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Esprit
Information Exchange System

iesnews

Issue No 17, August 1988

Sometimes getting the information you need can be difficult. The ancient Greeks told the story of Proteus, the soothsayer of Pharos, who had to be compelled to give up his wisdom while asleep because awake he could change shape as he pleased and escape their questions.

Unlike old Proteus, PROTEAS is designed to be much more forthcoming. The acronym for PROTotypes European Access System – prototype since it concerns developments with commercial potential which have yet to reach the market, and European since its purpose is to allow organisations across Europe to access its files.

A FURTHER NEW IES SERVICE:

PROTEAS

Pilot Database Promotes Commercial Exploitation of R&D

The information, which the new database is designed to handle, will draw from many research projects under way in all Community countries, some of them funded through Commission programs such as ESPRIT, some taking place in universities and various research establishments and some within European corporations, large and small.

For the truth is that while Europe has always had a strong tradition of research – at present it is reckoned that upwards of a million scientists are currently at work on projects costing many thousand of millions of ECU – the result of that research are all too often underused or left to Europe's competitors to exploit.

The problem is to achieve commercial exploitation of such developments by European companies – hence PROTEAS, an online database designed to bring together developers with organisations able to bring prototypes to the market.

With projects from the first phase of ESPRIT nearing completion, the IES team began considering ways which could assist in bringing about developments beyond their project environment into the world of product creation.

LATE NEWS

Third Eusidic Network Survey

Results of the annual survey of data calls show progressive improvements: of the 5699 recorded calls during the survey week, the failure rate was 25.38% compared to 30.73% in 1986 and 29% in 1987. Geographic variations in success rates are still marked and surprisingly it was easier to place a transatlantic call from some locations than a transEuropean one.

European Telephone Companies Aim for Joint Data Network

18 of Europe's public telephone companies have reached agreement to set up a jointly owned data-handling company. Participants include the Bundespost, DGT and Brit. Telecom. One of the results may be joint billing in a single currency (ECU?) of the customer's choice.

THIS ISSUE:

PROTEAS

Pilot Database Promotes Commercial Exploitation of R&D Developments

PROTEAS INFORMATION ENQUIRY

Address:
LONGMAN CARTERMILL LTD.,
Technology Centre
St. Andrews
UK - FIFE KY 16 9EA

Tel.: +44 334 77660

Please check one or both:

☐ Yes we wish to contribute information
Please send data entry form

☐ We would be interested to access
Please let us know when

Organisation: _____

Address: _____

City: _____

Country: _____

Attention: _____

Earlier this year a preliminary investigation showed that although a number of minor data collections existed in some Member States with similar objectives, no European-wide application was identified. A team of experts advised that if such a service was to be put into operation it would be a lost opportunity to limit itself to only results from ESPRIT but it should be open to all researchers throughout the Community who might wish to contribute.

The Commission could assist in a catalytic fashion with initial support for a Pan European service which, if successful, could be turned over to a commercial organisation.

The investigation established that the information targetted is where a methodology, a design or a prototype development is ready to move to the production engineering stage, but where its commercial viability is still untested. In some cases, it is possible that a potential commercial application of a particular process may not be appreciated even by the research team concerned. At present, it may only be by pure chance that a company with the resources to exploit such a process becomes aware of its existence.

In summary, the general specifications proposed for PROTEAS will be:

- an online database of potentially exploitable developments as yet untested in the market
- accessible using the public data networks from anywhere within Europe
- searchable by subscribers using combinations of keywords and free text to identify developments of potential interest within defined technical boundaries
- information will be collected, through the help of entry questionnaires, from various points within Member States and the service will be properly promoted as it will depend on voluntary contributions
- the information to be introduced should be addressed to systems integrators, commercial and marketing people, venture capitalists, consultants and other researchers
- updated regularly to ensure accurate, relevant information.

As PROTEAS will be financially assisted by IES initially, it will restrict itself to the area of Information Technology and Telecommunications. This practical measure can help focus the pilot implementation and minimise initial costs. On the other hand, this field is one of the fastest growing with high R&D activity, high modularity in its associated products and relatively short life cycles of products. If PROTEAS proves successful in the area of Information Technologies, it could easily expand to other areas of Technological Research and Development.

The pilot implementation was entrusted to Longman-Cartermill Ltd of St. Andrews who already had a similar implementation in place, and who have experience in the area of developing and commercialising R&D databases. They are the creators of the successful British Expertise in Science and Technology (BEST) Database.

The aims of the pilot scheme are to develop and build a prototype database containing some hundred entries ready for demonstration at the ESPRIT Week in November. The pilot phase will be used to establish the viability of the service, create a strategy for collecting data, refine the information categories collected, investigate in detail the likely markets and develop effective operational procedures.

It is necessary to assess the willingness of organisations to contribute data, and discover from which segments of the market the demand for PROTEAS will come. Know-

PROTEAS

Pilot Database Promotes Commercial Exploitation of R&D Developments

ing this will help decide how best to deliver the information to subscribers and the pricing alternatives appropriate to the particular markets.

Organisations are invited to contribute data for the pilot database and they can contact Longman Cartermill Ltd, Technical Centre, St Andrews, Fife, KY16 9EA UK (Tel.: +44.334.77660), for a questionnaire. In addition, Longman Cartermill would be happy to hear from companies interested in making use of the system.

Those wishing to know more about PROTEAS should complete the enquiry form (see opposite) and send it to the address indicated. In addition the IES Help Line (Tel.: 352-45 30 30) in Luxembourg can also give you information and send you a PROTEAS entry form.

There will be demonstations of the pilot PROTEAS at the ESPRIT Week in November, and questionnaires for potential providers of data and subscription forms for subscribers. Come along and see for yourselves how it will work!

DRIVE

(Dedicated Road Infrastructure for Vehicle Safety in Europe)

What is DRIVE?

DRIVE is a 120 million ECU, 3 year European Community program of collaborative research and development which seeks to alleviate some of the present problems in road transportation through the application of advanced information technology and telecommunications. It is a partnership between the Community, which is contributing 60 million ECU, and European industry, which is providing the rest. DRIVE aims not only to improve road safety, but also to reduce wasted time and fuel through the improvement of transport efficiency, and thereby reduce vehicle emissions and noise pollution.

Why DRIVE is important

The scale of the problems which DRIVE addresses can be illustrated by the following statistics:

- Every year in the Community 55.000 people are killed on the roads, 1.7 million are injured and 150.000 permanently handicapped
- The financial cost of this is estimated to be 50 billion ECU per year; the social cost in human misery and suffering cannot be measured
- The total cost of operating vehicles in the Community, including time spent driving, is estimated to be 500 billion ECU per year; the potential for savings through improving routing and cutting down congestion could be as high as 10% of this figure
- Vehicle emissions contribute towards the total environmental pollution which is estimated to cost Europe between 5 and 10 billion ECU per year.

Without concerted action these problems will get worse, as vehicle performance continues to increase in relation to the unchanged capability of the average driver and use of the road network continues to increase in relation to its near-static capacity.

A corollary of this is that road transport efficiency, safety and environmental compatability are major factors in the economic and social development of Europe. For example, traffic congestion cuts down the time available for business or leisure activities and thereby increases cost both to organisations and to individuals; caring for accident victims puts strain on families, social services and, of course, the victims themselves; and stationary traffic in cities generates excess emissions which are a health hazard and therefore decrease the quality of life for the people who live there.

The support of the European Parliament and Council of Ministers, and the rapid progress which DRIVE has made in gaining approval is a

DRIVE

(Dedicated Road Infrastructure for Vehicle Safety in Europe)

clear indication of the priority given by the Community to attacking these problems.

What DRIVE seeks to achieve

Existing approaches such as traffic management schemes, civil engineering improvements, engine management technology and Community Directives on vehicle standards are important, but do have their limitations. DRIVE envisages a common European road transport environment, where drivers are better informed and "intelligent" vehicles communicate and cooperate with the road infrastructure itself. The program follows a top-down systems approach which will enable sophisticated and effective traffic management and provide the basis for more comprehensive safety systems. It will represen a significant advance in improving the situation.

DRIVE therefore seeks to create the conditions for the development of this integrated road transport environment (IRTE), through precompetetive and collaborative R & D in the field of information technology and telecommunications applied to road transport, which is known as RoadTransport Informatics, or RTI. DRIVE will entail: research, development and assessment of a range of RTI technologies; the evaluation of strategic choices of candidate systems; and a very significant amount of standardisation work. Specifically, DRIVE aims to achieve the following results:

- The identification of the best choice of systems from an economic and technical point of view, and the best strategy for their implementation
- The specification of performance and compatability standards which will enable industry to develop the necessary equipment and systems
- The provision of Directives and guidelines to which industrial pro ducts and "intelligent" European road transport infrastructures should conform
- The design, and if necessary, the implementation of pilot schemes to assess the performance of equipment and systems.

The importance of harmonised European standards must be stressed, for without them difficulties would be put in the way of international road travel and further non-tariff barriers would be erected for industry. On the other hand, common standards will result in a unified European market for RTI products which will bring down the costs of mass production and provide a large home market which will improve the world competitiveness of European industry.

How DRIVE will operate and who will be involved

DRIVE will bring together road users, research institutions, providers of broadcasting and telecommunications services, industry and road transportation authorities. It has developed and will maintain close links with other European actions in the domain, notably those carried out under EUREKA, such as Prometheus, Carminat and Europolis, and COST. In particular it will include Community activity with regard to standardisation and common functional specifications relating to the development of advanced infrastructure systems. Such cooperation is essential in supporting the close-to-market activities of European industry and ensuring that incompatabilities or unnecessary duplication of effort do not occur.

The core of DRIVE is a workplan which has been drawn up by the European Commission in consultation with the Member States, interested parties in industry and representatives of road user organisations. The workplan was approved by the DRIVE Management Committee, consisting of two representatives from each Member State and chaired by the Commission, on 29 June 1988 after final adoption of the program by the Council of Ministers. The workplan will form the basis for proposals for projects to be carried out under the rules established by the Community's R & D Framework program. The essential features of these rules are as follows:

- Projects will be carried out by means of shared cost contracts, under which contractors will be expected to bear a substantial proportion of the costs, which should normally be at least 50% of the total expenditure. Alternatively, in respect of universities and research institutes, the Community may contribute up to 100% of the additional expenditure involved.
- Proposals will be submitted in reply to the open tender published in the Official Journal of the Eu ropean Communities on 2 July

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(Dedicated Road Infrastructure for Vehicle Safety in Europe)

1988 and involve the participation of at least two independent partners not all established in the same Member State. At least one of the partners will be an industrial concern. Closing date for proposals will be 17 October 1988.

