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# Esprit Information Exchange System

# iesnews

## Issue No 18, October 1988

### LATE NEWS

#### **European Workshop for Open Systems**

Further to the notes in Issue 16, some 65 European and International IT suppliers, users, governmental and standardisation bodies agreed on further actions at their meeting in Brussels in late September. Three additional domains (virtual terminals, directory and message handling systems) have been added to the four major domains of OSI environments for which progress was reported.

#### **The End of Paper Filing?**

A recent UK report suggests that computer storage will bring an end to the economic burden of holding paper records. Currently some 12 million filing cabinets hold some 75.000 million documents which may never be consulted or handled except for disposal once the legal storage life is reached. A new system, "The Origin", developed by Realstream is claimed to meet most of the objections to document disposal and bring with it considerable savings in archiving space and costs.

Twenty-two European Telecommunication Administrations and Operators of Public Networks and Services from CEPT countries reached an Agreement in Berlin on the 8th of September in which they declare their intent to establish as soon as practicable a joint limited liability company with the objective of providing customers and users with comprehensive telecommunications services for intra- and inter- corporate communication.

The Company shall provide Managed Data Network Services (MDNS) including access and interfacing facilities, gateway services, network management and one-stop-shopping for data communication services using public switched networks or leased circuits.

MDNS will be marketed by Administrations or Public Operators to their customers, with support given by local offices of the MDNS Company. In some countries, marketing will be performed by the MDNS Company itself, where national operators prefer this approach.

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## JOINT EUROPEAN TELECOMMUNICATION SERVICE

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The MDNS Company will be incorporated in the Netherlands. The site of the headquarters of the Company will be determined at a later stage.

A final decision about the establishment of the Company is expected to be taken early 1989 when all outstanding formalities are resolved.

The MDNS initiative reflects the commitment of European Telecommunications Administrations and Operators to provide efficient and cost-effective universal telecommunications and to utilise the existing and future telecommunications infrastructure in the most efficient way to the benefit of European industry and European society at large.

For further information about the MDNS project, please contact any of the Signatories or Mr J.F. Pedersen, Chairman of the CEPT Commercial Action Committee, telephone +45-1-93 33 77, extension 210.

Signatories included the PTT Administrations from all the 12 Community Countries, as well as Austria, Finland, Iceland, Switzerland, Norway, Sweden and Cyprus, and commercial operators such as Italcable and Mercury.

# LIBRARY

### LATE NEWS

#### **An Old Friend in a New Guise**

*In parallel with the unveiling of the new edition of the Oxford English Dictionary, a CD-Rom version of the first, 1933 Edition, has been announced. One disk holds the full content of the original 12 volumes and offers many advantages in access. Thus it is possible to find all words introduced into the language by Shakespeare.*

#### **Meeting Overflow**

*Both the Fifth Esprit Technical Week in November and the 12th International Online Meeting in December look like not having room for late registrants.*

### THIS ISSUE:

*Trans-Europe Data Network Service  
Brite Program Evaluation  
COMETT and EuroKom  
Videoconferencing  
Copyright for computer Programs  
RARE MHS Project*

#### **COSINE News**

*Policy Group Meeting  
Specification Phase  
ESA Information System  
Marine Information System*

# Trans-Europe Data Network Service for Research

Following the eight meeting of the COSINE Policy Group in Athens, on 3-5 October 1988 the European Community is to make up to one million ECU available immediately from its ESPRIT budget for a pilot Managed Data Network Service (MDNS) for European researchers to interconnect their computer systems.

The requirement for such a pan-European infrastructure was defined by a COSINE working party of major research network users. COSINE (Cooperation for Open Systems Interconnection Networking in Europe) is a EUREKA project whose aim is to establish an advanced communications network for scientific and industrial research institutes throughout Europe.

Recently, 22 European Telecommunication Administrations agreed to provide such services from 1989, as announced on 8 September by CEPT (Conférence Européenne des Administrations des Postes et Télécommunications; see also pg 1).

The Commission also intends to continue to participate in COSINE during the forthcoming implementation phase of the project, and to use its results in Community R&D programs and projects such as ESPRIT, RACE and BRITE. ESPRIT II, the largest of the Community R&D programs, is on its own expected to contribute a potential user base of 8.000 professional researchers and engineers for this network.

The support for a Managed Data Network Service follows the announcement in November 1987 by Mr Michel Carpentier, Director General for Telecommunications, Information Industries and Innovation at the Commission of the European Communities in Brussels, of additional measures to support computer communications for users in the research and development sector, using the standards for Open Systems interconnection (OSI).

In his announcement, Mr Carpentier explained that actions were required specifically:

- to enhance user services;
- to improve interworking between heterogeneous computers through the provision of systems conforming to European norms, currently being defined on the ba-

sis of internationally agreed standards for OSI;

- to help users of existing closed or dedicated networks to contact their colleagues in the outside world, and to be contacted by them, by helping them in duly justified cases with the process of transition to use of the OSI standards;
- to improve further the level and quality of service provided by the underlying packet-switched infrastructure of the PTTs and PTOs (Private Telecommunications Operators).

The Commission uses the provision of an open data communications infrastructure for research, both academic and industrial, as an important step towards creating a European Technology Community.

## Evaluation of Brite Program

A report on the BRITE program, prepared by an Evaluation Panel comprising industrial managers, research scientists, industrial consultants and senior officials from Member States, was presented to the Commission on 27 September. The report finds that BRITE has already generated additional and beneficial

research for the development of new industrial technologies. As the only program specifically oriented towards established industries it is making a unique contribution to the competitive strength of the Community.

Over 215 projects costing a total of 350 MECU have been supported

# Evaluation of Brite Program

under BRITE on a 50/50 cost-sharing basis with industry, some 67% of the budget going to industry, but because of the high rejection rate of applications the report supports the decision to seek a higher budget for the follow-up BRITE/EURAM program currently before the Council.

The report stressed the value-added aspect of BRITE: over 85% of project managers reported that without it work would not have taken place. 80% of projects are making real progress and the majority of industrial participants expect commercial results within 5 years. Evidence of progress on industrial interaction and links between academia and industry was also found.

The report makes a number of recommendations, including: – a stronger marketing approach to R&D and more attention to the economic significance and strategic management of projects; continuous adaptation of BRITE program priorities by a team of mainly industrial experts; a two step evaluation process; and recommendations which have already been adopted on combining BRITE and EURAM and holding annual calls for proposals.

Copies of the report, reference EUR 11782, are available at 32.50 ECU from:

Office de Publications Officielles  
de la C.E.  
Rue Mercier  
L-2985 Luxembourg

## **BRITE Program: BACKGROUND**

BRITE is a 4 year program of collaborative research launched in 1985

and funded jointly by the EC and industry. It aims to improve the technological base of European manufacturing industry by promoting Community-wide industrial R&D in a framework of international cross-border cooperation. The research is pre-competitive, with commercial product development left to industry. The technical content of BRITE was drawn up in consultation with industry and reflects the requirements of the European market. The focus is on new manufacturing techniques and new materials, with the following fields given priority:

- improved reliability of industrial materials, components & systems;
- laser technology as a production tool;
- new material jointing techniques;

- new testing methods, often computer based and used on production lines in continuous processes;
- advanced design and manufacturing techniques;
- application of advanced materials such as polymers, composites & ceramics;
- membrane science and technology;
- catalysis and particle technology;
- automated processing and assembly of flexible materials leading to the automated manufacture of clothes and shoes.

Projects must have partners from at least 2 Member States, and preferably more than one industrial partner. Small and medium-sized enterprises are particularly encouraged to participate. Supported projects receive funding for up to 50% of the cost of personnel, equipment and materials, the balance being met by the industrial partners.

