

INFORMATION

INFORMATION MANAGEMENT

First three-year Community plan of action in the field
of scientific and technical information and documentation¹

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Introduction

1. A recent study² carried out at the Commission's request has shown that the use of a common telecommunications network covering all the Community countries would cost the European taxpayer one-third to one-tenth of what it would cost if several separate networks were set up alongside each other.

This was one of the main arguments which prompted the national PTT administrations, meeting in the CSTD (special committee for data transmission), to agree to work together, under the Commission's sponsorship, on setting up EURONET, a European network whose purpose will be to make scientific and technical information accessible as rapidly and as cheaply as possible to all Community enquirers.

This event is worthy of note in that it represents a number of European "firsts". It is the first time that a single network for transmitting information is to be set up in Europe; it is the first time that agreement has been reached on the use of a single technology for this network, namely

¹ Report requested by the European Parliament pursuant to Article 2 of the Resolution of 13 January 1975 (PE 38.725-fin).

² The Economics of the European Information Network (EURONET), by Diebold Deutschland (August 1975).

packet switching; it is the first occasion on which the national PTT administrations have ever really associated and formed a consortium for the purpose of planning and implementing a joint programme; it is the first example of preparation of common standards for equipment and methods; and finally, the agreement is the first that has ever linked the Community with the PTT administrations.

All these factors will have substantial repercussions, not only because they represent the practical outcome of the Council Decision of 18 March 1975 launching a first three-year Community plan of action in the field of scientific and technical information and documentation, but also because they represent a new approach as regards the implementation of other policies of essential importance to the development of the internal market; alignment on the same basic principles for the switching technique and the adoption of common standards should open up a vast market for European industry and help to remove technical barriers to trade, while also forming the embryo of a concerted Community policy on telecommunications, starting with the terminals.

Basic principles

2. The design and construction of the EURONET network are based on some essentially practical basic principles: in particular, it has been agreed that existing documentation systems should constitute the "organs" from which the network, which will be the "nervous system", will develop. As a rule, these systems tend to create a host of small independent networks in order to meet the requirements of even remote customers; the creation of a single network should put an end to this proliferation; for the time being, and until the PTTs have established an international public network for data transmission to meet the requirements of EURONET - which in all probability they will have done in the next five to ten years - a special network will be needed to transmit the data which make up the scientific and technical information.
3. The construction of this network has already started and, by the end of the first stage of implementation, scheduled to last eighteen months, will lead to the inauguration of an operational pilot network around mid 1977. The pilot network will comprise:

four switching nodes, in Rome, Frankfurt-am-Main, Paris and London;
four concentrators, in Brussels, Amsterdam, Copenhagen and Dublin;
local access facilities in Luxembourg.

4. In addition to the savings achieved by setting up this packet-switching network, there are other advantages worth mentioning:

the network will allow intercommunication between existing documentation systems, most of which use specialized link-ups often incompatible;

it will enable excessive duplication in the establishment of data bases to be minimized;

it will place major data bases within everyone's reach;

by its mesh design, it will afford adequate guarantees of satisfactory reliability, which "star" networks cannot achieve economically;

finally, its federative effect will continue to be felt: the European Data Processing Network, which is the fruit of European cooperation in the field of science and technology (COST Project 11), has agreed to associate itself with the Commission's effort and to cooperate in the construction of EURONET. The fact that several European countries not belonging to the Community are taking part in the construction of the European Data Processing Network suggests the possibility of collaboration with other networks, particularly in the Scandinavian countries.

Furthermore, preliminary steps to establish closer collaboration with the European Space Agency are already well-advanced and should give the Community the backup of proven skills and existing achievements in teleprocessing. The European Space Agency has set up and is running a scientific information service (SDS - Space Documentation Service) which allows users to converse directly with the computer to obtain the desired information; an interesting feature of this system is that several data bases can be interrogated from a single console.

Role of national PTT administrations

5. The PTT administrations were quick to realise the interest of the proposals made by the Commission and in a short space of time (between July and November) succeeded in reaching agreement in their organization on this highly complex and momentous project. Whereas at present any user of data-processing equipment can change computers subject to a few months notice, the vast investments required in the infrastructure of telecommunications systems generally take 20 or 25 years to amortize.

