C.E.C. Luxembourg.

4412.32

Esprit
Information Exchange System

iesnews

(beginning with

Issue No 1, Autumn 1985

In welcoming you and our other readers to this, the first issue of „IES News", the I.E.S. Newsletter, which will arrive four times a year on your desk, let me set out the purpose and aims of this publication. No doubt you will feel that here is yet another unsolicited paper and may wish to consign it into the usual filing tray. Please, do not. I cannot promise you that "IES News" will be different, but we will try to make it an eagerly awaited event.

The ESPRIT Programme was launched to help establish European Information Technology as at least the equal, if not the best in the world. To achieve this aim, it is essential that all involved in ESPRIT, either as formal participant or interested in its success, stay in close touch – and

Welcome

this is the guiding concept of I.E.S. "IES News" is merely a tool in this. Being a quarterly and initially a convential print product, it cannot hope to bring you the news in the Information Technology world as it happens, but it can give informed comment, bring constructive ideas, report on successes and failures, make contributions to ongoing debates etc.

We want to deal in particular with

1. On-going programmes of I.E.S. such as ROSE (Research Open System for Europe), ELAN (European Local Area Network), UNIX* United, etc.

* UNIX is a trade mark of ATT Bell Laboratories

Late news
An electronic mail switching and forwarding system has been established in Luxembourg. This is operated by Electronic Mail Corporation of America.

Half-way to OSIS? Two recent developments are the order by French banks for 11 million smart cards and the installation by Marks & Spencer of electronic point of sale equipment.

0.1.1

CEE: XIII/51

What I.E.S. is about

The ESPRIT programme in which the many participants and those interested in its progress are scattered throughout Europe requires as one of its basic assumptions for success a comprehensive and multiple communication system: this should interlink the geographically separated units to allow speedy interchange of results, correspondence and other relevant information, and at the same time serve as a management support for ESPRIT as a whole. This thought led to the establishment of I.E.S. – the information exchange system.

What should this provide – computer-based message and conference services, common text preparation facilities, information retrieval, integrated software development environment, as well as graphics facilities, and mechanisms to ensure both privacy and security. In the light of these needs, the constraints imply that any such system must be open-ended, evolutive and firmly based on European and international standards.

The aim of I.E.S. is therefore to provide the user with a fully transparent, complete, secure and easily accessible collection of communication and information services, comprising electronic mail, computer conferencing, electronic document storage and retrieval, administrative services and access to such other services available on computers linked into the ESPRIT project, subject to security considerations.

Hence it becomes relatively easy to see what I.E.S. should be and how it should be used: getting there is and will be a different matter requiring much commun effort, of which IES News but a small part. Thus, I.E.S. is to be a practical and operational system for daily use, and, not a mere demonstration package.

I.E.S. is to be available not only to active ESPRIT participants, but to project management(s) up to the level of member states as well as all interested in ESPRIT progress and results.

I.E.S. is to serve the principle of information exchange and sharing, that is it is for people as well as for purposes of theoretical data exchange between machines.

I.E.S. will certainly not become a physical network or rigid single system, but be a set of conventions embodying sets of procedures for intercommunication using in many instances existing links provided by PTT's and others.

In its turn, the management team of I.E.S. will have to ensure continuous evolution of existing, and development of new tools and services to be used once shown to be reliable and flexible.

I.E.S. will certainly not involve a set of dedicated hardware components or operate in a uniform or unique software environment. One of the basic problems is the interlinking of different networks and operating systems, either by the strict adherence to Open System Interconnection standards, or using suitable gateway techniques – hence the ROSE project. Other work is directed towards local area networks where the components may not be compatible on first sight, hence ELAN. Yet another facet is the provision of messaging and conferencing facilities through EuroKOM. Work is or will also be done in the areas of security of communication between I.E.S. users, on interfaces between machines conforming and not conforming to Open Systems Interconnection standards, a UNIX server for remote availability of UNIX based programmes etc. There certainly are many aspects which as yet have not been considered as relevant to I.E.S., but as these are identified and their needs defined and established, they too will be added to the I.E.S. menu.

I.E.S. is only at its beginning – it is a service and not an end in itself. It must be there, be known to exist, but ideally, like any good service, be not noticed because it operates smoothly – for those working in I.E.S. it will be reward enough if they and the services they provide are accepted without comment – comment on service functions are usually adverse. What I.E.S. does however need, is ideas and suggestions on new services which will help users and ESPRIT participants.

ELAN ist a project established within the framework of ESPRIT. It has a double objective, the first of which is to provide an experimental telematics environment based on collaboration between four European Informatics Companies (ICL, BULL, Olivetti and Siemens) to promote the use of public standards, particularly European Open Systems Interconnection (OSI) standards. The second aim is to provide a working tool for the use of the ESPRIT Task force.

The network configuration already installed consists of three Ethernet type coaxial cable segments, in two Commission buildings in Brussels. Two segments in one of these are linked by a repeater, and the two buildings are linked by a synchronous bridge (connecting cable and modems).

There are currently some two dozen users, with a variety of equipment. These machines are connected to Olivetti NIM 1000 Network Interface units, each of which contains four asynchronous ports. These ports can link work-stations or servers.

