# Annual Report 1988-1989

**EARN**

# Contents

**The EARN Executive Committee:**

Standing from left: **Michael Hebgen**  **Paul Bryant**  **Dennis Jennings**  **Jean-Claude Ippolito**  **Stefano Trumpy**
Vice President  General Secretary  Treasurer

Sitting from left:  **Avi Cohen**  **Frode Greisen**  **Alain Auroux**
President  Manager

# President's Report

EARN has now been established as the major permanent computer network dedicated to research and education in Europe, the Middle East and Africa. Each month, about 70,000 academics and researchers at more than 500 institutions use the network for electronic mail, exchange of research data and other applications.

EARN has proven to be a highly reliable, low cost network that is today indispensable for a significant part of all academics in our member countries.

Geographically, EARN spans all of Western Europe. It also includes some Middle East and African countries and several new countries in these regions are planning to connect. So far, although there is significant academic cooperation between countries in East and West, trade restrictions have made network connections to East Europe impossible. For some time EARN has negotiated with government bodies about the condition for establishing such connections and we trust the dramatic political changes in 1989 will eventually lead to a positive outcome of these negotiations.

EARN has close cooperation with other networks with a direct link to BITNET in the USA and gateways to several other national and international networks. So electronic information exchange is possible with an even greater geographic extension and user base.

Since the beginning of 1988, EARN has been funded by the participating countries according to their size, but we are now moving towards sharing costs according to traffic. The main expenses on the the budget are the international lines and the central EARN staff, and a staff of about six full-time employees is working at the office in Paris, at the EARN OSI centre in Amsterdam and at key sites in the network. However, a decisive factor in the success of the network is still dedicated people at the EARN sites, especially at the international nodes. The cooperation between these technical experts secures a network that is both reliable and able to use more advanced techniques in a rapidly developing field.

In computer networking, OSI is the major long term goal for the industry, and EARN has for some years had an OSI strategy. In 1989, the first phases of this strategy were implemented in a private 64 kbps X.25 pilot backbone. This project is supported by DEC, Northern Telecom and IBM. Furthermore, EARN is cooperating with RARE and COSINE in planning and evaluating a private 64 kbps X.25 network operated by PTTs.

1988/89 has been a very successful period for EARN. User services, as well as EARN's organisation and finances have been consolidated. Abstract migration goals have become realities. We look forward with great confidence to providing even better services to our users in the future.

**Frode Greisen**
**President**

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European Academic & Research Network

# Secretary's Report.

## EARN's year of achievements

Welcome to the EARN annual report. Since the last one much has happened. Since EARN was set up in 1984 a vast amount has happened.

EARN has had a year of achievements and this introduction mentions many of them which are explored in detail in other sections. Many events and developments have taken place but EARN has many problems which it is vigorously trying to solve with great success.

## Users rely on EARN, EARN hires staff to guarantee services

There are now a large number of users who rely on the facilities provided by EARN. Without it projects would be slowed down or in many cases would not be possible. This has placed a responsibility on EARN to provide a guaranteed professionally run service. This contrasts with the volunteer effort which launched the network. It would have been impossible to launch this network without the vast amount of free effort provided by many sites and people but with the best will in the world it is wrong to rely on effort which may vanish at any time or which may decide to move the network in undesirable directions.

The response of EARN has been to hire staff or contract with sites to provide the essential tasks needed to keep EARN running. The most important person is the EARN manager responsible for the day to day operation of the network. Other staff are employed on the maintenance of the EARN tables and LISTSERV. Although this has raised the fees EARN has had to charge it has enabled EARN to provide a guarantees of service to the customers. The network still looks to the army of volunteers to provide many of the developments and services enjoyed. Without the outstanding job done by these volunteers EARN would be a far poorer network.

## EARN in a changing world

No network is static. As with EARN's attitude to operating the current service it also takes the greatest care to ensure that changes or developments to the network will at least maintain the quality of the service if not improve it. This has made development rather slower than many would have liked but has led to the improvement of the quality of EARN.

There have been several strands of development.

