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# Esprit Information Exchange System

# ies news

## Issue No 25, December 1989

The successful introduction at last year's Conference Week of an IES User Forum had as a natural follow-up a further such meeting which was held immediately after the presentation of the four IES papers (see pg 3). Again, following the established pattern, the Forum was chaired and introduced by Richard Sanderson, Head of IES. Giving a general review of the achievements of the IES to date, he underlined the difficulty that had become apparent over the five years of IES operations in identifying those services which meet the requirements of all ESPRIT participants, irrespective of whether they are from an industrial or academic organisation, using PC or mainframe based support systems, and experienced in the use of office automation or not. For instance considerable marketing efforts have been necessary to ensure the partial penetration currently experienced by EuroKom, which is the main service offered by the IES to ESPRIT participants.

## THE SECOND IES USERS' FORUM

The reasons for this were manifold: telecommunication links from some areas were initially inadequate, a new form of communicating was not always embraced as quickly as the proponents hoped, and there was a continuing reluctance on the part of managers to use a medium involving keyboarding, traditionally an assistant's task. Whilst the last two points would require much effort in publicity and education, with the improved user friendliness of EuroKom now on the horizon also of significant importance, the first point was one of the contributing reasons for IES wholeheartedly supporting the COSINE Project, the driving force of which was to afford better electronic intercommunication for researchers throughout Europe. The IXI Backbone Project which was now going ahead full steam would go a long way in overcoming many of the technical and economic problems of electronic communication.

## LATE NEWS

### Media Summit.

A meeting announced for May 1990 in Luxembourg will attempt to address the problems of trans-border TV in the Single European Market. Emphasis will be on *inter alia* the cultural concerns which might restrict the freedom of programme producers and broadcasters and freedom to broadcast and choose: Public service versus free market programmes.

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## LATE NEWS

### Telecommuting.

Following the recent San Francisco earthquake, the authorities encouraged working at home using computer networking to relieve traffic congestion.

An estimated 3 000 000 persons apparently did so.

### Telecommunication Forecast.

Annual growth rates forecast for data transmission networks, electronic information services and mobile communications in Europe for the period to 1992 are 9 - 20%, 23 - 33% and 16 - 19%, respectively.

### Information Technology Atlas - Europe.

A second edition of this which was first published to coincide with the ESPRIT Week in 1987 has been announced for early 1990. A special discount is offered to readers up to 1. April by the publishers, IOS of Amsterdam.



# Esprit

DGXIII  
Telecommunications  
Information Industries  
and Innovation



## THE SECOND IES USERS' FORUM

Mr. Sanderson outlined the main policy guidelines which governed IES actions. Strategies involved provision of basic services such as E-mail, conferencing facilities, a project database and a newsletter; use of public networks and support procurement of local equipment; publicity of results achieved and encouragement to participate in field trials; implementation of needed gateways; support to enhance European collaboration leading to increased competitiveness; actions which would catalyse support for major efforts (such as COSINE); gather support from other European organisations. Many of the problems to be tackled were human, as well as technical: user perception and apathy, high PTT tariffs, user motivation, interoperability testing, speed in obtaining and implementing the necessary agreements. The importance of the Single European Act and its role as the legal basis for all IES actions was stressed.

Next, Dennis Jennings outlined the current plans for EuroKom, where considerable improvements in quality and range of services should be in place in early 1990 (Details of these will be provided by EuroKom, see pg 17). A preview was available at the EuroKom stand and at special short seminars: certainly the impression was gained that this was a significant step forward for a service that had already done much in cementing the collaboration in ESPRIT and other Framework Programmes.

A brief review was given by Nicholas Newman, the CEC Secretary of the COSINE Policy Group, of the progress made here; this was largely covered by the corresponding paper in the IES Session (see pg 3). He therefore concentrated on a number of questions for the future development of computer communi-

cations in the research area and the contributions COSINE could make.

Questions raised related largely to the interrelationship between Y-Net and IXI, the role of European Broadband Interconnection Trial (EBIT) and the support for this by the Commission as well as the need for high-speed links. These issues were to be discussed at length at the Second COSINE Users' Meeting. (See pg 4).

## THE 1989 ESPRIT CONFERENCE

The annual ESPRIT Conference held during the last week of November 1989 in Brussels was attended by around 3000 delegates.

It was the opportunity for people representing industrial, scientific and policy interests of European Information Technology to meet and discuss the results and achievements of their work within the ESPRIT Programme.

During the week the different events that took place were:

- a three-day technical conference with 87 paper presentations, complemented by 79 workshops and 22 panels where participants had the possibility to exchange and discuss, in small groups, ideas on different topics;
- the IT Forum Day, giving distinguished European IT leading personalities such as Mr. H. Curien, Minister of Research and Technology in France and Chairman of the Council of Research Ministers; Mr. A. La Pergola, Chairman of the European Parliament Commission on Energy, Research

and Technology; Viscount E. Davignon, Chairman of the Société Générale de Belgique; Dr. U. Agnelli, Vice-Chairman of Fiat; Dr. H. Nasko, Chairman of Nixdorf and Chairman of the ESPRIT Advisory Board, the opportunity to discuss broad strategic issues of importance to the future of high technology in Europe. The IT Forum Day was transmitted via satellite to more than 40 sites by Eurocase;

- a press conference by Vice-President F.M. Pandolfi for over 70 journalists;
- a discussion session on the recommendations of prominent members of the European IT community as to future directions of the ESPRIT Programme;
- a special session on technology transfer within the ESPRIT Programme with presentation of case studies and commentary by a panel of outside experts;
- a special session on Small and Medium Enterprises (SMEs) participation in the ESPRIT Programme;
- an exhibition covering 2000 sq.m. with 130 projects participating in more than 100 exhibits. Some of the most imaginative and innovative products in the Exhibition were produced by the many small companies involved in the ESPRIT Programme.

The Conference was also visited by Members of the European Parliament who attended the IT Forum and were given a special presentation as well as a guided tour of the exhibition.

# THE IES SESSION

*For the benefit of the readers who were unable to attend the Conference Week, we present below abstracts of the four papers:*

## CACTUS: A RETROSPECTIVE VIEW

An outline is given of some of the experience gained during the CACTUS project. The emphasis is on four subjects:

- The use of Formal Description Techniques to develop higher layer protocols;
- Problems and experiences found when implementing the P7 protocol;
- General reflections about ASN.1;
- Comments on the underlying OSI tower used in X.400.

Although the main goal of the CACTUS project was to build a prototype, some generalised extrapolations are possible.

The use of a development methodology based on FDTs (Formal Description Techniques) proved to be very useful. In particular, the mixture of FDTs designed to specify behaviour (ESTELLE and LOTOS) and ASN.1, designed to specify syntax, permitted proper modelling of all features at any layer (taking into account the characteristics of each layer).

Some reflections on how ASN.1 specifies the encoding/decoding of PDUs were outlined. Some modifications are proposed to the standard in order to simplify it and make it more efficient.

The P7 protocol has been analysed at length. Some comments, errors and simplifications of the P7 proto-

col (specially of the ECMA (European Computer Manufacturers Association) version [2] on which the project based its implementation) were described. Some of the difficulties experienced in the implementation have been also identified (probably of general scope). Finally, some future extensions were proposed.

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## TESTING THE OSI DIRECTORY

The OSI Directory has recently been standardised, and a number of implementations have been undertaken in the commercial and research world. It is clearly important to test any such implementation in a systematic manner. In future, conformance testing will meet many of these requirements, but this is not available for early implementations.

THORN is an Esprit project (719/720), which has implemented the OSI Directory, and is experimenting with its usage through a

large scale pilot exercise. THORN recognised the importance of testing, and so contained a substantial task to tackle this area. The results of this task were reported. There are a number of aspects of testing the OSI Directory which have not been dealt with in previous work on testing of OSI Applications. This particularly relates to the distributed nature of the OSI Directory.

A description was given of how a set of testing tools and tests was designed and built for use with the THORN directory, and usage to test Directory Abstract Service, DSA Abstract Service, the two protocols, and distributed operations were detailed. This has shown some of the issues that will arise when performing testing of a directory system, and suggests some approaches which might be taken for conformance testing systems. The use of executable test cases which allow multiple associations to be managed is a useful basis for testing such distributed systems. It is believed that this work has greatly facilitated the progress and quality of the THORN implementation.

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*For the two remaining papers dealing with COSINE aspects please see overleaf*

# COSINE NEWS

Cooperation for  
Open systems  
Interconnection Networking  
in Europe.

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

## THE SECOND COSINE USERS' MEETING.

This meeting was held during the Conference Week on Thursday afternoon of 30 November 1989. It began with an opening speech from Dr. Peter Tindemans who emphasised the need for collaboration between firms and universities or publicly funded research institutions between disciplines, countries and computers of different makes. He also stressed the high importance of building an open data communications infrastructure, as standardisation had made sufficient progress for a basic infrastructure to be created.

OSI (Open Systems Interconnection) is the perspective shared by all and is reflected in the umbrella role which COSINE and RARE should play. Flexibility and pragmatism on COSINE's and RARE's part are necessary, however, to take into account the many existing structures not yet using OSI. He appealed to those other networks to work towards the OSI perspective and to work within RARE rather than setting up rival organisations.

Dr. Tindemans mentioned that the Specification Phase of COSINE had resulted in a framework for the future data communications infrastructure that consisted of three pillars:

- a federated structure of local, national and international levels;
- COSINE services where standards exist;
- operational and managerial services.

Dr. Tindemans also mentioned that the Memorandum of Understanding

signed in August 1989 between RARE and the CEC on behalf of COSINE marked the effective start of the Implementation Phase and enabled RARE to set up an interim COSINE Programme Management Unit. He added that the IXI contract had also been signed between the Dutch PTT Telecom and RARE, concluding that following from February 1990, interested net works would be able to connect for X.25 traffic.