The method used to transfer data on the network is Carrier Sense Multiple Access with Collision Detection (CSMA/CD). If a number of devices begins transmission more or less simultaneously they detect the collision which results and stop transmission. They wait for a random period before retransmitting, thus minimising the probability of a further collision.

Connecting their work-stations to the network gives users better communication with each other; whatever type of machine they have, they can transfer messages or text to each other for display, storage or printing. They can also share access to common services on the network, and can gain access to EuroKOM and other external services by either direct X-25 or external PAD connection.

Message and file transfer between work-stations are handled by the ELAN Point-to-Point Application facility, which allows the user to use his screen as a glass teletype for input and output. Transfer between work-stations of a different type is limited to "print image" format to avoid incompatibilities. However, between work-stations of the same type, enriched character sets can be transferred and processed. In this first version the users must be present for transfer to take place.

European local area network: *Elan*

A second version contains purpose-written software which provides a menu-oriented user interface. This relieves the user of needing a detailed knowledge of the different packages. In addition, the introduction of a "wait state" allows an unattended work-station to receive and store incoming data. To date two servers have been implemented: the ELAN messaging application and an address list database service.

The first server is addressable from all connected work-stations. It stores messages for access at a convenient time, and outputs or displays the messages on request. It also supports the transfer of text files. It will later be extended to provide a mail service to and from the outside world.

The second server holds a file of about 8000 names and addresses. This constitutes the ESPRIT central mailing list.

The work-stations can transfer to the server address files which are to be used to update the central data base. The administrator updates the data base periodically and merges and sorts the files. Duplicates are eliminated. Lists of possible duplicates and possible wrong addresses are produced. The administrator resolves these cases and modifies the file accordingly before finally using it to update the data base.

A user can also create files of his own. He can, for instance, request others to transfer their files, or a selection from them, to the server for storage. He can also request that a selection be made from the data base and stored. He then requests that the server merge and sort all these files, eliminate any duplicates, and transfer the resulting file back to him, print it out, or print out labels from it.

The ELAN team have also developed some stand-alone applications for proposal evaluation, financial control, and project control.

What has been achieved so far is an encouraging beginning, but there is still much to do. In the next phase we will be extending the infrastructure, connecting more users, and introducing new servers, new standards and new strategic products.

D. SUTHERLAND

Existing Facilities

Since August 1983, University College, Dublin has provided the "EuroKOM" service based on the COM computer-based mailing and conferencing system developed at QZ, Schweden. In addition, access to the large community of UNIX mail users within the Community is provided through a UNIX machine. This pilot service, initially at the GEC Hirst Research Centre, London, is being transferred to University College, Dublin, as a full service.

These systems allow the transmission of electronic mail and messages, the holding of electronic conferences, file transfer and the transfer and collective editing of texts. They are being used to accelerate project work and to reduce the need for meetings. Documentary data bases of general interest to the ESPRIT Community are also being set up.

Further Developments

In view of the popularity of the UNIX portable operating system, its communications facilities are being adapted, through two 1983 projects, so as to conform to the Open Systems Interconnection (OSI) standards, thus enabling them to exchange information with other operating systems using the same interpretation of international standards.

The **Research Open System for Europe (ROSE) project** involves Bull, GEC, ICL, Olivetti and Siemens. The Centrum voor Wiskunde en Informatica (NL), INRIA (F), University College, Dublin, and the University of York were also involved during the initial phase. It is developing OSI com-

munications software for UNIX, enhancing the possibilities of network connection and network management, and implementing ISO file transfer (FTAM) and CCITT Message Handling (X-400) software.

The **UNIX-United Aspects of the I.E.S.** project, involving SG2 (F) and MARI (UK) has provided OSI Session Layer software within the UNIX-Unifed or Newcastle Connection environment.

In 1985, a study was carried out into encryption mechanisms (CSS-UK) and two new development projects launched.

The **Obviously Required Nameserver (THORN)** project involves Bull, CERN, DFN, GEC, ICL, INRIA, Olivetti, Siemens, SW (I) and University College, London. Its aim is the design, implementation and large-scale testing of distributed name server functions, such as "white pages", "yellow pages" and "aliasing", and it is closely coordinated with the ROSE project.

The **Communications Architecture for Layered Open Systems (CARLOS)** project involves CASE (UK), and A. Fischer-Madsen, RC Computer and Sysware (DK). It is developing generalized interfaces between non-OSI machines (hosts and terminals) and OSI networks, a novel set of network management and presentation tools and an OSI-PC, a personal computer with full OSI software.

Related Activities

Among other Community projects, the following activities are closely related to the ESPRIT I.E.S.

In the Experimental Telematics Environment (ELAN) project,

Where the ESPRIT Information Exchange System is today

ICL, Bull, Olivetty and Siemens are providing a live environment for the interconnection of advanced telematics products via local area networks (LANs), and a means of communication for the Commission's ITT-Task Force.

Following early work by the European R & D and academic networking community, in 1983 and 1984, on the common choice of standards and mechanisms to enable interworking across Europe, and a similar activity carried out within European industry, a joint CEN/CENELEC and CEPT Committee is establishing a harmonised set of European Norms under the Community's standardisation policy. Those involved in the early activities, recognising their common interest and requirements for interworking, have recently formed a European Association to promote the creation of a unified network infrastructure for the support of research and academic collaboration.

