteries, hybrid vehicles are currently the only practical form of electric propulsion for most applications. Other technologies, such as bimodal and pure electric, impose limits on the vehicle's automony. Even with a diesel backup, however, the COMPACAR designers have had to use some clever design techniques to keep the trucks' weight and power consumption down to acceptable levels.

The project has brought together three vehicle manufacturers: Fomento de Construcciones y Contratas (FCC), a Spanish firm specialising in high-technology refuse collection trucks and a second Spanish company, Iveco-Pegaso, as well as Swiss truck and diesel engine manufacturer Iveco Motorenforschung. The 7-tonne prototype uses the latest type of batteries, but the amount of energy available remains a serious limitation. It has been necessary to redesign the bin emptying and compaction systems so that they use less energy than on conventional vehicles. This has also allowed the engineers to make the machinery quieter. One of the challenges with all hybrid vehicles is to define the driving conditions under which they operate. If the vehicle spends too much time in the city centre, with no opportunity to run its diesel engine, the batteries will go flat. At the moment few hybrids can fully recharge their batteries during the non-electric parts of their duty cycle, especially if, like COMPACAR, their duty cycles are variable in length. Optimising the route taken by the vehicle in its tour of the city has been yet another way the partners have reduced the power required.

AWARD-WINNING PRE-PROCESSOR CLEANS UP DIGITAL TV

EU 1245 PROMPEG

EU 1245

Acronym:
PROMPEG

Title:
Pre- and post-processing with motion compensation for MPEG (Motion Picture Engineering Group) digital coding

Participants:
Germany
Broadcast Television Systems GmbH
United Kingdom
BBC R&D department /
Electrocraft Laboratories Ltd /
Snell & Wilcox Ltd

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Total cost: 6.50 MECU

Completed in: March 1996

When digital television arrives in Europe, the pictures will be transmitted cleanly and efficiently thanks to British and German engineers collaborating in this project.

Digital TV cameras convert the picture into a series of numbers which are transmitted from the studio as a stream of binary digits or 'bits'. The channels through which the picture is sent, whether terrestrial transmitters, satellites, conventional cable or optical fibre, can only cope with a certain maximum flow of bits. If the channel capacity is too narrow at any point between the studio and the receiving set, good-quality pictures cannot be transmitted.

One way around this problem is to 'compress' the picture before transmission so that narrower, and less expensive, channels can be used. This is done by transmitting only those parts of the picture that change from frame to frame and then reconstructing the full picture in the receiving TV set. Standards for compressing pictures have been agreed internationally.

Removing noise

However, compression devices cannot tell the difference between real moving objects, such as a football kicked across a field, and spurious features such as noise and film grain. If these artifacts could be removed before compression, not only would the final picture be cleaner but even narrower channels could be used. The partners in EU 1245 - a leading broadcaster, a manufacturer of studio equipment and two specialists in television technology - discovered how to remove noise from a TV picture before it is compressed, and so make the best use of the available transmission channels.

Snell and Wilcox Ltd, the project managers, have already marketed a product arising directly from the EUREKA work. Launched in April 1996, PREFIX has already won several industry awards, including the EC's prestigious European IT Prize. Following on from a project funded under the EC's RACE programme, EU 1245 PROMPEG clearly demonstrates how EUREKA support can help bring EC funded research to the market place. Knowledge gained in PROMPEG is now being fed into ACTS-ATLANTIC, a large EC-funded project to develop a complete demonstration system for the transmission and reception of digital TV pictures.

