LATE NEWS

Standardisation for Information Technology

A British Standards Institution booklet just out bluntly states that "While IT offers the world so much, it is now in a state of crisis... it is a victim of its own success... Confronted with a bewildering range of incompatible equipment, users have for too long been struggling to fit round pegs into square holes... OSI is a way towards maximum efficiency".

Procedural Changes at BABT (British Approval Board for Telecommunications)

Applicants for approval will in future be able to deal directly with a competent test laboratory of their own choosing, leading to a significant speeding up of approval. The scheme follows the Commission directives on Mutual Acceptance of Test Reports.

TRADANET Supported

The electronics component industry is exploiting the benefits of paperless business communications by endorsing the TRADANET service for electronic data interchange.

DOCDEL brings Success

The Union Bank of Switzerland has selected a Philips Megadoc image-handling system for their signature verification process, with signature cards stored on optical disc. Megadoc featured prominently in the DOCDEL program of DG XIII.

DEC, EARN and OSI

DEC has announced support for the proclaimed intention of rapid migration of EARN to OSI by testing implementation of OSI software and network management components in large-scale multivendor environments. Replacement or upgrade of facilities will be by adding functionality needed to support move to OSI.

Esprit
Information Exchange System

iesnews

Issue No 12, October 1987

The 1987 ESPRIT Conference took place between 28 September and 2 October. Roughly 4000 delegates attended; over 130 technical reports were presented to the Conference and more than 50 demonstrations of the latest ESPRIT technology were on display. In addition over 800 delegates took part in ESPRIT Proposers' Day.

A number of prominent industrialists addressed the Conference on IT Forum Day, including Cornelius Van der Klugt, chairman of Philips, and Jacques Stern, chairman of Bull, as well as key political figures including Bertl Haarder, chairman of the Council of Research Ministers, Michel Poniatowski, chairman of the European Parliament's Energy Research and Technology Committee, and Karl-Heinz Narjes, Commission

1987 Esprit Conference and the IES Workshop

Vice-President responsible for European High-Technology Strategy. The theme of the IT Forum was "Europe 1992 – Technology and Market".

During the last two days of the Conferecence 17 workshops were held to discuss a number of ESPRIT related activities, including IES Services. The IES Workshop was chaired by Peter Linington, University of Kent: Horst Hunke DG XIII, gave a perspective of the past and future of IES and Nicholas Newman, DG XIII, gave an overview of other Commission activities related to ESPRIT/IES. Peter Tindemans, chairman of the COSINE Policy Group, gave a presentation on the objectives and status of the COSINE project. The workshop was attended by some 50 delegates representing user groups, standardisation bodies and people involved in activities related to IES.

A full report will be published in the next issue of IES News.

Graphic File Transfer

This article describes the Graphic File Transfer which is based on the graphical data structure of the Computer Graphics Metafile (CGM). For the first protocol generation only the transfer of sequential graphical files is provided. The following chapters discuss the concepts and the implementation in more detail.

Introduction

Within the last few years graphics processing has become important in developing technical products – especially in heterogeneous computer networks. Therefor there is an increased requirement to exchange graphical data (e.g. for further processing) in a computer network or to have access to graphical information on remote hosts.

Because the German Research Network (DFN) has the purpose of providing its users in the scientific and technical area with a set of communication services, a Graphic File Transfer has been developed within the project "Graphics, Modeling and Document Services in the DFN". General requirements are the exchange of graphic information (pictures) in a compact representation, access to it in computer networks, as well as the generation and interpretation of graphical information. Because DFN is a heterogeneous computer network, i.e. many computers from different manufacturers are interconnected, all developments have to be based on standards. The basic standard for communications in heterogeneous networks is the OSI Reference Model (Basic Reference Model for Open Systems Interconnections, ISO/IS 7498). The Graphic File Transfer is based on the Reference Model.

To ensure the correct exchange of graphical data between different computer systems, standardised data structures and codings are necessary. The Graphic File Transfer will be based on the only standardised data structure for two-dimensional vector and raster graphics: the Computer Graphics Metafile (CGM, ISO/DIS 8632) (the GKS Metafile is only an appendix, i.e. it is not part of the standard itself).

There are several applications for a Graphic File Transfer; some are listed below:

- Processing and editing of the graphical data on remote hosts,
- Special graphical hardware (e.g. a special, expensive kind of plotter) should be available to many users,
- Use of special system resources on remote computers, e.g. the use of vector processors for extensive calculations to generate a metafile, or mass storages to archive graphical information,
- Integration of graphics into documents, especially in the area of decentralised document processing,
- Use of picture data bases.

The following describes the CGM, its generation and interpretation as well as the File Transfer more in detail.

Computer Graphics Metafile (CGM)

Currently the Computer Graphics Metafile (CGM) has the status of a Draft International Standard but will become an International Standard (ISO) soon. The CGM provides for the storage and exchange of pictures independently of the graphical system, the graphical periphery, and the computer system. The standard consists of four parts: a functional description of the structure, control and graphical information (abstract syntax) and three standardised codings for the representation of the elements.

1. Functional Specification

This part defines the form (syntax) and functional behaviour (semantics) of the elements and their parameters that may occur in the CGM. There are eight classes of elements:

- *Delimiter Elements*, which delimit significant structures within the Metafile (e.g. BEGIN PICTURE, END PICTURE).
- *Metafile Descriptor Elements*, which describe the functional content, default condition, identification, and characteristics of the CGM (e.g. METAFILE VERSION, VDC TYPE).
- *Picture Descriptor Elements*, which set the interpretation modes of attribute elements for each picture (e.g. SCALING MODE, VDC EXTENT).
- *Control Elements*, which allow the modification of picture boundaries and coordinate representation (e.g. CLIP RECTANGLE, VDC INTEGER PRECISION).
- *Graphical Primitive Elements*, which describe the visual components of a picture in the CGM (e.g. POLYLINE, CIRCLE).
- *Attribute Elements*, which describe the appearance of graphical primitive elements (e.g. LINE TYPE, TEXT COLOUR).

Graphic File Transfer

ESPRIT '87

Achievements and Impact

Proceedings of the 4th Annual ESPRIT Conference, Brussels, Belgium, 28-29 September, 1987

edited by **Directorate-General XIII, Telecommunications, Information, Industries & Innovation,** *Brussels, Belgium*

1987 xxii + 1888 pages (in 2 parts)
Price: Dfl. 350.00
ISBN 0-444-70333-0

Reports on the achievements and impact of selected ESPRIT projects are presented in these volumes. The majority of the papers cover the subjects of microelectronics and peripherals, technology, advanced information processing, office systems and computer integrated manufacturing. In addition, there is one session on the network development projects of ESPRIT. A good balance exists between the various specialised areas and also across different European national boundaries.

Contents:

PART I

Plenary Sessions:

Bipolar CMOS ESPRIT Project *(P.A.H. Hart and A. Wiede...*

Information Technology Atlas - Europe

edited by **IOS (International Organisations Services B.V.),** *Amsterdam, The Netherlands,* **J.C.P. Bus,** *Centrum voor Wiskunde en Informatica (CWI), Amsterdam, The Netherlands, and* **Wedgwood & Company, Ltd.,** *London, UK*

1987 xii + 470 pages Paperback
Price: Dfl. 140.00
ISBN 0-444-70336-5

"a timely and useful handbook for the further development of IT partnerships across the Community."
M. Carpentier, Director General Telecommunications, Information Industries and Innovation, Commission of the European Communities

With massive technology revitalisation programmes under way in Europe, both on national and supranational levels, the need for comprehensive surveys combining market, technical and research data is more apparent. The necessity in policy considerations for coupling information on research with information on industrial activity is evident.