Mr. C. Duxbury introduced the Message Handling System and the COSINE Implementation Phase activity plans. This was followed with an introduction of Ashton University's "ACCENT" project by Dr. A. Jordan and an update on the start-up of the Pilot International X.25 Infrastructure (IXI) backbone service by Prof. C. Michau.

Following the overview of the current status of the project, a number of users and providers of computer communication services made short presentations. The meeting concluded with an open exchange of views on future requirements.

A fuller report will be presented in the next issue of IES News.

## THE EUREKA COSINE PROJECT STATUS REPORT

The aims, progress and current status of the EUREKA COSINE project were described. COSINE means "Cooperation for Open Systems Interconnection Networking in Europe" and is a "EUREKA project to provide a computer communications infrastructure for European researchers, and thereby also for EUREKA and other programmes".

Following a Specification Phase carried out by the RARE (Réseaux Associés pour la Recherche Européenne) association of users and providers of computer networks for researchers, the project is now entering its Implementation Phase. A COSINE Project Management Unit (CPMU) is being established for the Implementation Phase and the first implementation activities have started.

It is now over three years since the first meeting of what was to become the COSINE Policy Group. During that time, a great deal has been accomplished in research networking.

Since that time, RARE has been built up and has completed the technical work of the COSINE Specification Phase, thereby validating the work in the standards field against actual user requirements, and creating a pan-European consensus on requirements for research networking.

Further, twenty countries and the Commission of the European Communities have come together at government level to map out a strategy for computer communications for researchers, and have begun to apply it, thereby leading to enhanced cooperation between and within widely dispersed research teams in industry and academe. A pilot pan-European X.25 Backbone infrastructure is to be established to support the COSINE services.



Contacts have been made with further industrial users, particularly those represented in user organisations or participating in EUREKA or ESPRIT projects. The European IT supply industry has been approached and is defining the way it can contribute.

Formal liaison has been established with EWOS (the European Workshop on Open Systems), and with North American networking organisations through the CCIRN (the Coordinating Committee for Inter-continental Research Networking).

With the establishment of the CPMU by RARE, the first activities for the three-year Implementation Phase of COSINE are now under way.

A federative structure has been defined for COSINE, which creates an overall framework for the creation of OSI-based networks, or their transition to use of OSI, in all member countries of COSINE, with an aggregate budget an order of magnitude greater than the budget needed at the international level (several tens of millions of ECUs), thus having a maximum "gearing effect". COSINE will make a major contribution not only to the efficiency of European research, but also to open communications and vendor-independence for many other user sectors.

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## Y-NET: OSI Services for Research in EC Programmes

Y-NET is an initiative by a group of manufacturers in the ESPRIT framework supported by the IES, the infrastructure part of ESPRIT, to provide OSI services for researchers. It primarily addresses participants of ESPRIT and other programmes and activities of the European Community but will be open for other researchers as well. It will be embedded into the overall OSI communications to be aimed at within the COSINE framework, and by this will allow information exchange between a wide range of users, both from academic and industrial research. Y-NET will concentrate on support for researchers from industry with particular emphasis on small and medium sized enterprises (SMEs).

The Y-NET configuration will be based on OSI developments from various ESPRIT projects. The configuration will comprise service points in each of the countries of the Community commonly managed at European level. Users will be enabled to access, on a national basis, the service points for international communications through X.25 PAD connections or through other simple telecommunication connections. The service will start with X.400, subsequently include FTAM and will be extended to other OSI services as soon as stable products are available (directories, structured document transfer, etc). At the carrier level, it will use international public X.25 services and the Commission sponsored RARE/COSINE international X.25 backbone (IXI).

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# OVIDE II: The Telematics Working Tool for Members of the European Parliament

Organisation du Videotex du Député Européen (OVIDE) was originally designed to eliminate the communication and information problems MEPs (Members of the European Parliament) have to face in having no single fixed work place.

OVIDE I commenced as a pilot project in 1983 under the CEC (Commission of the European Communities) INSIS Programme (see IES News çß14). The objectives of OVIDE I were to verify the technical feasibility of a Community-wide multistandard, multinetwork, multilingual telematic Service and to assess the satisfaction of users.

## A Community-wide telecommunications solution for OVIDE

In 1985, the videotex scene was fragmented and confused. There were three incompatible standards for the information presentation modes (PRESTEL, TELETEL, BILDSCHIRMTEXT) as well as three information exchange protocols with external computers (PG, X29M, EHKP4). Such a situation gave rise to incompatible National videotex services (NVS) for the technical leaders in this field and a wait-and-see attitude elsewhere.

At the request of the European Parliament and under the aegis of CEC (DG XIII), an ad-hoc group to solve the technical problems involved in establishing a Community-wide telematics server was convened.

In February 1986, this group adopted the technical solution recommended for OVIDE.

In addition, the telecommunications authorities agreed in April 1987 to provide the European Parliament with technical assistance in the implementation and setting up of OVIDE as well as commercial support to the OVIDE users, which consisted mainly of the MEPs in their constituencies. Such cooperation has continued through meetings of the ad-hoc group and by bilateral contacts with the PTT administrations.

## THE DUAL ROLE OF THE OVIDE SERVICE:

### 1. Communication

The first objective of OVIDE is to improve communication between MEPs, the Secretariat and the political groups; this will be achieved by means of an electronic mail system, designed especially for non-specialist users.

Videotex has a number of advantages over traditional methods such as telephone and fax:

- a. Availability: the mail service is available twenty-four hours a day, seven days a week.
- b. Flexible operation: messages can be received during absence and read by accessing OVIDE from anywhere in Europe.
- c. Multiple dissemination: By drawing up a "mailing" list the same message may be sent to all by means of a single operation.

- d. Cost: OVIDE is more cost effective

than the telephone. In Brussels, Luxembourg, Strasbourg, where the Parliamentary sessions are held, connection to OVIDE and to the other Community databases such as Epoch, Scad, Telex, Ted and Eureka is established via the European Parliament's private high-speed data transmission network (EPinet).

- e. Electronic document transfer: Working documents can be exchanged via OVIDE. Thus the document does not have to be re-keyboarded by either the sender or the recipient and allows for changes to be made to the document if and when required.

### 2. Information

The second objective of OVIDE is to speed up and facilitate access to information.

- a. OVIDE offers rapid access to continually updated information from the Secretariat of the European Parliament, the political parties and the other Community Institutions, in particular: calendar and agendas of meetings of all Parliamentary bodies, info-memos from the committees, briefings and summaries of part-sessions, European press agency dispatches, Parliament's electronic telephone directory. Such information is obtained from an on-line, real-time user-friendly system. The system will be accessible by any Member from his constituency and/or principal place of work.

- b. Easy access to databases: In order to cater for the documentary requirements of MEPs, OVIDE also

# OVIDE II: The Telematics Working Tool for Members of the European Parliament

provides rapid and easy access to Community databases. This is facilitated by gateways which automatically take charge of the repetitive and tedious connection procedures.

## CHARACTERISTICS AND NOVEL FEATURES OF OVIDE

OVIDE is the first European on-line service which presents information in both Videotex and ASCII mode. The service is multilingual (English, French, German and Italian).

It is accessible from all the Member States through the NVSS, via the national X.25 data transmission networks or via PSTN (mainly for back up purposes). Using X.25, the service is accessible from anywhere in the world. Thus, access to OVIDE is given from any type of equipment (from the ordinary domestic videotex terminal to a personal computer with communication capabilities).

It is set up for non-specialist users with no prior experience in information systems, as well as for experienced users who can benefit from advanced facilities, e.g. uploading and downloading of files.

The OVIDE system is being developed by SCICON Ltd (a UK software house) on the basis of its ACCENT Videotex software and is operated using hardware provided by Bull (DPX 2000 and 5000) interconnected locally by Ethernet. The design architecture gives a high potential for extension (access ports, user number, applications, volume

of information stored).

Finally, as the overall coherence of OVIDE and its quality of service are assured centrally, information providers can enter information directly for the services for which they are responsible, thus ensuring rapid availability of current information for the end user.

## BENEFITS TO THE MEMBERS OF EUROPEAN PARLIAMENT

1. "Real Time" Information available almost AT ONCE - and continually UPDATED, accessible 24 hours a day, 7 days a week, from Members' constituencies or their principal place of work.
2. Better PLANNING of Members' WORK with greater continuity and better organisation.
3. An END to the ISOLATION of Members in their constituencies resulting in closer contacts with parliamentary functions, made possible by more flexible methods of communication.
4. A better SERVICE for Members, which will allow them, for example, to table amendments or consult Community databases from their own constituencies.
5. A service which is less expensive, more rapid and more selective than the postal service, the telephone or fax.

## CONCLUSION

OVIDE is above all intended as the

telematics working tool of MEP's for the life of the current parliament (1989-1994). The service is expected to be opened to other populations: national parliaments, social and professional lobbies, regional authorities, the general public, and should in the near future evolve to be the focal point for parliamentary activities in Europe.

## OVIDE SERVICES

### O-MAIL SERVICE

40-column videotex  
80-column ASCII electronic mail service  
X.400 capability

### 1. WHO'S WHO

Electronic directory

### 2. CALENDAR & AGENDAS OF MEETING OF PARLIAMENT'S BODIES

### 3. PARLIAMENTARY PROCEDURES

Topical-urgent debate  
Amendments  
Legislature Monitor (progress and passage of individual legislation)

### 4. EPISTEL

Info-memo  
Press review/releases/agencies

### 5. EP DOCUMENTATION AND EUROPEAN STATISTICS

Epoque - European Parliament documentary databases  
Eurostat - European Economic and

## **OVIDE II: The Telematics Working Tool for Members of the European Parliament**

other Statistics from Eurostat

### **6. COMMUNITY DATABASES**

Celex Community Law

Scad-EEC publications, articles

Sesame - Research projects - energy sector

Ted - invitations to Tender

IES-DC-Information exchange system - Data collections

Eureka - Information on projects

### **7. EUROPE IN PROGRESS**

An information service including activities of the European institutions: council of Ministers, Commission Court of Justice, Economic and Social Committee Court of Auditors, Council of Europe, European Investment Bank.