- Only exceptionally, in the case of projects indispensable for implementing key requirements of the workplan, will these rules be relaxed, after careful scrutiny and at the discretion of the DRIVE Management Committee.
- Organisations from non-Com munity European countries (notably EFTA) may participate in the program where there would be mutual advantage; in such cases the Community will expect the organisation concerned to make a full financial contribution.

The participation of small and medium-sized enterprises will be particularly welcome. The Commission is assisting in bringing potential partners together by the distribution of a document listing the interested parties in relation to the tasks in the workplan which interest them.

Proposals for projects will be evaluated by independent experts from the Member States on the basis of technical and project management criteria. The DRIVE Management Committee makes the final selection of projects on the basis of the experts' recommendation and on an assessment of the projects' likely benefit to the Community and the ability of the partners to carry them out and exploit the results. Following selection, and any final negotiation that may be necessary to amend the proposals, contracts will be drawn up between each consortium and the Commission. One partner will be responsible for managing the contract on a consortium's behalf. The contract will be reviewed annually.

The areas of work involved

The particular systems to be developed will be determined by the requirements of road users and transportation authorities, but DRIVE will include the following areas of work:

- analysis of actors' requirements and functional specifications
- analysis of traffic accident data
- transmission technologies (microwave, infra-red, radio, etc)
- communications architectures and technologies (including ISDN and IBC)
- vehicle, road condition, weather and pollution sensors
- radar systems
- route guidance and journey planning systems
- message and signalling systems
- software for infrastructure planning, traffic management, traffic modelling and embedded systems on-board vehicles
- development of strategies for traffic management
- systems for specific groups of users such as the road haulage industry and public transport operators
- modelling tools for techno-economic evaluation of RTI systems
- human factors work
- standardisation, particularly of communications protocols and interfaces between RTI sub-systems

DRIVE will adopt a systems approach, in which a "top-down" analysis of users' and transport administrations' requirements is combined with "bottom-up" R & D in RTI technologies; a considerable amount of assessment and integration work will be performed in order to translate systems into an integrated solution that best meets DRIVES's objectives. DRIVE itself is an essential preliminary to the implementation of the IRTE, and will contribute substantially to planning for it.

How to find out more about DRIVE

To find out more about DRIVE, contact the DRIVE, contact the DRIVE Central Office:

DRIVE Central Office, TR61 1/31
Commission of the
European Communities
200 Rue de la Loi
B-1049 Brussels

Telephone +32 2 236 1130
Telefax +32 2 236 2391

DRIVE projects are included in the Eurocontact database. If you wish to obtain a DRIVE/EUROCONTACT entry form, please contact the DRIVE Central Office or EUROKOM.

EUROCONTACT II: The Way Ahead

In 1986 EuroKom demonstrated the first version of EUROCONTACT at the ESPRIT Conference, and the database was operational by May 1987. EUROCONTACT is now of increasing relevance following the introduction of the Framework program, and it was used extensively in relation to the ESPRIT II call for proposals. Recently other parts of the Commission, such as the Energy Directorate, have expressed interest in using the service and expanding it for identification of research interests in their own technical areas.

Nationally supported value-added services operating within the Community, such as EUROCONTACT, will in the future be of increasing importance. In this context, EUROCONTACT can be seen as a prototype for similar services which will be developed within the IES during ESPRIT II. As one of the major ways in which the Commission enables contacts to be made throughout the Community it is important that the effectiveness of this type of support is maximised by its being assessed and tailored to fit its objective.

The National Organisations

As EUROCONTRACT has now been running for just over a year, it has been decided to invest in improvements. EuroKom, the service providers, are therefore currently undertaking a review of the service, which will include detailed consideration of user requirements. When the EUROCONTACT database was first designed, time constraints prevented a full exploration of hardware and software options. This obviously has an effect on current performance and one of the objectives of the present review is to ensure that identified improvements are implemented.

One 8 June a EUROCONTACT assessment meeting was held in Brussels, with the aim of contributing to this process. User feedback is vital in order that the service can best be designed to suit user needs, therefore attendees at the meeting included representatives from two important EUROCONTACT user groups.

The first was the recently set up EUROCONTACT national point network. The present situation is that in order to qualify for access to the database, organisations must normally contribute at least one entry expressing an interest in participating in research. Because the Commission wished to move beyond just a central facility, and to have more involvement from the Member States, informal agreements have recently been made with national non-research organisations which are able to act as national information and help points for EUROCONTACT (see Issue 15, page 14).

The second was the PEER (Partner Exchange for European Research) Group which incorporates national organisations from throughout the Member States, and some EFTA countries, each of which is charged with organising partner search for European projects within their own country. The Group was formed late in 1987 as a result of discussions between potential members on how to handle what was becoming a heavy load of organisations in each country who were trying to find European research partners. The nature of the PEER Group organisations varies: some are government, some government-sponsored and some private. By its nature the work of the Group overlaps with that of the national points, and indeed some of its members have already agreed to become national points.

The PEER Group's perception of the EUROCONTACT service is of particular interest because they are an independent group with a purpose closely related to the original intention of EUROCONTACT. Broadly speaking they see the service as one potential tool to assist their work, but one whose use alone would not facilitate efficient partner search, for the following reasons:

- Partner search cannot be undertaken efficiently using the current broad profiles found in EUROCONTACT, since these do not focus sufficently on good potential partners. What is needed is more information on specific project proposals corresponding to program workplans;
- Information is required on the types of partners sought.

The Group have found their own electronic solution to the task: customised databases containing only the precise information they need. Working on a decentralised basis, and on the assumption that local knowledge of organisations is best, they now store their information on databases with a common format which they circulate regularly amongst themselves. This is supplemented by constant personal and telephone contact. The Group is satisfied that this approach is effective – it has apparently led to several ESPRIT II proposals.

Since the objectives of the PEER Group are so close to those of the Commission, the importance of coordination between the two, for example by matching the structure

of the PEER Group database with EUROCONTACT in order to facilitate the interchange of information, is clear. It is therefore appropriate to explore ways of achieving this coordination and to consider how a central facility can better meet its objectives in coordination with the work of national organisations.

The Future

A PC version of EUROCONTACT, which can be stored on diskettes, was demonstrated at the assessment meeting. For various reasons there is a significant improvement in the speed of the PC versions over normal online access: it is therefore in the process of being developed for eventual general availability. It was agreed that there is a place for both PC and online versions of EUROCONTACT, as well as hardcopy, because of the variety of user types, which range from the individual user who will perhaps access the service once or twice, to the national organisations who are potentially heavy users and therefore need a better performing system.

There are two aspects to be considered in attempting to gain an overview of the future evolution of EUROCONTACT: the nature of the service; and the roles of the various parties involved. Within these categories the meeting agreed the following points:

Nature of EUROCONTACT:

- There should be both a central database and a local PC version with common structure, the local version to have sufficient flexibility to allow for tailored codification according to individual requirements. There may also be a need for indexed and cross-referenced hardcopy. Access to any or all of these options should vary according to user type. The central and local databases should have a common format;
- There should be several different program-specific databases as well as a general database containing research profiles, all of which may be searched by all users, and database records should reflect the workplan of the program to which they relate.
- Separate codified data entry forms should be designed for each program featured in the database. The participants of the meeting did not consider that the consequent requirement for users interested in more than one program to fill in more than one form would cause problems;

EUROCONTACT II: The Way Ahead

Roles:

- Validation of forms and data entry should be decentralised as far as possible to National Points and program coordinatiors. The Commission should initially provide guidance on validation and should be kept regularly informed of new entries. A flexible approach should be adopted to cover all eventualities;
- The Commission should continue to exercise control over the types of organisations which can become National Points, and should have an option to reject those which it considers unsuitable. If the number of National Points should increase greatly there will be a need for one national coordinator per country, per program;
- It is anticipated that in the near future there will be a role for the TFPME (Task Force Petites et Moyennes Entreprises) and their Euroguichets in the National Points network. The aim of the Euroguichets is to give information to small and medium sized entreprises throughout the Community about the full range of Commission programs: they therefore need access to a wide range of information;
- National Points should be authorised to carry out updating, including circulating users asking whether they wish to maintain their entry. (This would also serve to avoid linguistic problems with data.) Such updating should not be done online, since this would have an unacceptably detrimental effect on performance;
- It was generally agreed that the database(s) should ultimately be open to everybody: participants did not consider the type of information contained in EUROCONTACT to be sensitive.

Summary and Conclusions

The meeting generated much valuable information which can now be used in the further development of the system, and highlighted the benefits of decentralising the service. In particular it had been identified that whereas EUROCONTACT is currently a research interest database, it should in the future be focussed on providing the central functions required for supporting partner search for European R&D collaborative projects. It is envisaged that the total system could consist of a combination of several databases and incorporate Commission programs other than ESPRIT.

Liability in the information age

This was the title of the third CELIM (Committee Europeene Lex Informatica Mercatoriaque) held in Brussels on June 27 and 28, 1988 (for a report of the first conference, see issue 5, pg 6).

Some 90 participants were greeted by CELIM's founder, Prof. M. VIVANT from Montpellier, followed by an introductory talk by Serge LUSTAC (DG XIII, Luxembourg), who outlined the Commission's interest in the legal aspects of information handling and transfer. The former Legal Observatory had been reconstituted as the Legal Advisory Board with a brief to collect information on the evolution of the legal aspects and court rulings in this area. No direct action by the Commission was currently contemplated in this arena.

The next speaker, Prof. VANDENBERGHE, discussed in detail the implications of the coming into force on July 25 of the Commission's Directive on Product Liability. The view was advanced that "software is a product to which this liability applies, and that it should do so... only the highest standards are good enough where human life or individual property may be at stake and there is nothing wrong in imposing these standards on the software industry. We see no reason why in the computer and information age those industries should be allowed to be more negligent with regard to safety than their traditional counterparts".

Dr van den BOSCHE-MARQUETTE presented strong arguments to demonstrate that software always contained bugs which were unpredictable in their effects and occurrence, so that the danger of "product liability" was inherent in such products. These dangers were even more in evidence in expert systems of all types. Here there was the additional complication of potential errors introduced by the expert builder. There should be clear definitions of the applicability limits of such systems.

Next Mr Daniel BROOKS, from the U.S., wondered why Europe should want to embrace the doctrine of product liability at all. After listening to the stories of American court decisions, one might almost agree – one example may show why: the producers of the Lotus I-II-III package were held liable because a user added a row to a table but forgot to alter the relevant table parameters, so that in additions etc. these added figures were neglected and the user suffered financial damage: the judge held that there should have been an on-screen warning, even though the manual clearly stated it.

