Esprit Information Exchange System

iesnews

Issue No 2, Winter 1985

In the opinion of this rapporteur, the I.E.S. is probably the most difficult of the ESPRIT programme subareas because of the necessity to liaise and coordinate with many similar and related activities occurring concurrently with ESPRIT. These include programmes initiated by the Commission itself ; national programmes ; international programmes ; manufacturers ; service suppliers ; and international standardisation bodies. The ESPRIT community expects the I.E.S. to provide infrastructure, while at the same time the I.E.S. must evolve in a dynamic environment. Not only are the quality of telecommunications products and services developing, but also their rates of adoption in the Community Member States are extremely varied.

The 1985 I.E.S. Workshop: Rapporteur's report

From the start of the ESPRIT main phase, the I.E.S. was able to provide general mail services via EuroKOM and the UNIX* Mail server for EUNET to any ESPRIT participants who wished to use them. Simultaneously a substantial project was initiated, subsequently called ROSE, to implement a major number of the standards associated in the ISO Reference Model under UNIX. The ROSE results would then form a nucleus of 'open systems' for the I.E.S. with which other such systems would interwork as and when native implementations of the Reference Model under other host operating systems became available.

Since then, the ESPRIT community has seen little more from the I.E.S. At the ESPRIT Technical Week 1984, there were demonstrations of EuroKOM-UNIX mail interworking (via COSAC) and papers on ROSE and wide area experiments with the Newcastle Connection. There were indications that the initial ROSE software would

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* UNIX is a trade mark of AT & T

Highlights

What you should know about CARLOS

ISO : Activities behind the scenes

News about German, Austrian and Norwegian networks

Communication activities in FAST

A ROSE blossoms forth

LATE NEWS

ISBN for Software

The International Standard Book Number designation system is to be normally extended to microcomputer software. Full details can be obtained from the ISBN Agency. Postfach 1407, D-1000 Berlin 30

ISDN for Geneva

Geneva will be the pilot city in the Swiss ISDN, Swissnet, with a 64-kilobit switching facility to be installed by 1987 : telephone subscribers will then be able to transmit and receive computer data, text, video and voice messages, or any two of these simultaneously.

become widely available within the year. At this year's Technical Week, there were more papers, a newsletter and the announcement of a natural language translation service. ROSE software and UNIX mail-EuroKOM interworking were still in the pipeline and currently unavailable. Additional services, particularly in the way of improved support documentation and general help facilities, were not yet in place.

The fundamental criticism of the I.E.S. is that while it has been highly successful in stimulating standards harmonisation within the Member States and while its development projects have been and are producing beneficial results, there has been virtually no visible effect on ESPRIT.

It was in this atmosphere that the I.E.S. Workshop was convened on the 26th and 27th September after the ESPRIT Technical Week 1985. It was attended by 29 delegates, of whom 6 were Commission staff and 10 were I.E.S. contractors.

EuroKOM, as the main I.E.S. service, was discussed first. A number of aspects was raised, including improvements to text submission and editing. Some ESPRIT participants connect to EuroKOM via a local machine and thus can prepare text 'off-line' from EuroKOM. For those who are accessing EuroKOM via just a 'dumb' terminal, the existing editing facilities of EuroKOM are weak.

The second aspect was to improve the connectivity of EuroKOM to other mail networks. It was understood that the recent contract between the Commission and University College Dublin included work on connecting EuroKOM to QZ KOM and to networks in the United States. The imminent installation of the

The 1985 I.E.S. Workshop: Rapporteur's report

UNIX mail server in Dublin would assist in establishing a link between EuroKOM and EUNET. Further discussions were held on obtaining an X-400 connection for EuroKOM and it was felt that this would allow EuroKOM to remain a viable service in the medium term as other mail networks converge towards X-400 interworking.

An additional aspect was bulk data transfer, to allow bulky messages to be spooled, so that their transmission or reception could take place as a background activity. It was also suggested that a rudimentary encryption mechanism should be added to EuroKOM. Perhaps most conclusively however, it was strongly argued that professional documentation and a stable environment for users are the most urgent concerns. The Commission indicated that documentation would be available by early 1986.

Friendly user interfaces and access procedures received considerable attention. Public PADs, accessed from 'dumb' terminals and providing an X-28 like interface, are notoriously difficult to use. The CARLOS project is developing 'OSI-PADs' and will devote care to the design of the user interface so as to make access procedures as simple as possible. The concept could be implemented more widely, and simple and uniform access made available not only from PADs, but also from other end systems including Personal Computers. A further point was that the service should be accountable as much as possible, so that a user can be aware of the charges being incurred as or even before they became liable.

File transfer mechanisms were discussed and it was noted that the ROSE consortium intended to develop a pilot implementation of the ISO FTAM within one year. The workshop agreed that the strategy which various national and international networking communities were adopting towards file transfer was not clear to the workshop delegates. The Commission accepted that a meeting should be held between interested parties before the end of 1986 to discuss and coordinate plans for migration to the ISO FTAM standard.

Full OSI support for large mainframes, and graphics facilities, were raised but it was felt that these were not as immediately urgent as other issues. The I.E.S. questionnaire conducted at the 1984 Technical Week had confirmed that mail and file transfer were considered by many to be the most important topics. Perhaps surprisingly, many of the respondents were using 300bps PSTN access for communication.

The ROSE consortium observed that they had already delivered the first release of their software to the Commission and that they were currently coordinating with a small number of pilot sites throughout the Member States to install and further test the software. However, they were not prepared to maintain, market, distribute or control licensing the software within the ESPRIT community for I.E.S. usage, because they saw their primary role as developers. The Commission had to ensure a suitable mechanism for providing the software to approved applicants. The Commission in

turn believed that the present deliverables required further 'packaging' before they could be made available widely. It was noted that a UNIX source licence would be required to port the software to any other systems other than those for which the consortium had been contracted. Many were surprised that the details of the maintenance and distribution arrangements for the ROSE software had not been determined fully. The ROSE consortium noted that similar problems may occur in other ESPRIT projects. The Commission agreed that, as an urgent action, they would consult with the ROSE consortium and other interested parties as rapidly as possible to derive detailed proposals that could be applied as a norm for all relevant ESPRIT projects.

There was considerable discussion on the promotion of the I.E.S. and user assistance. It was suggested that promotional documentation and films or videos could be beneficial. The need for regional support was identified : this should take the form of technical workshops or tutorials on infrastructure aspects, including the procurement of the I.E.S. services and products. The concept of regional 'help' desks, with advice obtainable locally or by site visit, was discussed. In this regard some suggested that there was an urgent need for such help in the routing of electronic mail through various mail networks and mail gateways. It was noted that the THORN project is producing directory services support. Nevertheless, an interim solution was desirable and work being carried out under the auspices of the RARE initiative, to gather information on network services, including mail, was seen as potentially valuable.

The work of the EURONET Launch Team was presented and summarised as help 'of the last resort', monitoring of both PTT services and end system services, and anticipation of problems and deficiencies. A clear definition of goals and knowledge of the precise user population had been essential. A similar service was required for the I.E.S. to assist the I.E.S. community in integrating new services and products as these became available.

It was agreed, that the fundamental problem in all such assistance and promotional activities for the I.E.S. is the 50 % funding rule for ESPRIT. Imaginative schemes were needed, perhaps on the basis of profit sharing with the product developers and service suppliers, to ensure that the user support activities could recoup their remaining 50 % from the increased sales and service demand which are created as a result.

In summary, the I.E.S. operates in a difficult environment. Despite a successful launch, highly successful standardisation and harmonisation initiatives, and fruitful development work, the I.E.S. has made little additional impact on the whole ESPRIT community since its inception. There is an urgent need to improve the situation by exploiting the results of development work, and by providing direct user support in the form of help services, professionally produced documentation, promotional materials, and regional workshops.