The future

of the I.E.S.

The plans for the future shape of the I.E.S. have been gradually refined, so as to ease its use and provide additional flexibility in its operation. Ultimately, a fully distributed ESPRIT Information Exchange System, resting on a network infrastructure provided by the PTTs, will provide maximum interconnectivity to the European R & D community within an evolutive, globally coordinated networking environment.

N.R. NEWMAN

N.B.: Many of the above activities are described elsewhere in this issue, or will be reported on at a later date.

Crucial Role of Standards in I.E.S. Recognised by Commission

The Standardisation and Homologation Unit of the ITT Task Force was set up in view of the importance attached to standardisation. Preparation and acceptance of standards on a national, let alone international level normally requires many years. The multiplicity of Standardisation organisations in Europe, with the U.S.A. having only one (and that in spite of having a much larger information technology industry than Europe) is also a problem. In a fast-developing field like that of concern to ESPRIT and I.E.S., difficulties due to the absence of suitable agreed standards can be damaging, and it is for this main reason that the Commission and the Task Force have taken the initiative in several respects. CEN/CENELEC in conjunction with the Community and the Joint European Standards Institution as well as CEPT are taking the lead in solving these problems. A call for proposals has been made for the launching of the State of the Art European Information Technology Conformance Testing Service. This is to consist of a set of individual cooperating services each covering a particular technical aspect. In turn, each of the services must aim at achieving complete consumer conformance of standards service, as for example in the transfer of data files by magnetic tape, magnetic coating properties, tape labelling, spool sizes etc. Each conformance test service is to cover a profile or set of standards necessary to test a product to assure its interoperability with other systems.

At the same time, the unit has motivated the Commission into issuing proposals for a Council Directive on standardisation in the field of information technology and telecommunications, and a further directive on the first phase of the establishment of the mutual recognition of type approval for telecommunications terminal equipment. The objective of the directives is to instigate satisfactory procedures for establishing by technically specialised organisations, standards and common technical specifications allowing harmonised implementation throughout the Community, to ensure that such standards serve as references in public purchasing by the Community and the Member States, to establish a common regulatory mechanism and to set up a procedure for the mutual recognition of tests for telecommunications equipment on the basis of common specifications adopted at Community level. This is to be complemented by the application of new concepts such as functional standards and development of experimental ones, the encouragement of standardising bodies to accelerate their work, ways and means of improving and harmonising test procedures and improving the necessary infrastructure to achieve these aims.

These measures and steps should it is hoped substantially alleviate the current problems in the standardisation areas.

EUROKOM

ESPRIT Computer Conferencing Facility at University College, Dublin

As part of the ESPRIT Programme, an Information Exchange and Data Communication System (I.E.S.) has been established for use by ESPRIT projects. The system is linked to various computing facilities and projects throughout the Community and is designed to assist in the development of Community-wide work on the ESPRIT Programme. The initial I.E.S. is provided by a computer conferencing facility (EuroKOM), located in the Computer Centre, University College, Dublin, which can be accessed via the Euronet computer network and the various national packet-switched networks.

EuroKOM is a computer conferencing system, developed at the QZ Computer Centre in Stockholm. A computerised conferencing system can be seen as something half-way between a conference and a very rapidly published newsletter. The system is used by hundreds of people at diverse geographical locations. Each user must have access to a simple computer terminal and modem; a typical user logs into the system once or twice a day using his terminal.

The system has a data base, consisting of a large number of text messages. Each message can contain any natural language text. There are two types of **message:** the first, called a **letter,** is a message from one user to another user or a number of other users, while the second type is called a **conference entry** and is stored in one of the several **computerised conferences.** A computerised conference consists of a number of users who are called members. Each member normally reads all that is written in the conference. He can also write messages into the conference, which are then made available to all the other members of the conference.

The system remembers which messages each user has already seen. When users connect to the system, they will get all their new letters and all the new entries in the conferences of which they are members. They can write their own messages, which will be stored immediately in the data base.

It is important to note that rarely do all members of a computerised conference sit at their terminals at the same time, conducting an ordinary meeting with written instead of spoken communication. Instead, a typical user connects once or twice a day at times suitable to him, gets all the news and writes and comments or stet adds new messages into the system. Thus, the system is in a way more similar to a very rapidly published newsletter than to a conference.

Clearly, computer conferencing is similar to electronic mail, in that users can send messages to various other users. However, in computer conferencing systems, messages can also be sent to conferences.

The EuroKOM project which was initiated by the Task Force late in August 1983 has by now attracted over 800 subscribers from all member states, with an average of 2200 new messages (averaging 8 lines of text per message) per month.

The project was extended, having proven successful in its preliminary implementation, for two years starting in May 1985. It has begun serving, aside from ESPRIT projects, different users belonging to groups with multinational membership with need for high interaction. Among these are standardisation groups, strategic planning groups, special interest groups. Other Commission projects such as FAST have also been using EuroKOM.

To date, the main users of this system have been the Commission and the ESPRIT pilot projects. As there are now more than 100 ESPRIT projects with more to be initiated by the Commission during 1985, one can expect that utilization will at least triple in two years.

COST-11ter and how it relates to IES

?

