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Esprit Information Exchange System

ies news

Issue No 11, August 1987

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It gives me great pleasure to extend the scope of IES News with this issue, bringing the first COSINE News insert. This coincides with a broadening of the distribution of IES News beyond the European Community, to embrace all the countries involved in COSINE, and also with the formal start (on the 1st July) of the specification phase of the project.

WELCOME TO COSINE

CEC Policy for COSINE: Harmonising Communications for Research and Industry

When Germany proposed the COSINE project in November 1985 as a practical means of giving effect to RARE's intention to set up an OSI infrastructure for researchers, the Commission saw its importance immediately, and its congruence with our existing efforts, and therefore expressed its support for the project. This support takes the from of a financial contribution, the setting up of a secretariat for the COSINE Policy Group, the management on their behalf of the contract with RARE for the specification phase of the project, and technical contributions to the work itself. The reasons for our support fall into two broad categories, one being on the policy level, the other being purely pratical. The Community has policy in favour of "Researcher's Europe" in the broadest sense, and therefore encourages suitable initiatives which aim to help this community and enhances its efficacity. There is a coherent framework of policies bearing a close relationship to the support of research. There are essentially the industrial policy, the telecommunications policy, and the standards and public procurement policies. The COSINE project obviously needs the support of all of these if it is to be a success.

Research and Development activities at Communitiy level are essential as a complement to the creation of the Community's internal market, and broader European cooperation, in particular with the EFTA coutries, creates the basis for still wider international cooperation with our main trading partners in other continents.

LATE NEWS

Electronic Bulletin Board for Science Policy-Making

In the latest "Scientist" (July 27), Garfield proposes a novel use for E-Mail: a bulletin board for scientists wishing to participate in science and technology policy-making. Advantages other than speed would be broadening of base for reaching consensus or bringing into the open conflict of views.

Integrated MediterraneanProgram for IT in Greece

As part of the modernisation program for the Greek economy, the Commission has proposed an extensive seven-year program for furthering IT in Greece; Included are help for developing a domestic R&D and industrial IT capacity, dissemination of IT applications in industry, civil service and social security management.

THIS ISSUE:

Market Pull

While all other sectors of industry are involved as users of computer communications, it is essentially the IT supply industry which supplies the necessary tools to the end-users. In order for this to be done by means of supported products, the size of the market must be sufficient to attract suppliers. This "market pull" mechanism is seen as one of the most important aspects of the COSINE project, and should complement the "technology push" actions towards OSI which we have encouraged so far through the ESPRIT and other programs. In addition, if the market-pull mechanism is to be succesful, the hardware and software supply industry will need to provide comprehensive marketing and maintenance support to its new customers. It is only when this "marketing link" is supplied that European industry will be able to compete with a real chance of success in the world arena.

In our recent "Green Paper on the Development of the Common Market for Telecommunications Services and Equipment", we advocate changes in the regulatory environment, to allow the creation of an open and dynamic market in the telecommunications sector. In this, amongst many other measures, we advocate that the role of the Telecommunications Administrations as the suppliers of infrastucture for data conveyance be safeguarded, and that the peripheral regions of the Community be given the same facility of access to telecommunications services as the more central regions. Indeed, it is only by making available a common infrastructure, conforming to common standards, that pan-European data transport will be freed from its present restrictions of kind, speed and volume, just as the transport of goods by road and by rail has benefitted from common standards for infrastructure in the past. The Community is thus actively promoting the removal of barriers to international telecommunications, through its Telecommunications Policy.

ISO Standards at Product Level

It is through the Community's Standardisation Policy that significant progress has been achieved in recent years in making full ISO standards workable at the product level. The European Standards bodies CEN/CENELEC have set up common working groups with the CEPT to derive harmonised functional standards in the area of computer communications, with the aim of guaranteeing that different computer systems adhering to them will be able not only to inter-communicate, but also to interwork, which implies many more common standards than those, already extremely complex, needed for pure interconnection. Within the ESPRIT IES framework, we were amongst the first to publicly recognise that the existing OSI standards, while they went a good way towards allowing open communication, contained too many gaps and ambiguities to allow full interworking, and this led to our support for the functional standards efforts, to which both academe and industry have contributed so much over the last three years.

At the practical level, the Community requires a healthy, broad based computer communications infrastructure in order to support its own international actions and programs. For example, research is carried out essentially in academe, in industry and in government research centres, and covers all fields of human endeavour. As these three sectors cooperate more and more in common projects, dispersed across Europe, they require a coherent computer communications infrastructure, so that any researcher may work closely with any other without having to set up a specialised computer network for every common project.

For the same policy and practical reasons, and in order to achieve the same aims for its own officials, spread throughout the Community, the Commission applies the same open systems standards and public procurement policy for its own use as those which it encourages for the use of others.

Spearhead in the Overall OSI Effort

Initial steps taken within the COST framework for collaboration in science and technology, and extended in the ESPRIT Program's Information Exchange System, have led, together with other initiatives, to the creation of the RARE association of users and providers of networking services for researchers, with help from the Commission. These steps now need to be extended so as to provide a fully operational computer communications infrastructure for European research, in particular for the Community's Framework Program, and in support of EUREKA projects (in many of which the Community as such shares an interest) in general. Another practical reason for our support is that the COSINE project can be seen as an initial spearhead in the overall OSI effort: if it works for the research area, it should be able to work for other users as well, and thus strengthen Europe's competitivity in these other sectors.

To conclude, let me assure the COSINE project and RARE of our continued support and encouragement, as a means to enhance the value of European research and pave the way to the internal market planned for 1992. Let me wish the project every succes in achieving its ambitious, but necessary goals.

MICHEL CARPENTIER
DIRECTOR GENERAL DG XIII

A Gateway between COM and X-400

1. Introduction

Following approval by CCITT in October 1984 of a series of X-400 recommendations (1) to permit interconnection of electronic mail systems, much work has been done to develop conforming systems. Until migration to a X-400 world will be complete, interim solutions involving gateways to existing non-conforming systems will be needed. As an example, Liege University has been operating the COM electronic mail system (which as is well known is the basis of EuroKom) on a DEC 2050 since 1980 and has worked on a gateway to the X-400 environment (2,3).

2. A COM System in the X-400 World

2.1. A Short Description of the COM System

COM is a computer conferencing system developed at the National Defense Research Institute, Sweden. It is described by its designer, Jacob Palme, in the following way (4): "The system has a data base, consisting of a large number of text messages. Each such text message can contain any text written in ordinary human language which the author wants to put there. There are two main kinds of messages: the first, called a letter, is a message from one user to a single or a number of other users. The second type, called a conference entry, is stored in one of several computerised conferences. A number of users are members of the computerised conference. Each member normally reads all that is written in the conference and can also freely write messages into the conference, which are then made available to all the other members of the conference."

In centralised mailing systems like COM, all information about users and messages is stored in a single data base (Figure 1). Thus it is not necessary to transfer physically messages between users. There is only one copy of each message in the data base and each user has a mailbox which contains pointers to these messages. When a new message is created and sent to one of many recipients, the message is put into the data base and a new pointer to this massage is created in the mailbox of the originator and each recipient. Thus they have access to the same physical representation of the message.

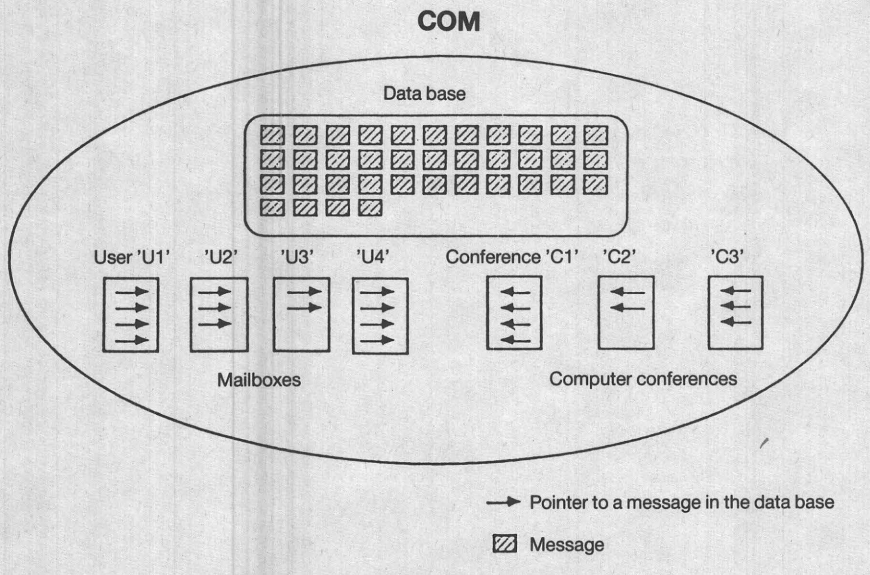


Figure 1: The COM System

Computer conferences are built in the same way, each one contains pointers to messages in the data base.

2.2. COM and the Interpersonal Messaging Service

In X-400, the basic Interpersonal Messaging Service (IPM Service) is provided by a class of cooperating User Agents (UAs) called IPM UAs. This allows a user to send and receive Interpersonal Messages (IP messages). In addition, an IPM UA may perform many functions to assist in the preparation and despatch of IP messages. These facilities are also provided in COM, which incorporates a special editor and some other functions to control the COM data base: thus help is given in preparing and editing messages, prompts are provided for recipients' names, subject and text. Comments or answers to messages received are given automatically references to the original message, and information and help are provided to identify newly delivered messages or conference notices.

