LATE NEWS

UN DATABASES ON CD-ROM

Sixteen of the UN Databases are now available on CD-ROM to make usage easier . Further information from the ACCIS Secretariat, Geneva

CALL FOR PAPERS

Papers are invited for the Second International Information Research Conference: Multi-Media Information, sponsored by the British Library, and scheduled for July 1991. Details from the British Library, 2 Sheraton Street, London.

ANNIVERSARIES

1965 - Introduction of BASIC
1940 - First colour television broadcast using system devised by Peter Goldmark
1890 - Hollerith punched cards first used in US census

FIRST HACKER CONVICTION

Three German "hackers" have been found guilty and given suspended gaol sentences for "breaking and entering private property without authorisation"..

Esprit Information Exchange System

ies news

Issue No 26, February 1990

Independent classical music publishers and distributors, faced with increasing pressure from the large international music publishing groups, are planning to use the latest information technology to improve their competitiveness.

A Pan-European programme is underway to develop an electronic network which could be accessed eventually by the music industry and the general public in all countries within the Community and the European Free Trade Association (EFTA).

A group of French, German and Belgian producers has devised the MUSIK project which will give distributors, publishers and the public access to an electronic classical music catalogue. Automated facilities, i.e. Electronic Data Interchange, will be tested with a view to cutting the industry's costs by exchanging orders and invoices over the network.

THE TEDIS MUSIK PROJECT

The task of developing the initial pilot for the MUSIK Project is being undertaken by the French Company GFI, part of the European Software services group SD-Scicon, and is financed for the initial 9 month period by the Commission.

MUSIK is one of twelve projects currently being developed under the Commission's Trade Electronic Data Interchange Systems (TEDIS) Programme with the initial aim of promoting the creation and establishment of electronic transfer systems for commercial use answering to the needs of the users.

LATE NEWS

OSI PRODUCTS

The forthcoming publication has been announced of a four volume survey of OSI products. The preparation of the four-volume set of loose-leaf binders allowing insertion of amendments and updates is supported by the (U.K.) Department of Trade and Industry, EurOSInet, OSITOP and many other similar bodies and should represent an authorative procurement guide.
The first volume - the planning guide and survey - is due in mid-March and the remaining three volumes - dealing in depth with more than 40 suppliers - will follow later this year.
Subscriptions entered before 31. March 1990 carry a discount of £50.The full price is £445 for the four volumes and updates for one year.

Further details from
BLENHEIM ONLINE Publications
Pinner, Middlesex HA5 2AE
Tel. +44 1 868 4466
Fax. +44 1 868 9933

A review of Volume 1 will follow in the next issue of IES News.

THIS ISSUE:

COSINE NEWS

Esprit
DGXIII
Telecommunications
Information Industries
and Innovation

THE TEDIS MUSIK PROJECT

OBJECTIVES

- To enhance the distribution of classical records or print of small products independent companies.

- To improve the productivity of both the editors and distributors by reducing delays for commercial and financial operations by assessing problems encountered in the application of EDIFACT standards within small and medium size companies.

- To produce an electronic catalogue containing the discs, details of audio and print products of participants. These data will be updated directly by the editors and will be accessible by the distributors and record dealers in France, Belgium and Germany from terminals over shared networks. Ultimately the project has ambitions to expand these services to all the member states of the Community and the EFTA. The conformance of catalogues with EDIFACT standards is already being achieved.

The MUSIK Project team hopes to exemplify the need for a gradual standardisation of commercial practice in Europe, without reference to bar-coding. The availability for professional users of an easy to use workstation in order to access networks and databases is also another important factor high on the list of objectives for the MUSIK team.

If the initial nine month phase is successful, MUSIK aims to establish a Pan-European network by the end of 1992. In addition to the music catalogue and financial facilities, the network will provide a multi-lingual messaging system in English, German, French and Spanish along with computer-aided publishing facilities. The possibility of providing the public with access to high quality recordings via the music catalogue will also be explored, as this would allow customers to listen to a part of a recording in which they are interested before placing an order.

The MUSIK Project demonstrates an unusual balance between the arts and industry. It seems that music producers have seen the potential for merging the latest technology to the traditions of classical music.

Based on information from:

GFI
4 Av. Pablo Picasso
F - 92000 Nanterre
France

NEW U.K. GROUP COMMUNICATION PROJECT

Work has recently started on a new Joint Network Team funded project for the specification and prototyping of group communication services based on OSI protocols. The overall goal of the projects is to produce demonstration applications for services such as conferencing and bulletin board which, in turn, are based on emerging OSI services such as X.400 Message Handling and X.500 Directory. These applications will provide strong support for the distributed management of information and of the communication process itself. In addition, they will incorporate a number of more novel features such as support for multi-media messaging.

The project will run for two years and is to be carried out by members of the Communications Research Group at the University of Nottingham.

Three major observations have led to the formulation of this project at the present time:

1. Existing applications such as the Electronic Information Exchange System (EIES), COM and USENET News have already demonstrated the vast potential of group communication services. These services have proved to be immensely popular and have provided a wealth of experience within a broad community. However, existing systems suffer from a number of limitations:

- Their users are typically presented with a continuous stream of information but are not provided with the high level information management functions required to combat the problem of information overload. Far greater support is required for functions such as collating, filtering, referencing, categorising and assembling information within a shared, distributed workspace.

- Communication is generally unstructured and anarchic. Although ideal for some environ-

NEW U.K. GROUP COMMUNICATION PROJECT

ments, this prohibits the development of more complex applications such as electronic newspapers, periodicals and journals where greater structuring of communication is required.

- They do not employ OSI protocols and do not utilise other OSI services. As a result, they are likely to become obsolete as communities migrate to OSI.

2. Recent research, such as that within the COST-11-TER funded AMIGO Message Handling Services (MHS) project and Alvey funded Cosmos project, has demonstrated how group communication applications might be built on top of existing services such as electronic mail and directory. This work can be seen as laying the foundation for the development of a variety of OSI based group communication applications.

3. The U.K. Academic Community is in the process of migrating to the use of OSI protocols. In particular, pilot exercises involving both X.400 (PP) and X.500 (Quipu) services are planned for the near future. In light of the above, this provides the ideal opportunity for the development and testing of complementary group communication services.

Given these observations, the new project aims to prototype group communication services to meet both the U.K. and broader European research communities future needs and to demonstrate how OSI services can be used for the provision of group communication. Spe-

cific goals of the project are to:

- Provide high level functions for the management of information (e.g. filtering and browsing) within multi-user work spaces.

- Incorporate multi-media capabilities.

- Utilise the PP and Quipu services for message transport and directory access respectively.

- Provide structured communication facilities such as moderation, administration, topic and subscription management.

It should be emphasised that this project is NOT about running USENET News over OSI protocols. Instead, the project aims to provide a broad framework for developing a wide variety of group communication services, some of which might include the functionality of USENET News.

It is intended to use USENET News as a rich source of information for testing purposes.

Consultation with the U.K. and European research communities is also an important aspect of the project (liaison with wider communities is, of course, welcomed). In particular, we recognise that there is a wealth of existing expertise and experience within these communities and that this can provide valuable input to the project. As a result, we welcome input from other researchers in the field and aim to provide a range of mechanisms for collecting this input and dissemi-

nating results. These include:

- Participation in the development of the relevant standards via the relevant BSI and ISO bodies.

- Involvement of the European Community via RARE.

- Establishing a distribution list for interested parties. The address of this list will be groupcomms@CS.NOTT.AC.UK (or group-comms@UK.AC.NOTT.CS from the U.K.). It is anticipated that, later on, this may evolve into a newsgroup.

- Holding regular open meetings at Nottingham where we will present status reports and encourage comments and input. Details of these meetings will be given at a later date.

Steve BENFORD and Hugh SMITH

The Communications Research Group
The University of Nottingham

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PATINNOVA 90

In the December issue of IES News the date for this Conference, to be held in Madrid, was announced as:

24 - 27 May 1990.