This first edition of the IT-Atlas identifies organisations (apart from universities) that are active in IT research, standardisation and the communications infrastructure, in Europe in general and the European Community in particular. Supranational and national programmes for

Graphic File Transfer

ture. That means the generator and interpreter should be clearly divisible into their graphics-dependent, coding-dependent and graphics/coding-independent components. This configuration facilitates the integration of the software into other graphics systems or devices, as well as supporting maintenance, distribution and further development. To ensure the portability of the system, the generator and interpreter are implemented almost fully in Standard FORTRAN 77 on VAX/VMS at the Hahn-Meitner-Institut in Berlin. Nevertheless, there are some parts which are system dependent (I/O-operations, bit-operations and the machine dependent data representation). Until now, the generator and/or interpreter are available on:

- VAX/VMS
- VAX/ULTRIX
- IBM/CMS
- Siemens/MSP
- Siemens WS30/UNIX

Generator

The CGM generator creates either a cleartext or a character coded metafile out of a set of subroutine calls (Standard FORTRAN 77 Interface). The decision as to which of the codings shall be used is the responsibility of the user by linking the appropriate library (if both codings are provided). These subroutine calls are nearly a one-to-one mapping to the metafile elements and their parameters. Some exceptions are additional parameters (e.g. number of elements in array), an additional function to determine the file name, different subroutine names for coding dependent elements (i.e., the precision defining elements), different subroutine na-

mes for elements with parameters of type colour direct and colour indexed, etc. Furthermore VDC-coordinates must be of FORTRAN data type REAL at the interface.

The generator consists of two modules: one coding independent and the other coding dependent. The first ensures the creation of a correct metafile, i.e., the syntax must conform to ISO/DIS 8632. If an error occurs, the corresponding CGM element will not be written onto the file. The other module codes the opcodes and operands (with respect to their data types) and writes them onto the file.

Furthermore the generator uses the facility of the character coding to compress colour and point lists. That means instead of coding each single colour value, the number of repetitions of the colour value and the colour value itself are coded. This method is efficient only if many adjacent colour list elements have the same colour value. When coding point lists, normally the distances between two points (relative values) of a point list are coded. When using the optimised coding, only the increments from one coordinate position to another are coded. These increments are identified by points on a ring and are coded using the Huffman Code.

Another component which was developed by the University of Stuttgart (RUS) provides for the conversion from a GKS-Metafile (GKSM) (level 0a) into a CGM. Presently the software for converting a GKSM into a CGM reads a GKSM and generates the subroutine calls for the CGM. Because the GKSM is not standardised (it is only an appendix to the standard) there exist different implementations of the metafile,

i.e., the converter can not be applied to other implementations. Only when the interface between the GKS-kernel and the workstations (Workstation Interface) is standardised, the problems of different implementations will be solved, because the CGM can then be generated directly from the GKS by the CGM-Output Workstation[1].

Interpreter

The interpreter reads a cleartext or character coded metafile and provides a FORTRAN interface – independent of any graphical system. This interface is similar to that of the generator and easy to integrate into other graphical systems or devices. The interpreter also consists of coding-dependent (scanning of the metafile) and coding-independent (examination of the syntax, degeneration and ambiguities, etc.) modules.

The interpreter provides a multiple-workstation concept (i.e., more than one workstation may be active at one time) and the facility to skip or superimpose pictures. Furthermore the workstation viewport can be determined by the user. The interpreter gets the information from a dialog with the user at the beginning of the session.

For the representation of a CGM on a graphical device two components are provided:

- an adapter to display the CGM with the help of the Graphical Kernel System (GKS),
- an adapter to display the CGM on a laser printer (QMS Lasergrafix 1200).

The interpretation of a CGM by GKS includes some restrictions, be-

[1] Just now there are efforts within ISO to standardise the GKSM as an addendum to the CGM.

Graphic File Transfer

cause GKS does not contain the full functionality of the CGM. E.g., the CGM element COLOUR MODE may not be set to 'direct', because GKS only knows colour indices (pointer to entries in a colour table). But a CGM which was generated by GKS (level 0a) can be fully interpreted by GKS.

Furthermore, a converter has been developed which consists mainly of modules from the generator and interpreter. It converts a cleartext coded metafile into a character coded one, and vice versa.

Figure 1 shows the software components and the configuration of the generator and interpreter.

File Transfer

For the first protocol generation metafiles will be transferred with the basis service "File-Transfer" which is available in DFN. It is based on a X-25-network and a T.70 transport protocol. This File Transfer provides only for the transfer of sequential files, i.e. an access to single pictures of a metafile is not possible.

Transfer of a cleartext coded metafile

Part 4 (Cleartext Coding) of DIS 8632 allows a metafile to be coded using the internal character code of the host computer system. To maximise portability of cleartext coded metafiles between diverse systems, it is recommended to use the standard national character set based on ISO 646. In DFN it was decided to use the US version of ISO 646 (AS-CII) instead of the national version (German Reference Version) (this is also the default character set for

string parameters). This also provides an encoding which can be incorporated into an ISO 2022 text environment as a complete code.

The DFN-File Transfer provides the functionality of automatically converting *text files* from the code of the local system to that of the remote system – if they are different. So a metafile can be created, e.g. in EBCDIC on a Siemens and then transferred as a *text file* to a VAX whereby it is converted to ASCII.

Transfer of a character coded metafile

A character coded metafile can be considered as consisting of octets. Therefore the metafile may not be converted and can be transferred with the DFN-File Transfer in the *transparent* (binary) mode.

It is convenient to transfer metafiles in character coding to reduce transfer costs.

Figure 2 shows an exemplary configuration of the Graphic File Transfer. A cleartext coded metafile will be sent to host B and a character coded metafile is transferred to a plotter on host C.

Comparison of the codings

Generally when considering the three codings, large differences can be noticed with respect to the size
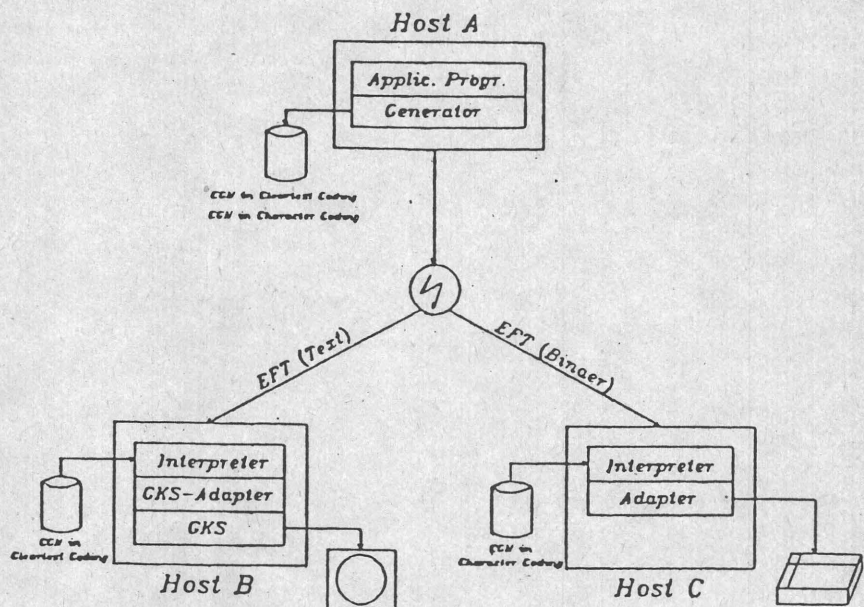

Figure 2: Exchange of metafiles

and CPU efficiency. The reason is, that the three codings have been designed for different reasons which are summarised below:

- Cleartext Coding
  Advantage: Human readability, generation and manipulation by a standard text editor.
- Character Coding
  Advantage: compact representation of data
- Binary Coding
  Advantage: optimised CPU time

for generation and interpretation

Nevertheless size and CPU efficiency of all three codings have been studied at the Hahn-Meitner Institut.

As already discussed, the binary coding is a machine oriented coding. Some of the data formats may match exactly those of some computer systems. In such cases processing is reduced very much relative to other standardised codings. Because parameter values have to start either on octet or word boundaries, this requires padding of the remaining bits with zeros. Furthermore the binary coding is a fixed length format (in contrast to the character coding). As a consequence the size of a binary coded metafile is always larger (perhaps in a few cases it is equal) in comparison to a character coded metafile.

It is easy to understand that a character coded metafile will be shorter than a binary coded metafile, because the character coding uses operands of variable length, i.e. values can be represented by the smallest number of bytes.

The comparisons demonstrate that the size of a character coded metafile can be minimised by using the facility of the character coding to code real values (especially coordinates) without exponents (if VDC coordinates are of type 'real')[2]. Some of the tests were practiced by generating a CGM out of a GKSM. Instead of coding a real value as a mantissa followed by an exponent, a default exponent of '-12' was established

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[2] The CGM element VDC REAL PRECISION contains a parameter to determine the size of a default exponent and if it shall be used.

