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EUREKA Program Update to March 1988
J.F. Blackburn
12 July 1988

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19. ABSTRACT <i>(Continue on reverse if necessary and identify by block number)</i> <i>(cont'd p1)</i> The EUREKA Program is brought up to date in this list, with descriptions, of the 165 EUREKA projects. Also identified are the participating/interested countries, the cost, duration, and status. The topics under which these projects fall are: information technology; robots, manufacturing, and process control; biotechnology; new materials; environment; telecommunications; transportation; energy; and lasers. <i>Keywords: Research management</i> <i>Foreign technology. (edc)</i> <i>A</i>			
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# EUREKA PROGRAM UPDATE TO MARCH 1988

## Background

→ The European Research Coordination Agency (EUREKA) Program was discussed in two recent issues of European Science Notes, (ESN 40-4:141-142 and ESN 41-1:12-15). EUREKA resulted from a proposal made in 1985 by President Mitterand, of France. Since its launch during a first ministerial meeting in Paris in July 1985 four further ministerial meetings have been held at which projects were approved. At Hanover in November 1985 the first 10 projects were approved. A further 60 projects were adopted during the third ministerial meeting held in London on June 30, 1986; at the fourth conference in Stockholm in December 1986, 37 more projects were approved; and in the Madrid meeting of September 15, 1987, the total was brought to 165 with the adoption of 58 further projects. The dominant fields of technology in the adopted projects are information systems, biotechnology, and production technology. The cost of the development effort in the 165 projects is about 4 billion ECU (currently about \$4 billion) over the lifetime of the projects. Many more projects are in preparation, some of which will receive approval at the sixth ministerial conference to be held in Copenhagen in June 1988.

→ There are at present 20 EUREKA members - 19 countries and the European Commission. The 19 countries are: Austria, Belgium, Denmark, Finland, France, West Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey, and the UK.

## Purpose

EUREKA is intended to serve as a Europe-wide organization to encourage collaboration on the part of its members on advanced technology projects. Approval is normally given to serious proposals involving cross-border collaboration on civilian projects between firms and research institutes from different EUREKA member countries, regardless of size or structure. No centralized source of funding is available. Projects are funded by participating firms and institutes and in some cases their respective governments. The expectation is that these projects will strengthen the competitive position of European products, processes, and services throughout Europe and overseas in both public and private markets.

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There are no predetermined technology areas. Companies, universities, and research institutes that decide to collaborate determine their own areas of interest and the advantages they see in their collaboration. Individual firms or institutes determine the topics on which they wish to collaborate and then they seek partners who are willing and able to contribute to the work. Associations made in ESPRIT, RACE (the program for R&D in advanced communication technologies for Europe), or Basic Research in Industrial Technologies for Europe (BRITE) probably play a part in determining partnerships. The proposed partners, with the assistance of their national government officials, are responsible for bringing their ideas and concepts to the attention of the EUREKA ministers for approval. Governments or the European Commission may choose to propose and promote a project whenever its size, complexity, or objectives are of sufficient national or international interest. EUREKA is, in effect, a clearing house in the search of industrial, scientific, and financial partners throughout Europe.

## Operations

The EUREKA Secretariat, located in Brussels, circulates project proposals and expressions of interest to the national authorities, when they are received, and the national authorities pass the information on to the other firms or organizations that may be interested. Constraints and obligations are kept as simple as possible so that, for example, additional partners may enter a project once a partnership has been formed, with agreement of the existing partners. Obligations concerning disclosure of results derived from EUREKA projects may be tailored to the particular needs of participants.

Through EUREKA, companies may request supportive measures from their own national governments or from the EC to help with cross-border cooperation in R&D. These measures necessarily relate to areas in which national governments and the EC may directly or indirectly influence the system for cooperation. Through these measures EUREKA should lead to a speedup of ongoing efforts to:

- Eliminate existing technical obstacles to trade by the mutual recognition of inspection procedures
- Elaborate joint industrial standards at an early stage
- Open up the system of public procurement.

Participants in EUREKA projects are expected to find the required funds themselves, either internally or by seeking financial partners, using private financial sources

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such as the capital market or loans or any public funds that they may receive from their national governments or the European Community. Within the initiative, contacts with groups of banks and venture capital associations have been established with the aim of mobilizing more private-sector funds for high-technology projects.

The percentage breakdown of projects by application area as a percentage of the total number of projects is:

- Information technology . . . . . 25.0 percent
- Robots and manufacturing . . . . . 17.6 percent
- Biotechnology . . . . . 13.0 percent
- New Materials . . . . . 12.0 percent
- Environment . . . . . 8.3 percent
- Telecommunication . . . . . 7.4 percent
- Transport . . . . . 7.4 percent
- Energy . . . . . 5.6 percent
- Lasers . . . . . 3.7 percent

The procedure for a proposal is for each partner or partners of each involved country to submit the proposal to the national coordinator of the country. The proposal is then examined by the national authorities concerned, approved by them if appropriate and transmitted to the EUREKA Secretariat. The proposal is checked, registered in the EUREKA database and circulated among representatives of member countries and the European Community by the EUREKA Secretariat. The proposal is then submitted to the next ministerial conference for review and approval.

## Projects

Following is a current list of the 165 EUREKA projects including a brief summary follows. Cost is shown in millions of ECU (currently, 1 ECU = \$1.00 [approx]) and Duration in months. Status code is A = Approved.