CHRIS HORN
(TRINITY COLLEGE, DUBLIN)

EUROKOM, UNIX & UCD TIMETABLE OF DEVELOPMENTS

During the September I.E.S. Workshop following the ESPRIT 85 Technical Week a number of sound recommendations and suggestions was made to the Task Force in relation to I.E.S. Some of these were related to the electronic mail and conference service offered by the University College Dublin under the name EuroKOM What was not known to most of the Workshop participants is that

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a new contract with UCD had been signed with the Commission the previous July and in its technical annex already included most of the suggestions made during the Workshop.

It is appropriate that following C. Horn's article we provide some responses informing the ESPRIT community of the details of this project and what they may expect to happen soon to improve the EuroKOM service.

As reported in the Autumn issue, the EuroKOM service, which has grown to over 1000 users after 2 years of operation, has been put in place in the absence of harmonised electronic mail services in Europe. To maintain performance requirements, the host machine was upgraded both in memory and disk space. In addition, new telecommunication hardware was installed conforming with the new X-25 Irish network.

For the first year of its contract a large number of tasks are scheduled aimed at improving old services as well as providing new ones.

SUPPORT TO USERS

New, professionally edited, documentation is under preparation. It will come in a ring binder allowing for additions and revisions. It will include a reference card and is intended to reach users by February. Better and more responsive support will be offered through the help desk (Tel. No.: 353/1/697890), registration and other procedures will be simplified. In view of a long-term strategy, the charge mechanisms will be modified to be more equitable and competitive, while invoicing should be simplified to reduce overhead associated with small monthly charges. A new pricing policy is expected to be in effect by Spring '86

Improved Connectivities through Gateways

To allow intercommunication with a wider base of users, a number of gateways have been specified and will be implemented.

A Telex Gateway will allow a EuroKOM user to send a telex from his session in EuroKOM to users not registered in the system. He may also receive telexes which will appear as letters to him when he signs to read his mail. What is also envisaged is to provide the capability to read one's mail from anywhere as long as one has access to a telex terminal. This gateway should be available for service by February '86.

Two intelligent gateways are planned with other mail systems. The first, with QZ in Sweden, will allow communication among two large European research communities. The other, with ARPANET, should allow exchange of mail and flow of information between the U.S. research community and the ESPRIT R & D world. Both these gateways should be offered as a service by mid-March and February '86, respectively.

Finally, a relay mail service is being planned. Using the COSAC system developed by CNET in France, a service will be provided which will allow messages to go from EuroKOM to other mail systems and vice-versa. COSAC being also an X-400 mail standards implementation, will allow, in a first phase, the link between non-standardised mail systems with European X-400 installations. Through the same system we also anticipate linking with the CSNET in the U.S. A COSAC relay implementation is planned now for July '86.

UNIX Mail and UNIX Server

The UNIX mail facility supported by the Commission at the GEC Hirst Laboratories will be discontinued. A similar system with UNIX5 is working since November at UCD. The GEC data were transferred and a new NUA was issued. To serve the research community which prefers making use of the UNIX based facilities, the system at UCD will be supplemented with qualified support and

documentation. In addition to its linkage to the EUNET network, it will be interfaced with the Euro-KOM system for mail exchange between the two environments (see the article on the UNIX server at UCD in this issue, page 15).

Participants of the I.E.S. Workshop have also identified a number of relatively easy enhancements to the EuroKOM system which, when implemented, may improve the user interface. These, although not foreseen in the present workplan, are being further specified for the purpose of implementing during 1986.

The EuroKOM team at UCD recognises in full its role in providing an ever improving service for the ESPRIT research community and thus assisting towards the objectives of the programme. They and the Task Force will always welcome constructive comments which may assist in further improving the service. And if any of you feels there is something good to say, remember that we all want to hear a good word every once in a while.

E. CASTRINAKIS
(ITT TASK FORCE)

DOCDEL:
Electronic Document Delivery

One of the important adjuncts of any electronic information exchange system is the ability to transmit and receive full-text documents, which may not necessarily have been stored or produced originally in digitized form. The need for this became apparent soon after wide-spread use of remote information-retrieval systems gave virtually instant access to bibliographic references to documents, but not to the documents cited. This led to initiatives by the Commission (DG XIII) resulting in the Docdel programmes.

Currently, there are ten experiments running under Docdel 1 : of these three concern document delivery, four electronic publishing, two deal with the handling of graphics and extended character sets, and the last is an invisible college with material of many types circulating freely among peer groups. Of these, some are of special interest to I.E.S.

In TRANSDOC, a French project, a comparison is being made between optical disc and microform systems for the input, storage and retrieval of full-text scientific documents. The initial database will comprise some 50,000 documents. Online searching for the bibliographic details and online ordering will be feasible (with Questel acting as the host), and orders will be passed to the document store for delivery through the post or via telefax.

EURODOCDEL is similar and concerns the input, storage and retrieval from a digital optical disc of European Community documents. Some 60 test users in Member States will be able to search a catalogue-type database, initially on a Videotex system and later on a conventional database one, and leave messages for document order in electronic mailboxes. Delivery will be by post, telefax or high-speed data links. This is a joint Dutch-French experiment.

A German effort is concentrated on making available online the first page of 200,000 patent documents, involving storage on magnetic disc of text, graphics and line drawings, a vector-representation technique having been developed for data compression. The database will be fully searchable online, with the full first page being delivered online via data networks or leased lines, or also videotex.

A further German project concerns the development of a standard for handling complex documents incorporating text, pictures, mathematical formulae etc. A test database is being developed and will be used inter alia, by national standards bodies. Part of the work involves research into multifunction workstations, especially the trade-off between equipment costs and user acceptance, leading to the development of a microcomputer-telecopy workstation for graphics handling and transmission.

Further details on the above projects and the others in the Docdel family can be obtained from DGXIII, located at the Jean Monnet Building in Luxembourg.

Communications Architecture for

C A R

Introduction

One of the more difficult questions facing developers of so-called open systems is where to put the software that enables incompatible devices to communicate. How much of it should go into users computers and how much of it should be built into the networks between them?

This question is also highly relevant for the I.E.S. and is at the heart of the ESPRIT CARLOS (Communications Architecture for Layered Open Systems) project. CARLOS will provide different degrees of network-based support for the higher-level protocols being defined in ISO's Open System Interconnection (OSI) work. By developing tools to provide access to the OSI systems of tomorrow's by today's (and yesterday's) terminals, CARLOS will enable the expansion of the I.E.S. structure and enhance the potential interworking among the ESPRIT community.

The CARLOS consortium (comprising RC Computer, CASE, SYSWARE and FISCHER & LORENZ) undertook under a 26-months programme to develop modular system components which provide users of public data communications networks with value-added OSI and network management services.
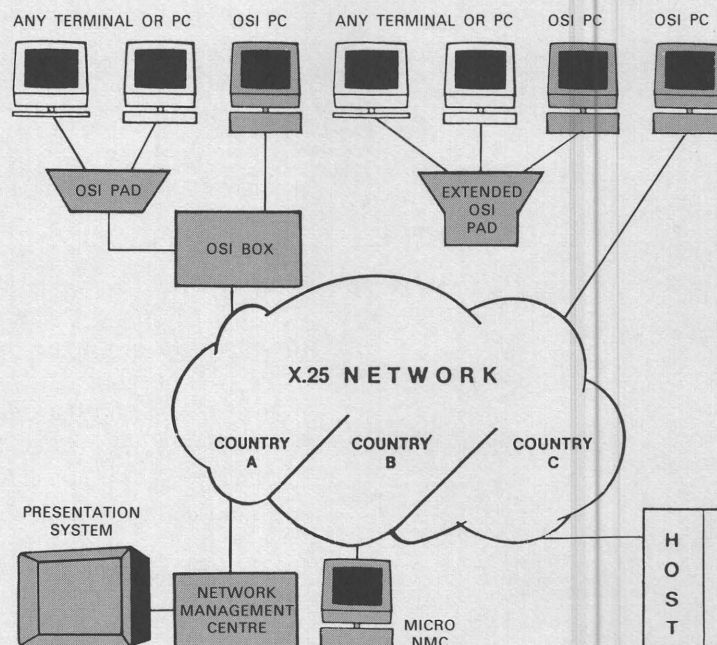
CARLOS services

The figure shows a schematic representation of the CARLOS concept. The CARLOS components (shaded) enable devices of different levels of complexity and different degrees of OSI-conformance to interwork with network-based (and potentially host-based) OSI applications.