On the organisational front EARN has had to show itself to be well organised and competent. Finance has been a particular problem with the move from being financed by IBM to being financed by the members. The strategy now adopted is to provide a draft budget and country contribution statement to the Spring Board of Directors Meeting and a final one for agreement to the Autumn meeting. Whilst the mechanisms now work well EARN still has two difficult tasks. The first is to keep the budget as low as possible so that contributions are low thus restricting the work EARN would ideally like to undertake. This has to be done as countries have very restricted sources of finance and many deserving calls on that finance. The second task is to find some equitable way of apportioning the contributions. If this is done on traffic grounds then countries will minimise their traffic and if this is done by all countries nothing will be achieved beyond the counter productive reduction in the service to the user. If contributions are based on something like GNP then countries such as Switzerland and Israel get their communications as an exceptionally low cost per byte. Many hours of study by many people have failed to resolve this problem.

Technically EARN is developing along a number of fronts and an ultimate strategy is difficult to determine. The OSI program which is well supported by DEC, Northern Telecom and IBM is now centred on the Amsterdam OSI Centre. Good progress is being made with the X.25 switches in place and the testing of the G-box and E-box systems going well. This provides a mechanism for transferring NJE traffic across an X.25 network. EARN has now produced a substantial document containing details of the OSI programme.

In the Nordic countries there is an extensive network based on ethernets interconnected with bridges. This network carries many services including EARN NJE traffic.

For some time there has been pressure to allow SNA to be used freely on the international lines. This has led to an SNA working group set up decide whether this is a good idea and if so how SNA should be organised. Good progress has now been made.

The tendency now is that EARN NJE traffic will be carried over a variety of bearer networks. It should also be remem-

bered that EARN is attempting on a longer term to exploit newer high level protocols such as X.400 which tend be be restricted in the bearer networks that can support them.

## EARN dedicates itself to service to the user

Drawing conclusions is difficult as there are many conflicting interests at work. However one interest above all others predominates and that is to meet the user requirements rather than any technological or political aspirations. EARN hopes to try and make some sense out of this complex situation over the next few months and produce a new statement on its future.

EARN is not the only international network or networking organisation. EUNET, High Energy Physics, the emerging IXI network, SPAN, and no doubt others all combine to provide a variety of services which at times compete. EARN has been working with many of these groups with a view to sharing resources and improving users services. This has led to line sharing arrangements and also agreements to carry each others traffic. It is difficult to see how these various organisations will evolve. It is difficult to see how EARN will evolve and the other networks have similar problems with their futures.

## EARN opens its books

EARN has been accused of being secretive. The truth was that being an open organisation take considerable effort in ensuring that information is well produced, readable, and accessible. EARN has revolutionised its workings. All Board

and Executive papers and minutes, except a few containing confidential information, are now published in LISTSERV. This has entailed producing the papers to a far higher standard. It has been of great interest to see the response from those studying the 200 or so documents on file.

## EARN has to evolve and adapt

EARN is caught up in the many technological and political changes in European networking. EARN has to evolve and adapt to meet the new challenges and opportunities. EARN has advice in abundance from the OSI, TCP/IP, SNA, and DECNET experts and the many organisations advocating various lines of development.

It seems that in the next few years there will be no consensus on one single network technology. Indeed, were this to take place it would probably be rendered obsolete overnight by new technologies.

It must also be remembered that EARN is an exploiter of networking and not a developer or innovator.

Thus any EARN future is a compromise between the customer needs, the technological opportunities, political pressures, and funding. Perhaps the only firm statement is that the customer needs are the single motivation.

*Paul Bryant*
*General Secretary*

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# Technical Work in EARN

During 1989 the organisation of technical work in EARN underwent major restructuring as proposed by the EARN Executive Committee and approved by the Board of Directors in June 1989.

The technical body known as EARNTECH was originally formed as a closed group with a limited number of delegates per country as the technical supplement to the Board of Directors in EARN (BOD).

The EARNTECH is now an entirely open group, which can meet at EARN conventions and have a distribution list for very
general and introductory questions for those involved with technical work in EARN, similar to the EARN-UG list for users.

The technical work in EARN is now structured as follows:

1. EARN Permanent groups
2. EARN Project groups
3. EARN Special interest groups
4. EARN Technical forum

## EARN Permanent Groups

- Definition:
  Groups in charge of management and operation of the network having a permanent functionality.

- Reporting to:
  EARN Executive Committee and BOD.

