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Community Data-processing Policy

Report on the status of Community programmes at 31 May 1982

COM(82) 452 final.

Community Data-Processing Policy

Report on the status of Community

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ANNEX : List of contracts and reports on studies carried out on behalf of the Commission under the Community's data-processing programmes.

INTRODUCTION

Since the Commission report on priority projects conducted by the Community on computer applications (1), there have been several milestones.

The Commission has duly completed the second set of priority projects (2), the launching of which was mentioned at the end of that report.

These projects, the results of which are outlined in Chapter 1 of this report, were intended to pave the way for activities that could be incorporated into a medium-term programme.

After lengthy discussion, the Council took a Decision on 11 September 1979 (3) on the proposal for a multiannual programme for the development of data processing in the Community contained in the communication from the Commission to the Council of November 1976 (4); this was accompanied by a Regulation (5) on a Community support mechanism and a Decision (6) setting up an Advisory Committee for the Management of the Programme. Finally, the microelectronic aspects in the Commission proposal, which with the exception of the studies had been left out of the programme, were the subject of a Council Resolution (7) which has since been followed up by a proposal for a Council Regulation (8) on which a Decision was taken on 7 December 1981 (9). The Decision on the programme set out the projects under two headings in the Annex : the first part consists of general measures concerned mainly with the environment, research and development and knowledge of the sector, and the second part contains promotion measures designed to promote projects either proposed by the industry and users

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- (1) COM (78) 761 final of 15 January 1979.
 - (2) Council Decisions Nos 77/615, 616, 617, 618, 619, 620/EEC of 27 September 1977. OJ N° L 255 of 6 October 1977, p. 22-36.
 - (3) Council Decision N° 79/783/EEC adopting a multiannual programme (1979 to 1983) in the field of data processing - OJ N° L 231 of 13 September 1979, p.23.
 - (4) COM(76) 524 final of 9 November 1976 - Volumes I to IV.
 - (5) Council Regulation (EEC) N° 1996/79 on a Community support mechanism in the field of data processing OJ N° L 231 of 13 September 1979, p. 1.
 - (6) Council Decision N° 79/784/EEC setting up an Advisory Committee for the management and coordination of data-processing programmes OJ N° L 231 of 13 September 1979, p. 29.
 - (7) Council Resolution on a Community action promoting microelectronic technology, OJ N° C 231/1 of 13 September 1979, p. 1.
 - (8) Proposal for a Council Regulation (EEC) concerning Community action in the field of microelectronic technology. COM(80)421 final of 1 September 1980.
 - (9) Council Regulation (EEC) N° 3744/81 concerning Community projects in the field of microelectronic technology, OJ N° L 376 of 30 December 1981, p.38.

or initiated by the Commission, possibly as a follow-up to studies completed during previous programmes. The Regulation mentioned above is intended to facilitate implementation of this second part.

The budget appropriations decided by the Council differed from the Commission proposals in the following ways :

- (a) the proposals for projects on peri-informatics and microelectronic components have been replaced by studies, while the support for software, standardization and data processing applications has been reduced from 32 to 15 million EUA.

The Council therefore reduced the budget ceiling for the programme to :

- 10 million EUA for the first part (general projects)
- 15 million EUA for the second part (promotion projects).

- (b) The management costs, which had been estimated by the Commission and included in the programme budget under Chapter 37 of the Communities budget, have been separated from it by the Council, and now management staff have to be recruited on temporary posts obtained under the annual procedure.

One result was that, although in its initial proposal the Commission had requested 39 temporary posts in order to recruit the highly-qualified staff needed for the management of the programme, only seven posts were granted under the 1980 budget (decided in June) and 16 under the 1981 budget (10). Consequently the projects have been launched more slowly than planned, especially in the first part of the programme, where some of the activities have been shelved for the time being (in particular the work on public procurement) and numerous management difficulties have arisen.

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- (10) In the 1981 budget the Commission had requested 25 posts for the multiannual programme and 14 posts for Commission activities concerning the new information technologies. The Council granted it a total of 25 posts, of which 16 were for the multiannual programme and 9 for the new information technologies.

To ensure a minimum of work on the programme, a small number of experts had to be recruited from the programme budget. However, the situation is now improving. Although there are still staff shortages, the Commission has done its best from the early months to see that the second part (promotion measures) develops more or less normally. It is the first part, which requires more staff, that has suffered most from these difficulties.

By the end of 1981, almost the whole of the budget for the second part of the programme and 55 % of that for the first part had been committed. In accordance with the possibility mentioned in a Council statement accompanying the Decision on the programme, a proposal for a new programme has been sent to the Council; it concerns an increase in the amount for guidance for the second part of the programme (III/627/82).

This report, drafted pursuant to Article 4 of Decision N° 79/783/EEC adopting the programme and Article 19 of Regulation (EEC) N° 1996/79, has been delayed because of the difficulties outlined above.

Chapter 1 contains the results of the second programme of priority projects (1978-80), the launching of which was described at the end of the previous report to the Council (COM(78) 761 final). Chapter 2 outlines the status of the multiannual programme at 31 May 1982.

CHAPTER 1 RESULTS OF THE SECOND SET OF PRIORITY PROJECTS

In September 1977 the Council decided on a second set of priority projects comprising :

- studies on software portability
- studies in support of the use of informatics
- pilot project for high-speed data-transmission techniques
- computerized system for the processing of data on imports/exports, and the management and financial control of agricultural market organizations (CADDIA)
- exploratory studies for projects under the four-year programme.

These studies have all been completed and some have led to new development projects under the four-year programme, while other projects are regarded as completed by the Commission services, as explained below :

1.1. STUDIES ON SOFTWARE PORTABILITY

The general aim of these studies was to identify fields in which Community projects could improve software portability so as to reduce conversion costs for users and facilitate access to the market for software houses and hardware manufacturers.

1.1.1. Software writing language

A study on a European systems language (ESL) was contracted in 1978 with a consortium consisting of Siemens and CII-Honeywell Bull for an amount of 90.300 EUA.

A European systems language would be an efficient way of enhancing software portability and thereby reducing program conversion costs which took up an ever-increasing share of the overall cost of data-processing in the 1970s.

The study was completed in November 1979 and concluded that a European systems language could be based upon the new programming language Ada being developed in Europe for the United States Department of Defense (see 2.3), if certain modifications concerning systems programming to the Ada language as preliminarily defined in 1979 were incorporated in the final Ada definition. The final Ada definition of July 1980 included these systems programming requirements as stated in the ESL final report. It therefore appeared that the Ada language fulfilled the requirements expressed by European users for a new programming language which would thus be supported by users both in the European Community and in the United States. It was with this as a basis that the Commission awarded two contracts under the Community support mechanism in the field of data processing for the development of portable Ada programming systems (see 2.5.3.3. (b)).

1.1.2. Conversion tools

A study on software conversion tools for an amount of 74.300 EUA was contracted in 1978 with Software Sciences and with Cerci, Solvfield and MBP as subcontractors.

The study was undertaken in order to establish a record of available software conversion tools, techniques and facilities with a view to possible Community projects. The study was completed in 1980. No further action following the results of the study was considered useful since it was concluded that market forces were already developing suitable tools.

1.1.3. Feasibility of developing a common software interface for mini-computers

A study on a common software interface for minicomputers was contracted in 1978 with a consortium consisting of Christian Rovsing International A/S, Leasco and Selenia for an amount of 112.500 EUA. The study resulted in a proposal for standardization for a kernel of operating systems for minicomputers.

This proposal was discussed with a group of interested minicomputer manufacturers and software houses in June 1980. However, no proposals from industry have so far been received in response to the two calls put out by the Commission under the multiannual data-processing programme (see Chapter 2). As the relationship between a standardized kernel of operating systems and the Ada kernel now being developed has not yet been clarified, Commission staff have not so far taken action on a follow-up to this study.

1.2. STUDIES IN SUPPORT OF THE USE OF INFORMATICS

The Council Decision on studies in this field stressed the need for a methodological approach to problems concerning the use, security or design of data processing systems, to benefit both users and industry; this implied that the studies should be carried out by centres independent of the sectors concerned. The cost of the studies were to be evenly split between the Community budget and the budget of the institutes concerned. The amounts given below represent the Community's share.

1.2.1. Programming Techniques

A study on programming techniques for an amount of 51 000,00 EUA was undertaken by a consortium consisting of the Gesellschaft für Mathematik und Datenverarbeitung (Germany), the Institut de Recherche d'Informatique et d'Automatique (IRIA, France) and the National Computing Centre (UK) in September 1978. The study was completed in November 1979. It consisted mainly of a survey of programming methods actually employed by users of business data processing in various sectors of the economy excluding computer service centres, manufacturers and computer research centres. The main conclusion of the survey is that approx. 50 % of all programming effort is taken up by program maintenance and updating for the following reasons :

- system specifications are generally not satisfactorily defined;
- modifications of system specifications are not easily included in corresponding modifications for programs;

- program validation standards are not available.

The study concludes by recommending the Commission to undertake a much larger study on specification and development of software systems.

1.2.2. Data security and confidentiality

A study on data security and confidentiality was undertaken by the same three institutes as the study on programming techniques.

The study, which cost 90 000 EUA, was started on 1 September 1978 and completed on 30 November 1979. The final report was submitted on 31 December 1979 and was discussed at a meeting of the group of experts on data processing and the protection of personal liberties at the beginning of 1980. It may be obtained from the institutes which worked on it.

In agreement with the group of experts, it had been decided to study six subjects in particular :

1. the quality and quantity of crossfrontier data flows;
2. the organizational character and technical functioning of data protection bodies;
3. the problem of legal personality (individual and legal entities);
4. the international economic aspects of data security and confidentiality;
5. the technical aspects of the right of access to data-registers;
6. the control, audit and implementation of requirements relative to confidentiality and their impact on data security.

1.2.3. Data base management

A study on the evaluation and implementation of data base management systems for an amount of 740 000 EUA was undertaken in January 1978 by four national institutes : GMD, IRIA and NCC (these three institutes having also undertaken the previous two studies), and the

Italian institute Consiglio Nazionale delle Ricerche (CNR). The study was completed in August 1980 after about 25 man-years of work. On the basis of its results, the Commission organized a conference in September 1980 with more than 200 European data-base specialists where the contracting institutes presented their conclusions and recommendations.