The dates have now been changed to:

21 - 23 May 1990

SECURITY IN ONLINE TRANSACTIONS

*With the growing use of online for a wide range of transactions, especially financial ones, attention has been direct-
ed to security aspects which can offer protection to legitimate users of network systems. It is the intention of "IES
News" to report briefly on some of the work in this area as an ongoing service to readers. Aspects to be covered
will include signature verification, securing of systems against illegal access - hacking, and data protection where
this involves security of data. The rapid introduction of point-of-sales terminals both for credit and bank cards
where signatures are hardly ever checked by vendors and where many card users actually write their PIN (Personal
Identification Number) onto the card (as indicated by the figures given by banks relating to lost and found cards)
makes cost-effective security and user identification a necessity and it is not infrequent for detailed descriptions of
successful frauds to be found in respectable journals, acting as virtual cookbooks for potential defrauders. We
present below one approach of verifying user identification.*

TELETRUST

TeleTrusT is derived from the acronym of "Trustworthy Telematic Transactions TTT", and is an international cooperative activity concerned with secure, provable and legally binding communication in open systems. Activities started in 1982, in Brussels, when a Pan-European group agreed upon a COST11bis/ter project entitled Open Shop for Information Services (OSIS; these activities were noted in IES News No. 1 and 2). The main objective of the OSIS European Working Group was to find a common way of facilitating secure on-line payments. As a result of the OSIS project the feasibility of such on-line payments could be demonstrated. In addition a sign-in and authentication method was developed and demonstrated. Signatures were effected using the RSA public key algorithm (proposed by Rivest, Shamir and Adleman).

As it became evident that this new technique was not only suited for on-line payment systems but also for more general purposes, OSIS was renamed to TeleTrusT. When COST11ter terminated at the end of 1987, the COST coordinated international TeleTrusT group decided to found independent national organisations which in turn would found an international TeleTrusT association.

Its efforts are directed against intelligent misuse of communication and payment systems and towards secure, provable and trustworthy communication. A non-repudiable electronic signature is considered as the main mechanism to achieve this goal. This necessitates: public key cryptography, chipcards and certification authorities (as specified in CCITT X.509).

Public key cryptography provides the means of signing a piece of information. The signature is effected with the signatory's secret cryptographic key; it is concatenated with the text of the actual message (or transaction) and it can be verified with the complementary public key of the signatory. The signatory holds the secret key: thus only he could have signed the information, if the verification result is positive. In this way the signature cannot be repudiated by the signatory. Chipcards can be personalised, identify the user by a PIN and contain the cipher algorithm and the secret key; they can effectively protect both the key and the algorithm against detection and manipulation.

The purpose of a certification authority is to certify the credentials of a user, which include his public key. The certificate is stored in the chipcard which is in turn issued to its holder. By entering his PIN, the card holder is able to activate the chipcard which in turn signs the information prepared for signature. The card then adds the certificate to the signature.

The certificate, including the signatory's public key, can be verified using the certification authority's public key. Thus with the authenticated signatory's public key the receiver of the message can check its integrity and origin.

This signature scheme has been adopted by TeleTrusT to provide a basis for discussion among manufacturers and users of secure communication techniques. TeleTrusT hopes to solve problems which cannot be solved by an individual party alone and must be resolved by a common, international approach, i.e.

- Stimulate national and international research, development and field trial projects
- Foster the use of identically based mechanisms (public key systems, electronic signature, key certificates, public key direc-

TELETRUST

tories, chipcards etc)

- Promote the necessary consensus on how to develop and use such security mechanisms for open communication and payment systems and stimulate their standardisation
- Stimulate the inclusion of the new technology (digital signatures, certification authorities etc) in the legal system
- Coordinate the various national activities at an international level
- Coordinate development and test projects between members
- Define quality criteria
- Establish and manage facilities for common use, as e.g. test beds

The general TeleTrusT strategy to achieve its goals is to stimulate and coordinate a sequence of interactive projects and field trials in special application areas. However, this is not expected to end in a totally coordinated and administered giant European project. TeleTrusT organisations will be supported by membership fees and thus will be kept close to what is supported by membership fees and thus close to what is supported by the market.

To date, national TeleTrusT organisations have been established in Sweden, Italy, Finland, Germany and the Netherlands.

Dr. Karl RIHACZEK
TeleTrusT Deutschland e.V
Bad Homburg

EUROPEAN CONFERENCE ON PROCUREMENT

CEN/CENELEC (The Joint European Standards Institution) is holding a conference on 14 March 1990 in Brussels. The conference title is **"European Standards for Procurement in the Water, Energy, Transport and Telecommunications Sectors"**.

This follows a directive from the Commission of European Communities which was adopted in August 1989. The directive relates to the procurement rules for water, energy, transport and telecommunications.

The directive proposes a required reference to European standards in the specifications of contractual documents. Substantial preparations are underway to achieve European standardisation in the sectors concerned.

The aim of the conference is to give the European Commission the opportunity to present its policies for procurement and explain the consequences for European harmonisation.

In addition CEN/CENELEC will detail its standardisation programme and its preparations for the organisation's new aims and objectives.

Subjects to be covered:

1. The Commission's policy for procurement, standards and certification.
2. The functions, organisation and standards' programme of CEN/CENELEC, the Joint European Standards Institution.
3. Summaries of the studies commissioned from consultants for railways, energy supply, drinking water, air transport, port infrastructure, waterways and terminal equipment.
4. Responses by representatives of purchasers of products and services.
5. Responses by representatives of suppliers of products and services.

Further information can be obtained from:

BSI
Milton Keynes
UNITED KINGDOM

The DOSES (Development of Statistical Expert Systems) Programme

This Commission Programme has now issued a newsletter, the DOSES Newsletter, to keep all parties that had expressed an interest in this activity informed of progress.

The first issue gives details of the four current DOSES projects which deal, inter alia, with application of artificial intelligence to statistical problems and model building. It also announces the publication of the proceedings of the seminar on "Development of Statistical Expert Systems", held in Luxembourg in late 1987.

Further details can be obtained from:

The DOSES Programme,
Jean Monnet Building C5/35
L-2920 Luxembourg

AN EUROPEAN MARKET FOR TELECOMMUNICATIONS: THE TWELVE GIVE THEIR POLITICAL AGREEMENT TO LIBERALISE SERVICES

The Twelve have adopted a "common position" on a Directive on "Open Network Provision (ONP)" which will facilitate the access of private companies to public telecommunications networks and certain public telecommunications services. The ONP Directive should enter into force in the summer 1990.

At present, the provision of Pan-European services is often made technically or administratively impossible by the absence of harmonised technical interfaces, by divergent conditions of use or discriminatory tariff principles. The ONP Directive aims at eliminating these divergences through harmonisation in close collaboration with the European Telecommunications Standards Institute (ETSI).

The major features of the ONP Directive are:

1: Technical interfaces and service features will become the subject of European standards to be adopted by ETSI. These standards will in principle be of a voluntary nature. However, there is a presumption in favour of those who comply with such standards, i.e. service providers complying with them will be able to offer their services throughout the whole European Community. This is an important incentive.

2: If this does not suffice in practice to guarantee the interoperability of trans-frontier services within the Community, the CEC can make reference to the standards in question mandatory, to the extent strictly necessary to ensure such interoperability and to improve freedom of choice for users.

There will probably be no mandatory standards for value-added services, since the procedure outlined above was designed for application to basic services such as packet-switched data transmission and the ISDN.

3: Since the Commission will have to improve the freedom of choice for users when making reference to a European standard mandatory, this will not prevent a company that offers services related to mandatory standards from offering other services.