In reviewing the U.K. position and the cases so far decided, Mr Simon CHALTON pointed out that the real problem was the concern that humans should not abdicate their responsibilities by delegating their decision-making functions to machines. It is inherently wrong for decision-makers to rely on tools - hardware or software - which have been designed by others who have no knowledge of the particular decisions to be made, and who, in using such tools, have no opportunity to correct them if decisions made in reliance on such tools are manifestly incorrect.
The law has yet to decide whether liability, if it applies at all, should rest with the use of the hardware or with the producer of its software. The simple solution of blaming the hardware is not available.

In the light of "certification" of information technology products, the next speakers, Jan van HERP of CEN/CENELEC and Mr Robert HART, pointed out that there could be circumstances where liability could be assigned to a certifying body if the product certified causes damage or losses, even if the applications where these occurred were not described originally, but not explicitly excluded.

Similar consideration applied to databases, in the view of Prof. J.H. SPOORT and Mrs Henriette MIGNOT-MEHL. Liability could arise from incompleteness of data, wrong data and possibly even from misinterpretation. There had been court decisions which covered the whole gamut of possible circumstances, but fortunately no consistency in judgements. Database producers and spinners (hosts) should include disclaimers in the strongest terms and backed by the best legal advice to reduce liability risks, but even this would not necessarily be a warranty of "safety". A lot hinged on whether data were considered a product or a service - and so far no clear-cut definition of whether information is a product or a service had emerged. There was a definite need to check, verify and recheck any data or information made available (it should perhaps be noted in parenthesis that no similar straight-jackets have been applkied to equivalent hardcopy products).

Liability in the information age

As regards the liability of telecommunication services, the German case was presented by Dr Helmut REDEKER and the French one by Prof. Lucien RAPP. There were some salient differences. The German position is that all telecommunication lines are the property of the Bundespost who cannot be held liable for any failure to provide service or errors in transmission, unless personal responsibility of a few select senior officials can be proved. Lines may be leased to operators, but this did not affect the liability position of the PTTs. Failures in transport of information due to technical shortcomings would be the liability of a (private) operator, and where the expense of ensuring safety would outweigh the value of the information, then the user must be informed of the lack of technical assurances. Interference by intruders may make the intruder liable, but not always. Again, provision of countermeasures is the responsibility of the operator, but technically complicated ones, which would not be understood by every user, may not be advisable or greatly affect the liability position.

As regards privacy of data, the operator should provide a simple encrypting system bearing in mind user-friendliness and economic viability. User indentification is yet another problem area, and user identifi cation numbers or transaction numbers are suggested, but liability for misuse is uncertain. Absence of such means should however be notified to users to avoid liability.

In the French case, there are differences in that the PTTs may be liable for some technical damages with operators again bearing the brunt of the liabilities which could arise.

The overall impression left with one participant was that this was an uncharted area where prudence is advisable with a careful watch on developments.

Fifth ESPRIT Conference: First Announcements

The 5th ESPRIT Conference will be held in the Brussels Palais des Congrès from 14-18 November 1988. The Conference is a key element of the annual ESPRIT operations cycle and of the dissemination of information on ESPRIT work: it is the major annual public event of the ESPRIT program.

The theme of this year's Conference will be "Putting the Technology to Use" and it will be devoted to the topic of exploitation and industrialisation of the ESPRIT results. During the first 3 days project results will be

ESPRIT Conference Week '88: Preliminary Conference Program

Monday 14 November:		PLENARY SESSION
PARALLEL SESSION I:	IES	– Development Projects
	IIS	– Technology & Information Management in Organisation
	IPS	– Formal Methods & Advanced Environments
	MEL	– Computer Aided Design I
Tuesday 15 November:		
PARALLEL SESSION II:	CIM	– Architectures & Communications in the Manufacturing Environment I
	IPS	– Programming Environments - PCTE
	IIS	– Implementing Secure User Environments (Panel)
	MEL	– VLSI Technology I
PARALLEL SESSION III:	IPS	– Software for Distributed Systems
	IPS	– Programming Environments – Logic
	IIS	– Workstations
	CIM	– Architectures & Communications in the Manufacturing Environment II
PARALLEL SESSION IV:	IIS	– How to Establish ODA in the Market Place (Panel)

Fifth ESPRIT Conference: First Announcements

presented in plenary and parallel sessions. These will be complemented by panel session where invited speakers will discuss issues relevant to the ESPRIT program. The Conference proceedings will be available for those who have paid the registration fee.

During the Information Technology Forum on Thursday 17 November a number of prominent invited speakers will address the Conference theme. The Conference and IT Forum will be complemented by an exhibition in which more than 50 projects will demonstrate their results. Additional projects will participate via poster displays or videos. During the evenings groups of delegates who share a common specialised technical interest will be provided with facilities to hold meetings. Details of the preliminary Conference program are given below.

The Conference will be complemented by several related events including:

- A half-day seminar on CAD standards organised by the ECIP project
- A one-day seminar on human factors organised by the HUFIT project
- A session on software quality metrics organised by the MUSE project
- An IES user's forum
- The 7th International Conference of the Federation of European Information Technology Associations (EIT).

With the launch of the Community Framework Program for Research and Development and the start of the 2nd phase of ESPRIT, interest in the Conference is expected to be high and early registration is recommended. The number of participants is limited and registration forms must be returned by 15 October. All enquiries should be addressed to the Administrative Secretariat at:

E.C.C.O (European Congress Consultants & Organisers)
Rue Vilain XIIII, 17a
B-1050 Brussels
Tel.: +32 2 647 87 80
Fax: + 32 2 640 66 97
Telex: 61434 sdrbru b

ESPRIT Conference Week '88: Preliminary Conference Program

	IPS	– Knowledge Engineering for Systems Development
	IPS	– Application of Knowledge Engineering Technology I
	MEL	– VLSI Technology II
PARALLEL SESSION V:	CIM	– Design, Graphics and Engineering
	IPS	– Application of Knowledge Engineering Technology II
	IIS	– Human Factors & Human-Machine Interfaces
	MEL	– VLSI Technology III
PARALLEL SESSION VI:	CIM	– Manufacturing Control
	IIS	– Wide Area Communications Systems & Services (Panel)
	IPS	– MMI
	MEL	– VLSI Technology (panel)

Wednesday 16 November:

PARALLEL SESSION VII:	IPS	– Directions in Architectures I
	IPS	– Database and Knowledgebases I
	IIS	– Multilingual Information Services (Panel)
	MEL	– Computer Aided Design II
PARALLEL SESSION VIII:	IPS	– Directions in Architectures II
	IPS	– Database and Knowledgebases II
	IIS	– Speech Technology
	MEL	– Computer Aided Design III
PARALLEL SESSION IX:	CIM	– Advanced Robotics I
	IIS	– Database and Knowledgebasis III
	IPS	– Management Support
PARALLEL SESSION X:	CIM	– Advanced Robotics II
	IPS	– Advanced Technics in Knowledge Engineering
	IIS	– Distributed Systems and Networks

Thursday 17 November:
PLENARY SESSION: IT FORUM: PROSPECTS FOR EUROPEAN IT INDUSTRY

(MEL = Microelectronics & Peripheral Technologies/IPS = Information Processing Systems/CIM = Computer Integrated Manufacturing/IIS = Integrated Information Systems/IES = Information Exchange System)

COSINE NEWS

Cooperation for Open systems Interconnection Networking in Europe.

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

EUREKA Ministerial Conference: Top Priority for Supportive Measures for EUREKA

At the EUREKA Ministerial Conference held in Copenhagen on 15 - 16 June 1988, Ministers and the Vice-President of the Commission of the European Communities stressed the special and important role of supportive measures in achieving EUREKA's objectives in general. They instructed the EUREKA High Level Group to give high priority to a continuation of the work on supportive programs such as COSINE. All steps should be taken towards the successful completion of the COSINE project, in accordance with participants' needs.

The Conference recognised the significance of COSINE for improving the data networking of all collaborative R & D activities in Europe and for creating market opportunities for the information technology industry. Participants underlined the need for harmonised national and Community actions by all departments and organisations concerned with R & D and expressed support for steps to make the implementation of the COSINE programe effective. It war argued that infrastructural projects such as COSINE create working and communication environments which are crucial for the success of collaborative R & D work. In addition, the Conference agreed that private firms should make more use of the potential of Europe's centres of excellence in research.

Ministers and the Commission agreed to express their support for the objective of COSINE and its implementation both at the national and at the international level. This support paves the way for funding required for integrating national networks into a harmonised communication system. It is now up to the authorities which fund R & D in the European countries to supply resources needed for the development of national and local networks.

Designed to meet the obvious needs of industry and research communities, COSINE started out as one of the earlier EUREKA projects (EU 8). It is an important example of a project aiming both at European standardisation and at immediate practical benefits from standards. Ministers and the Vice President of the Commission concluded at their meeting in Copenhagen that in order to achieve effective use of standardised computer communication services throughout Europe, the COSINE project requires coordinated action from responsible ministries and research networking bodies in each participating country.

RARE Presents Project Structure for COSINE's Implementation Phase

The bulk of resources in COSINE's Implementation Phase will be available for the execution of the national network plans. However, the Implementation Phase has to

be given structure and cohesion through a small number of international projects approved and supported by the COSINE Policy Group. In its report "The COSINE Implementation Phase" submitted to the COSINE Policy Group at its meeting in Egham (UK) on June 20 - 21, RARE gives a brief description of 18 projects. These have to be monitored directly by the COSINE Program Management Unit and will in general be carried out under contract with COSINE by suitable consortia offering the necessary skills for each project.

The objective of the first project is the provision of a managed data network service to the scientific community. A Managed Data Network Service pilot project is already in progress (see below). This network service should provide for international communication between the various national infrastructures. RARE considers it essential that this provision should be open to the full range of researches, in all sectors, and open for access via the national public X-25 networks. Another project will provide gateways to the USA. This covers an estimated three subprojects for gateway operation, the first and second of which will support X-400 and FTAM respectively. The objective is to install and operate gateways and links, and provide management facilities interfaced to the national network organisations. Furthermore, a central directory service has to be provided as a clearing house for exchanging directory information between national organisations.

Demonstrations to all kind of scientific users

The provision of information on networking services and products or material suitable for user support is also listed as a project. This type of information is likely to be available on a distributed basis. An International User Group Support project envisages actions targeted at the promotion of networking in various user communities. One project provides resources to help the existing international research networks adopt the standards and management structure proposed by the COSINE Specification Phase, by contracting international network providers to implement the necessary changes within a defined timescale. A related project deals with the development of additional tools to support remote operation or migration needed by a number of organisations. These tools should be developed under contract and placed in the public domain for distribution among national support units. There is also the Promotional Activities project which will provide demonstrations, support and advice in order to increase public awareness within the user community, especially those scientific users who are not concerned primarily with information technology.

