JPRS-EST-92-024
29 JULY 1992

JPRS Report

Science & Technology

Europe
EUREKA: Programs and Recommendations

Science & Technology

Europe

EUREKA: Programs and Recommendations

JPRS-EST-92-024 *29 July 1992*

CONTENTS

EUREKA Develops Lidar-Based Air Monitoring System

92BR0419 Paris FRENCH TECHNOLOGY SURVEY in French Mar-Apr 92 p 2

[Text] The ALAMOS [Automated Lidar for Air Monitoring Systems] project (EU-471) will use a lidar (optical radar using a laser) for remote measurements of the amount and location of aerosols in the atmosphere.

The main contractor for the project is the Italian company Alenia (formerly Selenia); the French partner is Quantel.

The system consists of a laser source generating a narrow beam which scans the surrounding atmosphere within a radius of 5 km. The laser light interacts with the molecules of the gases and suspended aerosols in the atmosphere: smoke particles, dust, droplets, etc. The laser light is scattered slightly by each molecule or aerosol and a fraction of the scattered light is transmitted back to the ALAMOS station, where it is detected by a small telescope and analyzed so as to measure separately the contributions of the air molecules and aerosols.

Since the main gaseous components (N_2, O_2, and H_2O) are already known from ground measurements, their determination provides a continuous and automatic calibration of the system.

The aerosol measurements will thus be independent of atmospheric conditions and instrument parameters.

By processing the signal using special mathematical models and the results of earlier measurements, it is possible to identify the different aerosols (the nature of which is already known).

In this way, the aerosol concentration is determined in a hemisphere with a radius of 5 km, the size of a small town or industrial complex. The measurements are made from a single automatic station requiring only limited maintenance.

The ALAMOS station can also be installed on a vehicle for making periodic measurements on sites requiring continuous monitoring.

Scandinavian Participation in EUREKA Eurolaser Project Detailed

92WS0661X Stockholm NEW SCANDINAVIAN TECHNOLOGY in English No 2, 1992 p 8

[Article: "Industry's Flexible Friend"]

[Text] High-powered CO_2 lasers are very flexible industrial tools. By simply changing the way in which the beam is focused it is possible to change the processes between various welding, cutting and surface engineering jobs.

To take advantage of this property a group of British, Danish, Finnish, German and Spanish companies have teamed up to work together on EUREKA project 83, Eurolaser-HPL25. The partners are aiming to build a complete manufacturing tool, based on a high powered CO_2 laser which can be directed into several industrial rated cells containing equipment to manipulate the laser beam. The completed unit will be able to handle a wide variety of complex three-dimensional shapes and to carry out a broad range of industrial tasks.

The 25 kW CO_2 laser being built by the group for use in the cells will be among the most powerful available on the industrial market, and will be suitable for various industrial processes such as thick section welding and thick section cutting. As part of the project the partners will build a demonstration cell at the Welding Institute (TWI) near Cambridge in England. There potential users will be able to test the suitability of the equipment for their own applications.

Components

The components for the cell will come from various contributors who work in a wide variety of industrial fields ranging from power supply to testing methods. For example, TWI, with help from some of the other partners, will supply the laser.

But the laser is just one of the components of the cell. Other essential items include manipulators and a central control system for planning throughput of jobs. The cell would also contain attachments for diagnostic purposes and to make the processes more efficient which would go on the tools.

Non-Destructive Testing

The FORCE Institutes in Denmark are working on a non-destructive testing (NDT) system to be used with the laser—machine tools combination in the cell to test the quality of laser welds made in the cell. "What we are going to supply is prototypes of equipment which could be installed in such a cell," says Peter Krarup of the FORCE Institutes. "After the laser completes the weld we could automatically test it using non-destructive methods. We would also be able to carry out tests during the welding operation itself, so you could have warning if the process is going wrong."

The system designed by the FORCE Institutes will make use of two main types of measurements, ultrasonic and eddy current analysis. In ultrasonic testing, sound waves are used to penetrate the area of the welds. Defects appear as reflections, which it is possible to locate and measure. Eddy current analysis is a useful technique for analysing a surface for cracks.

For all the Eurolaser-HPL25 partners the project will serve as a shop window for new designs, as well as a testing ground for new equipment.

Looking Towards the End User

Another important part of the project involves coming up with new practical applications. Valmet Paper

Machinery, a Finnish company which specializes in manufacturing paper making machines, is one partner which is considering practical uses of the laser cell in manufacturing. As a manufacturer of large industrial machines themselves, Valmet has a comprehensive knowledge of the problems involved in constructing large manufacturing machinery, and a keen interest in applying new techniques to improve efficiency.

According to Mr. V. Sailas, Valmet have found that the CO_2 lasers can be applied very successfully in the paper machine manufacturing process.

The use of lasers in heavy manufacturing industries is just one of the many applications EU 83 the partners are exploring. No matter how you look at it, lasers are lighting up the future for industry.

The FORCE Institutes, Park Alle 345, DK-2605 Brendby, Denmark. Phone: +45-42-96-88-00, Fax: +45-42-96-26-36. Contact: Peter Krarup

JESSI Program Organization Adopts Vertical Approach

92BR0352 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 9 Apr 92 pp 14-15

[Article by Elisabeth Feder: "The JESSI Program Adopts a Japanese-Style Strategy"]

[Text] Having undergone a rationalization process, JESSI [Joint European Submicron Silicon Initiative], the European microelectronics R&D program, has emerged with a strategy based on high-emphasis projects in order to generate greater synergy between the various areas of activity.

Much ink has flowed since the publication of the JESSI Green Paper and to quote JESSI chairman Raimondo Paletto, speaking recently in Brussels, "our 18-month initial phase was marked by an extraordinary quantity of work, little of which is known and is even slightly underestimated." However, JESSI, Europe's microelectronics program, which represents 21,400 man-years over an eight-year period with a budget of ECU3.8 billion, has today become a European reality. This is due more to the spirit of cooperation between the participating countries and manufacturers than to the Community budget, as the EC is always slow to distribute its subsidies. The experience of the initial phase has enabled the steering committee to draw up what one could almost call a "Japanese-style" strategy. At the moment, for any form of cooperation that may exist it is necessary to avoid any kind of waste, from material resources to people. By combining several projects closely linked within a "cluster," with an approach directly focusing on a particular high-emphasis microelectronics application, the necessary guidelines have been set up to make the work converge on the essential aims of the program. The great majority of the 75 or so projects which have been approved and carry the JESSI label thus make up some 15 clusters. In basic research, the emphasis is still on individual projects.

For Vincent Le Goascoz, technical coordinator for JESSI, "JESSI's main phase, which will last until 1996, began in January in an atmosphere of overall confidence, in spite of some concern about the funding promised by the European Community. The parties' willingness to cooperate had already been confirmed. From now on we also have a common concept of a bottom-up approach, which used to be lacking." In contrast to a series of scattered projects, the cluster-project strategy virtually imitates vertical cooperation as it exists in the large Japanese holding companies and which is, according to many experts, one of their strengths. The basis of this strategy is laid by Raimondo Paletto, who envisaged the development of an Airbus Industrie-type concept for JESSI: i.e., several projects, sharing out of tasks, and one single aim. This is an ideal situation, yet not always feasible, for example when it is impossible to separate various proposals. In such a case, the best course was to define the strong point(s) of the group of projects.

Cooperation Framework Based On Mutual Acceptance

However, the more traditional horizontal cooperation, which is already frequently used by research laboratories (in particular CNET [National Center For Telecommunications Research] and LETI [Laboratory for Electronics and Information Technologies] in France), is still indispensable. The JESSI joint logic project is a typical example of this: The main parties cooperating at the basic technology level are the semiconductor manufacturers.

In addition, the sole fact of having been able to bring nearly all the interested parties of each high-emphasis project—from the development to the production phases—together around one table and to have obtained such a level of cooperation is already a success in itself. For the first time—and this cannot be said too often—there is a real framework for cooperation in Europe. However, it has required the definition of common interests and real commitment by the participants, and assumes mutual acceptance, which is sometimes difficult for certain parties. It safeguards the individual character of each firm and guarantees future competitiveness, even within Europe. From the beginning, clearly defined project objectives and technological know-how steer the work, determine research, and improve the final result. Some examples will be given below.

The interaction between the projects of the technology subprogram and those of the applications subprogram are a good illustration of the importance of vertical cooperation. In the applications subprogram, the clusters are organized around general themes such as high-definition television, broadband communications, and radiocommunications. The high-emphasis projects determined for each cluster have in common the fact that they focus on the development of integrated circuits,

or sets of circuits, designed to bring about the application. The result could be expressed in figures; development times are reduced thanks to the exchange of technological know-how, and the "prerequisites" of users are transferred upstream to their suppliers. On the other hand, the CAD [computer aided design] framework plays a key role, and here also it has been possible to define specific projects and focus them on specific applications. For example, research into test equipment for electromagnetic compatibility in digital radiobroadcasting, or the development of an expert system for designing mixed analog and digital radiocommunications systems.

As a reminder, what is JESSI's objective? Briefly, JESSI is meant to re-create the foundations necessary to enable Europe's electronics industry to be competitive and independent at a world level, in particular from the Japanese. In order to achieve this, all sectors should be covered: materials, equipment, components, and systems. The most crucial sector turns out to be that of equipment and materials, where dependence on Japanese industry has been the most critical, as it is at the root of the rest. It is therefore not surprising that most of the clusters have been set up in this sector. Eight groups covering about 30 projects are working on the most sophisticated manufacturing processes, from purified gases to automated wafer production via chemical products, lithography, deposition and etching processes, silicon, and testing, in the JESSI equipment and materials subprogram.