The study covered the following subjects :

- examination of users' needs, problems and experience;
- development, on the basis of this examination, of guidelines for the selection, implementation and use of data-base systems;
- formulation of recommendations regarding standardization and portability of data-base systems.

Twelve reports and a summary report were submitted to the Commission (see Annex).

The results of the study were also presented at the "Very Large Data Bases" Conference held in Montreal in September 1980 and at the IFIP 80 Conference held in Tokyo and Melbourne in October 1980.

This important study shows in particular the extent of the use of data-base systems in the Community and sets out the extent of present and immediate future problems in this field. The study analyses the conditions for correct utilization and identifies necessary action for improvements.

1.3. PILOT PROJECT ON HIGH-SPEED DATA-TRANSMISSION TECHNIQUES (STELLA) (*)

1.3.1. Current status

A joint project on experimental application of high-speed data-transmission techniques was undertaken in 1977 by the European Space Agency (ESA), the European Organization for Nuclear Research (CERN) and associated national high-energy physics laboratories. The Community contributed 420 000 EUA to the total budget for the four-year project.

The project was undertaken to encourage the development of advanced techniques and procedures giving the necessary operational safety for the transmission of large quantities of data by satellite link. The experiment is unique in that it has successfully associated, in a European environment, research into high-speed satellite transmission techniques with the clearly defined requirements of the community of users in the field of high-energy physics.

The project includes the installation of transmitting/receiving equipment at CERN in Geneva, in order to provide a high-speed link from CERN to the associated laboratories and a low-speed link in the opposite direction.

The links for high-speed data transmission are provided by an OTS (**) channel; the ground station at CERN and the interfacing equipment are financed from the project's budget.

(*) STELLA : Satellite Transmission Experiment Linking Laboratories.

(**) OTS : Orbital Test Satellite.

The project has now moved from the preparatory phases of technical specifications and procurement of equipment to the operational phase where the link is being used to ensure high-speed exchange of data from magnetic tapes between various research establishments. The result is satisfactory bearing in mind the complexity of the required technologies. It should be added that the services which are provided should be more exactly described as pre-operational in view of the fact that three stations (CERN, Rutherford, Pisa) are already exchanging data between laboratories and that some details are being discussed to ensure the smooth and reliable mode of operation required by the physicists as end users. DESY (Deutsches Elektronen synchrotron) has just be connected, while it has recently been announced by the French PTT that the SACLAY Centre (France) will not pursue its participation at the level of station inter-connection. Other laboratories (Dublin, Graz) have connected their stations to participate in the measurement programme.

1.3.2. Improvements and developments in the experiment and future prospects

Most of the work now being undertaken is related to the improvements which have been proposed and decided by the Steering Committee. These concern to two key areas :

- (a) the upgrading of interfacing mechanisms (software and hardware) which are needed to follow the recent evolution in the field of standards,
- (b) the provision of some additional features which were requested by the users to improve data communication in the specific environment of high-energy physics.

If such improvements are successfully carried out, they will increase the use of the link, provide a better test-bed for standards and contribute to facilitating the transition towards the services which will probably be offered by the PTT administrations within a few years.

The total Community budget allocated to the project is almost exhausted. It is expected that the additional costs for improvements will be partly covered by contributions expected to be made available from national sources by some of the participating laboratories.

1.4. STUDY OF INFORMATICS SYSTEMS FOR THE PROCESSING OF DATA ON IMPORTS/EXPORTS AND ON THE MANAGEMENT AND FINANCIAL CONTROL OF AGRICULTURAL MARKET ORGANIZATIONS (CADDIA) (*)

The CADDIA project was awarded in March 1979 to a consortium of seven consultancy companies, each from a different Member State, for an amount of 493 000 EUA. The aim was to study the application of computing and data transmission techniques to the functioning of the Customs Union and the common agricultural policy since the rapid notification and processing of data on imports and exports and on the agricultural market and its financial control are essential for efficient working.

The consortium delivered its report to the Commission in December 1980. Copies have been distributed to appropriate administrations in Member States and to Commission departments, for evaluation and consideration of the findings and recommendations of the report.

The report proposes a ten-year development programme during which the Commission and the relevant administrations in Member States would develop their autonomous data processing systems in a series of concerted action projects aimed at exploiting data processing technology to improve the quality and adequacy of information and to enable it to be interchanged directly between systems.

The Commission endorses in principle the main proposals of the report and is currently developing ideas on the organizational and resourcing implications at Community level. These will have to be further developed in discussions with the Member States' administrations, following which it is envisaged that the Commission will make a proposal for the adoption of a long-term programme.

(*) CADDIA : Cooperation in Automation of Data and Documentation for Imports/Exports and Agriculture.

A number of preparatory activities must be undertaken in order to implement the proposals in the report. These activities are the subject of a proposal now before the Council summarizing the main recommendations of the consultants' report and recommending that an Advisory Committee of Users of CADDIA be set up. The abovementioned long-term programme will be finalized with the aid of this Committee and the first stage will be transmitted to the Council in 1983. The Commission is in the meantime taking action internally to support the more urgent preparatory work, including the organization of discussions with Member States' administrations.

1.5. EXPLORATORY STUDIES IN THE FIELD OF INFORMATICS

A series of exploratory studies with a budget of 200 000 EUA was approved by the Council in order to identify projects of Community interest that might be included in the future multiannual programme in the field of data-processing then being considered by the Council. The studies undertaken in this framework are as follows :

- (1) A study on the establishment of operational rules for a Community support mechanism in the field of data-processing for an amount of 6 800 EUA was awarded to two experts. The results of this study provided the basis for the administration and the implementation of the Community support mechanism in the field of data-processing under the multiannual programme in this field.
- (2) A study on computer applications in the sector of ports and sea-borne transport for an amount of 29 900 EUA was contracted with the ASIPE(*). The study resulted in a series of recommendations, some of which have been taken into account in the multiannual programme.
- (3) A study on applications for computer-aided design for an amount of 12 100 EUA was awarded to an expert. The study describes the situation in the Community concerning the use of computers in the design and production process, and defines needs and recommendations for Community actions in this field. The conclusions of the study were discussed at a seminar held in Brussels in December 1978. The results of the study were later used as a basis for the launching of projects under the multiannual programme in the field of computer-aided design (use of computers in the electronics, microelectronics and construction industries).

(*) ASIPE : Association pour le Système Informatique Portuaire Européen
(Europeab Port Data Processing Association) (EVHA).

- (4) A study on the application of computers for navigation requirements for an amount of 15 000 EUA was awarded to ASIPE. The study established the requirements for communication and information systems for shipping companies. Following this study a specific application was financed under the support mechanism of the multiannual programme.
- (5) A study on support for a standard point-to-point interface for an amount of 28 800 EUA awarded to B.N.I. (Bureau de Normalisation en Informatique). The study was an attempt to determine whether support given during the elaborative phase for an international standard would accelerate its preparation. The results identified existing difficulties stemming from the divergent national and commercial interests represented in ISO (*).
- (6) A study on computer applications in Chambers of Commerce and ministries of foreign trade for an amount of 34 300 EUA was awarded to the company CERVED. The result of this study has been a proposal for a project that has received aid under the support mechanism of the multiannual programme following the second call for proposals (see 2.5.4.2.).

Two exploratory studies were also financed from the remainder of the budget for the first set of priority projects undertaken in 1977 (**). These were:

- (7) A study on the European hydrological system for an amount of 24 200 EUA contracted with a consortium consisting of the Danish Hydraulic Institute, the Institute of Hydrology of the National Environment Research Council of the UK, and the French company SOGREAH. The study established an interest in the development at Community level of a computerized simulation model for hydrology, which is now being developed under the multiannual programme. (see 2.5.3.3.(a)).

(*) ISO : International Standardization Organization.

(**) Council Decision 76/632/EEC of 22 July 1976 - OJ N° L 223/11 of 16 August 1976.

- (8) A study on computer applications which might be supported by the Community for an amount of 58 500 EUA contracted with the Irish company Systems Dynamics.

The study resulted in an outline of computer applications in various fields and their classification according to different criteria.

1.6. STATUS OF THE BUDGET

Most of the commitments and payments under this budget have been made.

Details of expenditure are given in Table 1.

T A B L E N° 1

Budget - Item 7701 : status at 31 May 1982 (ECU)

	STATUS OF COMMITMENTS			STATUS OF PAYMENTS		
	Industrial costs	Technical costs (1)	Total cost	Industrial costs	Technical costs	Total cost
Software portability	277 048	112 952	390 000	277 048	112 952	390 000
Support for the use of informatics	881 000	363 420	1 244 420	838 174	363 420	1 201 594
High-speed data transmission	420 000	-	420 000	420 000	-	420 000
Processing of import/export data	493 027	229 200	722 227	493 027	229 200	722 227
Exploratory studies (2)	126 900	66 952	193 852	126 900	66 952	193 852
	<u>2 197 975</u> =====	<u>772 524</u> =====	<u>2 970 499</u> =====	<u>2 155 149</u> =====	<u>772 524</u> =====	<u>2 927 673</u> =====
Differences in exchange rates			6 501			
Total funding of the programme			<u>2 977 000</u> =====			

- (1) Cost of project leaders, their technical assistants, purchase of studies, attendance at congresses, administrative management and meetings of technical committees.
- (2) The two studies (7) and (8) in Chapter 1.5, for 24 200 ... and 58 500 EUA respectively, were funded from the budget item for the first set of priority projects (Article 3700).

CHAPTER 2 STATUS OF THE MULTIANNUAL PROGRAMME (1979-83) IN THE FIELD OF DATA
PROCESSING AT 31 MAY 1982

2.1. GENERAL

The Community's multiannual data-processing programme is the first action of any scope undertaken by the Commission in this field. It is a response to the Council's invitation in its Resolution of July 1974 (*) to prepare, in the medium term, a systematic Community programme to promote research, industrial development and applications of data processing.