The basic COM service is similar to the basic IPM service: users can send and receive letters. Other service similarities are:

Message Identification
Replying Message Indication
Submission Time Stamp Indication
Originator Indication

A Gateway between COM and X-400

Multidestination Delivery
Primary and Copy Recipient Indication
Delivery Notification
Receipt Notification
Expiry Date Indication
Crossreferencing Indication
Subject Indication
Replying Message Indication
Replying Request Indication
Name Validation
Old Messages Modification
Computer Conferences

This last, which is available in COM, is currently under study for introduction into the X-400 world (5,6,7). Most, if not all the above facilities will be familiar to users of electronic mail systems and so require no further explanation.

3. The Gateway Structure and Functionality

3.1. General Structure

The COM integration into the X-400 world is based on two principles: all messages pass through a gateway and all communications between COM and the gateway are made by means of COM mailboxes. Thus, very few modifications have to be made to the COM system.

The gateway and the COM system must exchange messages with each other. A simple way to perform this is to create a "virtual" user in the COM data base (Figure 2). This user will be named 'out'. Messages to the gateway must be sent to the mailbox of the user 'out'. At regular time intervals, the gateway enters the COM system under the name 'out', exactly like an ordinary user. If there are some new messages in its mailbox, the gateway reads them, processes them and passes them to the MTA. Similary, messages from the MTA are processed by the gateway before being sent into the COM mailbox of each recipient by means of the user 'out'. Thus only built-in COM functions are needed for communication between COM and the gateway.

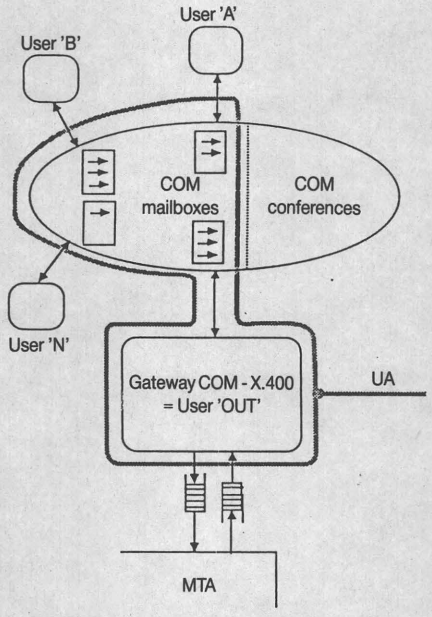


Figure 2: COM and the Gateway

The use of a gateway represented by a virtual user avoids adding new functions into the COM system. The gateway manages the UA/MTA interface, converts messages between COM and X-409 presentations, assigns default values to some parameters and sends receipt and non-receipt notifications.

3.2. Parameters

Some common service elements are defined in both COM and X-400 systems; the translation of parameters related to these service elements is straightforward. However the IPM service includes other service elements which are not defined in the COM system. This is for example the case of the *Obsoleting Indication* or the *Sensitiviy Indication*. As letters coming from the X-400 world can contain parameters related to these service elements, a method should be found to reflect them in the COM system. Moreover a message to the MTA is actually sent to the user 'out', but 'out' is only a virtual recipient and addresses of real recipients must also be found elsewhere in the letter. That is why, besides the COM header, a second header, named the X-400 header, has been added. This second header

COM header *(identifier) date hour* *originator's COM name*
Expires after *number* **days**
Receiver: OUT
Comment to: *identifier:* **by** *originator's COM name of the commented letter*
Subject: *subject*
X-400 header **Receivers:**
recipient n°1 O/R name
recipient n°2 O/R name
For information:
copy recipient n°1 O/R name
copy recipient n°2 O/R name
Text:
Body *body*

Figure 3a: A COM Letter Ready to be Sent to the Gateway

A Gateway between COM and X-400

is included in all messages exchanged with the MTA.

A COM letter ready to be sent to the gateway is shown in Figure 3a, the X-400 header follows the COM header and precedes the message body. It contains the recipients addresses. After receiving such a letter, the gateway can find parameters related to the service elements: *Message Indication* (the local identifier of the COM message is a number which is used to construct the IP-message identifier), *Expiry Date Indication, Cross-referencing Indication, Subject Indication, Replying IP-message Indication* and *Primary and Copy Recipients Indication* in the COM header or in the X-400 one. Other service elements are not accessible to COM users. For example, the originator is not able to request a non-delivery notification or a receipt notification. The values of these parameters not defined in the COM system or in the X-400 header are determined by the gateway in such a way that the COM principles are preserved: a delivery notification, the disclosure of other recipients and the conversion prohibition are requested with each IP-message. A receipt notification is requested with each recipient. The return of the content, the request of a reply and the authorisation of an alternate recipient are never requested.

When the gateway receives a message from the MTA, it performs the reverse conversion. The COM message with its two headers is built from the IP-message. Such a letter is shown in Figure 3b. In addition to recipients' addresses, the X-400 header can contain parameters related to the service elements: *Authorising Users Indication, Obsoleting Indication, Cross referencing indication* and *Request Indication*. If many messages are referred to by a new IP-message, information about these messages are written in the X-400 header. If only one message is referred to and if a copy of this message is stored in the COM data base, the COM service element *Cross referencing Indication* is used.

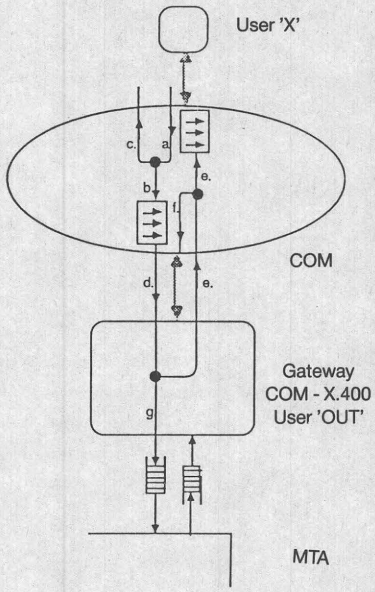
COM header	*(identifier) date hour* OUT
	Expires after *number* **days**
	Receiver: *recipient's COM name*
	Comment to: *identifier:* **by** *originator's COM name of the commented letter*
	Subject: *subject*
X-400 header	**Author:**
	originator O/R name
	Authorising Users:
	authorising user n°1 O/R name
	Receivers:
	recipient n°1 O/R name
	recipient n°2 O/R name
	For Information:
	copy recipient n°1 O/R name
	Obsolete:
	identifier of the obsolete message
	Text:
Body	*body*

Figure 3b: A COM Letter Built by the Gateway

3.3. Transmission

The different phases are shown in Figure 4.

The letter is edited by means of the COM editor. Letters to the gateway must include an X-400 header and are sent to the user 'out' (arrow a).



a/b/d = message sent to the gateway
g = message given to the MTA
c/f = acknowlegdement from COM to the user or the gateway
e = acknowlegdement from the gateway to the user

Figure 4: Transmission of Message from COM to the MTA

The letter is put into the mailbox of the user 'out' (arrow b) and an acknowledgement generated by the COM system is sent to the originator (arrow c). This acknowledgement means that this first operation has been successfully performed.

At regular time intervals the gateway enters the COM system to examine the contents of its mailbox. If there is a new letter, the gateway

reads it (arrow d) and transforms it to an IP-message. If an error is detected during this operation, for example a parameter is missing or is badly formed, a letter including some information about the reason of the failure is sent to the originator's mailbox (arrow e). If an IP-message has been successfully formed, the gateway forwards it to the MTA with the following parameters: the originator O/R name, recipients O/R names, the content type, message flags and the UA content identifier.

The UA content identifier is given back to the originator within a possible delivery notification. Therefore it can be used for correlation. The identifier of the message in the COM data base is actually assigned as value to the UA content identifier.

3.4. Reception

The different phases are shown in Figure 5.

Three kinds of messages can be received by the gateway from the MTA: IP-messages, delivery and non-delivery notifications and receipt and non-receipt notifications (arrow a).

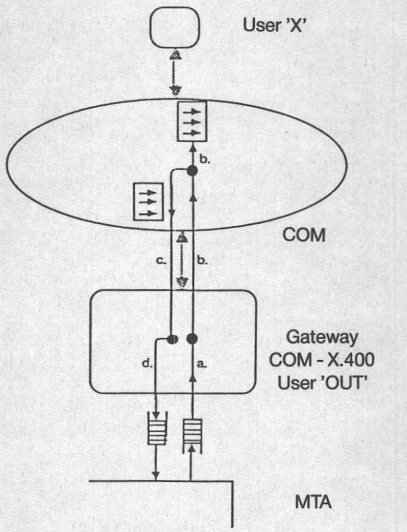


Figure 5: Transmission of a Message from the MTA to COM

IP-messages

From the IP-message received from the MTA, the gateway builds a COM letter which contains an X-400 header. This letter is sent to the recipients of the IP-message (arrow b). COM acknowledgements come back to the gateway (arrow c). If a non-receipt notification is requested by the originator and if there are some negative COM acknowledgements, the non-receipt notification is also requested, it is built from the positive COM acknowledgements and directly sent back to the originator, without waiting for the recipients' authorisation; thus it is an automatic receipt notification. Messages including a receipt or non-receipt notification are sent without any request for further notification.

Delivery and Non-delivery Notifications

The gateway constructs a letter with the information received in the notification. Then this letter is sent into the mailbox of its recipient (arrow b). The notification is associated with a previous message by means of the UA content identifier: the value of this identifier is the local identifier of message in the COM data base, so that the recipient can easily find it.