4: The ONP Directive is a "framework" Directive, to be followed by Directives on specific issues. In this context the Council reached agreement on the work programme in the field of ONP for the next years. In particular, this programme provides that:

4.1: There will be specific ONP Directives for leased lines and voice telephony;

4.2: By 1 January 1991, technical interfaces and services features concerning packet-switched data transmission and the ISDN will be established and could be made mandatory according to the procedure mentioned above;

4.3: ONP conditions will be adopted in the form of recommendations by 1 July 1991 and 1 January 1992 for packet-switched data transmission and the ISDN respectively;

4.4: The Council will examine Commission proposals in 1992 and thereafter by which the recommendations mentioned above would be transposed into Directives.

The United Nations Criminal Justice Information Network (UNCJIN)

This is an electronic network for information services, electronic mail and information dissemination among governmental and non-governmental organisations on criminal justice and crime prevention issues. It is linked world wide through a major computer organisation called TCN (Telecommunications Cooperative Network). Members of UNCJIN are offered services which include electronic mail; international calendar, news and updates on legislative and court decisions; a library of reports and international crime statistics; newsletters and reports from criminal justice organisations; gateways to other major commercial databases and fax and telex services.

For more information contact:

UNCJIN Accounts Manager Telecommunications Cooperative Network
505 8th Avenue, Suite 1805
New York, NY 10018
USA

COSINE NEWS

Cooperation for Open systems Interconnection Networking in Europe.

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

IXI - AN EUROPEAN X.25 NETWORK PILOT PROJECT

A contract for the provision of a pilot Europe-wide interconnection of computer networks for researchers has been signed between the Commission representing the partners in the EUREKA COSINE (Cooperation for Open Systems Interconnection Networking in Europe) project, and PTT Telecom of the Netherlands. The contract provides for a five month period of preparation and commissioning, starting in September 1989, followed by 12 months of full pilot service.

The Commission is to contribute the major portion of the funds on behalf of the Community and its member states from the budget of the ESPRIT programme, while the other COSINE states are to provide the remainder.

The Pilot International X.25 Infrastructure (IXI) Backbone Service is the first major activity of the implementation phase of the EUREKA COSINE project. PTT Telecom will be responsible for establishing, operating and managing the service in cooperation with other European telecommunications administrations.

The COSINE project aims to provide an open, standards-conformant computer communications environment for the European research community. Responsibility for technical aspects has been given to RARE, the European association of users and providers of research networks.

The research networks will be connected to the Backbone via 64 Kbps X.25 access points, with a possibility for later upgrade to a speed of 2 Mbps. The countries to be interconnected are Austria, Belgium (also providing access for Luxembourg), Denmark, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden (providing a connection to the other Nordic countries: Finland, Iceland and Norway), Switzerland, the United Kingdom and Yugoslavia.

Following RARE's specifications, the IXI pilot service will use data communications protocols that conform to the CCITT X.25(84) set of recommendations and will allow connectivity to X.25(80) subnetworks. It will allow not only improved connectivity between the participating organisations in RARE but also the possibility to investigate a number of the most important aspects of the management of Pan-European X.25 interconnections.

During the project operation, steps will be taken to ensure continued availability of IXI or equivalent functionality for the full duration of the COSINE Implementation Phase.

Development of Services

The main thrust of COSINE is to develop OSI-based services for researchers. To this end, the majority of projects planned for the 3-year programme will be in the applications area, and a number of pilot services is foreseen. For 1990, effort is likely to be concentrated on electronic mail, file transfer, directory and information facilities. In the following years, there are plans for, amongst other things, virtual terminal support and (Europe-wide) gateway to North American research networks. So, over the lifetime of the project, the aim is to provide the means for academics and researchers world-wide to communicate using a single set of machine-independent communications protocols based on international standards.

Immediate Plans

The timetable laid down for the IXI pilot phase is:

Preparation Phase - end November (now completed)
Installation Phase - completion due February 1990
Pilot Service Phase - March 1990 to February 1991

The initial configuration will have major switches in Amsterdam and Bern connected by multiple 64 Kbps links. There will be minor switches in several other countries, where multiple access links are required. Higher speed connections are foreseen when traffic levels justify them. For example, the UK's JANET will be connected to the Amsterdam switch via the University of London Computer Centre, and the 64 Kbps link was installed in December. It should be possible to begin trials of user services early in the New Year. Of course, the rate at which services can be established over the network will depend on cooperation between the participants, but a number of activities are already going on over other underlying transport mechanisms which could be moved over rapidly to the IXI, in particular, the current X.400 Mail and X.500 Directory pilot projects being operated by members of RARE.

A number of low-speed (up to 64Kbps) links already exist between European countries, in general serving a subset of the users. As demand grows, additional bandwidth will be required. However, because of the way that telecommunications links are priced, much more bandwidth can be obtained for the same money by combining all the current arrangements. The long-term aim for IXI is that it provide a high-bandwidth cost-effective access path for all users.

Of course, uncertainties still remain, the most important of these being what happens after February 1991, both in terms of funding and of capability. The COSINE Policy Group has confirmed its intention to make an X.25 service available throughout the 3-year life of the COSINE Project, and to ensure that facilities

continue to be available beyond that time. Just how this will be done should be dealt with in the first half of 1990, in parallel with the establishment of the network itself.

If the pilot is a success, it is believed that the remaining difficulties will be overcome so that this ambitious project continues and grows into the 1990s.

Further Information from :

RARE Secretariat
Kruislaan 409
PO Box 41882
NL-Amsterdam

RESEARCHERS GET SUPPORT FROM COSINE

The Eureka COSINE project (Eu8) is now installing its first service, based on the international OSI standards, to provide electronic communication between Eureka - and all other - research workers in Europe. The Commission of the European Communities has recently signed a contract, on behalf of COSINE, for a pan-European backbone service which will provide data networking interconnection between national research networks from March 1990. Operating in accordance with the international X.25 standard, which is used in public data networks, this service will enable others, such as electronic mail, to be provided to researchers on the basis of international OSI (Open Systems Interconnection) standards.

The COSINE project involves all Eureka countries, Yugoslavia and the Commission of the European Communities. The purpose of the project is

to provide electronic communications support for researchers in industry, universities, public laboratories etc. on the basis of international standards - the most important of which are those for OSI. Using these standards, computer systems from different suppliers can communicate, exchanging messages documents and programmes, access remote databases and use remote computer systems. COSINE will develop a number of services over the next 3 years with the intention that these services will continue to be available on a commercial basis thereafter.

The chosen mechanism for COSINE is to call for proposals in connection with the development and supply of appropriate services. An initial COSINE Programme Management Unit, established for the project by the Amsterdam-based organisation RARE (Réseaux Associés pour la Recherche Européenne) will undertake the management of the programme and it has recently issued the first Calls for Proposals for Directory and Informations systems. Further calls will be issued in the next few months for gateway services to interconnect older non-OSI systems into the network. Security (confidentiality) systems will also be developed under a call expected later in the year. A full list of COSINE development activities and proposed services is given opposite but, as the project is driven primarily by the needs of the users, these may be subject to some modification as the user community grows.

All Eureka projects are strongly advised to consult with their COSINE or RARE representatives in order to obtain more information on the use of these services and to make the particular, electronic communication requirements of their research projects known to COSINE or the CPMU in Amsterdam.

COSINE Services and Development Projects:

Activity	State of Play
International X.25 Interconnection	Under way
Directory Services	Call for Proposals issued: See below
Information Services	Call for Proposals issued: See below
Gateway to Existing non-OSI networks	Call being prepared
Development of OSI Networks and Services for New User Groups	Call expected in mid 1990
Investigation of Security Requirements	Call expected in mid 1990
Gateway Services to North America Networks	Call being prepared
Interworking X.400 Domains	Call expected second quarter 1990
Pilot Implementations of Multivendor X.400, X.500	Call expected second quarter 1990
Pilot Implementation of Multivendor FTAM	Call expected second quarter 1990

This article, originating from the iCPMU Secretariat, is also being submitted for publication in EUREKA NEWS.

Notification of Invitation to Tenders

COSINE Sub-Project P2.1 Pilot International Directory Services

As part of the implementation phase of COSINE, tenders will be sought from organisations to investigate and set up a Pan-European pilot Directory Service according to CCITT X.500/ISO 9594 for users in the CO-SINE community, in collaboration with national directory pilot projects.