## COMETT European Network starts its EuroKom Pilot Phase

Operational since the 1st of January 1987, the COMETT Program focuses on the following objectives:

- to give a European dimension to university-enterprise cooperation in the field of training related to innovation and the development and application of new technologies;
- to foster the joint development of training programs and the ex-

change of experience, and also the optimum use of training resources at Community level;

- to improve the supply of training at local, regional and transnational level with the assistance of the authorities concerned, thus contributing to the balanced economic development of the Community;
- to develop the level of training in

# COMETT European Network starts its EuroKom Pilot Phase

response to technological and social change by identifying the resulting priorities in existing training arrangements which call for supplementary action both within Member States and at Community level, and by promoting equal opportunities for men and women.

One of the key objectives of COMETT is to establish a European Network of UETPs (University-Enterprise Training Partnerships) across the twelve Member States. The UETPs are consortia whose initiatives bring universities and enterprises together on a structured and coordinated basis in order to meet training needs through initiatives such as student placements, exchanges of personnel, continuing education programs and media-based actions.

The distinct actions of the COMETT Program are identified by the following "Strands", and the interaction between and amongst the Strands is one of the most important elements within COMETT.

As a key element of Strand A, the UETP may well start on a local basis, but must have the intention in principle to develop cross-frontier activities. A UETP can be regional, based on a particular geographical area, or sectoral, related to a particular scientific or technological field or to an industrial sector. Of course, the UETPs might also be regional and sectoral at the same time.

Strand B deals with transnational exchanges and provides funding for student placements in enterprises and for university or enterprise se-

condments in order to promote the mobility of people between universities and enterprises across national frontiers.

Strand C concerns continuing education projects. COMETT supports initiatives for the development of training materials and packages for use in firms and short intensive courses of high level having as their aim the dissemination of the latest R&D results within universities and enterprises.

Under Strand D, which is entitled "Multilateral initiatives towards multi-media training systems", COMETT offers support for initiatives designed to provide and improve structures through which media-based learning can be provided.

At the beginning of the Program, COMETT Information Centres were created in order to set up in each Member State a support structure for the Program. The main functions of these Centres are:

- to distribute all information on COMETT in their country,
- to advise potential applicants,
- to assist promoters in finding European partners for the formation of projects, and
- to assist promoters in the drawing up of their applications.

During the first operational year, 108 UETPs were selected in the first and second rounds of applications and started their activities in 1987. On 15-16 October 1987 the first UETP Symposium took place and was one of the first steps in setting up of the European Network and in determining the role and purposes of the UETPs. As part of the discus-

sions, it was foreseen that the regional/sectoral UETPs would have to look towards sister associations from other Member States or associations which are already transnational in order to conceive and jointly develop projects falling within the other Strands. The transnational/sectoral UETPs will endeavour to complement each other on a geographical level by entering into contact with other UETPs with common interest in particular fields of technological training.

As part of the plans for setting up the UETP Network, the Commission gave its consideration to the introduction of an electronic mailing system for all UETPs selected in 1987 as well as for the COMETT Information Centres. The system initially chosen is EuroKom. After an interest survey and on the basis of the level of technical preparation, an initial group of users was invited to participate in a pilot experiment which started in June 1988. The purpose of this initiative, as part of the overall activities within the COMETT Program, is to promote communication and information exchange amongst the UETPs and Information Centres. A further aim is to investigate the level of interest of users whose experiences will be considered as a possible basis for a later expansion of the system for all UETPs of the COMETT European Network.

# Videoconferencing

Taking part in a meeting away from your normal workplace often involves a number of inconveniences such as loss of time, reduced efficiency and fatigue, not to mention the direct cost of travel and hotel accommodation.

Although some face-to-face meetings will always be necessary or desirable, the development of electronic systems which combine technical and infrastructural facilities for holding conferences or working meetings without requiring participants to spend so much time away from their usual place of work, such as Videoconferencing, could improve the situation considerably.

The system works like this: the participants sit at a meeting table facing a screen on which they see their interlocutors, who are in a similar videoconferencing room elsewhere. The two sides are able to communicate in the same way as at a normal meeting.

Establishing videoconferencing facilities across European frontiers and beyond requires consensus on technical and regulatory issues. The Commission not only provides the impetus and the framework for agreement but is itself a leading client for international videoconferencing facilities, since progress in Community affairs – indeed the management of the Community as a whole – depends largely on committee meetings. Brussels and Luxembourg host numerous meetings involving European and national officials every day, while other specialists in Community affairs are constantly travelling between the 12 Member States.

For instance, someone travelling between Brussels and Luxembourg to take part in a meeting will have to spend about 6 hours in travelling time. If this is multiplied by the number of people who have to attend the meeting, which will itself probably only last 3 hours, the scale of the problem becomes clear. The situation is even worse when a meeting is held in another European capital, in which case it will often be impossible to travel there and back on the same day. The consequence is frequently that only one person from an organisation will be able to attend when ideally the attendance of several specialists would be desirable.

As a potential leading-edge user itself the Community has therefore taken a number of steps to promote videoconferencing facilities, pioneering the application of this new technology across frontiers to open up new services and market opportunities.

## Community Videoconferencing

The possibility of such an improvement in the physical organisation of Community meetings was identified in 1982 in the framework of the INSIS program. It appeared that the rapid development of videoconferencing technology, plus the early availability of a broadband telecommunication infrastructure, could provide the best means for the purpose.

A study was therefore initiated to investigate the creation of a pilot videoconference service between the Community institutions in Brussels and Luxembourg. Officials of Community institutions and Members of the European Parliament were chosen as the main potential users.

Thereafter, at the initiative of DGXIII, videoconferencing rooms were set up in the Berlaymont building in Brussels and in the Schuman building of the European Parliament in Luxembourg, as a short term follow-up to the INSIS videoconference activities, with the telecommunications administrations in Belgium and Luxembourg providing the necessary terrestrial link (2 Mbits) to connect the rooms. EC officials are being encouraged to use these studios whenever possible for their meetings, not only in Brussels and Luxembourg but also between Brussels and rooms in the capitals of the Member States. The Permanent Representations (EC embassies) of the Member States are also invited to use the Brussels rooms.

Already a number of notable figures have made use of videoconferencing for important events and press conferences. These include Prime Minister Martens, Prime Minister Santer, and Sir Geoffrey Howe.

The rooms allow sound and image communication with other videoconference rooms installed in most other European capitals including Bonn, Copenhagen, Dublin, The Hague, London, Paris, Rome, and shortly to be set up in Athens, Ma-

# Vide Conferencing

drid and Lisbon. Outside the Community, communications have already place with Geneva, Stockholm and Washington, and there is a possibility of links with the Far East.

The Commission is also researching the possibility of making simultaneous translation facilities available to accompany the videoconferencing facilities. However, there are technical problems for the translator, who usually relies on direct visual contact, using video images and sound.

The Commission took full advantage of the work being done in other frameworks, in particular by the European Videoconferencing Experiment (EVE) undertaken by the European Conference of Postal and Telecommunications Administrations (CEPT).

The EVE project, focussed mainly on technical and telecommunication aspects, has led to the European Videoconference Service (EVS) project, oriented more towards the commercial and marketing aspects of this new service in Europe.

## Intergovernmental Videocommunications

In the meantime, rapid technological development and progress in the industrial production of videoconferencing equipment allowed a second initiative: in February 1984 the EC Research and Technology Ministers asked the Commission to study the possibility of setting up a videocommunication system which would link the capitals of the Member States and the three locations of

the Community institutions, putting videocommunications at the service of political decision-making in Europe.

Aimed at improving communications, facilitating the preparation of meetings or negotiations and reducing travelling, this initiative, known as the Intergovernmental Videoconferencing Project (IVP), is also expected to play a significant role in the development of a future broadband telecommunications network across Europe. As a catalyst in the creation of a trans-Community broadband network, the project could be a key element in Community telecommunications policy. This trans-Community network of videoconference services is operated either using satellite or terrestrial systems. Multipoint videoconference technology, which acts as a gateway for videoconferencing transmissions and allows up to 5 simultaneous videoconferencing links, has been implemented in 4 countries on the network, and this will be extended in the future according to user needs.