Individuals or small user groups will be suited by the OSI-PC terminal, which will be the first personal computer supporting full OSI. Currently two OSI applications will be made available to users of the OSI-PC by the CARLOS project — a File Transfer Access and Management (FTAM) service and a Virtual Terminal, Basic Class service. Furthermore, two types of OSI-PC will be implemented. The full OSI-PC

CARLOS components and interconnection

ANY TERMINAL OR PC — OSI PC — ANY TERMINAL OR PC — OSI PC — OSI PC

OSI PAD — OSI BOX — EXTENDED OSI PAD

X.25 NETWORK

COUNTRY A — COUNTRY B — COUNTRY C

PRESENTATION SYSTEM

NETWORK MANAGEMENT CENTRE

MICRO NMC

HOST

Layered Open Systems

L O S

will contain all OSI layers and can thereby make direct use of a public X-25 service. The so-called 'Upper Layers' PC will contain only layers 6 and 7 and will communicate with the network-based level 5 service.

Individuals with non-OSI terminals will be able to use the services of the OSI-PAD, a modular packet assembler/disassembler, which will support a number of network communications options including ISO Virtual Terminal Basic Class, Triple X and passthrough for X-25 devices. In addition the PAD will perform a mapping function for many of the most popular terminals — simple 'teletypes', scroll-mode terminals, VT100, 3270 BSC and asynchronous printers. Two forms of OSI-PAD will be implemented. The ('regular') OSI-PAD will support protocol layers 6 and 7 of the OSI Reference Model, communicating with the OSI-BOX, where levels 4 and 5 are implemented. The Extended OSI-PAD will include transport and session layer services, and therefore may be connected directly to an X-25 network.

The OSI-BOX provides an interface between low-level (X-25) networks and (through a link to the OSI-PAD) end user terminal equipment or (directly) an OSI-PC. The OSI-BOX implementation provides a user inter-face on OSI levels 4 and 5 (Transport and Session layer), and provides the environment for the control of distributed applications, and for the implementation of a network management application. One of the major services in the CARLOS project is the provision of network management facilities for organisations of different sizes and with network management requirements of varying complexity. To this end, two network management products are envisaged. The micro-Network Management Centre (NMC) is implemented in the environment provided by an OSI-PC, and provides tools for the administration of standard networks of limited size and complexity. The comprehensive NMC is implemented in the environment provided by the OSI-BOX, and provides sophisticated monitoring and administration tools for the management of complex, distributed networks.

A fundamental aim of the project is to enable network management functions to be initiated by any properly authorised network user from a terminal anywhere in the network. Conversely, it is also recognised that many network management activities require sophisticated graphical presentation techniques. Therefore the project will also undertake the development of a set of genera-lised tools for the presentation of graphical information, initiated by event reception from the NMC. The presentation system will be implemented on a UNIX machine and will make use of GKS primitives.

Testing

The CARLOS components can be installed readily alongside currently existing telecommunications equipment. By means of close collaboration with the Danish Teleadministrations, the CARLOS project components will be tested rigorously in an operational environment.

Conclusions

The value-added services provided by the CARLOS components represent significant progress towards the goal of interworking among the ESPRIT community. Furthermore, the modularity of the architecture together with strict conformance to standards, enables the incorporation of alternative communications services such as public X-21 services or LAN subnetworks, with relative ease.

ERIK LORENZ PETERSEN and SUE HAMER (FISCHER & LORENZ, DENMARK)

With kind assistance of CARLOS experts

The ESPRIT ROSE Project

The results of ICL's first collaborative ESPRIT project are beginning to make their way into our products. The ROSE project which is developing open systems interconnection protocol implementations, on UNIX, in conjunction with BULL, GEC, OLIVETTI and SIEMENS, is now into its third year of implementation.

The resultant OSI codes (ICL was mainly responsible for the transport and this year is doing FTAM) are already making their way into UNIX products, such as PNX release 5.0 on PERQ. The transport code has been ported onto all the major variants of UNIX — Version 7, System III, System V, Berkley 4.2 and onto machines such as the AT&T/Olivetti 3B2, GEC System 63, the Honeywell/BULL DPS mini 6 and BULL SM90 and will shortly find its way into other ICL products like CLAN 3 and DRS.

A big factor of this collaboration is that the design and specification of the C code for this transport layer, has been agreed between all the companies and is thus a more definitive and acceptable solution than might be done for an in-house product. This has led to its adoption by AT&T for use in the Autofact Exhibition and possibly future UNIX products.

Another advantage is that ICL receives code for other OSI layers from its partners, the design and specification of which have also been agreed. Coupled with joint understandings on standards options selection, as in the standards promotion applications group under ESPRIT, and other quite public collaborations on defining interfaces in UNIX under the X/OPEN activity, it can be seen that ROSE must be considered a success.

Soon we hope the European Commission will establish a working information exchange system for all ESPRIT participants based upon the ROSE software. We already have some pilot implementations derived from our preparatory study work in 1983, with UNIX mail services and the EuroKOM electronic conferencing service, based at University College Dublin. The ROSE consortium has established links between partners using facilities like UNIX mail and UUCP over ISO transport. By the end of the year, we expect to have FTAM and X-400 mail running over full implementations of session, with connections to services such as the CEC's COMMITTEE SUPORT SYSTEM (provided by ICL), and the Newcastle Connection for distributing UNIX-files. Links are over X-25, also with PAD access using class 3 transport, and where a connection with Internet is not implemented, using a transport level relay to class 4 transport over, e.g. OSLAN. The user sitting at his workstation needs to address only the remote workstation without having to know anything about any intermediate gateways or networks. A further extension of this is covered in a new project called THORN (who ever saw a rose without a thorn) which stands for 'The Obviously Required Name Server' and is producing first implementations of the full ISO distributed directory service.

ROSE is full of firsts :

— we started off with initial implementations of the ECMA 72 transport, which we later converted to the ISO IS standard code.

— We have now, very early implementations of the basic combined subset of session

— and particularly being the first ESPRIT project to deliver its output.

Now we have to exploit that output, and the happy relations we have built up with our partners. Part of that exploitation is that many of our implementations are ahead of U.S. companies ; they can be used as trading items for other significant and useful codes or collaborative deals, and establish ICL credentials in pushing our views of where the standard selection should go in forums such as the NBS OSI workshops and the MAP and TOP task forces.

J. R. CADWALLADER
(ICL, **United Kingdom**)

The Role of Terminology in the ESPRIT Information Exchange System

The ESPRIT Programme is split up into many projects each using its own terminology. Thus the linkage and sharing of the results of these projects can become rather difficult if no terminological control takes place. Firm specific terminologies may cause the same communication barriers as the multitude of European languages. The necessity of the creation of terminological interfaces in the form of multidisciplinary and multilingual vocabularies is particularly pressing for the field of information technology.

The I.E.S. has chosen as one of its aims to provide the users with information services that are transparent and free of ambiguities. The commonly accepted view of the information process is that it involves the analysis of the content of a document, the formulation of this content in a set of descriptors, and the arrangement of the descriptors in such a way that the inquirers can match their search requests and not miss any documents relevant to that request. Thus it is considered the task of any information service to provide the right interface between the terminology of the document, the terminology of the information system and the terminology of the inquirer. If these three languages are not compatible, the information process is jeopardized. Any type of terminological control requires the compilation of appropriate works of references along with measures related to the standardisation and unification of concepts and terms. As a result of this, the terminology of a warehouse catalogue will no longer differ from that of customs regulations or technical reports. The formation of new concepts and terms should be the responsibility of professional committees composed of representatives from each country interested in the transfer and sharing of information technology.