Complete or partial tenders will be sought to achieve the project objectives, which are in summary:

1. To encourage the establishment of an European wide X.500 based directory service for the user community.

2. To interconnect the national X.500 pilot directory projects to give their users an international service.

3. To include the existing North American pilot X.500 based directory service activities.

4. To ensure that there are no significant problems of interworking at the international level between different X.500 implementations.

5. To provide user input into the standards and functional standards' making process based on practical experience.

6. To remove a major barrier to be spread of the use of OSI applications across Europe, in particular electronic mail and FTAM, by providing directory information for applications and users.

COSINE Sub-project P.2.2 Pilot Support and Information Services

As part of the implementation phase of COSINE, tenders will be sought from organisations to investigate and provide a Pan-European pilot sup-

port and information service. This will be the focal point of information for users of OSI based data communications facilities in the European industrial and academic research community. Existing national information services' activities will be coordinated and support will be provided to establish new national services to enable a uniform level of user support.

Complete or partial tenders will be sought to achieve the project objectives, which are in summary:

1. To establish a pilot information service which will be available to all target users of OSI data communication networks in the COSINE countries;

2. To coordinate national information service initiatives so that a consistent access is provided to all support services for information providers in the COSINE countries;

3. To provide initially a central focal point for users to obtain information about networking products, projects and services;

4. That the service is usable as a vehicle for promoting OSI and COSINE;

5. That Special Interest Groups are able to run their own information services to enable group communications and information dissemination within the framework of the common European operational OSI interworking infrastructure;

6. To provide information to the COSINE Project Management Unit so that an on-going, self-supporting information service can be contracted beyond the three year project

7. To study future requirements and make recommendations for the evolution of the service.

For conditions of submitting Tenders, please see overleaf.

It is expected that the successful organisations will have as a minimum the following characteristics:

- experience in the implementation and the management of major international projects;
- experience in OSI standards, applications and related products;
- experience of multi-vendor systems and environments.

The working language of the COSINE Project is English

The closing date for the receipt of completed tenders is expected to be in late March 1990.

To receive a copy of the Invitation to Tender, organisations should send the following information to the address below to be entered in the COSINE Register used for administrative and management purposes:

Name of organisation, address, telephone, fax, e-mail, ... and name of contact person;

Areas of primary and secondary technical expertise, plus references to other OSI projects undertaken.

The register is a non-exclusive computer database containing similar references to all organisations that have expressed an interest in the COSINE Project. Collaborative ventures will be welcomed for this project where the tenderers are able to show the benefits to be gained from the collaboration. The COSINE Project Management Unit may assist, on request, with the creation of suitable collaborations on the basis of information held in the COSINE register.

interim CPMU (P2.1) or (P2.2)
c/o RARE Secretariat
PO Box 4188277
NL - 1009 DB AMSTERDAM
Tel. +31-20-592 5078
Fax. +31-20-592 5155

VIENNA COSINE POLICY GROUP MEETING

The fifteenth meeting of the COSINE Policy Group was opened by Dr. E. Busek, Federal Minister for Science and Research, in Vienna on the first of February 1990.

Dr. Busek stressed the importance of networking for the research world in general, and for Austria in particular. Further, the present developments in Eastern Europe show that COSINE, as an infrastructure project, is of the utmost significance to foster communications between machines, people and countries.

Dr. Busek announced the decision of Austria to participate actively in the Implementation Phase of the COSINE project. This was particularly opportune, as it gave further weight to the formal entry into force of this vital phase of the project, on the first of February.

This EUREKA project supported by twenty European countries and the Commission aims at the creation of an open, standardised computer networking environment for all researchers in Europe.

During this meeting of governmental representatives from the participating countries and the Commission, the first series of activity plans was approved. These concern message handling, information and directory services and intercontinental file transfer services, amongst others, and will complement the International X.25 Infrastructure or IXI project for a pan-European research network, which has already been started by the COSINE community and the Commission.

Budgetary decisions were taken to enable the COSINE Project Management Unit (CPMU) to carry on the work involved.

The COSINE Policy Group emphasised that future networking would be based on globally accepted standards, and that therefore migration of existing networks to these standards is an important element in its policy. It particularly welcomed the decision by RARE, taken two days before in Vienna, to actively coordinate current, not yet fully standardised networking activities, in order to offer to today's users a smoother path towards the open networking of the future.

Finally, the COSINE Policy Group decided to present the project at the forthcoming EUREKA exhibition in Rome, in June.

A STATEMENT BY THE COSINE POLICY GROUP ON THE USE OF NON OSI OPEN PROTOCOLS IN RESEARCH NETWORKING

At its meeting in Vienna on 1 and 2 February 1990 the COSINE Policy Group defined its position on the use of the TCP/IP protocol.

The following statement was adopted.

i. The COSINE Policy Group is firmly committed to the OSI standards as the basis for an open computer communications environment for European research. Active financial support of the use of any protocols which do not conform to the OSI standards therefore does not fall within the scope of COSINE.

ii. On the way to widespread adoption of OSI, some use of other protocols or their incorporation into OSI-stacks needs to be recognised as part of the transition, where user investment cannot yet be written off or the market cannot provide full OSI solutions. In particular, use of IP over the IXI (X25) backbone network is acceptable as a step towards use of full OSI standards.

iii. At the same time, the CPG emphasizes that OSI solutions should be adopted as soon as practical, which stresses the importance of migration.

iv. The CPG confirms its intention (vide the relevant subprojects in the CIP-Project Proposal) to support and encourage migration to OSI and this will be undertaken through plans submitted to or actively solicited by the CPMU in the context of Calls for Proposals in this area. The CPG urges RARE and the CPMU to actively monitor user needs, discuss requirements for migration and put forward proposals for changes in the CO-SINE framework if necessary.

v. The CPG is of the opinion that CO-SINE and RARE are the outstanding coordination efforts in European networking. Hence, the CPG welcomes an active coordination by RARE, as the umbrella organisation of European research networking, of open networking efforts which do not yet conform to OSI standards where this furthers and accelerates their harmonisation and migration towards an OSI framework. In particular, the CPG endorses the decision by RARE to adopt such a role with regard to TCP/IP.

Mr. N.K. Newman
COSINE POLICY GROUP
    Secretariat
CEC, DG XIII-A-2
200, rue de la Loi
B - 1049 BRUSSELS
Tel. +32-2-235 59 76
Fax. +32-2-235 06 55

Second COSINE User's Meeting

As promised on the last issue of IES News, a fuller account of the Second COSINE User's Meeting, held in Brussels on the 30 November 1989 is presented below:

Dr. Peter Tindemans opened the meeting by outlining the aims of CO-SINE which had been endorsed by the contributing governments and the Commission. He added that given the progress made in standardisation over the last few years, the object was to provide scientists, engineers and other researchers with a reliable electronic communication service allowing exchange of electronic mail, file transfer, remote log-in, distributed use of software, remote job entry and database usage, all supported by adequate directory and information services. Dr. Tindemans stressed that the feeling shared by the majority was that OSI was the best way forward for the future communications environment. RARE was committed to OSI and it was interesting to note that the US Department of Defence was adopting OSI standards.

Dr. Tindemans mentioned that although migration from existing protocols was both a long and expensive process, cognizance should be taken of the experience gained from existing practices. He added that whilst an outline plan for the Implementation Phase had been agreed, it did not mean that priorities could or should not be changed in the light of needs or experience. The IXI contract for the provision of the pilot backbone service had been signed and the interim COSINE Project Management Unit (iCPMU) had been established to start the implementation of the project.

Mr Christian Michau outlined the pilot IXI Project and reported on the achievements to date. He explained that the main purpose of IXI was to extend connectivity between the various existing national research networks. Usage of the IXI service would be for authorised users only and a mechanism for authorisation would be established for each participating country. He added that since the IXI contract was signed (21 September 1989) the commissioning phase had already commenced and would be completed by the end of February 1990. Meanwhile there were already signs of interest for participation and/or use of the service from organisations outside the intended user community.