Given that many users will be high-level policy-makers dealing with sensitive matters, a high degree of confidentiality will be required. This is presently being studied and encryption is already available on the Brussels/Luxembourg link. A common encryption system has to be defined in the framework of this project, which is expected to pave the way towards videoconference services open to a larger user population and adapted to broader geographical coverage. However, it must be said that the signals used for videoconferencing may only be in-

tercepted by means of highly sophisticated equipment.

The technique used for videoconferencing, while partly related to television technology, is not exactly the same. A television transmission requires a frequency of 140 Mbit/sec, the transmission costs of which would simply be too high. With videoconferencing the "analogue" images of traditional television are converted into numerical or "digital" signals of 2 Mbit/sec. In this way the transmission costs are considerably reduced. If necessary these transmissions can be encrypted.

The transmissions are conformant to the European standard COST 211, which is currently accepted internationally and also allows communication with videoconferencing rooms in Austria, Canada, Finland, Japan and the People's Republic of China.

To do its job under this initiative, the Commission has set up a technical working group, the IVP Group, bringing together representatives of the telecommunications administrations of the Member States and other organisations concerned, including users and government representatives. This group agreed to carry out a feasibility study of the proposed system and their report, covering its technical and economic aspects, is now available [COM(85) 265 final] from the Commission. A report on the activities carried out as part of the IVP to the end of 1987 is now being written and is expected to be available at the end of 1988.

The telecommunications administrations are also organising demonstrations of cross-border videoconference services to raise awareness

# Videoconferencing

of their feasibility amongst potential users. Videoconferencing was used for working meetings and press conferences by UK representatives each week during the UK presidency of the Council of Ministers in the second half of 1986; the success of this first demonstration led the telecommunications administrations to plan more ambitious operations which could become the forerunners of a permanent service.

## Visiophones

Visiophone communication, i.e. communication between individuals sitting in front of a terminal comprising a screen and a camera in their own office, rather than in specially equipped studios, will also be included in the IVP project. Although videoconference studios have become a commercial product in the Community, common specifications for visiophony still need to be worked out.

This pioneering use of new telecommunications technology today could rapidly become commonplace tomorrow, not only for European decision-making but for business meetings across the Community.

## Videoconferencing/ EuroKom

Discussions are taking place at the moment on the possibility of using the EuroKom electronic mail and conferencing system for pre- and post-videoconferencing meeting communications. It is envisaged that each Member State will have a videoconference representative re-

gistered on EuroKom who will be able to use its conferencing and mail facilities for the circulation of reports and other communications. This arrangement was recently approved by the IVP Group and is likely to be implemented during 1988.

## Demonstrations

Demonstrations of videoconferencing facilities can be organised by the Commission for potential users

within the scope of European affairs for Commission and intergovernmental purposes, and details can be obtained by telephoning +32-2-236-0000. This is strictly for users associated with public organisations. For private users the telecommunications administrations have a similar arrangement and should be contacted directly.

A Videoconference Directory, which lists the locations of current videoconferencing facilities for intergovernmental communications, is also available from the number given above.

## U.S. Research Networks... lagging behind Europe?

A recent article by Gordon BELL, a former chairman of the subcommittee on computer networking of the (U.S.) Federal Coordinating Council for Science, Engineering and Technology (see I.E.E.E. Spectrum, February 1988) suggests that America appears to have fallen behind Europe in developing a computer network for research purposes.

Bell's article starts provocatively: "If a research cardiologist at Boston University Medical Centre urgently needs to review cardiac images with a colleague at the Mayo Clinic in Minnesota, he can either express-mail his material to the clinic or fly there. What he cannot do is transmit the material instantaneously from the computer workstation in

his office. On the other hand, researchers at the Massachusetts Institute of Technology do not lack networks. They can communicate with many research organisations around the world, but they must use the right one of a dozen networks to do it.

These scenarios point up just two absurdities of the present situation in U.S. computer networking. Existing networks not only lag well behind the growing needs of the research community - they are too fragmented to develop unaided into a single, coherent system."

The first network, ARPANET, was established nearly twenty years ago, 1969. But "today's Arpanet is conceptually identical to the network of the early 1970s. But it can

# U.S. Research Networks... lagging behind Europe?

do little more than swap computer-mail messages now that the number of machines has mushroomed beyond a hundred switching computers that connect hundreds more shared computers and workstations. The network could be upgraded, with great difficulty. But the Defense Communications Agency, which oversees it, is reluctant to run a civilian research network."

Bell then continues: "Federal agencies usually support an average of two independent wide-area networks. Often these networks go to different buildings on the same site — be it university campus or Federal laboratory — wasting resources. Yet the Government cannot even begin to estimate the current costs because each Federal agency considers its networking expenses proprietary information.

In any event, more networks do not automatically translate into greater capabilities. The situation is reminiscent of telephone systems in the early 1900s, when a town might support several distinct company telephone networks, forcing subscribers to keep a deskful of phones. Theodore N. Vail, president of the American Telephone & Telegraph Co., however, successfully corralled the local companies under the banner: "One policy, one system, universal service." Similarly today, easily a dozen incompatible networks may overrun just one university campus."...

and clearly states the needs: "Connecting several hundred workstations and high-performance computers would require a network capable of delivering hundreds of mega-

bits per second. Visualising mechanical parts, medical images, and geological data can demand the transfer of some 4 gigabytes of data among workstations or from supercomputers to workstations. Without data encoding, a 45-Mbit/sec link would transmit those 4 Gbytes within 10 minutes. Today's networks are over 1000 times slower!"

It follows, and here there is the significant admission that: "Clearly, huge volumes of data will pour through a national research network. Other countries are already acting: European governments are busy building fiber-optic computer networks that will transmit gigabits of data per second."

Bell concludes that "All these developments point to the need for a national research network in the United States. But might that network evolve over time, without a centrally administered plan?", but sounds what for an American audience must be an ominous note: "The integrated-services digital network (ISDN) is often touted as a panacea. But it has moved much too slowly to hold much promise for a national network in the 1990s. Local and international carriers are still thrashing out technical specifications for compatibility. The regional Bell operating companies are not especially cooperating with each other to set up ISDN standards. There are barely standards for low-level protocols, and there are not standards at higher levels. Moreover, when high-speed fibers do terminate in switching offices, distributing them to local users takes an inordinate amount of time and effort — the so-called "last mile" problem. In fact, U.S. manufactu-

ers are losing the ability, if they ever had it, to build ISDN equipment since they buy the hardware from their international partners. Wisconsin Bell collaborates with Siemens. Pacific Northwest Bell works with Northern Telecom. Mountain Bell, AT&T, Illinois Bell, NYNEX and Southern Bell all have various links to Ericsson, NEC, Northern Telecom, Siemens and Fujitsu."...

and continues: "I chaired the subcommittee on computer networking, infrastructure and digital communications. In the report, we strongly urged that the Government create a national research network to "foster and enhance the U.S. position of world leadership in computer networking." I believe the situation is far worse; we have already lost leadership in this field. By developing a network that enables U.S. researchers at all universities, national labs, and companies to share resources and ideas, the country just might regain its footing."

An outline is then given of proposed remedial measures involving connecting Arpanet to other Federally supported networks within two years, to give a national network operating at 1.5 Mbits/s at an annual cost of \$ 5 million. During the following three years, this network should be upgraded to 45 Mbit/sec with a further upgrade to many gigabits by the late 1990s. However, private enterprises might also lead to the same result. The need for action is however clear and pressing. It is also heartening to note that Bell points out that network incompatibility is now on the wane with the gradual adoption of the OSI standards by most network operators.



# COSINE NEWS

Cooperation for  
Open systems  
Interconnection Networking  
in Europe.

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

## COSINE Policy Group 8th Meeting Athens, 3rd.-5th October 1988

The COSINE project is a major infrastructure project within EUREKA program which was launched in 1986. COSINE has now reached the end of a one-year Specification Phase and is about to embark on a three-year Implementation Phase.

"COSINE" stands for "Cooperation for Open Systems Interconnection Networking in Europe"; the major aim is to establish a pan-European computer communications infrastructure and services for use by the research and development sector, particularly in support of projects undertaken both within EUREKA itself and in other international and national programs. A prime example is the European Communities' ESPRIT program, the recently-started second phase of which is open to participants from EFTA countries.