Its aims are to develop a set of projects of interest to the Community, including those started under previous programmes, in particular the second set of priority projects described in Chapter 1, and to provide coordination for national promotion measures.

The general measures (part 1 of the programme) consist mainly of work by specialized panels of experts and the carrying out of studies under contract, while the promotion measures (part 2) range from feasibility studies to the predevelopment or development of software and applications.

2.2. MANAGEMENT OF THE PROGRAMME

The Council has set up an Advisory Committee for the Management and Coordination of Data-processing Programmes (see footnote 6 on page 1); the terms of reference of this Committee are wider than those of the previous committee(**); in particular, it delivers qualified opinions on action which the Commission intends to take under Article 8 of the Council Regulation on a Community support mechanism in the field of data processing (see footnote 5 on page 1).

(*) Council Resolution of 15 July 1974 on a Community policy on data processing. OJ N° C 86 of 20 July 1974, p. 1.

(**) Advisory Committee on joint data processing projects. The Council Decision 76/633/EEC setting it up was amended by Decision 77/620/EEC of 27 September 1977, OJ N° L 255 of 6 October 1977, p. 35.

The Advisory Committee meets on average five times a year; it has set up or officially approved several subcommittees in accordance with its terms of reference :

- The Subcommittee on Standardization, which has taken over from the WGS (Working Group on Standards); it has the task of proposing guidelines and projects under the Community standardization policy (four meetings a year);
- the sub-committee on public procurement now being set up;
- the COST 11 bis Subcommittee, a concertation committee to keep an eye on the Community teleinformatics project (see 2.4.5.).

Also CREST's (*) Subcommittee on Data Processing, and information technologies, more particularly responsible for advising on a relevant research and development policy, serves as a specialized subcommittee of the Advisory Committee for the management of research projects.

2.3. COMMUNITY CONTRIBUTION TO THE ADA LANGUAGE

Amongst the projects under the programme, special emphasis has been placed on the Community contribution to the Ada language.

The studies on software portability described in Chapter 1 (§ 1.1.) focused on the need to create a high-level language for the writing of complete systems designed for a vast range of applications.

In April 1979, when the US Department of Defense (DOD) took its final decision on the characteristics of the high-level language Ada, designed to meet its future requirements for real-time applications, definition of the European language ESL was already well advanced. As the DOD adopted for the specification of Ada the version presented by a European group, the "green language" (**) designed to meet similar requirements, the problem of relations between ESL and Ada arose.

(*) CREST : Scientific and Technical Research Committee.

(**) The bases for the "green language" have been defined by a team led by Dr. J. Ischbiah, now chairman of the Alsysis Company.

Despite their differences of approach (ESL being intended originally for file management systems and communications), it seemed essential to harmonize them, or even make them coincide completely, so as to move towards a standard international language that could meet the requirements of a much larger market. Although initially devised for military needs, Ada has been developed for more general use, and it is the first language to supply a technical basis for a software components industry. One of the consequences of this harmonization, which involved close cooperation with the DOD, was the urgent need to create a first Ada compiler, the corresponding programming system and their technical and educational environment, while ensuring that the Community had the necessary technical expertise.

Work therefore proceeded along these broad lines; Sections 2.4.4. and 2.5.3.3(b) contain a description of the studies launched by the Commission and the industrial projects which it is assisting under the Community support mechanism that has been set up.

The action taken meets some of the main objectives of the multiannual programme: it will assist the software portability and standardization (see Ada-Europe, 2.4.1.) policies and help to bring about greater uniformity on the international market, while providing an opportunity for the Community's computer industry to strengthen its competitive position by means of ambitious ventures, thus paving the way for better penetration of home and foreign markets.

2.4. PART 1 OF THE PROGRAMME - GENERAL MEASURES - STATUS

2.4.1. Standardization policy : (see 1.1 of the Annex to the programme)

This is a focal point of the multiannual programme; effective application of the same norms and standards within the Community is an essential condition for :

- mobility of specialists, who are thus sure of being able to use their skills and technical training to the full,

- economies of scale that can be made by industry when the market is better harmonized,
- freedom of choice for purchasers in a more competitive market,
- development of services using automated communications between offices, branches and companies.

To attain these aims, the approach set out in the Annex is as follows :

- to define priority sectors,
- to promote projects designed to foster a Community contribution towards international standards and practices,
- to encourage the application of standards through concerted measures
- to disseminate relevant information in the Community,
- to encourage Community organizations to contribute towards international standardization.

Through the official standards bodies, it is possible to reach a consensus during the long standardization process, starting from the initial idea stemming from a need, through the clarification of the concept and drafting of the standard, up to its finalization and actual application in purchasing transactions.

So far staff shortages have hampered much of this work. Bearing in mind that some five to ten years elapse between the idea of a standard and its entry into effect, the Commission has mainly used the limited resources available to it to continue the indirect support already started during the preparation of the programme.

The Subcommittee on Standardization advises the Commission on these activities and serves as a forum for the exchange of information, helping to identify difficulties, reach mutual understanding of problems and prepare for international meetings.

The national standards organizations and Member States are represented on it, as are associations representing the interests of manufacturers (ECMA)*, users (CECUA)**, service companies (ECSA)*** and telecommunications administrations (CEPT)****.

The indirect action projects have consisted of supporting technical cooperation at Community level by holding meetings and contributing to international standardization.

The industry and users have been consulted; mention should also be made of the standardization work of the following two committees (outside the multiannual programme) :

- The SIC (Standardization Implementation Committee), set up by the Commission early in 1981 to coordinate its own requirements for standardization when purchasing computer systems and equipment.

- The Steering Committee for the INSIS Project (Community Interinstitutional Integrated Services Information System) set up by the Commission to advise on the project for an information system between the Community institutions and Member State governments as part of its activities on the development of the new information technologies.*****

- The COST 11 bis Concertation Subcommittee (see 2.2).

* ECMA : European Computer Manufacturers' Association

** CECUA : Conference of European Computer User Associations

*** ECSA : European Computing Services Association

**** CEPT : European Conference of Postal and Telecommunications Administrations

***** A draft decision on the development of the INSIS project was sent to Council in July 1981.

The main activities contributing indirectly to international standardization have been as follows :

- The EWICS* has gradually gained a reputation at international level as a recognized authority on standardization in real time of the FORTRAN and BASIC programming languages. This workshop has also become a leading forum for discussions on safety aspects in the use of computers for applications such as railways, chemical plant and nuclear engineering.
- In a separate context, the Commission has encouraged the setting up of the Ada-Europe group which, on the basis of national activities, has brought together at Community level a combined technical expertise (see 2.3).

The recent increase in staff improves the prospects of carrying out the work defined above : the Subcommittee on Standardization has prepared a plan for establishing priorities so as to identify projects needed to back up and supplement the work of international bodies and activities that can be carried out with available resources and to ascertain whether the time required will be acceptable.

The emphasis will be on effective application of standards, as the only way of benefiting from the money spent in elaborating them. This involves tests of conformity with selected standards, recognition of certification services going beyond national boundaries and undertakings by the Member States to use these services for public procurement purposes. There are two important points :

- (a) the incompatibility between the limited duration of the programme and the long lead times inherent in standardization deter some

* EWICS : European Workshop on Industrial Computer Systems.

institutes from putting money into long-term standardization programmes if no long-term public declarations of intent are made;

- (b) in the specific case of the communication of data and information, before a firm can be free to communicate with any other firm by office automation techniques the enormous obstacle of complete standardization must be overcome.

2.4.2. Public procurement (for information) : (see 1.2. of the Annex to programme)

As stated in 2.2, a start on this activity has been prevented by lack of staff. It is hoped to begin work in 1982. Only the standardization aspects have been considered in the course of the work of the Subcommittee on Standardization (see 2.4.1).

2.4.3. Cooperation between research centres in R&D (see 1.3.1 of the Annex to the programme)

The Commission's main action here is a follow-up to earlier studies (see 1.2 of this report and 1.3.1(b) of the Annex to the programme); it is a study on improving the efficiency of software systems at the specification and development stages, which has been awarded to the Gesellschaft für Mathematik und Datenverarbeitung (GMD) of Germany and the National Computing Centre (NCC) of the United Kingdom, working in cooperation. The budget for the study is about 2 million ECU, financed in equal shares by the Commission and the participating organizations.

The aims of the study are as follows :

- to identify and describe effective means for specifying and validating software systems;
- to survey systematically means of producing software against the specification of requirements;
- to provide users with an effective method of comparing alternative means of producing software;
- to determine unsatisfied needs and specify their possible solutions.

The following four projects will be tackled :

- A. Specification and validation of software projects
- B. Methods and tools for software production

- C. Quality control for software products
- D. Methods for evaluating software products

The study started on 1 March 1981, interim reports are expected in March 1983 and the final reports should be submitted early in 1984.

2.4.4. Studies on the Ada language (see 1.3.1 of the Annex to the programme)

Past experience shows that a standard programming language has to be stringently controlled if it is to be efficient. For Ada this control will be carried out by a validation process for Ada compilers and by protection of the Ada trademark.

Consequently, under the heading of general studies, a contract for 120 000 ECU has been concluded for a study designed to explore the technical, contractual and management aspects of a European Ada validation service that will provide universally recognized validations on behalf of the European industry. This study is being carried out jointly by BNI (Bureau d'Orientation de la Normalisation en Informatique) of France, GMD (Gesellschaft für Mathematik und Datenverarbeitung) of Germany and NPL (National Physical Laboratory) of the United Kingdom. The initial results of the study already show the great interest in this service in Europe.

Finally, a study costing about 70 000 ECU has been commissioned to investigate more thoroughly the technical and commercial aspects of interpretive compiling and computers using high-level Ada; this study has now been completed and the final report will be published shortly.

The Commission is exploring the possibilities of cooperation with the United States so that Europe can continue to exert a significant influence on future developments under the Ada programme. The American Bureau for the Ada programme has also expressed interest in this cooperation.

With these projects and the activities described in 2.5 (Promotion measures), the Commission is hoping to encourage the European industry to committ itself more firmly to the development of a completely new software technology stemming from Ada, on the same lines as the energetic efforts being made by the American industry, research institutes and universities.

