Esprit

European Strategic Programme
for Research and Development in
Information Technology

The Project Synopses

Information Exchange System

Volume 7 of a series of 8

September 1989

Directorate General XIII
Telecommunications, Information Industries and Innovation
Commission of the European Communities

The Project Synopses

Information Exchange System

Volume 7 of a series of 8

September 1989

XIII/321/89

LEGEND

COUNTRIES

B	Belgium
D	Federal Republic of Germany
DK	Denmark
E	Spain
F	France
GR	Greece
I	Italy
IRL	Ireland
L	Luxembourg
NL	The Netherlands
P	Portugal
UK	United Kingdom

ROLES

M	Main Contractor
C	Coordinator
P	Partner
S	Sub-Contractor
A	Associate Contractor

INDEX BY PROJECT NUMBER

INDEX BY ACRONYM

Projects without acronym can be found in the main index

INFRASTRUCTURE ACTION: INFORMATION EXCHANGE SYSTEM (IES)

THE ESPRIT COMMUNICATIONS INFRASTRUCTURE - IES

The Council decision on ESPRIT required that, in addition to the work defined in the main technical areas, supporting infrastructural actions be taken, particularly that an Information Exchange System (IES), be implemented to ensure that the execution and management of the research and development projects were properly supported and that appropriate dissemination was given to their results.

The general policy adopted hinges around the gradual development and availability of Open Systems Interconnection (OSI)-conformant computer communications products and is split into three parts :

1) The provision of services to the ESPRIT community.

2) Support for developments conforming to the International Standards Organisation (ISO) standards for OSI.

3) Harmonisation of standards implementations and other related Europe-wide research networking activities, in order to allow for interworking.

As part of the policy of supporting and accelerating migration to OSI, development activities were actively stimulated by the IES in order to provide OSI-conformant tools for IES users and service providers and to encourage the acceptance of OSI amongst European manufacturers. The overall objective was that in those areas where standards were sufficiently mature, products which would be of potential benefit to IES would be available in a time-frame allowing support to be given to other ESPRIT R&D projects.

The IES infrastructural actions were also intended to supply working services to be used by the information technology R&D community. Within one month of the initial pilot projects starting (the first project began on 12 July 1983), ESPRIT had an operational electronic mail and conferencing system available called EuroKom, based on work under the European Cooperation in the field of Scientific and Technical research (COST) 11 programme. The system is used regularly by a significant proportion of the ESPRIT community and is growing rapidly as a means of:

- Projects communicating amongst themselves.

- Projects coordinating with the Commission of the European Communities.

- Dissemination of information about ESPRIT norms, standards, institutional news and conference calendars in many different fields.

PROJECT SYNOPSES

RESEARCH OPEN SYSTEMS FOR EUROPE (ROSE)

PROJECT NUMBER: 33

The objectives of ROSE were to create the Open Systems Interconnection (OSI)-conformant communications software modules for the UNIX-based computers of 5 major European IT vendors and to demonstrate interworking over a pilot network. The project was a test environment for prototyping OSI implementations on a European scale and the work carried out covered the network management aspects of OSI. A major demonstration was made in 1988 as the culmination of the project.

The project provided major support from industry for the definition of the "Standards Promotion and Application Group" (SPAG) profiles and inputs to the international standards definition process. In the ROSE pilot network, about 20 sites were in operation, one being located at the offices of the Information Exchange System (IES) group in Brussels. The network continues to be used for day-to-day communication between the project partners. The vendors who participated in this project are now marketing OSI-conformant modules in their product catalogues.

In Year 1, Network and Transport were developed and integration with UUCP achieved. In Year 2, ISO Transport, Session Remote Operations Service (ROS), File Transfer Access & Management (FTAM) and X.400 Message-Handling Service were implemented. A pilot network was installed to test the different implementations of the software developed and to demonstrate interworking between the different implementations. The prototypes developed within the project have led in many cases to commercial implementations. During Year 3 further interworking tests were done and Basic Network Administration (an early intercept of a draft proposal for ISO 9595) was developed, ported and then demonstrated working between the partners' systems. The industrial partners are now moving from development prototypes to fully integrated suites of software. It is expected that these will be commercially available by the end of 1989.