Receipt and Non-receipt Notifications

The gateway constructs a letter with the information received in the notification. However, this notification is associated with a previous message by means of the IP-message identifier. Therefore the gateway must translate this identifier into the local identifier of the message in the COM data base. This letter can then be sent to the mailbox of the recipient (arrow b).

4. Some Features

Each message in the COM data base has a unique identifier. When the gateway translates a COM message into an IP-message, the IP-message identifier is formed by appending the COM address to the local message identifier. So the local message identifier and the IP-message identifier can be derived from each other.

Each message received by the gateway from the MTA contains an IP-message identifier which has been selected by the originating UA. When this message enters into the COM system, it receives a local identifier. In that case, the IP-message identifier and the local message identifier cannot be derived from each other. This is why the gateway maintains a table which maps the IP-message identifier to the local message identifier. In order to support a unified view, IP-message identifiers built from COM message identifiers are put into this table too.

When a COM user writes a message, he can make references to old messages by means of their local identifiers. The gateway converts these local identifiers into IP-message identifiers before giving the message to the MTA. In the opposite direction, if an IP-message received from the MTA contains some

A Gateway between COM and X-400

references to other IP-messages previously received or submitted, the gateway converts each IP-message identifier into the corresponding local message identifier. So, COM users use local message identifiers for both local and outer communications.

The COM editor assists the user in preparing his message. This editor is dedicated to ease the construction of the COM header. But, in order to communicate with the gateway, it is necessary to construct a second header: the X-400 header. The COM editor is unable to help the user in this task which is rather tedious. That is why the values of some parameters are determined by the gateway; choices are restricted but the construction of the X-400 header is simplified.

To make the system easier and more flexible, either the COM editor should be enhanced with functions to assist the user in preparing the X-400 header, or another editor specially dedicated to X-400 should be used.

In the COM system, when a new message is an answer (or a comment) to a previous one, the editor automatically adds the originator (and primary recipients) of the previous message as recipient(s) of the new message. The same principle may be applied to recipient addresses appearing inside the X-400 header.

5. Extending the System

Before the forwarding of a message, COM checks the correctness of each recipient's name. The existence in the data base of a list of all COM users eases this tasks. An extension to the checking of O/R names in the X-400 header can be achieved as follows:

A Local Directory System

A list of frequently used O/R names with corresponding freeform names can be added into the gateway. Thus, when writing the X-400 header, a COM user needs no more to put the complete O/R name of each recipient but only the freeform name. It is then the task of the gateway to retrieve corresponding O/R names in its local directory. This extension implies the implementation of new functions, allowing a user to add a new O/R name to the list and to remove or to change old ones. This list cannot reasonably contain the O/R names of all potential recipients but can provide useful services before international directories are settled.

6. Conclusions

A Message Transfer Agent and a gateway to the COM system have been implemented on a DEC-2050 computer. The MTA is not yet complete: it has no access to the service of a session layer, but it has been useful to test the gateway. Two COM systems have been installed on the DEC-2050 and connected to the MTA. Messages have been exchanged between these two COM systems to test the gateway in transmission and reception. Then a new entity emulating a UA has been developed and connected to the MTA; this entity allowed to generate and send to the gateway IP-messages with various patterns of parameters.

All the tests performed on the gateway have demonstrated its correct behaviour. COM users have access to the IPM-X-400 service without complex manipulations. The sole drawback is the construction of the X-400 header. A new editor would solve this problem.

The use of conferences and directory systems has not been integrated into our prototype. However, this integration will be feasible when related standards emerge.

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The above is a shortened version of a paper by Pierre Godelaine, Isabelle Debry and Andre Danthine of Liege University, who retain the copyright to this article. The full paper can be obtained from the authors at the Institut d'Electricité, Liege University, B-4000 Liège.

European Strategic Program of Research and Development in Information Technology ESPRIT

Advance Notice of 1987 Call for Proposals

The Commission of the European Communities has just made a proposal to the Council of Ministers for a second phase of ESPRIT, the European Strategic Program of Research and Development in Information Technology. ESPRIT was first decided by the Council of Ministers in 1984 and currently comprises over 200 precompetitive R & D Projects in Information Technology whose total cost is about 1.400 MECU.

The Framework Program of Community Activities in the Field of Research and Technological Development (1987-1991), has recently been adopted by the Council of Ministers: it includes an estimated amount of 1.600 MECU for the Community contribution to information technology. The Commission intends to allocate this to the second phase of ESPRIT, which will enable R & D Projects with a total cost in excess of three billion ECU to be carried out. After the recent agreement on the Framework Program, it is now expected that the Council of Ministers will deal with the second phase of the ESPRIT Program as a matter of urgency.

The Commission proposal for the second phase of ESPRIT will be published in the Official Journal. The Call for Proposals for projects addressing the work program will be published immediately after the Council has taken a decision on the program; it is expected that this decision will be taken well before the end of 1987. A separate Call for Proposals covering basic research topics will be issued in 1988.

The purpose of this advance notice is to assist proposers in their forward planning and to ask for expressions of interest. Intending proposers are requested to indicate their intention to submit a proposal in writing. A briefing session for potential proposers (Esprit Proposers Day) will be held on October 2nd, 1987 as part of the annual ESPRIT Conference.

Intending proposers may also wish to make use of the EUROCONTACT system that assists in finding partners for projects. EUROCONTACT is a publicly accessible data base containing information concerning organisations seeking partners for R & D work.

The EUROKOM electronic mail and conferencing system serves as an electronic communications medium within ESPRIT and for all those interested in ESPRIT matters.

To obtain information about EUROCONTACT and EUROKOM please write to the address below.

Potential proposers who would wish to receive a copy of the work program, and of the information package as soon as they become available, are invited to write to:

Commission
of the European Communities
DG XIII Telecommunications,
Information Industries & Innovation
ESPRIT Operations Office A25 7/11
22 rue de la Loi
B-1049 BRUSSELS

Conformance Testing Service Days

The Commission of the European Communities will be hosting a program of technical days on Conformance Testing Services (CTS) in Brussels on October 1st and 2nd immediately following the 1987 ESPRIT Conference.

A full program has been planned with papers being presented not just on specific conformance testing services, such as Local and Wide Area Networks, Languages etc., but also on more general aspects of standardisation, the concept of conformance testing and certification.

Although the CTS Technical Days are being held in the same venue as the 1987 ESPRIT Conference, separate registration is required. The registration fee is 60 ECU or 2600 BF.

Accommodation has been arranged with several hotels in Brussels.

Further information as well as registration forms can be obtained from:

E.C.C.O.
(European Congress Consultants & Organisers)
Rue Vilain XIIII, 17a
B-1050 Brussels
Belgium
Tel.: +32 2 647.8780
Tlx: 61434 sdrbru b

This is also the address to which registrations forms/fees should be returned.

COSINE NEWS

Cooperation for Open systems Interconnection Networking in Europe.

COSINE News intends to cover viewpoints of all parties with interest in COSINE.

COSINE Bridges IT Industry and Research Communities

The time is ripe to capitalise on the established European-wide acceptance of the seven-layer Open Systems Interconnection Reference Model in a practical way. The EUREKA project "Cooperation for OSI Networking in Europe" (COSINE) serves a dual goal: to make present-day research networks in Europe interwork, and to create a large home market for the European information technology industry. This means elaborating on the concept of functional standards, in order to really open up systems of different makes for services that belong to the working environment of scientists and engineers. COSINE aims at having available as soon as possible a number of operational information and communication services to any researcher in Europe, from the north to the south. Until definition of future networks such as ISDN and IBCN, these service nets remain limited to remote terminal access, message handling systems (MHS), file transfer access and management (FTAM), directory services and network operations and management.

As a EUREKA project, COSINE is supported at government level by various European countries, as well as by the Commission of the European Communities (CEC). Governments participating in COSINE as well as the CEC will contribute to the international interworking of network services in several ways. COSINE's implementation management for new services can be underscored significantly. Governments assist in defining the scope and tasks of national research networks and bring those in to accordance with the COSINE specifications. Those recommendations can be given official or even mandatory status. In addition, through demonstrations and procurement, governments can assist in the dissemination of COSINE's results to new categories of professional users of network services.

Existing Technology

COSINE deliberately chose to work with existing technology, as it wants to have operational interworking at the shortest notice. The program selects OSI standards, which already have met widespread acceptance, and will develop operational services for those. For COSINE, the technical specification work implies selection of services, definition of hardware and securing interconnection of national data communications services. Meanwhile, the ever ongoing process of specification of existing functional standards will be reinforced by COSINE. At present, development efforts of the information technology industry depart from the 1984 sets of standards of CCITT and other bodies. Prior to the adoption of new standardisation guidelines in 1988, COSINE provides feedback from the information technology industry and user groups to the standardisation bodies.

In order to be as practical as possible, the EUREKA project focuses on a systems approach. A successful example of such an approach has been set in the automotive industry with MAP, (Manufacturing Automation Protocol). MAP has been developed by General Motors Corp., USA, as a networking asset for its subsidiaries and subcontractors in the struggle for life with the Japanese automotive industry.

In the COSINE framework, a systems approach on the one hand follows the interests of the information technology industry for market pull, as it is based upon functional standards as defined by the OSI Reference Model, CEPT, SPAG and CEN/

CENELEC. Similary, services are always based upon products that have passed conformance testing by major industrial testing facilities for OSI implementation. SPAG Services AG (Standards Promotion and Application Group) and COS (Corporation for Open Systems) are bodies committed to this task.