### **8. FORUM**

Direct Contact with MEPs through data terminals

Opinion polls

### **9. PRACTICAL INFORMATION**

### **10. GUIDE INDEX**

Selection by Keyword Suggestions

P. JEGU

Directorate - Data Processing and Telecommunications

EUROPEAN PARLIAMENT  
LUXEMBOURG

## **COS, POSI & SPAG HAVE SIGNED A MAJOR AGREEMENT TO ACCELERATE THE WORLDWIDE OSI HARMONISATION EFFORT**

The Corporation for Open Systems International (COS) in the US, the Promoting Conference for OSI (POSI) in Japan, and the Standards Promotion and Application Group (SPAG) in Europe have agreed to harmonise Open Systems Interconnection (OSI) testing in these regions of the world.

Extensive negotiations took place this year in which all three parties identified common areas of interest within their member organisations for the promotion of OSI worldwide. This has resulted in an agreement to set up a Forum (CPS-Forum) to pursue the harmonisation of OSI testing, and a framework for the CPS-Forum has been developed.

COS, POSI and SPAG have been working closely since the mid eighties to align their OSI activity in the respective regions. Their participation in the MLFF/TLFF (Management & Technical Level Feeders Forum) has helped shape the domains of functional standards and OSI testing methodology, and represents a major commitment from industry in these regions of the world.

The CPS-Forum, scheduled to meet every six months, will provide common specifications ( architecture, models etc. ) for conformance testing systems. It is expected that adopting a common technical solution to interoperability testing will reduce investment in testing technology as well as testing effort. The CPS-Forum will be responsible for promoting the harmonisation process and technical devel-

opment. Individual project teams will be appointed for specific tasks.

Furthermore, the terms of the agreement include a pledge from the three organisations to collaborate on the development and procurement of OSI test tools and the development of an open architecture test system concept.

Next Spring, INTAP (Interoperability Technology Association for Information Processing, Japan) is also expected to join the CPS-Forum which will formally commence its activities through the establishment of a Management/Technical Committee and project teams.

For further details on the CPS-Forum please contact:

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# European Network of Operational Services Facilitate OSI

The world's leaders in communications systems testing, many of whom own the networks upon which information travels, have set up a simple mechanism for sharing their knowledge on harmonised testing with the rest of the OSI (Open Systems Interconnection) community. This approach, which has become known as Conformance Testing, was the result of an initiative of the Commission of the European Communities (CEC), Directorate General XIII Telecommunications, Information, Industries and Innovation.

One of the most important participants in this significant step towards European-wide conformance testing is the OSTC (Open Systems Testing Consortium) group, (previously known as CTS-WAN) which will provide "Open Testing for Open Systems" to further the aims of OSI.

(Similar activities, such as ET-COM, undertaken by SPAG, are noted in the article on SPAG, see IES-News No. 24, page 17)

Representing major Telecommunications Providers of Europe (FTZ (FRG), CSELT (I), Telefonica (Es), PTT-DK (Dm), CNET (F), BT (UK) and NCC (a UK membership organisation) this achievement is firmly based on 3 years successful collaboration within the CTS-WAN programme where harmonised testing procedures and test tool technology within Europe were developed.

As a result OSTC Eurolabs offering ten testing services are now open in six different countries. These Eurolabs offer testing in strategically important OSI areas: FTAM, MHS, Teletex, Transport & Session Layers and Network Layers X.21, X.21bis and X.25.

The achievements of CTS-WAN in the establishment of publicly available testing services and the harmonisation of test tools is of major importance to governments, public procurers, standardisation and certification groups, users and manufacturers. The leading edge work undertaken by the CTS-WAN project and now available under OSTC is vital to all these sectors for the following reasons:

- it is particularly relevant to Council Decision 87/95/EEC which came into effect in February 1988 and references the OSI and OSI-related standards mandatory for public procurement.

- it addresses the requirements of public sector purchasers for conformance testing by public availability of specifications and testing facilities for the procurement process.

OSTC testing concentrates on areas where non-conformity could give purchasers major problems and provides testing for whole products in FTAM, MHS and Teletex areas.

This means that OSTC can test user

perceived functions - a valuable tool in public procurement.

- it adopts a pragmatic approach to standardisation activities by feeding OSTC specifications to the standards-making machinery for the advancement of OSI.

- it provides a viable foundation for certification.

OSTC test reports are harmonised and recognised by all Eurolabs. Plans for increasing the scope to all CEC and EFTA countries are well under way within recognised European structures (ECITC: European Committee for IT Testing and Certification).

- it provides a network of test centres (Eurolabs) that are independent of suppliers of IT products. This third party testing facility is important criteria in determining the credibility of testing.

The priorities which have prompted the formation of OSTC are strategically important to all OSI followers:

- the need to progress OSI.

The CTS-WAN contractors who have established OSTC have a genuine interest in achieving global Open Systems Interconnection. Fully experienced in the technical aspects of harmonisation across European boundaries, they are now in a position to share and apply this

# European Network of Operational Services

## Facilitate OSI

knowledge at an international level. No other group has such technical experience in harmonisation.

- the need for transparency of information.

OSTC test specifications and all operational documentation are in the public domain.

This ensures that Manufacturers and Users know the selection of test cases in advance. This visibility is an important weapon to counteract the risk that various categories of OSI are deemed to conform, but in reality may offer only "Closed System Interconnection".

Hence, OSTC promotes true Open Testing for Open Systems.

- the need for advances in test tool technology.

OSTC have defined procedures for the integration and harmonisation of new test tools with the existing harmonised tool set. This counteracts technical limitations and strategic dependency on one type of technology.

Therefore, OSTC ensures that advances in test tool technology are possible and that, having utilised the freedom afforded by OSI, clients are not "locked into" one type of test tool.

In essence, we provide choice and do not dictate what testing technology should be used.

- the need for competitive services in Europe.

Facilities for others to operate harmonised OSTC services are also available through OSTC. This means that new testing services can open in response to market needs. This directly reflects CEC policy as elaborated in GATT (General Agreement on Trades and Tariffs).

- the need for continued dissemination of information.

CTS-WAN (i.e. OSTC) public documents have been available on the market for over a year. This work is vital input to standardisation organisations for elaboration of European and International functional profiles (EN/ENVs, NETs and ISPs). OSTC supports work in this arena in order to assist the expedient realisation of European and International standards and the provision of testing services to support the implementation of these standards.

- the need by Users and Manufacturers for easily recognisable harmonised OSI products.

OSTC has its own mark. Products tested using harmonised test tools and procedures in OSTC Eurolabs will carry the mark.

Therefore, Users can now easily ensure that testing has employed harmonised procedures and technology.

Similarly, Manufacturers can easily

recognise harmonised test tool technology and have access to the compatible procedures to operate tools and run laboratories.

OSTC therefore ensures visibility of harmonised services and technology, thereby enabling strategic investment.

- continued liaison with CEC major initiatives.

OSTC working for a better OSI community will apply its experience in new ventures (e.g. CTS-2 programme) and will continue to co-ordinate with Certification and Accreditation bodies at both a national and international level in order to promote mutual recognition of test reports.

The Open Systems Testing Consortium extends a warm welcome to the OSI community to participate with us in advancing objectives of OSI. Details on how to join are now available.

Further information can also be obtained from:

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# METAL

## MACHINE TRANSLATION BY SIEMENS

This is the third article in the continuing series on machine translation and reports on a further approach to automated handling of the complexities of language.

As products and processes become more complex and companies become more export-oriented, the need for rapid translation of documentation increases. Conventional translation methods cannot sustain such changing pace.

Research in machine translation technology is now on the verge of providing a practical answer. "METAL" (Machine Evaluation and Translation of Languages) is a translation system that has been under development at Siemens for several years, and has now achieved marketability.

The system is a truly international project, based on approaches originally developed at the Linguistics Research Centre of the University of Texas (Austin). Four R & D centres are finalising the product: a Siemens Centre in Austin is developing language pairs with English as source language, whilst a centre in Munich is developing pairs with German as source language. In Barcelona, Spanish is developed as a target language, and in Belgium, Dutch-to-French and French-to-Dutch pairs are close to being officially released.

METAL is a language-independent system of open design. It differs from older MT. (Machine Translation) systems in that it translates on the basis of sentences instead of word by word. It is capable of processing one word per second, or

about 200 pages in an eight hour period.

The system starts with documentation written on a PC or a word-processor in machine-readable form, or from printed papers via an optical reader. At entry, format information is automatically separated from the material to be translated. This is an important step, because very often, less than 60% of each page in a technical document is translatable material. The rest is structure layout, charts, diagrams, etc. Accordingly, METAL first takes the original layout and produces a page mask. The actual text is routed to a LISP processor for translation and is finally put back into the appropriate slots in the page mask.

Post-editing is done on a multi-user PC connected to the translation system. The raw output can be presented to the post-editor as a correctly reformatted target text or as a dual-language interlinear version for easier comparison.

### LANGUAGE-INDEPENDENT PROCESSING

METAL is designed as a language-independent system to which various language-specific components can be added. It is based on software which analyses the texts in terms of grammar rules and lexicons, both of which are language-specific. The analysis procedure is language-independent. This means that the same analysis can be used to translate into several languages and that adding new target languages to a pair already developed is less complicated than being obliged

to develop a complete pair as in older systems.

The modules include a set of grammar rules that can analyse sentences in their dependent parts. The lexicon contains grammatical, morphological and syntactic information, so that METAL knows how individual words can behave functionally in a sentence.