Contact Point

Mr. M. Elie
BULL S.A.
68, Route de Versailles
F-78430 LOUVECIENNES

Tel: +33 139 025 000
Tlx: 697030

Participants	Country	Role
BULL S.A.	*F*	*M*
GENERAL ELECTRIC COMPANY	*UK*	*P*
SIEMENS	*D*	*P*
ING. C. OLIVETTI & C., SPA	*I*	*P*
ICL	*UK*	*P*

Start Date	Duration
01-NOV-85	*60 months*

THE UNIX-UNITED ASPECTS OF THE IES

PROJECT NUMBER: 130

The partners in this project were SG2 of France and Microelectronic Applications Research Institute (MARI) of the UK. The main objective of this project was to prove the suitability or otherwise of the Newcastle Connection method of interconnecting UNIX machines via wide-area networks (WANs), rather than just local-area networks (LANs). The other major objective was to provide software for the portable UNIX operating system, conforming to the Open Systems Inteconnection (OSI) session layer standards suitable for a Newcastle Connection environment.

The Newcastle Connection method was developed in 1982 at the University of Newcastle under Professor Brian Randell. The aim was to give the user of a machine running the UNIX operating system over a LAN the possibility to interact with other such machines as if they were one and the same machine. In a sense, this could be considered a distributed virtual machine. The mechanism used is that of remote procedure calls buried within the Newcastle Connection software, itself installed on all the machines concerned. During the project, the following work was performed :

- The resolution of apparent contradictions between the addressing mechanisms of the Newcastle Connection, designed for local area network uses, and of the OSI standards; this was done by designing a resources search algorithm to resolve data transmission pathnames, and an adapter to allow use of the OSI session service.

- OSI session layer and transport layer software were built for the UNIX machines involved; during the project, a session layer was built (BCS and BAS subsets, ISO/DIS8326/27) on top of a transport layer (classes 0 and 2, ISO/DIS8326/27). Lack of availability of suitable network layer (X.25) software and hardware led to an X.25 simulator being used over a loop-back asynchronous transmission service operating at 4800 bps.

One of the main results of the project has been to show that although it is technically feasible to interconnect UNIX machines running the Newcastle Connection software via wide area networks, such interconnection has been found in practice not to be interesting at present WAN speeds. To be of interest to the end user, compared to more traditional methods, WAN speeds need to be of the same order of magnitude as LAN speeds.

The other main result has been the building and testing of OSI session layer software, profiles BCS and BAS.

Contact Point

SG2
12 Avenue Vion-Whitcomb
BP 215 16
F-75765 PARIS Cedex 16
Tel: +33 1 4 050 22 22

Participants	**Country**	**Role**
SG2	*F*	*M*
MARI SOFTWARE SERVICE	*UK*	*P*

Start Date	**Duration**
01-OCT-83	*24 months*

ESPRIT/EUROPEAN LOCAL AREA NETWORK (ELAN)

PROJECT NUMBER: 700

The objective of this project was to install a Local Area Network (LAN) which corresponded to specific operational and functional user requirements through phased implementation of International Standards Organisation (ISO) and Open Systems Interconnection (OSI) standards.

As part of the experiment, a local area Carrier Sense Multiple Access/Collision Detection (CSMA/CD) network was installed for the duration of the contract in two CEC buildings in Brussels, comprising a 10 Mbit transfer coaxial cable, a bridge linking the two LAN buildings, an X.25 gateway and a PAD gateway. This provided connections to over 40 end-users, linking word processors, microcomputers and clusters as well as providing access to an E-Mail server. It also provided a forum of co-operation among four major European computer manufacturers, which resulted in the acceleration of agreement on standards.