COSINE is aimed not only at Research and Development personnel, estimated at some 500.000 in Europe, but also at their managements and at the managers of R&D programs, in the industrial, academic and state-run research sectors.

The users are represented by the RARE (Réseaux Associés pour la Recherche Européenne) Association of users and providers of computer networks for researchers, who carried out the Specification Phase under contract for the COSINE Policy Group.

The COSINE Policy Group, which steers the project, brings together representatives from the governments, and from circles close to the governments of 19 countries and the Commission of the European Communities. The countries are: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, the United Kingdom and Yugoslavia.

The Specification Phase results have been accepted, subject to minor adjustments, by

the COSINE Policy Group, which has met in Athens, thanks to the hospitality of the Greek Government, particularly the General Secretariat of Research and Technology of the Ministry of Industry, Energy and Technology, and the organisation of Prof. C. Halatisis, head of the Institute of Informatics and Telecommunication at the DEMOKRITOS Centre.

The COSINE Policy Group has also examined the organisational structure needed by the Implementation Phase. This will include a COSINE Program Management Unit, to be responsible for day-to-day management of the project, closely related to RARE and reporting to the COSINE Policy Group. The overall structure envisaged is a federative one, in which common technical specifications and common European standards will be used by users and systems managers at the local level, and by service providers at the national and international levels.

COSINE is furthermore based on three principles:

- use of European and International standards for Open Systems Interconnection, which are designed to ensure that computers of different make and model can communicate messages, files etc. between them;
- use of publicly-available, professionally-managed data networks for the conveyance of data;
- use of industrial, supported products;
- creation of a sufficiently large, coordinated market to interest industry in the provision of such supported products  
- this is known as the principle of "Market Pull".

But COSINE is also about services to users. The main areas it has so far concentrated on are electronic mail, interactive access to remote computers, the transfer of data files between computers, and the provision of di-

rectories of names, as well as electronic and postal address, of people and facilities. As standards mature, new services will be provided, such as the transfer of graphics.

In addition, COSINE and RARE are to participate in a pilot Managed Data Network Service (MDNS), to be provided initially by the Netherlands PTT and later by a new company to be set up by 22 European telecommunications administrations, and intends to provide "gateway" services to other networks, including North American networks, with which our researchers need to communicate. (see also pg 1)

To conclude, the COSINE project is now embarking on what we trust will be a highly suc-



cessful, although no doubt testing, implementation phase, designed as a model of open computer communications, from which other user populations might well profit, and providing a high level of service to its heterogeneous, geographically dispersed user population, thus enhancing the efficiency of European research and development effort, both within and beyond EUREKA.

cessive of providing a harmonised computer communications infrastructure and of generating a market pull for standardised products. The first phase of the project has now ended with the delivery by RARE (Réseaux Associés pour la Recherche Européenne) of a set of reports describing, among other user requirements, status of standards and outlook for future services development. RARE was the expert organisation contracted by COSINE to undertake the specification work. The results of the COSINE Specification Phase were discussed in the meeting of the COSINE Policy Group in Athens in early October 1988.

In order to proceed with the Implementation Phase, RARE recommends urgent action to establish a central project management structure, through which funding required for some central activities of the project is made available. Funds are necessary for activities such as pilot services (X-25 backbone networks, X-400 message handling, FTAM file transfer, information services, transatlantic gateway services, etc.), user involvement in standardisation and sponsoring of transition programs of general interest. COSINE Member States are asked to follow up on their responsibility in this respect. In addition, the availability of international funds will be investigated.

In addition to the funding issue, national support organisations are needed to ensure that there is a national focus for COSINE and that proposals laid down in national plans are brought to fruition. Almost all 19 Member States of COSINE have submitted National Plans to the COSINE Policy Group in the course of the past year. RARE considers it necessary that organisations supporting research groups become aware of the importance of a coordinated approach to computer communications. Many research communities are working in a relatively isolated communications environment which tends to limit their leverage.

### **Towards a European marketing approach for suppliers**

Harmonised interworking requires agreement on a common set of profiles, but there

## **COSINE Specification Phase**

The COSINE Specification Phase is now complete. The technical work, undertaken by RARE, has resulted in ten reports containing descriptions of user requirements, technical specifications and recommendations for the continuation of the COSINE project. These results are the focus of this issue of the COSINE section in IES News. For further reference, the ten reports of the "COSINE Specification Phase" are the following:

1. Project Plan: The Technical Specification of the COSINE
2. Progress Reports
3. The Scope of COSINE
4. Protocol Profiles
5. Future Services in COSINE

6. Public Services
7. Operational Requirements
8. Migration Strategies in COSINE - Some Aspects of the OSI Transition
9. The COSINE Implementation Phase
10. Summary and Conclusions

The recommendations presented by RARE in the framework of the COSINE Specification Phase and mentioned in this issue are currently being evaluated by the COSINE Policy Group. Decisions on the organisation and scope of the COSINE Implementation Phase will be made subsequently, during meetings in October and December 1988. The next issue of the COSINE section in IES News will report on the details.

## **COSINE Specification Phase demonstrates feasibility of truly OSI pan-European infrastructure**

The realisation of a pan-European networking infrastructure based on the first draft, formulated in 1986, of technical specifications for the Eureka project COSINE (Cooperation

for Open Systems Interconnection Networking in Europe) is feasible. This is the conclusion of the COSINE Specification Phase. COSINE is working towards the dual objec-



are three factors impeding a common central procurement definition. With respect to telecommunications, each PTT still has different certification practices, a situation which is expected to improve soon. Secondly, the suppliers of computing equipment generally are not yet marketing to a unified European market. It is common practice to offer many country specific options of products or implementations. Finally, local managers have to make descriptions of their system environments to determine whether products are available.

COSINE should, as part of its "market pull" objective, be able to reduce the problems arising from national approaches to marketing and certification. Usually, suppliers are reluctant to provide information on future plans in the product area. Both the interests of users and suppliers can be met through COSINE. RARE recommends that with agreement on COSINE Protocol Profiles, suppliers will be contacted at their European head-offices and asked for commitments on principle and of time scale to the provision of conforming products. This recommendation is an indication of the developing market perspective for standardised products.

Growing availability of harmonised OSI-based communications protocols will lead to a large growth of traffic. Reviewing the available traffic figures and considering the low penetration of services today, one finds that the growth of traffic volume is currently exponential with the number of users connected.

## The COSINE community

The research communities at whom the implementation of the COSINE infrastructure for OSI communication services is aimed, includes about 530.000 researchers in over 2.500 institutions. A key objective for the COSINE Implementation Phase is to enable all these institutions to benefit from the COSINE networking infrastructure. The above figures do not include support staff and students, but they nevertheless represent a considerable number of potential users. An overall estimate is that in all COSINE countries at least 10.000 medium and large scale computers are in use which should be provided with OSI communication software and

hardware. In Europe there are about 30 research networks in existence, which are not necessarily controlled by a formal organisation. At present they serve some 120.000 users. This is clearly only a minority of the target group for COSINE. Current users reside on about 5.000 end systems, most of which are interconnected to more than one research network. Generally the research networks are at best linked through converters, at the application level for international mailing services only. In the countries that have submitted national reports to COSINE, it appears that about 20 different manufacturers are represented running roughly 25 different implementations of operating systems.

Participating countries in COSINE currently include: Austria, Belgium, Denmark, Finland, France, FR of Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom and Yugoslavia, together with the Commission of the European Communities. Turkey has announced an intention to join.

## Introduction of services

At the present remote terminal access, electronic mail and file transfer are closest to operational status as harmonised COSINE application services. Considering both the incomplete standards for directory services and the importance of such services for the users, COSINE should promote the implementation of a pilot for this application. With respect to future services, COSINE should determine which are urgent general requirements for its user communities. In some cases suppliers seem reluctant to invest in product development. Having understood the reasons for this, funding of pilot implementations as demonstrators can be considered. This can be done in collaboration with other user communities, such as GO-SIP for the British public administration community or for organisations participating in national and international pre-competitive R&D projects.