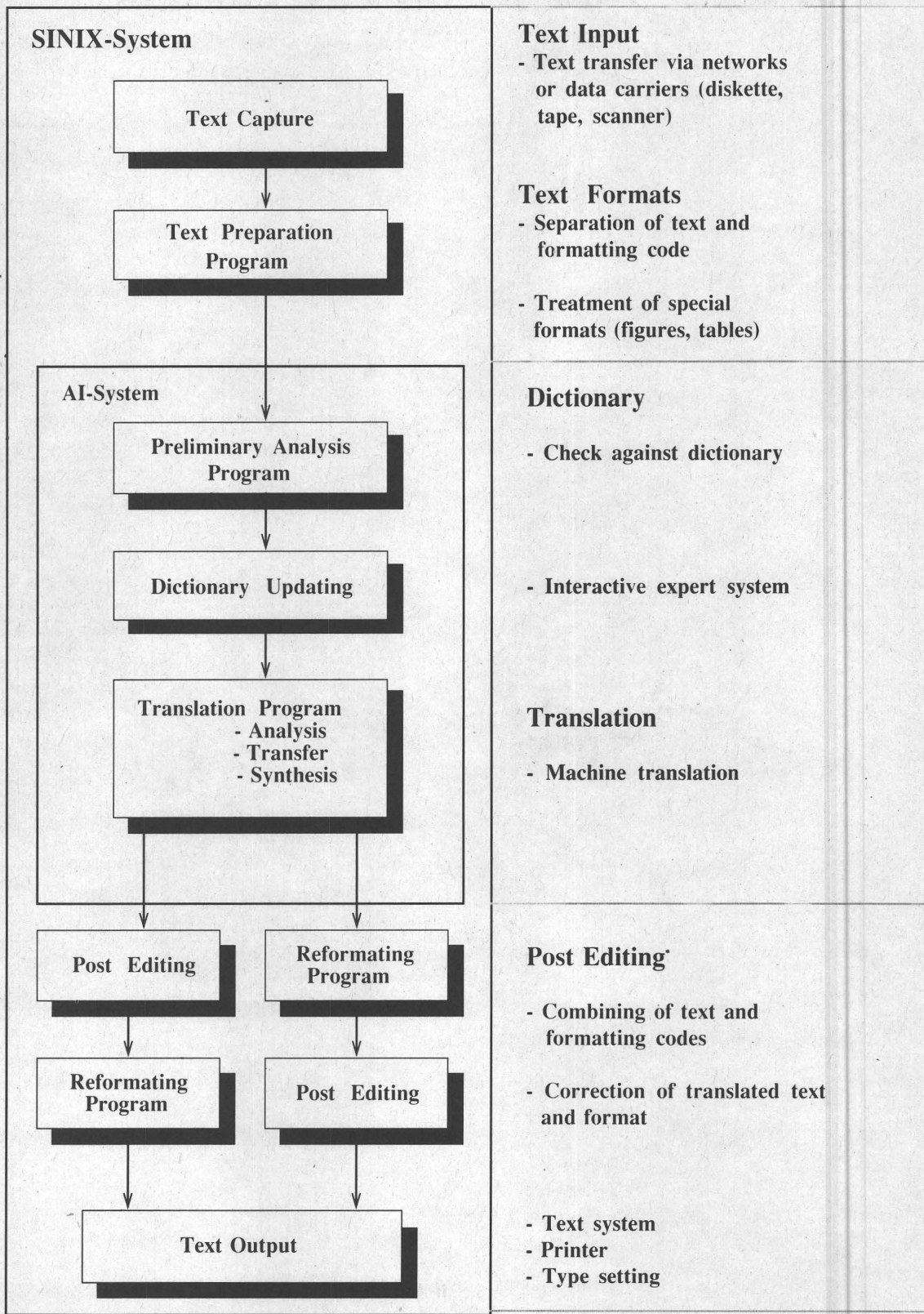
Central to the METAL system is the presupposition that natural languages have an unlimited number of structures. For this reason, METAL has recursive rules, meaning that the same rule can be applied over and over again in the same sentence. This allows the system to interpret even extremely unusual constructions and to work with a restricted number of rules.

### THE MACHINE TRANSLATION RUN

In the translation process, METAL scans a sentence from left to right; each word is analysed from a lexical point of view in terms of ways in which it can be interpreted. The system then applies grammar rules. Relying on weighting factors, it chooses the rules leading to the most likely interpretation of the sentence. It interprets all the elements in the sentence until it has defined their mutual functional relationships, and it groups these elements into sentence parts (noun phrases, verb phrases, etc.)

When all grammar rules have been applied and all words have been examined in their morphological, syntactic and semantic behaviour, the system produces a tree structure

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# METAL

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which illustrates all syntactic dependencies. Each node of the tree is associated with information derived from the lexicon and the applied rules.

The information represented by the tree is independent of the target language. This analysis tree is then transferred to a corresponding structure in the target language. From this new tree, and according to grammatical, morphological and syntactic rules of the target language, generation modules produce the target sentences.

### THE LEXICON

METAL's lexicon modules are organised hierarchically. At the top are function words, such as conjunctions, prepositions, and articles. Below that is a general vocabulary module covering everyday non technical words. Next comes a common technical vocabulary. Further down are modules defined by the translator that can contain very specific or "jargon" words.

In addition there is the internal ex-

pert system that helps the translator in the coding of additional lexical entries. This system cuts out much of this activity by using information already in the lexicon to guess at the morphological and syntactic behaviour of individual words.

### INTELLIGENT INTERPRETATION

Natural languages are fraught with ambiguity. Yet problems can be resolved by comparing the pronoun in one sentence or phrase with the nouns of the previous phrase (anaphore resolution) which is one of METAL's capabilities. Other problems of ambiguity can be solved by adding semantic attributes to the lexical items used by the system during analysis and translation phases.

### WIDENING PROFESSIONAL HORIZONS

Like many technological innovations, machine translation is open to criticism. Some members of professional bodies have claimed that

systems like METAL threaten the very existence of the human translator. For staff translators in industry, however, a very different picture is emerging. First of all, implementation of an MT system spotlights the translation function - traditionally seen as a backroom job - as never before.

MT gives translators a chance to gain new skills in sophisticated technologies. It enhances their status within the organisation by promoting liaison with other departments. It also adds a challenging new dimension to their work in that it relieves translators of the daily drudgery of doing stereotype word swaps on basically dull texts. By giving them the freedom to plan, organise and ultimately raise the quality of their work, it will leave them free to concentrate human aptitudes on the things humans do best.

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In September 1988, the scientific Journalists User Group of the German Research Network (DFN) was set up in the Bonn editorial office of the Deutsche Universitäts-Zeitung.

The project is aimed at establishing a communication structure between scientific journalists on the one hand and research institutions outside the university, including those run by industry, on the other. Although it is not just scientists who make use of the system to exchange information, it has only

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been used in isolated cases in the journalistic sector.

As yet there is no such thing as a joint information pool or point of communication at national or even European level. These shortcomings in the sector of scientific journalism ought to be eliminated, and it would be desirable to strive for swift paperless communication. This is by no means simple, for al-

though the user group may be highly homogeneous in terms of contents, options for technical access to mailing are just as diverse.

Potential users are frequently not aware of the practical options that E-mail provides; On the one hand, this is accounted for by a lack of access to message handling systems which in turn is due to insufficient transparency of electronic communi-

## ELECTRONIC MAIL AS AID IN SCIENTIFIC JOURNALISM

cation. Much improvement has been made regarding handling of telecommunication and world-wide standardisation. In particular, access to the X.400 OSI network via personal computers, frequently used by journalists, is extremely vulnerable to disturbances. Additional treatment of special characters such as accents (i.e. é,ü) are necessary.

The GMD (Gesellschaft für Mathematik und Datenverarbeitung) has put its KOMEX-MHS system at the disposal of the project as an electronic mail/conferencing system in which a large number of members also have their own boxes. The Federal DATEX-P network acts as a transmission medium, and it enables communication with participants from EARN, BITNET, UN-ET and the national telephone networks.

There has been a rapid increase in the number of users who now include journalists working for Die Zeit, Die Welt, VDI-Nachrichten, Stern, Sender Freies Berlin, Deutschlandfunk and other.

The organisers of the project are currently concluding an agreement with the STN International (Fachinformationszentrum Karlsruhe) under the terms of which the participating journalists will have free access to the various databases available through STN.

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## OPEN DISTRIBUTED PROCESSING THE ROLE OF SYSTEMS ARCHITECTURE

Information Technology (IT) suppliers have recognised that the marketplace increasingly demands systems which match the needs and culture of their clients. This has resulted in a growing market demand for open distributed systems obtained from different suppliers and independent of any one proprietary technologies.

The Advanced Network Systems Architecture (ANSA) project was started in 1985 to address this issue by devising an architectural framework for open, distributed systems to support distributed applications and to promote the acceptance of this as an industry - wide standard. The project was sponsored by the UK's Department of Trade and Industry and seven major British Electronic Companies. The initial successes of the project have resulted in its continuation and expansion into a European context as the Esprit Integrated Systems Architecture (ISA) Project, the partners for which include STC, AEG/Modcomp, British Telecom, CTI-Patras, DEC, Ericsson, GEC Plessey Telecommunications, Hewlett Packard, ICL, ITL, Philips, SEPT (France Telecom), Siemens and Televerket (Swedish Telecom) with Newcastle University and Chorus Systemes as sub-contractors.

The ISA Consortium includes computer and telecommunications companies, since Open Distributed Processing (ODP) covers these two areas. A common architecture for both these sectors was desirable and technically feasible. The partners also saw a need to span and in-

tegrate the range of applications domains for IT factory, office and corporate systems, which are often addressed by different specialist companies.

This fragmentation applies particularly to the European IT industry where many small or medium companies have excellent products in specific market areas and which, if they are to share a common delivery platform could be used together to create excellent integrated systems for the users.

The objective of the project is therefore to attain an optimum architecture, giving a consistent and coherent style for designing distributed networked IT systems, in order to meet the requirements of the market

The architecture relates consistent views of IT from five perspectives:

- the enterprise - the IT needs of an organisation
- the information - how to structure the system and its information
- computation - how to program distributed applications
- engineering - how to manage and control distributed systems
- material - how to map onto existing products and standards.