ECU26 Million Budget

The lithography cluster is a good illustration of the overall concept, and, as it is currently one of the best defined activities, it is often used as an example for JESSI executives. It consists of developing an industrial deep-UV optical lithography process with a resolution of 0.3 microns. Around the high-emphasis project, which is the manufacturing process in the strict sense, have been grouped all associated projects. These include the development of a wafer stepper (already achieved by ASM Lithography, in cooperation with users such as IBM and LETI), the necessary materials (in this instance resin, with the manufacturers BASF, UCB [Belgian Chemical Union], and Hoechst), the masks and grids for the manufacturing process (with in particular the mask manufacturer Compugraphics), and the components for the wafer stepper (such as lenses, with Zeiss), as well as measuring equipment, either traditional optical equipment or electron-beam versions, mainly with Nano-Master. The associated i-line lithography project with a resolution of 0.5 microns has already been successfully completed, and the wafer stepper is on sale.

Among the aims to be achieved by the first version of the cluster by the end of 1992, should be mentioned an average wafer processing yield of at least 50 wafers of 200 mm per hour, with 92 percent availability. The second stage, which should be finished by the end of 1993, will cover the complete production line including the wafer stepper, the resin, and the development process, for a resolution of 0.3 microns. Particular attention will be given to the reduction of fault density and the improvement of availability. The 1992 budget for this cluster is ECU26 million.

The development of an integrated vacuum processing system is another major project in the equipment and materials field, as part of a group dealing with etching and deposition processes. It is an automated tool design for clean-room processes, called cluster tool, with a vacuum processing room and the various process modules attached to it in a cluster, the whole thing allowing wafer manipulation in extremely clean conditions. This project, which has been under preparation for a year, obtained the JESSI label last February and its management structure is being finalized. Although it has a budget of only ECU19 million, it is nonetheless the focus of attention of many participants: semiconductor manufacturers, such as SGS-Thomson, Philips, Siemens, IBM (France or Germany) or Telefunken; research laboratories such as LETI and the Fraunhofer Institute, or the English Queen Mary College; equipment manufacturers such as AST, Electrotech or Leybold; and many others. Balzers, which contributed to setting up the project, would have been an ideal partner. Unfortunately, its partial takeover by MRC, which is owned by Sony, prevented it from taking part.

The technology subprogram has three clusters dealing respectively with competitive CMOS [complementary metal oxide semiconductor] production, logical CMOS technology and on-chip memories (all European semiconductor manufacturers taking part in this), and encapsulation. Competitive CMOS production is by far the most important of the three in terms of its budget, which could be as high as ECU124 million (including the EC subsidy), once all the associated projects, in particular production on 200 mm wafers, have been accepted. All European semiconductor manufacturers are participating: ES2, Matra MHS, Mietec, IBM, Philips, Plessey, Telefunken, SGS-Thomson, and Siemens. By tacit agreement, those in charge have agreed to keep their aims confidential in order to avoid laying themselves open to competition.

As far as the applications subprogram is concerned, five major themes have been defined: automobile electronics for safety aspects; broadband communications; digital radiobroadcasting; high-definition television; and radiocommunications. These five major themes will affect our society in the, more or less, near future. In the matter of digital radiobroadcasting, for example, a cluster from the EUREKA 145 project deals with the technology which, around the year 2000, will replace frequency modulation, but with compact disc quality and with many other services. On the other hand, in broadband ATM [Asynchronous Transfer Mode] communications, two high-emphasis projects have been determined. The first, managed by Alcatel Bell, covers integrated circuits necessary for communications networks in the strict sense, the foundations having been laid by the integrated services

digital network. For example, a prototype 32 x 32 matrix is expected in 1996. The second project focuses on the development of integrated circuits for videophones for ISDN; the full system should be available by 1996.

Results of Latest EUREKA Meeting Discussed

92BR0544 Paris ELECTRONIQUE INTERNATIONAL HEBDO in French 4 Jun 92 p 6

[Article by Didier Girault: "EUREKA: Electronics No Longer a Priority Area"]

[Text] Claiming only two of the 102 projects which received the EUREKA label on 22 May, the electronics sector cuts a pitiful figure.

Out of a total of 102 projects, only two electronics projects were given the EUREKA label during the latest meeting of representatives of the EUREKA member countries held in Tampere (Finland) last 22 May. The fact that the EUREKA presidency did not include electronics in the list of four priority initiatives (the factory of the future, automobiles, information technologies with the emphasis on the language industry, and waste processing) speaks for itself. This year, the EUREKA presidency will be assumed by France in the person of Henri Guillaume, the president of ANVAR [National Institute for the Implementation of Research]. And if any doubt (about the role of electronics) persists, the opinion of Hubert Curien, minister of research and space, would eliminate it:

"A realignment seems to be necessary to me, since the EC concentrated much of its efforts on the electronics industry in the past," he recently stated in an interview to LA TRIBUNE.

The 102 new projects with the EUREKA label, which represent an overall budget of 4.39 billion French francs [Fr], include nine projects in the area of information technologies. These include the two electronics projects mentioned above, with a value of Fr248 million (JAMIE, involving electronic CAD [computer-aided design] for the development of integrated circuits and subassemblies operating in mixed analog/digital mode; and VADIS, for the development of transmission and recording technologies for digital TV signals). In addition, there are seven other projects in the field of software.

Acceleration of Funding Procedures

Although the projects on process automation (automated farms for milk production) and improvement of the environment (guidance assistance in the cities) are not labeled "electronic," they still call on this field of activities.

Out of 539 European projects in progress, 77 are in the field of electronics, bringing together 471 participating organizations including 309 companies (89 small and medium-sized companies), 123 research centers, and 39 national institutes. The year under France's presidency should result in speeding up funding procedures and opening up to small and medium companies. As suggested by Serge Gregory, national EUREKA coordinator (who assumes with this title the presidency of the coordinators' group for one year), these two concerns can be linked: "The slow funding procedures affect mainly small and medium-sized companies that need this money to conduct their research." At the present time, throughout Europe it takes only two months to make the financing decision (once the file has been submitted) and three months to prepare the corresponding contracts, so the selected candidate must wait for up to six months before receiving the first installment.

Some national habits may lead to even further delays: For instance, the Italian financing procedures are among the most complex and, consequently, slowest of those in the 21 EUREKA member states (the Mobiliari Italiano Institute may delay release of funds by up to 24 months). In practice, to assist in speeding up financing, a network of agencies modeled after the ANVAR is being created in six countries (Spain, Finland, France, Italy, Norway, and the Netherlands).

With regard to the participation of European small and medium-sized companies, Serge Gregory said that "they currently represent 25 percent in the 623 EUREKA projects; a better equilibrium would be assured if this share went up to 50 percent." It remains to be defined what a European small and medium-sized company is: For France, these are companies with fewer than 500 employees; Germany, however, takes into account the sales figure.

Still, according to ANVAR, 31 percent of the 455 French companies involved in EUREKA are small and medium-sized companies, i.e., 144 companies (including 62 project leaders). These small and medium-sized companies participate in short-term projects (two or three years). In addition to synchronized financing, they want more information on EUREKA projects.

No Overlap With Other Programs

Serge Gregory pleads for better coordination between EUREKA projects and EC programs (BRITE-EURAM [Basic Research in Industrial Technologies for Europe/ Advanced Materials], ESPRIT [European Strategic Program for Research and Development of Information Technologies].

According to the national EUREKA coordinator, there is a risk of overlap between these two types of programs because of the downstream slide of programs under the sponsorship of the EC.

In fact, the EC programs increasingly encroach on EUREKA projects, which, by definition, are market-oriented as they are initiated by manufacturers (the strategic programs that were started upstream and will end downstream—HDTV [high-definition television] and JESSI [Joint European Submicron Silicon Initiative]

in the field of semiconductors—constitute the exceptions where the EC acts as EUREKA member).

[Box]

Hungary Joins EUREKA

Hungary, which is involved in power electronics (such as inverters), has just been admitted to the EUREKA club. It participates in seven projects (including three in cooperation with France) with eight of its laboratories.

Serge Gregory, national EUREKA coordinator, notes: "The Hungarians have shown initiative. They hosted a EUREKA information seminar (with more than 100 participants) in May 1991 and they set up a national information office which will become the national coordination agency."

Belgian Participation in New EUREKA Projects Noted

92BR0546 Antwerp DE FINANCIEEL-EKONOMISCHE TIJD in Dutch 4 Jun 92 p 2

[Excerpt] Eight out of the 11 Belgian research projects which have just been approved under the EUREKA program were submitted by Flanders. This was announced by Luc Van den Brande, chairman of the Flemish Government, earlier this week. The EUREKA approval does not automatically imply a financial contribution, but it is important from a marketing point of view. [passage omitted]

During the annual Ministers' Conference of the 19 EUREKA countries, which was just held in Tampere (Finland), the EUREKA label was awarded to 102 new research projects, including 11 Belgian projects. The overall cost of these projects will amount to 26.4 billion Belgian francs [BFr], including BFr4.3 billion for the Belgian projects.

Once they have obtained the EUREKA label, project participants can apply for subsidies with their national or regional governments. However, according to Van den Brande, the marketing value of the label is more important.