## Transitions towards initial services close at hand

Transitions to the initial OSI services specified in the COSINE framework are possible either today or in the very near future, keeping in mind the key rules for the success of transitions: continuity of service and user acceptance. With respect to basic transport services, implementations offering the 1984 version of X-25 packet switching data networks to replace 1980 version services are well under way. For electronic mail, a number of gateways is installed or available which is giving use to a continuously expanding X-400 environment. For transition of file transfer applications to standardised FTAM, COSINE should investigate whether converter services can be developed.

## Functional standardisation and conformance testing

User requirements are essential as part of the functional standardisation process. Services in COSINE are based on international ISO standards and CCITT recommendations, together with functional standards as prepared by CEN/CENELEC, CEPT, ETSI and EWOS. Functional standards turn international standards into practical communications solutions, inasmuch as they are selected protocol stacks taken from the many options in the seven-layered OSI Reference Model. Functional standardisation in areas of interest to COSINE will be undertaken by the Expert Groups of EWOS (European Workshop for Open Systems) and ETSI (European Telecommunications Standards Institute). It is particularly important for these bodies to consult users. Therefore, RARE recommends that the time and travel costs necessary for this consultation be provided for experts to represent research user communities.

Another aspect of the development and introduction of new services is testing of product implementations. The majority of the conformance testing services required by COSINE has begun to become available in 1988. For the purpose of consistent conformance testing before the European Certification for Information Technology (ECIT) scheme is in place, COSINE can start mak-



ing use of the operational conformance testing services developed under the CTS Program of the Commission of the European Communities. Eight sites in seven different Member States have already been designated to offer conformance testing services. RARE recommends that procurements contracts take such new possibilities into account. Procurement contracts should therefore specify that, in cases of dispute, all upgrades must have been successfully tested for conformance in order to be accepted. In addition, suppliers must be committed to run interoperability tests. COSINE may commission interoperability tests for areas where none are available.

The COSINE Specification Phase has evolved in line with many programs related to OSI networking. Industrial demonstrator projects, the recent emergence of an OSI testing industry and new procurement regulations in various countries all point in the same direction of ever increasing support for harmonised solutions for computer-based communications. When finalised, the COSINE specifications will of course be in agreement with public procurement specifications in general.

## ESA to implement enhanced worldwide information system

The European Space Agency has reached the point of no return in establishing an enhanced computer communications infrastructure interconnecting all its affiliated institutions and providing gateways to other networking environments. The user requirements have been defined and the implementation plan for the European Space Information System (ESIS) has been finalised. ESIS is being developed along the lines of existing infrastructure elements as well as of OSI standards. From its pilot phase onward, ESIS will adopt standard access methods and protocols as far as possible, aiming as a final goal to make use of ISO/CCITT standards to achieve a completely open architecture. At present, products and services are not available for all OSI layers. This is why ESIS will build upon "empty boxes", to be filled in with OSI implementations as soon as these are available. COSINE is very important for ESA, as it is involved in pursuing the development of OSI products and services.

The ESA Executive drafted a program proposal for European Space Information System (ESA/C (85) 47) back in 1985. In addition to the pure archiving system, this proposal also included the complementing network aspects. In 1987, it was recommended by the ESA Science Policy Advisory Group that ESA implement without delay a science data network and archiving system for the data acquired from its own spacecraft and platforms. In a workshop held on December 10-11 1987 at ESA/ESRIN in Frascati, Italy, the user requirements and the main design concepts were finalised and accepted by the participants.

## COSINE applies uniform electronic document structure

The production of all studies and reports for the COSINE Specification Phase was carried out using a uniform document structure and a common layout developed by RARE. In this way, the COSINE project functions as a real life example of working on complex projects in a distributed environment and in which many specialists cooperate.

### Documents processed in standard markup language

RARE decided to apply a method of document production which did away with the usual inconveniences. The new idea for the COSINE Specification Phase was to create an electronic environment which would minimise the efforts on the author's as well as on the editor's side. At the same time it would guarantee a uniform and professional appearance of the documents.

The first requirement for having a common layout and a common document structure was to establish a central point in the COSINE project team which would collect electronic copies of their documents and drafts from the various contractors and authors. Several means of communication were available: the public Teletex service; QZ-COM or EuroKom, the computer conferencing sys-

tems of Stockholm University and the ESPRIT community of the CEC (Commission of the European Communities) respectively; the RARE pilot message handling service which is based on the X-400 series protocols. Unfortunately one is restricted to the characters available in the ISO IAS character set. The documents were collected, filed and printed on a VAX of the Deutsches Forschungsnetz Verein (DFN) in Berlin and then distributed for review.

In order to achieve a common document structure and layout, all COSINE studies are processed by a system called DAPHNE. This is an implementation of the DIS (Draft International Standard) of the Standard Generalised Markup Language (SGML) ISO 8879. A short paper entitled "Formats for COSINE studies" was written describing how to use a subset of the available commands. This was sent to all authors. The subset was chosen to save the time of authors and editors in learning how to use DAPHNE but it was sufficient to produce the style of report generated in the COSINE Specification Phase. In cases where more sophistication was needed this was undertaken by DFN.

Stefanie Fuhrmann, DFN (Deutsches Forschungsnetz Verein), FR of Germany.

## Efficient usage of space mission data

Space scientists represent an international computer networks user group with a wide spectrum of service needs. ESA has revealed a real need to ensure that maximum use is made of the opportunities afforded by space experiments through real time control of the experiment operations. Direct network connections from the spacecraft operations centre to the laboratories participating in a mission are essential for enhancing scientific work.

In sounding out user requirements for an information system within which information can be obtained, exchanged and deposited, ESRIN had approached the astronomical and solar terrestrial communities. These contacts showed that the ESIS concept meets a demand clearly identifiable in all groups consulted and that the expectation of a role for ESA in scientific data archiving and distribution is very high. The following two aspects are felt to be primordial components of a space information system: an easy to use and effective set of communication links and a broad and powerful access to information contained in remote centres. Query for information will be done in discipline-specific and not computer-specific terms. Also, the ESIS environment will feature facilities to combine measurements from different databases. It is essential that European scientists have access to such tools enabling them to maintain competitiveness with their US counterparts.

On the network aspect, the Space Physics Analysis Network (SPAN) serves as a good example of extensive data exchange between principal and co-investigators. In the United States SPAN is a network under control of NASA with about 600 nodes; the European part of SPAN has about 150 nodes and is managed by ESA. The European part of SPAN will be the basic environment for ESIS in its first phase. ESIS will evolve as a new network based on OSI, accessible under the same user interface as SPAN.

On the archiving aspect, experience shows that mere archiving and primitive retrieval functions do not guarantee a broad dissemination of satellite gathered data among the



scientific community. The great diversity of data formats and access methods hampers the scientific throughput of any non-principal investigator.

Therefore, the following specific needs for communication links in ESIS have been identified (source document: ESA/C (87) 85):

- accessing remote archives, including the possibility of using the services offered by host institutes;
- providing interactive communication means;
- providing gateways to already established networks, with connections to SPAN (US), EARN and JANET networks being of primary importance.

For archiving functions, the following user requirements in ESIS have been identified (source document: ESA/C (87) 85):

- structured access to gathered data sets and cross-correlation between primary data archives;
- organised access to software;
- transfer of data and software, both online and on a batch basis;
- availability of information about spacecraft and their instruments, and scheduling data on observatory satellites.

### Pilot project

For ESIS an evolutionary approach to services will be adopted. This means that in the pilot phase of ESIS, basic functionality will be deployed making use of a backbone network and existing infrastructure, as well as of available software and facilities, and will be installed at the end of 1988. The pilot distributed system will be implemented in a second phase on top of the basic layer. This way the user enjoys full compatibility between his current functions and the evolving ESIS environment.