A second category of projects comes under the heading of Implementation Phase Activities. The first project in this category, Operation of the COSINE Program Management Unit (CPMU), has a general monotoring function. The CPMU will also provide technical support to the COSINE Policy Group. The second project in this category deals with the further evolution of standards, since early operational experience requires clarification or amendment of the specifications. This should be done, as far as possible, by the original authors. Areas not included in the first set of operational specifications, such as additional security features, X-500 directories and window-oriented terminal working, need to be covered in a project called Creation of New Specifications.

Produce procurement model texts

RARE considers it a necessity to produce procurement model texts, created from the technical specifications. Technical guides and handbooks should be produced in support of the specifications. The project Transition Planning foresees the need for support for interworking tests and advice on products to support migration. According to RARE an attempt should be made to establish a centre of excellence for transition planning; the planning process needs to be continued on a firm basis, both for the Implementation Phase and for the period after this phase. This will involve significant studies to create the necessary planning framework.

The RARE MHS Project has already demonstrated the benefits of establishing a coordination and support project in advance of wide-scale national deployment. Such projects aid the exchange of information and avoid potential mistakes in the deployment of services by creating a reservoir of expertise. It is expected that there will be a need for further projects of this kind, based on the work of the various RARE Working Groups, namely WG2 - FTAM, piloting FTAM implementations, particularly in areas where the protocol offers new features such as file access; WG5 - full screen terminal working, piloting early ISO implementations, including work on Terminal Management and the Ripple Mode addendum; and finally WG6 - high speed transmission services. The total Implementation Phase Budget per annum is estimated to be 16 220K ECU.

Agreement on Requirements for Shared International X-25 Service.

MDNS Pilot Offered to Research Networks

A working group with participants from a number of international network organisations serving research communities has reached agreement on the requirements for a Europe-wide X-25 joint data network service. The interim report of this group,

called Joint Working Party A on X-25 (WP-A), was approved by the COSINE Policy Group (CPG). It was agreed to use this report as the basis for the essential Europe-wide data-communications infrastructure for the research community, numbering over 500.000 workers in the academic and industrial research sectors.

WP-A states that at least a pilot service for X-25 (1984) and 64 Kbit/s access must be in place by the end of 1988, and a full service including 2 Mbit/s access available to all who wish to participate, should be in place by September 1989. In order to start an operational managed X-25 service without delay, COSINE intends to have about 10 lines and two switching nodes installed in the coming months, one in Amsterdam and another in Geneva. Participants for WP-A were drawn from RARE, EARN, EUnet, CERN/HEPNET as well as IES of the Commission. Observers from the European postal and telecommunications organisation CEPT, and from ESA were invited to participate. WP-A, set up under the aegis of COSINE, presented its interim report at the CPG meeting of 20 - 21 June 1988 in Egham (UK). This report is intended as a basis for a pilot implementation in line with the design of the final networking infrastructure. The CPG has authorised WP-A to negotiate the provision of an X-25 backbone network with European PTT's.

Meanwhile, the Dutch PTT offered to set up a pilot for a managed data network service for X-25 (MDNS). The Commission and the Government of Norway expressed their willingness to provide some financial assistance in 1988 for this MDNS option which requires an investment of about 1 million ECU. The CPG has welcomed these offers, urging the PTTs to continue working with the research community to provide a cost-effective basis for further X-25 services.

Fast implementation X-25 (1984)

The network organisations in WP-A worked on a tight time schedule to reach practical conclusions. The availability of a substantial X-25 international infrastructure based on the CCITT 1984 standards is recognised as a top priority. Current national X-25 services implementations based on the CCITT 1980 standards are ill-suited for OSI networking: different X-25 interfaces to PSPDN (packet switched public data networks) are required for identical end systems in different countries.

The CEN/CENELEC functional standard for Data Terminal Equipment (DTE) aims to ensure that end systems operate in any country without change of interface. Using this DTE standard, a CEPT project team is working on implementing the 1984 facilities on the X-25 services. However, WP-A reports that the stated time schedules for implementation in the various CEPT member countries vary widely and do not match the evolving needs of networking organisations. An upgraded shared X-25 infrastructure will give the existing networks the opportunity to enhance their current services without the need to invest more time and money in technically obsolete transport facilities.

In order to assess the required network bandwidths, WP-A collected traffic figures from all the participating organisations. The outcome of this investigation reveals that a common X-25 backbone network will initially require 64 Kbit/s access lines within one to two years and 34 Mbit/s within two to five years. Traffic towards North America is already estimated to require a combined bandwidth of 1 Mbit/s, which is expected to grow at the same rate as intra-European traffic, due to the fully international nature of research. It is also estimated that in about four years time the international backbone network should be capable of supporting an average total bandwidth of 200 Mbit/s, with peaks at 1 Gbit/s.

Many service requirements applications have been identified, such as software development environments and distributed computing; database access; remote teaching and learning; bulletin boards; electronic mail and electronic conferencing; file transfer; access and management; archiving and sorting of mail, documents and files; graphics transfer and job transfer. Regarding common characteristics and facilities, user-friendly access to networks is listed as the first requirement. Other important features are: secure access to networks, user-friendly interfaces to networks and standardisation of network access and usage functions, both internationally and across application boundaries; automatic directory look-up; and complete transparency of networks and facilities, providing smooth access following simple standardised procedures. Several modes of distribution will be provided, not only point-to-point between end-users but also broadcast and store-and-forward. Transmission speeds come in three classes, from low up to 9.6 Kbit/s, to high speed above 144 Kbit/s.

From the start, the network should be open for use by all categories of researchers, and after an initial running-in period, specific efforts should be made to encourage new groups of researchers to use it.

With the establishment of a managed international X-25 infrastructure gaining ground even before the starting date of the COSINE Implementation Phase on 1 January 1989, one of COSINE's primary goals, operational services for the entire European research community, is beginnig to emerge.

Output Specification Phase for Managers Infrastructure Facilities

The objective of the Cosine Specification Phase was the creation of an agreed set of specifications covering the standards and procedures needed to operate an open network infrastructure. The first category of these specifications is to be applied internationally, for those central services to be established and operated on a European basis. These specifications will form the basis of invitations to tender for sup-

pliers. Another set of specifications to be applied internationally deals with the necessary properties of the basic telecommunication infrastructure in Europe. It is expected that this infrastructure will be provided cooperatively by a number of separately operated subnetworks. RARE has also laid down the principles governing interworking, which will form the basis for discussions between CEPT and RARE, COSINE and the CEC.

Which requirements apply for suppliers?

The second category of specifications relates to actions to be coordinated on a national basis: specifications of nationally operated information, infrastructure and gateway services, and of national coordination, information distribution and contact mechanisms. The last category of specifications is the most important part of the COSINE documentation and relates to the end user systems. The typical user of this documentation will be the manager of the infrastructure facilities of a participating user organisation. This manager needs to know what requirements to communicate to suppliers when procuring equipment and software. This set of specifications covers conformance testing of communication equipment, the local functions for preparation, control and storage of information and the management facilities for meeting system requirements for security, accounting and similar functions. In addition, the manager of infrastructure facilities needs to determine which services to subscribe to. His choice covers national and international value-added services providing smooth exchange of information, such as nominated interim directory services or subscriptions to mail transfer services of national PTTs. Furthermore, the participating user organisation needs to know what procedures to follow in dealing with other members of the community. These procedures cover the commitment to use and update information for services in the basic European telecommunications infrastructure, as well as the commitment to provide contact points such as advisory or 'postmaster' facilities.

Technical Reports by RARE

The work program of the COSINE Specification Phase as carried out by RARE is given by the following survey of main study items.

1. Project plan.

2. Interim reports.

3. Scope of COSINE. Five separate reports will deal with an analysis of the market for COSINE facilities. Topics in this area will cover such items as the size of the R & D community; its communication requirements; the systems presently in use; available and planned OSI-products (X-25 transport protocol classes, X-400, FTAM); and traffic loading.

4. Services. Here the definition and the service requirements in terms of functional standards of XXX, FTAM, X-400 and X-25 are investigated. Where appropriate options and priorities within the profiles are determined.

5. Future services. The need for these services, the status of standard profiles and any functional profiles are evaluated. Topics include: full screen services (including VTP), remote job entry, high bandwidth services and ISDN, directory services and network management.

6. Public services. An evaluation of present and planned public data-communications services, including topics such as: availability, tariff specifications and outside connections of X-25 networks, performance of PSDNs in terms of capacity and reliability, X-25 access to ISDN and existing and planned public X-400 services.

7. Operational requirements. These have been investigated in the following areas: interim directory serrvices, conformance and interoperability testing, charging and accounting, transport services, requirements for authentication and security, management of services, user support and specific technical operational issues.

8. Migration. The necessary steps for migration from present (interim) services towards future services are identified. Recommendations are formulated.

9. Implementation. Procedures, project management, costs, funding, etc. for the Implementation Phase are given in this part of the program.

10. Final report. A final report will be produced upon completion of the individual reports listed above. This document will be a comprehensive survey intended for policy makers. The results of the work program items 3 to 10 are published by IOS (Van Diemenstraat 94, 1013 CN Amsterdam, The Netherlands, Telephone +31.20.382189). Each of these items will appear as a "Topical Report", and for each technical sub-item a "Technical Report" will be available.

The reports will be made available on a one-by-one basis or as sets (one for each category).

Now Published:

Technical Report 3.1. User Community, by A. Cornillie-Braun. Approx. 14 pages. Survey of data communication users in European R&D establishments. (15 ECU)

Technical Report 6.1. Tariffs and Availability of PPSDNs in Europe, by A. Cornillie-Braun and W. Bauerfeld. Approx. 48 pages. (30 ECU)

Technical Report 7.4. Transport Classes over X-25, edited by L. Clyne. This study is concerned with the choice of classes of transport protocol for use in the Cosine/ RARE community. Approx. 16 pages. (20 ECU)

These can be ordered directly from IOS.

Standardised File Transfer Services: Powerful New OSI Applications

ISO Standard for FTAM Adopted

Computer communications have reached a new milestone in their development with the recent adoption by the International Standards Organisation (ISO) of a standard (ISO 8571) for File Transfer, Access and Management (FTAM). Without a standard, the transfer of large files of any type always has to be arranged on a bilateral basis by the computing centres involved. In the framework of COSINE, FTAM is recognised as an important but complex application in computer communications.