Mr. Christopher Duxbury summarised the activities of the iCPMU which was concerned with the establishment of plans following an order of priorities set by COSINE. The first of these was a pilot directory service establishing an European wide X.500 based facility. COSINE funds would be used to integrate and encourage international cooperation between existing pilot projects at the national level. Another plan was for the pilot information service, where the focus of attention would be more on the implementation of a central information server with the object of allowing suitable input from the user community. He added that part of the second priority tasks was the planning of the COSINE Message Handling Service (MHS) to follow on from the RARE MHS Pilot; he noted that there were some 15,000 users in the COSINE community who were using X.400 electronic mail systems. In addition, a number of gateways would be provided to extend the user population and the utility of these services by ensuring wider interconnectivity.

Dr. Andrew Jordan presented Aston University's ACCESS project the aim of which was to provide adequate communication services for the University's population of 4,500. He ex-

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plained that some 2,500 points were to be provided for E-Mail, file transfer and library usage. By integrating X.400 services, users would be able to gain access and to use current library services from their desks and reduce much of the workload on the library.

Dr. Jordan acknowledged that whilst X.400 was extremely important, he foresaw X.500 as being of vital importance in the longer term by extending access to all 42 university libraries in the U.K. having computerised systems, but operating with a variety of interfaces making universal usage difficult. Mapping onto X.500 would alleviate much of that difficulty and the provision of information would be easier and more economical Document delivery too should benefit from the current work.

Other presentations on the usefulness of COSINE to the work of marine environmental data handling were made by Mr Paul Gerets and the MARIUS Marine Information Service by Mr Schaap. Miss Maggie Smith presented the Open Systems Testing Consortium and its work (For details see IES News 25, page 9) and Prof. Paul Van Binst outlined the future role and importance of high-speed networking of 140 megabits/sec. services projected for RACE compared to 64 kilobits/sec. which had seemed to be high speed a few years ago. He added that EBIT (European Broadband Interconnection Trial) was being considered as a forerunner for thirteen European PTT's to examine services that will have to be provided across Europe within a few years. The need for network services to support JESSI (Joint European Submicron Silicon Initiative) was introduced by Mr. Mathias Ress. He explained that the requirements were for X.400 connections and a reliable file transfer mechanism, but one giving a high degree of security, involving encryption and signature authentication. He added that the JESSI population would like to rely on the COSINE net-

work provisions with suitable security safeguards in place, but gateways to other networks were also needed. Files to be transferred were large and 120 megabits was not exceptional.

Security aspects involved in EDI was discussed by Mr Van Zuren (see article on page 5 which deals with this topic).

The meeting ended with a questions and answers session in which topics such as the evolution of LAN's versus WAN's gateways to non OSI networks, the capacity of the IXI backbone network, the importance of high speed networking, access from and to eastern countries and many more topics were raised. Dr. Tindemans closed the meeting by advising the users present that their needs and questions had been noted carefully. A detailed report would be given to the CPMU who would take these points into account when working out their proposals.

COSINE REGISTER

The interim COSINE Project Management Unit (iCPMU) is anxious to receive urgently for inclusion on the COSINE register, names (including contact point) and addresses of organisations interested in receiving invitations to tender for the various planned COSINE sub-projects and services. However, registration is not a prerequisite to tender.

The information received will be maintained on a computer database, created by the (iCPMU) to assist in the administration and management of the COSINE register only. The iCPMU will contact organisations directly at a later date for further information.

Interested parties should forward their details to:

Mr Christopher DUXBURY
interim.CPMU
c/o RARE Secretariat
PO BOX 41882
NL - 1009 DB AMSTERDAM
Tel. +31-20-592 5078
Fax. +31-20-592 5155

OSI Application Layer

Several new International Standards from ISO/IEC JTC 1 help to complete the set of base standards specified in the Application Layer of the Open Systems Interconnection (OSI) Reference Model. They are:

ISO/IEC 9066: Information Processing Systems - Text communication - Reliable Transfer Part 1 Model and service definition and Part 2 Protocol specification

and

ISO/IEC 9072: Information Processing Systems - Text communication - Remote Operations Part 1 Model, notation and service definition and Part 2 Protocol specification.

JOINT NETWORKING CONFERENCE, 15-17 May 1990, Killarney, Ireland

This conference, jointly organised by RARE and EARN, is being held at a critical time in the development of research networking in Europe:

- The COSINE (Cooperation for Open Systems Interconnection Network for Europe) Programme is about to start its implementation phase.

- The IXI (International X.25 Interconnection) 64 kilobits/sec. X.25 Network sponsored by the CEC and COSINE will begin operation in 1990.

- The RIPE (Réseaux IP Européenne) meetings are coordinating the development of TCP/IP networking in Europe).

- The IBM EASINET Network is planning a T1 circuit to the United States.

- The first results of the EARN OSI Transition Programme are becoming available.

The conference will provide the forum where policies underlying these developments can be discussed and reviewed, where networking specialists will be brought up to date on technical developments, where network service providers can outline their future plans, and, most importantly, where those who support academics and researchers using the networks can contribute to the development of networking policy and the introduction of new network services.

The main topics to be covered in the Programme will be:

- Policy Issues
- OSI Transition
- TCP/IP
- Library Network Services
- US Networking
- User Support and Documentation: the Conference will include a major exhibition of existing enduser documentation to support network users. All participants are invited to contribute to this exhibition.

Other topics planned include: - network servers, FDDI networking, interactive services, mail gateways, security (viruses and worms), and human factors.

Posters

Facilities will be provided for poster presentations.

Venue

All the meetings will be held in the Great Southern Hotel, Killarney.

Language

The official language of the Conference will be English.

Registration Fee

The registration fee covers: a copy of the Book of Abstracts and also of the Post-Conference Proceedings, entry to all sessions, refreshments daily and a Welcome Reception on May 14th.

Please note that associates of delegates are welcome to attend all social events but may not attend any of the technical sessions or appear as joint authors on papers.

EARLY Registration Fee IR 150
LATE Registration Fee IR 180

The early registration fee applies to all fees received before March 13th. Please ensure that your payment is made net of all bank charges.

Please note that an administration charge of IR 25 will apply in respect of cancellations received by us, in writing, before March 31st. No registration fees can be refunded in respect of cancellations received by us, in writing, after March 31st.

Registration

Registration will take place in the Foyer of the Conference Building, Great Southern Hotel - Killarney, as follows:

Monday May 14   12.30/18.00
Tuesday May 15   08.00/17.30

Registration Forms and additional information concerning hotel accommodation, transport and social events may be obtained from:

RARE Secretariat
PO Box 41882
NL - 1009 DB Amsterdam
Tel. +31-20-592 5078
Fax. +31-20-592 5155

or

EARN/RARE Joint Networking Conference 1990
c/o Conference Management Services
26 Temple Lane
Dublin 2
IRELAND
Tel. +353-1-452081/797655
Fax. +353-1-451739/762469

THE CEC TO LIBERALISE MARKET FOR TELECOMMUNICATIONS SERVICES

At its meeting of 7 December 1989 the Council of Telecommunications Ministers reached agreement on the further liberalisation of the CEC telecommunications market. The agreement is the successful conclusion of long and controversial discussions between the Commission and Member States. The controversy was about the scope, timing and the legal basis of two separate but linked directives which the Commission had put forward following the publication of its "Green Paper" in the summer of 1987 on the liberalisation of telecommunications services and on Open Network Provision (ONP), covering harmonised rules for accessing the liberalised networks as well as technical standards and tariffs.

The effect of the compromise agreement is that, from the middle of 1990, there will be free competition in the provision of advanced telecommunications services such as electronic mail, electronic banking or access to computer databases. From the beginning of 1993 competition will be extended to cover basic data communication.