- Existing permanent groups:

  - EARN-NOG
    The EARN-NOG is chaired by the EARN Manager, and is responsible for the operations of the current EARN backbone network. The members of the group are the EARN Network Country Coordinators (NCCs), appointed by the EARN Directors, and
    people having responsibility of major EARN tools.
  - EARN-INFO
    This group has been approved in the BOD in October 1989. The EARN-Info permanent group

will be responsible for information about the EARN network and services provided within EARN, as well as information on other networks and services accessible from EARN. An Info-Rep will be appointed by the EARN Director of each EARN member country.

Each Info-Rep will be responsible for:

Country-Specific Facilities: The Info-Rep will maintain information about the various servers and databases in his country which are available through EARN. The Info-Rep will work with the maintainers of these facilities and to establish procedures to access the facilities from common computer systems.

Country-Specific Networks: The Info-Rep will maintain information about networks in his country which are accessible through EARN including national, regional and campus networks.
Directory Services: The Info-Rep will act to organise directory services within his country based on standard X.500 Protocols.

One of the first tasks to be accomplished by the EARN-Info group will be to collect a complete information on the existing services over the network, on their utilization and the status of the documentation.

## EARN Project Groups

- Definition:
  Project groups are established in order to carry out network developments and projects, have specific responsibilities and goals, and have limited lifetimes.

- Reporting to:
  EARN Executive Committee.

- Existing project groups:

  - EARN-X25
    The EARN-X25 group is established from staff at the switch sites and those working with the G-boxes and E-boxes and others who may contribute to the project. The goal of the group is to get the

X.25 backbone working according to the OSI migration plan.

- EARNSTAT

  The EARNSTAT group is established with staff from international nodes and others contributing to the goal of providing statistics of the EARN traffic, primarily the international part, to provide a basis for configuration and routing and maybe cost sharing.

- EARN-SNA

  The EARN-SNA group was set up with the initial task to suggest the optimal utilization of SNA on the EARN international backbone in the interest of the overall user community.

- EARN-Value Added Services

  This group has been appointed in the BOD in Autumn 1989 to identify development areas for Value Added Services in EARN together with possible contractors and founding sources. A document will be delivered early in 1990.

- EARN-ASTRA

  This group has been appointed by the EXEC to define a proposal for activating the ASTRA EARN service for the dissemination of information available on databases distributed over the network. A document indicating also the resources required and the possible financing sources will be provided by the end of 1989.

- EARN-Security

  This group which has produced several reports two years ago is not active anymore: the EXEC plans to revive it, and its new terms of reference will be planned to the EXEC for approval in 1990.

## EARN Special Interest Groups

- Definition

  Many technical developments may be important for the evolution of EARN on a short or long term perspective and thus warrant the establishment of a technical Group of people interested in or experts in specific areas of networking. The work of such groups, which may arise spontaneously from the technical environment (special interest groups) would typically be focused on areas where no EARN projects are (yet) established.

- Existing Special Interest Groups

  1. X.400

     The X.400 group was set up to study the migration-process towards full standard X.400 services.

  2. NETSRV-L

     The NETSRV-L group works in the area of Netserv services.

  3. LSTSRV-L

     The LSTSRV-L group works in the area of Listserv services.

  4. EARN-IP

     EARN-IP has been recently constituted; some participants attended the first meeting of an initiative called RIPE (Reseaux IP European) held in Amsterdam on May 22. The object of RIPE is to organize the European IP community to solve problems as utilization of the lines, routing, etc..

  5. RED

     The RED group works in the area of the TRICKLE server.

  6. LISTEARN

     The LISTEARN group works on the development of LISTEARN, which is based on the Listserv program developed by Eric Thomas.

  7. GENROUTS

     The GENROUTS group coordinates the routing tables generation activities.

## EARN Technical Forum

- Definition:

  Is the general interest group including all people active or interested in technical work, located at EARN nodes.

- The EARN Technical Forum Number 1 took place in Crete before the conference EARN 89.

- The EARN Technical Forum Number 2 will be held in conjunction with the Joint Networking Conference 90 to be held in Ireland next May by EARN and RARE.