Title Description/Purpose	Participating Countries and Interested Countries	Cost/ Duration	EUREKA ID #/ Status
<b>Information Technology</b>			
<b>Educational Computing Project</b> Development of "standard" for integrated computer system suitable for educational use, including initial evaluation of existing standards and specifications with long-term viability.	United Kingdom, Italy	32.00/36	1 /A
<b>Compact Vectorial Mini Computer</b> Production of a minicomputer with the capacity of 100 M Flops.	France, Norway	50.00/54	2/A
<b>Cerise — European Center for New Image Synthesis Technologies</b> The Center will make it possible to develop, test, and improve computer image synthesis systems.	France, Luxembourg	8.50/60	15/A
<b>ES2 — Automatic Design and Production of Custom Chips Using Direct Printing on Silicon Wafers</b> The objective of the project is to use software and printing technology so as to minimize the efforts in producing custom-made chips.	France, Germany, Italy, Netherlands, Norway	4.00/36	16/A
<b>East — EUREKA Advanced Software Technology</b> Development of software engineering factories, constructed around Unix system V and the Emerald acceptance structure, the industrial version of the ESPRIT PCTE prototype.	Denmark, Italy, Finland, France, United Kingdom	141.00/72	20/A
<b>GALENO 2000</b> Development of new, noninvasive medical measuring methods and combining these with computer aided diagnostics.	Spain, Denmark	60.00/72	26 /A
<b>APEX — Advanced Project for European Information Exchange</b> Development, evaluation, then marketing of a methodology for associated products and services for the computerization of exchanges of information in the context of large industrial cooperation programs.	Spain, Italy, France, United Kingdom, Germany	30.00/60	28/A
<b>Modular Image Processor</b> Produce modules and two prototypes of an integrated 48A modular image processor.	Sweden, France	7.00 /48	34 /A
<b>DESIRE — Development of an All Dry Single-Layer Photolithography Technology for Submicron Devices</b> Development of an all dry single-layer photolithography technology for submicron resolution, applied to multimegabit devices.	Belgium, United Kingdom	4.00/36	38/A

<b>ESF – EUREKA Software Factory</b> Development of a computer aided system for the production of software (software production environment).	Germany, Sweden, France, United Kingdom, Norway, Spain	327.00/96	43 A
<b>Sub 0.1 Micrometer Ion Projector</b> The development in telecommunication and data processing systems for applications such as robots calls for a further increasing degree of integration of electronic components, aiming at cost reduction and improved systems reliability.	Austria, Germany	5.00/60	50/A
<b>Integrated Work Place for Operating Room &amp; Intensive Care Units as Part of a Hospital Automation System</b> Provide an information system to the anaesthesiologist and other medical staff in order to improve the quality of their decisions through intelligent data management system and integration of several units.	Germany, Netherlands, France	13.00/60	51/A
<b>Transpolis/ Transpotel</b> A worldwide reproducible concept for physical distribution centers where central facilities are offered of which the major provision is an integral data and communications processing system.	United Kingdom, Netherlands, Austria	45.00/36	54/A
<b>CARMINAT System</b> System for acquisition, transmission, processing, and presentation of information to improve the safety of the driver and to make trips easier and more efficient, including electronic car monitoring and/or navigation system.	Netherlands, France	52.00/48	55/A
<b>PROTOS – PROLOG Tools for Building Expert Systems</b> Development of software tools in the programming language PROLOG, aimed at expert systems.	Switzerland, Germany	2.00/36	56/A
<b>Crop Management Expert Systems</b> Development of a range of expert system software and ancillary hardware for use in crop management decisions of farms. Project includes the use of expert system techniques, new hardware and visual, user-friendly presentation techniques.	United Kingdom, Netherlands	0.60/36	63/A
<b>Computerized Engineering Unit</b> New engineering working methods by the use of data-bases and appropriate applications, where users will be genuinely assisted by computerized systems.	Switzerland, Spain, France 1	7.00/36	64/A
<b>BD 11</b> Development of a data base for distributed expert systems on low-level computers, using the "Pick" operating system and "C" language.	Spain, France	20.00 /60	79/A
<b>A Practical ADA Workbench for Real-Time Applications</b> Bring together within one system a high-quality ADA compiler from alsys interfaced to the user through maccadd from logical within the I star framework developed by IST. A comprehensive integrated system as part of an information system factory.	United Kingdom, France	4.30/24	82/A
<b>High Performance Signal Processing for Laboratory Environments</b> Development of high-performance analog-to-digital converters for nuclear electronics applications and signal correlators compatible with standard and latest generation microcomputers (IBM PC, XT, AT and RT).	United Kingdom, Portugal	0.4024	90/A
<b>New Designs and Technologies for High-Power Semiconductor Devices</b> Development of new technologies, new design of components, and environmentally acceptable use of energy in order to achieve further development in power semiconductor technology.	Switzerland, Sweden	5.00/24	97/A

<p><b>EPROM — Multi-Megabit Nonvolatile Memories</b> Study, development and industrialization of integrated circuit nonvolatile memory (EPROM) with storage capacity of 4 Mbit. Feasibility study of technology and architecture of 16 Mbit capacity.</p>	France, Italy	404.00/60	102/A
<p><b>Development of Improved Systems for Stereophonic Sound Reproduction</b> The aim is to provide a basis for design and production of improved, flexible audio systems and procedures for high-quality reproduction of sound for domestic and similar purposes.</p>	United Kingdom, Denmark	5.00/60	105/A
<p><b>Aerospace Intelligent Management and Development Tool for Embedded Systems</b> Supply European manufacturers in the aerospace field with distributed knowledge-based management system for the development and maintenance of embedded software.</p>	France, Italy, United Kingdom	23.60/60	112/A
<p><b>Intelligent Automated Inspection and Analysis of Integrated Circuits</b> Package comprising an expert system operating on a database provided by the inspection and testing of custom IC's and pattern generator tapes describing geometrical features of microelectronic structures.</p>	Switzerland, France	14.90/48	124/A
<p><b>Mobidick — Multivariable On-Line Bilingual Dictionary Kit</b> To develop an on-line general purpose bilingual dictionary kit including information storage on CD ROM, for users on ordinary PC's, for spelling, hyphenation, grammar, and style. Contribute to standards of linguistic software.</p>	Netherlands, Switzerland France, United Kingdom	3.50/36	128/A
<p><b>ATIS — AIT Tourist Information System</b> A tourist information-base for the European clubs affiliated with the SIT (Alliance International De Tourisme) and their members.</p>	Austria, Switzerland Netherlands, Belgium, Germany	5.80/54	134/A
<p><b>Ink Jet Printing</b> Development of a computerized "contactless" printing technology using digital image information input.</p>	Sweden, Netherlands Germany, Switzerland	13.90/36	136/A
<p><b>Development of Methods for the Prediction of Material Properties of Injection Molded Thermoplastic Products</b> Develop high-technology computer methods for more rational design of thermoplastic products, reduction of machine time for injection molding, savings by controlling the warpage, computerized quality control.</p>	Sweden, Norway	1.70/60	139/A
<p><b>Tele Atlas — Electronic Publishing of Cartographic and Geographic Database</b> Develop in Europe National Data bases with a core of digitalized line segments, link with several geographic, topographic, traffic-related, and economic databases. For car navigation, traffic planning and control, research, and other uses.</p>	Netherlands, Belgium	4.20/36	145/A
<p><b>Demeter — Digital Electronic Mapping of European Territory</b> Development of standard from digital geographical data bases, for compact disk storage. Automatic production methods and equipment for digital maps. Prototypes of digital maps for Europe.</p>	Netherlands, Germany	5.00/48	148/A
<p><b>Advanced Finite Element Software for the Design of Structural Fluid Flow and Microelectronic System</b> Exploitation and development of existing research, which over the last 5 years has made major advances in the solution of engineering problems in a number of different civil, mechanical, and electronic fields.</p>	Portugal, United Kingdom, Spain	3.50	149/A