The scope of ODP is much broader than the supply of computer systems. An integrated systems architecture must encompass the structure of the enterprise and match the

IT system to the organisational needs of this. After the enterprise system has been fully analysed, it is possible to plan strategies which use IT more effectively. As companies face the changes necessitated by competitive pressure, a critical success factor will be the possession of an IT system which both matches the organisation's culture and which supports and facilitates change and validation. It is for this reason that users and manufacturers need to take an early interest in ODP and the standards that are necessary for its success.

ANSA and ISA did not intend to carry out their own original research, but preferred to identify and select the best components available for distributed systems and then to merge these into a consistent and modular architectural framework, filling the gaps where necessary. This is used for describing the different views or projections of the common architecture, each of which highlights the concerns of different groups involved with the design and the use of systems. Key features of this framework are portability, scaling and evolution from current industry standards such as Unix and Open Systems Interconnection (OSI). This approach has proved highly successful and the project has built excellent links with leading research groups and universities.

The sponsoring consortium recognised the need for a centre of skill and excellence from which they could all benefit, and which transcends company pressures and constraints. Therefore a laboratory was established in Cambridge with an international team, some of

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whom are seconded from the sponsor companies whilst others are specially recruited. This laboratory has developed the major ANSA deliverables:

- inputs to and support for international standards
- a reference manual for distributed system design (a system designer's "recipe book")
- a reference implementation ( a software suite called the "Testbench")

In order for ODP to succeed, industry must call for, support, and adopt standards before rather than after the systems have been designed. In addition to being of high quality and robust, these standards must be internationally supported. A substantial amount of effort in ISA is devoted to the support of the work of the standards bodies - a task which has equal priority to those of the production of the reference manual and Testbench.

The architecture is described in the ANSA Reference Manual (ARM), which is updated regularly. Over three thousand copies of the first issue were distributed, and it has been adopted by several universities as the basis for distributed systems courses. The project has carried out a major awareness programme by means of workshops, seminars, teaching and participation in national and European planning bodies.

Theories and texts are not always sufficient, and consequently the project produced the ANSA Reference Implementation (Testbench). This distributed systems platform is now supported in Unix, Sun-OS, HP-UX, MS-DOS, VME and VMS. Many of the original collaborators have taken the testbench and are using it in developments as diverse as networks, telecommunications systems, factory systems and office products. The success in supracompany design and efficient technology transfer has made the ANSA project a model for others.

Industry is moving into a new world of Open Distributed Processing where the organisation needs as careful design as the underlying IT system. Through the ESPRIT Programme and the links the ANSA team has built with other projects, it is hoped to accomplish the set objectives over the next four years.

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## BOOK-REVIEW

### EUROPEAN TELECOM- MUNICATIONS:

#### Standards and Open Network Provision - Keys to the Open Market.

Analysys Briefing Report Series,  
1989, 100 pp.

Central to the creation of the 1992 European Single Market for telecommunications equipment and services are Standards and Open Network Provision (ONP). Both subjects are treated at length and in detail in the above published report under the headings Background and Status, Issues and Analysis, and Basic Data. The report also provides extensive reviews of past, present and planned actions and policies with detailed discussions of the results achieved.

In dealing with Standards, the report stresses the considerable efforts expended by the Commission of the European Communities (CEC) in guiding the various bodies concerned, including users, to the recognition of the importance of uniform standards throughout the Community, the essential role of uniform conformance testing and approval, and the need for universal availability of products and services conforming to the common standards. The advantages of the creation of a strong common European process of standardisation are seen to bring with it an increase in the range of equipment available and lower costs, the encouragement of innovation in services, systems and products, and the creation of a strong European input into world standards bodies to offset Ameri-

can and Japanese influences. The data also include an outline of the European Telecommunication Standards Institute (ETSI) work programme, lists of Commission documents relevant to standardisation and European functional standards.

The section on ONP outlines the concepts involved and discusses the relationship between ONP and Open Network Architecture (ONA). It reviews the central role played by ONP in formulating CEC telecommunications policy and the progress made towards implementing ONP. In analysing the present state of evolution towards ONP there is a well-reasoned presentation of the role played by the Telecommunication Authorities in the form of the Senior Officials Group for Telecommunications (SOG-T). The position of this body, composed largely of Telecommunication Administration personnel, is seen as having been strengthened by the CEC's framework directive. The report raises the question of tariffs and some concern is noted about uncertainties in this area, e.g. would voice and data be charged at the same rate, would leased lines be an economic proposition and if so, under what conditions? It stresses that ONP relies heavily on the OSI Reference Model, and that this reliance will create a considerable workload in ensuring coherence between the Telecommunications and Information Technology Standardisation processes, particularly between:

- European Standard (EN)
- Normes Européennes des Telecommunications (NETS)
- International Standards Organisation (ISO)
- International Telegraph and Telephone Consultative Committee (CCITT)

European obligations are to follow proposals for European norms. There are large implications seen for extra-CEC inter-working of high-level-OSI ONP services and non-ONP services, particularly with the United States.

Two further sections of the report give a detailed analysis on Terminal and Services Liberalisation, both issues of vital interest to suppliers, administrations and users. Not unexpectedly there is some impatience voiced in the realisation of the timetables proposed for liberalisation of the terminal market. The difficulties faced by the CEC in reaching the present stage of this process are acknowledged and any implied criticism is intended as a helpful contribution to the debate. This also applies to the discussion of services liberalisation, where the seminal importance of the Green Paper is stressed. There are paragraphs on managed data network services, mobile communications, Electronic Data Interchange (EDI), data broadcasting, as well as satellite services and the role of broadband communications. The basic data presented here include the CEC schedule for services liberalisation and details of recent international value added network services involving the Telecommunications Administrations.

The report is available at £ 245 from:

ANALYSYS PUBLICATIONS  
Analysys Ltd,  
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UK



# EUROKOM NEWS

On the 5th February 1990, EuroKom will introduce a new Menu System which all users will be presented with when they access the system. The Menu System is the culmination of a substantial development effort over recent months, and owes its existence to a number of factors:

There was the need to offer a number of new services, such as the Eurocontact service, a Directory Service, and access to the Unix News service. The most effective way to offer access to these various services, without different network addresses and login sequences, was to offer a Menu and allow the user to select the service required.

As a second requirement, it has been apparent for some time that procedures involved in transferring files to the EuroKom host required simplification.

With the new menu system, the entire file transfer operation is now achieved simply by selecting options from a menu.

A further complication, in relation to file transfer, was that the operation resulted ONLY in the file being transferred to the specific user's directory on the host. Until now, the user then had to remember (and use) another complex command to make this file available to another user.

A File Copy facility has been added to the Menu System, so that the user who sends a file will now be asked, after the file transfer is complete, whether he wishes to copy

this (or any other file or files) to another user on the system. If he answers in the affirmative, the files will be offered to the relevant receiver when he in turn signs on. It should be stressed that these files can be of any type and any size.

The Unix News service was until now provided on a separate Unix System V mainframe at the EuroKom site. Two services were offered on this System V machine - a feed from the Unix News service, and an intermail capability between Unix Mail and the EuroKom system. Both of these functionalities have been transferred from the current machine. A new Unix machine has been acquired, and will be used during 1990 to provide some specific Unix functionality to our EuroKom users, by implementing inter-operability between the new Unix machine and the EuroKom host. For the moment, however, the Unix News feed will be offered within the new menu system.

## What Does it Mean to the User ?

Firstly, in order to deliver a full-screen menu-based system over X.25 networks, PSI (Packet Switched Interface) software has been implemented on the host. Essentially, this means that the EuroKom host can now set the PAD parameters at the user site, enabling delivery of screen-control and menu-painting without the user having to get involved with the X.25 command set. Similarly, when sending files, various PAD

parameters have to be set to enable file transfer to work successfully; these parameters will now be automatically set by the EuroKom software.

From the user perspective, in order for the menu system to be properly presented to him, it will be essential that his local machine properly emulates the VT100 or VT200 series terminal. Although most communications software will have this facility, and even the most basic of terminals should be capable of emulating VT100, there may be a few users who, after migration, will have difficulties because of vagaries or deficiencies in their local system.

Obviously, there will be complications. Many of our users access EuroKom by means of tortuous and complex paths, and in many cases they do not themselves fully understand their path. A user with a powerful work-station, connected to a Local Area Network, which accesses the outside (X.25) world by means of an X.25 gateway on a mainframe on the LAN, SHOULD have the menu system properly presented to him. IF his local settings, emulations, protocols etc. are set in the standard manner, and if he is using the various elements of his path in a predictable and documented way. However, this would be unusual in our business; in most cases, if a computer professional is offered options to tweak, and little switches to reset, he will usually tweak, reset, and otherwise experiment.

# EUROKOM NEWS

To get the new Menu System fully functioning, specific users may have to spend some time, with EuroKom help, re-tweaking settings that they shouldn't really have tweaked in the first place.

## What are the Benefits?

The file transfer system should enable all users to exchange files without the current complex sequence of commands. Starting with BLAST, more options and protocols for file transfer will be added, and the most effective way to offer a range of alternatives in this area is by means of a menu system.

The new services should be of interest, and these services will be complemented by further announcements during 1990 and beyond.

Intermail facilities will be brought up to the primary menu level during 1990; that is, a user will be able to send a fax, or a telex, or an intermail message, without first entering the Mail/ Conferencing system. This will greatly simplify these intermail facilities, which are currently quite complex.

Given migration to a full-screen interface, users who so wish can make use of full-screen editors on the EuroKom host. Although this will only be of interest to those users who have a relatively fast access path into the system, it is a feature that many users have asked for in the past.