*Stefano Trumpy*

EARN
EUROPEAN ACADEMIC & RESEARCH NETWORK

## EARN International Lines                November 1989



**Countries to be connected in 1990**

| | |
|---|---|
| Algeria | Morocco |
| Cyprus | Syria |
| Jordan | Tunesia |

Reykjavik
Trondheim
Helsinki
Stockholm
Copenhagen
Dublin
Nijmegen
Oxford
Leuven
Bonn
Luxemburg
Geneva
Linz
New York
Montpellier
Pisa
Belgrade
Barcelona
Izmir
Lisbon
Heraklion
Tel Aviv
Abidjan
Cairo

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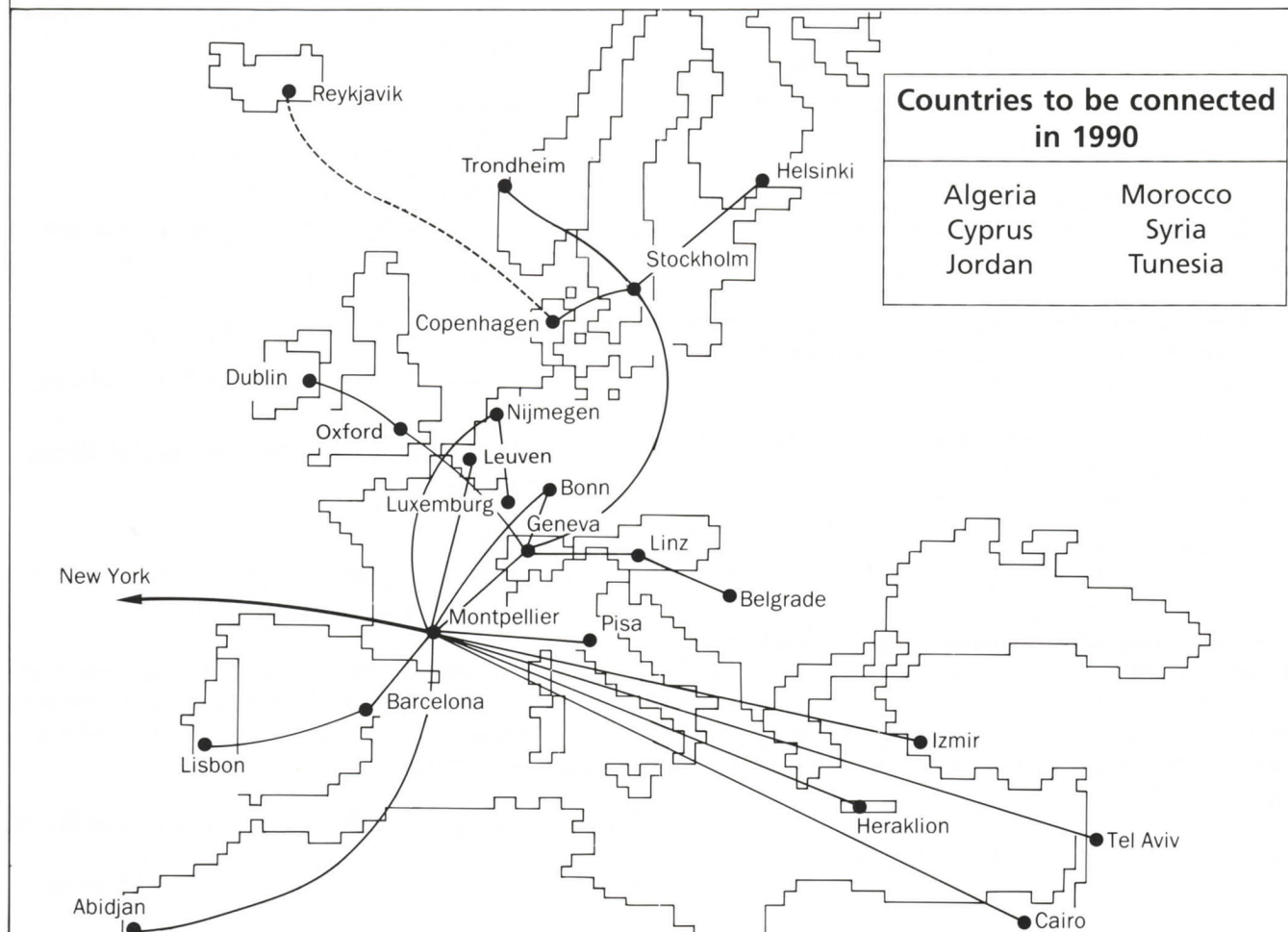
# EARN89 Conference

The 3rd EARN conference, EARN89 took place in Heraklion, Crete, Greece on May 29-31 1989.