RARE closely cooperated with the international standardisation bodies on FTAM. For instance, RARE is represented in the relevant ISO group, in CEN/CENELEC, in SPAG and in the National Bureau of Standards of the United States. Complementary to the standardisation process, test tools and services for FTAM products are becoming available, among others at the National Computing Centre in the United Kingdom, the Centre National d'Etudes de Télécommunications in France and the Fernmeldetechnisches Zentralamt of the Deutsche Bundespost in West Germany.

In any activity where large data collections have to be transported for processing, the network application FTAM will be extremely useful. Then biomedical data can be transferred to a remote facility with advanced computing power, manufacturing instructions can be exchanged in a factory environment or counter transactions in branch offices of a bank can be processed centrally. Likewise, FTAM will prove its usefulness in distribution and maintenance of software. The first pilot implementations of the new standard protocols for transmission of large data files through networks have been realised. These are more steps towards the interconnected research network COSINE is aiming at.

Richness of facilities

The FTAM standard provides a general purpose toolkit for the manipulation of files. The most basic capability is the transfer of a single file, with the minimum of a preliminary dialogue. However, many functions can be added to manage files, interrogating or changing their properties as necessary. If required, access can also be made to parts of a file, possibly holding the file open while a number of different sections are read or written. If a public file is to be accessed, various parts can be read before changing the way the file is opened so that exclusive control is taken for selective updating. In addition, there is a wide range of supporting mechanisms: controlling, charging and accounting, access control, concurrency control, distributed commitment and many other user facilities. For system designers, there are recovery mechanisms to correct communication or host errors. The application designer can select the features he needs from his toolkit. This richness of facilities is managed by a succession of selection mechanisms, so as to avoid the risk of failure of communication arising from incompatible selection of options.

Much of the standard is concerned with the specification and manipulation of file contents. It covers the structure and constraints on the filed data and the types of information which can be stored. In order to facilitate interpretation of files among particular user groups, the concept of document types has been introduced into the OSI work. The definition of a document type includes statements of scope and purpose, together with the semantics, abstract syntax and possible transfer syntaxes applicable to the file contents. It also states rules for concatenation of files and any simplified views that may be taken of them by simple applications. ISO 8571 contains an initial set of document types, but it is expected that document type definitions will be registered by an OSI registration authority, allowing support of new file types meeting the specific requirements of particular industrial sectors.

File Transfer, Access and Management based on the ISO standards represents a powerful and flexible set of facilities. However, flexibility and choice always introduce the possibility of incompatibility and hence failure of interworking. There is a need to ensure that the same options are selected by all the participants in a particular application. Therefore, RARE is preparing input to the process of defining functional standardisation of common applications of FTAM from the user point of view, in order to promote rapid development and early adoption of FTAM as a working tool within the European research community.

ISDN and High-Speed Networks: The Networks Situation within the Next 5 Years

Users need 64 kbit/g - 2 Mbit/s

RARE Working Group 6 is specifically targetted to examine this topic. The following article was provided by this group and highlights the most critical issues that will

need to be addressed during the period of the COSINE Implementation Phase.

The increasing use of powerful workstations puts new demands on local and wide-area communications. Data are becoming more prolific in many scientific disciplines, and large research facilities appear which imply ever more collaboration between scientists in various locations. Users of computing facilities need services for transmitting experimental data; remote control of experiments; access to centralised computing facilities for image processing or numerical simulation and modelling. Meanwhile, remote education is coming up as a new user need. On the other side, supercomputing centres need external users for optimising usage of their expensive hardware. Access services to remote resources must be as close as possible to methods or access to local resources. This means interconnecting LANs to supercentres with high-speed links. A policy of decentralising experiments related to the large laboratories such as CERN and CNET can only be implemented if a suitable wide-area infrastructure becomes available. Very soon, in every country, every institute will need regular access to 64 kbit/s networks, and all large research centres will need easy access to 2 Mbit/s WAN networking. The setting up of such physical links involves:

- leased lines;
- satellites;
- pre-ISDN;
- ISDN.

The priority list for application services is as follows:

- file transfer;
- remote job entry;
- terminal access in full screen mode;
- remote file access.

Connectivity of national services major concern

With respect to pre-ISDN, an issue of major concern is European connectivity between national services. Insufficient quality or even the absence of connectivity for X-25 and for the pre-ISDNs is a most critical aspect of the PTTs offering.

A user interface for ISDN consists either of two digital channels of 644 kbits/s (B channels) and a control channel of 16 kbit/s (D channel), or thirty 64 kbit/s channels and a 64 kbit/s control channel. An ISDN may support both non-switched and switched connections. For pre-ISDN standards, switched X-21 and X-31 for running X-25 over a switched X-21 network, are well defined and stable. All national plans for ISDN include provision of user access to the X-25 network through ISDN. This implies a packet switching network service at a much higher speed than the maximum of 9.6 kbit/s which is currently available. However, it is not clear when and how access to X-25 will be provided: over channel B, at 64 kbit/s, or over the D-channel at 16 kbit/s. Generally speaking, pre-ISDN is a practical option for certain traffic. On a national basis, pre-ISDN networks with X-21 switched 64 kbit/s circuits are already available on a commercial basis in several countries in Northern Europe, France, Germany and the United Kingdom. Italy is just starting, and the French PTT offers synchronous switched X-21 channels via satellite, at various speeds from 64 kbit/s up to 1920 kbit/s.

ISDN is just starting on very much a pilot basis. From the COSINE/RARE perspective, it is not realistic to assign a significant role to it in the short-term future, as long as ISDNs are only developed using national specifications. The same consideration applies to broadband ISDN. International pilots on the contrary will be very important for the COSINE/RARE community. In the long-term future, ISDN will be a major component of the PTT offering, replacing switched circuit services and enhancing access to X-25 public networks.

For leased lines and switched X-21, the standards are well defined and stable. For ISDN, the 1984 series of standards is incomplete, therefore the 1986 'Grey Book' serves as a basis for most European pilots. The 1988 series, to be published in the Autumn of 1988, is expected to be much more exhaustive and a sound basis for commercial implementations. Provided that the new standards are well defined, the user may expect connectivity between different countries which implement identical ISDN protocols.

Contrary to widespread belief, the ISO-OSI Reference Model provides a basis for high speed communications as well as for low-speed traffic. Experiments with standard protocols (X-25) or de facto standard protocols (TCP-IP) have shown that these can be tuned to provide high-speed communication. For example, it is possible to operate a link with X-25 at data rates of 1 or more Mbit/s.

Trade-off digital leased lines - ISDN

The connectivity of ISDNs is a critical aspect of PTT offerings. Also critical regarding the usefulness of the current ISDN option are the lack of practical trials with users. PTT rules on third party traffic, which is prohibited in some countries and in transnational traffic, is a third critical issue. A positive aspect of the ISDN option is tariffication, which according to PTT announcements will oscillate between factor 1 and 2 of the regular telephone tariffs. In addition, users will be able to apply X-25 on top of the ISDN infrastructure, thus providing a standardised international data-communications service. Regarding digital leased lines on the other hand, the availability of links with a satisfying cost-performance ratio may be insufficient. Another important consideration is the temptation to develop schemes for the implementation of high-speed networks which might not use OSI, while waiting for international ISDN. Meanwhile, peripheral countries may be at a disadvantage due to the lack of international links in the pre-ISDN period. Restrictive PTT rules on third party traffic also present a limitation.

Cost optimisation

With today's low-speed WANs, cost optimisation is very simple, from the user's point of view. With public X-25 Packet Switched Networks the cost depends on the volume of data transmitted. Cost is almost unaffected by whether end equipment and gateways are able to use efficiently the link to the public network. With leased digital lines the cost is not related to the efficiency of the protocols; users should only have a rough idea of their traffic volumes in choosing line speeds. ISDN and high-speed PTT WAN provide switched circuits without the facility to mix miscellaneous traffic. This means that the user has

to make efforts to optimise the use of the network. This can be done by sending file transfers, image transfers and similar applications over ISDN or high-speed digital lines. In these cases ISDN will be cheaper by a factor of 5 to 10 than today's public X-25 networks. Furthermore, it is expected that off-peak tariffs will be quite low. Interactive terminal traffic is best sent over good X-25 networks, public or private. For this application, ISDN could easily be more costly than today's networks, as long as there is no sophisticated software able to temporarily disconnect when there is no traffic. Additional efficiency can be achieved by adjusting the bandwidth to the speed at which the end equipment can send or receive data. Financial optimisation in an environment with available high-speed networking options including ISDN is more difficult because standards do not yet deal properly with quality of service. In addition, high-speed networking leads to several requirements on OSI levels 2 and above. The network gateway between LAN and WAN uses information about the profile of each communicating logical unit in a LAN, to route the connection through the most suitable WAN service. A suitable way of informing the network layer about these profiles needs to be defined.

Investments in PABXs

Existing digital PABXs can be upgraded only if they are recent enough, no more than two to five years old. Considering that a PABX, whether it is digital or not, must remain in use for ten to fifteen years before it can be phased out, some sites might soon be in a position to start a private ISDN service, whereas others might have to wait for many years. When buying new PABXs, institutions should make sure that these offer the following ISDN services:

- the SO inferface (two 64 kbit/s channels and a 64 kbit/ channels and a 64 kbit/s control channel) for large institutions;
- suitable connections to the PTT ISDN network;
- the availability of 'permanent' circuits at 64 kbit/s or even higher would be an asset;
- value added services should be taken into consideration, in particular X-25 switching within the PABX.

ISDN in the COSINE Programme

For the development of international ISDN services and the creation of a large market for ISDN systems, the industry and the PTTs would find an enthusiastic user platform in the research communities. Rare WGG has expressed the view that a pilot European-wide ISDN action would serve to gain experience with connecting private and public ISDN, as well as with European-wide ISDN as soon as PTT pilot services are available. Furthermore, the problem of mixing circuit-switched networking, which is an application of primary and practical importance for ISDN environments, could be studied.

Based on information provided by: J. Prevost, P. van Binst, RARE Working Groupe 6.

OSI standards For Meteorological Institutes: Access to Supercomputers at ECMWF

The European Centre for Medium-Range Weather Forecasts (ECMWF) in Reading (UK) serves as a focal point for one of the most extended and geographically dispersed user groups of computer facilities in the world. The Centre is developing its computer communications services infrastructure in line with the emerging international networking standards of ISO and CCITT. ECMWF joined RARE on January 1, 1988 as an International Member. The Centre has a commitment to ISDN (Integrated Services Digital Network) and fully subscribes to the RARE Work Plan. RARE and COSINE are setting up an infrastructure open to computers that varied user communities have, with the goal to achieve interworking and reduce the need to continue to work with proprietary networks. ECMWF could use this infrastructure when it is fully standardised. In an intermediary period, proprietary protocols will be used for the upper layers of the ISO-OSI Reference Model for computer communications. Member States of ECMWF can be upgraded to ISO protocols as the software becomes available for each site. The star configuration of the network with the ECMWF at its centre, and the nature of point-to-point protocols allow for a smooth changeover.