The companies or institutes involved in the eight Flemish projects are Triton NV (for a project dealing with expert systems), Innogenetics (biotechnology), University of Ghent (flat television screens), Imperial NV (food products), Alcatel Bell (copiers), IMEC [Interuniversity Microelectronics Institute] and Soltech NV (solar cells), the Flemish Institute for Technological Research (surface treatment), and Veus NV (processing of blood from slaughtered cattle).

France Seeks To Tighten ESPRIT-EUREKA Links

92BR0558 Amsterdam COMPUTABLE in Dutch 12 Jun 92 p 10

[Article: "Step Up Cooperation Between EUREKA [European Research Coordination Agency] and EC Research Programs"]

[Text] Brussels—As soon as France takes over the chairmanship of the European EUREKA R&D program, it intends to achieve closer interaction between EUREKA and the research programs supported by the European Commission. The research areas to be given priority by the French are information technology, environment, and transportation.

This was recently revealed by spokesmen of the French Government at a ministerial conference in Tampere, Finland.

The conference was attended by Filippo Pandolfi, director of the EC Commission's research directorate, who advocated closer cooperation between the various programs in Europe.

The French also expressed their intention to examine the effective impact of EUREKA projects on industry; they will also assess whether research projects actually lead to new products. These assessments will be ready in early 1993.

In an interview, a spokesman of the EUREKA secretariat in Paris declared: "The idea to achieve closer interaction between the EC and EUREKA has already been suggested before. But thus far, the European Commission has always hesitated and seemed rather reluctant to get involved in joint efforts. During the conference in Finland, Pandolfi gave a signal that the EC has finally changed its position."

The ministerial conference in Finland also decided to accept Hungary as EUREKA member. The ministers also called upon small and medium-sized companies to increase their participation in EUREKA.

FRG's Riesenhuber Wants Stricter Supervision of EUREKA

92WS0583B Duesseldorf HANDELSBLATT in German, 15-16 May 92 p 6]

[Text] Federal Research Minister Heinz Riesenhuber (CDU) wants a stricter supervision of the success rate in research projects which have been carried out within the framework of the European EUREKA program.

It must now be assessed how the results of the joint researches are holding their own on the market, Riesenhuber explained before journalists. EUREKA was established in the mid-eighties on the suggestions of the

German Federal Republic and of France. In the meantime 19 European countries and the European Community have become members. At the conference of ministers of the EUREKA countries in Tampere next week Hungary will be the first country of the former Eastern Block to be admitted.

Even countries who are not members can participate in the EUREKA program, Riesenhuber explained. Although, to be sure, they would not be able to launch any new projects. In Tampere, 105 new plans are at issue. German scientists are participating in 35 of them. In all, there are 600 Eureka projects, 178 of which Germans are participating in. The EUREKA program has funds amounting to DM19 billion at its disposal. German businesses, scientific institutions, and the German Government are contributing DM3.7 billion.

As important new focal points of research in EUREKA Riesenhunber named photo-voltaics and collaboration in integrated circuits. In the middle of the year a German will become head of the EUREKA Secretariat, when Ministry Director Reinhard Loosch from the Federal Research Ministry replaces the Swede Olaf Meyer.

Participation of Small- to Medium-Sized Enterprises in EUREKA

Prototype Self-Propelled Vehicle

92WS0601A Paris LES ECHOS in French 27 May 1992 pp 24-28

[Article by Michel Queruel: "ADL Automation Doubles Its Sales"; first paragraph is LES ECHOS introduction]

[Text] Like ADL Automation, small companies do have a place in European programs, provided they stick to short, concrete projects that offer commercial prospects in the near term.

"Small and medium-sized companies have no business in 21st century projects, but they do have a role to play in small, short-term ones—those which require flexibility and field experimentation." Because ADL's CEO Maurice Schoonemann is himself the head of a small company that carried out a successful EUREKA project with two big manufacturing groups, he does not consider the European program reserved to large firms. If each side does what it does best, "the lion and the lamb can lie down together."

ADL specializes in the manufacture of automated systems for the assembly and handling of components. Although the Drome company reported sales of less than 50 million French francs [Fr] in 1989, it did not hesitate to latch onto a EUREKA program initiated in 1987 by the German group Bosch and the Italian firm B. Ticino (Legrand group). "They were collaborating with university laboratories to develop ultraflexible assembly systems in the MOCIM project."

ADL highlighted its innovativeness to win over Bosch, which sponsored it for the project. "The German group had had the opportunity to evaluate our expertise, since we had sold it a license for a new, self-propelled, materials-handling car equipped with an onboard power supply. Shortly afterward, the German engineers invited us to join them in the MOCIM."

Capital Increase

ADL's rapid acceptance as a member of the project team has much to do with the fact that it exploits a niche which complements rather than competes with those of the two big groups. "We are positioned between Bosch, which manufactures small runs of sophisticated systems, and B. Ticino, which does just the opposite."

In MOCIM, ADL was assigned to further develop its prototype for a self-propelled car with onboard power supply. "We had to miniaturize it and increase its operating speed." The company's flexibility was right on target during the pilot experience conducted at Klaxon, a potential user of the system. "We kept to our deadline and discovered other interesting leads in the area of flexible-server warehouses and line-monitoring systems."

ADL had to find Fr14 million to underwrite its participation in the EUREKA project from 1989 to 1991. Despite a Ministry of Industry subsidy covering 35 percent of the sum, the company had to increase its capital. "We supplied Fr4 million and brought in three investor banks who contributed Fr5.5 million." ADL Automation does not regret its decision to participate in a European program. The results came quickly: "Participation helped us double our sales in two years and pass the Fr100 million mark. The technical solutions we developed account for half of our current business volume."

From EUREKA to ESPRIT

Maurice Schooneman considers the EUREKA label a good way to establish a company's technological credibility. The group's holding company, ADL Industries, was able to build a Fr200 million center of business in automated component-assembly systems as quickly as it did because of the program. ADL's acquisition of the Bisontin company Sormel, the former French leader in the field, is its final step up the ladder.

The Drome company has also taken advantage of its participation in EUREKA to restructure and beef up its capital ownership. Indeed, ADL's "enhanced technical credibility" has attracted a new shareholder—the Franco-Belgian industrial group Fabricom, a subsidiary of Tractebel—which has agreed to relay the three bankers in supplying capital.

Bolstered by the arrival of the large group, which is "willing to back its technological efforts over the long term," ADL has just successfully applied to the European ESPRIT program together with Bosch and Mog.

The project will have a budget of Fr7 million over a three-year period. It will aim to develop "smart" interfaces to facilitate communication among machines in the component-assembly shop. Although ADL will have to lay out another Fr1.5 million, half of which should be funded by the EC, its CEO has no fears whatsoever about the project's profitability.

Hard Disk Industrial Production

92WS0601B Paris LES ECHOS in French 27 May 1992 p 26

[Article by Michel Queruel: "SILMAG Sets Out to Conquer the Hard Disk Market"; first paragraph is LES ECHOS introduction]

[Text] In a three-year program, a subsidiary of the Olivetti group and a young Grenoble company called SILMAG are going to industrialize a thin-film process for manufacturing magnetic heads. Their target: the expanding, strategic market for computer hard disks.

Will France have a manufacturer of magnetic heads for computer hard disks in 1994? Plausibly, yes. It all depends on the dynamism of SILMAG, a young Grenoble firm that makes thin-film semiconductors, and the success of the EUREKA program on which it has teamed up with Data Magnetics Corporation, a subsidiary of the Olivetti group.

The EUREKA program has been budgeted Fr142 million over a three-year period (1991-1994). It is a good impetus for the Franco-Italian pair. "Our several-months-old collaboration is paying off. Since the project is vital to the two companies, motivation is running high," explains Hubert Jouve, SILMAG's administrative and financial director. The way the firms complement one another is a positive factor. "We are making the magnetic heads and our Italian partner is assembling them, to produce a product ready to be inserted into hard disks."

SILMAG was created in August, 1991 and boasts an unusually solid technological base. "Our process for manufacturing magnetic heads on silicon substrates is a direct offshoot of a technology that was developed over three years at LETI [Laboratory for Electronics and Data Processing Technology]. The Laboratory is a Grenoble-based division of the CEA [Atomic Energy Commission] and specializes in applied research on sensors and instrumentation. The process has already generated 15 patents and sparked the interest of several American hard disk makers."

A Scientific Spinoff of the CEA

Magnetic heads account for 20 percent of the price of a hard disk, and are strategic components which directly affect the disk's final performance. Consequently, all the hard disk makers in the world are looking for a way to cut production costs while improving packing density, speed, and access time. The French process does all that. Moreover, the young Grenoble company has substantial starting capital—Fr50 million—60 percent of which is split among three venture-capital firms: Sofinnova, Finovelec, and Innolion. The Olivetti group, which is especially interested in the hard-disk market, holds 30 percent, and the inventors share the remaining 10 percent.

Gemi Roberti, an Olivetti executive, manages SILMAG, which is lucky enough to get LETI support. The CEA division already spun off EFCIS ([Integrated Circuit Study and Manufacture], a Thomson division) in the seventies, and is acting as a logistical base for SILMAG. It houses its 60 employees (100 by the end of the year), and provides the company with a clean room and solid scientific support.

A $3 Billion Market

This arrangement should make Jean-Pierre Lazzari, SILMAG's general director, and Hubert Jouve, its administrative director, feel right at home. Before taking the "big leap into industry," they worked as researchers at—you guessed it—LETI, where they last headed the microelectronics laboratory.