The first two conferences were organized in Berlin (EARN86) and Izmir, Turkey(EARN88).

As EARN grows, the organization of such EARN conferences has become more complex, and EARN89 had several new features:

- 3 formal committees (program committee, organizing committee and review committee) were established 9 months before the conference.

- A call for papers was sent out, and many articles were submitted, the choice between them was made by a review committee.

- Proceedings were published before the conference, and distributed to all participants.

In addition to the submitted papers accepted, several contributions were made by invited speakers.

As EARN develops, new applications are more and more important, and the program committee decided to emphasise applications in the medical field.

The programme for EARN89 was the following:

- 1 half day of tutorials (internetworking and security).

- 1 half day of plenary sessions (on EARN and other major networking activities).

- 3 half days of two parallel sessions on the following subjects:

  – Existing networks

  – Networks servers - user interfaces

  – Medical applications (2 sessions)

  – Network monitoring, management and security

  – Access to data bases / libraries

The following organizations sponsored EARN89 :

  – General Secretariat of Research and Technology, Greece

  – Institute of Computer Science, FORTH, Greece

  – IBM Greece

  – IBM Europe

  – Digital Equipment International Europe

  – Northern Telecom Europe Limited

About 300 participants attended EARN89 which was a great success, not only because of the quality of the presentations, but also because it is a unique opportunity for EARN users to meet and exchange their experience.

A joint EARN/RARE conference is planned in Ireland in May 1990.

*Alain Auroux*

# Load Statistics

EARN has collected traffic figures on international links since November 1988. These are required to:

- Show the load on lines with a view to indicating:

    - desirable topology changes
    - desirable line upgrading
    - desirable relocation of servers.

- Distribute part of the EARN costs from financial year 1991 onwards.

To achieve these requirements each international EARN node is required to collect traffic data on EARN international links for traffic to and from every other country. Data is collected on a monthly basis.

Up to August 1989 the end-to-end statistics have now been gathered in most countries. A few countries have not sent the appropriate data. However, due to the redundancy, we have all data needed to have an accurate view of the EARN end-to-end traffic.

This data, complete for every month starting in November 1988, is available in central files. The matrices presented in each of these files are the "SEND" matrix, the "RECEIVE" matrix and the "SEND+RECEIVE" matrix. The matrices show the number of records sent or received from country to country.

A summary of the data between November 1988 and August 1989 covering 10 month show:

- The records sent by EARN countries have grown from about 100 Million records/month end of 1988 to about 140 Million records/month in mid 1989.

- The records received by EARN countries have grown from about 110 Million records/month end of 1988 to about 160 Million records/month in mid 1989.

- The total traffic – records sent and received – has increased from 210 Million records/month end of 1988 to about 300 Million records/month in mid 1989, resulting in an average value of 270 Million records/month, which is (using an average record with 40 characters) 10.8 GByte/month.