As a matter of fact, the vocabulary of information technology has to be considered as one of the basic working tools for the ESPRIT task force. Not only does it support translation activities but it is the main medium for any information exchange in this field. Therefore terminological activities should be part of any procedures for intercommunication and consequently of the I.E.S.

In practice, the solution of terminological problems depends upon the involvement of knowledgeable subject specialists, the efficient organisation of their cooperation, the application of principles and guidelines for the recording of terminological data developed on a scientific basis, the access to existing terminological data and to pertinent literature, as well as the training of the specialists involved in terminology work. The introduction of computerized terminography forms a direct link to the various aspects of new generations of information technology.

Three programmes have been devised for the purpose of coordinating international activities within TermNet, the international network for terminology. These programmes are concerned with the following topics.

— Programme 1 : Developing the scientific basis for terminology, i.e. its theories and principles ;
— Programme 2 : Establishing closer cooperation, in preparing terminologies and recoding them in machine-readable form ;
— Programme 3 : Establishing closer cooperation in collecting, recording, processing and disseminating terminological data and information.

These programmes should provide adequate guidance in the development of a global infrastructure which would promote cooperation in terminology with Infoterm acting as a catalyst and focal point for all activities within TermNet.

Within the framework of programme 3, Infoterm plans to launch a bibliography of all dictionaries available in the field of data processing and its corresponding technologies.

Since this project will also be of interest to the users and participants of I.E.S., any support from the readers of this newsletter is welcome.

W. NEDOBITY
(INFOTERM, VIENNA)

Deutsches Forschungsnetz

DFN

The German Research Network

DFN has been established to provide communication services for the academic and research community in Universities and similar institutions of higher education, public and private research institutes and research laboratories. The network, which is intended to meet the specific needs of this user group, is based on close collaboration with hardware and software suppliers and uses internationally accepted and agreed specifications for communication services and protocols.

The aim is to allow for a sharing of resources by permitting remote access to computing centres, and to provide mail and conferencing services. To ensure smooth operation and development, a management structure has been implemented for the network. An assembly of all participants, currently some 70, controls an administrative board who in turn is guided by a technical advisory committee but direct a permanent management group including 12 scientists. This supervises the various development projects for establishing and directing the network. (It is worthwhile noting that in the latest information policy proposals of the German government, full support is scheduled for this network to allow its extension and use by all Universities, related institutions and research centres : 55 Million DM are being spent over a three-year period.)

Emphasis is currently on provision of dialogue, remote job entry and file transfer facilities. The first is achieved by a simple line-oriented access via the public Datex-P network, where the PAD function may be one operated by the PTT, a private hardware device or one implemented in the local host computer. The last variant has the advantage of permitting extension to a simple file transfer functionality so that input data to the remote facility will not be taken from the terminal but out of a file and vice versa. In absence of an international standard for a virtual terminal with page- or format-oriented dialogue facility, DFN is implementing the relevant German protocol specification .

The remote job entry service allows a user to send a batch job written in the command language of the receiving host to a remote computer, have it executed there and direct the output back to the original host or another specified computer. Again, in absence of an agreed international standard, a German intercept one is being used for the time being.

Transmission of files is an essential service in cooperative research. In the absence of an agreed final FTAM specification, DFN uses another intercept standard for the basic file transfer functions, but work is proceeding in parallel on defining a suitable subset of the FTAM specification for implementation in DFN.

A further important and widespread sector is the exchange of messages (electronic mail) and computer-assisted communication and conferencing. Here the DFN activities fall into three groups. Firstly, use of the centralized TELEBOX system of the German PTT as a pilot user society ; exploitation of private and foreign systems such as KOMEX, EARN/BITNET, CSNET, KOM or Euro-KOM ; use of existing gateways between systems and implementation of a gateway between EARN and X-400 systems. Secondly, there is the installation of private management domains of the Canadian X-400 system EAN under the operating systems VAX VMS, UNIX 5 and UNIX bsd 4.2, the work here being done in close cooperation with the academic network projects of other European countries. The third group involves specification of a real X-400 system suitable for DFN but supplemented by specifications for group communication and directory services ; implementation of the DFN specifications for UNIX, BS2000, VMS and VM ; and design of a distributed directory service in cooperation with the THORN project.

In addition, work is in hand for transmission of graphics, and for allowing access to remote graphics hardware and software. Efforts are also being directed towards the transmission of three-dimensional modeling data and document processing and interchange.

The basic principle guiding all DFN activities is to use only internationally agreed OSI standards

for protocols and services as far as available. Close cooperation obtains with hardware manufacturers and software houses in Germany, with other European academic networks and with the SPAG group: the object is to ensure interconnectivity to network implementations in other countries, especially in the Community. It is the aim of the Association of DFN participants to keep central management efficient but minimal. Thus, because the communication software is installed on autonomous computers and computer systems of DFN member organisations, supply and use of services can be negotiated on a bilateral supplier — user relation, with a corresponding accounting procedure based on local tariffs of the executing computer centre, avoiding a central DFN accounting system and policy. However for a distributed message-handling environment a mere supplier — user account system may prove inadequate. Additional agreements will be required between message-handling service domains and users related to general accessibility and availability of the system, reservation for storage of messages etc. A fixed rate per message unit will be necessary.

A further activity planned is the setting up of a DFN Test Centre for conformance testing and certification for all protocols where public facilities are not available. Only certificated software will be made available to the DFN community. Work is also progressing on installing a user-friendly information service for handling queries about network services, costs, addresses, DFN plans and events. A centralised network information service centre based on the SIR database system is being established, and will be accessible via the X-29 dialogue facility.

DFN is to be an independent operation eventually, with all financial support for the central management services coming from users through the DFN Association once Government subsidies cease. To ensure smooth transition from the development to the operating phase, Governmental funding will be available for a pilot operational phase with the funds going to user groups for communication equipment, maintenance and data transmission charges.

K. TRUÖL
(DFN, BERLIN)

Information: The Billion Dollar Industry

This year's EUSIDIC Conference, held at Bath in the last days of October, brought much of interest, and concern, to I.E.S.

Several papers addressed communication problems directly as seen from the viewpoint of very large users. These represented banking, news media and multinational corporations. The message that came over loud and clear was the desire to have assurance of compatibility today and in the medium term, to enjoy active cooperation of Postal authorities (including facilities for international reverse charging) but not at the cost of restrictions on the latest technologies, and to have 100 % reliability. In particular, the arguments for and against private versus public networks received much attention. The need for reliability was shown by the high investment to guarantee that no user would be without service for more than a few seconds, with complete duplicate systems being installed.

Listening between the lines suggested that much of the hardware (and software) was not European and that the protocols did not conform to known standard recommendations.

What also emerged quite clearly, that research use of telecommunication and network facilities was an insignificant part of traffic and that it will be the large user who will of necessity dictate developments. The need for action now to safeguard the interests of the research community in this respect is urgent.

The COST-1

Basic Research in Teleinfor

In the first issue of IES News (No. 1, 1985) a short description of the aims of the COST-11ter project (COST : Coopération Scientifique et Technique) and its relationship to I.E.S. as well as a detailed description of one of the subprojects — the OSIS project — were given.

It is intended to present some other COST-11ter subprojects in the next issue of I.E.S. News but for those who are not familiar with this COST action and its projects an overview is given here.