In conclusion, the project provided input to the specification of a multivendor LAN call for tenders issued by the Commission's DGIX/E Informatics Directorate. It accelerated the agreements on LAN standards through the cooperation of major manufacturers within the Standards Promotion and Application Group (SPAG) and CEN/CENELEC (Comité Européen de Normalisation/Electrotechnique).

Contact Point

Mr. D. Lloyd
ICL European Institutions
Bessenveldstraat 9
B-1920 DIEGEM

Tel: +32 2 723 18 11
Tlx: 22362
Fax: +32 2 725 09 08

Participants	Country	Role
ICL BELGIUM	*B*	*M*
BULL S.A.	*B*	*P*
SIEMENS DATA S.A.	*B*	*P*
OLIVETTI S.A.	*B*	*P*

Start Date	Duration
01-MAR-84	*36 months*

EUROKOM

PROJECT NUMBER: 706

The EuroKom service represents an important basic component of the ESPRIT Information Exchange Services (IES) which provide infrastructure support to the ESPRIT and other Framework Programme participants.

The EuroKom project provides a centralised computer service to terminal and personal computer users, supporting research teams, business and government organisations in their national and international communications requirements in all member states and from other sites within Europe and beyond. Initially established in 1983 to cater for participants in the ESPRIT programme, current services include an electronic mail and conferencing service (which can also be used for document and file transfer and repository), gateways to all major international research networks (allowing messaging and conferencing with subscribers to these networks) and a telex gateway, reflecting the trend towards multi-function terminals with full facilities.

EuroKom is complemented by support services including the provision of comprehensive documentation and training, a central help desk for on-line or telephone queries and a local support office in Brussels.

The project also resulted in the establishment of the EUROCONTACT service, a database designed to provide partnership-search facilities to the potential ESPRIT programme participants. This service is now based on a network of National Contact Points (NCPs) which will provide local support centres in each member state. Each NCP will administer a down-loaded, local version of the database and at regular intervals, will transmit national data to EuroKom where it will be integrated into the central database. It is projected that the Eurocontact Service will be available to other European Community R&D programmes running under the aegis of the European Commission.

New developments include an X.400 gateway (already operational on a pilot basis), a fax gateway, an extension of the services offered in the document and file transfer and repository, improved access to the central host from all Community member states and an extension of local support activities.

Contact point

Mr. J. Conroy
University College Dublin
EuroKom
UCD Computer Centre
Belfield
IRL-Dublin 4

Tel: +353 1 697890
Tlx: 91178 UCDEI
Fax: +353 1 838605

Participants	**Country**	**Role**
University College Dublin	*IRL*	*M*

Start Date	**Duration**
01-MAY-83	*60 months*

INFORMATION EXCHANGE SYSTEM (IES) SUPPORT SERVICES

PROJECT NUMBER: 710

The objectives of IES Support Services project are:

- To identify and implement services complementary to or in support of present and future IES services.

- To monitor user needs in relation to their information exchange requirements in cooperative R&D community programmes and to propose ways in which these can be satisfied through existing or new IES services.

- To edit, publish and distribute a publication reporting on IES projects and developments as well as other major European-wide activities related to information exchange through telecommunication networks.

Since the contract began the project has :

- Issued 23 bi-monthly IES Newsletters up to June 1989 to its subscribers (currently numbering over 10 000).

- Tested and demonstrated an online machine translation pilot service called COTEL. This service was offered through a host in Luxembourg and the SYSTRAN programme, which could be accessed through public X25 networks by any asynchronous telecommunication device. A user interface allowing users to pass text files in source language and receive a raw translation in the target language was developed and provided to interested users. The service was terminated when a commercial operator began to offer a similar service.

- Provided electronic news over EuroKom conferences in specific areas such as European information technology (IT) standards news, news from the European institutions related to IT and news on IT technological developments.