## Summary of records sent and received between 11/88 and 09/89

| | | | | |
|---|---|---|---:|---:|
| AR | = | Argentina | 11.638 | 0.0% |
| AT | = | Austria | 104.662.846 | 3.9% |
| BE | = | Belgium | 93.240.372 | 3.5% |
| BR | = | Brazil | 357.721 | 0.0% |
| CA | = | Canada | 10.210.500 | 0.4% |
| CH | = | Switzerland | 256.729.036 | 9.5% |
| CI | = | Ivory-Coast | 2.026 | 0.0% |
| CL | = | Chile | 254.289 | 0.0% |
| DE | = | Germany | 502.230.892 | 18.7% |
| DK | = | Denmark | 42.733.497 | 1.6% |
| EG | = | Egypt | 599.353 | 0.0% |
| ES | = | Spain | 65.231.529 | 2.4% |
| FI | = | Finland | 90.641.821 | 3.4% |
| FR | = | France | 211.195.114 | 7.9% |
| GB | = | Great-Britain | 187.549.394 | 7.0% |
| GR | = | Greece | 33.785.178 | 1.3% |
| IE | = | Ireland | 53.081.121 | 2.0% |
| IL | = | Israel | 212.558.377 | 7.9% |
| IN | = | India | 15 | 0.0% |
| IS | = | Iceland | 1.101 | 0.0% |
| IT | = | Italy | 199.730.064 | 7.4% |
| JP | = | Japan | 2.143.506 | 0.1% |
| KR | = | Korea | 654.006 | 0.0% |
| KW | = | Kuwait | 0 | 0.0% |
| LU | = | Luxembourg | 330.384 | 0.0% |
| MX | = | Mexico | 519.262 | 0.0% |
| NL | = | Netherlands | 198.639.850 | 7.4% |
| NO | = | Norway | 34.054.071 | 1.3% |
| PT | = | Portugal | 26.018.417 | 1.0% |
| SA | = | Saudi-Arabia | 9.283 | 0.0% |
| SE | = | Sweden | 38.142.432 | 1.4% |
| SG | = | Singapore | 1.074.926 | 0.0% |
| TR | = | Turkey | 75.130.134 | 2.8% |
| TW | = | Taiwan | 2.180.373 | 0.1% |
| US | = | USA | 244.820.117 | 9.1% |
| YU | = | Yugoslavia | 973.460 | 0.0% |
| Total | | | **2.689.496.105** | |

- The distribution of traffic between EARN and non-EARN countries show that

  – 85% of the records were sent to EARN countries and 15 % to non-EARN countries,

  – 95% of the records were received from EARN co-untries and 5 % from non-EARN countries,

  – 90% of the total traffic was exchanged with EARN countries and 10% with non-EARN countries.

- The majority of traffic to non-EARN countries was the with US

  – 96% of traffic to non-EARN countries,

  – 86% of traffic from non-EARN countries.

*Michael Hebgen*
*Vice President*

# Use of SNA

Many countries are using SNA on the national level for years. They have realized advantages and improvements compared with the traditional old BSC protocol. In addition SNA is required as inter-process communication facility inside an IBM open system by the IBM OSI products OSNS-OTSS and OSICS.

Faced with emerging requests to use SNA also on EARN international links the EARN Executive Committee has set up an EARN SNA project group in April 1989. The terms of reference for the SNA project group include among other things the following principles:

- SNA is permitted only if it leads to better service at both network level (network management) and user level (existing services).

- The use of SNA must be considered as a short term strategy, and must not prejudice the migration to OSI, which is the final objective.

The first activity of the EARN SNA project group was to collect descriptions of the usage of SNA within the countries including the naming conventions and management rules. This report was produced in August 1989 and is publicly available.

By end 1989, the following international EARN links run SNA:

| | | |
|---|---|---|
| France | - | USA |
| France | - | Germany |
| France | - | Italy |
| France | - | CERN/Switzerland |
| Austria | - | Yugoslavia |

A new report will be presented to the EARN Board of Directors describing the problems associated with the planning and maintenance of an SNA network linking a considerable number of sites belonging to different organizations. For the various problems, this report will indicate which solution is to be preferred and will give an estimation of the amount of organizational effort required.

*Michael Hebgen*
*Vice President*

# EARN OSI Transition

## OSI Transition Strategy

In 1987 EARN decided on an OSI policy to:

- convert the backbone to X.25 (1989)
- run NJE over X.25 in an interim
- use FTAM/JTP/VTP products when available
- allow coloured books, DECNET etc. in an interim
- phase out interim protocols when OSI programs available
- encourage national EARN to migrate with national plans
- use RFC822/X.25 relays and RSCS/FTAM relays
- investigate public vs. private backbone options
- seek support from national and international organisations

## Approach

The approach adopted by EARN to the OSI transition was as follows. First, Continuity of Service to existing EARN users is to be provided by implementing the existing EARN NJE protocols on top of the ISO/OSI Session layer. In this way, existing NJE services can be carried across the EARN OSI network as it develops. Second, the improved sub-network is to be provided by implementing a private X.25 backbone network, and connecting this backbone to the various national X.25 networks. Third, the transition to OSI protocols will be facilitated by the introduction of Applications Gateways to connect the existing NJE applications to users of the new OSI applications, and finally, new OSI applications will be introduced. This overall approach has bee described in more detail in the late version of the EARN OSI Transition Plan, recently approved by the EARN Board at its meeting in October 1989.