Largest Community of Users in Europe

On the other hand, the systems approach also meets the needs of research communities throughout Europe. COSINE intends to build and expand the largest single community of users of electronic information systems in Europe. It reaches out to researchers at universities, industrial laboratories and independent laboratories for applied research. Cooperation with the Commission of the European Communities means that the present RARE community (Reseaux Associes pour la Recherche Europeenne) can be assured to encompass also researchers in EEC programs such as RACE, BRITE and ESPRIT. Together with participating researchers in EUREKA projects, this means that an extensive potential of professionals and scientists can be served by the COSINE initiative. In the near future, even user groups beyond this community such as commercial professionals will benefit from the achievements of COSINE.

Bridging the interests of both the information technology industry and the vast numbers of researchers in user groups throughout Europe, COSINE elaborates on the results of RARE. Under the auspices of this body, academic networks are being specified in a growing number of European countries. The specifications and implementation recommandations of COSINE will help the expansion of existing RARE networks now prevailing in academia into circuits of the information technology industry as well as into circuits of end users in other industrial environments. To this end, COSINE provides for managerial support and procedures for migration of these networks in line with the OSI Reference Model.

COSINE is about an organisational and managerial problem, rather than a technical one. Europe can gain an edge over the United States and Japan by broadening the community of users that adheres to OSI standards.

Dr. Peter A.J. Tindemans,
Chairman COSINE Policy Group

COSINE Moving on from Specification to Implementation

The Specification Phase of the COSINE project is in full swing: the outline for the final Implementation Phase starting in 1988 has been defined. This resulted from the meeting of the EUREKA COSINE Policy Group (CPG) held in Valencia, Spain, on May 5 and 6, 1987. RARE, as the body responsible for the definition of COSINE specifications, can conclude that part of the project before the last CPG meeting on the COSINE Specification Phase in June 1988.

The Policy Group delegates generally agreed that in order to strengthen the thrust of COSINE, as many OSI-based forces have to be aligned as possible. The intention to establish working relations between COSINE and relevant interest groups or initiatives emerged as a priority issue from the Valencia meeting. Of consideration are the European information technology industry, telecommunications organisations, standardisation bodies, as well as U.S.- and Japan-based relevant activities.

The European industrial Standards Promotion and Application Group (SPAG) would be the first contact in this area. It became clear that SPAG strongly supports the establishment of the European Workshop on Open Systems (EWOS) as a common European forum for developing the technical definition of functional standards. SPAG welcomes support for EWOS from RARE and COSINE. The CPG decided immediately to study this new opportunity and contacts with relevant parties have been established. Meanwhile, COSINE will keep track of infrastructure requirements with relevance to other EUREKA projects. Futhermore, to expand industrial user contacts, COSINE will among others approach the European Industrial Research Management Association (EIRMA). During the coming months, COSINE will study the extent to which European industrial users and suppliers can be included more in the project. To set an example for the networking communities of Europe, the COSINE Policy Group is making headway to replace 'snail mail' as much as possible by the internationally used EuroKom computer conferencing facility.

Progress in Specification Work

The well-accepted goals for all countries participating in COSINE are the creation of a European R & D community equipped with better electronic communications, and stimulating a market pull for OSI products in academia and industry. This goes along with the clear intention to benefit the European IT industry as a supplier by strengthening its competitive position.

The starting point in this dual aim is the development of the COSINE specification for OSI products for use in the common infrastructure. This specification will reflect the requirements of academia and public research institutes.

At the CPG meeting in May in Valencia, a contract for the specification work to be executed by RARE was made ready for signature. Funds necessary for the contin-

uation of the project were secured through this procedure. The job covers all aspects of computer networking, from identification of user communities, their systems and their products, to migration strategies and future services. In this way, a detailed insight into the market for COSINE facilities will result from the very beginning. Application services include terminal access via remote networks, packet switching (X-3, X-28 and X-29), file transfer access and management (FTAM) and message handling services (MHS) with X-400 standards. In the future, screen-oriented dialogue and remote job entry are anticipated facilities.

The Specification Phase will be of practical value with respect to upgrading existing systems, and the migration of current users of EUNET and EARN. From them, RARE will identify products, specify protocol converters and encourage development of plans for migration. RARE will also specify the use of wide-area network (WAN) protocols with sufficient facilities to allow connection of WANs to local-area networks (LANs). The future-oriented approach is stressed by the fact that network architectures currently under construction such as ISDN, are already taken into account.

COSINE Policy Group

Peter A.J. Tindemans, Chairman

Johan Martin-Loef, Vicechairman

Keith Bartlett, Vicechairman

COSINE Secretariat

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Implementation to Start 1988

Plans and procedures for the final Implementation Phase of COSINE are to result from the previous stage in the project. As a practical input for the COSINE Policy Group, an analysis of the relevant implementation costs and funding mechanisms will come out from that stage as well. Currently, the Federal Republic of Germany, the Netherlands and Finland are examining the likely consequences of the COSINE Implementation Phase at national level, in preparation for the next CPG meeting in November 1987.

COSINE's goal to build a common OSI infrastructure with a large demand for new products, will become most apparent in the Implementation Phase. At the Valencia meeting it was decided that this final stage can take off after the Summer of 1988. Then the procurement, installation, testing and operating of systems can begin. Other activities, such as defining the package of services, are to be decided on a national policy scale. The exact degree of national commitment to the COSINE Specification in each country will be clarified in upcoming CPG meetings. As ist stands, COSINE has reached a point of no return in realising a harmonised network in the very near future.

Spain's Interest in COSINE: OSI Standardisation for IRIS

Governments of many nations have begun to modify the evolution of technologies to coordinate disparate efforts and optimise the use of scarce forces. The opportunity for Spain is now ripe to participate in this process. In the past five years Spain has begun a serious effort to strengthen its scientific infrastructure. Over this period government expenditures being channelled to R&D have doubled. This year, the National Plan for Scientific Research and Technological Development, the first in our history, will be passed.

The only manner in which to boost technological development and thus reduce the degree of dependence of the United States and Japan, is to integrate heterogeneous information systems. Various bodies within the communication and computer fields are pushing the creation of new standards in accordance with the concept of Open Systems Interconnection (OSI). Spain supports this intention.

In 1984 Spain began to establish consistently the essential instrument of a data network for use in the Spanish scientific and research community. To this end, a commission was assembled that analysed the needs of our country within this field as well as the solutions other nations had adopted. This effort led to rapid contact with the most active European experts, who at that time were taking their first steps towards that integrative objective. The support gained from other countries and the experience acquired were very positive. The spirit of international cooperation has blossomed into the EUREKA program, and in effort to coordinate and aid various international research projects. Within EUREKA, the COSINE project attempts to create a European-wide communications infrastructure.

The European initiative of integration and hamonisation of research networks, began at the hands of the scientific community and crystallised with the formation of the RARE Association. RARE drew as its objective the establishment of an infrastructure to facilitate access to the most important information centres, thus allowing collaboration and information exchange between various groups. Even since the formation of RARE, Spain has

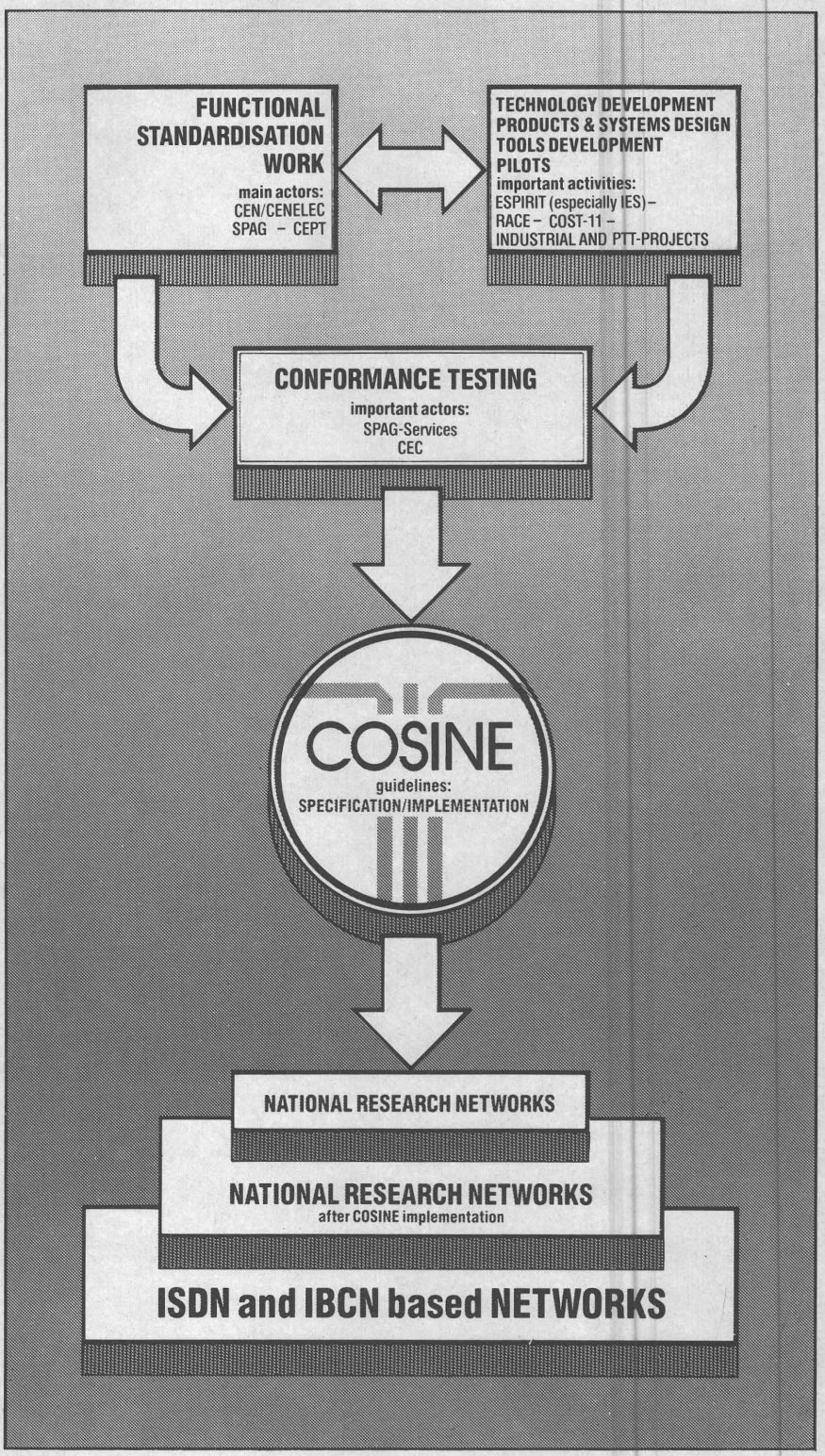
been one of the first members of the Executive Committee and has participated intensely in its activities. The Third European Networkshop of 1987 in Valencia clearly demonstrates Spanish involvement. Since its conception in 1986, our country has also actively collaborated in the COSINE project, which along with RARE will be synchronised with our IRIS Program.