Electronic Information Systems in danger

The stated aims of COST-11ter include the initiation and stimulation of cooperative research in teleinformatics, the harmonisation of the efforts of European research networks, the transfer of results to e.g. industrial environments and the provision of input to standardisation bodies. These objectives are to be achieved by such means as exchange of researchers, sponsoring of collaborative research projects and possible establishment of experimental user groups. Specific areas of work of special interest to I.E.S. are those related to the seventh layer of Open Systems Interconnection (the application layer in the ISO reference model) which will contribute to a better understanding of the requirements of various applications, network arrangement and human interfaces.

Other topics here are the management of distributed data bases, computer-assisted human communication services, graphics applications with special emphasis on evaluating the effect of possible standardisation on the service providers, human factors in relation to the suitability and acceptability of layer seven at the man-computer interface, the Open Shop for Information Services, distributed system management, and privacy and security in networking environments.

Another important aspect relates to work on formal methods of description and testing of protocols, where criteria and methods for evaluating and comparing protocols are to be established.

All these activities should help in furthering the objectives of I.E.S.

The recent 5-to-4 decision of the U.S. Supreme Court in upholding the suit by Greenmoss Builders against Dun and Bradstreet has seriously threatened electronic information exchange. The suit arose following an erronneous credit report by Dun and Bradstreet in its data base that Greenmoss was bankrupt. In the lower court, Greenmoss was awarded 50.000 $ for damages together with a punitive award of 300.000 $.

The dangers to the electronic information industry are obvious. In future, the data-base producer and host may be held liable for information which subsequently turns out to be wrong, but has been made available in good faith. It is easy to imagine that say a wrong or erroneous piece of software when transmitted electronically which causes some damage to the recipient may then become the matter of a court case and punitive award. While this currently is a U.S. situation, again, it is not beyond the realms of possibility that some European countries may adopt similar legislative or judicial procedures. The implications are there and all involved in electronic information exchange should be aware of this potential danger.

Make sure of receiving your own free copy of IES News regularly

Please let us have your address
and any other names and addresses
to whom
we should send IES News.

Write to:

The Editor
IES News

c/o European Institute
for Information Management

13, rue de Bragance
L-1255 LUXEMBOURG

OSIS can best be understood as an international effort to generate a consensus on how to develop communication and payment systems that are both open and secure; open in the sense of free admission and anybody being allowed to communicate with everyone else; secure in the sense of security against fraud and other kind of misuse. OSIS is not meant to compete against existing national or international networks.

At present, such information services (information retrieval, mail and conferencing etc) are delivered by the information services supplier (ISS) to users over data transmission networks (DTN). Access to those services is limited by a number of constraints:

1. The user cannot pay for a service immediately upon delivery, as the present online services do not allow for payments. The payment must be made through different media, e.g. through conventional mail.

2. This means that such services normally are closed in a sense that only registered users will be admitted; a user must have signed a separate contract with each ISS, whose services he intends to call upon.

3. Because of the need of protection, universal free access to all ISSs is not possible.

4. Because of the need of registration, anonymous business is not supported by the system.

5. Services that require secure and confidential delivery cannot be handled by conventional DTNs.

OSIS is to help in opening this market. It is to allow for instant payments over the DTN. For credibility and security reasons the user must be able to sign orders, pay-

ments etc. For this purpose, banks are to be an integral part of OSIS; they issue credit-card-size payment devices to their customers and act as trusted third parties for authenticating their customers signatures. OSIS can be applied to more than just the ISS market; it can be generalised in two ways: signatures, on one hand, need to be restricted to payment applications. They can be effected on any text to be transmitted over a DTN: i.e. contracts could be concluded securely over insecure public DTNs, as e.g. Teletex. On the other hand, payments and other signature applications need not be restricted to DTNs. E.g. payments can also be made at offline point of sale (POS) terminals. In this respect OSIS is to be compatible not only with communication systems but also with existing payment systems, like the magnetic strip of the chipcard. Furthermore it is intended to improve their infrastructures.

OSIS was proposed as a European research project to COST-11bis. COST is a treaty between the European Community, its members and other European countries and practically coincides with the European OECD countries; its general secretariat is attached to the Commission in Brussels. Basing the development in the international scene seems to be indispensible considering the difficulties experienced with isolated national developments.

After a feasibility study supported by COST-11bis a "toy-project" was agreed upon by an international study group in 1983 to be finished by 1985. In February 1984 an OSIS European Working Group and three sub-groups:
— WGO Scenarios
— WG1 Algorithms

— WG2 Protocols
were convened to carry out the project, to study further the feasibility of OSIS, to implement a demonstration of an OSIS service payment cycle and to plan further work for the realisation of OSIS. In July 1984 an additional group,
— WG3 Legal Aspects
was convened to cover (economical) aspects that are stipulated by legal problems.

Participating members of the OSIS European Working Group are:
* Sweden
* Germany
* France
* Finland
* European Communities
* European banks
Observers (and contributors) are:
* Great Britain
* Italy
* Norway

Italy has announced full participation. Further interests have been expressed by: Belgium, Ireland, Japan, Jugoslavia, the Netherlands and Spain. Among participating members the INTAMIC, International Association for Micro-circuit

OSIS

Open Shop for

SIS

rmation Services

Cards, is contributing its experience in chipcard standards development and thus helping to ensure technical and economic compabili-. Each national group finances its work on a national basis. International travel and communication are largely financed from COST.