<b>Oasis – Open and Secure Information Systems Information Systems</b> Combined pilot scheme for the overall concept of security.	France, Germany, Switzerland, Austria, Germany	92.00/60	153/A
<b>European Common LISP</b> Create a LISP environment as basis for a common European LISP. Improvements will be: efficiency, portability of language and applications and availability on a wide range of European and American machines.	France, Germany	4.30/18	157/A
<b>Eurovisé – European Low Cost Vision System</b> Produce detailed specification of a versatile low-cost machine vision system. Promote, use, and increase depth of knowledge within inspection and quality control processes.	Ireland, United Kingdom	1.60/40	163/A
<b>Microencapsulation</b> Joint venture company of the development of systems for tablet press instrumentation and for computer control, and process study for Microencapsulation	United Kingdom, Finland	0.50/10	164/A
<b>FASTCAT – High-Speed Computer Support for Translation</b> A new and considerably enhanced system for multilanguage computer support for translations, which as a minimum corresponds to the demand profile which the translation department (Eurotra) of the commission has established.	Germany, Sweden, Netherlands	1.40/23	165/A
<b>Idea – Integrated Development Environment for ADA</b> Enhance productivity during the software development process and decrease the cost, distributed workstations.	Belgium, Italy, United Kingdom	4.00/36	179/A
<b>Educational Software Development Throughout Europe</b> The project aims to create an effective network of educational authors, publishers and distributors by unifying to the maximum extent the market for educational software in terms of hardware, language, and culture.	United Kingdom, Germany Netherlands, Italy, Turkey	1.50/36	192/A
<b>Expert-System on Portable CD-ROM Terminal: Visually Explanatory Assistance for Decision Making in the Field</b> Complete assistance tool for diagnostic and therapeutic decision making involving a portable, sturdy, and intelligent terminal, and a user-friendly expert system with interfaces/peripherals (RS232, MODEM, CD and keyboard).	Belgium, France	4.00/24	211/A
<b>Fast Prototypeable Analogue Transistor Array</b> Development of an analogue ASIC which is prototypeable by direct-write laser (DWL) and is of different layout philosophy enabling good speedup of layout time and better use of silicon area.	Netherlands, Switzerland	0.30/16	222/A
<b>Transputer-Based APD/INMOS Language and Operating Systems Research</b> Formalization of technical requirements and specifications for the construction of parallel processing systems, develop a UNIX-compatible operating system, AC compiler, and an OCCAM compiler.	Spain, United Kingdom	5.70/24	228/A

## Robots, Manufacturing and Process Control

<b>UPAC-Adaptive Garment Manufacturing Unit</b> Development for garment factory incorporating the latest concepts in production and organization.	Portugal, France	23.00/48	4/A
<b>Carmat 2000 – Car Structure Using New Materials</b> Investigation and definition of process and design of new fabrication techniques regarding car body production.	United Kingdom, France, Netherlands, Germany	60.00/48	13/A

<b>Eurocim — Flexible Automated Factory for the Production of Electronic Equipment</b> Design and development of a group of flexible automated workshops for the production of electronic cards.	Italy, France, Spain	30.00/60	14/A
<b>Gallium Arsenide — Microlithic Microwave Integrated Circuit Foundry Project</b> Setting up of industrial manufacturing of GaAs integrated circuits leading to "foundry" operations and the manufacture of standard "catalogue" circuits.	United Kingdom, France	60.00/36	17/A
<b>Advanced Mobile Robots for Public Safety Applications</b> Involving third-generation fast-moving robots for public safety application such as national disasters and antiterrorism (definition phase).	Spain, France, Italy	100.00/72	18/A
<b>Mentor — Expert System for Dealing With Security Control</b> Expert system for dealing with major plant failures and security control.	France, Norway	30.00/48	19/A
<b>Paradi — Development of Flexible and Integrated Systems</b> Definition of a system of function management, design, production, and logistics adapted to different types of manufacturing operations involving a high-level of technology.	France, Spain, Switzerland Belgium, Italy, Germany	30.00/72	21/A
<b>Pan (N5)</b> Manufacture of pilot equipment to produce, then prove feasibility to manufacturing flow-line style, high-pressure sub-sea pipe from high-performance fibers.	United Kingdom, Norway	2.00/60	30/A
<b>Prospects for Construction Techniques</b> Creation of an industrialized urban infrastructure applicable on an identified site, using building techniques for the years 2000 to 2020.	United Kingdom, Germany France, Italy	9.20/60	40/A
<b>UMDC — Universal Modular Color Display System for Process Control</b> UMDC will be designed to meet the requirements of modern control systems where picture update speed, high system flexibility, and advanced operator facilities are of special importance.	Germany, Finland	1.00/36	48/A
<b>Integrated Sensor for Large-Scale Applications</b> Integration of sensors in the production line using photolithography techniques and microelectronics.	France, Switzerland	27.00/60	60/A
<b>Fast Prototyping Service for Silicon Application-Specific IC's (ASICs)</b> Development of compatible design and manufacturing tools for ASICs.	United Kingdom, France	30.00/60	69/A
<b>FAMOS</b> Development of Automated flexible assembly systems for an automated factory of the future.	Spain, Germany, France Italy, Sweden, United Kingdom, Austria	2.20/120	72/A
<b>Fiabex — Development of an Expert System for Safety and Reliability Analysis of Industrial Systems</b> Expert system for automatic calculation and presentation of FMEA and fault tree analysis statusgraphs and petri nets for safety and reliability analysis for industrial subassemblies, operating systems and complex industrial processes.	France, Spain, United Kingdom, Italy	1.40/24	85/A
<b>Electron Beam Welding</b> Second generation of high-power electron beam equipment for out-of-vacuum metal processing — design and develop for industrial use a new and cost effective method of welding steel of up to 100-mm thickness at atmospheric pressure.	Spain, Sweden, United Kingdom	2.40/48	86/A