In the first phase of the pilot, services will include direct access to remote archives and

to network functions such as electronic mail and file transfer. The heart of the system is the service directory. This module will be distributed to all access points of the network, in order to bring as much functionality as possible to the end user. During 1988, a prototype user interface will be installed in six different user sites for testing purposes. This user interface will result in the interconnection of functions, instead of interconnecting machines only.

Therefore, this aspect of the ESIS development coincides with the concept of "Open Distributed Processing", currently part of ISO work (reference: ISO SC21 Working Group 7 - Basic Reference Model for Open Distributed Processing).

The Query Processor and Reference Directory modules represent that part of the system where the knowledge about the information contained in ESIS is stored and handled to provide homogeneous access. These subsystems are the most innovative aspect of the whole ESIS system. All services integrated in ESIS will be approached through a service shell which provides both controlled access and the translation of internal requests onto the local environment.

### The ESIS Backbone Network

ESIS will not set up a new network but will start from the existing infrastructure of ESA. The envisaged system applies an evolutionary strategy based on a compatible mixture of DECnet and ISO/OSI network protocols. This is compulsory in order to achieve compatibility with current functions in SPAN and to implement newly enhanced services such as X-400 and FTAM, which are oriented towards an open environment.

Miguel A. Albrecht, Angelo Bodini, ESA/ESRIN (Frascati, Italy)

# MARIS develops information referral service

The Marine Information System (MARIS) aims at improved accessibility of systems containing marine information and data related primarily to the North Sea. The project also presents an exemplary framework for similar marine information systems pertaining to other regions. This framework provides an organisational basis which secures a wide cooperative scope for users of marine data. A referral service will be operational on 1 January 1989 in the test phase. Using X-25 packet switched network services, MARIS will be a "yellow pages" service for marine scientists. In these two aspects, the project coincides with elements of the COSINE project.

MARIS is a project under development in the Netherlands, carried out in collaboration between government, the marine research community and industry, and now managed by the North Sea Directorate of Rijkswaterstaat but it is soon to become an independent foundation. An international relational network of 55 national oceanographic data centres (NOCDs) functions under the auspices of the Technical Committee on International Oceanographic Data Exchange (IODE) of the Intergovernmental Oceanographic Commission of UNESCO. The International Council for the Exploration of the Seas (ICES) in Copenhagen provides a platform for NOCDs in the region of the Baltic Sea, the North Sea and the North Atlantic. Within the Working Group on Marine Data Management of ICES not only global procedures and mechanisms are implemented, but also new developments are initiated before introduction on a global scale. One of the tasks of the national centres is to transmit on a regular basis marine information and data to the World Data Centres for Oceanography. These are located in Washington (D.C.) and in Moscow and set up by the International Council for Scientific Unions.

The expenditure per annum in collection of marine data is very large, leading to the relative cost-effectiveness of this investment being

low, caused by insufficient overview and poor accessibility of data, as well as a limited standardisation of data formats used by data-holders. MARIS makes a contribution to solving these problems. Apart from setting up a referral service, a marketing approach for marine data will be developed under the project, in order to strengthen the financial basis for investments in data archive and retrieval services.

## Distributed databases and centralised directory services

The core of the MARIS service is a database system that may be searched either in online mode using an intelligent interface, or with the assistance of a customer desk. In the near future MARIS plans to use distributed databases, in combination with a centralised directory service. For international access, MARIS will make use of X-25 packet switched networks.

The total concept of MARIS encompasses three phases, of which the first has already received funding:

- the online central referral service, with a directory of marine data holdings, a directory of offshore companies and their products, and an inventory of marine research and measurement programs;
- a network for the management and exchange of measurement data enabling users to access such data online, either in an alphanumeric mode or in a graphic mode;
- an expert system by implementing fully developed numerical models.

A vital element of the MARIS concept is that the technical management of the database system is performed by a commercial host organisation.

The test phase of the service will start on 1 January 1989 with a limited number of users. At that moment the service will contain a directory with tens of thousands of references to marine measurement holdings in the Netherlands.

On 23-25 November 1988, a workshop will be held in the Netherlands with support of the

Commission of the European Communities. Participants represent scientific institutes, government and industry from most European countries. This workshop is to investigate the possibilities for a European network for marine information and data. Furthermore, the MARIS online retrieval system and query procedure will be demonstrated to an international group of marine scientists.

Marine scientists participating in MARIS seek to extend their communication capability into circles of scientists in related disciplines. Marine scientists in Europe are currently getting accustomed to communicating with each other through the OMNET electronic mail system. In practice, however, communication with scientists belonging to the EARN or JANET communities often fails due to technical obstacles, such as the complexity of system codes. MARIS recognises the importance of the cooperative work in the COSINE project, with respect to achieving transparency among networking communities. An element in COSINE of particular importance is the definition of directory services. In addition, the work of COSINE related to broadband communications and transmission of graphics is very relevant for the future of services such as MARIS. It is essential to synchronise and harmonise programs for networking systems at an early stage, in order to ensure that requirements of specific user groups can be addressed and implemented properly.

Paul J.F. Geerders, the Netherlands Centre for Oceanographic Data.



Contributions from our readers  
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**THE NETHERLANDS**

## Progress in International Cellular Radio

Within the framework of the CEPT (European Conference of Postal and Telecommunications Administrations), the European administrations have agreed on pursuing a joint development line for the future digital cellular radio network and they vigorously advance the establishment of a European technical standard and the joint operational implementation of this system. The CEPT Sub-Working Group "Groupe Spécial Mobile" – briefly called GSM – has meanwhile worked out concrete proposals and further developed them to a standard, which was presented at the Digital Cellular Radio Conference (DCRC) held in Hagen, Westphalia from October 12 to 14, 1988.

The aim of the conference was to enable an exemplary representation of the GSM standard not only for radio network planners or designers of cellular radio equipment, but also for manufacturers of components or peripheral equipment, such as antennae or testing equipment, as well as developers of applications for the

special data transmission services offered by the system.

Mobile radio services are fast on the advance. Mobile telephones, even independent of the use in cars, represent a vast and innovative growth market. The development of subscriber figures demonstrates that already today the radio-telephone service is no longer a luxurious special application but that the trend is towards a mass product of the future with individual application benefits.

The telecommunications administrations or authorised operating companies are adjusting to the requirements of an increasingly growing international market. Thus, the Deutsche Bundespost is prepared to meet a demand for more than 450.000 subscribers in the radio-telephone network C.

The planning for the future digital cellular radio network D based on a uniform international standard and a pan-European use envisages capacities of 10 million subscribers, with about 2 million subscribers in the Federal Republic of Germany.

(Information provided by the Bundesministerium für Post- und Fernmeldewesen, Bonn, F.R. of Germany)

## Summary of Suppliers' OSI Products and Plans

In the last issue of IES News (No. 17, August 1988) we published a table based on a report issued by Her Majesty's Stationery Office, London. It has been drawn to our attention by one European manufacturer that his products were omitted from this table. As is usual with surveys, they are subject to a deadline and omissions are consequently inevitable but certainly unintentional. The table was published as the first seen by the Editor which gave a simple overview of the existing position. We would like to apologise for the omission and also take this opportunity to invite all other manufacturers and producers who would like to have their products included in a revision, to let the Editor have the relevant details as soon as possible. The deadline for inclusion is Friday, 2nd December, and the amended table will appear in the December issue of IES News.

*The Editor*

## Copyright and Legal Protection: Computer Programs and Data bases

The Commission has decided within the framework of the completion of the internal market, to examine as a matter of priority the issues relating to the legal protection of computer programs and subsequently to submit a proposal for a Council Directive on the legal protection of computer programs. For this purpose,

certain preliminary consultations have already been concluded, which have confirmed the desirability of an early initiative in this field. Further, all information received and experience gained from participation in the discussion at the international level on the appropriate protection system indicates that the

Community approach should be within the framework of copyright and related rights.