2.4.5. Research projects under the Community data processing policy

(See 1.3.1. of the Annex to the programme) :

The guidelines for research projects under the programme were defined with the aid of the CREST Subcommittee on Data Processing and Information Technologies as part of an attempt to establish a general research policy in this field.

The main aim is to encourage, if possible by catalytic means, cooperation between research teams in different Community Member States or even other European countries with a view to rationalizing the effort being deployed and channelling it towards a global strategy.

So far the projects have mainly focussed on two fields of special importance emphasized in the Annex to the programme : teleinformatics and real time.

Teleinformatics is by nature international and right from the research stage it is necessary to pave the way for the standardization of systems and products. The COST 11 project, one of the first set of projects approved in the COST framework in 1971, had made a start on establishing cooperation in this field and this had to be continued and expanded.

Real-time data processing is of direct interest to industrial processes and therefore affects the competitiveness of industry; consequently it is of strategic importance.

In several calls for proposals, the Commission has invited research teams to submit proposals for research carried out in cooperation.

The Community support offered is mainly intended to finance the additional costs involved in cooperation (such as travel and subsistence costs). The projects themselves are financed nationally.

The calls for proposals were published in the Official Journal *) or distributed through national channels. By the end of April, 18 projects, some combining several of the proposals received, had been selected. The total amount allocated by the Commission to support these 18 projects is around 1 million ECU. In all, they involve coordination of the work of more than 250 research scientists, not counting assistance by students, in almost 80 different centres or research teams. The Community contributions are paid as the work progresses.

This policy will be continued in the future with the remaining funds. The calls for proposals cover in turn specific subjects recognized as meriting priority under an overall strategy defined by the scientific community created as a result of these activities.

In accordance with the Council's instructions, the Commission has negotiated with the non-Community countries in COST an agreement associating them with the teleinformatics project (COST 11 bis Agreement). So far Sweden, Finland, Norway, Yugoslavia and Spain are officially associated. The COST 11 bis Concertation Committee is helping to implement the project in coordination with CREST's Subcommittee on Data Processing. A project leader has also been recruited and is working at the Ispra establishment of the Joint Research Centre.

For the future, three new fields have been singled out from those in which initial projects could be undertaken with the reserve budget for the current programme and in which projects of wider scope could be proposed.

*) for real time, OJ N° C324, 12 December 1980
for teleinformatics, OJ N° C340, 31 December 1980.

These are ergonomics, educational applications of the new information technologies and artificial intelligence. For the last field a study commissioned from an outside consultant has described the situation and suggested projects. The implementation of some of these projects, especially those concerning an image processing centre and a research network, is now being examined.

Under a training programme separate from the four-year programme, the Commission is involved in the organization and partial financing of advanced data-processing courses. About ten two-week courses a year are held and the aim is to collect in consolidated form the results of recent research in a specific area of computing or its applications, so that they can later be included in normal university courses, thus speeding up the transfer towards applications. These aims are included in the Annex to the programme (see 1.3.1 (e)(i)). These courses now have an excellent reputation and publication of the proceedings increases their impact.

2.4.6. Medium-term study of data processing

This work, which produced the first report on developments in the data processing sector in the Community *), had to be shelved for lack of staff until 1979. In the course of 1979, the foundations for the annual preparation of European data-processing indicators were laid down by contract which was updated in 1981.

*) COM(76) 524 final of 27 October 1979, Volume III.

A further updating was carried out in March 1982 together with an extension involving more detailed definition of some fields (data processing expenditure, industrial subsectors) and an initial approach to disaggregation at Member State level.

A network of liaison officers in the Member States has been set up to help the Commission with the collection and disaggregation of subsequent statistics.

For information, the Commission launched in 1980 (from a different budget) a feasibility study on indicators for the new information technologies.

These partial indicators (1981), which are intended to extend the data-processing indicators to cover all the information technologies, are now in preparation. The aim is to collect information and prepare indicators for two main sectors : telecommunications and the information market (in practice, data banks and bases). Initial results are expected by the end of July 1982. After the Advisory Committee had delivered a favourable opinion, a number of more specific studies were either purchased (multi-customer studies) or carried out and completed under contract. These relate to :

- (a) better knowledge of the market for information technologies and computerization in Europe,
- (b) the influence of technological choices on structures and their implications for society and employment,
- (c) the information technologies : new fields of application and their economic aspects,
- (d) better knowledge of technological developments and the relevant markets, especially for electronics and microelectronics,
- (e) the high-technology sector, electronics in Europe; its main aspects : industries, markets, users,
- (f) the videodisk : prospects for the development and use of the videodisk.

With more specific reference to microelectronic component technology, the Council, at its meeting on 7 December 1981, adopted the proposal for a Regulation submitted by the Commission which provides for the coordination at Community level of national measures in the field and for direct financial support. Research and development projects on production equipment, integrated circuits and CAD may receive contributions of 30-50% from the Commission, the conditions to be specified in the technical annex to the contracts.

The Regulation will apply for four years and its budget is 40 million ECU. The first call for proposals was published in May 1982 and it is planned to award aid to the selected projects at the end of 1982. The second call for proposals is scheduled for the beginning of 1983.

2.4.7. Effects of data processing on employment and its impact on society

At its meeting on 26 February 1980, the Standing Committee on Employment came out in favour of the Commission proposal to set up a European Pool of Studies and Analyses (EPOS) in the field of the new information technologies and employment, under the responsibility of the Directorate-General for Employment, Social Affairs and Education.

The pool has three main functions :

- (a) to collect and evaluate completed research and significant development work at national level,
- (b) to compare and circulate the results of such research and development and make summaries available to those who take part in political and scientific debates, in particular employers and trade unions,
- (c) to play a more directional role, in future, vis-à-vis factual studies and analyses.

One of the main aims of EPOS has been attained with the publication of a monthly bulletin. The fifth issue appeared in April 1982.

Rapid dissemination of the results of research conducted in and outside the Community is also possible. Information is collected by a network of liaison officers in the Member States.

Following the meeting of the Standing Committee on Employment in November 1981, the Commission has recently adopted a communication to the Council on the vocational training and new information technologies which is designed to supplement and reinforce Member State policies on training by means of Community measures *).

The multiannual programme has contributed to these activities by means of studies covering the social aspects of the introduction of the new information technologies (see list in the Annex).

2.4.8. Data security and confidentiality

The study on data security and confidentiality carried out as part of the second set of priority projects (see Chapter 1, paragraph 1.2.2. of this report) was the first stage of activities which are to be continued under the multiannual programme. A second stage therefore started on 1 January 1981 with a budget of approximately 955 000 ECU, financed in equal shares by the Commission and the participating organizations, Agence pour le développement de l'Informatique (ADI), France, Gesellschaft für Mathematik und Datenverarbeitung (GMD), Germany, and National Computing Centre (NCC), United Kingdom.

The aims of this new study are to examine :

- requirements for harmonization of legislation and recommendations and standards concerning data confidentiality;
- control of data security, including technical feasibility and financial implications;
- impact of confidentiality and security measures.

The specific subjects studied will be as follows :

- protection of data in the light of the new information and communication technologies;
- technologies applicable to data protection and security;
- personal data and the automatic decision-making process;
- the impact of international data protection regulations on sectors most concerned with information;
- system design and data protection;
- freedom of access to information and data protection;
- data banks, distributed systems and data protection.

The study is planned to last 32 months; results are therefore expected by August 1983.

2.4.9. Legal protection of computer programs

Although as yet no work has been done on this for lack of staff, DG III has started a preliminary survey in the industry to identify more precisely the shortcomings in software protection that those concerned find most serious. There are plans for more substantial developments in the course of 1982-1983.

2.5. PART 2 OF THE PROGRAMME - PROMOTION MEASURES

2.5.1. Origins of the projects; finance ceilings

The support mechanism set up by Council Regulation (EEC) N° 1996/79 allows the Community to support projects of interest to the Community stemming from various sources :

- projects based on earlier studies under previous programmes such as the Ada project stemming from the portability studies;

- projects proposed either by users in at least two Member States or by users and undertakings in at least two Member States or by undertakings, in particular associations comprising at least two undertakings established in different Member States. The Commission may itself propose projects. They may be feasibility studies, pilot projects, pre-development studies in which commercial interest is not the dominant factor or development projects of public interest; in the first and last cases, the financing may be as much as 100% of the total cost of the project.

Pilot projects, pre-development studies and development projects stemming from undertakings or users may not receive more than 50% of the total cost of the project. In the case of projects or studies culminating in a commercial product, contracts are concluded in the form of loans with or without interest.

The Advisory Committee, acting by a qualified majority, gives its opinion on projects proposed by the Commission; if its opinion is unfavourable, the Commission transmits the proposal to the Council which acts by a qualified majority.

2.5.2. Importance of the support mechanism

This scheme, devised to back up the European industry's efforts in the way of innovation, and to encourage the creation and accelerate the opening up of markets by means of cooperation in the field of development between companies and users in different Member States, would be pointless if it did not operate rapidly and efficiently.

Since the Council Decision, therefore, the Commission has made every effort to ensure that the working of the scheme is not jeopardized by the staff shortages already mentioned. In February 1980 it made a first call for proposals, the results of which will be discussed below, and did its utmost to select and implement proposals quickly. A second call was published in March 1981; examination of these proposals was completed in July and the results will be discussed below.

In order to act so quickly, strict organizational measures had to be taken and a heavy and difficult workload has been placed on existing staff. The new staff members recruited on the temporary posts mentioned in the introduction to this report did not arrive until the proposals received in response to the second call had already been examined.

2.5.3. First call for proposals (February 1980)

2.5.3.1. General results

This call, published in the Official Journal of the Communities (*), resulted in 64 proposals, 60 of which were acceptable and were evaluated by independent experts selected with the help of the Advisory Committee. The United Kingdom was the best represented with 40 proposals, but projects came from all the Member States and from both users and the industry. The proposals covered a wide range of products and applications.

In the end 14 technically viable projects meeting the criteria laid down by the Council were selected, in some cases with modifications or additional conditions, and the Advisory Committee delivered a favourable opinion on them.