<p><b>Eurofor-New Drilling System</b> Automation and computerization of a drilling apparatus for the petroleum industry, enabling an integrated and modular approach to optimize the steering of the drill on the surface and at the bottom of the hole.</p>	United Kingdom, Italy, France, Netherlands	26.00/48	87/A
<p><b>Hercules (GEO)</b> Application of robotics to the construction industry to eliminate laborious and dangerous tasks as well as improving productivity. A load-manipulating crane atlas and a platform-mounted robot GEO for working on tall buildings/structures.</p>	France, United Kingdom	39.50/60	93/A
<p><b>Fishing Vessel for the 1990's</b> Development of sophisticated technologies necessary for the design, construction, and operation of industrial fishing vessels, including prototypes.</p>	Spain, France	56.00/60	99/A
<p><b>Absorption Heat Pump</b> Research, development and industrialization of absorption heat pumps (PACA, Type 1) and heat transformer (PACA, Type 2) for industrial use and high-power applications. Prototypes are to be transformed into products adapted to the market.</p>	France, Germany	10.00/60	109/A
<p><b>Mobile Robot For Remote Surveillance</b> Development, industrialization, and sale of mobile robots for tele-surveillance.</p>	France, Switzerland, Italy	33.30/54	110/A
<p><b>Jessi - Joint European Submicron Silicon Initiative</b> To develop submicron silicon process technology as well as manufacturing and design capability in 1995. The resulting technical targets could be: (1) very high complexity (10 to 100 millions transistors/chip, and (2) very high speed IC (5 Gbit/s).</p>	Germany, Netherlands, France, Italy	3.60/12	127/A
<p><b>Super Subsea</b> Develop standardized modular subsea production systems, configured to satisfy requirements of any particular field development.</p>	Germany, Norway, France	10.50/60	129/A
<p><b>Computer Aided Manufacturing for Constructional Steelwork Including Expert Systems</b> Definition, applied research, and subsequent system evaluation for a modular computer-integrated manufacturing system.</p>	United Kingdom, Netherlands, France, Italy, Finland, Denmark, Germany, Turkey, CEC	11.00/48	130/A
<p><b>Escape - European Strategic Cigar Automation Project EUREKA</b> Product innovation which allows for preservation of European production, based on modern fundamentals and standards.</p>	Netherlands, Belgium, Spain, France, Germany, United Kingdom, Turkey	0.35/12	146/A
<p><b>Factory of the Future</b> Development of methods and techniques for computer-integrated manufacturing, the development and application of artificial intelligence during the production process, and testing of this in pilot projects.</p>	Germany, Switzerland, France, Italy	17.00/48	154/A
<p><b>Process Industry Applications of Electron Beam Treatment Development of Electron Beam Technology</b> EB treatment of cellulose; new manufacturing methods for emulsions and polymer granules; exhaust gas purification with EB; development of related new-type EB units.</p>	Sweden, Finland	3.30/36	162/A
<p><b>IVIS - Integrated Vacuum Instrumentation System</b> Development of process control architecture for vacuum processes involving a system controller communicating with sensors and actuators with a common protocol.</p>	Sweden, United Kingdom, Germany, Finland	2.50/40	166/A