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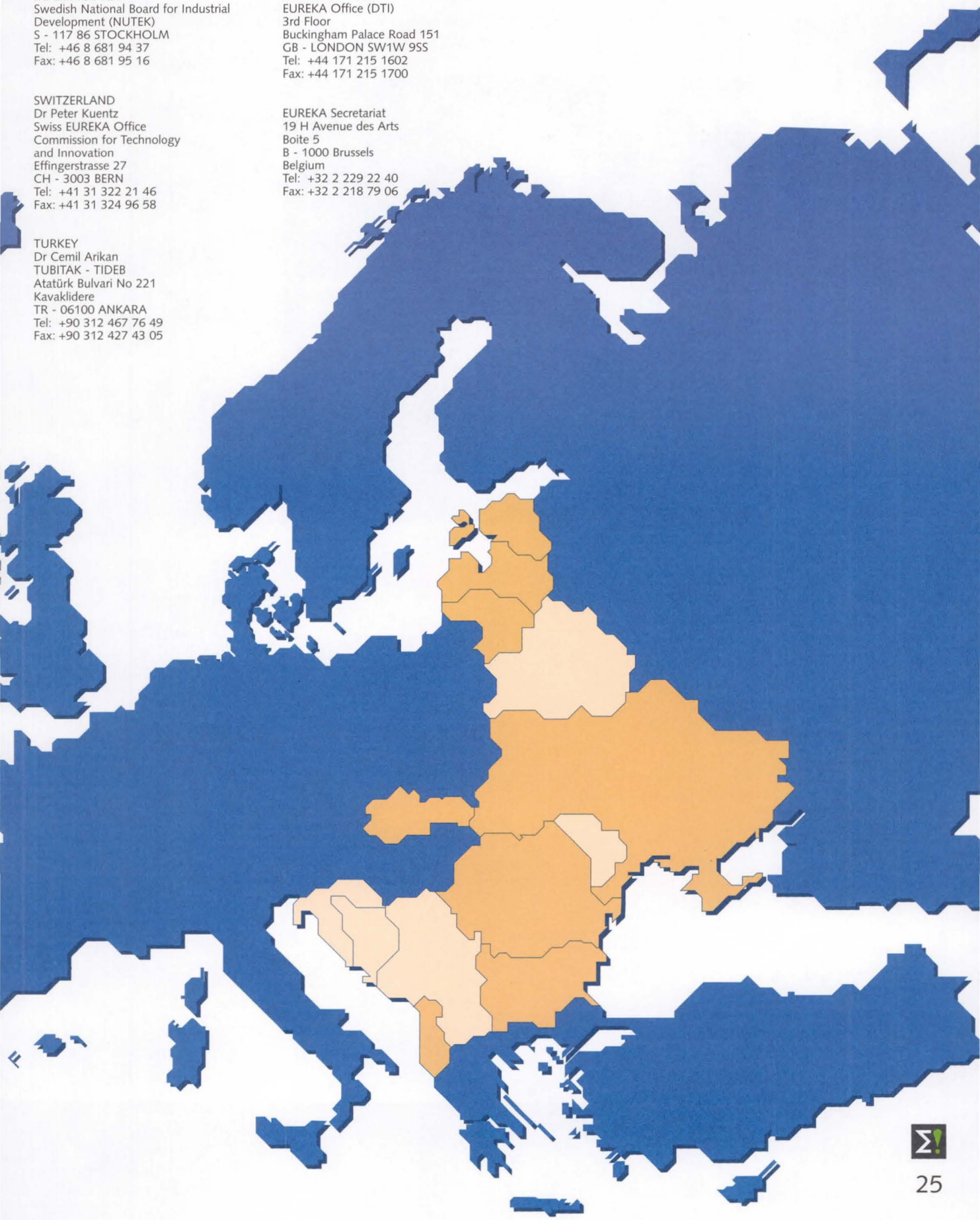
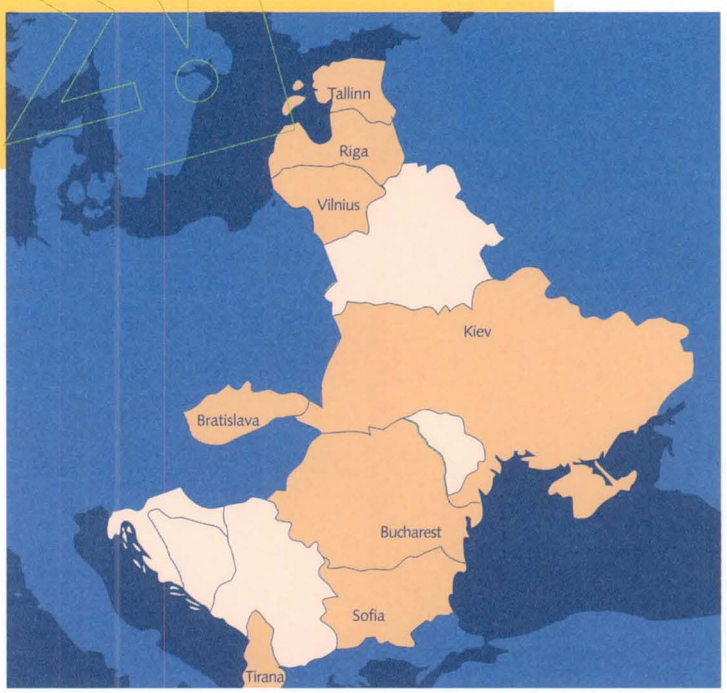