(i.e. the smallest precision is $1/4096$). This results in a character coding, that comprises only about 60% - 80% of the size of a character coded metafile 'with exponent'. Generally, it can be stated that the size of a character coded metafile is 15% - 30% of that of a cleartext coded metafile and about 50% - 80% of a binary coded metafile.

The time for generating a metafile is the shortest for a binary coded metafile.

Figure 3 shows a comparison of the size of some metafiles (curve functions, presentations of spectra, CAD/CAM-objects, etc.)
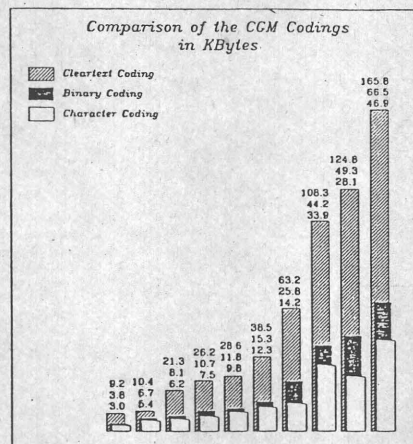

Figure 3: Comparisons of the CGM codings

Perspective

As already mentioned the ISO subcommittee TC97/SC21/WG2 will standardise the GKS Metafile as an addendum to CGM. The problem was recognised that the CGM cannot completely serve as a GKS Metafile (e.g., there is no segment concept in the CGM).

For the next protocol generation in DFN, a subset of FTAM (File Transfer, Access and Management, ISO/

DIS 8571) will be used for the Graphic File Transfer. The problem of exchanging graphical data was also recognised within ISO. Therefore liaison meetings between the subcommittees for graphics processing and application layer standards have been held.

The next task we will do is the determination of functions which are necessary to transfer graphical data (CGM, GKSM) and modeling data structures (Initial Graphics Exchange Specification (IGES), Format for the Exchange of Geometrical Information (VDAFS)) with FTAM. Futhermore it must be discussed which access structure (pictures, segments, etc.) should be provided for the exchange of graphical data.

Manuela Tesch
Hahn-Meitner Institut
BERLIN.

Aims of the ECA

The ECA is an International Association legally registered in Belgium. It is active in the field of real-time data handling and process control. Currently it has 3 main objectives:

– To support the identification and development of standards and common practices in the real-time data field
– To promote the application of such standards
– To maintain standards with which the Association becomes involved.

The realtime data handling and process control field is understood by the ECA as the field of online collection of data from experiments and industrial processes, and control of these experiments and processes in realtime.

Relations to the ESONE Committee of European Laboratories

The ECA has an older and influently sister organisation, the ESONE Committee of European Laboratories, which created the complete set of CAMAC computer interface standards. The CAMAC standards describe the interface system in terms of electrical, logical, and mechanical specifications. These include both the interface modules and their 19-in. crate housings, as well as different ways of interconnecting the housings. The ECA was initially created to promote the standards created by ESONE, and in this work it has been strongly supported by the Commission.

ESONE is comprised of members from laboratories, governmental organisations, universities, and similar non-profit-making bodies, who

The European CAMAC Association, ECA

are interested in collaborating to solve common problems related to instrumentation standards and practices in electronic systems. ESONE has 66 member institutes. In the past, the main task of ESONE was the definition of the CAMAC standards. Today most of the ESONE activities aim at the interchange of experience between members, and the definition of common practices. The work is carried out in study groups, of which the following exist:

– Advanced System Study Group (FASTBUS)
– Computer-Aided Design for Electronics Study Group (ECADE)
– VME Study Group
– Personal Computing Study Group
– Real-time Software Study Group
– Document Maintenance Study Group (Joint ESONE-ECA)

Membership and Structures

The members of the ECA come from all parts of Europe. There are personal members, institutional members, and regional association members. Regional associations exist in Denmark, England and Poland. Members represent mainly research laboratories and companies supplying hardware and software for the real-time data handling field.

Membership fees are charged for all types of membership.

The Association is administered by a Council consisting of 25 members, all elected in agreement with certain rules in order to obtain a proper national representation at the biannual General Assemblies of the Association. The Council elects a management board consisting of a chairman, 2 vice-chairmen, a secretary, and a treasurer to conduct the current activities initiated by the Council. This small group is called the Management Board. The Council of the ECA comprises 25 members coming from, inter alia, Austria, Belgium, Denmark, France, F.R.G., Hurgary, Italy, the Netherlands, Norway, Poland, Switzerland and the U.K.

History of the Association

In the years prior to 1980, the ECA concentrated on the promotion of CAMAC, also in fields outside the world of scientific laboratories, where CAMAC was born. This was done by organising conferences and by publishing. During this period 3 conferences where held in collaboration with other interested bodies, especially ESONE:

– First International Symposium on CAMAC, Luxembourg 1973
– Second International Symposium on CAMAC, Brussels 1975
– Real-time Data Handling and Process Symposium 1, Berlin 1979.

A CAMAC Product Guide was produced on a regular basis and is still being issued; it contains entries about all existing CAMAC equipment available commercially. The guide is very user friendly, because the modules are listed according to functional specifications. A bibliography of articles on the use of

CAMAC was also produced. During this period the Association had two working groups, one for Analogue Signal Handling in CAMAC and one for Medical Applications of CAMAC.

From about 1980, when CAMAC was firmly established, the main activity shifted to the identification of areas, where prestandardisation and common practices in the real-time data handling field were needed by the members. A number of Conferences with the above mentioned aim was organised, often in collaboration with ESONE and the European Workshop on Industrial Computing Systems (EWICS), including:

- Real-time Data Handling and Process Control (II) Symposium, Versailles 1982.
- European Seminar on Local Area Networks, RTS83/1, Berlin, May 1983.
- European Workshop on Local Area Networks, RTS83/2, Brussels, November 1983.

The last two formed a successful forum for discussions about local area networks at the time of their introduction in many research institutes.

In 1983 work on a "Guide of Internationally Recognised Hardware Interfaces" started. The goal was to published a guide with an introduction to all existing computer interface standards with sufficient information for readers to make a choice between available possibilities for their current projects. The guide would also contain a tutorial on interfaces.

For CAMAC the specifications were completely revised by the Document Maintenance Study Group, which operates jointly with ESONE, and the revised version was published as EUR8500 Vol. 1 and 2. It is worth while mentioning

The European CAMAC Association, ECA

that the CAMAC specifications have now been IEC standards for some years.

Current Work under Contract with the CEC

After a very quiet period from 1983 to 1985, the ECA resumed its work under a contract with the CEC covering a number of activities.

Two seminars have been organised:

- Portable Software for Microprocessors, Brussels 1986.
- Standards and Interfaces in Personal Computing, Brussels 1987.

The first one of these was a milestone on the way to the creation of a very vital study group in ESONE on this topic. The group is at present collecting information on existing systems, and a survey paper is planned. The next step will be to define a set of minimum requirements for future systems.

The earlier mentioned "Guide to Internationally Recognised Hardware Interfaces" was completed and will appear soon as an EUR report. The publication of the CAMAC Product Guide was continued, because there are still many new products being developed.

Initial steps have been taken with ESONE to promote and possibly

support the maintenance of the IEEE960 (FASTBUS) standard which is being applied at an increasing rate, mostly in research laboratories.

The Short-Term Future of the ECA

The current contract with the CEC will expire at the end of 1987, and discussions have recently begun between the Association and the Commission on ECA's future activities. Some possible events during the next two years which the Association is considering include two conferences and continuation of some of the standards maintenance work. The ECA has also consulted CEN and CENELEC about possible contributions to their activities in the real-time data handling field, and there is a hope that these initial contacts may lead to a fruitful collaboration.

A condition for the success of the plans is, first of all, a committed membership of the Association. At a recent ECA general assembly the good hopes for the future were confirmed optimistically by a very active discussion between the members, the Council, and the Management Board about the program for the coming years.

The latest main event was a combined meeting in Paris from September 29 to October 2, 1987: ECA had a Council meeting and ESONE had its Annual General Assembly including a CAD seminar and technical presentations of activities of member laboratories.