(*) OJ N° C 46 of 23 February 1980.

There are four feasibility studies, one predevelopment study, seven development projects, one pilot project and one feasibility study followed by a development project, amounting to a total of 4 885 000 ECU.

Apart from one project which was delayed by the contractor and another withdrawn by the proposes, all the projects have now been launched for a total of 4.04 Mio ECU.

2.5.3.2. Brief description of the selected projects

Proposal N° 1/3 - This is a maritime communication and information study being undertaken for a number of shipping companies by the Europese Vereniging voor Scheepvaartinformatica (EASI)*, coordinated by the Commission with the projects of other bodies such as EVHA (European Port Data Processing Association). The kproject involves five feasibility studies for which EASI has announced a call for tenders.**)

Proposal N° 1/4 - This is for the development of an integrated turnkey design and production control system for small and medium-sized shipyards. It is being developed by Italcantieri S.p.a. of Italy in partnership with Naval Consult Holland BV of the Netherlands.

Proposal N° 1/9 - This is for a robotics study being undertaken by Remek Micro Electronics Limited, United Kingdom, in partnership with Mars Money Systems GmbH of Germany. This study led to a congress on robotics held at Cranfield Institute of Technology in February 1982.

Proposal N° 1/10 - This is for a feasibility study into a software package for bulk updating of all European Videotex systems to be undertaken by Langton Information Systems Ltd., United Kingdom, in collaboration with the videotex departments of a number of Community PTT administrations. As the projects yielded good results it has been followed by the development of the software package.

*) EASI : European Association for Shipping Informatics.

***) OJ N° C 39 of 24 February 1981.

Proposal N° 1/11 - This is for the development of an integrated computerized airport management and maintenance system for small and medium-sized airports being undertaken by COPS, Ireland, in collaboration with Aer Rianta/Irish Airports of Dublin, Birmingham Airport Authority in the United Kingdom, Marseille Airport Authority in France and SGI in Belgium.

Proposal N° 1/12 - This is for the development of a generalized terminal for open systems interconnection by RC Computer A/S, Denmark, in collaboration with SIA Ganymede in the United Kingdom.

Proposal N° 1/19 - This project is for the development of a system for the self-implementation by users of computer programs without recourse to expert programmers being undertaken by Nixdorf Computer AG, Germany, in collaboration with Nixdorf Computer BV (Netherlands), Fa Knapp und Weigels (Germany) and Fa Bessman (Netherlands).

Proposal N° 1/30 - This is for a feasibility and market study of software tools for converting Pascal programs into Ada being undertaken by Olivetti and Co S.p.a. of Italy in collaboration with System Programming Ltd in the United Kingdom.

Proposal N° 1/39 - This is for the development of a voice input system for medical records intended for hospitals and general practitioners. It is being undertaken by Christian Rovsing International A/S, Denmark, in partnership with Charing Cross Hospital of London. The project will use under a subcontract the speech recognition knowhow of the National Physical Laboratory of Teddington, United Kingdom, and is based on earlier work at Charing Cross Hospital.

Proposal N° 1/51 - This is for the development of software to use prepared data bases of road networks for generating road travel paths (Autoroute) being undertaken by Rainsford Computing Services Ltd., Ireland, in collaboration with Hobnob Ltd., United Kingdom.

Proposal N° 1/58 - This is for an APL interpreter for minicomputers, being undertaken by GFI of France in collaboration with Scicon of the United Kingdom and Informatical Society Italia of Italy.

Proposal N° 1/60 - This is for the development of a microprocessor-based control system for space heating using alternative energies being undertaken by Sterialux S.A., Luxembourg, in collaboration with the Fondation Universitaire Luxembourgeoise in Belgium.

2.5.3.3. Description of the projects launched at the Commission's instigation

(a) Two projects, the definition of which was already well advanced following studies carried out in the second set of projects (see 1.5), were adopted on the Commission's proposal in 1980.

- The project on European Ports : study of the definitive system and, as one of its first applications, study of the automatic exchange of data on dangerous goods.

This project was undertaken by EVHA (European Port Data Processing Association) (*). Following invitation to tender for the pilot system (**), a contract has been awarded.

- The European Hydrological System (EHS) : a project to develop a computing system for the generation and use of hydrological models described in deterministic terms and distributed in space. It is being conducted by the Association for the European Hydrological System (AEHS), made up of the Danish Hydrological Institute, SOGREAH of France, and the Institute of Hydrology at Wallingford, United Kingdom. This system is now being tested and is expected to be available by the end of 1982.

The model could provide an extremely useful tool for a range of major civil engineering projects (dams, irrigation schemes, etc.) and its use is expected to enhance the reputation of civil engineers and contractors in the Community. The potential market for the model, especially in developing countries, is estimated at around 20 000 million ECU.

(*) Europese Vereniging voor Haveninformatica (EVHA) - European Port Data Processing Association (formerly ASIPE see 1.5(2)).

(**) OJ N° S 97 of 28 May 1980.

(b) The Commission later launched other projects :

The two most important contracts, accounting for a total of 6.4 million ECU, concern the development of software for the Ada language, the importance of which has already been explained in 2.3.

A contract for 3.74 million ECU has been concluded with the Franco-German consortium formed by CII-Honeywell Bull, Alsys and Siemens and another for 2.66 million ECU with the Italo-Danish consortium consisting of C. Rovsing, Danish Datamatics Center and Olivetti.

The British software industry will also participate in the latter contract through the company Systems Designers Limited, which will be a sub-contractor.

The two projects, which will receive 50 % Community support, will be completed in 1983. The Franco-German project covers the development of a root compiler for Ada, including portability for micro and mini-computers and larger computers manufactured in Europe and elsewhere. Two back-ends will also be developed under the contract.

The Italo-Danish project is intended to develop compilers based on the Franco-German root compiler and a programming system to support the Ada environment. Also the feasibility study mentioned in 2.5.3.2. (proposal N° 1/30) comes within the general context of the project.

(c) Two other projects are extensions of studies carried out in the second set of priority activities (see Chapter 1, 1.5 (3)) on computer-aided design (CAD) applied to electronics and construction.

i) The study on electronics is a predevelopment study on a components data bank and modelling for digital logic circuits. It is being carried out by a team of experts with the aid of a technical committee under the supervision of the Advisory Committee. The project is being managed jointly by NV Philips of the Netherlands and MBLE NV of Belgium.

Two predevelopment studies on construction have been launched : one to develop specifications for a work place for architects and engineers, the other on the specification of input-output conventions for industrial users.

The project is being administered by the Construction Industry Computing Association in the United Kingdom which has 170 members in 14 different countries, in cooperation with the Rechen- und Entwicklungsinstitut für EDV im Bauwesen Rib e.V. of Germany.

2.5.4. Second call for proposals (March 1981)

2.5.4.1. General results

This call, published in the Official Journal of the European Communities *) resulted in 76 proposals which were added to the seven proposals received too late to be evaluated in 1980. These 83 proposals were evaluated by independent experts. The United Kingdom was the best represented with 57 proposals, but projects came from all the Member States, including three from Greece, and from both users and the industry. The proposals covered a wide range of products and applications.

In the end, 22 technically viable projects meeting the criteria laid down by the Council were selected, in some cases with modifications or additional conditions. The Advisory Committee delivered a favourable opinion on 18 of them, but not on two others which, at the request of the Netherlands delegation, were submitted to the Council for a decision in accordance with Article 8 of Council Regulation N° 1996/79 instituting the programme. It postponed an opinion on two others, one of which is still in abeyance, while the other has since been approved after being revised in the light of the Committee's comments.

*) OJ N° C 48 of 7 March 1981.

There are 17 feasibility studies, two predevelopment studies, one pilot project, one development project and one project comprising a feasibility study and a development phase, amounting to a total of 9 075 000 ECU, including aid of 2.7 million ECU.

2.5.4.2. Brief description of the selected projects

Proposal N° 2/4 : This is a feasibility study of a site-dependent computer-aided system for the evaluation of the impact of spatial planning (roads, power stations, etc) on landscape ecological potentials, to be undertaken by the Institut für Kerntechnik und Energiewandlung e.V. (IKE e.V.) of Stuttgart, in cooperation with the University of Stuttgart and the Transport Technology Department of the University Democrit of Xanthi, Greece.

Proposal N° 2/11 - This is a feasibility study on aid for the development and maintenance of software in the Ada environment to be undertaken by Systems Designers Ltd of the United Kingdom in cooperation with TECSI Software of France.

Proposal N° 2/14 - This is a study on the application of UNCLE (Universal Nice Command Language Environment) to meet Ada-Europe support environment requirements, undertaken by Trinity College Dublin in Ireland in association with the University of Leeds, United Kingdom, and Fernuniversität Hagen in Germany.

Proposal N° 2/15 - A predevelopment study on data processing and information exchange in European Chambers of Commerce, undertaken by the Permanent Conference of Chambers of Commerce and Industry of the EEC. This is a follow-up to a study conducted as part of the second set of priority projects (see 1.5.6.). It was launched at the Commission's instigation.

Proposal N° 2/16 - Feasibility study on an interactive microcomputer system for planning the collection of urban refuse, undertaken by the Local Government Operational Research Unit of the Royal Institute of Public Administration, United Kingdom, in association with Dansk Data Elektronik (DDE) of Denmark and the Bureau d'Etudes sur l'Urbanisme et l'Equipement (BETURE) of France.

Proposal N° 2/17 - Study of guidelines for the design of large scientific libraries in Ada, undertaken by the National Physical Laboratory, United Kingdom, in association with the Mathematisch Centrum, Netherlands.

Proposal N° 2/21 - Pilot project on videotex for consumers' associations, undertaken by the British, Belgian and German consumers' associations. This project was launched at the Commission's instigation.

Proposal N° 2/27 - Study for a system for teaching programming language concepts and software development methods, undertaken by the Consorzio Interuniversitario Lombardo per la Elaborazione Automatica (CILEA), Italy, in association with the Compagnie d'Assistance Informatique de l'Enseignement (CASSIE) of France and Syntax S.p.A of Italy.