- Launched a set of online databases under the name IES Data Collections available through the European Commission Host Organisation (ECHO) in Luxembourg. These are aimed to support Information Exchange activities and concern:
    - Publicly funded IT projects.
    - People accessible via electronic mail systems.
    - Research sites and facilities.
- Launched a multilingual telephone service (IES HELP-LINE) providing information and answers to questions on the IES in services and the IES general.
- Sponsored the development of the *Information Technology ATLAS*, a reference publication on public R&D activities in Europe.
- Assisted in preliminary activities in the definition of the Community R&D Information Service (CORDIS), which constitutes part of the VALUE programme within the Community R&D FRAMEWORK programme.
- Launched the pilot implementation of the PROTEAS database which contains information on R&D developments and prototypes with potential commercial applications.

Contact Point

Mr. P. Lenert
IEGI
13 rue de Bragance
L-1255 LUXEMBOURG

Tel: +352 445 811
Fax: +352 447 352

Participants	**Country**	**Role**
IEGI	*L*	*P*
Expertel	*UK*	*S*
Nouveau Medias	*L*	*S*
GRS	*UK*	*S*
Longman-Cartermill	*UK*	*S*
IOS	*NL*	*S*

Start Date	**Duration**
24-JUL-85	*60 months*

MESSAGE-HANDLING SURVEY AND TRENDS FOR THE IES USER COMMUNITY (HERMES)

PROJECT NUMBER: 717

The objectives of the Hermes project were to investigate the requirements of the Information Exchange System (IES) users of message-handling systems conforming to the relevant standards (CCITT X.400 series), and the extent to which current and planned systems met their requirements. Subsequently a series of guidelines for the specification of an IES message-handling system would be laid down. It was also important to ensure that the guidelines proposed were in harmony with the developments being proposed by the appropriate standardisation bodies.

As a result of the completion of a series of three tasks, the appropriate set of guidelines were produced. The successfully completed tasks were:

- Assessment of the current and future requirements of the ESPRIT user community for electronic information exchange, in the context of their ESPRIT work.

- Evaluation of current and planned products and the extent to which such products fulfil user requirements.

- Analysis of the progress of international standardisation in the relevant areas, and the applicability of this work to the introduction of new IES services.

The resulting guidelines incorporate the definition of services based on user requirements and a description of the IES system architecture. Further to this the guidelines address the use of off-the-shelf products and migration towards interworking capabilities conforming to the Open Systems Interconnection (OSI) standards.

Contact Point

Mrs. S. Hamer
FISHER & LORENZ
16 Copthorne Road
Croxley Green, Rickmansworth
UK-Herts WD3 4AE

Tel: +44 923 896 056
Fax: +44 923 896 485

Participants	**Country**	**Role**
FISHER & LORENZ	*DK*	*M*

Start Date	**Duration**
01-JAN-86	*12 months*

COMMUNICATIONS ARCHITECTURE FOR LAYERED OPEN SYSTEMS (CARLOS)

PROJECT NUMBER: 718

Communications Architecture for Layered Open Systems (CARLOS) is intended to allow existing personal computers and terminals to communicate via the Open Systems Interconnection (OSI)-conformant protocols, even if these current communications packages are considered incompatible.

The consortium has developed a set of hardware and software modules which were tested by Danish telephone administrations in an operational environment.

Dependent on the customers' equipment, various modules can be added in order to allow interworking with OSI-conformant applications. The full OSI-PC conforms to all OSI layer protocols across public X.25 packet-switched networks. The OSI-PAD allows users of common terminal equipment to connect to the world of OSI communications. A sophisticated presentation system is available, comprising a set of tools for the presentation of network management information in a graphical form.

There have been two extensions to the project:

- CACTUS (CARLOS Addition for Clustered Terminal USer agents), which has developed CCITT X.400 message-handling software for a cluster of PCs around a central server.