Under the rules of the "services directive", Member States will be obliged to allow private providers of telecommunications services to enter into competition with public network operators which maintain exclusive rights for the provision of telecommunications services. On the other hand, Member States will be given the right to draw up licensing conditions for these private service providers. In order to avoid the definition of licensing conditions to be used as an instrument against increased competition, the compromise agreement says that any such condition must be transparent and non-discriminatory. The Commission shall have power to veto these conditions so as to ensure their conformity with the Treaty of Rome and other relevant CEC regulations. The ONP directive is a framework directive, to be followed by specific directives on individual telecommunications services. The rules on Open Network Provision are planned to be voluntary rather than compulsory. ONP conditions can, however, be enforced by the Commission if it believes that the voluntary approach does not lead to a proper connection between the various networks and is an obstacle to the provision of competitive advanced telecommunications services.

For information please contact:

Mr. J. Rosenbaum
CEC, DG XIII-E
Breydel 06
200, rue de la Loi
B - 1040 BRUSSELS

Tel. +32-2-235 92 35
Fax. +32-2-236 27 23
Tlx. 21877 COMEUR B

OSI in Libraries

Two new CEC Publications stress the importance shown in and the support given by DG XIII-B to telecommunications and networking for library applications.

A. Proceedings of the Workshop Dedicated to the Use of OSI in Libraries.
(EUR 12436, 126 pp.).

This volume reports on a meeting introduced by Mr. Parajon Collada, Deputy Director General of DG XIII who noted that this conference, held in January 1989 was the first European seminar concentrating on the use of OSI in the library sector. OSI in this area was particularly important as it ensured interlibrary cooperation on a European scale. The four technical sessions dealt with communication in open mode, OSI standards specifically related to libraries, examples of national approaches (with case histories for Italy and the FRG) and the cost of communicating in OSI mode.

B. OSI Model for Library Applications: A Tutorial.
(EUR 12437, 135 pp.)

by J. M. Callioux and C. Casimir includes an analysis of the requirements for introduction of OSI to libraries and presents the relevant standards for electronic documents and data formats.

Further Information from:
Ariane Iljon
DG XIII-B
Jean Monnet Building
L-2920 Luxembourg.

ESPRIT: 450 NEW PROJECTS SUBMITTED FOR ECU 3.9 BILLION

Four hundred and fifty new projects for a total cost of ECU 3,853 million have been submitted to the Community's European Strategic Programme for Research and Development in Information Technology (ESPRIT) in response to the latest general call for proposals, which closed on 10 January. Half of the projects concern the area of information processing systems (IPS), 28% computer integrated manufacturing (CIM) and 22% office and business systems (OBS).

Industries, small and large companies, universities and research institutes from all member states have joined in the consortia making the proposals and, as expected, there is strong participation from everywhere in the Community.

This response confirms the interest of Europe's information technology sector in the ESPRIT programme. Funding at 50% by the European Community of all the proposals received would require a budget exceeding the Ecu 270 million available seven times over. A rigorous evaluation process has now begun.

A significant number of new participants, responding for the first time to an ESPRIT call for proposals, are among more than 1300 organisations submitting projects for evaluation. An increased participation by small and medium-sized companies (SMEs) can be expected.

The Commission, taking into account the advice of the Esprit Review Board, has simplified the application procedure and will also improve the transparency of the selection procedure by sending to proposers within a few weeks of the closing date, the results of the preliminary evaluation of the 450 proposals by independent experts.
The preliminary evaluation will be completed by the end of February. The Commission will then obtain advice from the Esprit Advisory Board (EAB) and the Esprit Management Committee (EMC). The final selection is expected to be made before the end of April.

Esprit's objectives and first results

Esprit has the following three objectives:

- to provide the European information technology (IT) industry with the basic technologies to meet the competitive requirements of the 1990s

- to promote European industrial cooperation in IT

- to pave the way for standards.

The first phase of ESPRIT started in 1984. The total R&D efforts of the first phase amounted to Ecu 1.5 billion, 50% of which were borne from the Community budget, and the rest by participants in the projects.

The programme is implemented by projects selected from public calls for proposals, based each time on a workplan describing the technology objectives. ESPRIT comprises collaborative precompetitive R&D projects, carried out across frontiers by Community companies, universities and research centres.

Under the first phase 226 projects were launched, each containing at least two independent industrial partners from different member states. at its peak, 3,000 engineers and scientists, coming from 550 independent organisations, were working full-time on the projects.

Esprit's second phase, launched in 1988, is a larger-scale operation, with a total cost of Ecu 3.2 billion. Calls for proposals under this phase met with an unprecedented response: the total funding requested exceeded the available budget by a factor of eight. After rigorous selection by independent experts, 180 projects were chosen, involving almost 800 organisations.

As a result of the response to the first call, over 65% of the work foreseen in Esprit's second phase has been launched. Overall, some 6,000 researchers will be working once all projects have been started. In addition, the Basic Research Actions launched in 1989 established a strong network of scientists who are now working throughout Europe on key topics related to ESPRIT's goals.

A comprehensive independent review of the ESPRIT programme has recently been completed. It found that in the vast majority of projects trans-European cooperation has been a success, resulting in significant benefits both for the participants and for Europe's technological base. Techniques, facilities and human resources have all improved and good work has been done on international standards. Links between industry and universities have been strengthened, managerial awareness of the strategic importance of IT heightened, and confidence and optimism about the future have increased.

TAKING STOCK: MACHINE TRANSLATION IN THE LAST FIVE YEARS

This concludes the series of articles devoted to this topic.

1989 has seen three major machine translation events: the second Machine Translation Summit in Munich, the International Forum on Translation Technologies (IFTT) in Japan, and an IBM Europe Institute seminar devoted to research in machine translation. In 1984, the Institute for Semantic Studies and Cognitives of the university of Geneva (ISSCO) organised a tutorial in machine translation (MT), and the material for the Special Issue of Computational Linguistics on Machine Translation edited by Jonathan Slocum was being prepared. Although actual publication of the special issue was in 1985, and the ISSCO Tutorial proceedings did not appear in book form until 1987, the date of the original material provides a convenient basis for comparison between the state of the machine translation world in 1984 and in 1989.

The operational systems in 1984 roughly were:

ALPS (Automated Language Processing Systems is the name of an enterprise selling among others the MT system ALPS),
CULT (Chinese University Language Translator),
LOGOS (derived from the ancient Greek word 'logos' meaning 'word, reason'),
METEO (MT system for meteorological data, i.e. weather forecast),
SPANAM (Spanish-English translation system of the Pan American Health Organisation),
SYSTRAN (a system for which the CEC has the exploitation rights for the public sector and a Gachot S.A. in Paris for the private sector)
TITUS IV (a translation system being developed for the translation of textile information within the Institut Textile de France) and
WCC (Worldwide Communications Corporation with two MT systems, one for mainframes MACROCAT and one for personal computers MICROCAT).

All of these predate 1984 with the starting date for SYSTRAN, the oldest, being 1964 and ALPS, the youngest, 1980.

In the intervening five years, however, two seem to have disappeared. ALPS, as a result of changes in policy, has acquired a number of translation agencies, and now supplies translations rather than translation software, which may still be used internally. WCC seems also to have disappeared.

Of the remainder, four systems - METEO (weather bulletins, English -> French), CULT (mathematics and physics journals, Chinese -> English), TITUS (abstracts of articles in textile technology, any combination of English, French, German and Spanish) and SPANAM (Pan American Health Organisation internal documents and information dissemination documents, Spanish -> English) - were essentially conceived to meet the needs of one particular user and to fit into that user's environment. All are still used in 1989, and SPANAM has acquired a younger and technologically more sophisticated sister, ENGSPAN (English -> Spanish), operational since 1984. Kitteredge, in the 1989 IBM seminar, announced work on a possible successor to METEO in the form of a multilingual generator of weather forecasts working directly from non-linguistic data. It should be clear, though, that work on a possible successor springs more from the possibilities offered by new technology than from dissatisfaction with METEO's performance.