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COSINE NEWS

Cooperation for Open systems Interconnection Networking in Europe.

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

1987 COSINE Workshop

Following the success of the 1986 COSINE Workshop held by the Commission and RARE from the 17-19th November in Brussels, and the entry into force of the COSINE Specification Phase on the 1st July this year, the 2nd COSINE Workshop, organised by the Commission and the COSINE Policy Group Bureau, was held in Brussels on the 3rd and 4th November.

The main objective of the workshop was to familiarise a wider body of people responsible for research as well as those responsible for product and service policy and planning from suppliers and telecommunications operators with the project, with its aims and with the main criteria which are at present shaping its specifications, and to discuss the role and responsibility of all involved in the later implementation phase of COSINE.

The program was as follows:

Session 1 – The Purpose of COSINE
Chairman: Mr. H. Hünke

The COSINE project	– Dr. P.A.J. Tindemans
The Commission view of COSINE	– Mr. M. Carpentier
The COSINE functions	– Mr. K. Ullmann
The Users' view:	
Euromath	– Prof. F. Topsoe
Chemical Industry Representative	

Session 2 – Implementation of COSINE (1)
Chairman: Mr. J. Martin-Löf

Overview of OSI products and standards	– RARE project team
The suppliers' view	– Mr. B. Millis
PTT/PTO/RPOA plans	– CEPT-CAC Representative
Panel discussion on manufacturers'	**Panel members**
plans, future availability of OSI	– Mr. H. Hünke
products etc.	– Mr. J. Martin-Löf
	– Mr. B. Millis
	– Dr. P.A.J. Tindemans
	– CEPT-CAC Representative
	– User Representative

Session 3 – Implementation of COSINE (2)
Chairman: Mr. K.A. Bartlett

Proposed federative organisation for the Implementation Phase	– Mr. N.K. Newman
The likely shape of the Implementation Phase	– Dr. J.S. Beale
Discussion on issues and timescales, each proceded by a short introduction:	
Conformance Testing Services	– Miss G. Efthymiopoulou
Charging and accounting issues	– Dr. M. Wilhelm
The Procurement Process	– Mr. N. Lamb
Transition issues	– Dr. J.S. Hutton
Addressing issues	– Mr. B. Mahon

Session 4 – The Effect of COSINE
Chairman: Dr. P.A.J. Tindemans

Timescales	– Mr. K.A. Bartlett
Panel discussion on the importance	**Panel members**
of COSINE to European IT industrial	– Mr. K.A. Bartlett
strategy	– Mr. H. Hünke
	– Mr. B. Millis
	– Dr. P.A.J. Tindemans
	– CEPT Representative

Progress in RARE

The three main OSI applications on which COSINE and RARE are focusing their efforts today are: terminal access through triple X protocols, electronic mail via X-400 and file transfer using FTAM. Directory services such as electronic 'Yellow Pages' will function as the link between all these facilities and users. In this issue of IES/COSINE News, we will have a closer look a progress in the RARE Working Groups concerned with message handling and file transfer.

COSINE Focusses on European Networking

The first public File Transfer Access and Management (FTAM) demonstration based on the OSI standards coincided with the official opening of the RARE Secretariat in Amsterdam. RARE is the prime technical partner of COSINE and is also its contractor. Some days before this event, the editors of IES/COSINE News had an interview with James Hutton, Secretary-General of RARE, and his colleague Rob Brinkhuijsen of James Martin Associates. The topic of conversation was the background to the work which the RARE people are doing for COSINE. The result of their discussion will be of interest to all IES/COSINE News readers involved in computer communications, not only at the European level, but also within their own corridors.

From the very beginning it was the intention of RARE, based on user experience, to help the translation of an idea – standardised communication facilities for researchers in Europe and other regions – into reality. The work which RARE does for COSINE at present – specifying products and services based on OSI in the first phase and preparing them for implementation in the second phase – is done on a semi-voluntary basis, because RARE is an association with limited central resources. Therefore RARE depends on the energy of a wide network of specialists, with people scattered all over Europe. "That is why", says James Hutton, "we welcome ideas and of course the efforts of everyone who can help us with this exercise. The specification is a matter of refining ideas which already exist in earlier documents. In these documents details have to be filled out because some of the ideas were only prelimi-

nary. These have to be critically evaluated; fresh ones have to be developed and combined with previous work. Transforming fragmented ideas into an integrated European plan is an enormous task. However, the big intellectual jump has already been taken since the requirements of OSI standards and the wishes of users are already known to a large extent." Rob Brinkhuijsen adds: "Meetings of the RARE working groups are much like brainstorming sessions. And when brains storm, they storm in all directions. RARE has to collect these separate ideas which are generated all over Europe. But the ideas themselves do not have to be invented; they have to be sorted out and combined. Then it is up to the engineers to fill in the technical details."

A jigsaw puzzle of networks

Rob Brinkhuijsen sees that, "in many countries networks have been developed

already, whereas in others there are hardly any communications facilities. The job that has to be done here and now is to carry the ideas from individuals in separate countries on to a scale larger than that in the United States or Japan. If you take a closer look at COSINE with respect to inntterconnected networks, you see a jigsaw puzzle. Some pieces are already coloured and put in place, the shape of others is not even known. Putting the pieces together is the big challenge for COSINE. But certainly even when the technical specifications are ready it will require effort to implement them. As James Hutton said, a lot of the technical work has already been done. The organisational, managerial and political job we are facing in the implementation task is what we are getting ready for now. On an international scale, some pieces of the puzzle are known already. There is not yet a European standardised network; separate ones must be interconnected." James Hutton: "I do not want to say that in one country they do a good job and in another they do not. We just have to face the fact that the degree of development in individual countries differs. Therefore, a series of support actions has to be undertaken. The need for information sources and gateway technology in individual countries must be established. Furthermore it has to be determined which services are required with what priorities, in order to make implementation possible. Now you understand why technical problems can be solved more easily than political, organisational and managerial ones."

Market pull effect of COSINE:

Research Community is Valuable Pilot Environment for Information Technology Industry

Reinforcing the development of standards and specifications for computer communication in Europe is an important action line of the Commission of the European Com-

munities (CEC). A clear testimony in this respect is the publication by the CEC of the Green Paper* on the development of the

*See IES NEWS no. 10

common market for telecommunications services and equipment. The Eureka project COSINE, in which the CEC is participating, acts as a driving force creating a market pull in both research and business environments, for commercially available products that adhere to the OSI Reference Model.

Keeping abreast of developments in information and telecommunications technologies is extremely important if Europe is to ensure the future competitiveness of its industry and information markets. Statistics make this very clear: no Community Member State currently represents more than 6 percent of the world telecommunications market – whereas the United States has more than 35 percent and Japan 11 percent. But taken as a whole, the Community's telecommunications market represents a share of more than 20 percent. The problem Europe has to cope with is the transnational organisation of the data-communications infrastructures. This will strongly influence the economic, social and cultural space in the future, as the railways did in the nineteenth century.

Enormous potential market for OSI-products

Academics, researchers and scientists have a great responsibility in this transnational aspect of the realisation of the Internal Market by 1992. They traditionally belong to an early minority. Their circles and communities are where the action is: developing, experimenting and using new products and services. Europe counts several millions of students, scientists and university staff. The synergy in COSINE results in development of new products and services by the information technology suppliers on one condition only: that they can be sure about adequate demand. After this has been achieved, a market place of the European business community will have been created.

In another way the research community has a great responsibility. It is not only an enormous potential market for OSI-products, it also functions as a valuable pilot-environment for the information technology industry. Researchers, academics and scientists

work with prototype products and services, in close cooperation with their suppliers. Experiences gained in pilot environments are extremely valuable to manufacturers who are sounding out how to create new markets. Crucial for future economic growth of the information technology industry are the innovative and creative characteristics of the products and services they can deliver. For the European market as a whole, this strongly determines the capacity of the economy both to generate and to use effectively the single most important factor of modern production: knowledge, a commodity which can be traded and exchanged.

COSINE speeds up development and usage

Acting as an intermediary force between research communities, governmental institutions, the industry and international standardisation bodies, COSINE is trying to speed up development and usage of OSI-products. Certainly a difficult task, but it can be done. In several countries, public procurement policies for OSI-products are being

devised. Such policy measures already have resulted in specific product requirements for major suppliers of university communities. Governments hand over specifications to network managers, telling them what the ground rules are: OSI-standards. All suppliers are required to follow these standards. As a result, it will become increasingly expensive to develop products for proprietary standards. Also, maintenace of such products will become increasingly costly.