SILMAG expects to create over 100 jobs in the next few months, and plans to open its own production site beginning in 1994. That will not keep it from marketing its first magnetic heads, "which will be produced in small runs at LETI," shortly.

The company is counting heavily on the vitality of the hard-disk market, which is worth an estimated $3 billion a year. Obviously it is an international market, and SILMAG will export nearly all of its production. The tape recorder market is another possible niche, for the process used to make thin-film magnetic heads can be applied to tape machines.

Synthetic Image Software Market Sought

92WS0601C Paris LES ECHOS in French 27 May 92 p 26

[Article entitled: "Cerise Awaiting Marketing"; first paragraph is LES ECHOS introduction]

[Text] Sogitec, Cap Sesa and RTL Production have successfully completed the Cerise project. Now they need to find a market for their synthetic image program.

Fifteen synthetic image systems have been installed in France and abroad, but the slump in the cinematography industry makes the commercial launch of Cerise difficult. Sogitec nonetheless considers its EUREKA experience working on the Cerise project (a project to market inexpensive synthetic image software) a positive one. Cap Sesa and RTL Production launched Cerise—which was one of the very first programs (EU 15)—in 1985. Sogitec came on board in 1988, bringing its Action 3-D software with it. The project ended in January, 1992.

According to Stephane Metz, the Sogitec department head in charge of Cerise, the division of labor among the three partners was relatively good. "Each one worked in his area: Sogitec on 3-D, and Cap Sesa and RTL Production, which was also doing the experimentation, on 2-D," he explains.

Everyone Benefits

Work was coordinated through progress and specifications meetings that were scheduled at intervals varying from once a week to once a month. Two people from each company participated. "The contacts were very technical and so there were no problems," explains Stephane Metz. In his view, the EUREKA program was largely positive in that each partner benefited from the experience of the two others. "We benefited from Cap Sesa's industrial knowledge and from RTL's knowledge as a user."

The division of industrial property is simple, since the product has been split into two versions. Cap Sesa and RTL own the 2-D, and Sogitec is marketing the 3-D. Sogitec is seeking partners to distribute its version.

Electronic Commutation Motor

92WS0601D Paris LES ECHOS in French 27 May 92 p 27

[Article by Michel Queruel: "Successful Collaboration on Electric Motors"; first paragraph is LES ECHOS introduction]

[Text] In just three years—and on a modest budget—Somfy has mastered a new technology for electronic-commutation motors. It collaborated with a Swiss research center and a small Italian firm on the project, whose starting stake was Fr4 million. Industrialization of the motor is slated for 1995.

"When we saw a new design for an electronic-commutation motor—more powerful than the asynchronous motors of the current generation—in the eighties, we knew we had to jump right in to avoid being left behind by competitors." It was the need to look ahead that spurred Paul Dreyfus, Somfy's CEO, and Marc Thery, its manufacturing director, to seek partners for a EUREKA program back in 1987.

Although the company, which had turnover of less than Fr300 million at the time, was small, it quickly found them. "Swiss researchers at the Lausanne Federal Polytechnical School and Pavesi, a small Italian firm specializing in spoolers, agreed to join the project, which was awarded the EUREKA label in 1988."

Staying in the Race

Four years later, the world's top manufacturer of motors for awnings and shutters, with sales of over Fr1 billion, describes the outcome as positive. "Now that the research phase, which ended in 1991, is over, we feel we have met our first objective," explains Bernard Grehant, research director. "The laboratory handled the transfer of its know-how to the two manufacturers well."

The Swiss researchers, who supplied 10 percent of the program's funding, are just as pleased. They were able to publish their work, and will be able to profitably apply their research to manufacturing sectors other than those of their two partners.

Somfy's technological collaboration on the project has given it mastery of electronic-commutation motors. "We know how to assess and size them, and have a good grasp of their potential applications." The company has even developed a new CAD [computer-aided design] program tailored for motor design. In addition, a joint patent on a specific aspect of the research has been filed.

Four Million in Three Years

Another strategic result is that Somfy now has solid commercial prospects. With the study phase behind it, the firm is beginning work to industrialize the new-generation motor. "We should be ready in 1995, which gives us a good chance of being the first on the market." Even failing that, the company is still assured of "staying in the race."

Somfy is especially pleased as its financial investment in the project has been modest. "During the research phase, from 1988 to 1991, we spent about Fr6 million, nearly a third of which was financed by a Ministry of Research and Technology subsidy." Most of its budget was spent on research hours, since the company's R&D staff was shored up for the occasion. "Six percent of the company's staff and 6 percent of its sales are now earmarked for R&D."

The company's investment seems especially reasonable as Somfy is likely to recover most of it starting in 1995, when it begins marketing the new awning and shutter motorization products incorporating the new-generation motors. "They improve performance so much we should be able to capture market shares." Encouraged by the success of the EUREKA project, Somfy has floated other projects with other EC partners: "We are now studying one in the European BRITE program." Once you acquire a taste for technology, the habit is hard to kick.

Franco-German Portable Computer

92WS0601E Paris LES ECHOS in French 27 May 92 p 28

[Article entitled: "Vecsys Puts Its Money on Portable Computers"; first paragraph is LES ECHOS introduction]

[Text] Vecsys, a high-tech company employing 25, has thrown itself into EUREKA with enthusiasm. It has good reason: Its research will be profitable even if its project fails. As a bonus, the company is learning to work on a European scale.

"EUREKA is more effective than ESPRIT." Michel Verel is the CEO of Vecsys, a small company of 25 that set up shop in Bievres in 1991. Mr. Verel is overflowing with praise for EUREKA. In his view, programs that are geared toward more basic research, such as ESPRIT or BRITE-EURAM, deal with subjects that are often "utopic," and serve as "cash cows, especially for the big companies." Harsh in his criticism, Michel Varel has no qualms about using the word "wasteful."

Mr. Varel thinks the Brussels-like structure of ESPRIT—which, unlike EUREKA, centralizes funding—skews decisionmaking. "Everyone pushes his side to get the maximum amount of money and there is no solidarity among partners. Each one works in his own corner for his own benefit." EUREKA is nothing like that. "The ultimate aim of the projects is spelled out much more clearly and participants are serious about coming up with a marketable product."

Vecsys is participating in the four-year Epos project (EU 571), which was launched in 1991 to develop a portable computer capable of voice and radio communication. Vecsys is part of a team that includes Devlonics, the project's leader, Belgium's Catholic University of Louvain, and the German chemical company Bayer. Such a project meshes perfectly with its R&D strategy. "We are working on functions for voice communication and modem and radio data transmissions," explains Michel Verel. "These technologies are fundamental to us." In fact, although the final aim of the Epos project is indeed to market a product, that goal is not vital to Vecsys. "We sell products that are not concerned with that specific application, but which benefit from our work in EUREKA and amortize our research expenditures in the short term."

Sharing Industrial Property

Furthermore, Vecsys will ultimately retain ownership of the parts it develops. "We are lucky that the various components of the final product are physically separate," says Michel Verel. Devlonics is acting as chief contractor for the whole computer; Louvain University is designing the software portion (expert system); and Vecsys is responsible for the communication components. Bayer is contributing its expertise as a typical market user and is involved in defining the industrial specifications sheet. As a chemical manufacturer, Bayer will equip its on-site maintenance technicians with the system Epos produces. When the portable computer is marketed, Devlonics will sell it after buying from its partners the parts that belong to them. EUREKA is insuring that the work of the different partners is coherent, without raising any problems of industrial property.

All the same, Vecsys ran into some difficulties setting up the collaboration. "It's not easy to find yourself face to face with a company like Bayer which employs nearly 100,000 people. At the last meeting, there were two of us, against 50 of them." And then there is the German mentality. Vecsys had to get used to the extremely rigorous discussions with Bayer. But, a "good atmosphere" now prevails. On the financial side, EUREKA awarded its label in six months. It will give Vecsys Fr3 million split into two halves: The first was disbursed in 1991; the other will be paid in 1993 depending on how the project is progressing. Such manna is not entirely free of strings, which Michel Verel considers natural. Under the pressure of EUREKA, for instance, Vecsys is going to have to increase its capital.

A Tough Market Forecast

Will Epos spawn a commercial product? "It is tough to keep a project from getting off track after four or five years," explains Michel Verel. Over a period of time like that, all kinds of random events can come into play: unexpected shifts in market needs, technological snags, regulatory obstacles, and so on. But the end result of the project is not Vecsys's only interest in EUREKA.

Besides a technological development that is profitable in itself, the company is learning to work on a European scale. "Before EUREKA, we had no contact at all with European manufacturers," admits Michel Verel. Today, Vecsys is concerning itself with standardization in Germany, and its relationship with Devlonics has resulted in something that has nothing to do with EUREKA: a contract with the Brussels airport.

Multidisciplinary Firm's Projects

92WS0601F Paris LES ECHOS in French 27 May 92 p 28

[Article by Paul Molga: "Bertin Takes Advantage of the Entire EUREKA Gamut"; first paragraph is LES ECHOS introduction]

[Text] Subcontracting, chief contracting, technology transfer: Bertin is participating in EUREKA in every way it can.

Over half of Bertin & Company's partnership ventures take place within European programs. Over the last five years, France's top contract research company has gotten involved in nine EUREKA projects that embrace its multidisciplinary activities, particularly mechanics, thermodynamics, and optronics. Its involvement represents a capital injection of nearly Fr50 million, or the equivalent of one year's reinvested cash flow. And Bertin is not finished: It is presently looking at 15 other projects.