LOGOS (general purpose, German -> English, French, Italian, English -> German, French, Spanish: English -> Italian under development), which is also still in use, has been chosen by the Canadian Government to serve as the general purpose machine translation component in a network based automation of their translation services and by the Deutsche Bank for use in its inter-office communications network.

SYSTRAN (general purpose, many language pairs. Judging from dictionary sizes given at the 1989 Summit by Gachot, of these English -> French, Italian and German, Russian -> English are well established. Pairs under development include English -> German, Portuguese, Spanish, Korean, Arabic, Dutch, Japanese, Russian: French -> English, Dutch, German: German -> French, Italian, Spanish: Japanese, Spanish, Italian, Portuguese, Korean -> English. The degree of work already done on these language pairs varies considerably), as well as still occupying its established position within the Commission of the European Communities, and be-

TAKING STOCK: MACHINE TRANSLATION IN THE LAST FIVE YEARS

ing used by Xerox in a controlled input environment, has presented itself to the public at large through the French Minitel service, and is currently offering network access to users in North America.

At first sight, then, the picture is relatively encouraging: of eight systems listed as operational in 1984, six are still available, but it may be worth noticing that of those six, four were developed for particular customers, and it is they who are still using them. Only Logos can really be construed as being fighting on a commercial basis to establish the credentials of machine translation.

Looking at the systems that have come onto the market since 1984, the most immediately striking factor is the number of Japanese systems. Toshiba, Fujitsu, Sharp, Hitachi and Oki were all demonstrating commercially available systems in the 1989 Summit. In addition NEC had a pre-product release of a system, and the Center for the International Corporation of Computerisation (CICC) was demonstrating a system under development. In the Japanese conference LinguaTech, NTT, Mitsubishi, RICOH and Sanyo were also exhibiting systems in various stages from research to product status. Apart from the sheer number of the Japanese systems, the observer will notice the difference in their technological base from that of the earlier systems. TITUS could reasonably claim to be an interlingual system, but works in a very tightly constrained world, and LOGOS makes use of a representation language where the border-lines between syntax and semantics are deliberately obscured. Otherwise, the older systems rely heavily on explicit use of contrastive bi-lingual facts, and are

quite modest in the targeted depth of linguistic analysis. By contrast, very many of the new Japanese systems claim to be interlingual or semantics based, and the very fact that they are commercial systems prevents them from being designed to work in very constrained worlds. Nearly all of these systems translate between representatives of radically different language families (Japanese and English being by far the most common combination), where it is far less easy to rely on similarities in syntax or in the lexicon than it is when translating between the European languages, so perhaps the shift in technology is not very surprising. Nonetheless, given the notorious difficulties of defining and maintaining semantics based general systems, it will be interesting to see how well these systems fare.

Of the two non-Japanese new systems presented in the Summit, METAL (Machine Translation and Analysis of Natural Language for technical documentation, German -> English) is familiar from the 1984 literature (see IES news No.25). It has now been implemented in a dozen installations, and new language pairs based on English, French, Dutch and Spanish modules are announced.

The other new-comer, Tovna from Israel (general purpose, English -> French: English -> Russian announced), is much less familiar and is harder to situate. It claims to be a "learning" system, but without knowing more of the underlying technology than can be deduced from a demonstration it is hard to judge what this means.

To summarise: over the five years, the absolute number of commercially available systems has more than doubled, which seems to indicate at

the very least the existence of a strong market need. On the other hand, most of the new systems concentrate on Japanese, with only METAL and Tovna increasing the coverage of the European languages, so that one cannot really say that the end-user's range of choice of system is much greater. Some caution is due to the fact that so many of these systems are new: the arrival of a system on the market place demonstrates only a perceived need, not that that need is being fulfilled.

Before turning to trends in research, it should also be pointed out that the discussion here is based only on systems demonstrated in the Summit or in Japan.

In 1984, apart from some research work in Japan based on semantic primitives in the style of Artificial Intelligence work of the 1970's, there was really only one research paradigm. Two distinctive features can be held to characterise it. First, under the influence of early generative grammar, the most natural data structure for the representation of linguistic structure is considered to be a tree, with tree-to-tree transformation in one guise or another serving as the basic operation for the manipulation of linguistic structures. Secondly, semantic analysis is concerned primarily with identifying predicate-argument structures, with, occasionally, the notion of a semantic role being extended to provide limited interpretation of free modifiers. In most systems, too, an ad-hoc system of selectional restrictions provides some help in source disambiguation or in choosing target lexical equivalents, but primarily as a supplement to information gained from syntactic and morphological analysis. The Grenoble Groupe des Etudes en Traduction Automatique (GETA) systems fall into this para-

TAKING STOCK: MACHINE TRANSLATION IN THE LAST FIVE YEARS

digm, as do the Japanese National Project, Mu, the systems SUSY (Saarbrücker Uebersetzungs SYstem) and STS (Saarbrücken Translation System), METEO and its successor research project TAUM-Aviation, METAL and EUROTRA, the MT R&D Project System sponsored by the CEC since 1984.

Five years later, the research world is much more variegated. Only mainstream EUROTRA and the IBM projects based on PLNLP still fall clearly into this paradigm, although the IBM LMT (Logic-programming based Machine Translation) using Slot Grammar projects are not very far removed from it.

Amongst the newer approaches, a clear and by now quite substantial community seems to be forming around the use of feature structures and systems based on the propagation of constraints. These groups tend to share also an interest in theoretical work in syntax, especially in the tradition influenced by the Lexical Functional Grammar (LFG) and the Generalised Phrase Structure Grammar (GPSG). It is therefore not surprising that they tend to be lexicalist in orientation, and much concerned with facilitating coding of a powerful lexicon. Another common pre-occupation of these groups is the use of a single linguistic description of a language for analysis and for generation, with much recent work concentrating on the design and implementation of generators and transfer components in constraint based systems with this architecture.

In contra-distinction to the intuitively based semantics of earlier systems, another community seems to be emerging interested in making use of recent work in formal semantics within machine translation.

Philips' Rosetta system, already reported in the 1984 literature, can be seen as an early fore-runner of this trend, although work in Situation Semantics seems to be overtaking Montagovian semantics as the main theoretical influence. There is some overlap, perhaps not surprisingly, between those investigating the use of constraint based systems and those interested in formal semantics, although the overlap is by no means complete.

A more surprising trend is a growing interest in systems based on statistics, typified by recent work in Buro voor Systemontwikkeling (BSO) and at IBM Yorktown heights. The basic hypothesis here seems to be that with the vastly increased capacity and computing power of modern machines, it is possible to examine huge amounts of parallel texts and to discover the most probable translation of individual linguistic units. Combination of probabilities should then lead to identification of the most probable translation for a (new) input text.

The trends described so far have all been concerned with the theoretical basis of machine translation systems. A rather different proposal which has emerged quite frequently from different sources, suggests a move away from the traditional batch versus interactive design, where the human involved either as post-editor or as interactive partner is typically a translator, to a "democratisation" of machine translation with human interaction with the system either at the authoring stage, or during the translation process, but in neither case involving knowledge of the target language.

Another area where interest is strong and growing not only cuts across all schools of machine trans-

lation, but is widespread in the general computational linguistics community. It has long been recognised that the construction of dictionaries for use in natural language applications is immensely time consuming and costly. As ordinary dictionaries become more easily available in machine readable form, reduplicating this work from one project to another begins to seem even more wasteful. Thus several projects aim at finding ways in which dictionary information can be shared across different systems with different theoretical biases. In a similar vein, efforts are being made to collect and code large corpora of texts, which can then serve as a common resource.