OSIS shall function according to the following scheme: for payments an OSIS token is used. It is a credit-card-sized advanced chipcard. In addition to the chipcard functions it has a foil keyboard and a liquid crystal display. This is needed for the user to have a secure way of identifying himself to the token and for the token to display information to its user, rather than using an installed device that is out of the user's or the token's control.

Signature is effected by encyphering the message using a public (assymmetrical or public key) encypherment algorithm and a secret key; the signature is a piece of ciphertext. It can be decyphered by means of a public key complementary to the secret key. Both the algorithm and the keys are unexplorably and unmanipulatably stored in the token.

Upon activation by its user the token signs a payment message and concatenates the signature to it, furthermore it also adds its "fixed field", typical for the individual token and needed for the authentication of the signature. A secure and publicly provable authentication of this payment message can be done by any other token. For this purpose, the authenticating token uses a trusted third party's public key which is unmanipulatably stored in it. This key authenticates the "fixed field"; the "fixed field" authenticates the signed message. Any token owner can sign any payment to anyone else; any receiver of a payment can authenticate it; payments are provable. The banks are licensed by the trusted third party to issue tokens with the latter's public key included.

The token can be activated for signature only by its owner. Only he is to know his PIN (personal identification number), which is stored in the token. If the correct PIN is keyed in, the token will sign a text. If a wrong PIN is entered, the token will refuse to sign and will display a warning "wrong PIN first input"; similarly also after the second and the third wrong attempt. After three such failures the token will be completely deprived of its signing capability.

OSIS is planned to come in the following stages:

OSISinf: this is to support identification and payment in public networks, which are used to deliver information services.

OSISpay: This is to generalise a payment system to all relevant kinds of use, including off-line applications like paying at PIS terminals or drawing money from automatic teller machines.

OSIScon: This is to generalise the secure use of DTNs for all authentication purposes additional to payment; e.g. to negotiate and conclude legally binding contracts.

Obviously, the project is aiming at generalised solutions which can be applied in open public networks. However, as a first step towards this goal, a specialised solution, OSISinf, is to help the information services market to become more open and to boost its growth potential.

The OSIS idea is also generalisable in a technical sense, e.g. the token could be a promising alternative to respective current Videotex security applications. It can serve both as a device for access control and for home banking. It identifies its owner unmanipulatably. Communication with its owner – accepting his PIN identification and displaying the authentication result – as well as DTN communication with its peers – other tokens or secure sections of host computers — are separated. This allows for further improvements of identification techniques. Thus the PIN method can be substituted or complemented by other methods, e.g. analysing finger prints. This would have no effect on the DTN compatibility. Tokens can identify their owners in completely different ways and still communicate with each other.

Considering the need for gradual change one can assume OSIS to be operational in the early 1990s. Thus it may not seem to be practical for the next two or three years. Nevertheless, it is of great importance for launching tomorrow's secure communication and payment systems.

K. RIHACZEK

9

Progress reported by ESPRIT Interest Group on Environments

At the third meeting of this group held in Brussels on June 20th, 1985, emphasis was placed on the importance in exchange of information of tools and environments. Rudolf Meijer of the Commission presented a preliminary survey of publicly available electronic information sources on environment and tools. This preliminary version, for which comments are invited, is available on request from its author.

A presentation was made of the UNIX facilities for mail, news and conferencing with special attention to the networking aspect. These facilities are to be used for internal communications in at least one ESPRIT project.

Requirements for the I.E.S. were discussed at length with special emphasis on the need for completeness of facilities, timeliness, funding arrangements and connection with other communication systems. It was stressed, that availability of a good electronic mail and messaging system was of crucial importance for the successful running of the whole ESPRIT Programme.

Task Force Staff indicated that in the I.E.S. framework, informations repositories are to be established and UNIX communication facilities are being adapted to conform to OSI standards. In addition to enhancing the possibilities of network connection, the ISO file transfer and X-400 protocols are being implemented in the I.E.S. It is also worthy of note that the I.E.S. software will be installed both on UNIX System 5 and Berkeley release 4.2. Furthermore, a new project will deal with design implementation and large-scale testing of distributed name server functions.

Now that the group has had its third meeting, a revision of the objectives seemed in order, and as a first approximation the following was suggested: "To provide guidance to the Esprit Community on:

- the exploitation of electronic communication means for improving the effectiveness of distributed software development such as it takes place in ESPRIT,
- the selection of existing environments and tool collections for use in ESPRIT projects, with special reference to UNIX, and to the transition to PCTE,
- the formulation of requirements for new work on environments and toolsets,
- the collection and dissemination of information (references, documentation, examples of use, evaluation etc...) concerning environments and tools."

Among topics of current interest for the work programme are:
- the collection and dissemination of information on tools, toolsets and environments,
- mechanisms for information exchange, and, as regards UNIX:
- availability, licensing, support, versions, standardisation and suitability for applications.

New Electronic Mail Service

British Leyland have announced a new specialised electronic mail service called "Electronic Data Interchange" or EDIC for short. This service is able to accept data in a variety of preagreed forms. Further details are available directly from British Leyland (please ask for the Istel division).