## What are the Possible Disadvantages?

The menu system is delivered to your local terminal over X.25, by painting the screen with the little boxes and reverse-video bars (as with any screen-based system). For those users using, for example, a 300-baud modem, this process of screen-painting will appear to be painfully slow. Even at 1200 baud, many X.25 services will only deliver the screen-painting at a speed that will seem slow, for the user who is accustomed to the screen-refreshing on a PC-based application.

While it is recognised that this speed problem will be a significant issue, the growing trend towards faster access speeds over X.25 services should resolve this.

Over the coming year, we will have local access in Brussels, access via the new IXI service, and many users will be accessing EuroKom at speeds in excess of 2400 baud. For these users, the menu system will refresh at quite an acceptable speed.

## Summary:

Quite a substantial effort has been invested into this new 'face' of EuroKom, and into the various sub-systems involved, such as the file-transfer capabilities. These changes reflect user feedback over the recent past, and it is hoped that most users will welcome the new services, and new presentation method for these services.

It would be unrealistic to expect that a significant change such as this could be implemented without some difficulties. EuroKom have gone to considerable lengths to anticipate the difficulties, and to test the system in various environments and countries. At this point, the menu system has been used by EuroKom systems staff from every X.25 service in the European Community, and through a number of quite complex end-user environments, including a number of the most popular LAN environments.

A comprehensively re-written version of the EuroKom Manual which contains a full description of all of the enhancements and changes mentioned above, is now in print, and should be with users well in advance of the migration date.

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## E-mail to and from EuroKom

### To EuroKom from a different E-mail network

Use the following format:

*eurokom\_name@eurokom.ie*

where *eurokom\_name* is your own Eurokom name with underscore characters (\_) substituted for spaces.

For example, a EuroKom user called "Pierre Lebrun XYZ SA" should specify his EuroKom name as

*Pierre\_Lebrun\_XYZ\_SA*

The address is NOT case-sensitive.

Any problems, call the Helpdesk.

### To other networks, e.g. JANET

Janet user addresses are in the following format

*j.smith@uk.ac.ucl.cs*

with the country code as the left-most domain. To send mail from EuroKom, reverse the order of the domain so that the address now becomes

*j.smith@cs.ucl.ac.uk*

To receive E-mail from a JANET user, quote your address in the format

*eurokom\_name@eurokom.ie@earn-relay*

To search for a string within a username use the *verify name* command

*verify name "string"*

## EuroKom User Directory Service Registration Form

The IES User Directory Service is provided as part of the EuroKom Service and will be available to all EuroKom users from February 5th 1989. The Directory will hold basic addressing information on all users within EC funded R & D Programmes.

To ensure that your details are entered into the Directory, please complete this Registration Form, detach it and return it to EuroKom.

Notes:

1. Please complete the form in English. Use BLOCK CAPITALS and print clearly to ensure that your details are legible and can be interpreted correctly.
2. All fields have a maximum length of 80 characters.
3. When entering information in the Country field please use the two digit ISO code for your country.

Austria	AT	Greece	GR	Norway	NO
Belgium	BE	Iceland	IS	Portugal	PT
Denmark	DK	Ireland	IE	Spain	ES
Finland	FI	Italy	IT	Sweden	SE
France	FR	Luxembourg	LU	Switzerland	CH
F.R.Germany	DE	Netherlands	NL	United Kingdom	GB

### EuroKom User Directory Service, Registration Form

Name:

Organisation:

Country:

E-mail Address:

EuroKom Name:

EC Programme Affiliation:

I agree that the information I have provided on this form be stored in the EuroKom User Directory Service, which is a publicly accessible, computerised database.

Signed:

Date:

# Implementing the X.400 Electronic Mail System for the Department of Trade and Industry

## A Case Study

A distributed research network, involving partners in government, industry and academe, where rapid and frequent exchange of messages to persons who may be on visits to other participants, and of reports and documents, especially where the field of concern is largely Information Technology, requires a flexible and reliable electronic mail system conforming to the latest X.400 specifications. Implementing such a system for a wide range of users who already may be using their own E-mail and network facilities poses many problems. The experience gained by the Information Engineering Division (IED) of DTI affords a case study which will prove useful to others facing similar problems.

IED, which administers multipartner IT research contracts, already has an Xionics office and mailing system, academic partners are linked to the Joint Academic Network (JANET) which was to implement its own X.400 gateway, industry makes use of Telecom Gold (with British Telecom establishing the GOLD 400 service allowing both integration of private X.400 systems and connection through a gateway to X.400), and there exists the IDEM (InterDepartmental Electronic Mail) system based on X.400 for U.K. government departments. All these would have to be integrated to form the network to meet the needs of IED and its partners. The expected current user population comprised 100 IED personnel, 300 Telecom Gold customers and 300 JANET users.

It was realised from the start of

the work, that a survey had to be made of all the existing facilities and characteristics of the various component systems to establish both communalities and differences which had to be resolved. These related to forwarding items, replying, reply requests, delivery reports, character sets, addressing and directories. In addition, there were some commercial and economic aspects which required careful analysis and study.

At this stage, four major issues were identified:

1. Ensuring that forward mail items and reply requests were handled correctly between the systems.
2. Ensuring that users of the systems understood that they may receive delivery reports from gateways which may not indicate that the mail item has been delivered to the recipient.
3. Commercial considerations of the GOLD 400 service.
4. Deferred Delivery.

A demonstration of the Xionics X.400 gateway revealed some outstanding issues which required attention. Other difficulties arose in registering users on the BT 400 GOLD directory so that the possibility of using available mailboxes on the IDEM service for users of Telecom Gold who would otherwise be unable to communicate with JANET was investigated. The result was that IDEM was found

to match existing needs and that external users should be registered with IDEM.

It was agreed:

- to accept external (i.e. non-government) users provided they were sponsored by the DTI. IDEM were prepared to bill directly those users who were not directly supported by IED, the remainder could be aggregated on a single invoice for the Directorate
- although the charging rates were established, they were expected to alter in April 1989 to be based on connect time
- IDEM would maintain the directories, particularly the GOLD 400 directory, with details of the IDEM mailbox users
- all the mailbox numbers (OrgUnits, in X.400 terms) would have six characters, IED being the first three, followed by three digits
- they would supply statistics of usage for the system
- the large number of connections currently available from other PRMDs would be proffered for use by IED.

The original intention had been to close down the existing ALVEY E-mail system serving IED at the end of 1988, but because of the problems met and subsequent delays, this did not happen until February 1989.

# Implementing the X.400 Electronic Mail System for the Department of Trade and Industry

## A Case Study

### Current Situation

Apart from the expected three connections to other PRMDs, viz to Telecom Gold via GOLD 400, JANET and IDEM, there are six other PRMDs (Private Management Domains) included in the Xionics system routing tables. In all cases these have been requested by staff in the IED who have a need to communicate with these groups.

Of the 110 plus users of the Xionics office automation system in the IED, 25 are currently using the X.400 gateway. This involves between 50-60 X.400 messages per week, the bulk of the traffic passing through the JANET gateway. All users registered on the Xionics system are included in the PRMD directory and on the GOLD 400 directory. There are currently between 30 and 35 requests outstanding for mailboxes on the Telecom Gold service, which have not yet been allocated because of the addressing issues between JANET and the GOLD 400 directory.

In June/July 1989 there was a planned increase in activity on the network caused by DTI contracts being awarded and the project reporting cycle beginning for those contracted.

The ALVEY Mail system was eventually closed down in mid-February 1989, although all funding from the IED for maintenance etc ceased in December 1988.

In order to assist the management

of directories and provide a directory facility to users, a simple off-line directory was produced using the dBase III package for PCs. This is available to be updated monthly and distributed to all participants in the network.

### Benefits Gained

Each of the participants in the network now has the ability to have all their mail items directed to one service. This allows them to concentrate their activities on supporting their partnership communications through their normal service rather than having to remember to enter their ALVEY Mail mailbox on a regular basis.

It is expected that the X.400 capability of the Xionics gateway will allow the IED group to access a far wider audience for mail than was possible using the ALVEY Mail system. They already have connections into EuroKom and are seeking connections to the COSINE network and others in Holland and Luxembourg.

The DTI no longer carries the cost of managing a centralised mail server within its administration budgets. The responsibility lies firmly with the message originator to pay for the cost of his own communication.

IED have not succeeded in their short term objectives of establishing connections from a number of industrial users in Telecom Gold to the JANET academic network. As the industrial users move towards

X.400 PRMDs they will be able to access the JANET network by connecting their PRMDs to GOLD 400.

The difficulty of registering partners in the academic community on the GOLD 400 directory persists.

### Key Learning Points

The key points to be learned from this exercise are as follows:

1. It is of vital importance to ensure that there is a strategy for naming and addressing when establishing a network. In particular, it is vital to ensure that the sets of manufacturers or groups that you are dealing with have not usurped some of the areas of naming and addressing for their own purposes, leaving you in difficulties in trying to bring the networks together.

On the other hand, providers of services and network managers should be aware of the implications of establishing an addressing constraint within their systems.

2. There is a requirement for a large amount of low-level activity associated with mail services of this kind. In this case there is still a need for a significant amount of UNIX skills, PAD configuration skills, debugging software, and line analysers. The necessity for networking skills around the transport layer should not be ignored.

3. The software systems involved in current X.400 mail products are not facility rich. The interface of the user, the system manager, the

## Implementing the X.400 Electronic Mail System for the Department of Trade and Industry A Case Study

network manager, and management statistical and debugging tools are not commonly available in this class of software. It must be recognised that network management systems which will help solve the problems which the database administrator has will not be available for some years. It must also be remembered that there is a high cost to be paid for network management systems in terms of system resources used.

4. A single directory service using standard PC based packages is needed for this type of network. Each of the systems on the network comes with its own directory look-up system, but there is currently no common facility.

Until X.500 Directory systems become commonly available, it is necessary to maintain proprietary Directory systems.