The IRIS Program

The participants at the 1987 Networkshop were able to become acquainted through the Minister of Education and Science with the IRIS program (see also IES NEWS, No. 3, pg. 1). Under the umbrella of the National Research Plan the objective of IRIS is to create a Spanish Academic and Scientific Network. The IRIS program has a planned duration of four years with several aims:

- to establish a communications infrastructure that can offer, with utmost speed, a series of basic services to a maximum number of users;
- to facilitate contacts between Spanish researchers and their counterparts in other nations who may be conducting similar activities in the field of data networks. The intention would be to seek any existing confluence of efforts underway to strengthen the technical development and standardisation of these networks, with special attention to any nascent project of intercontinental nature;
- to elaborate a permanent operations plan which would propose the envisioned evolution of an organisation, structure and technical development, and its financial development provisions based on the results of previous objectives and the experience already acquired.

The organisation of the IRIS program is structured on two levels. The Program Commission is a top-level decision-making body. Its main responsibilities are financing, coordinating globally, and supervising all program activities. In accordance with the organisation of the



National Research Plan, this commission is integrated in administrative bodies of various Ministries which themselves are related with scientific and technical research. The Director General of Telecommunications will chair this commission. The second level of IRIS is the Technical Direction, an executive body whose responsibility is the initiation and maintenance of the network. It is attached to the Program Commission and has as its principal missions the planning of the network, definition of projects and coordination of developments. It is composed of a team of highly-qualified network experts supported by various operators and administrators.

The IRIS Network will start functioning by offering its users an electronic mail service and access from remote terminals. For the first of these, the EAN package from the University of British Columbia will be used. For the second, the protocols X-3, X-28 and X-29 will come into play. For transportation of communication, the public IBERPAC (X-25) network will be employed.

Replacing Non-OSI Networks

The IRIS network will not start from zero. The Spanish scientific community has acquired some solid experience in networking. For quite some time networks like FAENET (High Energy Physics Net) and EARN have been in operation in Spain. IRIS takes the existence of these two networks into account, in line with its goal to coordinate them with the existing networks at the European and international level. The policy will be to subsidise the operational network activities, with the understanding that as these OSI developments become available on the market for the implementation of various services, they will replace gradually those in use in non-OSI networks.

All this taken into account, the IRIS Program will be synchronised with the objectives of RARE and COSINE. These projects are to promote the use of OSI standards, relying on public networks for the transport of data, using available products for the implementation of services, coordinate national network activities and related research and participate in international bodies. Our universities and research centres can rely on experts with a growing interest in these areas, resulting from the increased necessity of using these networks. The IRIS network will become reality this year. The research teams of our country will be able to count on an indispensable tool in the pursuit of their tasks.

Juan M. Rojo (Secretary of State for Universities and Research) and Javier Nadal (Director General of Telecommunications), Madrid

The U.K. View: OSI in Service

The COSINE project came along at exactly the right moment for the U.K. By early 1986, the Alvey program, a major, national program of collaborative research and development in IT, had been under way for almost three years and further activities were being considered. The Alvey program succeeded in spite of the fact that it had no overall communications infrastructure to allow data to be transferred between the participants.

It had not been possible to establish a common interworking environment which was acceptable to both the academic and industrial participants due to the lack of commercially acceptable standards. The situation was made more acute by the fact that the university participants enjoyed a common working environment through widespread adoption of the local Coloured Book protocols which pre-dated OSI. Industry, on the other hand was aware that these would not be taken up commercially on a suitable scale and could not justify the investment in software which was appropriate to only one activity. Thus while one part of this large R & D community had shown how valuable a common data interworking environment could be, the other was unable to use it and illustrated the severe disadvantages of not having such an environment.

Multinational Programs

Of course, both communities had been waiting for OSI and by 1986 it was clear that the long wait would soon be over and practical interworking for some activities such as electronic mail and file transfer would be possible using full international standards. The international nature of OSI was important as many of the participants in the Alvey program were also active in multinational programs such as ESPRIT and the infrastructure used for the national program would need to be identical to that used internationally.

With the increasing importance of international collaboration in most areas, but particularly R & D in Europe, it is vital that all steps are taken to assist the rapid esta-

COSINE Agenda

		1987
November	**3 - 4**	**Brussels, COSINE Workshop**
November	**5 - 6**	**Zoetermeer (the Netherlands), COSINE Policy Group**
		1988
March	**9 - 10**	**Pisa (Italy), COSINE Policy Group**
May	**16 - 18**	**Les Diablerets (Switzerland), RARE Networkshop**
June	**20 - 21**	**Last COSINE Policy Group on Specification Phase**

blishment and smooth running of projects and ventures which demand communication of data, programs, messages designs and other information between the participants. However, it is difficult and expensive to isolate the equipments and procedures used for communications connected with research from those which support other activities concerned with the business of the organisation. Thus, common communication infrastructures which span the research and other activities are desirable. It is even more difficult to isolate the communications environment for one R & D activity from that used by another. It is therefore vital that there is one common R & D communications environment and that the one used for EUREKA must be the same as the one used for ESPRIT, BRITE, RACE and other programs. The wide remit for COSINE and the major role played by the Commission are important in this area.

Major Pull-Through Exercise

Government Departments in the U.K. have strongly and consistently encouraged the development of networks and value-added services. They have also strongly supported the use of OSI in these networks. COSINE will have a major impact as a new kind of services network meeting the needs of a major community. In the first case, this will be the R & D community consisting of the IT supply industry, end-users in other industries and the universities. This new style network consists of more than just the publicly-available data services; it necessarily involves detailed interworking between products from different suppliers, running in machines operated by different organisations. There are many problems, some known, some unforeseen, in creating and maintaining such an environment which demands a high level of operational compatibility and cooperation between product and service suppliers, end-users and in-house systems on an international scale. Understanding and solving these problems is essential for COSINE if it is to perform its intended role as a utility, initially for the R & D community but hopefully extending into other areas. In doing this, it will act as a major pull-through exercise for OSI but this cannot be achieved unless COSINE demonstrates the practical advantages long promised for these standards.

The effect of COSINE as a leading-edge activity on practical OSI is one of four reasons why the project is important. The most important reason is COSINE's role as a service; without this, the others become invalid. It is also important as a major technology transfer exercise from the academic to industrial communities and it is important as a pilot for the next generation of multilayer networking which extends well beyond OSI layer 3. Within a practical, working context, it will explore problems which will be met by other users of OSI. It must do so quickly as the project is an infrastructure activity – not an R & D project in networking – and there is no point in attempting to lay down infrastructures after the events which they support have commenced. The OSI which is used within COSINE must be that which emerges from the IT suppliers; it must not be experimental in nature. It must be attractive and supported as a product such that all users will purchase it with confidence.

In solving these problems, COSINE will obtain a realistic view of the future requirements for standards. It is likely that even COSINE will have to make some interim judgements on management standards and it will focus the minds of the standards makers on exactly what is meant and required by management and other standards. Thus, the project will make a major, practically-oriented contribution to further standardisation.

B. Oakley, Alvey Directorate, London

Cross-National Boundaries in an Early Stage – COSINE in the German View –

When, in 1983, the Federal Republic of Germany decided to build up a computer network in support of research cooperation and communication, everybody was fully aware from the outset that, as European and international cooperation grew particularly in the field of research, communication services could not stop at national frontiers. Since, at the time, we did not wish to take the second step before the first, we began at the national level. The German research network DFN (Deutsches Forschungsnetz) has three goals:

1. A science policy goal: the establishment of a communication infrastructure;
2. An industrial policy goal: the demonstration of international standards for open communication up to and including the level of application;
3. A research policy goal: the promotion of research in the field of data communication.

In order to ensure ensure acceptance of the communication services, responsibility for the project was given to the users, who organised themselves in an association specifically for this purpose.