- SESTA (Standard Esprit System Transfer Adaptor), which is developing a plug-in card for industry-standard PCs to provide the full OSI 7-layer model within the PC, thus allowing for the first time a direct interface with X.25 data networks.

The project achieved a signal success by being selected to provide the network management facilities for the Danish Public Library Service's private data network. The CACTUS software was completed in mid-1989 and will be marketed shortly. The SESTA implementation is scheduled for completion in mid-1989 and should be available as a commercial product early in 1990.

Contact Point

Mr. J. Bruun
PMC
17 Square Ambiorix *Tel: +32 2 733 8357*
B-1040 Brussels *Fax: +32 2 733 8869*

Participants	**Country**	**Role**
FISHER & LORENZ	*DK*	*M*
PROJECT CONSULTANT (PMC)	*DK/B*	*P*
CASE	*UK*	*P*
RC COMPUTER	*DK*	*P*
SYSWARE	*DK*	*P*
ETSIT-B	*E*	*P*
ESTSET-M	*E*	*P*
INESC	*P*	*P*

Start Date	**Duration**
01-FEB-84	*48 months*

THE OBVIOUSLY REQUIRED NAME-SERVER (THORN)

PROJECT NUMBER: 719

THe Obviously Required Name-server (THORN) is a precompetitive research project to study directory services and to develop a prototype. The functions to be provided included "White Pages", "Yellow Pages", aliasing, replication and shadowing.

During Phase I (years 1 and 2), the Project produced prototype software conforming to ECMA standards. A Pilot network was implemented, based on this software, to gain experience in using the directory.

Phase II of the Project (currently underway) is developing a full implementation of the International Systems Organisation (ISO) 9594/International Telegraph and Telephone Consultative Committee (CCITT) X.500 specification, together with appropriate on- and off-line tools and screen/window-based interfaces for interrogation of the directory system. The original Large Scale Pilot eXercise (LSPX) has been extended to include all partners. Completion of the project is expected in late 1989.

THORN has achieved international recognition for its input to standards for directory services, being developed by both CCITT and ISO. The LSPX has been extended, with 20 Directory Service Agents (DSA) in 6 countries. These DSAs now hold information on nearly 400 sites, over 1500 hosts and over 18 000 people. The industrial partners have commenced the development of commercial products, tracking further evolution of the pre-competitive developments. These are expected to be commercially available by the end of 1989. User-friendly man-machine interface prototypes have been developed, allowing the use of any type of terminal from Teletype to X-Windows.

The project should provide the basis for establishment of directory services during the early 1990s.

Contact Point

Ing. F. Cordera
ING.C.OLIVETTI & CO. SpA
Didau DSM Ufficio Reti
Via Jervis 77 *Tel: +39 12 552 518*
I-10015 IVREA (TO) *Tlx: 310030 I*

Participants	**Country**	**Role**
ING.C.OLIVETTI &CO. SPA	*I*	*M*
BULL S.A.	*F*	*P*
DFN	*D*	*P*
ICL	*UK*	*P*
SW	*I*	*P*
UNIVERSITY COLLEGE OF LONDON	*UK*	*P*
SIEMENS AG	*D*	*P*
INST NAT RECH INFORM & AUTOM (INRIA)	*F*	*P*
GENERAL ELECTRIC COMPANY	*UK*	*P*

Start Date	**Duration**
01-JAN-85	*60 months*

MORE INFORMATION?

If you require more information, please contact:

COMMISSION OF THE EUROPEAN COMMUNITIES

DGXIII/A2

Telecommunications, Information Industries and Innovation
ESPRIT INFORMATION
200 Rue de la Loi
B-1049 Brussels

on

Tel: +32 2 235 16 03
Tlx: 25946 JEPE B
21877 COMEU B
Fax +32 2 235 06 55

or

COMMISSION OF THE EUROPEAN COMMUNITIES

DG XIII/E5

Telecommunications, Information Industries and Innovation
Ref: ESPRIT
200 Rue de la Loi
B-1049 Brussels