The group uses three criteria—the availability of resources for technological development, the capacity for managing innovation, and what competitors are doing—in deciding whether to join a EUREKA program. More important, it employs three strategies. On the bottom rung, Bertin acts as an equipment supplier by making subcomponents for the program's chief contractor. The group is developing the navigational computers and vision sensors for the Mithra autonomous monitoring robot project; its CIS or SESO subsidiaries will market them. It is using the same formula for Eurolaser, which involves an optical control block for a surface-treatment laser.

In the second type of involvement, Bertin acts as the project's chief architect. It created a subsidiary, for instance, for the "Labimap" program, an attempt to automate identification of the human genome. Finally, Bertin uses EUREKA to transfer its technologies to small- and medium-sized companies. This is illustrated by "Calies," a project to develop a stimulator to re-educate paraplegics. An initial prototype of the stimulator, which was assembled for the MXM and the Montpellier INSERM [National Health and Medical Research Institute] laboratories, has just been built. MXM has already completed the electronic miniaturization work, and will direct the first clinical tests between now and 1994. Ultimately, Bertin should at least recover its investment through royalties.

Software Engineering Marketing Alliance

92WS0601G Paris LES ECHOS in French 27 May 92 p 28

[Article by Michel Alberganti: "Five Shareholders for One Company and One Product"; first paragraph is LES ECHOS introduction]

[Text] The East project has prompted several French companies to create SFGL [French Software Engineering Company] and to collaborate with several foreign companies for essentially commercial reasons. SFGL remains the sole proprietor of the software engineering factory that has just been marketed.

"EUREKA is Europe's version of American venture capital." The experience of Jean-Phillipe Bourguignon, the general director of SFGL, illustrates the protean nature of EUREKA programs. The first motivation (for joining a EUREKA program) is financial, since funding for high-risk research is becoming increasingly rare. The East (EU 20) project, however, is more oriented toward industrialization than research, since it aims to market a software engineering factory (SEF), or a tool to industrialize the writing of computer programs.

The French partners have combined to form a joint company called SFGL. They include Bull, 21 percent, Cap Gemini Sogeti, 21 percent, CISI [International Company for Data Processing Services], 21 percent, Steria, 21 percent, Sema Group, 14 percent, and Ciseca, 2 percent. SFGL is the center of the program, which has also drawn the Italian firms Datamat, Intecs Sistemi, and Bull Spa, the Finnish company Nokia, and Canada's DMR.

"In 1986 we followed up on an ESPRIT program," says Jean-Philippe Bourguignon, "and we just presented a product to the Hannover CEBIT last March." East thus seems to be one of the rare projects that is beginning to gel, despite the one-year delay in launching its first product and a shift away from initial objectives. "Until late 1987, we tried to secure financial backing while our foreign partners did the same. No attempt was made to coordinate our timing," says Jean-Philippe Bourguignon. He also points to the practical organizational difficulties of working with his foreign partners. "We made a first attempt with a central team that included members from all the partners. It resulted in a failure that cost us 12 to 18 months." Jean-Philippe Bourguignon observes that a project involving the marketing of a product raises complex issues of shared industrial property.

Too Many Chiefs

The solution that was finally adopted includes an order giver, SFGL, which subcontracts out certain components of the final product to its partners. Canada's DMR, for instance, has taken over work to broaden the SEF's scope to management applications. The Italian firms Datamat and Intecs contributed tools which they already possessed. Nokia and Bull are not interested in marketing the SEF for any purpose other than their own needs. In other words, the division of labor between the partners could not be more diverse. Each one has a different interest in the project. Only SFGL is counting on returns from East. The Italians and Canadians are acting as commercial relays in their geographical areas, while Bull and Nokia are future, and certainly privileged, customers. Consequently, the problem of industrial property is settled: It is split among the founding members of SFGL.

Besides providing financial support that is difficult to find elsewhere, Jean-Philippe Bourguignon sees another quality in the EUREKA program. "Contacts with western partners make people less stale, and are highly motivating and rejuvenating." In contrast, setting up a program of this kind results in too many chiefs, both to put together the financial package and coordinate teams. Today the SFGL team—which numbers 70, including 50 technicians—hopes to make a living from the product. The marketed SEF costs Fr45,000 per programmer. It does not seem to be arriving too late, since Jean-Philippe Bourguignon reckons that its potential users are barely ready to employ it.

Environment Tops the List

Expected Program Completion Dates by Industry (411 projects)

	1992	1993	1994	1995	1996
Biotechnologies	17	16	20	14	17
Communication	8	7	4	1	2
Energy	5	4	3	2	3
Environment	16	27	25	12	15
Information Science	14	13	12	7	3
Lasers	4	4	2	2	1
Materials	8	18	8	5	1
Robotics	28	26	14	9	3
Transport	4	3	2	2	0
Total	104	118	90	54	45

(Source: Brussels EUREKA secretariat)

EUREKA Program Results Evaluated

Diversity of Projects, Budgets Discussed

92WS0605A Paris LES ECHOS in French 27 May 92 p 21

[Article by Paul Molga: "EUREKA Waiting for Concrete Results"; first paragraph is LES ECHOS introduction]

[Text] Evaluating the success of EUREKA is no easy task. The 100 projects that have been launched since 1985 run the gamut, from several dozen success stories to almost as many failures, and a full range of projects in the pipeline.

With the adoption of 102 new projects in Finland Friday, France's term as president of EUREKA is getting off to a euphoric start. The European program, which now has more than 600 projects to its credit, is also a good barometer of the technologies that will count in the nineties. Everything that is happening in innovative industries can be found in EUREKA, from biotechnologies to robotics, transportation, energy, communication technologies, information science, the environment, lasers, and materials.

Budgets are just as diverse. Modest projects costing a few million French francs flank "monsters" weighing in at several million.

This year industry coverage will be shored up around four strategic areas in which Europe is still weak: information science (with special emphasis on machine translation), automobiles, future factories, and waste treatment. Consultation is already under way on how to make the procedures for obtaining EUREKA approval and funding uniform in the different countries. Discrepencies here are sometimes a handicap to synchronizing work.

Modest Industrial Spinoffs

But what about EUREKA's industrial spinoffs? Where are the products that were supposed to give Europe the decisive technological lead that was one of the program's initial goals? From this standpoint, EUREKA's results are nothing to boast about: of the 544 projects with the European seal, 37 have been abandoned and 48 successfully completed, including 20 in which France has participated. But so far they have generated more prototypes, patents, industrial collaboration agreements, and marketing plans than they have sales.

Examples such as Alsys, which teamed up with the British firms Logica and IST on the Tribune project to develop an ADA-language software engineering factory, are still rare. The factory generated sales of Fr27 million for the company in 1989, just one year after the program ended. Completed projects also include those which simply firm up a partnership built around an already tested technology. An example is Cerise, which was orchestrated by Cap Sesa, Sogitec, and RTL Production. Except for a few research adjustments, the project simply combined within one organization expertise in synthetic imaging that the companies had acquired in-house.

Also counted among completed projects are those to better discern future lines of research, or even just to validate or rule out a new product design.

Too Soon to Judge?

This amorphous melting pot of aborted, suspended, postponed, and extended projects, which are under development, awaiting results, or have already produced a concrete outcome, makes it tricky to assess the financial payoff of EUREKA. The only certainty is that after seven years intense cross-border exchanges, the airlines and travel agencies must be among its top beneficiaries.

It may be too early to measure EUREKA's full impact. In 1990, the Rome meeting noted that 40 percent of EUREKA projects were long-term ones (over four years). Wisse Dekker, Philips's ex-president, echoed that observation a year later. Mr. Dekker, who was in charge of auditing the program, noted that 8 percent of the participants expected initial project results within two years, 50 percent within two to five years, and 42 percent after five years or more.

Moreover, as Serge Gregory, France's national coordinator for the program, now stresses, "a EUREKA project is rarely an end in itself. Its completion often means the beginning of work to add economic value to the product, find private capital, or assess markets in greater detail to prepare an effective commercial strategy."

EUREKA's Organization an Asset

This makes it hazardous to reduce EUREKA's performance to simple statistical calculations. A project's instigator is allowed to assess its goals, handling, and research work freely, and the interpretation of results from a purely industrial or commercial standpoint is just as unfettered. We will therefore have to wait a few more years for the final arbiter—the market—to decide whether EUREKA did in fact introduce strategic and competitive technologies.

There is one initial success, however, that is evident today. EUREKA is a flexible, decentralized organization that has enabled over 3,400 partners from 19 countries, with different cultures, languages, and philosophies, to work together. That is quite a feat when you consider how difficult it is, just in France, to get more than two partners to collaborate on a single project. "EUREKA embodies the notion of entrepreneurial freedom on a continental scale," says a pleased Gilbert Nicolaon, who is the French EUREKA secretariat's international relations officer. Mr. Nicolaon sees the absence of a higher authority dictating financial terms as one of the reasons for the industrial initiative's success.

In practice, EUREKA executives rely on proximity and simple administrative procedures to promote collaboration among companies, often acting as go-betweens to make it easier to set up projects. EUREKA's organizational form has been overwhelming approved by 89 percent of its participants. Among them are Canada,

which has been involved in certain projects since 1987, Turkey and Iceland (admitted as members in 1985 and 1986 respectively), and Hungary, which has just joined the circle.