The project concerning COSINE in the framework of EUROKA draws on the characteristics of our national project. COSINE was intended to help stimulate the establishment of similar infrastructure measures in the neighbouring countries and, where similar systems are already in the process of being established, to find a common technical basis in order to avoid expensive gateways which tend to reduce performance between incompatible networks from the very outset. After all, a common technical basis has economic advantages because many tasks and additional developments can be handled centrally and costs are shared among a

larger user community. Finally, the cost of communication services must be borne by the users themselves. The project is, in addition, given an industrial policy component by the requirement, established by the COSINE partners, that the communication services

- are to comply with the international standards for open systems (OSI) in the shape of European standards
- existing common carrier data services were to be used and that
- the communication services would be realised with industrial products.

OSI Demonstration Project

Confinement to European operational standards makes COSINE, with its large number of computers of the most varied manufacturers, probably the biggest demonstration project so far, but it also makes it the touchstone of European OSI standards. The decision in favour of manufacturers' products only, in addition, creates a transboundary demand for OSI services within the meaning of a pioneering role, which should be assumed by government procurements also because of their influences on industry. In addition, COSINE brings together the research teams working in the field of data communication in Europe. This is necessary, because the activities in preparation of standardisation can gain acceptance in the international standardisation process more easily if they enjoy broad-based support as joint European activities. Even though research activities are initially excluded from COSINE, the purpose being to avoid overloading the project at the beginning, multinational research cooperation on future-oriented projects is bound to come about eventually because national research activities will soon cross national boundaries as a result of the institutionalised contacts established in the framework of RARE.

The definition phase will last one year. During this year, the establishment and the extension of user organisations will be encouraged at the national level, as has been done in the Federal Republic with the DFN Association. For these national user organisations are responsible for the establishment and operation of the communication services in their own countries, in accordance with the targets fixed for COSINE. The European user organisation RARE is only an umbrella organisation which has to bring about more general coordination and harmonisation and which carries out central tasks and developments and organises the transfer of know-how. This form of organisation largely respects national characteristics and the different levels of development and degrees of organisation of the individual project partners. However, it expects the partners to do practical work also. In this way, COSINE influences policy formulation and political awareness in the field of data communication.

The above remarks have probably revealed that one of COSINE's major merits even now is a little aside from technology, namely in the organisation of the European user community, in the formation of a joint political will among the participating countries to support the project and in raising joint awareness that research and development in the field of data communication, if it is to succeed worldwide, must cross national boundaries even before standardisation is actually brought about.

Towards Involvement of Industrial Research

COSINE has to rely on functioning national user organisations providing the communication services at the national level. On the other hand, the national research networks are in need of the organisational framework offered by COSINE in order to be ready to start participating both in communication and in cooperation in the field of data communication. The way to European cooperation has been paved. Those active in the field of science must now seize the opportunities available and attempt to enhance them. As soon as the services have been established, these efforts should also include the attempt to also involve industrial research, which is hitherto under-represented. Another development opportunity certainly consists in the stimulation of multinational research activities.

Prof. Dr.-Ing. Fritz Rudolf Guentsch
Director-General at the Federal Ministry for Research and Technology, Bonn

RARE

Reseaux Associes pour la Recherche Européenne

Peter F. Linington, President

Klaus Ullmann, Vicepresident

James Hutton, Secretary-general

RARE, COSINE's Prime Contractor in the Specification Phase

Without RARE, no COSINE. Users of computer networks have to be unified to go out into the promised OSI-land, while all parties concerned need guidance to provide the necessary services and products. The Reseaux Associes pour la Recherche Européene (RARE) (see IES NEWS, No. 4, pg. 10, No. 5, pg. 4), having been established as a European association of national research networks and their users, is a rallying body to harmonise electronic communications.

RARE has the aim for scientists and researchers to communicate all over Europe and to use information or computational services on a European scale. Assembling most of the operational networks or planned networks in the academic world, RARE is a collection of present-day and prospective network operators. This com-

munity of considerable size asks for commensurate actions from the IT industry.

RARE has been involved in COSINE from the very beginning. It was decided that the plan COSINE initiated was to be divided into two phases: specifications and implementation. For the COSINE Specification Phase, RARE shall be the prime contractor.

Activities

Every year RARE organises a European Networkshop. The last one was held in Valencia (Spain), in May 1987. These Networkshops are organised as private parties, with attendees invited by the representatives of the full national members, to maintain a high technical level of discussion.

Other ongoing activities of RARE are:

- identification of protocols and selection of implementation options;
- selection of data transmission facilities;
- directory services;
- information services.

COSINE Workshop for Policy Makers

The COSINE workshop of November 3 - 4, 1987, is under preparation. The main goal of this event is to increase involvement from industry (as supplier and a user), from PTT's, from national administrations, from scientific organisations, etc. This time, COSINE wants to address policy makers rather than Information Technology experts. Invitation of attendees is organised through the COSINE Policy Group secretariat in Brussels.

Contributions from our readers should be addressed to:

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All these activities are progressed by RARE Working Groups.

RARE activities have been focused towards COSINE in performing the Specification Phase. The network association develops a common set of profiles, establishes a financial and accounting model for the infrastrucutre, and builds a strategy for the management of addresses and routes. Also, RARE will establish directories of available services, specify testing and diagnostic tools and evaluate PTT services. The technical work program will thus cover basic facilities for a managed infrastructure.

RARE also helps in designing the project management, funding mechanisms and in identification of potential contractors for the Implementation Phase. This phase will be characterised by a shift of emphasis from international and centralised activities to national and decentralised ones.

One aspect could make COSINE's relationship with RARE even more fruitful. If the present RARE community could encompass the entire ESPRIT, RACE and BRITE communities, this would enhance considerably the scope of COSINE's efforts.

Infrastructure for EUREKA

Among all EUREKA projects, COSINE has a claim to distinction, as it aims to provide essential prerequisites for industrial success. But even in areas remote from present-day interests of industry, such as historical research or language research, information facilities and data communications are more and more a key asset for scientific and technological developments.

At the European Conference of Ministers in November 1985 in Hanover, the German proposal for this European Research Network was accepted as a EUREKA project. Baptised COSINE (Cooperation for Open Systems Interconnection Networking in Europe) it asked the organisation RARE (Reseaux Associes pour la Recherche Européenne), to elaborate a plan for the establishment of a harmonised and fully operational infrastructure.

Entering World Markets

The main objective of COSINE is the rapid establishment of an environment to make data-communications services available to users from academic and industrial research organisations. These services will be based upon the international ISO/OSI standards and CCITT recommendations in the form of functional standards as defined by CEN/CENELEC and CEPT. The services will make use as much as possible of common carriers and will be operated on commercially available products. Thus, COSINE intends to create a market pull for OSI products, giving the European industry an opportunity to become a world leader in the supply of open systems for data communications.

In addition, COSINE will support collaborative research and development work throughout the EUREKA program by providing electronic data communications for all EUREKA projects. This way, COSINE is uniting a broad front of industrial research users, industrial suppliers, standardisers and providers of telecommunications infrastructure. In other words: allow the scientist in Helsinki to work as easily with his colleague in Valencia as his neighbour next door, and create for Europe a large home market which is an asset on its own as well as a point of departure for entering world markets.

The following countries have been participating in COSINE: Austria, Belgium, Denmark, the Federal Republic of Germany, Finland, France, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, Turkey and the United Kingdom, with the European Community as a contributing body. Yugoslavia has shown interest to join.

Esprit Conference 1987:

1000 Delegates expected

This year, as in the previous three years, the European Information Technology R & D community, of which ESPRIT is an important component, will converge on Brussels for three days in September to evaluate the progress of the previous twelve month, make new contacts and look to the future. This year the future will be very much the topic of discussion. The theme addressed by the fourth annual ESPRIT Conference Week Forum is to be "Europe 1992 – Technology and Market" reflecting the importance of the success of the ESPRIT Program to the completion of the internal market.

To date the organisers have received 177 notifications and over 100 proposals for static displays. A Program Committee of eminent figures in the European IT Community has been appointed and is planning a full program to consist of some strategic flagships presentations and 115 presentations in up to five parallel sessions.

More than 1000 people are expected to attend. There will be an IT Forum, on the Wednesday, where researchers and decision makers will have the opportunity to hear leading industrialists, such as Mr. Van der Klught (Chairman of Philips), Mr. Stern (President Directeur General of CII-Honeywell Bull), and leading political figures such as Mr. Haarder, President of the Council of the European Communities - Research, and Mr. Karl-Heinz Narjes, Vice-President of the Commission of the European Communities.

Associated with the ESPRIT Conference Week in 1987 will be a two day Conformance Testing Services Conference; a special one day conference on Distributed Data Base Systems, resulting from work done under the Multi-Annual Program in Data Processing, and from the COST 11ter program; and a Proposers Day to assist potential ESPRIT participants in finding partners, making a proposal etc.

Information and requests for registration forms should be addressed to the organisers:
E.C.C.O.
(European Congress Consultants and Organisers)
Rue Vilain XIIII, 17a
B-1050 Brussels
Belgium
Tel.: +32 2 647.87.80
Tlx: 61434 sdrbru b

1987 ESPRIT Proposers' Days

In order to assist potential proposers in industry, academia and other organisations interested in participating in ESPRIT, DG XIII will be holding two Proposers' Days in 1987.

The first of these will be held on 2 October, 1987 at the end of the annual ESPRIT Conference; the second Proposers' Day will be held about two weeks after the official call for proposals.