Engineers Establish International Computer Network

Various national centres for computer applications in engineering have established an international network, INCCA, with the stated aim of improving international cooperation. Support for the new organisation, which is nonprofit making, is coming from, inter alia, UNESCO. Objectives include the practical application of computer technology to the solution of technical, scientific and social problems, educational and training activities and the holding of meetings, and the diffusion of information on computer applications in engineering. As activities of the new organisation are to be decentralised, it may be assumed that communication between the various participating centres will by computer networks, so that I.E.S. and its programme may be relevant to INCCA, even through this is heavily slanted towards developing countries.

MEETING OF EUROPEAN ACADEMIC NETWORKERS

A workshop of representatives from European Academic Networking Communities was held in Luxembourg in May this year, the meeting being sponsored by the European Science Foundation, the European Committee for Future Accelerators and the Commission-sponsered COST-11ter project.

The reason underlying this meeting was the difficulties in communicating between the various academic networks which had been established in different European countries. Such difficulties had been encountered on national levels following the introduction of networking facilities by most academic and research institutes; because of differences in local installations and their technologies, intercommunication between different sites had proved a problem and had led to the establishment of national programmes for harmonisation within each country.

It therefore seemed logical to find out whether it was appropriate to consider international harmonisation and collaboration.

During the meeting, an informal discussion group proposed the setting up of a formal association of European academic networks. The main purpose would be for cooperation, collaboration and harmonisation, and it was proposed to start up initiatives in 8 priority areas; message handling, X-25, collection and dissemination of information, file transfer, operation of networks, full-screen terminals, administration and forward planning, and liaison with CEPT. These proposals were put to the workshop at the conclusion of the meeting and were unanimously and enthusiastically accepted. An organising committee was set up to consider how these priority areas should be progressed.

The role I.E.S. can and will play in supporting these activities is not far to seek; I.E.S. is trying to provide

ACADEMIC NETWORK COOPERATION WORKSHOP

This annual workship involves the architects and operators of computer networks for academic users. Its main aims are the coordination of activities, the discussion of common solutions to common problems involving the interconnection of such networks, and the coordinated planning of future services.

This year's workshop took place in Stockholm from the 22nd to the 24th July and was organised by the Stockholm University Computing Centre QZ, the creators of the COM computer-based group communication system. It was chaired jointly by Tommy Ericson of QZ and Larry Landweber of the University of Wisconsin, and was attended by some forty people representing networks from Europe, North America and Asia, including the ESPRIT I.E.S.

Brief updates were given on new activities, and a report on the Luxembourg workshop, held in May, which had laid the foundations for the European Association of Network Users and Providers (provisionally known as RARE – Réseaux Académiques et de Recherche Européens).

Three parallel working groups discussed gateways and charging, naming and addressing, and the interconnection of electronic mail systems, and reached a broad consensus on these issues. Very great importance was attached to the CCITT X-400 recommendations for message handling systems, and to the draft recommandations for directory systems.

N.K. Newman

mail, conferencing, text preparation, information retrieval, integrated software development and graphics transfer for the benefit of ESPRIT participants and this requires a communications infrastructure. It is I.E.S. policy, furthermore, to use existing network infrastructures wherever possible, and not to build its own separate network.

In view of the success of the May meeting, further workshops were proposed to be held, with Copenhagen being selected for May 1986 an a Spanish location being sought for May 1987.

Networking for High-Energy Physics Research in Belgium

It is always good to report successful use of networks in a real environment. P. van Binst and R. Vandenbroucke of Brussels University describe in two recent papers (refs. 1 and 2) how, following the public availability of the Belgian X-25 network (DCS) in December 1982, two connections to this were established at the Interuniversity Institute for High Energy: firstly, a direct one at 2400 baud and, secondly, a dial-up connection at 1200 baud.

The need for such links became apparent because of the collaborative nature of European high-energy or elementary particle research, essentially located at CERN in Geneva, but also involving laboratories in the United Kingdom (Oxford, Cambridge, Manchester, York), France (Saclay), F.R.G. (Bonn) and Belgium (Antwerp). The various host computers are VAX, IBM, GEC, GEC-IO and Prime, with the networks comprising PSS/Janet, Transpac, Datex-P and DCS.

The Brussels installation consists of a number of Digital machines and micros, interconnected in a home-made local network. Currently, the high-level protocols used are the "Yellow Book" transport service and "Blue Book" file transfer protocol of U.K. academic community practice. The present connections involving V-24 terminals, a Tektronic 4010 and a LA120 Decwriter are to be upgraded later this year with the installation of a DN20 front-end with DUP-11 interface, the ANF-10 software with X-25 gateway and Yellow and Blue Book protocols.

The network connections were found to be essential to meet the growing need for a wide range of activities from terminal access to remote hosts and small data traffic (e.g. electronic mail, exchange of programes), to transfer of large volumes of experimental data.

Because of the high rate of usage of the network for data transfer, it seemed of interest to establish the effective data rate of the X-25 which has a nominal speed of 2400 baud. Since external factors were thought to have a possible influence, a study was made of the effect on throughput in file transfer of destination, access path, time of day and requesting computer. Among the results, the following are interesting: transfer of two files simultaneously, as expected, results in a considerable slowdown. Differences in file transfer rate from the DEC-10 and PDP-11 are explained by the greater complexity of the network software on the former, inducing a higher overhead.