Optimising its computer facilities is vital for the Centre to meet its goals. The principal objectives of ECMWF are the development of numerical methods for medium-range weather forecasting; preparation on a regular basis of medium-range weather forecasts for distribution to the meteorological services of the member states; scientific and technical research directed to the improvement of these forecasts; and collection and storage of meteorological data. Medium-range weather forecasting is vitally important for agriculture, energy consumption, ship routeing, icebreaking, planning off-shore exploration and development, and for many other weather-sensitive activities.

An extremely powerful computer is needed to measure the atmospherical condition of the entire globe at regular intervals and predict the weather situation up to ten days in advance. The European Centre chose a Cray X-MP/48. Specifically, in the next ten years advances in computer and telecommunication technology should result in extension of deterministic forecasting range towards 2 weeks; provision of useful forecast information (time average) approaching 3 to 4 weeks ahead; significant enhancement in the quality and flexibility of product and data services; major improvements in remote access by member states to the Centre's computing facili-

ties, and in other data, model and educational services related to the mission of ECMWF.

Global observations and analyses from the Centre's archive have been found to be of great value for the scientific community. Universities and research institutes of the Member States make use of the Centre's 'supercomputer'. ECMWF is supported by seventeen Member States in Europe, and has a cooperation agreement with the World Meteorological Organisation of the United Nations (WMO), which has 160 members. The Centre also cooperates with the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) and with ESA (European Space Agency).

Outside institutes access ECMWF facilities

The facilities, computer simulations, regular data reports and data archives at ECMWF are used not only for the Centre's research and operational forecasting. Universities and the national meteorological services of its Member States also need to have access to its large computer installations in order to use these machines for a range of disciplines and activities related to meteorology, such as wave modelling and assessing ozone distribution in the atmosphere. ECMWF recognises special projects which can obtain computer time: about 25 percent of computer time is for usage by researchers outside of the Centre.

Currently, researchers working with the facilities at ECMWF apply DECnet or the Centre's proprietary ECNet protocols. After the envisaged implementation of OSI protocols in the DECnet environment, much more interactive traffic will be possible. As a measure to ease communications with its external users, ECMWF has just ordered a node for connection to the academic network EARN.

Five-fold increase in data traffic

ECMWF is going to see a considerable increase in the amount and the types of data transmitted and received by the Member States. This traffic is estimated to grow by up to a factor of five during the period 1988 to 1993. There is likely to be an increase in the amount of interactive traffic between users in the Member States and the European Centre. The Centre intends to adopt the emerging ISO standards for networking as these become available from manufacturers. The most important applications level standard for ECMWF will be the file transfer subset of FTAM. The Centre would prefer ISO protocols not to be introduced in a piecemeal fashion, but in complete FTAM implementations. Therefore, the Centre takes an interest in the defining of functional profiles which enable interoperability in particular applications such as FTAM. At a later stage and awaiting further standardisation results, Virtual Terminal connection will be an important application for the communities using the facilities at the Centre. In particular these facilities for interactive job preparation require very high-speed communication links. For ECMWF the gradual introduction of a public digital communications infrastructure is a sensitive issue as this is a vital complementary element in the upgrading of its services. The Centre has established that truly international digital links of 64 kbit/s and of 2 Mbit/s will be the mechanisms required for data transmission in Europe. Whether or not private circuits, which until now have been the dominant transmission links for the ECMWF community, can be phased out to be replaced by ISDN, depends among other things on tariff structures.

Information for article provided by: Geerd-R. Hoffmann, Head of Computer Division, European Centre for Medium-Range Weather Forecasts, Reading (UK).

COSINE NEWS
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TeleTest–A Swedish Test Centre for OSI Testing

There has been a lot of information published about the Test Centres in the Common Market project CTS-WAN. It is therefore easy to believe that no OSI test activities goes on in Europe, outside the CTS-WAN project. News on the Swedish Test Centre TeleTest may therefore by of interest.

In 1988 The Swedish Telecommunications Administration started marketing their test and validation services under the name of Teletest.

TeleTest' test services

At the new test centre, protocols according to ISO's OSI standards for Open Systems can be tested, as well as other characteristics of importance to quality and functionality of IT products.

Swedish Telecom has for a long time been testing their own telecommunication products. That service is now, together with new resources for testing and validation of data protocols, also available to customers outside of Swedish Telecom. Type approval tests for connection of telecommunication equipments to the Swedish Telecom network are carried out by TeleTest.

TeleTest is today the main national Swedish test centre for data and telecommunication products. Other test facilities for testing telephones, modems etc in Sweden are The Swedish National Testing Institute in Boras and SEMKO in Stockholm-Kista.

Parallell with building up new facilities for the PABX testing, decisions where taken at the Swedish Telecom Administration to build up a modern test center for OSI protocol validation. As a result of that decision, a new unit with testing facilities, and a special marketing function, was created within the Swedish Telecommunications administration.

With the forthcoming European and national requirements for testing and certification of Information Technology products in connection with governmental purchasing, it will be useful for the Swedish (and Nordic) industries to have easy access to testing facilities in Sweden.

The test tool ITEX

The decision to build up a test centre for OSI testing was the availability of the test tool ITEX, for writing structured test suites for protocol testing from layers two to seven in the OSI model. It is a product owned by the Swedish Telecom and was developed by The Swedish Institute for Computer Science, SICS and TeleLOGIC, a subsidiary of Swedish Telecom.

ITEX consists of a TTCN (Tree and Tabular Combined Notation) module, a module for the abstract syntax language ASN.1 and a test suite print module, which together can be used as a test suite development editor. With ITEX, the writing of test cases is simplified. Even if different persons are engaged in the writing of test suites, the test cases will be made to a uniform pattern.

TeleTest also cooperates with The National Computing Centre (NCC, England), IDACOM (Canada) and the Corporation for Open Systems (COS, USA) in the development of test tools for protocols validation.

TeleTest's test facilities

At TeleTest the following OSI testing will be available;

	OSI level	Product	ISO/IEEE	CCITT	Available
7	Application	FTAM	ISO 8571		Nov 88
		MHS		X-400	Nov 88
6	Presentation	–	–	–	–
5	Session	–	ISO 8326	X-215	Aug 88
			ISO 8327	X-225	Aug 88
4	Transport	–	ISO 8072	X-214	Aug 88
			ISO 8073	X-224	Aug 88
3	Nät		ISO 8208	X-25	Aug 88
		Internet	ISO/DIS 8473		Sept 88
			ISO 8348		Aug 88
			ISO/DIS 8878		Aug 88
2	Link	WAN	ISO 7776	X-25	Aug 88
		LAN	8802.2		running
1	Physical	CSMA/CD	8802.3	X-21	running
		Token bus	8802.4		planned
		Token ring	8802.5		planned

TeleTest–A Swedish Test Centre for OSI Testing

Other test services offered by TeleTest

To market test services it is necessary to look at the customer needs (known as well as unknown). To provide these services it is important to have motivated and qualified personnel.

With those two needs in mind, Swedish Telecom has built up a joint test service for all telecommunication products, from the approval testing of telephones to protocol validation.

Facilities for different kinds of testing will be attractive for the customer and will hopefully also increase the demand for quality assurance and operability testing in connection with approval tests, which in the long run also benefits the end user.

If type approval is concerned mainly with ensuring safety of networks, far more qualities may be of interest for the user of telecommunications equipment. Such aspects as functionality, interoperability, compatability etc are requirements that vendors and users may want to have documented and verified.

Functional standards, and functionality tests, together with conformance tests, measuring principles and test methods are also important items to consider in the development of accepted and needed test facilities.

At Teletest we therefore found it important to supply all these test services, and not only to provide type approval or conformance testing, especially as conformance to standard or type approval is no guarantee for the functionality of IT equipment.

There are also another important reason for wanting to do all types of testing and trouble shooting that will be done, e.g. the job satisfaction for TeleTest's personnel. To use the knowledge gained only for testing according to specifications, will probably not provide the necessary job enrichments, and in the long run knowledgable and dedicated personnel is the most valuable asset for high tech companies and organisations.

Though Sweden is not a member of the Common Market, and thus not a member of the CTS-WAN project, it does not mean that TeleTests personnel refrains from the necessary interactions with colleagues, standardisers and decision-makers which is a necessity to accomplish protocol testing projects sucessfully.

TeleTest's personnel takes an active part in standardisation work and is thus well-informed of the latest developments in OSI standards and conformance testing. The work on developing international (ISO/IEC, CCITT) as well as European (CEN/CENELEC and CEPT) standards has never been limited to the Common Market countries, and Swedish representatives have always been very active in these areas.

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IES NEWS is your newsletter. We want your comments, views and contributions. Help us to fulfill this aim. All communication to

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CTS-WAN

1. Introduction

The development and usage of a communications infrastructure (both global and local) is accelerating rapidly. As this trend continues, increasing reliance is being placed on the availability and capability of a stable communications platform.

Europe has long been a participant in the development of these communication facilities – one significant factor being the presence of national telecommunications monopolies. This development, both in Europe and worldwide has unfortunately led to a proliferation of Standards and national variations of these standards.

These problems have been recognised, and there are now two significant activities taking place that are attempting to provide solutions:

- the emergence of Open Systems Interconnection (OSI) and its related standards;
- the development of conformance testing services for OSI products that will provide reciprocal recognition of testing services produced in other countries.

The Commission is sponsoring a number of complementary initiatives in supports of these objectives, the overall aim being to enhance the portability and interoperability of IT systems. Currently three initiatives stand out within Europe.

a) Promotion of Functional Standards
b) Concept of European IT Certificate
c) Support for the Provision of Harmonised Testing Services

It must be remembered that implementations are derived from (and should conform to) complex, envolving, paper documents, making little use of any formal definition techniques. Existing standards largely rely on English descriptions of protocol and service behaviour, requiring implementors to translate these definitions into software and hardware. This translation process is formidable and subject to human error – simple mistakes and also misinterpretations of the intent of the standard. Indeed the standards are often imprecise and self-contradictory.

It is clear that OSI can only succeed if all implementations are reliable, effective, consistent and conform to the standards. Hence, conformance testing is essential to the realisation of Open Systems Interconnection.

2. CTS-WAN

The CTS-WAN program is part of a major European initiative launched by the Commission to provide harmonised conformance testing services in a wide-area-network (WAN) environment.

This program has utilised Europe's major centres of technical excellence on communications testing.