NATIONAL INFORMATION POINT ADDRESSES



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EUREKA PUBLICATIONS

The EUREKA Secretariat produces a wide range of publications which explain the activities of both the EUREKA Initiative and the individual projects and which offer advice on how to manage an R&D project in an efficient way. Unless otherwise stated, all publications are available in English, French, German, Italian and Spanish.

EUREKA News
A newsletter published 4 times a year to report on the activities of EUREKA projects, EUREKA events, technology trends and to serve as a channel for a wide-ranging exchange of views on the EUREKA experience.

Together for the Future
A brochure containing a short general description of the EUREKA Initiative.

Vademecum
A brochure containing the basic EUREKA documents, a guide to EUREKA project participation and other useful information on the EUREKA network.

The Role and Medium Term Future of EUREKA. An Assessment and Recommendations
A report of an Expert Group chaired by E. Davignon advising on the role and medium term future of EUREKA in the overall European research and industrial context, on the basis of the needs of European industry and research, technological and market trends, etc. (English)

EUREKA Medium Term Plan 1996 - 2000
EUREKA's third Medium Term Plan, addressing key issues and challenges facing EUREKA for the period 1996 to 2000. (English)

Evaluation Report 1995
Report on the findings of an evaluation of EUREKA's finished projects. (English)

EUREKA Annual Impact Report 1996
A report presenting the results of a new process for assessing EUREKA participation and projects in a systematic and continuous way. (English)

The EUREKA Toolbox
A set of 11 booklets developed to guide present and future EUREKA project participants in their effort to carry out a EUREKA project in an efficient and successful way. (All guides in English only)

- **The Toolbox! An overview.**
  A short description of all booklets in the Toolbox.
- **A Practical Guide to R&D in Europe.**
  A guide for scientists and industrialists preparing R&D cooperation projects as an aid to identifying the most appropriate framework within the European research environment.
- **Cross-Border Cooperation. Managing Cooperative Ventures in Industrial R&D.**
  A guide describing how to avoid the potential pitfalls of cooperative ventures through strategic and operational management actions.
- **Checklist for the Preparation and Execution of a EUREKA project**
  A guide for potential project partners, describing the items to be treated in setting up a high quality project.
- **Guide for the Smaller Enterprise**
  A guide offering advice to small or medium sized enterprises wanting to enter or start a EUREKA project.
- **Legal Forms of Collaboration**
  A guide providing information on a number of regularly used legal forms. It describes their drawbacks and advantages and will help project partners to find a better adapted form than the consortium agreement, especially when exploitation comes in sight.
- **Guidelines for the Protection of Technological Information**
  A guide providing the steps to be taken by project partners for the protection of intellectual property and technological information in a EUREKA project.
- **Guide to Standardisation**
  A guide describing links between standardisation and R&D, suggesting a basis for a standardisation strategy in R&D and outlining the steps involved in developing such a strategy.
- **Information Guide on Environmental Issues**
  A guide presenting the environmental aspects of particular interest for industry or researchers engaged in the definition of a new R&D project within the EUREKA framework.
- **Key Factors for Success**
  A guide interpreting some of the lessons from existing management literature, applying these on the collaborative research in the EUREKA framework. Seven key factors for success are identified. The booklet also contains a CD-ROM.
- **Good Practice in R&D Collaboration Management - a EUREKA Guide**
  A guide drawing on the experience of EUREKA participants.

Information on EUREKA and its projects can now be accessed via the Internet: http://www.eureka.be/