COST-11ter is a project for cooperative basic research in tele-informatics in Europe and it is the successor of COST-11 and COST-11bis. Cooperative research in this field has a long tradition. In 1973, the COST-11 Project 'European Informatics Network' resulted in a communications subnetwork with nodes in London, Paris, Zurich, Milan and the JCR Ispra Establishment, and a number of secondary centres were connected to the nodes via leased lines. The network was dismantled when EURONET became available.

COST-11 was followed by the COST-11bis Action (1980-1983/4), which was part of the multiannual programme of the Community on data processing. Other countries (Finland, Norway, Spain, Sweden and Yugoslavia) participated under the Community-COST Concertation Agreement. The 14 projects which were financed under the Action involved almost 70 institutions with an estimated 250 researchers. Participants were mainly from universities and research centres. Existing international standards were consistently upheld and, in particular, the definition of

the protocols was based on the ISO Open System Interconnection architecture. The project covered a spectrum of detailed activities in areas like computer-based message systems, service and protocol specifications of OSI layers, inter-networking between local networks using satellite links and X-25 public services, formal description techniques for protocol specifications, management and communication aspects of distributed database systems etc. A final report of the COST-11bis project which also contains summaries for the individual subprojects is available and can be obtained from the Task Force.

In 1984 it was concluded that there was a need for the continuation of basic research in teleinformatics at an European level, complementary to the work done in the PTT's research laboratories and to that under the ESPRIT Programme. The extension of the multiannual programme of the Community on data processing, approved late in 1984, provided the basis for the continuation of the Action, and the European countries of the COST framework were again invited to join the project by signing the 'COST-11ter Agreement'.

The support scheme adopted for the COST-11bis Action was considered appropriate also for the environment to be addressed for COST-11ter, i.e. aimed mainly at support of public research institutions in the field of informatics :

This support scheme differs from other programmes in that its financial support to single project is restricted to cover only the additional costs of cooperation of institutions at the European level ; the basic costs (manpower, equipment, etc.) have to be provided by the participating institutions themselves.

Although the COST-11bis/ter funds are small, they nevertheless attract a large number of institutions and experts in the teleinformatic area to work together on common projects.

In COST-11ter again a set of subprojects, with participation of a large number of institutions and researchers, will be conducted with the research aimed primarily at distributed applications (layer 7 of the OSI reference model) within an open system environment.

The intensive participation of institutions and researchers in COST-11ter (and its predecessor) demonstrates the enthusiasm f

1ter Project

atics on the European Level

European-wide basic research in teleinformatcis. The COST agreement provides a framework for participation of research institutes of non-Community countries in a European wide activity.

A short description of COST-11ter subprojects soon to be started is given below. About 50 institutions ready participate in this initial phase. Further projects will be established in 1986. For details about COST-11ter, its subprojects, possibilities to join, etc. please contact the writer.

vice Elements) and of the Presentation and Session Protocols. Pilot implementations are planned as a prototype for the demonstration of the applicability of the defined services and protocols.

Specific items for study include :

— a distributed system management kernel

— authentication mechanisms and support for authorization

— journaling and performance monitoring

— network help service

— error reporting and diagnostic mechanisms

— configuration and reconfiguration

ferencing in open systems interconnections (group agent concept) ; it has become obvious that sophisticated systems with a wide range of user services (as e.g. Euro-KOM) are actually not supported sufficiently by the new CCITT standard X-400 for their interconnection to similar systems, so that remote X-400 users cannot make use of their functionality.

However AMIGO is not restricted to these (essential) conferencing aspects but aims at a broader study of various types of group communication which can be implemented making use of forthcoming X-400 transfer infrastructures. Examples are, e.g., joint editing schemes, voting procedures, agenda planning, discussions, etc. It is hoped that a general functional abstract model of group communication can be defined allowing the derivation of communication services and protocols. Pilot implementations are planned.

1. DSM — Distributed Systems Management in Wide Area Networks

The objectives of the project are to define a DSM architecture, the necessary set of management functions for the interworking of distributed open systems and the development of communication protocols in support of distributed system management. The DSM application protocols to be developed within the framework of ISO/OSI will so make use of SE (Common Application Ser-

2. AMIGO — Advanced Messaging in Groups

The project aims at investigating general concepts for communication in groups within an open message handling system environment.

One essential and early application of the work will be the inclusion of communication procedures to allow distributed computer con-

3. Security Mechanism for Computer Networks

A security architecture for open system interworking will be investigated and specific mechanisms will be analysed and designed. The specific results will be integrated into a general protection mechanism and scheme, and questions of rating and verification procedures will be considered.

Specific items of interest are e.g. the application of cryptography and key management techniques,

user identification and authentication mechanisms, user authorisation and access control, protection of data in transfer, protection for access to data in a network environment (database and file transfer and access) and protection for distributed systems management.

4. Human Factors in Teleinformatic Systems

This project will study three interrelated areas.

(a) The work on user modelling aims at defining the human factors requirements of users in an OSI applications environment and communicating them in a form which is suitable for incorporation into an ISO standard.

(b) There will be work on a language for defining user interfaces which are distributed in an OSI applications environment and which should provide a basis for a standard for applications programmers in an OSI environment.

(c) Finally human factor guidelines will be investigated for the design and development of OSI systems.

5. OSIS — Open Shops for Information Services

The aim is to investigate the theoretical and technical conditions for accessing service providers (e.g.

travel agencies, mail systems, etc.) through a telecommunication system (e.g. from remote POS devices) and to pay for the services by means of 'electronic cheques'. The cheques are digitally signed (by means of an encypherment scheme).

A special device — the OSIS token — is under discussion (e.g. electronic unit with control and signature logic, check card characteristics, keyboard). National projects are under preparation, e.g. in Germany, France and Sweden, with participation of banks and manufacturers; the exchange of experience and results are coordinated by this COST-11ter project. (See also the article on Security without Identification, page 18).

6. FDT-ABM — Formal Description Techniques — Architectural and Behavioural Model

The objectives are:

— to examine the relationship between architectural and behavioural models of distributed systems with particular reference to the COST-11bis architectural model of a protocol entity and including both explicit behavioural models (e.g. based on Petri nets and finite automata) and implicit ones (e.g. based on temporal logic or algebraic specification);

— to formulate requirements for formal specification languages based on alignment between architectural models;

— to formulate requirements for software tools supporting verification and other checks of specification at different levels of abstraction and validation of systems at different stages of development;

Other areas in teleinformatics are under consideration within the framework of open systems architectures (such as distributed graphical application, distributed databases and others). It should be noted that COST-11ter is open to further suggestions on cooperative basic research work in the teleinformatics field.

ROLF SPETH
(ITT TASK FORCE)

One of the initial services identified for ESPRIT/I.E.S. was a UNIX facility. The first bureau service for UNIX was operated for ESPRIT/I.E.S. by G.E.C. Hirst Research Centre (HRC), near London. This service was known as the UNIX Pilot Server.

A new contract signed in July 1985, provides that University College Dublin (UCD) Computer Centre run a parallel UNIX based electronic mail and news system to EuroKOM, and interlink the two in the near future. In order to meet these requirements, the UNIX based service at G.E.C. (HRC) was moved to UCD on Monday 18th November 1985. Initially, a UNIX pilots server will be offered, but it is planned to provide a fully-fledged operational service to the European Community sometime in mid-1986.

In view of the increasing popularity of the UNIX portable operating system for workstations, personal computers and microcomputers, and the need for an Open System Approach, the UNIX communications facilities are being adapted so as to conform to the OSI standards. Thus, UNIX systems will be able to exchange information with other operating systems using the same interpretation of international standards. One of the projects undertaking this work is the "Research Open System for Europe" (ROSE) Project.

UCD are offering all the services formerly available from HRC and, in addition, will initially make provision for documentation and user help services and will also provide a test-bed for products developed by other ESPRIT/I.E.S. projects, such as ROSE, within the Community. It is intended that the products developed from the ROSE Project will be made available in due course.