<p><b>FAMOS: Flexible High-Volume, High Variety, Mechanical Product Assembly Facility, Suitable For Engine/Transmission Applications</b></p> <p>A computer-integrated, flexible engine assembly system for high-variety customer dress parts.</p>	United Kingdom, Italy	10.00/48	170/A
<p><b>Robot for Citrus Harvesting and Handling</b></p> <p>Development of a robot prototype for detection, collection, and manipulation of citrus fruit.</p>	France, Spain, Turkey	6.30/54	176/A
<p><b>Automation and Expert Systems in Chemical Industrial Process Control</b></p> <p>Basic research and development into AI-based advanced automation techniques in the chemical and petrochemical process control systems, including methodologies, application expertise method, and prototypes.</p>	Belgium, France	12.70/48	188/AI
<p><b>Advance Underwater Robots (AUR) For Underwater Working/Inspections and Long-Range Autonomous Missions</b></p> <p>Develop and make available robotic technologies for the off-shore market: (1) a tethered, semi-autonomous working and inspection robot (WIR) and (2) an autonomous robot for underwater survey (ARUA).</p>	Italy, United Kingdom, Denmark	50.00/60	191/A
<p><b>FAMOS: Flexible Manufacturing Cell for Telephone Subset Assembly</b></p> <p>The design, development, and installation of flexible assembly system (FAS) including the following subsystems: transport system/manufacturing equipmentsuch as robot cells, test system, and control system.</p>	Spain, Belgium, United Kingdom	3.80/28	196/A
<p><b>Advanced Dynamic Simulator for Chemical Plants</b></p> <p>Development of a fully portable, CAE software tool for advanced dynamic simulation of chemical plants, applicable for process design, disturbance analysis, and training purposes.</p>	Finland, Belgium, CEC	4.00/36	199/A
<p><b>FAMOS: CIM Assembly Pilot Plants</b></p> <p>Flexible, automated assembly systems for local integration of information and material flow (CIM,JIT), advanced hardware/software modules, assembly equipment and advanced systems to improve production quality/statistic process control.</p>	Germany, Italy	18.30/72	203/A
<p><b>New Process for Casting of Thin Metal Sheets</b></p> <p>The process consists of casting on a rotating cylinder a sheet of large width and low thickness (0.1-1 mm). The sheet obtained will have the final usable thickness or will need little complementary cold lamination.</p>	France, Germany	23.20/78	206/A
<p><b>FAMOS: ARIA</b></p> <p>The development of new automated assembly lines for large series of small and medium-sized products. The first applications will be in the area of low voltage miniswitches.</p>	Spain, France, Italy, Switzerland	7.70/60	212/A
<p><b>FAMOS: Refrigerator Compressor Assembly System</b></p> <p>Design and development of a prototype of flexibleautomated line for the assembly of refrigerator compressors.</p>	Italy, Sweden, Austria	22.50/48	218/A
<p><b>FAMOS: Integrated Design with Engineering and Automated Manufacturing</b></p> <p>Development of a group of flexible, automated workshops for the production of electronic cards,ranging from the preparation of naked printed circuits to quality control and card testing.</p>	United Kingdom, Italy	34.50/48	229/A
<p><b>Automated Textile Printing Shop</b></p> <p>Definition and implementation of a prototype for an automated textile printing shop using the rotating frame system.</p>	Netherlands, France	1.50/25	231/A
<p><b>Flexible Automated Factory for the Production of Washing Machines</b></p> <p>FAMOS: Automation of the production of washing machines (frames, motors and electrical installation) and automatic quality control.</p>	France, Italy, Spain, United Kingdom	8.00/48	232/A

## Biotechnology

<p><b>Clinical Diagnosis of Gonorrhoea</b> Development of a new range of immunodiagnostic kits for the rapid diagnosis of gonorrhoea infections.</p>	Spain, United Kingdom	2.60/24	9/A
<p><b>Protein Design</b> Develop a complete an integrated system of instrumentation and computer analysis capable of solving three-dimensional structures of small-to-medium-sized proteins – up to 150 residues.</p>	Germany, Denmark	16.00/120	41/A
<p><b>Sunflower Seeds</b> Production of new commercial varieties of sunflower seeds with high oil contents, suitable for Mediterranean arid zone conditions.</p>	Spain, France	4.00/120	57/A
<p><b>Oxidipene – Development of Oxidipene</b> Pharmacological and clinical development of oxidipene, a calcium antagonist, and studies of related structures.</p>	Spain, France	6.00/96	59/A
<p><b>Development of rhizobacteria products for growth promotion, fungal disease control in corn, sunflower, sugar, soybean, wheat</b> Develop microbial products for seedcoating, to increase growth and crop yield. A strain selection program for corn, sunflower, sugarbeet, wheat.</p>	Austria, Belgium, Spain, Italy	2.10/48	78/A
<p><b>Production of Artificial Seeds, in Particular of Tomatoes</b> Develop general, cost-effective technological expertise in the field of plant embryo cultivation, conservation, and pelleting processes for living plant material.</p>	France, Switzerland	3.30/60	100/A
<p><b>Malaria Vaccine</b> Experimental research on, and development of, malaria vaccine and serum.</p>	France, Germany	11.00/48	101/A
<p><b>Mass Production Using Animal Cell Cultures as a Starting Material</b> The aim is to extend the range of usefulness of animal cell cultures introducing processes which allow mass production to take place using animal cell cultures as a starting material within a continuous process.</p>	France, Austria, Italy, Germany	25.50/36	104/A
<p><b>Improveed – New Methods for the Improvement of the Feed Value of Raw Materials and Feed</b> Improve digestibility of protein-rich raw materials grown in EUREKA countries, such as beans, peas, sunflower- and rapeseed-products and lupines which contain antinutritional factors, and of fibrous byproducts such as wheat-bran.</p>	France, Netherlands, Germany, Belgium	10.50	135/A
<p><b>Diagnostic Procedure Through Selective and Specific Filtration of Antigens or Labelled Antibodies</b> The project attempts to develop a diagnostic system or procedure of universal application, where the necessary and suitable reagents may be incorporated in order to achieve a concrete diagnosis of various pathological entities.</p>	Sweden, Spain	1.50/36	172/A
<p><b>Development of New Technologies in Nutrition and Genetics Improvement for the Industrial Culture of Bivalve Molluscs</b> Develop new techniques in order to optimize the industrial culture of flat oysters and Japanese clams.</p>	Norway, Spain	7.00/60	174/A
<p><b>Rapid Diagnosis of, and Vaccination Against Canine Leishmaniasis</b> Provide veterinarians and health-care workers with new means of combatting this illness.</p>	Spain, Portugal	1.00/48	177/A