The variations in transfer rate to the same host depending on the path selected appear to be related to the number of gateways used; this seems to affect throughput. Performance at night seems to be better than during the day, indicating that other terminal usage bears on file transfer performance. Loading of either transmitting or receiving machine are factors which must be considered.

A special mention should be made of the successful use of a Tektronic 4010 terminal at Brussels for a menu-driven graphics application on a PDP at CERN, once the correct PAD parameter setting had been defined. Future plans include the implementation of a private packet-switched network at Brussels University, which will be connected to the PCS public network: the first machine to be accessed will be a PRIME 9950, once Coloured Book software will be available.

1. Binst, P. Van, and Vandenbroucke R.: Experience in Using the Belgian and International Packet-Switching Networks. Paper to Digital Equipment Computers Users Society Conf., Amsterdam, Sept. 1984.
2. idem: Wide-area Networking for High-Energy Physics in Brussels and Antwerp. Paper to Computing in High Energy Physics Conf., Amsterdam, June 1985.

Your editor would also like to confirm some of the data reported relating to load effect on data transfer rate: excessive loading of a PDP-11 slows down file transfer drastically, irrespective of whether UUCP or a remote login procedure is involved.

German Government Addresses Electronic Communication Problems

The Bundesministerium für Forschung und Technologie (German Ministry of Research and Technology) has just published a report on information technology in which an outline is given of the plans to promote the development of microelectronics and information and communication technologies.

In dealing with changes in information technology, it is pointed out that during the 1970s data processing and communication technology developed along separate and independent lines, both being spurred on to differing rates by the startling evolution in semiconductor technologies. In future, however, these two areas will tend to converge both in basic technology and system design, and more importantly, marketing. Digitalisation of information networks and terminals will initiate a technological revolution: thus, the processing and transmission of data, text, speech and images – hitherto distinct processes – are being combined in new integrated solutions with a noticable trend towards multifunctional terminals interlinked by integrated communication networks.

The liberal attitude of the German PTT in granting licenses for new and innovative telecommunication equipment is considered to have played a material role in such developments.

The increasing complexity of systems, which is paralleled by the growing sophistication of user requirements as regards user interfaces, such as high quality screens, speech recognition and voice output, manipulation and transmission of images, is seen as a transition from data processing to knowledge processing.

Getting from the present state of development to what the future holds in the information industry sector cannot, in the view of the German Government, be achieved in a purely national context, since it calls for greater international cooperation, particularly within the Community, both by establishment of suitable framework conditions and through projects of common interest.

As regards European cooperation, the report states „The Federal Government supports the Commission in its efforts to make the European market for information technology equipment and services more transparent and homogeneous". This will also involve the intensification of activities of, and cooperation between, European standards institutions. It is essential that the numerous trade barriers resulting from the different technical specifications in force in the Member States be removed. It also strongly supports the creation of general conditions which will encourage undertakings in the Member States to cooperate more closely within the confines of the laws of competition. Commission support should be provided to complement the improvement of general conditions. In this connection, the Federal Government regards the ESPRIT programme as a useful contribution to efforts to stimulate European cooperation, seeing it as an important support programme complimentary to national measures.

The report continues that the German Government believes that a liberalisation of European public procurement markets for information equipment, systems and services could have a more far-reaching and rapid impact than the ESPRIT programme.

In this context, the most important sectors are considered to be inter alia, telecommunications and information technology systems used in the transport and communication sectors of public administrations.

The report reveals a multibillion DM support, which if correctly applied and used should go a long way in fulfilling the stated aims of the German Government. It is important to stress, that the report clearly shows the concern and interest of the Federal Government in European collaboration and in the support given go Community initiatives.

Private sector perceptions of community interests in the liberalization of trade in services

CEC Report 1/231/85

One of the sectors covered by this report, prepared by SEMA of France for the Commission, deals with computer service bureaux and relates to the attitude of these to liberalisation of international trade. Some of the statements made will be of interest to I.E.S. participants. There is an increasing symbiosis between data processing and telecommunication – information technology; the industrialisation of the software production process –, the software technology of the ESPRIT programme, is seen as an important trend. There are criticism levelled at national administrations for giving systematic national preferences. It is considered no small virtue of the ESPRIT programme that it forces data processing companies from different member states to associate with each other. Emphasis is given to the desire of this sector in abolishing the compartmentalisation of the Community PTT networks and unifying telecommunication standards. It is also considered that the service bureaux sector is less subject to external competition that the hardware manufacturing one. For the American market, high skills are required and are successfully provided, in inter alia, high-level consultancy for the de-sign of message-switching architecture. An interesting aspect is that no barriers are perceived outside the Community in the field of technical standards. On the other hand, the whole sector is favourable to deregulation in telecommunications and the unification of standards in the field. Also, greater consistency within the Community itself in the coordination and promotion of research and development in advanced technologies, above all in artificial intelligence, and harmonisation of telecommunication standards with special reference to new services (videotex, teletex) are felt to be essential. (The Computer Service Chapter was prepared by J. MICHEL).