The UNIX service is running on a GEC 63/40, a super-mini computer located at UCD Computer Centre. This machine was installed on October 1, 1985, and is currently running UNIX Version 5 Release 3 operating system.

The UNIX Server currently offers the following facilities :

Electronic mail — to exchange messages with other UNIX machines.

News service — to read recent items on a variety of subjects and to post items yourself. It will provide a "notice-board" for general ESPRIT topics. You can also use it to disseminate information within a single ESPRIT project.

UNIX Services in ESPRIT/I.E.S.

UNIX familiarisation — you can use the user-friendly UNIX familiarisation environment to gain experience of using UNIX commands and utilities.

The UNIX Server is available to any ESPRIT participant who has a normal teletype-compatible terminal. Access is via a communications link from your terminal to the Server. The options for connection are via X-25 packet switched data network or end-to-end telephone link.

During the initial phase of UCD management of the Server no charge will be applied for use of the UNIX machine. However, as the various enhancing facilities are implemented, a charging structure sufficient to recover running costs will be introduced.

The specific enhancements envisaged are :

ROSE Product Incorporation

These products will be incorporated as they become available.

UNIX Software Validation and Distribution

A UNIX based ESPRIT/I.E.S. Software Validation and Distribution Facility for the purpose of speeding-up access and distribution of newly developed pieces of mostly portable software within the Community.

UNIX — EuroKOM INTER-MAIL

this is intended to provide ESPRIT/I.E.S. users with access between the two systems. In particular, this feature will allow users to have a means of interfacing to other electronic mail systems and the Telex network via EuroKOM.

The UNIX Service at UCD is connected to the Mathematical Centre Amsterdam, currently the backbone of EUNET. This allows the transfer of mail and news between UNIX users worldwide.

For any further information concerning the ESPRIT/I.E.S. UNIX facility, or the EuroKOM facility, or for details of registration requirements contact :

EuroKOM Help Desk,
Computer Centre,
University College Dublin,
Dublin 4,
Ireland.
Telephone + 353 1 697890
Telex 91178 UCDEI

The Help Desk is manned between 09.00 and 19.00 hrs Central European Time, Monday — Friday. Inquiries made outside the above times may be left on the telephone answering machine.

AHMED PATEL
(UNIVERSITY COLLEGE, DUBLIN)

Moving towards International Open Systems Interconnection

It was interesting to note the emphasis placed on standardisation, and the ISO Open Systems Interconnection (OSI) reference model in the first issue of I.E.S. News. In fact, OSI is mentioned quite casually in information technology 'circles' these days. It is, of course, true that the ISO standard (ISO 7498) which defines the OSI reference model is a major step forward towards stabilisation of information technology. The general acceptance of OSI, and commitments by many IT manufacturers to design and produce future products in accord with OSI architecture seems to demonstrate that OSI has 'sunk-in' and will be an important guidepost for the future.

If you are an IT person and more or less in the know about the business, you have a reasonably good chance of having heard about OSI. However, it is not as likely that you would hear very often about ISO (the International Organization for Standardisation) which established OSI as an international standard, or of ISO Technical Committee 97 (ISO/TC 97) which is where (in sub-committee 21) the OSI work was prepared. It might also have slipped your notice that ISO/TC 97 *Information processing systems* has been operating for more than 20 years, and has prepared more than 250 international information technology standards in addition to OSI.

The hardware standardisation jobs and rationalisation of vocabulary were tackled early and this is a continuing task. Thus we have ISO standards on basic things such as paper tape, reels, magnetic tapes, connector pin allocations, disks, etc., and a large and growing standard terminology. The software side is also progressing well and everyone connected with the work is enthusiastic about the progress made; it covers topics such as character set coding, labelling and file structures, character recognition, error detection, high-level data link control procedures, programming languages and OSI (including the protocols required for interconnection as specified in its seven-layer reference structure).

The programming languages standardised in ISO consist of ISO endorsements of existing standard forms of language, such as for FORTRAN, COBOL and PL/1, as well as those elaborated by the normal process and usually aimed at clarifiying situations where confusion is becoming apparent due to variant usage. A good example is BASIC where an International Standard for Minimal BASIC was demanded in order to define the bone structure of this very widely used (and abused) language. Another recent very significant achievement is publication of an internationally agreed approach to graphic functions known as the Graphic Kernel System (GKS). Items in the current programme and at advanced stages include the language requirements for GKS, the standards needed to fill out OSI and a series devoted entirely to local area network access methods. Of immediate interest to everyone associated with publis-

hing is the ISO Standard Generalised Markup Language, due to be published very soon, and I have mentioned only a fraction of what is happening in ISO.

All this is being accomplished in spite of the fact that standardisation in fast-moving technologies such as IT is very difficult to achieve. Standardisation seen from the sidelines seems a slow-moving process and is criticised easily on that basis, but it is more realistic to think of standardisation as a *necessary* lengthy and expensive business aimed at eliminating *unnecessary* lengthy and expensive business. It has been proved many times, for technologies ranging from watchmaking to shipbuilding that investments in international standardisation pay large returns.

ISO work on international standards is organized in Technical Committees, presently numbering 164, which cover all fields of technology where a need for international standards is evident. These committees include experts from industry, governments, and universities as members, and operate with administrative support provided by national standards institutions (ISO members) in 32 different countries. The ISO work is decentralised, *by design.* Each working day of the year more than eight ISO technical committee meetings are under way somewhere in the world. In the IT field alone there are easily more than two ISO meetings per week — meetings with 20-40 participant experts, representing 20 to 30 countries.

ISO/TC 97 is one of the largest of the ISO technical committees. This is partly due to the difficulty of identifying parts of IT standard-

isation that can easily be treated separately from each other and organised into other technical committees. Nevertheless, certain aspects of the subject such as 'documentation' and 'banking', still have their own committees. At present, ISO/TC 97 operates with 14 subcommittees and over 70 active working groups *. Twenty-one countries are actively participating in the major part of the work and another 25 have observer status on all or many of the subcommittees and working groups. Staff support for this committee work in almost all of the major industrial countries easily comes to more than 20 man-years per country per year. The technical experts involved are almost uncountable, but I would hazard an estimate of more than 100 man-years per country per year — just for ISO/TC 97 work. Remember, this work is paid for by the employers of the experts — industry, government, universities etc. International standardisation is, without doubt, the largest international collaborative effort going for the information technology industry — a necessary collaboration with far-reaching consequences for future business.

For historical reasons, ISO has been the main international organisation supporting IT standardisation. However, IT standardisation is increasingly interlinked, or in some cases indistinguishable, from telecommunications standardisation, and because of these converging technologies, ISO and the CCITT (International Telephone and Telegraph Consultative Committee) have found it necessary to establish strong coordination links. Also, with the blurring of hardware/software technologies, the in-

tegrated circuit/microprocessor system standardisation work of the IEC (International Electrotechnical Commission) has became increasingy integrated with the ISO/TC 97 work, and a recent decision has been taken to associate certain IEC work with ISO to form a joint ISO/IEC information technology operation.

All of the activity described above is, of course, dedicated to a relatively new approach in standardisation, i. e. that international standardisation should take priority over national or regional standardisation, if at all possible. The IT field is one in which the axiom — do it once, do it right, do it internationally — has indeed been the practice. In recent years, very few national standards for IT have been established before international agreement in ISO has been reached.

The benefits of this approach are obvious, especially to those who have lived with the problems of divergent national standards in other technologies. The European Community member countries have long been major contributors to the ISO work in all fields of technology, including IT standardisation. New efforts such as IES News to increase understanding of and appreciation for IT standardisation should help to bring even more attention to this global challenge.