Proposal N° 2/28 - Feasibility study on a portable multi-microprocessor programming line (MMPL) software product for industrial applications, undertaken by Zeltron Automazione S.p.A. of Italy in association with the Centro Informazione Studi Esperienze S.p.A. (CISE) of Italy and Systems Programming Ltd (SPL) of the United Kingdom.

Proposals N° 2/29 - Study on a viticultural programme, undertaken by Mittlere Datentechnik Organisationsberatung GmbH, Germany, in association with winegrowers and merchants in all the wine-producing countries of the European Community.

Proposal N° 2/33 - Study of methods for defining, cataloguing and retrieving specifications of abstract data types, undertaken by Standard Telecommunications Laboratories Ltd of the United Kingdom in association with the Doctor Meher Laboratorium of the Post, Telefoon en Telegraphie, Netherlands.

Proposal N° 2/35 - Study of supporting CHILL on the Ada programming support environment, funded by the Commission under the first call for proposals (see 2.5.3.3. (b)), undertaken by GEC Telecommunications Ltd, United Kingdom, in association with the Dansk Datamatik Center, Denmark.

Proposal N° 2/39 - Predevelopment study on testing techniques for implementation of high-level protocols, undertaken by the Agence pour le Développement de l'Informatique (ADI) of France, the National Physical Laboratory (NKPL) in the United Kingdom and the Gesellschaft für Mathematik und Datenverarbeitung (GMD) of Germany, with the cooperation of the Ispra Establishment of the Commission's Joint Research Centre.

Proposal N° 2/40 - Feasibility study on fullchannel teletext systems, undertaken by Logica Ltd, United Kingdom, in association with G.S. General Systems SpA, Italy.

Proposal N° 2/53 - Feasibility study on comparative financial accounting software, undertaken by the University of East Anglia, United Kingdom, with the cooperation of Belgian, French, German and Dutch universities and institutes.

Proposal N° 56 - Feasibility study on the applications of distributed data-base models to EEC transborder medical data flow, undertaken by the Ulster Polytechnik, United Kingdom, in cooperation with University College, Galway, Ireland.

Proposal N° 2/66 - Feasibility study on a data base on energy consumption in buildings, undertaken by SWD Software Design GmbH, Germany, in association with LIège University, Belgium, and RPA, France.

Proposal N° 2/73 - Development project for OSCAR (Outil de Simulation pour la Conception d'une Architecture Répartie - simulation tool for distributed architecture design undertaken by ECA Automation, France, in association with the Rogowski Institut für Elektrotechnik, Theinisch-Westfälische Technische Hochschule, Germany.

Proposal N° 2/82 - Feasibility study on the conversion of RTL/2 to Ada and the production of a manual on the conversion, undertaken by Systems Programming Ltd (SPL) International, United Kingdom, in association with Hollandse Signaalapparaten BV, Netherlands.

2.6. STATUS OF THE BUDGET

The status of the budget for the programme (commitments and payments) as at 31 May 1982 and as planned up to 31 December 1982 is shown in Table 2 below.

T A B L E N° 2

Budget - Itam 7702 : Status at 31 May 1982 (ECU)

Programme	Commitments (1979 - 81 - 82)			Payments (1979 - 81 - 82)		
	Budget	Planned up to 31.12.82	Status at 31.5.82	Budget	Planned up to 31.12.82	Actual Status at 31.5.82
Part 1		5 518 131	3 787 616		4 083 851	2 186 659
Part 2		15 000 000	13 226 693		12 456 361	8 642 339
STAFF AND ADMINISTRATION		1 389 088 1 300 000	1 280 962 1 025 000		1 389 088 1 300 000	826 695 962 441
TOTAL	25.000.000	23 207 219	19 318 504	20 000 000	19 229 300	12 618 134

LIST OF CONTRACTS AND REPORTS ON STUDIES CARRIED OUT ON BEHALF OF THE COMMISSION
UNDER THE COMMUNITY'S DATA-PROCESSING PROGRAMME

Comment :

Those studies for which a final report has been submitted are mentioned with the date of receipt.
For on-going contracts, the end-date is not mentioned.
The sums quoted correspond to financial commitments until 31st May 1982.

<u>Title</u>	<u>Contractor/Author</u>	<u>ECU</u>	<u>Date</u>	<u>Lang.</u>
<u>FIRST PRIORITY ACTIVITIES (*)</u>				
<u>STUDY ON THE SETTING UP OF A DATA BANK FOR MATCHING ORGANS AND BLOOD</u> REPORT ON THE EUROPEAN ORGAN- AND BLOOD MATCHING STUDY TEAM FEASIBILITY STUDY FOR LINKING EUROPEAN COMPUTER CENTERS FOR EXCHANGE OF ORGANS AND BLOOD	Commission Mescon International BV, Regnecentralen	 30.000	 04.77 09.77	 EN EN
<u>STUDY OF REQUIREMENTS IN THE FIELD OF LEGAL DOCUMENT RETRIEVAL SYSTEMS</u> TECHNICAL STUDY ON LEGAL INFORMATION RETRIEVAL : .Report on European Community Institutions System Development, .Report on Development of Systems within the Member States, .Report on Use of Networks, .Report on Standards for data exchange, .Report on System Design Specification (Vol. I and II), .Report on Surveys of Users (Vol. I,II and III)	SFS GmbH, Sema Informatique,	249.964	12.78	EN

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(*) Council Decision N° 76/632 of 22.7.76 O.J. N° L 223/11 of 16.8.76 cf. COM(78)761 final - First Annual report 15/01/79.

<u>COMPUTER AIDED DESIGN (ELECTRONICS)</u> CAD ELECTRONIC STUDY PROJECT	Saget Luxembourg Sarl, Plessey, Sema Informatique, Nixdorf, Brunel University	229.956	23.08.78	EN
CAD STUDY	Arthur Llewelyn	14.816	78	EN
<u>COMPUTER AIDED DESIGN (CONSTRUCTION MANAGEMENT)</u> CAD SYSTEMS AND THEIR RELATION WITH CONSTRUCTION MANAGEMENT, EEC Study project:-Task 1 report (3 vol.) -Task 2 report -Appendix 1 and Appendix 2	CIAD (NL), International Research and Development Co Ltd (UK), TNO-IBBC (NL), Atkins Research and Development (UK), Diaforsk (DK), DG Walford and Partners(UK)	219.330	10.78	EN
THE EFFECTIVE USE OF COMPUTERS WITHIN THE BUILDING INDUSTRIES OF THE EUROPEAN COMMUNITY	CIAD (NL), International Research and Development Co Ltd (UK), TNO-IBBC (NL), Atkins Research and Development (UK), Diaforsk (DK), DG Walford and Partners(UK)	241.281	03.79	EN

<p><u>SECOND SET OF PRIORITY ACTIVITIES (*)</u></p> <p><u>SOFTWARE PORTABILITY</u></p> <p>COMMON SOFTWARE INTERFACE FOR MINICOMPUTERS</p> <ul style="list-style-type: none"> . Intermediate report for main task I (2 vol.) . Intermediate report for main task II . Intermediate report for main task III . Final report 	<p>Christian Rovsing International A/S (Christian Rovsing, Leasco and Selenia)</p>	<p>112.466</p>	<p>08.78</p>	<p>EN</p>
<p>PROJECTS IN THE FIELD OF SOFTWARE PORTABILITY, Study II : CONVERSION TOOLS :</p> <ul style="list-style-type: none"> . Report on main task 1 . Report on main task 2 . Management summary of recommendations 	<p>Software Sciences Ltd</p>	<p>74.296</p>	<p>09.79</p>	<p>EN</p>
<p>ESL (European Systems Implementation Language):</p> <ul style="list-style-type: none"> . Report on main task I : characteristics of ESL (05.79) . Report on main task II: Language evaluation (10.79) . Final Report (11.79) 	<p>Siemens, CII Honeywell Bull</p>	<p>90.286</p>	<p>11.79</p>	<p>EN</p>
<p><u>USE OF INFORMATICS</u></p> <p>USAGE OF PROGRAMMATION TECHNIQUES IN EUROPE</p> <ul style="list-style-type: none"> . Final Report . Summary Report 	<p>GMD (Gesellschaft für Mathematik und Datenverarbeitung (RFA), IRIA (Institut de recherche en informatique et en automatique (FR), NCC (The National Computing Centre (UK)</p>	<p>51.000</p>	<p>01.80</p>	<p>FR, EN, DE</p>

(*) Council Decision No 77/165 EEC, 77/616 EEC, 77/617 EEC, 77/618 EEC, 77/619 EEC of 27/9/77
 O.J. No L255 of 6.10.77

<p>DATA SECURITY AND CONFIDENTIALITY</p> <ul style="list-style-type: none"> . Vol.1:Quality and quantity of transborder data flows . Vol.2:Organisation and method of operation of the data protection authorities . Vol.3:The physical person / non physical person problem . Vol.4:International economic aspects of data protections . Vol.5:Technical aspects of the right of access . Vol.6:Data protection inspection . Summary report 	<p>GMD (Gesellschaft für Mathematik und Datenverarbeitung (RFA), IRIA (Institut de Recherche en Informatique et en Automatique (FR), NCC (the National Computing Centre (UK),</p>	<p>90.000</p>	<p>01.80</p>	<p>FR,EN,DE</p>
<p>EVALUATION AND IMPLEMENTATION OF DATABASE SYSTEMS</p> <ul style="list-style-type: none"> . Experience of DBMS (Database Management System) Usage in Europe (06.79) (EN,DE + FR) . Database software descriptions,Part 1:Systems for small machines (11.79) . Database software descriptions,Part 2:Main-frame systems (01.80) (2 vol.) . Selection and evaluation of database management systems (01.80) . Case studies (06.80) . Database design tools (06.80) . The use of data dictionaries : A survey (06.80) . Performance evaluation of database management systems (08.80) 	<p>GMD (Gesellschaft für Mathematik und Datenverarbeitung (RFA), IRIA (Institut de Recherche en Informatique et en Automatique (FR), NCC (the National Computing Centre (UK), CNR (Consiglio Nazionale delle Ricerche (IT).</p>	<p>685.294</p>	<p>06.79 09.80</p>	<p>EN,DE</p>