However, vendors may promote their own networks with gateway solutions to other environments. One example shows how a gateway from a proprietary network to X-400 is offered. But in this solution, X-400 stops once the user is inside the proprietary network. From that point the advantages of X-400 are lost. A real infrastructure of open, vendor-independent communications facilities has still to be created.

One role of the CEC is to establish the homogeneous European market of tomorrow. At first it did so by creating a technology push. Now, it adds an element of market pull to its stimulating efforts. Through COSINE and RARE, the CEC is actively contributing to an institutional and coordinating framework that starts from the user's perspective.

"All European countries will join X-400 international network."

Alf Hansen, chairman of RARE Working Group MHS

The international pilot project for an X-400 message handling service is operational in sixteen countries now. Also, gateways to the most important non X-400 networks have been established. At the moment, hundreds of institutions and thousands of user can be reached through the service. X-400 is one of the three main OSI-services COSINE is focusing on in the current phase of the project. With the backing of the new contract with the Commission of the European Communities, the RARE Working Group 1 for Message Handling Services (MHS) is well equipped to stimu-

late and monitor X-400 implementations all over Europe.

"All the European countries will join the X-400 international network." This is the conviction of Alf Hansen of RUNIT in Norway, chairman of the RARE Working Group on Message Handling Systems. Among the sixteen countries now participating in an operational pilot service, non-European countries also include: Canada, Australia and South Korea. Contacts with the international academic networks include EARN, BITNET, ARPA and EUNET.

Moreover, the X-400 project of RARE encompasses contacts with national non X-400 networks, such as those systems working according to JANET or the 'Grey Book' in the United Kingdom and the identification of gateways into them. The Grey Book is a protocol for electronic mail that has been implemented in about twenty operating systems. It is running on some 700 computer systems. It is expected that Belgium, the Netherlands and Yugoslavia are the next countries to join this trend. In these countries, no X-400 service nodes are as yet operational.

Traffic increases

Alf Hansen says that the new standardised communication service meets a real need: "We see that international traffic is increasing heavily now that X-400 services have become more widespread. In Norway we offer both X-400 and other message services to the same users. They prefer X-400 because of its better connectivity. In most cases, participation in the X-400 pilot service occurs on a very informal basis. Only in some countries has participation been supported by a high-level decision. West Germany for example has a very systematic approach to X-400 message handling. Also in the United Kingdom and in France, activities have reached a large scale. For the United Kingdom a plan has been draw up to migrate the Grey Book towards X-400, without disturbing the quality of service for users of the current facilities."

Awaiting further progress in standardisation work, the international X-400 message handling service is developing step by step. Thousands of network users can contact each other through the pilot service today. But routing and addressing are parts of the service that still need to be improved. Individual organisations that take part in the international message handling system run X-400 on their own machines, integrated with local computing functions. At this moment, it is not yet possible to address users on different locations directly. A hierarchical routing scheme is used on the international level. All messages are routed to a 'well known' entry point in each country. Hansen: "However, we want to move to direct routing. But therefore we need better guidelines for interconnection of nodes. Here is the link of our work to the Working Group on Directory services, since we need to coordinate our results and agreements." International standards for directory services are coming up, but have not yet reached a stage comparable to those for message handling. One of the advantages of an addressing method that follows the X-400 pattern is that each individual address can be used from wherever you are. In contrast, the EARN network requires different procedures for contacting addresses, depending on the location.

"Our goal is to include many X-400 products in the international service and show that the addressing problem is solved. Some X-400 implementations may be using different procedures. CEN/CENELEC has set a temporary European norm for an X-400 functional standard. The definitive European Norm of CEN/CENELEC will not be launched until the Autumn of 1988, when the 1988 version of the basic X-400 recommendations will be available, based on the 1984 version of the X-400 recommendations, the European Norm will be adjusted," says Alf Hansen.

Gateways: temporary necessity

Gateways between services can be an obstacle to standardisation. They are, however, a necessity for users of existing networks. Therefore, RARE steps in to provide guidelines for gateways in order to maintain a level of uniformity. Alf Hansen notes: "COSINE started out with the position that only standardised services would be supported and not gateways. This has changed a little. The reason is that if we cannot offer gateways in existing networks, only very few users will be interested in an X-400 service. Now we want connectivity both inside and outside. EARN plans to migrate from IBM-specific protocols to X-400. While waiting, we have to provide gateways." Hansen points out how the RARE Working Group 1 has agreed on a method for building gateways. The document RFC 987 specifies how addressing in X-400 and in other services will match each other. The first gateways according to this method have been installed in the United Kingdom, France and West Germany.

There is no doubt about RARE's commitment to standardised solutions. "There is always a loss of service quality when you pass a gateway. Gateway solutions tend to be of an informal nature, with much uncertainty about responsibilities. Communication costs can easily turn out to be higher and there are always delays in response time." Hansen mentions how two sites in Norway communicate with each other through a gateway facility with CERN in Switzerland, an example which is not an exception. "On the other hand, there will always be gateways by definition. New services will come up claiming to be much better than the existing and standardised ones, thus creating a continuous need for new gateways."

COST 11ter Conference to take place in Vienna in April 1988

The European Action in Teleinformatics COST 11ter is organising a European Teleinformatics Conference, EUTECO 88, which is to be held in Vienna, Austria, from April 20 to 22, 1988. COST 11ter is a concerted research action project in the field of teleinformatics and is part of the European Community Multiannual Program (1984-1986) in the field of data processing. COST11ter is executed by the Commission of the European Communities (DG XIII) with the assistance of the COST 11ter Concertation Committee.

The objective of EUTECO 88 is to disseminate the scientific information generated by COST11ter and to compare it to other research work in the teleinformatics field in Europe and to discuss future directions of research in this area.

There will be plenary session where invited speakers will present trends in teleinformatics research and where current work and perspectives of standardisation will be discussed; parallel sessions where research work from European laboratories in specific topical areas will be presented; and panel sessions where future directions in teleinformatics research will be discussed.

The topic areas will be:
– Computer-mediated human communication
  Coordinators: H. Santo (GMD, FRG), H. Smith (Univ. of Nottingham, UK).
– Management of distributed systems; OSI and distributed operating system's aspect.
  Coordinators: A. Langsford (AERE, Harwell, UK), C. Horn (Trinity College, Dublin, IRL)
– Architectural issues in distributed systems
  Coordinator: H. Zimmerman (Chorus Systemes, F)
– Security issues in distributed systems
  Coordinators: S. Muftic (University of Sarajevo, YU), D. Maroulis (The Greek Computer Society, Athens, GR)
– Human factors in telematics
  Coordinators: L. G. van der Veer (Free University of Amsterdam, NL), J. Ekberg (Technical Research Centre of Finland, Helsinki, SF)
  – Distribution aspects in generalised databases including issues of knowledge distribution.
  Coordinators: E. Neuhold (GMD, FRG), W. Litwin (INRIA, F)
– Formal description techniques for distributed systems
  Coordinators: B. Pehrson (Swedish Institute for Computer Science), A. Lombardo (Politechnico di Milano, I)
– High speed WAN communication: applications in teleinformatics
  Coordinator: A. Kundig (ETH Zurich, CH)

Authors are invited to submit papers on the topical areas above.
– Contributions of a more general nature which could be presented in the plenary sessions would also be welcomed. The timetable is as follows:
Dec. 7, 1987: full draft version of papers required
Dec. 22, 1987: notification of acceptance
Jan. 20, 1988: Camera-ready papers required.

The address for the submission of papers and/or for general enquiries is:

EUTECO 88
R. Speth
CEC DG XIII, COST 11ter
200, rue de la Loi
B-1049 Brussels (Beglium)
Tel.: +32 2 236.04.16
Tlx.: 21877 COMEU B
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and EuroKom/Dublin:
Rolf Speth

Council approval for TEDIS

TEDIS, the CEC program on trade electronic data interchange systems, received approval from the Council of the European Communities on 5 October 1987.