<b>Carrier-Mediated Therapy and Diagnosis of Malignancy</b> Develop targeting systems to decrease toxicity of anticancer agents for sites of limiting toxicity in normal tissues. Increase the rate of objective responses.	Belgium, Germany	3.90/36	181/A
<b>Fruit Flavor Production from Plant Tissue Cultures Turkey</b> Develop technology to substitute natural products produced by plant cell culture for synthetic compounds, in the area of food technology.	Denmark, United Kingdom	1.00/48	182/A
<b>Mass Spectrometric Analysis of Biologically Active Macromolecules</b> Mass spectrometric techniques for reliable and quantitative detection in process control systems of protein masses of at least 50 kd, molecular surfaces for specific sampling, and subsequent mass specific analysis of proteins.	Denmark, Sweden	3.40/60	184/A
<b>Development of Hybrid Antibiotics of the Anthracycline Group</b> New hybrid antitumor antibiotics, using recombinant DNA technology, to combine the antibiotic biosynthetic genes of two streptomyces strains, and to reduce side effects.	Finland, Sweden	2.00/36	185/A
<b>Allergy innovations</b> Development of technology and kits for laboratory diagnosis of allergic and occupational diseases: kits for <i>in-vitro</i> diagnosis of IGE- and IGG-mediated allergies and their application.	Spain, Netherlands	0.10/36	190/A
<b>Memcare</b> The development of mobile self-supporting emergency hospitals for immediate medical attendance to victims of calamities (nuclear chemical, etc.).	Netherlands, Belgium	3.00/48	198/A
<b>In Vitro Immunization for Production of Monoclonal Antibodies to Gangliosides</b> Aim is to obtain monoclonal antibodies of human origin for the treatment of certain neoplastic processes.	Spain, Germany	1.40/36	208/A
<b>Enzymatic Treatment of High Yield Pulps</b> Development of products and processes for enzymatic treatment of paper pulps and of high-yield pulp in particular.	Finland, France	14.60/60	210/A
<b>Electronic Identification of Blood Bags in Connection with Autologous Blood Banking</b> Development of complete automatic warehousing of frozen blood or blood components, with safe identification of autologous blood.	Sweden, Germany, Turkey	3.00/36	216/A
<b>New Materials</b>			
<b>Phototronics Proposal</b> Industrial development of amorphous-silicon-based components for photoelectronic applications.	Germany, France, Austria	50.00/84	3/A
<b>Diane — Automated Integrated System for Neutronography</b> Mobile neutron radioscopy equipment adapted to nondestructive testing for components and the study of new materials.	France, Spain, Germany	15.00/48	22/A
<b>Chrome Tanning Salts Substitutes</b> Development of a method of obtaining quality leather for various uses which eliminates or reduces to a minimum the quantity of chrome required.	Spain, Greece, Austria	2.50/36	25/A
<b>Development of New Materials for Car Engines</b> Industrial research and development of advanced, reliable, and competitive metallic components for car and commercial vehicle engines.	France, Italy	15.00/60	29/A

<b>Use of Composite Ceramics in Axial Flow Gas Turbines</b> Establish the performance gains to be expected from the introduction of CF-RASEP composite ceramics into axial flow gas turbines of a power not exceeding 10 MW.	France, Sweden, Italy	16.00/60	33/A
<b>Ceramics for Diesel Engines</b> Development of new, efficient fiber-reinforced ceramics for diesel engines for commercial vehicles.	Germany, France, Italy	14.00/60	47/A
<b>Disposable Sensors in the Medical Field</b> Development of sterile, intelligent multisensors with integrated signal conversion, which can be inserted into the human body by medical personnel.	Netherlands, Belgium, Germany	4.00/60	52/A
<b>Production of Superconducting Wires and Magnets for Very-High-Field Applications</b> Study of important parameters for development of technology of high-field superconducting magnets. The long-term goal is the realization of high-magnetic-field superconducting coils in the range of 20 tesla.	Austria, Switzerland, Netherlands	8.00/36	96/A
<b>Production of Precursors for High-Performance Ceramic Materials by Wet Chemistry</b> Development of high-grade precursor materials for the production of high-performance ceramic materials with exceptional electrical, thermal, optical, and mechanical properties. Use of wet chemistry.	Belgium, Austria, United Kingdom	2.00/36	107/A
<b>Wollastonite-Reinforced Engineering Plastics</b> Develop and test high-performance wollastonite, thermoplastics/thermosetting of wollastonite, glass fiber, and thermoplastic/thermosetting composites and identify the major application areas for these composites.	Finland, Belgium	1.50/24	117/A
<b>Coatings for Advanced Technology</b> Development of coatings and fabrication processes for smart windows, with dynamic properties as to transmission of visible light and solar energy.	Sweden, Germany	2.70/56	138/A
<b>Development of Mineral Membranes and Processes for Separating Biological Fermentation Products</b> A new process for the preparation of pharmaceutical products of fermentation based on the use of new mineral membranes characterized by their separating capacity adjusted to each stage of the process.	Italy, France	14.00/48	160/A
<b>New Polymer Fibers</b> Fibers for medical applications, and concrete reinforcement and fibers for polymer matrix composites.	Denmark, Finland	4.00/60	183/A

## Environment

<b>Membranes for Ultra-Microfiltration</b> UF/MF module/membrane systems for the production of drinking water and for the treatment of wastewater.	Denmark, France	34.90/72	5/A
<b>Eurotrac</b> European experiment on transport and transformation of environmentally relevant trace constituents in the troposphere over Europe.	Germany, Norway	68.00/120	7/A
<b>Euromar</b> Euromar—development and application of modern technologies for the exploration of ecological relations and cause-and-effect chains in the seas of Europe.	Netherlands, Italy, Germany, Denmark, France, Finland, Turkey, Ireland, Norway, United Kingdom	164.00/108	37/A
<b>Gas Proportional Scintillation Counters</b> Development of three radiation detectors of the gas proportional scintillation counter type.	United Kingdom, Portugal	4.00/48	39/A

<p><b>Eau Claire System Project</b> Improvement of the aquatic environment under economically acceptable conditions. Reduction of the pollution in the Rhine River basin.</p>	Netherlands, Belgium	0.40/48	53/A
<p><b>Polyvalent Measuring System for Hazardous Gases</b> Develop low-weight, easily operated equipment to identify and measure simultaneously many hazardous gases — includes detectors, prototypes, and final products.</p>	Belgium, Finland	2.80/48	94/A
<p><b>Eurocare — European Project of Conservation and Restoration</b> Development of not now available industrial products and technologies as well as craft skills for conservation and restoration work. Establishment of technical standards and guidelines for examination and treatment of objects and monuments.</p>	Austria, Italy, Spain, Germany Sweden, Denmark, France, United Kingdom, Greece, Netherlands, Portugal, Turkey, CEC	7.00/120	140/A
<p><b>Zeol System</b> Purification of air and water effluents especially from industrial outlets by removal of organic compounds.</p>	Germany, Sweden, CEC, Turkey	9.70/24	161/A
<p><b>Restore</b> This multidisciplinary project aims to make hydrocyclonics/flotation techniques universally applicable for the treatment of highly contaminated sludge and to develop and test experimental sludge processing plants.</p>	Netherlands, United Kingdom	95.40/48	195/A