One Third Small and Medium Companies

Small- and medium-size companies were practically unknown at the first conferences to select EUREKA projects, but today they make up nearly a third of the participating firms. As Louis Dreyfus, the CEO of Somfy, notes, "technological potential and motivation count for more than company size." But the responsibility for leading a project is still beyond the reach of most small companies. "It requires too big an infrastructure," says Louis Dreyfus, who also thinks that partners "must spell out from the the beginning the terms under which a partner in difficulty can leave and think about problems of industrial property."

Finally, it is not clear whether EUREKA will have the wherewithal to match its ambitions. The Fr93 billion commited by states and companies since 1985 amount to only 2 to 3 percent of the industrial research money spent in Europe. "That leaves us much room for improvement," quips Henri Guillaume, the EUREKA general secretary for France. More seriously, he thinks that "the program is part of a new trend toward products that are nearly ready for the market. There weren't many programs along those lines in Europe, and it is time to do a qualitative assessment." (see interview, related article).

The JESSI Affair

The current problems of the JESSI microelectronics program (see related article) also demonstrate that ambition is not enough when budgets fall short and aims do not match company strategies. With that in mind, officials will try to promote real interaction between the EC's skeleton research program and the EUREKA initiative this year. "We will improve synergy by analyzing programs point-by-point," proposes Serge Gregory. "Projects could then be steered to one or the other program according to need (precompetitive or applied research)."

Yet it is difficult to impose anything at all in the framework that manufacturers like, which by its very nature is free of state control. EUREKA can only follow suggestions, both on how projects should be implemented and on what industries they should cover. This lack of any real industrial policy may be the program's greatest weakness.

Boxed Material: A Fragile Balance Sheet

Now that it is seven years old, EUREKA has reached the age of reason. Last year the Dutch minister, Andriessen, commented that, "It is time to see where we are," and began an attempt to evaluate the projects initiated since the program's start. He did not have much success. The French officials presiding this year seem to have the same desire for disclosure and openness. Henri Guillaume too wants to measure the profitability of a program, started in 1985, that has already swallowed up nearly Fr93 billion in all the 19 countries. France's share—Fr21 billion, about a third of which is public money—represents an impressive total of 229 projects. Apparently only 20 of them have resulted in anything concrete so far. When confronted with these meager results, EUREKA's organizers invariably reply that the program is an investment in the future, that collaboration between European companies must go through a long and difficult breaking-in phase, and that synchronizing procedures is a tricky matter. Lacking any better alternative, then, we will have to wait another year to judge EUREKA's real effectiveness, and settle for a very partial accounting that includes a few successes and many question marks.

623 Projects Over a Seven-Year Period

	Total number of projects (19 countries)	Amount spent (private and public) in billions of Fr	Number of French projects	Amount spent by France (private and public) in billions of Fr
Hanover (Nov 85)	9	3	8	0.6
London (June 86)	62	23	37	7.9
Stockholm (Dec 86)	37	32	15	6.3
Madrid (Sept 87)	58	7	26	1.1
Copenhagen (June 88)	54	4	28	1
Vienna (June 89)	89	7	26	1.1
Rome (June 90)	91	7	31	1
La Hague (June 91)	121	6	41	1.1
Tampere (June 92)	102	4	17	0.9
	623*	93**	229*	21

*Totals include projects abandoned and terminated

**Including JESSI

Program Failures Analyzed

92WS0605B Paris LES ECHOS in French
27 May 1992 p 22

[Article by Paul Molga: "Market Is Program's Final Arbiter"; first paragraph is LES ECHOS introduction]

[Text] Decisions that are too slow in coming, limited public subsidies, and poorly synchronized national funding: Like all big programs, EUREKA earns its share of criticism. And a look at the program's failures does turn up some weaknesses.

Two reports—one made by France's IDS consulting firm in 1989 and Wisse Dekker's Dutch audit in 1991—have already stressed the procedural discrepancies in how different countries select and finance projects. Their observation that this is one of EUREKA's main problems still holds today. The shortcoming affects some 500 small and medium companies and 785 research institutes, for whom EUREKA's cold, hard ECUs are the foundation of any technological development. This makes the omission especially hard to bear.

The example of the Hardroad (highway materials) and Eurofor (new drilling procedures) projects gives some idea of the dangers. In the first case, Italy's Research Ministry did not decide to fund the program until two years after it was awarded the EUREKA label. Lacking equity capital, the Techniche Industriali research center, which was the partner of the French highway construction company Mallet, fell too far behind to catch up. It is now excluded from the marketing agreements that were initially planned. A similar situation caused the second program to fail. The Italian firm Massarenti refused to accept the terms of the Research Ministry, which planned to disburse funds only after the project was complete.

Italy's procedures for funding industry are excruciatingly complex. And even though a special appropriations bill was passed not long ago for EUREKA, the program is still subject to the peculiar traditions of Italy's banking system—namely, the right to retroactive payment. The latter authorizes the Institut Mobiliari Italiano, which provides the funds, to delay disbursement for a period of up to 24 months.

Various Financial Waiting Periods

Although unique, the case of Italy nonetheless exemplifies the difficulties EUREKA coordinators face in marrying the mosaic of cultures and state procedures peculiar to each country. On the whole, funding decisions are generally made within two months after a request is filed, and financial contracts are drawn up in the month following the decision.

But disparities resurface with a vengeance when it comes time to loosen the purse strings. In Iceland, Luxembourg, and Sweden, manufacturers receive the first payment when the contract is signed. The waiting period is one month in seven other countries, and up to six months in Norway, the Netherlands, and the United Kingdom.

That is enough to dampen the enthusiasm of manufacturers for a program that remains loaded with pitfalls despite its commercial attractiveness. EUREKA's national coordinator, Serge Gregory, points out three basic hazards which are responsible for the majority of the 48 failures to date: technological snags, poor market analysis, and partnership problems.

The short history of the Becos project cruelly illustrates the third hazard. Planned in 1989, Becos called for Siemens's Austrian subsidiary to team up with CEDIAG (Bull's Artificial Intelligence and Expertise Center) to design a computerized language translation system using machine language.

Two days before the project was to receive the EUREKA label, the ceiling caved in: Siemens's German management had only just then learned about the project, and hastily decided to shift its involvement to its Munich-based department for natural language study. But the German Government deemed Siemens's record profits that year incompatible with a subsidy request. So the group withdrew, Bull found a replacement partner in Sweden—Cap Gemini Sesa, a subsidiary of Cap Sesa in France—and the Ministry of Industry finally refused to authorize Cap Gemini's participation for fear that a Franco-German program would result.

In the end, the program was abandoned. Only partially, however, since Bull, Siemens, and Olivetti are now negotiating a new cooperative agreement to divide research work on machine processing of languages.

"Given markets of this size (linguistic systems are expected to grow from $68 million next year to $155 million in 1995), European partnership projects require strategies that are not purely focused on technical aspects," sums up Celestin Sedogbo, who followed the abortion of the program at CEDIAG.

Inadequate Specifications

In that respect, the fact that market studies concern emerging technologies and products for which no point of reference or comparison exists makes them an even bigger stumblingblock. Like Ulisis, which grasped the potential of its market too late, many programs are forced to beat a hasty retreat.

Yet Ulisis, which was initiated by the Bertin contract research firm, met all the conditions for marketing a new product: a need—in this case, for non-destructive quality control; a competitive product—an acoustic microscope five times cheaper than its electronic counterpart; and substantial sales potential of Fr500 million.

The surprise came from the Pacific: the Japanese market, underestimated by an initial study, proved to be 10 years ahead in the field. Naturally, the group's ambitions bowed to industrial lucidity.

The final category is technological failures. According to the French EUREKA secretariat, these are the least common. The secretariat gives three examples: an amphibious all-terrain vehicle which, for lack of rigorous specifications, failed to interest the military market; a laser process for destroying toxic substances; and the first project proposed in 1985 by Thomson, Great Britain's Acorn, and Olivetti, for a personal educational computer. The computer fell to Japanese competition. The dangers of technological failure ultimately have less to do with the way EUREKA is organized than with the usual problems of the industrial world.

Secretary General Interviewed

92WS0605C Paris LES ECHOS in French 27 May 92 p 22

[Interview with Henri Guillaume, France's secretary general for EUREKA, date and place not given: "Henri Guillaume Says Economic Assessment of EUREKA Is a Priority of France's Presidency"]

[Text] Henri Guillaume surveys EUREKA's seven years of existence as France begins its term as president. He acknowledges that an economic assessment of EUREKA's impact on European competitiveness still remains to be seen. Such an assessment is in fact one of the priorities of France's presidency. Henri Guillaume, who is also the president of ANVAR [National Agency for the Upgrading of Research], promises to provide concrete results in June of 1993. Duly noted...

[LES ECHOS] What is your assessment of EUREKA seven years after its launch?

[Guillaume] There is a consensus about EUREKA among the 19 European countries participating in it. The governments unanimously applaud its framework. Moreover, audits show that companies appreciate the initiative. In that respect, EUREKA is a success, for it is no simple matter to get 19 countries to work together. But now we must make a more factual assessment. Up until now our focus has been on the number of projects initiated. The count will soon exceed 620, 230 of which involve French participation (38 percent). Since the average project runs from four to five years, and the first two years saw fewer projects than those which followed, the first concrete results of EUREKA will come out in 1992 and 1993. Those dates correspond to France's term as president, which we are going to take advantage of to assess the program economically.

[LES ECHOS] What kind of initial numbers do you have?