The program aims to promote the free movement of goods and services throughout the member states and to foster cooperation between European companies by easing the circulation of information.

By promoting compatibility between national approaches to electronic data interchange and attempting to cut down on fragmentation, TEDIS aims to create an environment where market unity can flourish.

TEDIS goes one step further than previous CEC projects such as INSIS and CADDIA by extending the concept of a standardised approach to all users, whether in commerce, industry or government.

For further information on the TEDIS program please contact:

EMILE PEETERS
CEC/DG XIII
J-37
200, rue de la Loi
1049 Brussels

Book Reviews

European Technological Collaboration.
Sharp, Margaret and Shearman, Claire.
London: Routledge & Kegan Paul, 1987, 122 pp.

This slim volume, issued as a Chatham House Paper by the Royal Institute of International Affairs, is a must for all who have European technological future at their hearts. The main theme is the question of whether and how far European governments should seek actively to promote technological collaboration within Europe in the light of growing competition in high technology with a simultaneous shortening of product cycles and escalation in development costs and risks.

There is an excellent review of the history of European technological collaboration from the inception of the Community, with clear definitions of precompetitive R & D cooperation, the technology gap and all the other buzz words and phrases so glibly used. Reasons are given for the apparent failure of early attempts to set up mechanisms for collaboration, but even these are shown to have sown the seeds for the present renewal of Community efforts, spearheaded by the ESPRIT initiative. The evolution of this and its impact in leading to the Framework Program are described in detail and supported by much evidence of the successes so far attained. The effects of the ESPRIT work, especially of IES, on European standardisation activities is dealt with at length, and the reasons for Commission support of OSI in preference to SNA are discussed.

In dealing with technological collaboration in a wider context, the authors quite rightly point out, that there is no universal formula for success: this will depend on an appropriate blend of complementary assets and interests, and participation in some ventures by nonEuropean partners should not be considered surprising or unwelcome. What is looked for are "horses for courses" and industry looks to governments and the Community to provide a framework and instruments which will help in the search for suitable partners in collaborative ventures and in a consummation of the result. (Events overtake the written word, and Eurocontact, an IES service, is the answer to the first of these aims). The EUREKA initiative is also included in the discussion, as are Community programs such as BRITE, RACE, COMETT.

Whilst noting that some European companies resorted to U.S. partners after failing to find suitable ones in Europe (the Olivetti and Philips agreements with AT & T, for example), the beneficial results of Community actions are stressed: the example there is the classical agreement with IBM, which requires the latter to provide sufficient interface information within 4 months of announcing a new computer to allow European manufacturers to attach both hard and software products of their design; to disclose details of the SNA; and to expend effort in matching SNA to OSI standards. A further important point is the provision of allowing users to purchase IBM main frames without data storage memory. The benefits of this agreement are shown to have had a considerable effect.

There are welcome definite conclusions given in the publication which lives up to the high standards of Chatham House. In summary these are:

Collaboration is not a panacea for all of Europe's high-technology problems, but it should be supported wholeheartedly, with decisions on initiatives in R & D taken on their own merits and "not subordinated to long-running problems of agricultural economics".

"Let the Community be just as ready as the U.S. or Japan to act on occasion in a self-interested manner".

"Reinforce strongly the measures taken to secure the completition of the internal market, including those involving public procurement, and work for the rapid achievement of unified standards and regulations in the high-technology sectors".

"Combine these measures with a tough anti-trust stance with involves both a hawklike watch on tendencies towards cartelisation and surveillance of abuse of dominant poisitions by indigenous and multinational firms alike".

"Find some means whereby some of Europe's minnows grow into bigger fish".

"Finally, and most importantly, within the broader national and European framework, adopt policies which are complementary to these collaborative programs...".

The volume is supplemented by an excellent collection of statistical data, which show that Europe is not necessarily behind its competitors in all areas, but there is no time for complacency. Priced at £ 5.95 (i.e. less than 9 ECUs), it is a bargain.

**Computer Strategies 1990-9:
Technologies - Costs - Markets**
Anderla, Georges
and Dunning, Anthony
Chichester: John Wiley & Sons,
1987, 299 pp.

"Within five years the computer products that are currently the market leaders will be definitely on the way out. By 1995, all computer and information systems being installed now will have become obsolete. Such is the iron law of innovation."

This is the provocative opening shot of this far-reaching book which would give much food for thought as it is, but coming from Georges Anderla, whose 1973 "Information in 1985" set the cat among the pigeons, it demands attention. And further reading shows, this is more than justified. Reading almost like a who-done-it, one cannot put the book down, once started. It is in parts a real crime story – the ups and downs of even major suppliers, the failures to grasp opportunities or to abandon cul-de-sacs until hitting the end wall certainly suggest that many managements should be in the dock. The ease with which newcomers are shown to have captured a market niche, only to loose that position just as quickly, makes fascinating reading. The only apparent victors appear to be in the far east, and even there the portents are not all good.

Each of the three sections, Anatomy of Costs, Dynamics of Marketing, and Megatrends in Technology, is divided into three chapters, each of which has a section of conclusions and outlook. Any single paragraph of these is hard hitting and will cause agonising reappraisals where the cap is found to fit too well. No easy solutions are offered, but that does not mean that the book is not optimistic. Thus computer penetration is forecast to have been pushed to 40-50% of the population in industrial nations from the present 5-10%

level. This will be the result of a combination of new technologies and improved vendor strategies. There are many hints, suggestions and case histories, serving both as a warning and an example, to suggest how this figure can be reached.

There is relatively little on communications to be found in the book, but some of this makes depressing reading; A comparison of computing and telecommunication costs over the last 20 years shows that the former have fallen by a factor of 100, whilst the latter have reduced to only one-sixth, and forecasts suggest that this divergent trend will be accelerated in the future.

It is not surprising to find a detailed discussion of the 1973 Tomita report "The volume of information flow and the quantum evaluation of media" which has formed the basis of Japanese strategies – its impact is compared which the conventional (western) recipe for marketing policies and philosophies. Thus instead of sticking to traditional priority markets such as banking, insurance, retailing etc., the focus should be on fast-growing markets and development of data transmission facilities and work directed towards replacing traditional postal services by electronic mail, fax, etc.

The scope of Anderla's and Dunning's work is difficult to summarise concisely, but the wide nature can be illustrated by another quote.

"For instance, watching one-way television with its set programs for several hours every day is likely in a matter of a single decade to be looked upon as an anachronism and replaced by à la carte entertainment, including digital three-dimensional television to a limited extent, plus flashback facilities, disconnect and replay, sandwiched-in file or encyclopaedia searching, file merging on the spot, person-to-person communication/interrogation, etc. – all that

at will – plus many other niceties we have difficulty imagining today."

This subject is also addressed in the general conclusions where it is lamented that although only 5% of human endeavour is spent on productive work, there have been so far surprisingly few successful applications of computing to education, health care, leisure, creativity and other unrewarded activities: surprising for an economic sector accounting for 5% of the aggregated GNP of the free world with an expected increase to 8% over the next decade.

Any reviewer is allowed one complaint – this one misses a consolidated bibliography. There is one more question – when will the second edition appear, reporting on the exploitation of the many ideas and suggestions. The price of £ 24.95 (36 ECUs) makes this an affordable must on every desk.

The CEFIC Electronic Data Interchange Project

CEFIC (Conseil Européen des Fédérations de l'Industrie Chimique), by announcing its decision to take a first step towards creating a paperless trading environment by launching its EDI (Electronic Data Interchange) project, is proof of the great interest and support for the Community initiative, TEDIS (see IES News N° 9, pg 13). Following a special conference to discuss the proposed innovations, a task force was set up to draft specific proposals for the new project. A Steering Committee and four working groups (Legal Issues, Network / Computering Services, Messages and Trials) have been set up by the participants which include the respective national federations from Belgium, Germany, France, The Netherlands and Switzerland and large companies such as Monsanto, Exxon, Ciba-Geigy, Dow, Bayer, ICI, Shell, Du Pont, Rhone-Poulenc, Autochem, Montedison, Enichem, Akzo, etc. DG XIII is also represented by an observer.

A timetable (see Figure 1) has been drawn up which calls for recommendations from the working groups (other than Trials) by early autumn 1987 and evaluations by summer 1988, which should enable CEFIC to decide whether it should continue to play a coordinating role in EDI.