The Commission intends to submit to the Council as a matter of urgency a proposal for a Directive based on Article 100 A EC for the protection of computer programs. As regards the contents of the Directive, and especially in the light of Community standardisation policy, the Commission would like to receive comments on whether:

- a) the protection should apply to computer programs fixed in any form;

# Copyright and Legal Protection: Computer Programs and Data bases

- b) programs should be protected where they are original in the sense that they are the result of their creator's own intellectual effort and are not commonplace in the software industry;
- c) access protocols, interfaces and methods essential for their realisation should be specifically excluded from protection;
- d) rights to authorize restricted acts should include a broad use right either formulated as such or as a consequence of rights to authorize reproduction, rental adaptation and translation; for these latter rights, specific provision should be made in any event;
- e) the adaptation of a program by a legitimate user exclusively for his own purpose and within the basic scope of a licence should be permitted;
- f) the reproduction of a computer program for private purpose should not be permitted without authorisation of the right holder whereas the production of backup copies by a legitimate user should be permitted without authorisation;
- g) the term of protection should start with the creation of the program and last for an appropriate number of years to be fixed by the Directive; a choice will have to be made between a period of 50 years and one in the region of 20 or 25 years;
- h) the issue of authorship of computer programs, including authorship in respect of computer-generated programs, should be left largely to Member States but with national laws having to establish who, in the absence of contractual arrangements to the

contrary, is to be considered the author;

- i) protection would be available for creators who are nationals of States adhering to the Berne Convention or the Universal Copyright Convention or enterprises of such countries or possibly to all natural and legal persons irrespective of origin or domicile;
- j) in infringement cases the onus of proof in respect of copying should be shifted to the alleged infringer once the plaintiff makes available to the Court the different versions of his program to which he has access and shows similarity and that the alleged infringer has had access to the right holder's program.

## DATABASES

The storage of copyright works in full or in part within computerised information systems creates a number of legal problems for which, at present the most appropriate solution would seem to be legal action to protect the compilation of works within a database where those works are themselves the object of copyright protection. Specific legal action aiming at resolving existing difficulties seems to be at best premature.

The Commission is also considering whether the protection of the mode of compilation of the database itself should extend to databases composed of material which is not in itself protected by copyright. Such action would only be taken if it were felt that the considerable investment which the compilation of a database represents could best be served by

copyright protection rather than by other means. The Commission would welcome comments from informed circles on the following matters:

- a) whether the mode of compilation within a database of works should be protected by copyright and,
- b) whether that right to protect the mode of compilation, in addition to possible contractual arrangements to that effect, should be extended to databases containing material not protected by copyright and whether this protection should be copyright or a right *sui generis*.

## Timetable for Submission

Comments on the above mentioned suggestions should be submitted (five copies) to the Commission not later than 1 January 1989 and in the case of computer programs as soon as possible.

200, rue de la Loi  
B-1049 Brussels  
(Mark envelopes

"COPYRIGHT-COMMENTS")

## IT Press Release Bulletin Board and ESPRIT week

This is a reminder to all readers who may be presenting material at the Fifth ESPRIT Conference that the IT Press Release Bulletin Board on EuroKom is prepared to post your announcements to be available online on Monday, 14 November. The precondition is that any material to be processed is received here at the IES News Editorial Offices during the preceding week. Actual release to the Bulletin Board will be timed to coincide with the opening of the Conference.



# The RARE MHS Project

In keeping with its aim to ensure the provision of a Europe-wide infrastructure, and to satisfy the communications requirements of a wide range of R&D activities throughout Europe, RARE began work in May 1987 on a 2 year MHS (Message Handling Systems) project. The aim of the project is to promote the installation of CEN/CENELEC conformant X-400 message handling systems within European research networks, and to migrate their current systems, which are pre CEN/CENELEC, to the European Development Norms (ENVs).

The contract for the project was signed in Brussels on 2 September 1987 between the European Community, RARE, and SINTEF (the Foundation for Scientific and Industrial Research at the Norwegian Institute of Technology). The project covers a two year period from May 1987 and is being undertaken by RUNIT, the Computing Centre at the University of Trondheim (a department of SINTEF), who had already started the work on a voluntary basis before approaching the Commission for supportive funding. Total project costs will be a maximum of 315.000 ECU, and these are being shared between the European Commission and RARE. The Scandinavian network NORDUNET also contributed during the first year of the project.

## BACKGROUND

Both the initial specification of the COSINE project and the activity areas identified by RARE cover basic and well understood telematic services, which:

- are based on the ISO and CCITT standards;
- follow OSI architecture;
- follow CEN/CENELEC harmonisation;
- use data carrier services provided by the European PTTs;
- utilise commercially available products.

One of these telematic services is Message Handling, for which the CCITT X-400 series recommendations following the OSI reference model are available. The first version of the CCITT recommendations was published in 1984, and an updated version is due to be published in 1988. In addition to the base standards, there has been intensive discussion aimed at establishing specific functional standards giving precise profiles for certain types of use. CEN/CENELEC has been the primary focus for this work, aided by CEPT and SPAG, following initial actions by the European Harmonisation Activity which preceded the founding of RARE. Implementations are now becoming available in increasing numbers.

The growing need for an MHS service within the European R&D community has long been recognised. A de facto standard for X-400, based on a very early implementation (the EAN implementation) produced in Canada by the University of British Columbia, had existed for some time before the RARE pilot project was initiated. In addition an early European implementation. GIPSI, had been produced by INRIA in France. Both implementations have been widely used for experimentation with the protocol and have been installed at a large number of sites within Europe. RARE has un-

dertaken the coordination of European developments to ensure that the versions conforming to the CEN/CENELEC functional standards are used.

## OBJECTIVES

The MHS project is aimed at the creation of a broadly based pilot infrastructure to test the suitability of the emerging X-400 implementation and to bring this into use by a wide range of research and development groups. The intention is to enable the X-400 European Development, Norms, ENVs, to be tested in a large scale pilot testing environments, and practical difficulties to be found and resolved before these norms become full standards, or ENs.

There now exists a sufficiently large number of implementations of X-400 that the protocol specification can confidently be considered sound. However, the current ENVs are based on X-400/84 and will eventually be updated to X-400/88. Interworking experiments and conformance testing initiatives are establishing the level of adherence of the various implementations to the recommendations, and errors and omissions are being put right. However, protocol conformance is only a small part of the creation of a working infrastructure. RARE is concerned with the support of active research communities based on the use of data networks, which implies a great deal of planning and coordination of management information and procedures, even when conforming implementations of the protocols are used.

The aims of the project are to:

- establish an organisation to support the exchange of information between the operators of pilot MHS services: this will include distribution of addressing information, product sta-

# The RARE MHS Project

tus information, advice and diagnostic assistance;

- promote participation in the pilot phase by European research and development organisations so as to monitor operation of a community of significant size; the R&D market will thereby indirectly produce a market pull for X-400 products;
- demonstrate communication with the initial public MHS provisions of the European PTTs;
- assess the success of the infrastructure produced, with particular reference to the problems of management in a large multi-domain MHS environment;
- identify shortcomings of the initial functional specifications and products with regard to their support of operational and management activities;
- input the experience gained into the latter part of the COSINE specification phase, making recommendations where necessary on missing elements in the COSINE specifications or on the products available for the provision of MHS services.

Many of the European PTTs are developing MHS services on a value-added basis, and these developments are expected to lead to a considerable increase in the use of electronic mail. It is also expected that much of the electronic mail to be handled will originate from private systems, because any organisation of significant size can be expected to establish its own private message handling system. It is therefore acknowledged that a realistic pilot phase should involve both private to

private and private to public message transfers. Experience with the full range of services will establish the variety of security, addressing and other operational procedures needed.

## MHS AND COSINE

The MHS project has been defined separately from the COSINE project, which it complements, rather than duplicates. It is based on the work of RARE Working Group 1 on MHS, which is responsible for creating the MHS component of the COSINE specification. The MHS project does not include work on the MHS specification but rather tests the validity and completeness of the first version of that specification.

The execution of the pilot project in advance of the COSINE implementation phase is in line with the request from the COSINE Policy Group to RARE to continue with the projects which are crucial for the

achievement of RARE's objectives. The pilot project will provide the opportunity for tests of the organisational structures and procedures proposed for COSINE in advance of the major expenditures expected in the COSINE implementation phase.