The organisations involved in this program are recognised authorities in communications systems and testing, namely:

- British Telecom plc (BT), UK
- Centre National d'Etudes des Télécommunications (CNET), France
- Centro Studi e Laboratori Telecommunicazioni S.p.A. (CSELT), Italy
- Compania Telefonica Nacional de Espana S.A. (Telefonica) Spain
- Deutsche Bundespost, Fernmeldetechnisches Zentralamt (FTZ), Germany
- The National Computing Centre Limited (NCC), UK
- Statens Teletjeneste Telelaboratoriet (PTT-DK), Denmark.

The goal is early, consistent, cost-effective testing in Europe and this achievement is only possible through the full and extensive collaboration of all contractors. CTS-WAN takes into account the fact thal reliable techniques, knowledge and experience of testing varies across the range of standards that comprise OSI. It has, therefore, defined six distinct but integrated technical areas to investigate testing in relation to:

Network layer implementations
Transport and Session layer implementations
Message Handling Systems
File Transfer Access and Management Systems
Teletex Systems
General Methodology

The methodology area exists to promote and encourage the following philosophies throughout all technical areas:

- use of a common testing methodology based on those defined by ISO in DP9646;
- use of common test specifications, so that the same abstract test specifications will be imple-

CTS-WAN

mented on different test tools to enable technical harmonisation;

- use of common procedures governing test centre-user relationships amongst all European countries. This includes documentation for interfacing and policies for contractual arrangements and re-testing strategies;
- the best choice of architecture which permits the efficient testing of the relevant OSI products.

The Testing Services

In the very near future the following ten CTS-WAN harmonised testing services will be available within the EEC:

MHS Layers 4-7
MHS Layers 6-7
FTAM Layers 6-7
Teletex Layers 4-7
Teletex X-75 Layer 2
Transport
Session
Network X-21 DTE
Network X-21 bis Layer 1
Network X-25

These testing services are the result of work achieved in five carefully defined technical areas all of which incorporate a common methodology. The CTS-WAN contractors insistence on instigating and supporting a common methodology is an example of their determination to apply the highest standards of professionalism to this program.

In order to test a complete OSI product, several testing services may be used – depending on the products architecture. For example, to test a monolithic complete MHS product connected to an X-25 network would require the X-21bis, X-25/2-3, and MHS/4-7 test services. All of these can be arranged through a single point of contact.

The Testing Technology

Within CTS-WAN there is a choice of testing tools for use in most technical areas. This ensures that clients are not "locked in" to any one specific technology. However, the same abstract test specifications are implemented in all tools used for a particular testing service. All testing technology is demonstrated to be equivalent via the use of reference implementation.

Technical Area	Test Tools
Network	MOSES (FTZ) TL X-21 (PTT-DK) OSITEST/X-25 (FTZ/TELEFONICA) NCT1 (CSELT)
Transport & Session	NCC T&S tester (NCC) RTLE-OSI (CNET/TITN/CAP)
Teletex	OSITEST/TTX (FTZ/DANET) RTLE-TTX (CNET/TITN/CAP) IDACOM (PTT-DK)
MHS	OSITEST/400 (FTZ/DANET) GENEPX 400 (CNET/SEMA/MARBEN)
FTAM	NCC FTAM tester (NCC)

The Reference Implementation

To ensure that different tools in geographically separated test labs consistently produce the same results, the CTS-WAN program has developed Reference Implementation (RIs) for each of the protocols covered. These RIs are configurable to be non-conforming in various ways and are used as the yardstick in assessing the correct performance of test tool technology and testing procedures.

Technical Area	Reference Implementation
Network	MOSES (FTZ) MPT (FTZ)
Transport & Session	OSIAM-C (MARBEN)
Teletex	PETRUS (FTZ)
MHS	CEMPS 400 (CSELT)
FTAM	FTAM RI (BULL)

Information and Public Domain Documentation

A catalogue has been prepared with information on the technical documentation available now from CTS-WAN. The catalogue is free but a charge (relating to the size of the document) will be made to cover duplication and distribution of all technical documents:

below 50 pages	35 ECU
51-200 pages	50 ECU
201-500 pages	100 ECU
over 501 pages	300 ECU

Technical documents will cover the areas Methodology, FTAM, MHS, Network, Teletex, Transport, and Session.

CTS-WAN

The Standards

The following European Functional Standards, CCITT recommendations and ISO Standards are relevant to the CTS-WAN program.

Technical Area	Functional Profiles	ENV	CCITT Recommendations & ISO Standards
Network	T/31	41 107	CCITT X-25
	T/41		CCITT X-21, X-21 bis
	T/421		
	T/422		
Transport & Session	T/31	41 104	ISO 8073, 8327
Teletex	A/221	41 203	CCITT F-20 T-60, T-61, T-62, T-70, T-64, X-75/2, X-21, X-25
MHS	A/311	41 202	CCITT X-400
	A/3211	41 201	X-401
			X-408
			X-409
			X-410
			X-411
			X-420
			X-400 Series Implementors Guide (Version 5)
			X-224
			X-225
FTAM	A/111	41 204	ISO IS 8326 and 8327
	A/112		SO IS 8224 and 8225
	A/13		ISO IS 8822 and 8823
			ISO IS 8649 and 8650
			ISO IS 8571

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The PDMB Secretariat

The CTS-WAN contactors employ a full time secretariat (called the PDMB Secretariat) which is based at the National Computing Centre Limited in the UK. The PDMB Secretariat act as a focul point for information on CTS-WAN as a whole and will provide you with technical documentation and answer general enquiries. In the first instance therefore, please contact:

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Contact: Mrs M Smith

Summary of Suppliers' OSI Products and Plans

	X-25		NETWORK SERVICE				TRANSPORT					UPPER LAYERS					
			CONS		CLNS												
	80	84	LAN	WAN	LAN	WAN	0	1	2	3	4	SES	PRES	ACSE	MHS	FTAM	VTP
British Telecom	◪	[8]	□	□			◪□		□			Gold 400	□	□	◪□		
CAP	■	■	■	■	■	■	■		■		■	■	■	■	■	■	[8]
Concurrent	■	□	■	■	[8]		[8]		□	■		[8]	[8]	[8]	[8]	[8]	
DEC	■	■	S	■	■	■	■		■		■	■	[8]	[8]	■	[8]	
Data General	■	□	■	■	◪	◪	◪				◪	■	■	[8]	■	[8]	
Ferranti	■	□		■	■		■	■	■	■	■	■			■		
GEC	■	[7]	[8]	[8]	■		■		■		■	□			□		
Honeywell Bull	■	[8]	□	[8]	[8]	[8]	S		S	S	S	□	□	□	□	□	
Hewlett-Packard	■	□			■	■	■		■		S	[8]	□	□	[8]	□	
IBM	■	◪				◪	◪		◪			◪			[8]	S	
ICL	■	[8]	S	◪□	■		■		■	■	■	◪□			◪□	[8]	S
ITL	■	[8]		■	■		■		□	◪□	■	■			■	[8]	□
Logica	■	S		S			◪					◪			[7]		
McDonnell Douglas	■	◪[8]			[8]				[8]		[8]						
Mercury	■	[7]								■	■						
NCR	■	□	□	□	□	□	S		S		S	S	□	□	□	S	
Norsk Data	■				□		■		■			□	□	□	□	□	
Plessey	■	[8]					□					□			□		
Prime	■	[7]	□	□	□	□	□		□			□	□	□	□	□	
Sun	■				■	■					■	■	■	■	■	■	□
Sydney	■	◪□	■	■	■	■	■	■	■	■	■	■	[8]	[8]	■	[8]	
Tandem	■	□		■	□		■	■	■	■	□	◪□	□	□	□	□	
Unisys	■	□			◪[8]		□		□		□	□	□	□	□	□	
Wang	■	[8]			[7]	[7]	[7]		[7]	[7]	[7]	[7]	[8]	[8]	[8]	[8]	

Key to table

■ Available

◪ Available on part of product range

□ Planned

[8] Figure in box indicates year planned; 8 = 1988; 7 = 1977

S Special product or prototype for demonstration purposes

Two boxes in the same column, e.g. ◪□ means available on part of the product range and planned for other parts.

Source: OSI Products 2nd Report published by HMSO

Text of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission

(UNCID)

As Adopted by the ICC Executive Board at its 51st Session (Paris, 22 September 1987).

Article 1: Objective

These rules aim at facilitating the interchange of trade data effected by teletransmission, through the establishment of agreed rules of conduct between parties engaged in such transmission. Except as otherwise provided in these rules, they do not apply to the substance of trade data transfers.

Article 2: Definitions

For the purpose of these rules the following expressions used therein shall have the meaning set out below:

a) **Trade transaction:** A specific contract for the purchase and sale or supply of goods and/or services and/or other performances between the parties concerned, identified as the transaction to which a **trade data message** refers;

b) **Trade data message:** Trade data exchanged between parties concerned with the conclusion or performance of a **trade transaction;**

c) **Trade data transfer** (hereinafter referred to as "transfer"): One or more trade data messages sent together as one unit of dispatch which includes heading and terminating data;

d) **Trade data interchange application protocol (TDI-AP):** An accepted mthod for interchange of **trade data messages,** based on international standards for the presentation and structuring of **trade data transfers** conveyed by teletransmission;

e) **Trade Data Log:** A collection of **trade data transfers** that provides a complete historical record of trade data interchanged.

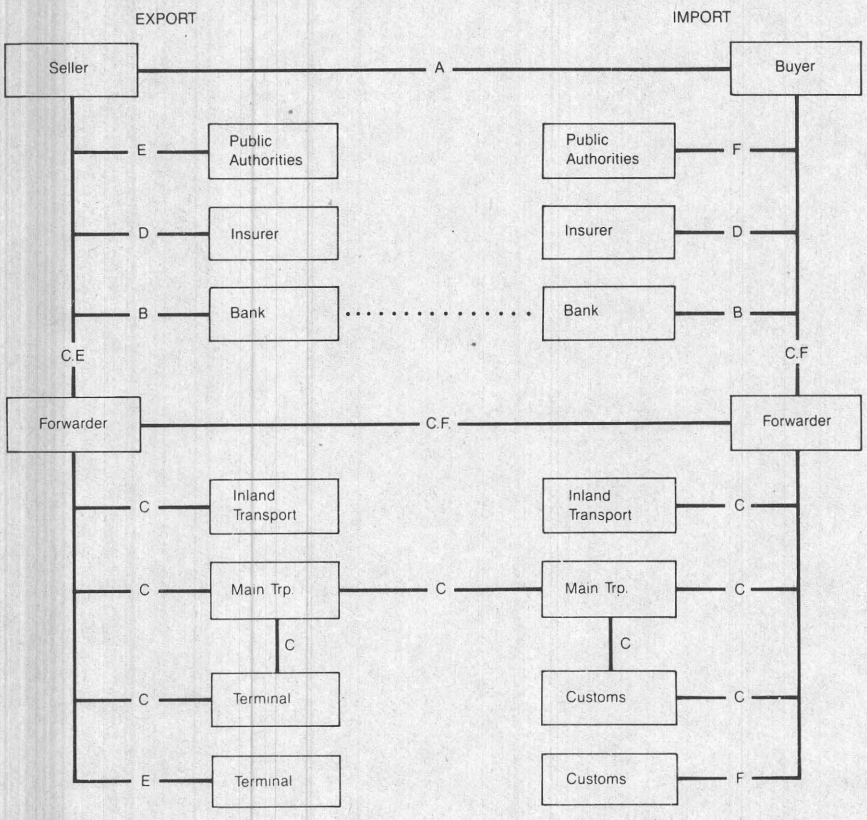
Article 3: Application

These rules are intended to apply to trade data interchange between parties using a TDI-AP. They may also, as appropriate, be applied when other methods of trade data interchange by teletransmission are used.