Lawrence D. EICHER
(ISO, GENEVA)

*The ISO Technical Committee ISO/TC 97 *Information processing systems* consists of a main committee (for which the secretariat is ANSI, the American National Standards Institute) and a number of subcommittees, each with its own secretariat and possibly with a number of working groups. The subcommittees and their secretariats are titled as follows :

Vocabulary (AFNOR, France)

Character sets and information coding (AFNOR, France)

Telecommunications and information exchange between systems (ANSI, USA)

Design and documentation of computer-based information systems (SCC, Canada)

Magnetic disks (UNI, Italy)

Flexible magnetic media for digital data interchange (ANSI, USA)

Interconnection of equipment (DIN, F.R.G.)

Representations of data elements (SIS, Sweden)

Labelling and file structure (SNV, Switzerland)

Identification and credit cards (BSI, United Kingdom)

Text and office systems (ANSI, USA)

Office equipment and supplies (UNI, Italy)

Data cryptographie techniques (DIN, F.R.G.)

Information retrieval, transfer and management for open systems interconnection (ANSI, USA)

Application systems environments and programming languages (SCC, Canada)

Optical digital data disks (JISC, Japan)

Security without Identification:

an Alternative Approach to OSIS

Computerisation has been claimed to rob individuals of the ability to monitor and control the ways in which information about them is used. With both public and private organisations routinely exchanging information on payments made, credits granted, insurance and social security etc., there is an element of uncertainty whether such data will remain secure against intentional or accidental misuse. On the other side of the fence, organisations such as banks, insurance companies etc., are open to abuse by individuals, which might lead to the requirement of more pervasive and interlinked computerised record-keeping systems.

A novel approach suggested by David Chaum of the Stichting Mathematisch Centrum in Amsterdam goes a long way towards resolving this dilemma. There are three major aspects in the proposals made : The first concerns the manner in which identifying information is used. It is suggested that the individual uses a different account number or digital pseudonym with each organization, individuals creating these by a special random process : no further information identifying an individual is used. This would allow a shop purchase to be made with a one-time-pseudonym whilst for a bank account the pseudonym would be retained for all transactions. The system would only allow one pseudonym for an individual-organisation relationship.

The second novelty is in who provides the mechanisms used to conduct transactions. Presently the tokens or credit cards are issued by organisations and contain information unreadable and unmodifiable by the user : when such tokens are used in computer-controlled devices such as cash dispensers or point-of-sales terminals, these are tamper-resistant and contain secret numeric keys to ensure secure communication with the central computer. It is now suggested that individuals could conduct transactions using personal card computers similar to presently-available credit-card sized calculators and including a character display, keyboard and limited distance communication capability (like a television remote control). In a transaction, the costs would be communicated to this device and displayed, with the card owner validating the transaction by entering a secret authorising number on the keyboard, but this authorising number having been programmed into the card by its owner previously for all transactions. Without knowledge of this number the card computer would be useless and safe from abuse.

Finally, the nature of security provided also differs substantially from that in present systems. Currently, there is an emphasis on one-sided security of organisations. whilst the new approach permits both parties to safeguard their own interests. Individuals keep secret keys from organisations and organisations in turn devise other secret codes that are kept from individuals. During transactions, the parties involved use these keys to provide each other with specially coded confirmation of the transaction details.

The systems presented rely on currently used coding techniques to provide security for organisations against abuse by individuals. No feasible attack or any proof of security is known for such cryptographic codes. In contrast, the security of individuals against organisations being able to link pseudonyms is unconditional. It can be shown mathematically, that even conspiracy of all organisations and tapping of all communication lines cannot yield enough information to link the various pseudonyms.

The feasibility of the new approach is demonstrated in detail for three types of consumer transactions : communication, payment and credentials. The first of these is of special interest here. The solution suggested to the known problems of communication security is that messages are untraceable except for the recipient's ability to authenticate them as having been sent by the owner of a particular pseudonym. Full details (and proofs) are available from David Chaum, Stichting Mathematisch Centrum, Kruislaan 413, Amsterdam.

Academic Networking and Computer-Based Messaging in Norway

UNINETT

The Norwegian academic communities were organised for concerted action on the construction of the UNINETT network as early as 1976. The four universities — Oslo, Tromsø, Bergen, Trondheim, — several research laboratories including the PTT research institute and the Norwegian computer industry (Mycron, Norsk Data, Kongsbert Våpenfabrikk) all participated in the specification and implementation of an X-25 service which was operated experimentally for several years before being replaced by the public Datapak service.

The Transport Protocol used is ISO class O and for terminal access the CCITT PAD recommendations are used. The UNINETT community also adheres to the T.62 Session Service which has been implemented for Teletex experiments.

The basic Transport service runs today on a number of nodes including Norsk Data, Univac, CDC, DEC and ICL equipment

Substantial financial help has been received from the Norwegian Council for Science and Technology (NTNF).

Local Area Networks and Network Interconnection

The Norwegian academic communities operate several Ethernet and NET/ONE based local communication facilities. Gateways to the X-25 service are provided. As a result of R & D activities the ARPANET TCP/IP protocols run in internetworking experiments.

Computer-Based Messaging

Messaging is by far the most used application. For many years the University of Oslo has been involved in the provision, use and development of the Swedish KOM teleconferencing system. The entire Norwegian academic community is regularly using KOM both at the University of Oslo and at QZ in Stockholm.

Recently the Technical University of Trondheim has implemented the Canadian EAN version of the X-400 series MHS, and is now offering this as an international service (with connections to USA).

European Research

The research activities on distributed computing and networking fit very well with the international priorities. Norwegian communities are participating in several COST-11ter activities like Messaging (developing group communication for MHS), Distributed Systems Management, and Human Factors in Teleinformatics.

Nationally, multimedia communication issues are considered to be very important. In the UNITT community, however, one considers the transition of the network into regular operation to be urgent. The commitment to OSI architecture and ISO OSI protocols is clearly stated.

Letters to the Editor

Dear Sir,

I congratulate you and the ITTTF on the appearance and content of the first issue of IES News. It is a welcome and valuable publication. Issue 1 remains on my desk as a reference document because of the useful short articles summarising the purpose and state-of-play of the projects and activities associated with the I.E.S. These articles would be even more useful if the appropriate contacts in the Commission and participating organisations could be added so that more detailed information could be obtained.

I suggest also that the list of forthcoming events, such as that briefly given on the last page of issue 1, is extremely useful and should be expanded. For example, I was not aware until too late, of the workshops held at the end of ESPRIT Technical Week and I missed an event of considerable interest and importance to me. A diary of forthcoming events of interest to the I.E.S. Community would be most useful and the next issue could usefully give dates of such events as the 1986 Technical Week and any meetings or workshops of interest to the the I.E.S. Community.

My interest in the workshops arises from my responsibilities with regard to the development of an electronic infrastructure for the U.K. Alvey programme of advanced R&D in Information Technology. This programme has strong links with ESPRIT and there are obvious advantages in creating an infrastructure which can easily interlink and interwork with other networks, electronic mail systems and R&D communities in Europe. Although there are several issues to consider, this should be largely a matter of adopting, wherever possible, the same standards and then ensuring that these standards are supported by the computers, operating systems and terminals attached to the networks. It is also necessary to recognise that some of these networks have been in use for some time and are thus built around local standards which continue to be of real value. Thus gateway or converter issues need to be addressed to interlink these systems while the universal standards are gradually adopted.

It is probably wasteful to consider the creation of a number of such gateway services ; there are considerable advantages in tackling these problems on a European scale with a saving of development effort and money while, at the same time, giving access to a larger community than would otherwise be the case. It is important to discuss these problems and possible solutions with others in the Community and IES News provides a most convenient means for contacting others with similar responsibilities. It would be useful to know how many national systems and networks are in use (or planned) : what standards they are (or will be) using, what communities they address, what other communities they wish to interwork, what functionality they provide and how they may be interlinked. Clearly, the I.E.S. should have a key role in unifying these networks but it is not clear that it will.