[Guillaume] About 40 projects, 20 of them involving French participation, have been completed so far. Some programs have not gotten past the definition stage, but we estimate that 25 projects have produced something concrete. Moreover, 80 European and international patents have been filed for, and a huge standardization effort, involving 20 initiatives, is under way. Finally, partners interested in pooling their resources have created 12 to 15 joint manufacturing companies. That's not bad for 25 completed projects.

[LES ECHOS] After seven years, those seem like very modest results. The number of products that have come out of EUREKA is still very small. How do you account for that?

[Guillaume] The program does aim to market products. But the number of completed projects is still too small to make a significant assessment. You cannot compile statistics on the basis of 20 cases. On the other hand, EUREKA is already playing a real role in technological collaboration. Companies meet, work together, and when the R&D industrial phase is successful, they go farther and create, for instance, a joint marketing company. In this respect, EUREKA fulfills its role as a catalyst.

[LES ECHOS] Can the EUREKA program be called profitable?

[Guillaume] That is a good question. We must ask ourselves whether EUREKA has improved Europe's industrial competitiveness. We are going to begin an in-depth economic study of 200 projects. It is one of France's priorities during its presidential term. I don't want to measure EUREKA by the number of projects anymore. I promise to provide an economic assessment of the program's effectiveness by next year. Even though that type of analysis is not traditionally practiced in France... We are going to look at the sales generated. For each project, we will study the type of product that resulted and measure results in terms of corporate alliances, patents filed, standardization achieved, and market shares captured.

[LES ECHOS] Qualitatively, what weak points have the audits turned up?

[Guillaume] In some cases, the lack of synchronization between countries is a real problem. It significantly delays the progress of projects. France provided an answer two years ago by instituting guarantees to finance companies as soon as they are selected for a EUREKA program.

[LES ECHOS] How effective is public funding of the programs?

[Guillaume] EUREKA only underwrites 35 percent of the total cost of projects. Companies must foot the remainder, that is, two-thirds of the investment. This guarantees that participants will become fully involved in the success of the research undertaken. France spends Fr800 million a year on EUREKA. The sum is taken from the budgets of the ministries and agencies concerned, without any specific allocations for the program.

[LES ECHOS] EUREKA is often criticized for not constituting a real industrial policy. What is your opinion?

[Guillaume] We must not forget that the initiative to launch new projects is left to companies. Consequently, EUREKA does not replace the industrial policies of the different European countries. It has nonetheless initiated strategic programs such as JESSI for electronic components and HDTV for high-definition television. JESSI's first phase produced a 16-megabit memory with a reasonable period of time, but the program is hamstrung in its efforts to go farther by the industry's fragile financial situation.

As for the HDTV program, it enabled Europe to impose its standard. Without it, Japan's analog standard would have had a clear field. France's presidency will launch initiatives in four strategic areas. One of them is the factory of the future. The factory initiative will combine projects underway to automate assembly (FAMOS) and maintenance (MAINE) and try to develop information-transmission technologies in factories. It is thus a response to the Japanese program IMS. The first meeting on the topic in France attracted no fewer than 300 interested manufacturers. But we are not publishing a bid invitation. We are creating a framework to promote contacts. It is up to companies to instigate projects.

[LES ECHOS] What is the relationship between EUREKA and ANVAR in France?

[Guillaume] In 1990, the prime minister at that time, Michel Rocard, assigned ANVAR and its network of regional delegates the task of making it easier for small- and medium-size companies to participate in EUREKA projects. Such decentralized organization means that projects are screened at the outset to avoid wasting too much time and help companies in their search for partners. Decentralization is essential to effective contacts with small companies, whose participation in EUREKA is still a priority. Furthermore, ANVAR-type systems exist in nearly half of EUREKA countries. That makes setting up a EUREKA project no more difficult than arranging an ANVAR innovation project. The manufacturer need only deal with one organization: the regional ANVAR delegation.

[LES ECHOS] Don't you think that EUREKA often has a hard time distinguishing itself from other European programs?

[Guillaume] Certainly there is a problem with coordination among the different European programs. A systematic analysis of projects will tell us exactly what the nature of EUREKA research is. Programs such as ESPRIT or BRITE-EURAM are presently concerned with work at the precompetitive stage. EUREKA is supposed to follow that up with research to industrialize products. It is essential to encourage complementary projects in the two types of programs. In that sense, we are working on building a Europe in the real world. The approach is still a recent, and far from obvious, one.

JESSI Funding Cut

92WS0605D Paris LES ECHOS in French 27 May 92 p 25

[Article entitled: "JESSI in Jeopardy"; first paragraph is LES ECHOS introduction]

[Text] The plan to develop a European microelectronics research program is sinking fast. A financial squeeze came on the heels of the disagreement among manufacturers. The EC can no longer afford to help finance the Fr3 billion program.

"The European Community is not meeting its financial commitments, which is jeopardizing the project's goals." The president of Europe's JESSI program, Raimondo Paletto, sounded the cry of alarm at the beginning of the year. The EC has seriously curtailed its funding of Europe's most ambitious program ever, from 25 to 15 percent. "He is quite right," confirms the French research minister Hubert Curien. Launched in 1989, JESSI clearly no longer has the money to match its ambitions. "The relationship between the EUREKA program and the Brussels Commission must be clarified," says Hubert Curien, who admits that the program is not working as expected. "Yet if ever there was an important program in Europe, it is JESSI. I spoke to Jacques Delors about it."

A Strategic Program

Indeed, the strategic, technological, and industrial value of JESSI is obvious. The JESSI program was launched in 1989 to bring Europe's microelectronics industry up to par with that of its Japanese and American rivals. The EC was to provide 25 percent of the initial funding (ECU3 billion between 1990 and 1996), with member states kicking in another 25 percent, and the three companies involved—Philips, SGS-Thomson, and Siemens—contributing the remaining 50 percent.

The decision of Brussels and the discord among the manufacturers—highlighted by the separate agreement between Siemens and IBM—may well deal the final blow to a program that has never inspired unanimity. It would also be a death blow to European microelectronics manufacturers, who are already trailing the Japanese and American champions badly. Europe's leader Philips ranks ninth in international market share, already well below what industry watchers deem a critical size (at least 5 percent of the world market). Despite these well-known facts, there is little chance of breaking the stalemate. The Commission, which is coming up short financially, is resisting the pressures and arguments of Raimondo Paletto. Meanwhile, Hubert Curien is visibly pessimistic about the future of the issue, since the states do not seem ready to relay Brussels financially. "We will probably have to revise our research priorities."

Financial Problems

Henri Guillaume, who heads the EUREKA program and ANVAR for France, does not believe the JESSI affair threatens the basic principle of EUREKA. "The program's first phase produced 16-Mbit memories in a very reasonable amount of time compared to the Japanese. But the financial difficulties of Philips and the Siemens/IBM alliance make the situation in the microelectronics industry very special. In a sector like Europe's microelectronics industry, a EUREKA project cannot freeze a system of alliances. If the partners' strategy changes, the project must be adjusted, and that is what is happening."

In theory, JESSI aims to guarantee Europe a certain degree of independence with respect to the next generation of electronic components. The component market was estimated at ECU55 billion in 1991, and is expected to double to ECU110 billion in 1996. Europe now meets only half of its own needs, and the trade deficit totals nearly ECU2.5 billion. The world market is controlled by Japan (52 percent) and the United States (35 percent), while Europe produces only 10 percent of the total.

Four Lines of Research

JESSI consists of four complementary lines of research, or subprograms, that ensure the coherence of the whole program. They are applications, technologies, hardware and materials, and basic research. Over 50 projects involving 150 research teams have been launched to date. "Applications" are primarily being developed in the four cutting-edge sectors in which electronics will play a fundamental role over the next few years: HDTV, automobile electronics, telecommunications, and digital transmissions.

The technology program aims to devise by 1995 methods of manufacturing 64-Mbit CMOS [complementary metal oxide semiconductor] memories with etch widths smaller than 0.3 microns. Research in this area, which the initial program described as "pivotal," aims to master the "building blocks of the microelectronics of the future." The technology subprogram also takes in manufacturing processes and logical circuits. The third component, which involves hardware and materials, is modeled on the rival American program Sematech. It deals with hardware and machines to manufacture components. The fourth subprogram takes up basic research and the new designs that will be employed after 1995.

The Explosion in Electronics Research Costs

Memories	Market Introduction	R&D Sums Spent
256K	1985	110 million $
1 Megabit	1988	250 million $
4 Megabits	1990	400 million $
16 Megabits	1995	850 million $
64 Megabits	2000	over 1 billion $

Source: Thomson

EUREKA Adopts Four-Year Plan

92WS0613A Paris AFP SCIENCES in French 27 May 92 pp 1-3

[Unattributed article: "Eureka Continues To Target Growth and Reaffirms Its Orientations"]

[Text] Tampere—A sign of the changes that have taken place over the past two years, on 22 May, an Eastern European country was admitted to a European organization as a full member.

In approving Hungary's membership application at the Tampere conference, the ministers of the countries of the EUREKA program (the 12 countries of the European Community, the six countries of the European Free Trade Association, and Turkey) and the vice president of the European Commission gave substance to the commitment expressed at their last conference a year ago in The Hague to open EUREKA to the countries of Central and Eastern Europe.

Until now, a company or institute of a non-member country could participate in a EUREKA project alongside companies or institutes of two or more member countries under certain conditions (in particular, the project's "center of gravity" had to be located in Europe). Under this scheme, Hungary is already participating in seven EUREKA projects (in the environment and computing) and, as the conference pointed out, has demonstrated its ability to cooperate with the industrialized European countries.