These were the considerations which determined the broad lines of the EURONET design. The system is to be of the modular type to avoid excessive constraints and too much dependence as between components; the telecommunications network will be an entity in itself and the extensions which will necessarily be added will not entail any modification of the infrastructure of the host system connected to it; moreover, it will be possible to add other host systems at will, as the needs and possibilities arise.

6. Needless to say, it is incumbent on the Commission to take full part in the operation and sound management of the network; this participation must not remain theoretical, nor must it be confined to the administrative level. The network will be operated and managed by a consortium of PTT administrations, specially created for this purpose, in close cooperation with the Community as laid down in the contract which has recently been signed. This contract provides that the maintenance and management of host computers will remain under the responsibility of data-base operators, including national and Community centres, subject to certain necessary constraints binding on all concerned; consequently, appropriate machinery must be designed and set up to permit close consultation between the PTT consortium, the Commission and the Community institutions.

Role of the European institutions

7. The Commission considers that the role of the Community institutions consists in taking an active part in this network; the Council has approved such participation and granted the Commission the necessary budgetary resources. It is in the interest of the Community institutions to have access to and be able to use all the data bases and services that EURONET may offer; in return, the Commission must be able itself to act as a supplier and operator of its own data and service bases.
8. To play this role to the full, the Commission must be in possession of adequate data-processing facilities to allow a large number (possibly several hundreds) of terminals, located with users in the member countries, to make use of the data bases and services provided by the Commission by direct link-up.

A recent report by a company of consulting engineers brought out the Commission's need for such data-processing capacities even more clearly; the report recommended the creation of a connection to EURONET which, in addition to supplying information, should keep accounting records and centralize and monitor the qualities of the network and its performance.

9. In order to offer users a reliable, rapid and efficient service, the Commission felt it was necessary to lease a medium-capacity computer which would be employed exclusively for work in connection with scientific information. This computer, designed and built in Europe, will be installed at the Commission's computer centre in Luxembourg by the end of November 1976; its cost will be partially offset by users' payments for the services it will help to render.

Another by no means negligible aspect is that, in this very young discipline of scientific information, the Commission's specialized personnel should be able to contribute to maintaining it in the van of progress by carrying out practical analyses and studies; without such permanently updated knowledge, there could be no dialogue between the Commission and the national experts, nor could the Commission work efficiently with the other Community institutions.

Use

10. The data bases and information systems which the Commission could operate through EURONET are commensurate with the Community activities and cover a very wide range of subjects and disciplines:

- the SDIM (System for Metallurgy Information and Documentation), set up by a Council Resolution of 24 June 1971 and operated on completely decentralized, cooperative lines, currently offers specialists a data base comprising almost 65 000 documents, an average of 20 000 documents being added each year to the existing store; SDIM's activities are expected to increase substantially in volume, mainly as a result of its extended coverage of patents, theses, studies, reports and conference proceedings which will be added to the articles and periodicals which make up the sole content of the system in its present form; over the next two years, this increase will involve 40 000 additional entries per year. Such a leap forward would not have been feasible without the significant qualitative progress recently achieved. The SDIM thesaurus has been completely recast in the light of experience gained over the last few years; a very high degree of input homogeneity was assured because of the training received by the indexers during seminars organized by the Commission; lastly, it is now possible to interrogate the Commission computer directly, using very-high-performance software;
- the AGRIS system covers the entire agricultural and agricultural economics sphere and is managed by the Food and Agricultural Organization (FAO) on behalf of the United Nations; the Member States have decided to entrust the Commission with the task of processing and transmitting their own contributions to the FAO, amounting to some 65 000 references per year, i.e., 46% of all contributions received by the FAO.

The number of research projects currently under way in the Nine is estimated at some 100 000, with a completion and renewal rate of 58% per year. For the time being only two sectors are covered by automated data bases:

- agricultural research with AGREP (permanent inventory of agricultural research projects) covering between 10 000 and 12 000 projects;
- education and training with EUDISED I (European Documentation and Infor-

mation System on Education) in collaboration with the Council of Europe.

Two other systems covering the environment and energy will soon be added to the two systems just mentioned.

Inventories, which are continuously being brought up to date, have been drawn up to cover numerous sectors such as the environment, agriculture and energy and to identify the various sources of information, research centres and documentation centres already in existence or being set up; for easy accessibility this information should be stored in a computer.