The case history is published by permission of the Department of Trade and Industry, UK, and is an abbreviated version of that included in the Users Open Systems Handbook published by:

Level-7 Limited

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## ISO 8613 Standard Permits Open Exchange of Documents

### Why do we need a new office standard?

ISO (International Standards Organisation) 8613 is a new office standard for the open exchange of documents between different processing systems. Such a standard is needed because sending wordprocessor / desktop publishing documents between different systems is difficult. This is due to the many formats used by suppliers. Users have few options other than standardising on particular systems within their organisations or employing ad hoc conversion techniques.

The previous solution adopted for sending electronic documents between organisations has usually meant that the documents have been reduced to basic text (typically ASCII). But the loss of features such as boldening, tabs, headers and so on alters the sense of a document, degrading the information interchanged.

Sending such documents between different systems (even within a single organisation) involves significant reformatting before the document can be used effectively on the target system. What users really need is the ability to maintain the structure and format intact. The new Office Document Architecture Standard (ODA) published this year by ISO and CCITT (International Telegraph and Telephone Consultations Committee) will make this possible.

### What is ODA?

ODA is a standard for allowing re-

visible documents to be moved freely between different vendors' equipment. It is designed to match the complete range of office documents from simple text and fax to integrated text and graphics documents.

Because ODA is an integral part of the OSI (Open Systems Interconnection) strategy, ODA documents can be sent between systems using the X.400 messaging standard or FTAM (File Transfer Access and Manipulation). ODA documents can also be sent using magnetic media information standards.

### How ODA works

The ODA model is object-oriented: it divides a document into a set of objects. There are two main groupings of objects in an ODA document:

- Logical. Logical objects are concerned with the structure of a document. They include objects such as paragraph, section number and chapter.

- Layout. Layout objects are concerned with the layout of a document. They include objects such as column and page.

Content, such as text or graphics, is shared by both logical and layout objects.

Each object has a number of associated properties that describe it. For example a paragraph may have the properties: first line indented, right margin offset equal to n units, Times Roman 12 point bold. Similarly a column might include

properties such as position dimensions and border line width.

In addition to the logical and layout attributes, a number of logical-layout relationships can be defined using attributes to specify such features as:

sections are to start only on new pages;

paragraphs are to be offset from the column margin;

figures and captions are to be kept together on the same page;

text in columns is to be synchronised for multi-lingual documents.

Where a group of objects has something in common, object classes can also be defined. This can save on transmission costs. For example, a logo that appears on each page need only be specified once for sending. Another use of object classes is to provide for the interchange of a company's house style rules (on typeface, margin width etc) to preserve information about a range of documents such as invoices, contracts or memos.

### **Application profiles**

ODA is a comprehensive base standard that provides a rich set of possible structures and attributes to satisfy most document processing requirements. From this set of possible structures, specific profiles (subsets) can be developed which define internationally aligned implementation agreements for particular applications. In Europe, the European Workshop on Open Systems (EWOS) have developed profiles for three levels of document - simple wordprocessing, integrated text and graphics and a level three profile for compound documents with advanced logical and layout

## **ISO 8613 Standard Permits Open Exchange of Documents**

structures. These profiles will now be progressed as European Norms.

### **Vendor Support**

Most vendors are now actively involved in prototyping ODA systems or completing ODA products. The major implementors include, in no particular order: Xerox, Unisys, Philips, IBM, ICL, Bull, Siemens, Olivetti, Digital, Apple, Océ, Nixdorf, BT, Hitachi, Oki, Mitsubishi, AT&T, Fujitsu, Televerket, NTT and Toshiba. Product announcements for level two profile support are likely at the end of the year.

### **Prototypes**

A major cooperative activity in Europe has been the ESPRIT Piloting ODA (PODA) project (ESPRIT project 1024) which involves ICL, Bull, Siemens, Olivetti and OCE. This group demonstrated the sending of integrated text and graphics ODA documents over X.400 at the CeBIT fair in Hanover earlier this year. A second project, PODA II (ESPRIT project 2374), started in January 1989 will continue this effort and additionally includes IBM, Nixdorf and BT. A further project which also supports ODA and SGML interworking together with applications for the presentation of EDI information is also under consideration by ESPRIT.

### **Conformance testing**

A means of testing conformance is critical to the spread of any standard. At the UK's NCC (National

Computing Centre) an international project, (funded by the Department of Trade and Industry (DTI) and International Technical Standards (ITSU)) was started in 1987 to provide a set of test tools and establish test services for ODA. The results of this work are likely to be used in the development of internationally agreed specifications for application profile testing addendum.

### **Formal Specification**

It should be noted that an important factor in the development of the standard and the conformance test system has been the parallel activity of formally specifying the ODA document structures. This work has been largely carried out at the Gesellschaft für Mathematik und Datenverarbeitung (GMD) in Germany and the UK National Computing Centre.

### **The future**

ODA provides a solid foundation for multi-media document exchange. It is the next step towards integrated telex, fax and wordprocessing / desktop publishing documents. Companies planning to send office documents using open systems should make sure that the systems they buy in the next few years provide an interface to ODA. This will ultimately put them in a position where they will be able to send documents between dissimilar systems (say IBM and DEC computers) anywhere in the world.

Extensions of the standard are

already under way to provide capabilities for colour, equations, voice annotation, hypertext, spreadsheets, business graphics, tables and security.

Richard Carr, of the NCC's standards division, is co-author of the formal specification of ODA and leads the TODAC testing project.

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## **RECENT DECISIONS BY THE EUROPEAN CONFERENCE OF POSTAL AND TELECOM- MUNICATIONS ADMINISTRATIONS CEPT**

The Commercial Action Committee (CAC) of CEPT met in Stockholm from 26 to 29 September for discussions and decisions on a number of important issues related to international telecommunication services.

More than 60 representatives of Telecommunications Administrations and Public Network Operators from 17 countries attended the meeting.

Of particular interest to the business telecom users were the following items:

### **1. One-Stop-Shopping**

The operators represented entered into a framework agreement on One Stop Shopping, aimed at making it easier for business customers to get international telecommunications services.

The agreement will be implemented in practice during the coming 12 months, in the first place for leased lines and packet switched services.

Under this agreement, customers may deal with a single point of contact in any of the countries involved with regard to ordering, implementation and billing of international telecommunications services.

### **2. Quality of Service for Public Data Networks**

Users are increasingly demanding information about the quality of service for Public Data Networks. CAC has therefore approved three recommendations containing ready-to-implement methods and tools for monitoring and for evaluating the most important parameters about network performance related to the international packet switched services.

A set of quality indicators will be commonly used by Public Network Operators in measuring and evaluating the network performance of the packet switched services. Information about the quality of service will be made available to the public on a regular basis.

CAC is one of the five specialist Committees of the Telecommunications Commission of CEPT. It was established in 1984 with the main task to define and implement a CEPT commercial policy and to co-

ordinate activities of the CEPT member Administrations in the field of service development and tariff and operational matters for all types of telecommunication services.

The result of the work is normally made available in the form of Recommendations concerning operational, administrative, tariff and accounting matters for existing or planned international voice, data, text and video communication services. It is a prime objective of CAC to assist the European network and service operators in meeting the growing demand for provision of coherent services and facilities across Europe.

In addition to the work on Recommendations, CAC and its specialist groups have, inter alia, also considered the implementation of the following Europe-wide services:

- X.25 Data Network Services
- European Video Conferencing Service
- European Free-Phone Service (Green Number)
- Business Satellite Services
- Common Emergency Call Number
- One-Stop-Shopping
- Telemarketing

Commercial Action Committee  
c/o General Directorate of P & T  
Anker Heegaards Gade 4  
DK-1503 Copenhagen V



# NEWS FROM CEN/CENELEC

## Test Specifications for OSI Functional Standards

A number of standardisation mandates has been issued by the Commission to CEN/CENELEC for the production of standardised test specifications in the areas of Virtual Terminal (VT), Directory, Office Document Architecture (ODA), and Local Area Networks (LANs). The work is expected to be undertaken by the same groups (if not by exactly the same people) who elaborated the corresponding Functional Standards: i.e. European Workshop on Open Systems (EWOS) Expert Groups for VT, ODA and LAN, and a joint EWOS-European Telecommunications Standards Institute (ETSI) group for Directory.

To help produce data communication test specification standards in the "proper" way, EWOS has created an Expert Group on the methodology of OSI Testing, the EWOS EG-CT (Conformance and Testing). Likewise ETSI has set up a Technical Committee on Advanced Testing Methodology (ATM). It is expected that the work will at least partially overlap; therefore close liaison between the groups is being arranged. They will also work within the context of the European Committee for Information Technology Certification Open Systems Interconnection (ECITC) OSI Testing Liaison (OTL) group, who is looking in particular to matters of harmonisation of test activities.

## New Memorandum:

### Directory of private telecommunication network standards

The IT Steering Committee (ITSTC) at its meeting in November decided to adopt the proposed Directory of Private Telecommunication Network Standards (and Technical Reports for interworking within an ISDN environment) as Memorandum M-IT-05. The Memorandum is in essence the work programme for the IT Advisory Expert Group on Telecommunications (ITAEGT). There is a corresponding supplement which gives a rough time-table for the different projects listed.

### Security aspects of OSI Functional Standards

The workshop on security aspects of OSI functional standardisation, which took place on 25 October 1989, resulted in a proposal to ITSTC to establish an ad-hoc group to consider what action should be taken to address all the issues related to standardisation for security in this field. ITSTC at its November meeting agreed on this. The ad-hoc group will be open to experts in the field, including nominations by CEN/CENELEC members, EWOS and ETSI, and also experts concerned with legal issues, audit issues, etc.

A report of the workshop can be obtained from CEN/CENELEC.

### CEN/CENELEC Report on aspects of a European Standard Parts Library

Within the activities of the IT Ad-

visory Expert Group on Advanced Manufacturing Technologies (ITAEGM), a working group has produced a technical report on the "Conceptual Analysis and Functional Constraints for a Standard concerning a European Standard Parts Library". This work was conducted in place of the original project on a standard for "Standard Parts libraries", because it was found that the scope of that project was too narrow.