These Proposers' Days should be of benefit to all those in the Community interested in participating in the ESPRIT program – regardless of the size of their company or organisation – and should help them in their preparation of proposals complying in both content and form with the ESPRIT Phase II Workplan and with the guidelines set out in the ESPRIT Information Package, and also in finding partners.

Briefing sessions will be help to provide general information about the ESPRIT program, about the Workplan and the procedures for submission of proposals.

Proposers' Days will provide an ideal opportunity for proposers to make contact with each other in order to locate potential partners – often felt to be difficult and time consuming part of making a proposal. There will also be demonstrations of the DG XIII EURCONTACT data base which has been set up to assist proposers to locate suitable partners.

If you would like to attend one of these Proposers' Days please write giving your name, address and telephone number and specify whether you would like to attend the Proposers' Days on 2 October or the Proposers' Day to be held after the Call for Proposals.

Subsequently we will send you confirmation of your reservation and details of the venue. Write to:
Commission
of the European Communities
DG XIII Telecommunications,
Information Industries
and Innovation
ESPRIT Operations Office A25 7/11
200 Rue de la Loi
B-1049 BRUSSELS

EuroKom and some of its Users

A casual look at the users who maintain an electronic mail box on the EuroKom service will reveal immediately the breadth and the effect ESPRIT has had in advancing European cooperation in the field of information technology.

These users come from some of the best European establishments, the biggest enterprises in IT and telecommunications and of course the cream of academic institutions.

The list of organisations given below include names known if not throughout the world at least throughout the industrial IT society of Europe.

Belgium
ACEC
FABRIQUE NATIONAL
SOBEMAP

France
BULL
CAP SOGETI
CNET
ELF
INRIA
ALCATEL
MATRA
PEUGEOT S.A.
RENAULT
SESA
SGTE
THOMSON

UK
ALVEY PROGRAMME
BP
BRITISH AEROSPACE
BRITISH TELECOM
FERRANTI
GEC
STC-ICL
INMOS
ITT
LANGTON
LOGICA
MARI
PLESSEY
RACAL
SCICON
THORN EMI

Denmark
DANSK DATAMATIC CENTRE
DANISH PTT, JTAS, KTAS
RC COMPUTER

Ireland
TELECOM EIREANN

Italy
COMAU
CSELT
ENIDATA
ITALIAN PTT
OLIVETTI
SELENIA

Germany
AEG
BASF
BIOMATIC
BROWN BOVERI
DEUTSCHE BUNDESPOST
DORNIER
FRAUNHOFER
GMD
IABG
KRUPP ATLAS
PCS
STANDARD ELECTRIC LORENZ
SIEMENS
NIXDORF

Spain
FUNDESCO
STANDARD ELECTRICA

Holland
CWI
OCE
PHILIPS
PTT NETHERLANDS
EUROPEAN SPACE AGENCY

To this list one can add over 80 universities and a big number of other lesser known large and small organisations. In addition, EuroKom is used by such groups as standardisation bodies (CEN/CENELEC, CEPT), the SPAG Group, the EUREKA Secretariat and various national government officials involved in program advisory committees.

There are of course other research hosts and networks on a European scale offering services to much larger communities. No other facility however exists presently which provides services to such a variety of institutions, on such a geographic scale. Maybe those not involved should take a better look at EuroKom and IES services in general. Their participation will enhance even more what a number of users consider as an effective means of communication and a forum for information exchange.

International Competition for Videodisc Applications

The Organiser of IMACOM 87 have announced a competition for videodisc applications. Awards of a golden mercury will be made for the best and most imaginative proposals relating to promotion, training, scientific uses and image data banks. Full details can be obtained from IMACOM 87, Centre Informatique Regional, 11 Rue de la Convention, F-25031 Besancon.

Recent Standards

Through assistance from ISO, we are now in a position to start publishing lists of recently issued final and draft standards in areas of interest. We are unfortunately not able to supply copies, which can be obtained either directly from the issuing body or your local national standards organisation.

New Standards

ISO 2382-3-1987 Bilingual	Information processing systems – Vocabulary – Part 03: Equipment technology
ISO 2382-6-1987 Bilingual	Information processing systems – Vocabulary – Part 06: Preparation and handling of data
ISO 2382/8-1986 Bilingual	Information processing systems – Vocabulary – Part 08: Control, integrity and security
ISO 6951-1986	Information processing – Processor system bus interface
ISO 7487/3-1986	Information processing – Data interchange on 130 mm (5.25 in.) flexible disk cartridges using modified frequency modulation recording at 7.958 ftprad, 1.9 tpmm (48tpi), on both sides – Part 3: Track format B
ISO 7776-1986	Information processing systems – Data communication High-level data link control procedures – Description of the X.25 LAPB-compatible DIE data link procedures
ISO 7812-1987	Identification cards – Numbering system and registration procedure for issuer identifiers
ISO 7813-1987	Identifications cards – Financial transaction cards
ISO 8063/1-1986	Information processing – Data interchange on 6.30 mm (0.25 in.) wide magnetic tape cartridge using IMFM recording at 252 ftpmm (6.400 ftpi) – Part 1: Mechanical, physical and magnetic properties
ISO 8348-1987	Information processing systems – Data communications – Network service definition
ISO 8378/1-1986	Information processing – Data interchange on 130 mm (5.25 in) flexible disk cartridges using modified frequency modulation recording at 7.958 ftprad, 3,8 tpmm (96 tpi), on both sides – Part 1: Dimensional, physical and magnetic characteristics
ISO 8378/3-1986	Information processing – Data interchange on 130 mm (5.25 mm) flexible disk cartridges using modified frequency modulation recording at 7.958 ftprad, 3,8 tpmm (96 tpi), on both sides – Part 3: Track format B
ISO 8471-1-1987	Information processing systems – Data communication High-level data link control balanced classes of procedures – Data-link layer resolution/negotiation in switched environments
ISO 8631-1986	Information processing – Program constructs and conventions for their representation
ISO 8859-1-1987	Information processing – 8-bit single-byte coded graphic character sets – Part 1: Latin alphabet No. 1
ISO 8859-2-1987	Information processing – 8-bit single-byte coded graphic character sens – Part 2: Latin alphabet No. 2
ISO 9036-1987	Information processing – Arabic 7-bit coded character set for information interchange
ISO 9293-1987	Information processing – Volume and file structure of flexible disk cartridges for information interchange

DIS circulated

DIS 2382/12 Bilingual	Information processing systems – Vocabulary Part 12: Peripheral equipment (Revision of of ISO 2382/12-1978)	1987-06-18

Recent Standards

DIS 6937-7	Information processing – Coded character sets for text communication – Part 7: Greek graphic characters	1987-10-09
DIS 6937-8	Information processing – Coded character sets for text communication – Part 8: Cyrillic graphic characters	1987-10-09
DIS 8485	Programming Language – APL	1987-04-13
DIS 8802-2.2	Information processing systems – Local area networks – Part 2: Logical link control	1987-05-19
DIS 8831	Information processing systems – Open Systems Interconnection – Job transfer and manipulation concepts and services	1987-10-30
DIS 8832	Information processing systems – Open Systems Interconnection – Specification of the basic class protocol for job transfer and manipulation	1987-10-30
DIS 8859-3	Information processing – 8-bit single-byte coded graphic character sets – Part 3: Latin alphabet No. 3	1987-10-02
DIS 8859-4	Information processing – 8-bit single-byte coded graphic character sets – Part 4: Latin alphabet No. 4	1987-10-02
DIS 8881-1.2	Information processing systems – Data communications – Use of the X-25 packet level protocol in local area networks – Part 1: Use with LLCType 1 procedures	1987-05-05
DIS 8881-2.2	Information processing systems – Data communcations – Use of the X-25 packet level protocol in local area networks – Part 2: Use with LLCType 2 procedures	1987-05-05
DIS 8882-1	Information processing systems – X-25 DTE conforance testing – Part 1: General principles	1987-08-26
DIS 8886.2	Information processing systems – Data communication – Data link service definition for Open Systems Interconnection	1987-06-05
DIS 9064-1	Information processing –Text and office systems – Minimum information to be included in specifications sheets – Part 1: Fascimile equipment	1987-09-05
DIS 9064-2	Information processing –Text and office systems – Minimum information to be included in specification sheets – Part 2: Character coded text and office systems including equipment suitable for participating in the CCITT telex and teletex services	1987-09-05
DIS 9065	Information processing –Text communication – Message OrientedText Interchange System User Agent Sublayer – Inter-personal messaging user agent – Messaging interchange formats and protocols	1987-06-30
DIS 9127	Information processing – Documentation of computer-based information systems – User documentation for consumer software packages	1987-05-13
DIS 9160	Information processing – Data encipherment – Physical layer interoperability requirements	1987-06-30

DIS circulated

These documents have obtained substantial support within the appropriate ISO technical committee. They have been submitted to the ISO member bodies for voting by the date shown.

Electronic Document Transfer between Athens and Brussels:

An INSIS Pilot Experiment

The INSIS Program, formally set up by the Council in December 1982, is concerned with the coordinated introduction of information and telecommunications technology in public administrations within the Community, in order to modernise and improve the efficiency of communications between Member State administrations and Community institutions.

Besides horizontal actions that serve this aim – such as promoting the definition and use of international standards and European norms relevant to the user requirements of the Community's public administrations – the INSIS Program actively supports the launching of pilot systems as precursors to the eventual introduction of fully operations ones.

Last year Greece proposed such a pilot system: the creation of an electronic link between the Greek Administration in Athens and the Commission in Brussels, for the purpose of transmitting written documents between them. It should be noted that while every national administration can derive benefits from electronic document transmission, these benefits are especially pronounced in the case of those Member States which are geographically most distant from Brussels.