11. Other data bases and data banks will be developed with a view to their incorporation in EURONET via the Commission's host computer; they will be chosen in the light of political, economic and technical criteria and they will cover a vast range of subjects including physics, biology, medicine, the social sciences, technology, engineering, pedagogics, administrative sciences and industrially oriented studies covering equipment, services and markets. One point in particular which has been noticeable is that the CIDST (Scientific and Technical Information and Documentation Committee), set up by the Council Resolution of 24 June 1971 to assist the Commission in drawing up proposals relating to the creation of EURONET, had assumed responsibilities which went far beyond the bounds of what one normally understands by "science and technology". Both the European Parliament and the Economic and Social Committee, moreover, had recommended that consideration be given to the processing of data covering the social sciences; the EUDISED project is moving in this direction and the Commission is due to embark on a project to set up a data bank on collective agreements. Feasibility studies will be carried out to ensure a better understanding of the problems facing industry as far as data and information are concerned. Furthermore, the Commission intends to seek the most authoritative advice available on the subject by consulting representative groups of information users and potential users.

It is also a reasonable supposition that a close liaison between EURONET and the Community legal data bank CELEX and the bank composed of the multilingual terminology glossaries (both of which were revised by the Commission staff) should prove very useful both to the users and the managers of these data banks.

Sectoral documentation systems

12. Listing such achievements and projects at Community-institution, and in particular Commission level, does not give more than a slight idea of the progress achieved in the Community. In order to provide the Commission with appropriate advice on its task of coordinating national activities, including those in the various sectors where the need for information was considered to be top priority, CIDST was prompted to set up numerous working parties. The recommendations of these experts led to the launching of at least 30 projects covering such areas as agriculture, biomedicine, metallurgy, the environment, energy, industry (food, computers, plastics and rubber), patents and pedagogics.

13. The aim of all this research is to determine precisely, on the one hand, the documentary resources in the areas under consideration - by compiling a permanent list of the latter with a view, of course, to the optimization of structures and methods, once the gaps and common objectives have been identified - and, on the other hand, the users and their requirements. These documentary systems, the usefulness of which has been demonstrated, should be such that they can be integrated in EURONET. While it is not essential that the design of these systems should be based on absolutely identical methods, the fact remains that the greater the degree of compatibility, the easier it is to ensure integration in a single network on economic lines.

14. The problems referred to above, which are common to several if not all sectors, come under the responsibility of the so-called "horizontal" working parties set up by CIDST. The task of these working parties is to deal with basic questions which have to be resolved if EURONET is to be a success, namely:
 - In the legal field, the first step must be to define the obligations and constraints to which the operation of the network is subjected by virtue of the application of the rules on copyright, and in particular the payment of royalties. By the same token, appropriate solutions must be found so as to ensure that users observe such restrictions on the distribution or use of certain information as might be imposed by the firms or organizations which own the information. Obviously, the network users and operators will need to be bound by an appropriate contract. In addition, the working party responsible for legal matters will have to ensure that

the use of the information - particularly information of a social nature - processed and transmitted in the EURONET does not interfere in any way with the private life of the individual.

- At the same time, steps must be taken to find scales of charges which are acceptable both to users and operators, having due regard to the tariff structures of the various national telecommunications networks. In the interest of good management, a theoretical case exists for insisting that expenses should be met in their entirety from royalties payable by the users. Nevertheless, by virtue of the undeniable semi-public service nature of the information, there is a strong case, at least in the initial operational stage of EURONET, for "relatively modest" rates, from which certain capital expenditure could be deducted. Obviously, this fundamentally economic problem also has political nuances which will need to be discussed at a fairly high level. The working party on the economic aspects, for its part, has already outlined the studies which it will have to carry out, prior to presenting the Commission with a complete dossier on possible options in time for the launching of EURONET towards the middle of 1977. Other financing problems are currently being studied and it will be necessary to cover the interface between the system and the physical telecommunications network, in terms of both equipment and software. As with any large-scale industrial operation, steps must also be taken to ensure that the launching process is properly handled and the operations themselves must be backed up by a vigorous marketing campaign. Lastly, as in any well-managed operation, provision must be made for investments, particularly as regards the development of new services.

- The services of the working party responsible for the technical aspects of designing EURONET have been in particular demand during the initial period of the three-year plan. It should be recalled in this connection that the Council Resolution of 24 June 1971 advocated the setting-up of a network employing the most up-to-date methods. The activities of this working party covered not only interface specifications - equipment and software - but also the guidelines for measures to be implemented in the various sectors and the solution of the technical and administrative problems inherent in the operation of the network.