## TELECOMMUNICATIONS

<p><b>COSINE — Cooperation for Open Systems Interconnection Networking in Europe</b></p>	United Kingdom, Finland, Netherlands, Norway, Germany, CEC, Sweden, Switzerland, Iceland	12	8/A
<p><b>Industrial Local Area Network for Real-Time Process and Machine Control</b> Communications architecture based on local area networks for real-time control of industrial processes and machines.</p>	Italy, France, United Kingdom, Finland, Norway, Germany	25.60/60	68/A
<p><b>Integrated Home Systems</b> Joint development of a communications system for use inside the home. Establish an industry standard with a high level of interconnectability between products or systems of different manufacturers.</p>	Sweden, United Kingdom, Netherlands, Italy, France	21.60/24	84/A
<p><b>HDTV — Compatible High-Definition Television System</b>  Development of a 50-Hz-based HDTV system along an evolutionary development from the mac-packet concept and with compatibility with mac transmitters and receivers.</p>	Germany, United Kingdom, Netherlands, France, Switzerland, Belgium, Italy, Sweden	180.00/48	95/A
<p><b>Optical Transmission at GB/S Rates</b> Development and production of a 2.4-Gbits/s optical fiber transmission system for use by telecommunication operators in high-capacity networks.</p>	Sweden, United Kingdom	26.40/48	132/A
<p><b>DAB — Digital Audio Broadcasting System</b> Demonstrate technical feasibility of the digital terrestrial radio network, and work out the most promising solution. To give a digital radio standard.</p>	Germany, Netherlands, United Kingdom, France, Germany	38.30/60	147/A
<p><b>Low-Cost Medium-High-Feature Telephone Subsets Using Bimos Technology</b> Development and use of bimos technology to integrate medium feature telephone subset functions in one single chip.</p>	France, Spain	2.00/24	173/A

<p><b>Very High Bit-Rate Optical Transmission System</b></p> <p>Design and development of high bit-rate systems for transmission of telecommunication signals on trunk and local networks, to support the implementation of the future broadband integrated service digital network (B-ISDN or IBCN).</p>	Italy, Germany, United Kingdom, France	53.00/60	189/A
<p><b>Logimax</b></p> <p>Development of (2nd generation) information and transport network throughout Europe, enabling the manufacturing industry to control inbound/outbound product flows to optimize logistic cost and minimize inventory.</p>	Netherlands, Germany	4.50/26	227/A
<h2>Transportation</h2>			
<p><b>GTO Thyristors (Gate Turn-Off Thyristors)</b></p> <p>Introduction of a range of GTO products, key components in railway traction in particular and competitive in price and quality on the world market.</p>	United Kingdom, France	20.00/24	24/A
<p><b>Experimental Techniques for Dominant Noise Source Identification of Transportation Facilities</b></p> <p>Development of new methodology to allow a more accurate and more automated identification of the principal noise sources in transportation vehicles.</p>	Belgium, Germany	1.60/48	27/A
<p><b>Light Materials for Transportation Systems</b></p> <p>Development of technology for welding aluminum alloys by electron and laser beams, and development of multilayer composite materials.</p>	Germany, France	15.00/48	42/A
<p><b>Prometheus — Program for a European Traffic System with Highest Efficiency and Unprecedented Safety</b></p> <p>Create concepts and solutions which will point the way to a road traffic system with greater efficiency, and economy and with reduced impact on the environment combined with a degree of safety never before attained.</p>	Germany, France, United Kingdom, Italy, Sweden	15.50/96	45/A
<p><b>Europolis</b></p> <p>New intelligent control system to aid urban and interurban traffic and advanced metropolitan information control and monitoring.</p>	France, Spain, Denmark, Italy	128.00/84	58/A
<p><b>IQ — Intelligent Quattro</b></p> <p>To develop intelligent mechatronic automation and remote control systems for hydraulic-operated vehicles so that limitations of hydraulic components and systems will be eliminated and the advantages of hydraulics will be additionally improved.</p>	Luxembourg, Finland	2.10/48	133/A
<p><b>Eurofar — European Future Advanced Rotorcraft</b></p> <p>Aircraft combining helicopter-type vertical takeoff and landing with airplane-type high cruising speed, by tilting of two rotors mounted at the outer ends of the wings.</p>	Germany, Italy, France, United Kingdom, Spain	46.00/36	137/A
<p><b>Ertis — European Road Transport Information Services Belgium, Netherlands, Norway</b></p> <p>Increase the efficiency of transborder road transportation services, using or developing advanced information transfer technology.</p>	United Kingdom, Denmark,	2.20/36	144/A
<p><b>Fuel Cell Bus</b></p> <p>Development of a vehicle used as a normal bus, with a 30-year-lifetime, with electric propulsion and on-board power supply and fuel cell causing no pollution in urban areas.</p>	Netherlands, Belgium, United Kingdom	2.20/36	201/A
<p><b>Advanced Gas Turbine for Automobile</b></p> <p>The objectives are: pollution level compatible with strictest regulations, adaptation to future fuels, effectiveness of conventional engines, satisfactory noise levels and reasonable investment/production costs.</p>	France, Sweden, Germany	21.80/144	209/A