<ul style="list-style-type: none"> . Database administration : experience from a European Survey (01.80) . Maintenance of database applications (01.80) . DBMS Standards (07.80) . The portability of database management systems (06.80) . Summary report (09.80) 				
<p><u>CADDIA (*)</u></p> <p>CADDIA : Main Report & Appendices (3 vol.)</p> <p>CADDIA : SUMMARY OF THE MAIN REPORT : Co-operation in automation of data and documentation for Imports/Exports and Agriculture</p> <p>CADDIA : Summary, prepared by the services of the Commission, of the final report of the Consortium of external consultants who conducted the feasibility study (III/828/81)</p> <p>CADDIA : III/829/81 PART A: The response of the services of the Commission to the final report of the Consortium of consultants who conducted the feasibility study PART B: An implementation strategy</p>	<p>CADDIA</p> <p>CADDIA</p> <p>Commission</p> <p>Commission</p>	<p>493.027</p> <p></p> <p></p> <p></p>	<p>12.80</p> <p>12.80</p> <p>05.81</p> <p>05.81</p>	<p>EN</p> <p>EN,FR, DE,NL, IT,DA, GR</p> <p>EN,FR, DE,NL, IT,DA, GR</p> <p>EN,FR, DE,NL, IT,DA, GR</p>

(*) CADDIA : Coopération sur l'Automatisation des Documents et des Données Import-export et pour l'Agriculture

<p><u>HIGH-SPEED DATA-TRANSMISSION</u></p> <p>Experimental application of data transmission using the "Orbital Test Satellite" (OTS)</p>	<p>European Space Agency</p>	<p>420.000</p>		
<p><u>EXPLORATORY STUDIES</u></p> <p>TECHNICAL REPORT SHE (Système hydrologique européen)</p>	<p>Association for the European Hydrologic System</p>	<p>24.196</p>	<p>12.78</p>	<p>EN</p>
<p>DATA PROCESSING STUDY IN THE PORT AND MARITIME FIELD, management study</p>	<p>ASIPE (Association for European Port Information Systems)</p>	<p>29.856</p>	<p>12.73</p>	<p>EN</p>
<p>EXPLORATORY INVESTIGATION IN MARITIME COMMUNICATION AND INFORMATION SYSTEMS : management report</p>	<p>Informal Study Team</p>	<p>15.097</p>	<p>07.79</p>	<p>EN</p>
<p>EXPLORATORY INVESTIGATION ON DATA PROCESSING APPLICATIONS IN CHAMBERS OF COMMERCE AND EXTERNAL TRADE DEPARTMENTS, final report to the Commission of the European Communities</p>	<p>CERVED Spa</p>	<p>34.350</p>	<p>12.80</p>	<p>EN</p>
<p>INTERFACE POINT A POINT</p>	<p>BNI (Bureau d'orientation de la Normalisation en Informatique)</p>	<p>28.670</p>	<p>01.81</p>	<p>FR</p>
<p><u>MISCELLANEOUS</u></p> <p>LA POLITIQUE DE PROMOTION, ENCOURAGEMENT ET SOUTIEN A LA RECHERCHE ET AU DEVELOPPEMENT EN MATIERE DE TECHNOLOGIES DE L'INFORMATION ET DE LA COMMUNICATION EN RFA</p>	<p>Dr. Kalbhen</p>	<p>3.420</p>	<p>31.07.79</p>	<p>FR</p>

<u>ADA LANGUAGE</u>				
Ada compiler validation in Europe	GMD NPL BNI	122.600		EN
Interpretative compilation for Ada	MBP	50.000		EN
<u>STANDARDIZATION POLICY</u>				
A study of the definition of a multilanguage keyboard	John de Smith Partners Ltd (London) Fraunhofer Institut (Stuttgart)	152.000		EN
State of the art study on the standardization of (level 4) transport layer of the ISO/TC97/SC16 reference model for open systems interconnection	Vissers (NL)	19.683		EN
Study on Teletex services in support of text communication	Langton	111.082	30.06.82	EN

TECHNOLOGIES AND ADVANCED APPLICATIONS

Japanese fifth generation computer system	Ostasien-Institut	22.018	15.03.82	EN
Japan's breakthrough in basic VLSI technology, Japan's VLSI reliability strategy Japan's basic VLSI technology and quality control	Ostasien-Institut	20.438	02.82	EN

COLLABORATION IN RESEARCH AND DEVELOPMENT

Continuation of the study "Programming Techniques"	GMD NCC	1.038.069		EN
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MEDIUM-TERM STUDY OF THE DATA PROCESSING SECTOR

- Microelectronics studies

Computer aided design for VSLI (*) 1. Study on testing 2. Study on languages and data-structure 3. Study on architecture 4. Study on device modeling	Experts of the industry	89.622 86.503 70.715 63.420	09.80	EN
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EFFECTS OF DATA PROCESSING ON EMPLOYMENT

Employment consequences of the increased use of data processing in services	Prof. Loveridge Prof. Baethge	40.461		
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CONFIDENTIALITY AND DATA SECURITY

Continuation of the study on "Confidentiality and Security of information"	GMD NCC ADI	477.621		EN FR
Specification and development of software systems	GMD NCC	1.038.069		EN

(*) Studies reserved for the relevant services of the national administrations.

MEDIUM-TERM STUDY OF THE DATA PROCESSING SECTOR

D.P. Indicator in the E.E.C 1980	PAC (Pierre Audoin Conseil)	10.798	08.80	FR EN
D.P. Indicator in the E.E.C. 1981	PAC	30.909	30.03.82	FR EN
Survey on data processing expenditures of European users, final report	PAC	9.816	05.81	FR EN
Third annual survey of the computing services industry in Europe (1979)	E.C.S.A. European Computing Services Association	12.179	12.79	FR EN
Fourth annual survey (1980)	E.C.S.A.	12.174	28.02.81	FR EN
Software skills survey in the E.E.C.	ORDA-B	34.837	30.01.82	EN
Multi-clients	Mackintosh	32.121	26.06.81	EN

MINI-STUDIES

Advanced information technologies - current and future development, position of European and non-European suppliers	IDC International Data Corporation	3.447	15.12.81	EN
Mutations technologiques et modifications structurelles dans l'industrie du fait de l'introduction des N.T.I.	Université de Strasbourg (B.E.T.A.)	28.000	15.04.82	FR
Automatisation industrielle et robotique - mutations technologiques et impact sur l'emploi	Université de Strasbourg (B.E.T.A.)	3.000	30.10.81	FR
Study of the impact of different technologies on the structure of industry and their consequences for society and employment - The contribution of new information technology for European education and professional training	Metra Consulting Group (London)	2.819	15.11.81	EN
Impact économique et social de l'informatique sur l'emploi et sur les postes de travail	CREA-BEL	4.401	15.12.81	FR
La place de l'informatique dans la politique de la main-d'oeuvre	Service Etude pour le Développement S.E.D.A.	3.896	15.11.81	FR

Macro and micro-economic modelling on information economy and its links with questions on employment	H. HERTZ INSTITUT	2.657	30.11.81	EN
Aspects majeurs de l'impact économique et social : applications nouvelles à l'enseignement et la formation en vue du développement des nouveaux services liés aux technologies de l'information. Banques de données, vidéodisque et micro-informatique.	Fondation Universitaire Luxembourgeoise (F.U.L.)	2.913	30.10.81	FR
Développement de l'utilisation des NTI y compris des nouveaux media dans le domaine des applications avancées à l'éducation et à l'enseignement	CASTAGNARY	34.609	1.11.82	FR
Synthesis of european studies on I.T.: New fields of application and their economical and social aspects	Institut für Politikprognose	2.859	31.03.82	EN
Panorama des problèmes que rencontre l'informatique dans Les P.V.D.	IDET-CEGOS	11.968	30.05.82	FR

MULTI-CLIENTS STUDIES

Eurodata reports : Data communication in W. Europe in the 80's Module 5 : the terminal market Module 7 : the market for modems and other data connections	LOGICA	15.065	18.11.81	EN
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ADV-Budgetanalyse 1. Wirtschaftszweiausgabe industrie 2. Branchengruppenausgabe, Handel, Banken, Versicherungen	DIEBOLD- Deutschland	2.279	20.8.81	DE
Specific areas of advanced appli- cation : "New types of services"	BUTLER COX S.A. II	3.171	15.12.81	EN
New applications of information technology for the home and for organizations	BUTLER COX S.A. II	2.898	3.12.81	EN
Perspectives de l'utilisation de la micro-informatique pour des applications individuelles et institutionnelles	LUSSATO	2.830	23.12.81	FR
Small earth stations - Information and communication for the home market - optical storage media	STATEGIC INCORPORATED	3.075	23.12.81	EN
Electronics in the Dev. World Point-of-sale systems Information retrieval systems	PREDICASTS	818	9.07.81	EN
Future of the Japanese electronic industry - Report 1980	FUSI CORPORATION (JEIDA)	374	9.07.81	EN
Information technology - New fields of application : the price differences between European, American and Japanese numerical control units for machine tools	CONSULTRONIQUE	5.880	30.11.81	FR

MISCELLANEOUS

Roboterie industrielle	CONSULTRONIQUE	75.000	02.82	F
Clauses applicables aux contrats de matériel et logiciel informatiques	ASAB	140.006	30.06.82	
Artificial intelligence and pattern recognition in Europe	RST-SIMON	9.667	24.12.81	

COLLABORATIVE RESEARCH WORK

A. REAL TIME DATA PROCESSING

<p>1. The use of ADA programming language for the specification of informatic systems</p>	<p>Imp. College London Univ. York Hatfield Polytechn. Techn. Univ. Graz CERN (Switzerland) BBC (Switzerland) Lab. des Ponts et Chaussées (F) CRIN (Nancy) Zentrallab. Julich Biomatik GmbH Univ. Karlsruhe ITT (U.K)</p>	<p>76.000</p>	
<p>2. Real Time Basis Environment</p>	<p>AERE - Harwell LADSEB -CNR(I) Hatfield Polytechn.(UK)</p>	<p>15.000</p>	
<p>3. A Real Time Local Area Network for Instrumentation Applications - MININET</p>	<p>Polytechn. of Central London Bologna Univ.</p>	<p>10.800</p>	
<p>4. Real Time Software Verification</p>	<p>GRS - Garching CNEN - (I) AERE - Harwell RISO (DK) KFZ -Karlsruhe</p>	<p>15.000</p>	
<p>5. Feasability study on Robust Real Time Distributed Systems:</p>	<p>SCICON (U.K) INRIA (F)</p>	<p>64.310</p>	