The admission of Hungary (all the more predictable in light of the EUREKA information forum held in Budapest in early 1990) also confirms the de facto situation, to paraphrase France's minister of research and space, Mr. Hubert Curien. Still, there is no question of admitting just any country—only those that have demonstrated their ability to propose projects and bring them to completion.

EUREKA continues to grow. The conference announced that the EUREKA label had been granted 102 new projects costing a total of ECU626.7 million (4.38 billion French francs [Fr]). EUREKA now claims 539 projects in progress, for a total of 623 including those already completed since the program began in 1985.

The conference also adopted a medium-term (four-year) orientation plan prepared by Finland, EUREKA's outgoing president. The plan echoes the major lines of action adopted by the conference of ministers last year in The Hague following an audit of independent experts led by Professor Wisse Decker (Netherlands).

- An information campaign targeting small companies will be launched with a view to increasing their participation in EUREKA projects, even [though] 25 percent of the 3,300 participants in current projects are small companies or small applied research institutes. The small companies will receive greater assistance in finding partners and financing for their projects.

- In selecting projects, the emphasis will be on quality. Preference will be given to "strategic" initiatives—that is, technologically advanced projects in certain fields—that will put Europe in a better position vis-a-vis the Japanese and the American competition. During its presidency, France will emphasize computing, automobiles, the factory of the future, and waste treatment, according to Mr. Curien.
- An effort will be made to synchronize the implementation of government assistance among the member countries, as excessive lead times and delays in the implementation of these procedures have too often been noted.
- Relations between the EC and EUREKA will be improved in response to "ambiguities and a number of disappointments registered over the past few years," in Mr. Curien's words, as well as to ensure greater complementarity between the two programs. Concretely, the "rules of the game" will be established for "intermediate" projects—those that fall between basic research, the domain of the Community's programs, and industrial production, EUREKA's domain.
- The efficiency of EUREKA operations will be improved by establishing closer ties between the program's national coordinators.

Lastly, independent experts will be asked to evaluate the impact of the projects. According to the French minister of research and space, the evaluation will measure not only the industrial and commercial impact of EUREKA projects but also their social impact (contribution to improvements in living conditions) and their respect for the environment.

France, which was the driving force behind the creation of EUREKA and occupies a privileged position in the program (since 1985 and as of 22 May, it has been involved in 230 projects, providing 38 percent of their total funding), has been chosen to hold the presidency of the program for one year. Mr. Henri Guillaume, general director of ANVAR [National Agency for the Exploitation of Research] and interministerial secretary of EUREKA, will preside over the program's "high-level group" (made up of experts representing the ministers—one per country).

In any case, EUREKA's top-down ("bottom-up" [in English]) [as published] operating principle still stands and has been reaffirmed. Rather than impose its own projects, EUREKA will limit itself to examining the projects submitted to it—an anti-bureaucratic attitude, in some ways, and the reason for its success.

Project Distribution by Conference and Technology Sector

		BIO	COMM	ENE	ENV	COMP	LAS	MAT	ROB	TRA	ABAN	FIN	Total
Hannover	1985	0	1	1	2	0	1	0	1	0	2	1	9
London	1986	7	4	1	2	8	0	9	8	2	7	14	62
Stockholm	1986	5	2	2	1	4	2	1	2	1	5	12	37
Madrid	1987	8	2	3	1	7	6	2	11	2	10	6	58
Copenhagen	1988	14	2	0	1	6	1	4	13	4	4	5	54
Vienna	1989	12	5	3	20	10	1	8	15	1	8	6	89
Rome	1990	8	5	2	37	5	0	5	21	4	1	3	91
The Hague	1991	27	6	5	36	13	3	14	15	2	0	0	121
Tampere	1992	22	5	5	16	20	0	11	16	7	0	0	102
Total		103	32	22	116	73	14	54	102	23	37	47	623

The total cost of the 622 projects (excluding JESSI [Joint European Submicron Silicon Initiative]) is Fr67.2 billion francs.

Distribution by Conference and Technology Sector of Projects With French Participation

		BIO	COMM	ENE	ENV	COMP	LAS	MAT	ROB	TRA	ABAN	FIN	Total
Hannover	1985	0	1	1	2	0	1	0	1	0	2	0	8
London	1986	5	4	1	1	2	0	4	6	0	6	8	37
Stockholm	1986	3	1	2	1	0	1	0	1	1	1	4	15
Madrid	1987	2	2	3	0	2	3	1	7	3	2	2	26
Copenhagen	1988	9	1	0	0	4	1	3	4	1	2	3	28
Vienna	1989	4	3	0	3	3	0	1	6	0	4	2	26
Rome	1990	6	3	0	10	4	0	0	6	1	0	1	31
The Hague	1991	8	3	1	7	8	1	6	7	0	0	0	41
Tampere	1992	5	1	0	1	5	0	1	3	1	0	0	17
Total		41	19	8	25	28	7	16	41	7	17	20	229

The 229 projects with French participation represent 23.5 percent of the total cost of EUREKA, or Fr16 billion.

Key:

BIO = Biotechnology
COMM = Communications
ENE = Energy
ENV = Environment
COMP = Computing
LAS = Laser
MAT = Materials
ROB = Robotics
TRA = Transportation
ABAN = Abandoned
FIN = Finished

EUREKA's Audiovisual Participants Push for National HDTV Platforms, Cooperation With Eastern Europe

92WS0660B Paris LE MONDE in French 29 Jun 92 p 16

[Text] Representatives of the 28 member states of EUREKA's audiovisual program, who met in Finland on 12 June, decided to found a European audiovisual observatory in early 1993. The purpose of the organization will be to improve the coherence and dissemination of information on the audiovisual industry. France and Germany are in contention as sites.

The ministerial conference also stressed the need to shore up collaboration between all European states: EUREKA's audiovisual program embraces many countries outside the Community, and Romania, Bulgaria, Estonia, Lettonia, and Lithuania have just joined. The conference expressed its support for the new European television technologies, and especially the 16:9 format. It particularly recommends the creation of national high-definition television platforms.

Finland's presidency, which expires 30 June, stressed the problems peculiar to "small" countries: those with limited territory or languages which are not widely spoken. Germany, which will succeed Finland as acting president for a year, will pursue that tack. Switzerland was designated to take over in July, 1993.

EUREKA Optical Communications Project Outlined

92BR0418 Paris FRENCH TECHNOLOGY SURVEY in French Mar-Apr 92 p 2

[Text] The EUREKA project known as Broadband Optical Fiber Access (BOA) seeks to develop an ultrafast communications interface allowing exchanges of digital data along an optical fiber at a speed of up to 1 Gbit/s.

The project covers the construction of a special ASIC [application-specific integrated circuit] incorporating the transmission and reception functions for an optical fiber, and its integration by CETIA [European Computer-Aided Engineering Technologies Company] in UNIX and TCP/IP workstations using an electronic card based on the European double VME [virtual machine environment] standard (6U).

The growing amounts of information stored, transferred, and processed in complex computer networks is leading to increasingly frequent saturation of traditional communications architectures. The result is a substantial need for data transfer both in corporate local networks and in public networks.

With its performance levels, the BOA project will pave the way to the construction of groups of machines or networks of the 1-Gbit/s FDDI [fiber-distributed data interface], broadband ISDN [integrated services digital network], or 1-Gbit/s DQDB [distributed queued dual bus] types.

The product range of CETIA (a subsidiary of Thomson-CSF [Services and Computing Division]) is based upon a range of workstations (for the development systems) and of "board computers" (for the wired systems) using the same basic set of standard cards conforming to the European double VME format (190 mm x 233 mm). The CETIA workstations and "board computers" are built around Motorola 88000 and 68000 (68020, 68030,

68040) processors in single or multiprocessor configurations; they thus provide integrated approaches to the design and operation of real-time systems and interactive scientific systems.

Luxembourg's SES Joins EUREKA 95 HDTV Program

92WS0501D Paris AFP SCIENCES in French 9 Apr 92 p 15

[Article: "HDTV: SES Enters Eureka 95"]

[Text] Paris—The European Satellite Company (SES, Luxembourg), owner and operator of the Astra direct-broadcast television satellites, has just joined EUREKA 95's HDTV [high-definition television] program.

SES will join Group 4 of the 11-group European program and will work on transmission questions, according to the communique. The company will install transmission capabilities on its Astra satellites to test HDTV transmissions in the big-screen 16:9 format.

EUREKA 95, a European research program that gets financial support from the different states, involves some 60 electronics manufacturers, broadcasters, scientific laboratories and operators, including Thomson, Philips, Nokia and France Telecom.

According to Mr. Peter Bogels, president of the EUREKA 95 HDTV directorate and head of Philips's video products division, the entry of SES into EUREKA "demonstrates the importance Astra gives to the development of European HDTV."

SES, it will be recalled, was one of the strongest opponents of the proposed European directive that sought to impose D2-MAC—an intermediate European transmission protocol prior to the introduction of high-definition HD-MAC—as a mandatory standard. The European directive was finally relaxed, so D2-MAC broadcasting will not be mandatory for new television services until 1995.

By joining EUREKA 95, SES "will be able to participate in HD-MAC transmission tests and make use of its experience in the area," adds Mr. Bogels. The Astra system already broadcasts Scandinavian programs in D2-MAC. SES general manager Pierre Meyrat noted that "the market area served by the Astra satellite—which covers 33 million homes, including 8.5 million with direct reception—offers a unique opportunity to interest consumers" in HDTV.