It will be of interest to look at the roles of the working groups in greater details. The remit of the Legal Issues group is to establish the legal framework within which electronic communication of trade data is to take place, with priority given to the relationship between trading partners, whilst that between trading partners and administrations (e.g. customs) will be examined at a later stage. Considering electronic data exchange to differ from other methods of communication of trade data, only in the actual means of communication and without implications for subsequent commercial transactions, the approach adopted was to look for differences from traditional exchange of documents and to establish rules for points where such divergences exist. The uniform rules of conduct for interchange of trade data by teletransmission (UNCID) of the International Chamber of Commerce will be used as a basis for the rules to be worked out by CEFIC and will be adapted where necessary. These rules should apply first for the duration of the trials. The present draft project contains provisions relating to conformity of infrastructures and messages, confirmation of messages, mistakes, data storage, evidence by printouts and handling of disputes.

The Network and Computing Services Working Party is looking for a means of exchange which will satisfy the needs of the environment in which members operate. A typical CEFIC member may have exchange dealings with more than 1.000 trading partners of varying size throughout Western Europe. The means of information exchange must therefore be widely available, easy to implement, meet throughput requirements, and be cost-effective and reliable. Other aspects of importance are control, traceability and auditability. At present, the group considers that there is no commonly available infrastructure throughout Europe to meet CEFIC's exchange requirements.

Key questions which have to be resolved are whether document exchange is to be based directly on telephone and/or X-25 packet services, thus leaving trading partners to arrange for all service elements and
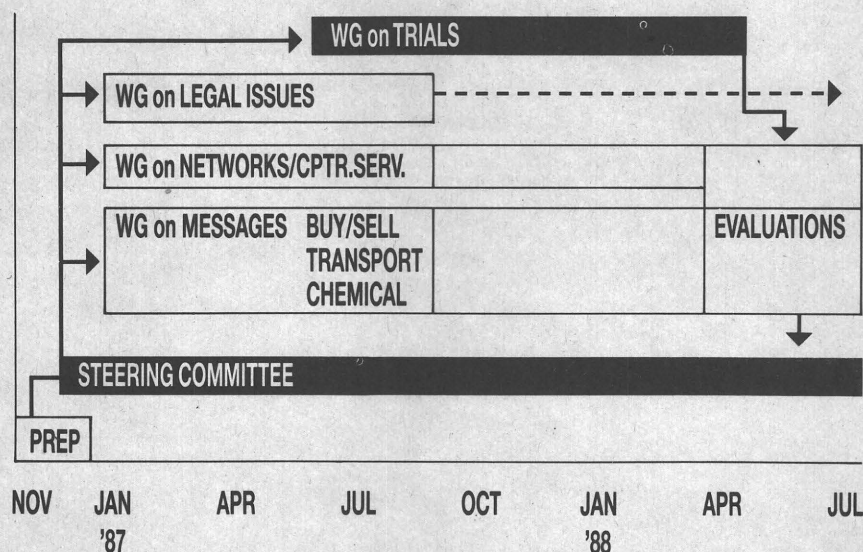
CEFIC EDI PROPOSAL
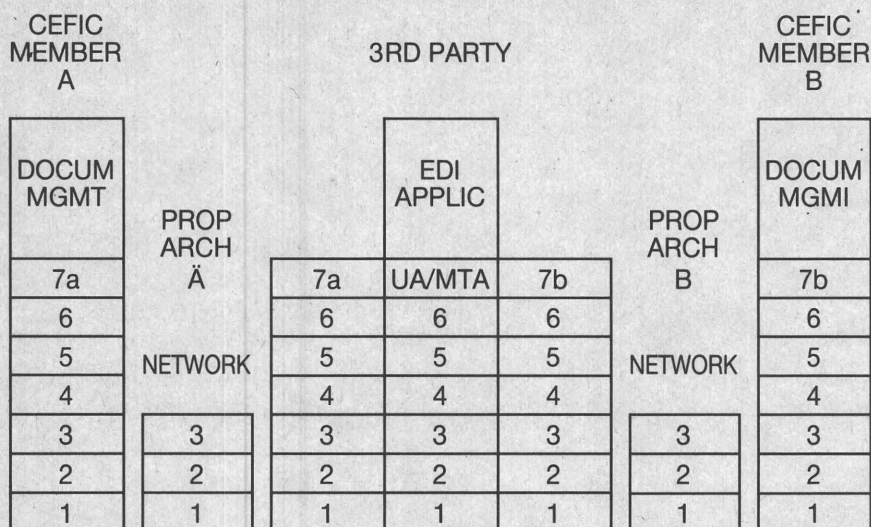

Figure 1

16

GENERAL ACCESS SCENARIO

CEFIC MEMBER A	PROP ARCH Ä	3RD PARTY			PROP ARCH B	CEFIC MEMBER B
DOCUM MGMT		EDI APPLIC				DOCUM MGMI
7a		7a	UA/MTA	7b		7b
6		6	6	6		6
5	NETWORK	5	5	5	NETWORK	5
4		4	4	4		4
3	3	3	3	3	3	3
2	2	2	2	2	2	2
1	1	1	1	1	1	1

Figure 2

coordination; or to resort to the same switched telephone and X-25 services to access and deposit documents with a middleman, who can clear these, provide service and function as a translator in the event of differing document or exchange standards.

The other fundamental problem to be settled is whether CEFIC should promote a particular standard for effecting the exchange of the standardised document. Currently little attention has been given to this aspect of electronic document exchange, although proposals exist for a standardised protocol with several variants available. Choice is still left at present to the individual industrial sectors, service providers and vendors. Irrespective of whether trade ultimately will be direct or through a clearing house, a single exchange standard means readily available software and hardware; it would also assure ease of access to different clearing houses guaranteeing a competitive environment; it would also provide bridges for linking various clearing houses, and join clearing houses and direct trading partners.

For the present trials, CEFIC has decided to operate through a privately owned but publicly available clearing house (see Figure 2) providing a value-added store and forward message-handling service to individual subscribers. One major stipulation is the use of the OSI model as a basis for all exchanges. A further decision is to use standard methods based on the emerging X-400 standard, but common non-X-400 exchanges will be provided and that in such a manner that the particular means of exchange between members are invisible to another. Finally, direct exchange, bypassing the clearing house will be valid using the same technical implementation.

The project has now reached the practical implementation stage and enters the first phase of trial. The General Electric Information Services – GEISCO – have been selected as the single clearinghouse for the CEFIC EDI trial, based on GE's EDI-EXPRESS system, designed to facilitate the electronic exchange of business documents e.g. invoices, purchase orders, etc. between trading partners. However,

future EDI activities will only be decided upon once an assessment is made of the success obtained in the project.

The trial will provide access to the EDI Service in several European countries, i.e. Belgium, France, Germany, Italy, Spain, Switzerland, the Netherlands and the United Kingdom.

Of particular note in the service selected is the use of X-400 Message Handling Service across Europe as a carrier for EDI documents. In this respect, the CEFIC EDI Project is the first major implementation to employ both EDIFACT and X-400 standards.

Each of the participants in the project will access the EDI-EXPRESS service via GE's worldwide network services, using a variety of access methods and protocols. The use of the emerging X-400 standards promotes the growth of an environment where multiple service providers will be easily accessible by the private user.

The Messages group started its deliberations from the known usage of computers in the chemical industry over the past 30 years to improve operational efficiency and reduce administrative overheads. Strangely, little attention had been given to automating communication with customers, suppliers or exporters. Paper documents and postal services are still the cumbersome, costly, time-consuming and error prone means of communication. One estimate has it that a single export transaction involves 27 different organisations and 60 documents with 300 copies. The aim now is to use EDI to increase efficiency and raise competiveness with American and other companies. A prerequisite for EDI is international agreement to a data standard so that a computer-despatched message allows the receiving machine to know what in-

formation is being handled, where it comes from and what further processing is needed. CEFIC in developing such standards is using earlier work by the U.N.E.C.E., the American Standards Institute, and ISO. Their EDIFACT standard will from the basis of the CEFIC message standards. This work is actively supported by help from DG XIII and DG XXI, and much progress has been made with the invoice, purchase order, despatch advice, quality reporting and hazard information modules. It is hoped that the necessary detailed work and documentation of the electronic messages needed to support the customer/supplier transaction can be completed to allow the practical trials to commence in September. Other industrial sectors will undoubtedly benefit from the pioneering work done by CEFIC in this area.