The main impression to be gained from comparing the machine translation worlds of 1984 and 1989 is one of much new activity, both in the commercial world and in research. Commercially, the Japanese companies have become very active, and IBM in Europe and America is taking a renewed interest in machine translation, whilst Siemens and Philips in Europe are maintaining (and even increasing) their involvement. On the research front, the paradigms are changing, with new research communities forming around specific areas of investigation. For Europeans, the major outstanding question must be the future of EUROTRA research. With the current programme soon to come to an end, the nature and organisation of follow-up work will be critical to the future of the field in Europe.

Margaret King
ISSCO and ETI (Ecole de Traduction et d'Interprétation)
University of Geneva

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EUROKOM NEWS

THE NEW MENU SYSTEM

The new EuroKom Menu System was implemented on 5 February 1990 and comprises:

Mail/Conferencing - a service combining the facilities of personal E-mail with computer conferencing;

Eurocontact - a database to help organisations find partners for European research projects, particularly those seeking to participate in R&D Programmes sponsored by the CEC;

File Transfer - an exchange of word-processed or typeset documents, spreadsheets, graphics and programs;

Directory Service - provision of intermail names and EuroKom user names;

Unix News - providing a gateway to the Unix News worldwide bulletin service;

Project Synopses - a database containing brief details of all projects in the ESPRIT programme.

User reaction has in general been very positive. The immediate result has been that the activity level has broken all records. There were 47 concurrent users on a number of occasions during the week; this exceeds by ten the previous record.

Despite all the preparation and planning, there was no way of anticipating how many users would actually convert successfully to the new system during the week of migration. In fact, almost 900 people converted right away, some 20 or so want to have the facility to swap between full screen and the old teletype interface, and only a very few users have significant problems outstanding.

Since the essence of the new system is that EuroKom is 'reaching out'

on the user side, it was anticipated that there would be some difficulties given the range of networks and pathways by which users enter EuroKom. At this time, most of the difficulties have been resolved; there is a persistent problem at the time of going to press with the 'line-wrap' problem. Long before the introduction of the menu system, some users experienced a 'line too long' error message from the system as their line-wrap parameter (locally) was set incorrectly. Since this (and other parameters) are now being set remotely, and some PADs are proving stubborn and inflexible, there is a number of 'line-too-long' errors. A number of potential solutions has been identified and it is hoped to have all the affected users 'cured' before their patience expires.
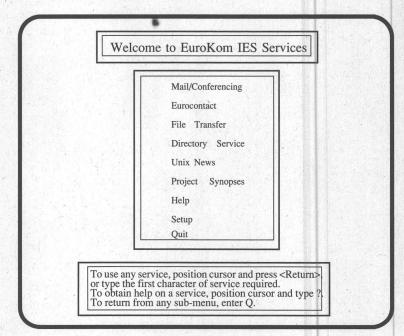
FURTHER DEVELOPMENTS.

The Personal Computer Utility (PCU) is now on Beta-Test at the Commission, and it is hoped to release it to all users during March 1990. This package, developed by

the EuroKom team to complement the new menu interface, further automates the file transfer facilities, and provides a local menu of EuroKom commands, an in-built editor, help functions, and many more interesting features. Initial reaction among the Beta-Test population has been very positive.

The menu system now provides a platform upon which EuroKom can mount many new services, and a number is planned within the next couple of months. The Eurocontact service will be extended to further Programmes(e.g BRITE-EURAM); a number of full screen editors is foreseen; and interesting developments in the database field generally are in the pipeline.

EuroKom Dublin
Belfield
Dublin 4
IRELAND
Tel. +353-1-697890
Fax. +353-1-838605

EuroKom Brussels
Rue Guimard 15
1040 Brussels
Belgium
Tel. +32-2-5131915
Fax. +32-2-5132853

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        Welcome to EuroKom IES Services

               Mail/Conferencing

               Eurocontact

               File   Transfer

               Directory   Service

               Unix  News

               Project   Synopses

               Help

               Setup

               Quit


     To use any service, position cursor and press <Return>
     or type the first character of service required.
     To obtain help on a service, position cursor and type ?
     To return from any sub-menu, enter Q.
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Current Status of EWOS
(European Workshop for Open Systems) Activities

European Telecommunications Standards Institute (ETSI) experts.

Furthermore 3 new EWOS Technical Guides (ETG) are ready for delivery, of which 2 open up the row of Manufacturing Message Specification (MMS) proposals.

It is useful to point out that in this list of announced results for next year, 5 items are included, which are conformance testing specifications. Finally 2 pDISP's are so far identified on which work is currently in hand.

Resolutions of EWOS/TA 7

At the most recent EWOS/TA 7 meeting a number of Resolutions were adopted, some of which address the newly proposed area of activity for which further actions will be taken by the EWOS community.

A new Expert Group on Conformance Testing (EWOS/EG CT) has been established which will also consider BC-IT-01 SI

Further examination of:

- the X/Open Portability Guide (XPG3),
- Bibliographic Application of OSI,
- BC-IT-05 SI Medix,
- Framework for Open Systems,

will take place at open Ad Hoc Meetings during the January 1990 Workshop.

The first conclusions will then be submitted to EWOS/TA 8.

Project Teams

As part of the EWOS/TA 7 Resolutions, a number of Project Team (PT) proposals has been ratified for establishment in the near future. These aim at tackling very specific missions:

- PT to review abstract test suites for EN 41.102
- PT on Character Repertoires and their Encoding
- PT on Alignment of M-IT-01/02 with JTC 1 TR 10.000
- PT on BC-IT-01 SI, to be prepared
- PT on Framework for Open Systems

Liaisons

1. European

The formula of progressing common work items in EWOS and ETSI in joint meetings (mainly DIR and MHS) gives full satisfaction and will be further developed.

In the domain of Conformance Testing a starting agreement was reached after two coordination meetings among the parties concerned: CEN/CENELEC, EWOS, ETSI, OSTC, ETCOM, CEC and OTL. It comprises a procedural document on the cooperation in this field and a second on the Initial Program of Work.

2. International

The Regional Workshop Coordinating Committee (RWS-CC), composed of National Institute for Standards and Technology Open Systems Interconnection Implementor's Workshop (NOIW), Asia-Oceania Workshop for Open Systems (AOW) and EWOS, had a second Meeting, on 18 September 1989 and adopted a few Resolutions with respect to the progression of TR 10.000 on one hand and with regard to the Inter-workshop cooperation procedures on the other hand.

An initial list of planned pDISP's, which indicates the respective responsible editing organisations, was accepted.

Further information from :

EWOS
Rue Bréderode 13
B - 1000 Brussels

N.B.:
Publications issued by EWOS can be obtained from:

OMNICOM
17 Park Place
Stevenage
Herts SG1 1DU
UK

Tel. +44 438 742424
Fax. +44 438 740154

FUTURE EVENTS

The general working procedures of EWOS have, after 18 months of operation and 7 Technical Assembly (TA) Meetings, become sufficiently stable, to be considered as a reliable supporting mechanism to the EWOS activities.

The current OSI development work is progressing steadily, although in a number of cases the delivery timing has proven to be somewhat optimistic.

On the other hand the portofolio of work items has been enlarged substantially and the quality of the delivered results is satisfactory. The smooth running voting procedures in CEN/CENELEC on the EWOS prENV proposals seem to confirm this impression.

CURRENT STATUS OF EWOS (EUROPEAN WORK-SHOP FOR OPEN SYSTEMS) ACTIVITIES

As for new types of work items proposed to EWOS, their impact and potential adoption are examined carefully. No speedup is envisaged and so far no change to the organisational procedures of the EWOS/TA has been judged appropriate.

Status of Activities

Up to now 10 EWOS DOCUMENTS (4 on file transfer (FT), 3 on Office Document Architecture (ODA), 2 on Virtual Terminals (VT) and 1 on Lower Layers (LL) and 1 EWOS TECHNICAL GUIDE on FT have been ratified for further submission to the formal standardisation process.

The schedule for future deliverables includes 3 new ED's (2 on Directory (DIR) and 1 on LL) to be available in January 1990. The 2 DIR profiles are the first of a list of results obtained by EWOS in close cooperation with

FUTURE EVENTS