15. The more traditional aspects of the process of launching the network, however unspectacular in themselves, represented an important stage during 1975, particularly in the field of information methodology and technology. Problems relating to documentary languages, monolingual and multilingual directories and terminology have prompted research covering various sectors such as agriculture, metallurgy, veterinary medicine, the environment, the food industry and biomedicine. Particular attention has been paid to research on automatic translation of texts and the Commission has awarded several contracts aimed at providing Community users with easier access to international scientific and technical literature. The initial results of several research teams in this area appear very promising.

Standards must also be drawn up and accepted by the Member States. Several studies are currently being carried out with a view to specifying such standards, particularly as regards protocols and interfaces between networks. These studies are also aimed at providing a methodological basis for the comparative assessment of data bases.

Research is being carried out on standardized software systems for retrospective documentary research, in order to improve the efficiency of existing software systems, supplied more often than not by the manufacturers.

16. Lastly, the training of specialists, particularly those who will be required in the context of EURONET, is the subject of a short-term programme consisting of specialized study courses, multinational training schemes, teacher-exchange schemes and the compilation of a directory of pedagogical sources. In addition, a medium-term programme has been set in motion with a view to ascertaining, and subsequently meeting, the need for high-level specialists and systems managers and engineers.
17. All the measures envisaged for 1975 have been initiated, in accordance with the forecasts, during the current financial year. If 1975 can be described as the preparatory stage in which the emphasis was placed on technical and financial studies leading in certain cases to pilot experiments, 1976 will most certainly be the year that witnesses the first achievements in a number of important areas, whereas in others the active experimental stage will be reached.

Financial considerations and future prospects

18. Naturally, these advances are reflected in budgetary variation from one year to another. By the time it is completed at the end of 1977, the network will have cost the Community some 3 000 000 units of account (which sum covers investments and a very short period when lines are leased, prior to their utilization on a commercial basis). At the same time, the sectoral activities (i.e., development of methodology and technology, and in particular the setting-up of data bases, due to be linked up with EURONET, in respect of which more than 1 000 000 u.a. was appropriated in the 1975 Community Budget) would require a little over 5 000 000 u.a. for normal operational purposes and to enable the plan to be implemented in its entirety. Included in this figure is the 1 500 000 u.a. allocated to nuclear and metallurgical documentation. If the Council decides to launch a second action plan after 1977, there will be a very considerable scaling-down of investments after 1978 and it is likely that the cost of telecommunications network lines, maintenance and overheads will be largely offset by revenue in 1979. As far as this year is concerned, the only deficit incurred will be due to additional requirements (involving a modest amount) in respect of certain investments necessitated by extensions of and improvements to the network.

19. Pending the outcome of these efforts, the promotional work already begun must be vigorously pursued so as to ensure that the network, once it is completed, is used rationally and to the Community's advantage. The choice of site for the 680 or so terminals which it is planned to link to the system should be approached judiciously and the research currently under way will serve to ensure that this will be the case. Scientific and technical information should not be regarded as the prerogative of the universities and mayor laboratories. On the the contrary, the benefits should be available, at all levels, to industry, the medical profession, the agricultural community and the decision-makers (particularly those whose decisions have to be based on scientific factors).

The measure of the success of EURONET will be determined by the extent to which it comes up to expectations, i.e., not only whether it is fast, reliable, cheap and accessible but also whether it provides its users with a sufficiently wide range of well-documented subjects.

As a result of the efforts of the Member States and the Commission, it has been possible in a few months¹ to lay the groundwork for the EURONET network. The basic options have been adopted, with the agreement of all interested parties. Not only do these options meet the requirements of the specialists, but they also comply with the Council's Resolution of 24 June 1971 and Decision of 18 March 1975².

In budgetary terms, the funds devoted to these measures are relatively modest, partly because the expenses have been shared between the Community and the Member States, but in particular because of the Commission's desire to avoid precipitate action. It might have been tempting in this unfamiliar field of data and information to fall back on past experience, or even intuition. The patient research, the inventories and the pilot projects carried out in this first year will allow future tasks to be approached with confidence.

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¹ On 10.6.1975, the European Parliament approved the transfer of 1 840 000 u.a. from Chapter 98 (reserve) to Chapter 36 (operating).
² OJ L 100 of 21.4.1975.