Based on information
supplied by CEFIC

Futher News about TEDIS

The article on TEDIS in issue No. 9 of IES NEWS, p. 13, appears to have been the tip of an iceberg – there is much national and international activity ongoing in this area – not surprising considering the considerable economies which are in prospect. Typical efforts in hand are the special Joint Committee of the International Chamber of Commerce (ICC) which has agreed Draft Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission (UNCID). Serving on the Committee were representatives from serveral ICC Commissions; the United Nations Commission on International Trade Law (UNCITRAL); the Customs Cooperation Council (CCC); the International Standards Organisation (ISO); the Organisation for Economic Cooperation and Development (OECD); the United Nations Commission for Europe (ECE) and the Commission of the European Community. The rules have been introduced in response to the need to create the tools that will make electronic interchange of data in international trade a secure, effective and cheap alternative to existing paper documentation and procedures. These currently cost as much as ten percent of the goods' value. The UNCID Rules represent an attempt by all the international agencies to get together to agree on a single framework. They are intended to be complementary to the work of UNCITRAL and the CCC, both of which are currently investigating particular aspects of the legal implications of electronic trade data interchange. The considerations adopted by the Committee in drawing up the draft proposals included recognition that the Rules should:

* Facilitate the use of electronic trade data interchange through the establishment of an agreed code of conduct between those engaged in such transmission.

* Apply only to the interchange of data and not the substance of trade data messages transmitted.

* Be built on the use of the international standards organisation and other internationally accepted standards.

* Deal with questions of security, verification and confirmation, authentification of communicating parties and logging and storage of data.

* Establish a focal point for interpretation that might enhance a harmonised international understanding and therefore use of the code.

The Draft Rules are contained in Document N° 374/10, supported by an explanatory note of the Special Joint Committee in Document N° 374/9. For further information contact ICC United Kingdom, Centre Point, 103 Oxford Street, London WC 1A 1QB.

A further development is reported from the public sector in the U.K.

Thirteen of the U.K.'s Electricity Boards have signed contracts to use the Tradanet service operated by International Network Services (INS) Ltd, the joint venture company announced by ICL and Geisco in January. The Electricity Boards are the first public utility to use an EDI (Electronic Data Interchange) service.

Tradanet will enable the Boards to link their computers with those of their suppliers to allow trading documents, like orders and invoices, to be exchanged electronically.

The Boards and their suppliers use a wide variety of computers including DEC VAX, Honeywell, Hewlett-Packard and ICL equipment. All these, and many others, can be connected to Tradanet using each organisation's preferred communications "protocol", such as X-25, C 03, 2780, 3780 and SNA/SDLC. Protocol conversion is an integral feature of the Tradanet service. The Boards believe using Tradanet will allow them to make significant improvements to the level of service they provide to their customers.

The Eusidic Survey of Public Data Networks

For the second year running, Eusidic has carried out an extensive Europe-wide survey focussing on public data network calls. Data were collected during one week in January. Compared to 1986, there was a slight overall improvement: in that year, 30.73% of the 3.436 calls recorded failed, whilst this year only 29% of the 5.223 calls did not reach their target. There are again wide national variations in call failure rate, both as regards originating country and target country. Thus, Norway reported an overall failure rate of 17% (but 42% of calls to Sweden failed), whilst both Spain and Italy had failure rates in excess of 40%. Germany appeared the worst country to call overall, although other country pairs also posed problems (e.g. Spain to Luxembourg with 34 out of 62 calls failing). Looking at the 1523 failed calls, suggested that over 1.000 involved network problems which could not be analysed in greater detail as to actual cause. Participants in the survey were asked to comment on PTT support and reactions: of the respondents to this question, two-thirds felt that help was available from the PTTs: here the biggest complaint was the length of time taken to obtain help, or even an answer.

The Eusidic survey respondees are the major customers of the future and their satisfaction should be a high priority item in the assessment by the PTT's with respect in particular to the achieved quality of service.

The average user wants a reliable and efficient service without too many frills, but with the knowledge that if there are problems, response will be speedy and courteous. Those of us who have tried to obtain help, know of the wide variations in service from nil on a Sunday afternoon to prompt on Monday morning. All said and done, Europe is still a better place than the U.S. in some respects: would any European PTT dare to attempt to impose a charge of $ 5.50 to cover "access costs" to packet-switched networks as now proposed by the U.S. Federal Communications Commission.

For the European network users, there is however good news. A special team has been created by CEPT involving standards as well as commercial experts. This CEPT project team on packet networks is expected later this year to disclose full information on plans, improvements and target dates for moving towards a Pan-European, efficient packet network infrastructure. The CEPT work is closely followed by the Telecommunications Directorate, DG XIII of the CEC in the framework of the overall CEC-CEPT cooperation.

Telecommunications in the Press

A new network for financial and stock exchange transactions is to be set-up in London. Whilst this will be the third such facility, the new network will enjoy the backing of the Bank of England, and, so it is stated, will be to OSI specifications.

"Financial Times, Sept. 22, 1987."

A small prototype has shown that communications lines made from the new generation of superconductors can transmit data at speeds up to 100 times faster than today's state-of-the-art optical fibre networks, according to scientists.

Very short electrical pulses, measured in trillionths of a second, passed through the device without any detectable distortion, an impossibility with conventional metals.

The study at Cornell University published on October 1, raises the prospect of extremely high-speed communication of electronic information: computer data, telephone conversations or television pictures.

A single superconducting transmission line could carry one trillion bits a second, the scientists said. This would be enough to support 15 million simultaneous telephone conversations or, alternatively, to send the complete contents of the Library of Congress in two minutes.

The device was tested at the Ultrafast Science Centre of the University of Rochester by a team using lasers to measure the very short pulses, slicing time into extremely fine slivers.

"International Herald Tribune, Oct. 3/4, 1987".

It will be interesting, when the European Parliament produces its report on the cost of "Non-Europe" later this autumn, to see how much cash we are wasting annually on not having a common telecommunications system across Europe... the annual cost (all industries included) will be estimated conservatively at 125.000 million ECUs... a large proportion of which is pumped into the telecommunications void, nothing hampers more than the jumble of differing national standards... the goal of a unified Europe is impossible without efficient trans-Europe communications.

"International Management, Oct. 1987"

It is strange how the media, or rather, those who control them, manage to manipulate these so successfully, that significant pieces of information on our society are aired in a manner to ensure minimal attention. Thus a recent edition of a program announced as a cultural one, which already implies a mass switching off or retuning, and shown at a late hour, dealt with the environmental consequences of modern technology and human attitudes: it was a relief to note that information technology in all its variants received a clean bill of health – not even the "big-brother" syndrome was trotted out as is only too usual on such occasions. The main thrust dealt with mass sport – the harm done by jogging to forests, by floodlit games such as golf or tennis to insect life. Late-night "hackers" and others engaged on such parlous activities as reading can breeze a sigh of relief – they are not guilty of causing acid rain or forest decline. What has this got to do with IT?

Well, the next offering related to a new design, German, of a steel mill for producing slabs at far less cost than hitherto: a sure means of making European steel more competitive. Not a bit of it, because of various forms of opposition, the first installation will be in the U.S. – probably even financed by its developers. This alas is only too typical an example of how European ingenuity is misapplied to make foreign competition even more successful – and there are many examples in IT which tell the same story.

Editor's Corner

By chance I was reading at the same time "Apocalypse 2000", Peter Jay's and Michael Stewart's vision of what might happen in the next 20 years. Whilst one may quarrel with some of the ideas, the scenario presented looks plausible and horrific. Again and again attention is drawn to the disastrous consequences of lack of funding for research and development, with IT prominently mentioned as one of the areas subject to much consequential suffering. Ultimately it ist contended, this lack of funding, coupled with the severe cutbacks in the educational field, will result in a society with no products worth manufacturing, and even if there were a product, no skilled labour force to produce this. Import restrictions or other artificial trade barriers will therefore be pointless, there will be nothing to protect or manufacture, and again the IT sector is singled out for special discussion. One need not believe implicitly everything one reads or hears, but…