6. Real Time Optimisation and Control of Large Scale Systems using Distributed Computing Facilities	UMIST - Manchester LAAS - Toulouse Techn. Univ. München Univ. Patras (GR)	45.200	
7. Planning of a European Cooperation in Data Base Machine Architectures	Lehrstuhl D für Inf. Techn. Univ. Braunschweig INRIA (F) HONEYWELL BULL CNR (Roma) Norw. Inst. Techn. Trondheim Inst. für DV- Anlagen	4.000	
8. Distributed Real Time Systems	Imp. College of Science and Technology - London Techn. Univ. Berlin	28.500	

B. TELEINFORMATICS ("COST 11 BIS")

1. TRANSPORT LAYER	HMI (RFA) Agence de l'Informatique (F)	40.000	20/04/82
2. File Transfer applications and management	HMI (RFA) SUNET (Stockholm) UNINETT (Norway) CENTERNET (DK) NBST (Dublin) Univ. of Zagreb	98.000	

<p>3. Interconnection of Local computer based message systems by means of communication protocols - <u>GILT</u></p>	<p>INRIA (F) GMD (RFA) Univ. of Düsseldorf CSATA (I) AERE-HARWELL UNINETT (Norway) FOA (Sweden) SUNET (Stockholm) J. Stefan Inst. (YU)</p>	<p>48.000</p>	
<p>4. Minicomputer Communication Software</p>	<p>I CILEA - Milano SRCE - Zagreb</p>	<p>5.700</p>	
<p>5. Service Specifications for Local Area Network</p>	<p>Imp. College London Univ. di Pavia Fraunhofer Inst. Twente Univ. HMI - Berlin CNUCE -(I) INRIA (F) M. Pupin Inst. -Belgrado Polytechn. of Central London Techn. Res. Centre -(Finland)</p>	<p>113.600</p>	
<p>6. Interworking between LAN using satellite links and X 25 public services</p>	<p>CERN (Switzerland) CENTERNET (DK) CNUCE (I) JRC (Ispra) NADIR PROJECT (F) Rutherford Laboratory (U.K)</p>	<p>86.000</p>	

<p>7. Formal Description Techniques- Temporal Ordering Specification</p>	<p>Twente Univ. RHIN HMI Univ. Stuttgart Univ. Catania</p>	<p>64.000</p>	
<p>8. Formal Description Techniques - Architecture and extended finite state descriptions</p>	<p>CREI - Politecnico di Milano RHIN (Agence de l'Informatique-F) HMI Inst. of Technology - Uppsula(Sweden) Inst. of Electrotecnico -Catania (I) Techn. Res. Centre (Finland)</p>	<p>63.000</p>	
<p>9. High Speed LAN - Design and Services</p>	<p>DTH -Copenhagen CNUCE (I) J. Stefan Inst. (YU) CCR</p>	<p>70.000</p>	

PROMOTION MEASURES

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Projects launched at the Commission's initiative

European ports' information system and pilot network (pre-development study)	Europese Vereniging voor Haven-informatika (EVHA)
European Hydrological System (SHE) (development project)	Association pour le Système Hydrologique Européen (ASHE)
Development of an Ada root-compiler and two back-end compilers	ALSYS S.A. CII-Honeywell Bull S.A. Siemens A.G.
Development of compilers and programming support environment for Ada	Olivetti SPA Christian Rovsing Dansk Datamatics Center
Computer-aided design (CAD) in construction (étude)	Construction Industry Computing Association (CICA) Rechen- und Entwicklungsinstitut für EDV in Bauwesen (R.I.B.) E.V.
Component-model data-bank (étude)	Philips N.V. MBLE N.V.

Projects supported following the first call for proposals (*)

<p>Maritime Communication and Information System (5 feasibility studies)</p>	<p>European Association for Shipping Informatics (EASI)</p>
<p>Integrated Design and Production-control turnkey system for small and medium-sized shipyards (development project)</p>	<p>Italcantieri SPA Navalconsult Holland B.V.</p>
<p>Heuristic programming and general control of a high-speed robotic assembly system (pre-development study)</p>	<p>REMEK Micro-electronics Ltd. Mars Money Systems</p>
<p>PREVIEW II - a package for bulk updating of all European Videotex systems (feasibility study)</p>	<p>Langton Information Systems Ltd. British, Netherlands, German and Danish PTT's</p>
<p>Integrated Computerised Airport Management and Maintenance System (development project)</p>	<p>C.O.P.S. Ltd. Aer Rianta Teoranta S.G.I. s.a. Birmingham Airport Aéroport de Marseille</p>

(*) O.J. C46 of 23.2.1980

<p>Multinational concept for user-oriented self-implementation methods (MUCASEM) (development project)</p>	<p>Nixdorf Computer A.G. Nixdorf Computer B.V. Fa Knapp und Weigele Faboesman</p>
<p>Generalised Terminal for Open Systems Interconnection (development project)</p>	<p>RC Computer A/S SIA - Ganymede</p>
<p>Conversion aids from PASCAL to Ada (feasibility study)</p>	<p>Olivetti + Co. SPA Systems Programming Ltd (SPL)</p>
<p>Voice Input System for Medical Records (development project)</p>	<p>Christian Rovsing Charing Cross Hospital Medical School National Physical Laboratory</p>
<p>"Autoroute" system (development project)</p>	<p>Rainsford Computing Services Ltd. Hobnob Ltd.</p>
<p>APL interpreter for mini-computers (development project)</p>	<p>Groupe Français d'Informatique (GFI) SCICON Informatical Society Italia</p>
<p>Realisation of a micro-processor-based thermal regulation system for heating buildings by alternative energies (development project)</p>	<p>Fondation Universitaire Luxembourgeoise (FUL) Sterialux</p>

Projects supported following the second call for proposals (*)

<p>Site-dependent computer-aided system for the evaluation of the impact of spatial planning on landscape ecological potentials (feasibility study)</p>	<p>Institut für Kerntechnik und Energiewandlung E.V. (IKE) University Democrit of Xanthi University of Stuttgart</p>
<p>Life-cycle support in an Ada programming environment (feasibility study)</p>	<p>System Designers Ltd. TECSI-Software</p>
<p>Application of Universal Nice Command Language Environment (UNCLE) to meet Ada-Europe support environment requirements (feasibility study)</p>	<p>Trinity College Dublin University of Leeds Fernuniversität Hagen</p>
<p>Data-processing and Information Exchange in European Chambers of Commerce (feasibility study)</p>	<p>Conférence Permanente des Chambre de Commerce et d'Industrie de la CEE (C.P.C.C.I.)</p>
<p>Interactive micro-computer system for planning the collection of urban refuse (feasibility study)</p>	<p>Local Government Operational Research Unit (LGORU) of the Royal Institute of Public Administration Dansk Data Elektronik (DDE) Bureau d'Etudes sur l'Urbanisme et l'Equipement (BETURE)</p>

(*) O.J. C48 of 7.3.81

<p>Guidelines for the design of large scientific libraries in Ada (feasibility study)</p>	<p>National Physical Laboratory (NPL) Mathematisch Centrum</p>
<p>Videotex for Consumers' Associations (pilot-project)</p>	<p>Consumers' Association Stiftung Warentest Association des Consommateurs</p>
<p>System for teaching programming language concepts and software development methods (feasibility study)</p>	<p>Consorzio Interuniversitario Lombardo per la Elaborazione Automatica (CILEA) Compagnie d'Assistance Informatique de l'Enseignement (CASSIE) Syntax SPA</p>
<p>Portable multi-micro-processor Programming Line (MMPL) software product for industrial applications (feasibility study)</p>	<p>Zeltron Automazione SPA Centro Informazione Studi Esperienze SPA (CISE) Systems Programming Ltd. (SPL) International</p>
<p>Viticultural Programme (feasibility study)</p>	<p>Mittlere Datentechnik Organisationsberatung GmbH partenaires : viticulteurs et commerçants</p>

<p>Methods of defining, cataloguing and retrieving specifications of Abstract Data Types (feasibility study)</p>	<p>Standard Telecommunications Laboratories Ltd. Doctor Meher Laboratorium des PTT néerlandais</p>
<p>Study of supporting CHILL on the Commission-funded APSE (feasibility study)</p>	<p>GEC Telecommunications Ltd. Dansk Datamatik Center</p>
<p>Testing techniques for implementations of high-level protocols (pre-development study)</p>	<p>Agence pour le Développement de l'Informatique (ADI) National Physical Laboratory (NPL) Gesellschaft für Mathematik und Datenverarbeitung (GMD)</p>
<p>Full channel Teletext Systems (feasibility study)</p>	<p>Logica Ltd. G.S. General Systems SPA</p>
<p>Comparative Financial Accounting Software (feasibility study)</p>	<p>University of East Anglia partenaires : universités et instituts belges, français, allemands et néerlandais</p>
<p>Applications of Distributed Data-base models to EEC transborder medical data flow (feasibility study)</p>	<p>Ulster Polytechnic University College, Galway</p>

<p>Pre-study for an Energy Consumption Data-base of Buildings in the EC (PRENCODEC) (feasibility study)</p>	<p>Software Design GmbH (SWD) Université de Liège R.P.A.</p>
<p>OSCAR - Simulation tool for the design of distributed computer architectures (development project)</p>	<p>ECA Automation Rogowski-Institut für Electrotechnik, Rheinisch-Westfälische Technische Hochschule Aachen</p>
<p>Conversion from RTL/2 to Ada and production of a conversion guide (feasibility study)</p>	<p>Systems Programming Ltd. (SPL) International Hollandse Signaalapparaten B.V.</p>