## RESULTS: 1987

When the project began 16 countries were participating in a global pilot X-400 service for the R&D community. The most important result during 1987 was the establishment of an international infrastructure for the R&D MHS service by maintaining information channels between national R&D MHS service managers. During 1987 public X-400 services were at a very early stage and no interconnection between the R&D MHS service and public X-400 services was offered. However, in France a pilot public X-400 service acted as a carrier for R&D MHS service traffic. The following were also achieved:

- The revision of the existing MHS documentation was started;
- Austria and the Republic of

C O U N T R Y	9 8 7 - g w y	No of sites		Migr. sched	Conn.ed. to publ. X.400	Relative Importance
		X.400/84	EAN V1			
AT	y	16	0	-	in progr.	90%
BE	y	1	0	-	no	1%
CH		0	32	-	in progr.	high
DE	y	80	31	-	in progr.	high
DK		0	9	-	no	-
ES	y	2	18	-	no	-
FI		0	8	-	testing	1%
FR	y	51	0	-	yes	-
GB	y?	7	3	3-89	testing	-
IE		0	3	-	no	-
IS		0	1	-	no	1%
IT		28	3	-	no	-
KR		0	6	-	-	-
NL		0	2	-	no	-
NO		0	30	6-89	no	60%
PT		0	3	-	testing	-
SE		0	8	-	no	-
<b>Total</b>		<b>168</b>	<b>157</b>			

Table 1. Migration status (RARE).

# The RARE MHS Project

Korea were connected to the service;

- Contacts were established with non-X-400 service providers such as EUNET.

## 1988

During 1988 a major update of the R&D MHS documentation was undertaken, with special attention paid to the separation between "EAN VI" systems (X-400 systems using domain defined attributes, following EAN addressing) and X-400/84 systems (X-400 systems using standard attributes for addressing). Information on user directories has been added to the documentation. Also being considered is whether to keep the documentation on a centralised or distributed database, rather than, as now, circulating it to national MHS managers over X-400.

Address conversion tables for interconnectivity between X-400 and non-X-400 services, using RFC 987 gateways, which have been defined by RARE Working Group 1, have been integrated into the MHS documentation. The RFC 987 gateway is a tool which enables a smooth migration because it can be used for EAN VI-X-400/84 address conversion. The RFC 987 gateways are also needed in order to maintain communication between the R&D MHS service and the non-X-400 RFC world.

The project will start using the "Pilot RARE Directory Service" as soon as it is operational. This will be used, inter alia, for the following user catalogues for end users; documentation for MHS managers; and

C O U N T R Y	9 8 7 - g w y	No of sites		Migr. sched	Conn.ed. to publ. X.400	Relative importance
		X.400/84	EAN V1			
AU		0	1	-	-	-
CA		2	170	-	-	high
Total		2	171			

Table 2. Migration status (non-RARE).

routing information for access from X-400 systems. Belgium has just joined the service. An information package is being prepared for other countries interested in joining, which explains how to join, and which addressing, routing, etc, decisions need to be taken locally.

Connectivity with the following non-X-400 service providers is being improved: EARN, EUNET, QZCOM and EuroKom.

Almost 400 sites worldwide are now included in the project. A snapshot of the migration status to the CEN/CENELEC functional standard, for RARE and non-RARE countries, is given in the following tables, which also indicate connectivity between the R&D MHS service and Public X-400 services. Since this is the first table of its kind no information on progress is yet available. The collection of data on the relative importance of the MHS service in comparison with other non-standard services is just beginning, therefore this column is incomplete. The column "987-GWY" indicates whether an RFC 987 gateway is operational between X-400/84 and EANVI/ the RFC world. "Migration schedule" indicates the year and month when complete removal of EANVI systems is envisaged (after which Standard Attribute addressing only will be used).

There are currently no connections to operational X-400 services in the USA, but the project is taking steps to establish experimental links to the existing X-400 islands in the US R&D communities in the near fu-

ture. First priority is being given to a common Europe/NSFnet connection, or alternatively to using the more expensive public X-25 network between the US and European MTAs, as is being done for connections to Australia, Canada and the Republic of Korea. It is hoped that Brazil, Tunisia and the US will shortly be included in the service and given assistance to set up direct routes to other countries.

Based on information provided by Mr Alf Hansen, RUNIT.

## IES User Group

During the 1988 ESPRITCONFERENCE WEEK there will be a chance for actual and potential users of IES services from within the ESPRIT community to discuss their needs and to hear about IES current service offerings and its future plans. This session will consist of a series of short presentations on the various existing services and some possible future ones; each talk being followed by a user feedback session. Provisional speakers are: Peter POPPER on IES News, John CONROY on EuroKom and EUROCONTACT, Manos CASTRINKAKIS on Data Collections and Collin SORREL on new services.

#### **FUTURE EVENTS**

*International Systems Security,  
Blenheim Online.  
London, 22 - 23 November, 1988.*

*Systems Application Architecture.  
Technology Appraisals, London,  
24 - 25 November, 1988.*

*Le Management  
de Systems de Communication.  
Ecole Nationale Supérieure des P & T.  
Paris, 28 - 29 November, 1988.*

*Application of Artificial Intelligence  
to Building, Architecture  
and Civil Engineering.  
CIMA. and Chambre de Commerce  
et de l'Industrie, Paris.  
28 - 29 November, 1988.*

*Cellular and Mobile  
Communications.  
British Academy of  
Film and Television Arts.  
London, 29 - 30 November, 1988.*

*European Satellite Communications  
Conference.  
British Academy of Film and  
Television Arts, Ltd.  
London, 1 - 2 December, 1988.*

*Relational Database 88.  
Codd & Date.  
London, 5 - 9 December, 1988.*

The current issue of IES News appears with the Fifth ESPRIT Conference and it will thus be the fourth time the Conference attendees will see the now familiar bordeaux-red and grey newsletter. We too have our milestone to celebrate – our circulation list has now exceeded 10.000 names, and copies are sent to all parts of the globe. Hardly a day passes without our receiving some requests for placing on the mailing list, and by coincidence, the following was received during the Olympic Games:

"I could fortunately have the chance to borrow from my colleague and read a copy of the IES News which I found carries the most important informations I have been seeking here. I decided to dare to request you to share your precious information with us, thus helping us identifying and exploring the proper fields of mutually beneficial cooperation between both prospering regions. I would accordingly be grateful to you if you could let me know I can be a subscriber to your IES News service so that I can receive copy periodically." (DACOM, South Korea)

#### **Editor's Corner**

Enclosed with the request was a copy of Dacom's latest Annual Report which should give us some concern. The rapid expansion and growth of telecommunications in South Korea disclosed by this is unmatched anywhere in Europe. Whether this is driven by governmental intervention or entrepreneurial activity is immaterial, the result is staggering: electronic mail usage growing by close on 80% each year, leased line usage by 60%. And what is more, there is a clear statement that DACOM is CCITT and ISO conformant.

The ESPRIT program and the other Community research initiatives have done much to stimulate European effort and collaboration, and the results of these endeavours presented at the Technical Weeks and elsewhere are indeed a testimony to European skill and application. There is however no room for complacency if we in Europe are not to fritter away the hard-won gains of the last few years. Europe has enjoyed a pre-eminent position in science for many centuries and to maintain this we should remember that we are Europeans first and foremost, which does not mean that our national feelings are of no account. Europe has a proud record of invention, which is not always matched by the transfer of ideas into products. ESPRIT has gone a long way to showing the way ahead – it is up to all of us to take this road.

#### **FUTURE EVENTS**

*Expert Systems 88.  
Clearway International MSM Ltd.  
Brighton, 12 - 15 December, 1988.*

*European Telecommunications  
Reforms.  
Institute for International Research.  
Brussels, 16 - 17 January, 1989.*

*Online 89: European Congress on  
Technical Communications.  
Online GMBH.  
Hamburg, 30 January -  
3 February, 1989.*

*Optical Information.  
Learned Information.  
Amsterdam, 18 - 20 April, 1989.*