Article 4: Interchange standards

The trade data elements, message structure and similar rules and com-

Annex 1. **DATA FLOWS AND MESSAGE FUNCTIONS**



Dotted line = Special, dedicated network

Main functions		Data flows
A	Establishment of commercial agreement	Commercial
B	Arrangement of payment	Financial
C	Arrangement of transport	Transport/Intermediary
D	Arrangement of insurance	Insurance
E	Clearance of export	Official
F	Clearance of import	Official

Text of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission

munication standards used in the interchange should be those specified in the TDI-AP concerned.

Article 5: Care

a) Parties applying a TDI-AP should ensure that their transfers are correct and complete in form, and secure, according to the TDI-AP concerned and should take care to ensure their capability to receive such transfers.

b) Intermediaries in transfers should be instructed to ensure that there is no unauthorised change in transfers required to be retransmitted and that the data content of such transfers is not disclosed to any unauthorised person.

Article 6: Messages and transfers

a) A trade data message may relate to one or more trade transactions and should contain the appropriate identifier for each transaction and means of verifying that the message is complete and correct according to the TDI-AP concerned.

b) A transfer should identify the sender and the recipient; it should include means of verifying, either through the technique used in the transfer itself or by some other manner provided by the TDI-AP concerned, the formal completeness and authenticity of the transfer.

Article 7: Acknowledgement of a transfer

a) The sender of a transfer may stipulate that the recipient should acknowledge receipt thereof. Acknowledgement may be made through the teletransmission technique used or by other means provided through the TDI-AP concerned. A recipient is not authorised to act on such transfer until he has complied with the request of the sender.

b) If the sender has not received the stipulated acknowledgement within a reasonable or stipulated time, he should take action to obtain it. If, despite such action, an acknowledgement is not received within a further period of reasonable time, the sender should advise the recipient accordingly by using the same means as in the first transfer or other means if necessary and, if he does so, he is authorised to assume that the original transfer has not been received.

c) If a transfer received appears not to be in good order, correct and complete in form, the recipient should inform the sender thereof as soon as possible.

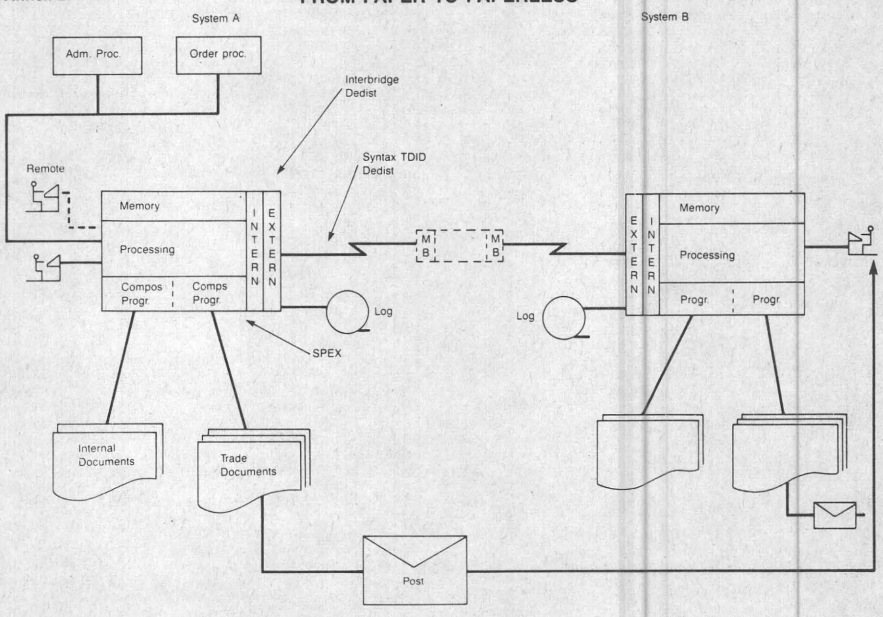
d) If the recipient of a transfer understands that it is not interded for him, he should take reasonable action as soon as possible to inform the sender and should delete the information contained in such transfer from his system, apart from the trade data log.

Article 8: Confirmation of content

a) The sender of a transfer may request the recipient to advise him whether the content of one or more identified messages in the transfer appears to be correct in substance, without prejudice to any subsequent consideration or action that the content may warrant. A recipient is not authorised to act on such transfer until he has complied with the request of the sender.

Annex 2.

FROM PAPER TO PAPERLESS



Text of the Uniform Rules of Conduct for Interchange of Trade Data by Teletransmission

b) If the sender has not received the requested advice within a reasonable time, he should take action to obtain it. If, despite such action, an advice is not received within a further period of reasonable time, the sender should advise the recipient accordingly and, if he does so, he is authorised to assume that the transfer has not been accepted as correct in substance.

Article 9: Protection of trade data

a) The parties may agree to apply special protection, where permissible, by encryption or by other means, to some or all data exchanged between them.

b) The recipient of a transfer so protected should assure that at least the same level of protection is applied for any further transfer.

Article 10: Storage of data

a) Each party should ensure that a complete trade data log is maintained of all transfers as they were sent and received, without any modification.

b) Such trade data log may be maintained on computer media provided that, if so required, the data can be retrieved and presented in readable form.

c) The trade data log referred to in paragraph (a) of this article should be stored unchanged either for the period of time required by national law in the country of the party maintaining such trade data log or for such longer period as may be agreed between the parties or, in the absence of any requirement of national law or agreement between the parties, for three years.

d) Each party shall be responsible for making such arrangements as may be necessary for the data referred to in paragraph (b) on this article to be prepared as a correct record of the transfers as sent and received by that party in accordance with paragraph (a) of this Article.

e) Each party must see to it that the person responsible for the data processing system of the party concerned, or such third party as may be agreed by the parties or required by law, shall, where so required, certify that the trade data log and any reproduction made from it is correct.

Article 11: Interpretation

Queries regarding the correct meaning of the rules should be referred to the International Chamber of Commerce, Paris.

ESPRIT II: 158 Projects Approved

(Concluded from pg. 28)

Some of the proposals selected build on ESPRIT I work which has already led to industrial success, such as Supernode (which has developed a range of European-built "minisupercomputers", now being built and marketed by a French SME and a large UK company) and CNMA (which has established a world lead in computer communications for increased efficiency in manufacturing). Other proposals move into new areas such as computer systems to control domestic equipment and appliances, and the establishment of Europe-wide specification. Particular emphasis is being put on strenghtening European capabilities in certain areas such as:

- Application-Specific Integrated Circuits (for use in consumer electronics)
- Bipolar (very high-speed) Integrated Circuits
- Non-volatile computer memories
- High-performance Parallel Processing Computers
- New Office Workstations which can handle voice, data, handwriting and graphics.

ESPRIT II also includes a new component. Basic Research Actions, aimed at enhancing European capabilities in basic research in IT, which was the subject of a separate Call for Proposals announced on 25 March and closing on 13 June. The response to this Call was also enthusiastic: over 300 proposals, with a total cost exceeding 1000 million ECU and involving more than 1300 participants, were received. The selection of projects is expected to be finalised in October.

Esprit
Information Exchange System

iesnews

Issue No 17, August 1988

The first Call for Proposals for ESPRIT II, the 2nd phase of ESPRIT (European Strategic Program for Research & Development in Information Technology), closed on 12 April.

650 proposals for Research & Developments projects were submitted in response to the call, of which 158 have been selected by the Commission and approved for contract negotiation. Negotiations are now starting with the organisations involved and the contracts should be signed in the autumn. Proposer will be informed of the status of their proposal within the next few days.

ESPRIT II: 158 Projects Approved

The high quality of the proposals, the industrial commitment underlying them and the urgency of the work proposed have led the Commission, with the support of the ESPRIT Advisory Board and the ESPRIT Management Committee, to plan to bring forward Community funding beyond the 600 million ECU orginally earmarked for projects arising from this first call. Subject to negotiations, it is expected that the total value of projects accepted will be 1,560 million ECU. This represents half the total volume of work in ESPRIT II and will involve Community funding of 780 million ECU.

The Commission has still found itself unable to support all the projects which were assessed as technically excellent.

One notable feature of the proposals selected is the level of participation by Small and Medium-sized Enterprises (SMEs), which will be taking part in 148 of the 158 projects.

The work to be carried out covers the different technology areas of the ESPRIT II Workprogram in the following proportions: 30% in Microelectronics & Peripherals, 30% in Information Processing Systems, 20% in Computer Integrated Manufacturing and 20% in Office Systems.

(Cont'd on pg. 27)

FUTURE EVENTS

Optical Communication.
I.E.E. Brighton,
11 - 15 Sept., 1988.

Eurofax. Inst. for
Graphic Communication.
Amsterdam, 18 - 21 Sept., 1988.

Forincom: Information Technology and Communications. SFIB and Syntec.
Paris, 4 - 6 Oct. 1988.

Information Now. Eusidic.
Heidelberg, 17 - 20 Oct., 1988.

New Technologies for NATO.
AFCEA.
Brussels, 18 - 20 Oct. 1988.

Datagram: Deregulation: Opportunities in a Radically Changing Market. European Telecommunications Industry Conf.
Brussels, 19 - 15 Sept., 1988.

FUTURE EVENTS

Infosystem 88.
Greek Computer Society.
Thessaloniki, 3 - 7 Nov., 1988.

Communications in the 1990s.
IDate.
Montpellier, 16 - 18 Nov., 1988.

Optical Informations.
Learned Informations.
Amsterdam, April 1989.