The immediate objectives of the pilot experiment between the Greek Administration and the Commission are twofold:

- to test the *technical infrastructure* for electronic communications between Athens and Brussels, an area in which Greece has not yet advanced as far as some other Member States;
- to gain realistic operational experience of the *procedural issues* that arise in public administrations when paper documents are replaced by electronically transmitted ones.

The scope of any document transmission pilot system needs to be restricted to a limited user population and to just a few well defined categories of documents. One important reason for this is that a considerable proportion of the documents exchanged between Member State administrations and Community institutions must be transmitted through the "official channels" (e.g. through the Secretariat General of the Commission and the Permanent Representation of the Member State) to satisfy legal and procedural requirements. This is likely to remain true for some time to come, pending international agreement on a number of technical issues (e.g. the security and the authentication of electronically transmitted documents) and internal reviews by the public administrations of the procedural implications of replacing paper documents by electronic transmission.

Thus the first step towards the implementation of the proposed pilot system has been a study, funded by INSIS and performed by the Greek consultancy organisation ELKEPA, whose aim it was –

- to identify technical options for an electronic document transfer link between Athens and Brussels;
- to identify administrative units, in the Greek Administration and in the Commission, which regularly exchange documents that could be transmitted electronically (i.e. that do not have to be sent through the "official channels").

The study, which is due to be completed during the summer, started by identifying a number of potential candidate ministries in Athens and information was collected about the types and volumes of documents they exchanged with the Commission. This preliminary information was used to define a shortlist of possibly suitable administrative units, in each of which relevant document flows were examined in greater depth.

At the time of writing the report and recommendations of ELKEPA are not to hand yet, but preliminary indications are that the Directorate for Informatics Development in the Ministry of the Presidency (which has overall responsibility for the project) and one other ministry in Athens have been pinpointed as the most suitable participants in the proposed pilot experiment.

In addition to the specific administrative units eventually selected, it is also intended to provide an electronic link to the Greek Permanent Representation in Brussels as part of the pilot experiment: the availability of such a link will contribute in no small measure to the evaluation of procedural issues arising from the use of electronic document transmission.

Finally, it is hoped that the experience gained through the pilot experiment will serve as a suitable foundation for more extensive use of electonic document transmission between the Greek Administration and the Community institutions by the time Greece next occupies the Presidency of the European Community.

Letters to the Editor

Dear Sir,

The objective of Euromath, the integrated data base and communications system for European mathematicians, is to improve the research environment for European mathematicians with the aid of modern information technology. By establishing an integrated information retrieval and communication system as well as a technical word processing standard, it will strive to stimulate the research potential within mathematics in Europe, increase the availability of mathematical research and create an environment which will encourage mathematicians towards increased collaboration through effective communication.

The first phase of the Euromath project will produce guidelines for the provision of the following interrelated facilities:

- **Information Retrieval:** Access to various directories, to (reviews of) published literature, to other data bases as well as drafts and notes of individual mathematicians;
- **Inter-person Communication:** Provision of suitable electronic mail and electronic conferencing facilities;
- **Document Preparation and Delivery:** The establishment of a European standard for mathematical communication embracing the main activities of entering, editing, transmitting, receiving and printing mathematical documents.

Traditionally, mathematicians have relied on computers manily for such specific task as scientific computation and symbolic manipulation. A goal of Euromath is to expand computer usage by enabling easy access to modern communication facilities. Its basic concept is howewer equally applicable to other scientific disciplines. The succes of Euromath could inspire others to see the benefits of a modern, full-scale solution to the communication needs of a scientific community.

The CEC project Euromath is a collaborative effort linking CWI (Amsterdam), DDC (Copenhagen) and NIHE (Dublin) in a technical partnership under the management team of CRC (Dublin) and EMT (European Mathematical Trust).

I am currently working on a state-of-the-art report and am anxious to liaise with similar and overlapping CEC activities. I am particularly interested in state-of-the-art capabilities in technical word processing, networks and communication protocols, electronic mail and tele-conferencing and getting views on such issues as the provision of a (distributed or centralised) data base of mathematical literature. Also relevant is the problem of "portability" of mathematical text, how it can be transmitted electronically and viewed in or retrieved from a suitably constructed data base.

It is hoped that the report should reflect what is currently available in any or all of the above areas and include information about any existing or developing products similar to the components of the proposed Euromath system.

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Editor's Comments: If any reader can help, please contact the writer or me. I shall gladly forward any suggestions. The data base is one of equations, not of literature.

ADA makes Progress in Europe

Alsys (France) and Imperial Software Technology and Logica (both U.K.) have announced a £2,8 million program over two years on an ADA workbench for the EUREKA program, much financial support coming from the respective governments. In addition, Logica are to develop its MaCadd intelligent software diagram editor into ADA oriented tools supporting specification and design notations, whilst Alsys will upgarde its ADA compiler and other related software.

Distributed Data Bases:

One Day Conference in Brussels in October

A conference on Distributed Data Bases is being organised, in conjunction with the Esprit Conference, in Brussels on Thursday, October 1, in the Palais de Congres (same venue as the ESPRIT Conference). There will be two sessions. The first, which will run from 0900 to 1300 hrs, will feature the following items:

Introduction to Program:
Emile Peeters DG XIII

Four Project presentations:

MAP project 761: Multi data base services on ISO/OSI networks for transnational accounting. Speaker: Bernhard Holtkamp, Universität Dortmund;

MAP Project 762: A complete specification for a model-independent heterogenous distributed data base system. Speaker: Prof. Peter Stocker, University of East Anglia;

MAP Project 773: Application of distributed data base techniques to transnational health information systems: design, implementation and evaluation of a system architecture. Speaker: Andrew Hutt, ICL, UK;

MAP Project 778: ARCHEDDA – Architectures for Heterogeneous European distributed Data Bases. Speaker: David Parr, Logica SA, Brussels.

The afternoon session will feature several guest speakers and an open discussion chaired by Emile Peeters.

As can be gathered from the numbering system used above, the work done on distributed data bases was conducted under the Commission's Multi-Annual Program in the field of data processing. This was one of the first IT programs launched by the Commission and the original program ran from 1979 to 1983. The program was then extended for two years. The four projects in the distributed database area were started during 1985.

There is no registration fee but places are limited and are allocated on a strict first-come-first-served basis. If you are interested in attending this one day conference then contact as soon as possible:

Emile Peeters
Commission
of the European Communities
200 rue de la Loi
DG XIII J-37 2/15
B-1049 Brussels
Belgium

or

the ESPRIT conference organisers:
E.C.C.O.
(European Congress Consultants & Organisers)
Rue Vilain XIIII, 17a
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Esprit
Information Exchange System

iesnews

Issue No 11, August 1987

IT in Europe is making progress, not as fast as some would like it, but there are some solid achievements. Thus there is a discernible move towards compatibilities of products, portability of software and open mindedness when it comes to national purchases. On the other side of the coin there are however some glaring misconceptions of what IT could and should be.

Thus at a recent international meeting, visible tremors of fear could be observed when an unconfirmed rumour went the rounds that big brother was bringing out a new product with a nonstandard size disc: the immediate reaction appeared to be, what shall we do, how can we modify our products etc. The rumour proved false, the fear was real. Another example – a major European producer is apparently unwilling to intervene when his product is sold for twice the London price in Paris, and the London price is already more than double the U.S. one. A real encouragement for the potential user. (One could mention in this context the grotesque currency conversions to which books, journals and newspapers are subject in Europe – four times the charge outside the country of origin is not uncommon.

Editor's Corner

Another failing of the IT industry is the apparent lack of understanding of the opportunities a new product could offer: the full potential of new media is seldom exploited by those who already use "older" technologies – transferring from one medium to another, without some added value, will loose a potential new market. A typical example here is the Lutheran bible on CD-ROM. It is also a sad comment on Europe with its so called north – south gradient, that a poor country can spend £ 400 million to make its cultural heritage more accessible through IT, whilst a wealthy state has to rely on private donations to preserve its old and unique book stock. Perhaps it is symptomatic of the European malaise that a well-run public telecommunication channel has to be privatised with the new owner immediately announcing cultural bankruptcy. Until authorities will support European technology, science and culture without expecting only financial returns, there is little hope that Europe will maintain, let alone recapture, its standing. The Framework program, just adopted, is a shining example of what can and must be done. Let us hope that it will be followed by other imaginative actions.

FUTURE EVENTS

Ada: Presentation, Methods and Industrial Practice. AFCET. Strassburg, September 8, 1987

Automatacom: EPOS Europe 87. RMDP. Montreux, September 8 - 10, 1987

IBM and Dec: A Global Perspective. Internat. Data Corp. Brussels, September 21 - 22 1987

Language and Speech Processing: Convergent Themes. Centre for Computer Analysis of Language and Speech Leeds University, September 23, 1987

FUTURE EVENTS

BUS/Board Users Conference. Buscon - U.K. and I.E.E.E. London, October 12 - 14, 1987

Informatics 87: Preparedness, Productivity, Profit. IMC. Vienna, October 12 - 15, 1987

Imacom 87: IMADISC Besançon, October 27 - 28, 1987

The Business of CD-ROM. Eikon, S.p.A. and EURIPA Rome, October 27 - 29, 1987

Achieving Safety and Reliability with Computer Systems. I.F.I.P., I.E.E.E., C.E.C. Manchester, November 11 - 12, 1987