There are suggestions regarding the establishment of a European network for the use of the research community. This community is a mixture of universities, industry and national research establishments. Any network proposed must take account of this mixture and not be designed purely for a

particular subset. Even more importantly, it is necessary to ensure that we do not create a number of separate, overlapping networks.

IES News has a significant role to play here, allowing views to be expressed, information to be exchanged and communities of interest to develop. I hope that the level of circulation and frequency of publication will be such that it can perform these functions. In particular, I would like to see it used to bring together those with interests in the interconnection of different networks.

Yours sincerely
K. A. BARTLETT
Director, Infrastructure
& Communications
The ALVEY DIRECTORATE

(The date of the 1986 Technical week has not yet been fixed. Hopefully, some of the other points made have been answered elsewhere in this issue. EDITOR).

Dear Editor,

I have read IES News No. 1 and I congratulate you for the good presentation of the whole picture of the various programmes in progress related to I.E.S.

Since on the last page you welcome letters and suggestions, I have been tempted to write on two different topics.

a) In my opinion to enlarge the number of users participating in the I.E.S. EuroKOM service it is important to establish as soon as possible a gateway service to the Telex network (it means that it should be possible to reach automatically a telex user by a message put in his electronic mailbox, if he is registred as user of this service, and has not yet a terminal for online operation).

This should obviously work two ways.

b) You have mentioned the availability, with a high degree of accuracy, of the SYSTRAN system for automatic translation. Will this be accessible via EuroKOM for the partners in the ESPRIT projects ? Will it be possible to make some experiments via EuroKOM ?

Thanks and best regards
OTTAVIO GUARRACINO
OLIVETTI/DRT
Via Jervis 77
10015 IVREA, Italy

ECAT, who operate the SYSTRAN system in Luxembourg, comment as follows on the above suggestion :

Making a link between EuroKOM and SYSTRAN is certainly a possibility which could bring a considerable enhancement to both services. ECAT is already providing online access facilities to current users of SYSTRAN and furthermore has been charged by the Community with promotion of automatic translation services among ESPRIT participants.

The main problem in such a link is the fundamental difference between the systems as regards spelling : what appears trivial to EuroKOM users is vital to SYSTRAN : accents, Umlauts etc are essential to guarantee high accuracy in SYSTRAN, but do not affect the understandability of messages on EuroKOM, which indeed has no provision for such niceties. No doubt sooner or later, hopefully the latter, this problem will be resolved.

Details of the online facilities of ECAT can be obtained directly (9-11 Av. Jean-Pierre Sauvage, L—2514 Luxembourg, Telephone (352) 43 83 88)

(The Telex link is coming — see the articles on EuroKOM, pages 3 and 15).

Annotated Bibliography on Software Engineering

Environments, Methods and Tools

Availability of this for open consultation on an experimental basis has been announced. The service is provided by the Department of Computer Science of the Université Catholique de Louvain in Belgium with the initial input being provided by Systems Designers Ltd and UCL. Queries may be submitted either interactively (by logging in on the system) or through the Unix Mail facility, in which case the results are mailed back. For full details of facilities, modes of access etc. please contact Olivier Declerfayt of UCL.

(Place de l'Université 1, B-1348 Louvain; Téléphone (0032-)10-43 21 11).

The (Tele-) communications Research Activities of the FAST Programme

Not everyone of the I.E.S. community may be aware of the extensive research effort into a wide range of telecommunication aspects being conducted under the Forecasting and Assessment in Science and Technology (FAST) programme of the Community.

The main topics being addressed relate to :

— the practical options and industrial stakes of the telecommunication industry
— the media industry
— the spectrum of possible future market configurations for telecommunications
— the final consumer demand for communication and telematics
— the structural effects of telecommunication technology on branches and sectors of industry (case studies of the textile and automotive industries)
— the function of communications : review and prospect
— the effects of a world communication network on the autonomy and relevance of national domains.

Outlines of these programmes, with details of the participating companies and organisations, are contained in a Commission Report (XII-466-85) copies of which can be obtained from Nicole Dewandre, C.E.C., Brussels.

UNESCO's General Information Programme and Standardisation

It is interesting, and sad, to note that the standards problem is not confined to I.E.S., even in the field of information exchange. Thus the latest issue of the Unisist Newsletter of UNESCO reports on the efforts to get the Common Communication Format (CCF) adopted. This is intended to facilitate international exchange (and hence compatibility) of bibliographic or data records. Following distribution of the agreed format, some 20 national institutions have by now indicated their interest in adopting this. Perhaps OSI and ROSE will find wider acceptance more rapidly.

Fifth ESPRIT Interest Group on Environments Meeting

Among the topics discussed at this meeting held in November was a preliminary evaluation of the questionnaire distributed during the Technical Week. The overall impression was that the state of practice of software engineering seems not very advanced. It was stressed that an accurate 'snapshot' of the current state of practice within ESPRIT would be valuable, for checking in five years or so whether there had been a significant improvement through the programme. This led to the suggestion of preparing an improved version of the questionnaire to be answered by all ESPRIT participants. Another one was the recent news about cooperation of AT & T and SUN Microsystems with regard to UNIX System V and BSO 4.2. As regards the prospects for convergence of these UNIX versions, it was pointed out that coexistence of two variants on one machine did not necessarily imply integration of tools and data files, but the prospect of System V converging to a set of functionalities similar to Berkeley 4.2 was considered good. In the light of X/Open Group and PCTE commitments to evolve with System V this was important, but the timing was such that users of Berkeley 4.2 wanting to change to PCTE as soon as possible would loose initially some UNIX functionality.

The Austrian Academic Computer Network

Stage 1 of the Austrian academic computer network which is being established with Governmental and PTT support, will link the local computer installations at the Technical University of Vienna, Graz and Linz Universities. Local networks already exist at Vienna and Graz, and these will form an integral part of the overall scheme. Interlinking is by the PTT packet switching service Datex-P and is based on OSI rules. Full details can be obtained from Dr. M. Paul, Technische Universität, A—1040 Vienna.

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For those who do not see the International Herald Tribune, there is a current series of well-researched and informative articles appearing under this title. Special interest attaches in particular to the articles 'Europe acts to join era of innovation' (Nov. 28). 'Europe sits by the phone, awaiting a revolution' (Dec. 4, which includes comments by M. Carpentier), and 'Europe caught between IBM and AT&T' (Dec. 16).

What emerges very clearly from these articles is that the collaboration between the telecommunications industry and PTTs has not always been to the detriment of the former: thus in contrast to the European trade deficit in high-technology equipment, there was a £2-billion surplus in the telecommunication sector. The taste for new technology has however created pressures on PTTs far in excess of their ability to provide. An example is the urgent need for ISDN, full implementation of which is still a long way into the future.

Getting Down to Business: Europe's New Approach to Competition

The need for standardised information exchange systems in Europe is not confined to ESPRIT, but is evident also from the Community efforts in Biotechnology where productivity of research and development is increasingly dependent on effective use of advanced information technology. This has led to the launching of BICEPS, a BioInformatics Collaborative European Programme and Strategy. Whilst clearly not all applications of information technology are related in these separate programmes, they all do need reliable I.E.S. services to reach their goals efficiently and quickly.

Peter Popper

Future Events

Software Engineering for Telecommunication Switching Systems. I.E.E., Eindhoven, April 14-18, 1986.

Information-Communication '86 AFCET and CESTA, Paris, June 3-5, 1986

ISDN: the Technical and Commercial Realities. Online, London, June 10-12, 1986.

COMPAT 86: Computer-aided Trade (includes Sessions on Network Services). EUROMATICA, Paris, September 15-17, 1986.

Future Events

Communications — the European Opportunity PERGAMON-INFOTECH, London, February 26-28, 1986

The Economics of Information. I.E.G.I., LUXEMBOURG, February 25-27, 1986

OSI '86. Department of Trade and Industry, London, and Online, London, March 19-21, 1986.