## Energy

<p><b>Compact Non-Polluting 300-MW Coal-Fired Power Station</b> Development of three major innovations in the design of 300-MW coal-fired power stations which will then be incorporated in a prototype plant. Focus is on the boiler, steam turbine, and the regulation system.</p>	Germany, France	11.00/60	32/A
<p><b>Stabine – Development of an Advanced Power Generation System Compounding a Diesel Cycle to that of an Ind. Gas Turbine</b> Stabine combines a compression unit based on a two-stroke diesel motor-compressor, with opposed engine pistons driving directly compressor pistons, which produces all of the compression work. Secondly a combustion turbine.</p>	France, Belgium	47.00/84	111/A
<p><b>Project Heating System in Thermomechanical Ceramics</b> Industrial application for burners with thermal energy recuperators and for recuperative radiant-heating tubes, using thermomechanical ceramics. Will use natural gas, and be designed for industrial applications in high-temperature furnaces.</p>	France, Spain, Germany, CEC	6.00/60	142/A
<p><b>Eurodyn High Technology Gas Turbine Engine Demonstrator Program</b> Two-MW turbine engine including an advanced novel cycle, new technology, and adaptation of new materials to meet efficiency level of high-speed diesels at a fraction of weight and volume, and with comparable or better reliability and endurance than existing designs.</p>	France, Norway	33.80/48	159/A
<p><b>Smart Motors for Domestic Appliances</b> Use of advanced-power and high-voltage semiconductor devices in thermally efficient power modules for cost-efficient implementation of smart electronic motor control for low- and medium-cost white line appliances.</p>	France, Spain	4.00/30	175/A
<p><b>FOWM – Fiber Optic Well Monitoring System</b> Use of fiber optic technology for measuring temperature and pressure in oil production wells. Design and adaptation of cable to harsh environment, also in subsea installations.</p>	Norway, United Kingdom	6.00/48	178/A
<p><b>Phoebus – 30-MW Solar Demonstration Plant</b> Design, construct, and operate a 30-MW solar tower plant. Includes optimization and integration of components, cost reduction, and reliable, complete systems.</p>	Spain, Germany, Switzerland, Sweden	1.20/60	186/A
<p><b>Development of a New Concept of Uninterrupted Power Supply (UPS)</b> Development of a line of new products to match future needs of uninterrupted fuel supply (UPS). Development of a new type of rectifier-charger to absorb a sinusoidal current with a power factor of 1 in AC network.</p>	Belgium, France	2.40/36	202/A
<p><b>Design Tools for Internal Combustion Engines</b> Construction of a widely applicable, easy-to-use numerical model of flow in intake ports and manifolds, based on PHOENICS, a widely used computer code for modeling fluid flow and heat transfer.</p>	United Kingdom, Netherlands, Switzerland	1.40/36	217/A

## Lasers

<p><b>Industrial Laser</b> Evaluation and development of industrial lasers for material processing.</p>	Germany, France, Italy, United Kingdom, Austria, Belgium	83.00/120	6/A
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<p><b>Fully Optronic Flexible Workshop</b> The aim of the project is to produce an automated flexible workshop, using the potential of lasers to the full, and creating a typical mechanical engineering unit.</p>	Italy, France, Switzerland	83.00/60	10/A
<p><b>Destruction and Detection of Chemicals By Laser Beam</b> The project is based on the use of laser irradiation for the destruction by photolysis of various chemical substances.</p>	France, Belgium, Netherlands	9.00/60	23/A
<p><b>25-kW CO<sub>2</sub> Laser Cell Project</b> Design and construction of an efficient 25-kW CO<sub>2</sub> laser module of good beam quality, capable in combination with similar modules of up to 200 MW; beam manipulator and a suitable seam tracking system; validation of the laser cell.</p>	United Kingdom, Spain, Denmark	7.00/48	83/A
<p><b>Development of an Industrial Carbon Monoxide Laser</b> Development of a CO industrial laser with satisfactory economic promise, and subsequent collection of processing knowledge and applications data with which to demonstrate its performance.</p>	Germany, United Kingdom, Netherlands, France, Italy, Sweden	0.50/12	113/A
<p><b>Cooperative Research in Laser Applications</b> High-power lasers, with powers not yet available, for use in carrying out research directed at products and manufacturing technology in order to transfer the technology into industrial products and material processing applications.</p>	Germany, Switzerland	7.50/36	155/A
<p><b>10-kW CO<sub>2</sub> Laser Modules and Related Systems</b> Lift the actual limitations of the diffusion of high-power laser manufacturing systems in industry by gas excitation techniques, optical power extraction, and innovative welding and heat-treatment procedures.</p>	Belgium, Austria, Italy, Spain	28.00/60	180/A
<p><b>Euro-laser: Industrial Application Evaluation of High-Power Lasers</b> Installation and/or upgrading of high-power laser facilities, together with appropriate beam manipulation and work handling equipment. High-power laser instrumentation and beam diagnostic equipment will also be included.</p>	Austria, Denmark, France, Germany, Italy, Spain, United Kingdom, Greece, Belgium	38.00/60	194/A
<p><b>Laser Work Station for Surface Treatment</b> Study and project of new optical systems to equalize the laser beam. Integration of these optical components in the multi-axis working systems. Building of a cell prototype for heat-treatment/experimental testing.</p>	Italy, Germany	18.00/48	204/A
<p><b>Euro-laser: High-Power Excimer Lasers</b> Design of excimer laser test facilities to investigate reliability of components for multi-kilowatt industrial excimer laser. Create European network of component and system subcontractors.</p>	Germany, France, Netherlands, Greece, Sweden, United Kingdom	14.70/96	205/A
<p><b>Euro-laser: Hipulse Excimer Laser</b> Development of a system which can deliver a power of at least 1 kilowatt and having a number of features (divergence, uniformity, high-frequency operation, wavelength extension techniques).</p>	Italy, Netherlands	10.00/48	213/A
<p><b>Euro-laser: High-Power Solid-State Laser</b> To research on the physical basics for a multi-KW, solid-state laser with high energy and good beam quality; study process principles, design prototype, and scale results to max. Average power for processing.</p>	France, Germany, Italy, United Kingdom, Netherlands, CEC	19.00/30	226/A