ITSTC adopted the report in November 1989. It will be published as CEN/CENELEC Report R-IT-02 and can be obtained from the national CEN/CENELEC members.

### CEN Technical Committee on Bar Coding

The workshop on European standardisation of bar coding, held in September 1989, made a detailed proposal for such standardisation, to the CEN Technical Board. The Board, which met in November, agreed to the proposal and specifically to create a Technical Committee (TC 225) for this work. (See IES News No. 24). There are as yet no offers for the secretariat of the TC, but it is expected that its first meeting will be in spring 1990.

### CEN Technical Committee on Machine-Readable Cards Mandate on payment cards for telecommunication applications

The Commission has issued a mandate on the standardisation of payment cards for telecommunication applications. It was decided by ITSTC in November that the work on this mandate should come under the newly created CEN TC 224, on machine-readable cards, but that ETSI should work as a subcontractor for telecommunication aspects of tele-

communication services (such as payphones, mobile terminals: see IES News No. 24).

The CEN TC on the standardisation of machine-readable cards has now been created (TC 224). The secretariat will be provided by AFNOR, and the first meeting is scheduled for 5-6 February (in Paris).

### **Progression of X/Open standardisation**

The proposal to adopt as a European standard the X/Open Portability Guide has run into problems due - in particular - to the format of the document. The Guide not only refers to the Portable Operating System Interface for Computer Environments based on the Unix documentation (POSIX) standards-to-be but also repeats large parts of the material, whereas the appropriate method for a Functional Standard is simply to make references to the base standard. Another difficulty is that the Guide is intended as a manual for the users of an X/Open operating system, while a standard normally is intended for the design as or procurement of a system.

It still remains to be seen whether CEN members wish to have a Functional Standard corresponding to the Portability Guide. If so, a lot of work will have to be done on re-editing those parts of the Guide which are chosen for standardisation (not necessarily all). Only after that can a possible ballot take place.

The matter will be further discussed at the EWOS workshop in January 1990. It is likely that after that a proposal along the lines described will be circulated among the CEN members for enquiry.

## **NEWS FROM CEN/CENELEC**

### **CEN Technical Advisory Group on IT created**

The CEN Technical Board (BT) decided at its November 1989 meeting to create a Technical Advisory Group (TAG) on information technology matters, in order to brief and support the CEN delegates to ITSTC, and to advise the BT in IT matters as necessary. Mr Reuss of Danish Standards will act as chairman pending a proposal from the TAG itself to the BT.

ITSTC agreed to this proposal in November 1990

### **New mandates in the ETSI sphere**

At its November meeting, ITSTC discussed the following new mandates from the Commission and decided in all cases to nominate ETSI as prime contractor and to recommend the final product as ETSs (European Telecommunication Standards): except in the case of the last one, where a report is expected.

- ISDN Videophone standards (mainly coordination, enhancement and acceleration of ongoing work)
- ISDN Datagram bearer service standards
- ISDN syntax-based Videotex standards
- Leased line access standards (for ordinary quality voice, special quality voice, 64 Kbit/s digital, 2048 Kbit/s digital)
- PSPDN (Packet-Switched Public Digital Network) access stan-

dards

- VSAT (Very Small Aperture Terminal) standards (including television terminals for use with DTH [Direct-to-Home] services and DBS [Direct-Broadcast-Services])
- Telecommunication terminals for disabled people.

### **Proposed new European Prestandards**

The following new prENVs are currently out for ballot:

- prENV 41 208. Information systems interconnection - Basic Class Virtual Terminal (VT) - S-mode - Forms. The document is in three parts, covering respectively the VT service, the VT protocol check list, and the underlying layers check list.
- prENV 41 209. Information systems interconnection - Basic Class Virtual Terminal (VT) - Common Control Objects.

The ballot period ends 1 April 1990.

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# The European Museums Network.

It is not only high technology enterprises and researchers or financial sector interest which resort to electronic means to speed and facilitate information exchange and flow. Museums have also become involved in this method of widening their potential audiences.

One of the earliest endeavours in this field was a French pilot study in which participants were to be provided with a videodisk system for home use whilst identification of the required "picture" was to be via a central online databank, possibly accessible via Minitel. This project did not succeed, largely due to the cost and poor quality of the videodisk systems then available.

A totally different approach is involved in the RACE Project on the European Museums Network. This started during 1989 with a four-year duration and a budget of 10 million ECU, half of which is provided by RACE. It is the only RACE project which has European cultural integration as its aim. The intention is to establish the parameters for an associative, multimedia and decentralised databank system for applications in museums and to set up and test a pilot.

The technology of the museums network involves a digital multimedia system (integration of still pictures, video, voice, music and text) with the participating museum databanks being interconnected by telecommunication services, which initially will be of a narrow bandwidth, but allowing of subsequent broadband networking.

The prime contractor is the Fraun-

hofer Institut für Systemtechnik und Innovationsforschung in Karlsruhe, FRG, and participating museums and relevant organisations include the Gulbenkian Foundation (Lisbon), Reina Sofia (Madrid), Hamburger Kunsthalle, the National Museum of Denmark, Museon (Den Haag), the Direction des Musées de France, the International Council of Museums (ICOM, UNESCO, Paris). Various telecommunications enterprises and other research institutes are also involved actively in this project.

The immediate target is to provide for the 1992 World Fair and Exhibition in Seville (EXPO'92) a common exhibit under the title "Discovering the Traces of Cultural Integration in Europe". The participating museums will exhibit items from their collections in support of this theme, and at the same time visitors will be able to enjoy via workstations interactive multimedia access to electronic representation of museum exhibits and holdings not on display, together with additional information presented in multimedia form. It is hoped that the software to be developed will afford to museum visitors a novel, motivated and individual approach to art and culture, i.e. to permit a differentiated and personalised exploitation of the multimedia data on museum holdings. The hope is that the man-machine interfaces required will be sufficiently self-explanatory and user-friendly to enable even a first-time user of the system to "navigate" successfully through the networked data. Needless to say, this approach can and should never replace or substitute direct contact with the artifacts.

Among the results to be expected of this ambitious project are novel solutions to telecommunication problems, multimedia exploitation of data, suitable interfaces or menus; software for intelligent exploitation of distributed databanks, development of specialised software allowing of simple and cost-effective localised development by individual users for their specialised exploitation of the databanks provided, and an evaluation of user response to such a presentation and access to data and display of remote artifacts.

The project is ambitious and may ultimately allow a broader enjoyment of Europe's cultural heritage. It may also permit many museums to give access to reserve holdings no longer displayable because of lack of space: if successful it could also trigger a massive overdue demand on more public spending on making such treasures available to the public.

There is naturally a danger - no image can replace reality. High-technology applications in the cultural arena can often be counterproductive: a recent example is the shortcomings in scenery and costume detail revealed by application of HDTV to filming of stage performances. Still, all encouragement is due to this project even though the funding is peanuts compared to moneys liberally wasted by advertising.

Further Information from:  
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FRG

## FUTURE EVENTS

*Measuring the value and benefits of I.T. Pergamon Infotech, London 22-23 January 1990.*

*13th European Congress Fair for Tech. Communications. Online 90. The conference includes several symposia devoted to telecommunications and OSI. Hamburg 5/6 -9 February 1990.*

*The Emerging and Merging Technologies. Pergamon Infotech, London 5-6 March 1990.*

*Modelling of Innovation. IFIP, Rome 21-23 March 1990*

*Object-Oriented Languages and Systems. University of Twente, Enschede February 26-1 March 1990.*

*International Telecommunications Society. S.I.P, Venice 18-21 March 1990.*

*U.K. I.T. 1990. I.E.E. and University of Southampton, 19-22 March 1990*

*2nd International Conference on Extending Database Technology. Fondazione Cini, Venice 26-30 March 1990.*

*International Conference "Computer, Man and Organisation II." Universite Libre de Bruxelles, Nivelles*

By chance, this the Silver Jubilee Issue of IES News, coincides with the Golden Jubilee of the first recorded remote computing. It was in December 1939 that a Bell Laboratory physicist, George Stibitz, demonstrated the use of his electric adder in solving equations, using teletypes installed at Dartmouth College, New Hampshire, and connected to his machine in New York via the public telephone network.

In Europe, the Commission recognised the importance of networking technology at an early stage: the Euronet initiative of the late 1960s and early 1970s showed the way to the use of remote data and led rapidly to data interchange. The recognition in the initial phases of ESPRIT of the importance of Information Exchange Systems - IES - by elec-

## EDITOR'S CORNER

tronic (and other, more conventional) means as an essential tool in welding together a dispersed research community was another milestone, to be followed by the COSINE project and the provision of the IXI backbone. Europe is now well on the way to achieving not only a comprehensive network, but again thanks to the lead given by the Commission policies in support of international standardisation, one that is compatible by adoption of the Open Systems Interconnection leading to a greater market for European OSI-conformant products.

Peter POPPER

As this is the last issue of IES News to be published in the Eighties, all of us connected with this publication would like to wish all our readers Happy Nineties.

## FUTURE EVENTS

*Patinnova '90. CEC, Madrid 24-27 May 1990.*

*Tenth International Conference on Distributed Computing Systems. INRIA, IEEE, Paris 28 May-1 June 1990*

*Conference and Exhibition of European Telecommunications. Euro-telecom, Madrid 5-7 June 1990.*

*International Technology-Transfer Congress. VDI, VDE Centre for Information Technology GmbH, Bremen June 1990.*

*CIM: Integration Aspects. Productic A, Bordeaux 12-14 June 1990.*

*The 2nd Scientific Computing and Automation European Exhibition. The Publishers of Nature, Maastricht 12-15 June 1990.*

## NEW PERIODICAL

*Signal Processing Image Communication  
ELSEVIER Science Publishers B.V.*