Automatic translation services in support of the ESPRIT programme

The reduction of language barriers plays an important role with respect to all research activities stimulated and launched by the Commission. Quick and reliable translation therefore may be considered as a basic requirement for the communication and free interchange of scientific and technical information presented by the multitude of languages in the member countries. The SYSTRAN machine translation system, as operated by ECAT of Luxembourg, is a means of solving the existing communica-tion problemes in a most efficient way.

Translation services play a significant part in the international business scene, gaining steadily in importance, and machines are mastering more and more the language of multinational business. As a matter of fact, computers that can translate from one language into others are becoming more accurate and cutting down on both time and cost. During the last decade, the biggest challenge was to reduce inaccuracy. The SYSTRAN automatic translation system met that challenge and the accuracy rate has recently been boosted (from 60% to more than 80%) for specific language pairs, such as English-French, French-English, English-Italian, English-German, etc, and applications such as information technologies, nuclear energy, agriculture, etc. Industry and many governmental agencies other than the Commission rely more and more on savings resultant from the SYSTRAN system.

Computer translation systems do not, of course, perform the entire translation task. A human editor must correct the computer-generated translation in order to produce a final version for publication. Nevertheless, the computer system substantially reduces the amount of time required for a given task and at the same time guarantees a consistent translation output, since the terminology will be chosen automatically from the SYSTRAN dictionaries.

New 9600 Bit Modem

British Telecom have revealed details of their latest Merlin Datel modem; this will allow computer equipment to communicate over two-wire circuits at speeds which until only recently were considered impossible. The new modem is one of the world's first 9600 bit-per-second modems to allow full duplex operation over a single exchange line or two-wire circuit, replacing the more expensive four-wire circuits previously required, and permits synchronous and asynchronous operation which means that simpler terminals can benefit from the higher speed as well.

Artificiel Intelligence Workers ask for I.E.S.

At the Artist Workshop, held on September 13 in Luxembourg under the regis of the C.E.C. and the European Institute for Information Management, researchers from 10 European countries requested participation in telecommunication and other facilities offered by I.E.S. Work supported by ESPRIT projects was among the topics reported at a meeting where ease of information retireral was the main subject.

Assessing User Requirements for Services within I.E.S.

There are many services currently available for application in I.E.S., but although these are used widely by researchers and industry throughout the Community they may have been harmonised or standardised on a national level, but may not be interlinkable or compatible on an international scale. Again, many of such services which correspond frequently to the latest in the respective state of the art, are not widely known outside their particular user groups. A survey has therefore been initiated by the Task Force to identify both existing services in information technology meeting user requirements, and those for which a real need is perceived, but which may not as yet have been fully implemented. It is the aim of the Commission to act as a catalyst in harmonising and in employing such services, which however should become self-supporting in a short time. An overriding consideration is that all services must be free of access restrictions and must conform to existing or proposed standards. Such services range from interactive terminal access to group communication and computer conferencing facilities, software engineering environments, remote training programmes and translation services. So far, some seventy existing or needed services to fill user needs have been identified and analysed on a structured presentation grid which examines each service from a dual approach: the demand side reflecting the users motivations and the supply side, showing market opportunities for the service providers. It is hoped that the initiative will result in a transnational market place and that the resultant European wide exchange of high-technology services will be a major step towards a common market of advanced information technology related services.

Electronic Conference Registration

ESA-Quest have announced a special service for conference organisers and participants. Password holders' will be able to arrange for online booking facilities for any conference they may wish to hold and other password's holders will be able to use a menu-driven facility to register their interest.

IES News is **your** newsletter. We want your comments, views and contributions. The next issue will have a Correspondance column. All communications to
Peter Popper
c/o I.E.G.I.
13, rue de Bragance
L – 1255 LUXEMBOURG
or via EuroKOM.

2. Those aspects of the ESPRIT Programme impacting on I.E.S.

3. Standardisation aspects, whether C.E.C. inspired or involving other international or national bodies.

4. National and international activities and programmes which bear on or are related to, information exchange activities, such as Alvey.

5. Other outside events and publications which are of interest in the above context.

Naturally "IES News" cannot exist in a void – it will require feeding. It is not my or our Newsletter – it is yours and you must actively participate in shaping it. We will gladly accept any contributions in the above mentioned areas, whether you

Welcome

send them via Eurokom or by conventional mail. We will be happy to be told of new publications, conferences or other relevant events. We will publish signed and anonymous contributions, the latter if we know the author(s) and the item is not harmful to a third party.

Europe in the past has always been the intellectual world leader. To be truthful it was European science that fathered the computer. It would be a tragedy, if now, in the Information Revolution, Europe should fall behind largely because of lack of intercommunication between those engaged in Information Technology – "IES News" should be one means of avoiding this.   Peter POPPER

Future Events
Building the European Electronics Industry. A Mackintosh International Seminar, supported by the C.E.C., Hilton Hotel, Brussels, Oct. 17-18.

SITEF (International Future Technology Conference, Exhibition Parkk, Toulouse, Oct. 22-27

Information: the Billion Dollar Industry. Eusidic Annual Conference, Beaufort Hotel, Bath, Oct. 29-31.

The 1985 European Telecommunications Industry Conference: European Initiatives and Cooperation, Hotel Gravenbruch Kempinski, Frankfurt, Nov. 20-22.