## X.25 Backbone

The development of the EARN private X.25 backbone network has proceeded rapidly in 1989, and should be completed in early 1990. This will consist of 64 Kbps lines linking CERN, Montpellier, and CWI, in a triangle. Also a 9.6 Kbs test link will connect RAL in the UK to CERN. In addition, connections between the EARN X.25 backbone and the Nordunet network, the Austrian network, and the Italian network should be completed in early 1990. To facilitate the development and management of the this X.25 backbone, EARN has established, with support from DEC, an EARN OSI Centre in Amsterdam (EOC), with staff from DEC and EARN. The EARN.25 management switch and a management VAX were installed at the EOC early in the year.

## NJE/OSI Software

The key to the EARN OSI Transition as currently designed is the availability of NJE/OSI software for the main types of EARN computers - viz DEC VAX/VMS, IBM/VM and IBM/MVS systems. In 1988, EARN received substantial support from IBM and DEC to make this happen. IBM Europe placed a contract with Heidelberg University to develop the VM and MVS versions of the NJE/OSI software, and initial prototypes were available in August 1988. Similarly, Digital Europe placed a contract with Joiner Associates to develop the VAX/VMS version of the NJE/OSI software, and again, initial prototypes were available in August 1988. Regrettably, for various reasons, it was only during the Summer of 1989 that interoperability testing took place between these two implementations, and, after some difficulties, both versions were demonstrated to interwork over the public X.25 data networks. Some updates will be required to make both versions interoperate satisfactorily under all conditions, but the tests undertaken so far provide the basis for use of NJE/OSI as the mechanism for providing continuity of service for the EARN transition to OSI. Further tests of the software implementations are planned for early 1990.

## Gateways

The introductions of a new set of applications protocols implies the need for gateway systems which will allow users of each set of applications to communicate. For the EARN OSI transition, the gateways will be provided by MicroVAX systems provided by Digital - the so-called G-Boxes - or by existing EARN national backbone nodes. The first G- Boxes

were provided by Digital in late 1988, and were installed in early 1989. G-Boxes are now installed in CERN, Montpellier, RAL, Dublin, Stockholm, Copenhagen, Espoo and Trondheim, and are connected to the EARN X.25 Backbone. The Joiners NJE/OSI software is installed, and under test. In addition, another MicroVAX systems is installed at the EOC, and the NJE/OSI software connects this machine to the rest of the network. The initial idea was that the G-Boxes would provide gateways between NJE and OSI Applications. However, it has become clear that for most EARN countries the G-Boxes can provide very general purpose gateways between the variety of protocols used in most countries and the NJE and OSI Applications to be used on EARN. Work is ongoing to test the G-Boxes as general purpose gateways systems in Finland, and Ireland, and many other countries are interested in this work.

## OSI Applications

To date, no progress has been made in this area. The first OSI Applications under investigations is the introduction of X.400 electronic mail, and the corresponding X.400 to NJE (RFC822) mail systems (the so-called RFC987 gateways). The availability of RFC987 gateway software is being investigated, and progress in this area is expected in 1990. When installed, these X.400 Gateways, and others installed on existing EARN backbone node computers, will enable better communications between EARN and the research communities already using X.400. In addition, these gateways will allow the introduction of X.400 electronic mail services on EARN, and ensure that all EARN users can still communicate using electronic mail. Further, the work on these gateways will assist those EARN sites which wish to introduce local X.400 (RFC987) gateways.

## Summary

Although progress on the EARN OSI transition was extremely slow during 1988, and early in 1989, the establishment and staffing of the EOC from April 1989, has dramatically improved the situation, and substantial progress was made in the second half of 1989. We look forward to even better progress in 1990.

*Dennis Jennings*



**EARN X.25 Infrastructure Nov. 1989**

Trondheim
Helsinki
Stockholm
Dublin
Copenhagen
Oxford
Nijmegen
EOC
Amsterdam
Geneva
Linz
Montpellier
Pisa

○ DPN100 X.25 switch
☐ G-box
— Leased line
---- Connection to be established
**EOC** EARN OSI Centre

EUROPEAN ACADEMIC & RESEARCH NETWORK
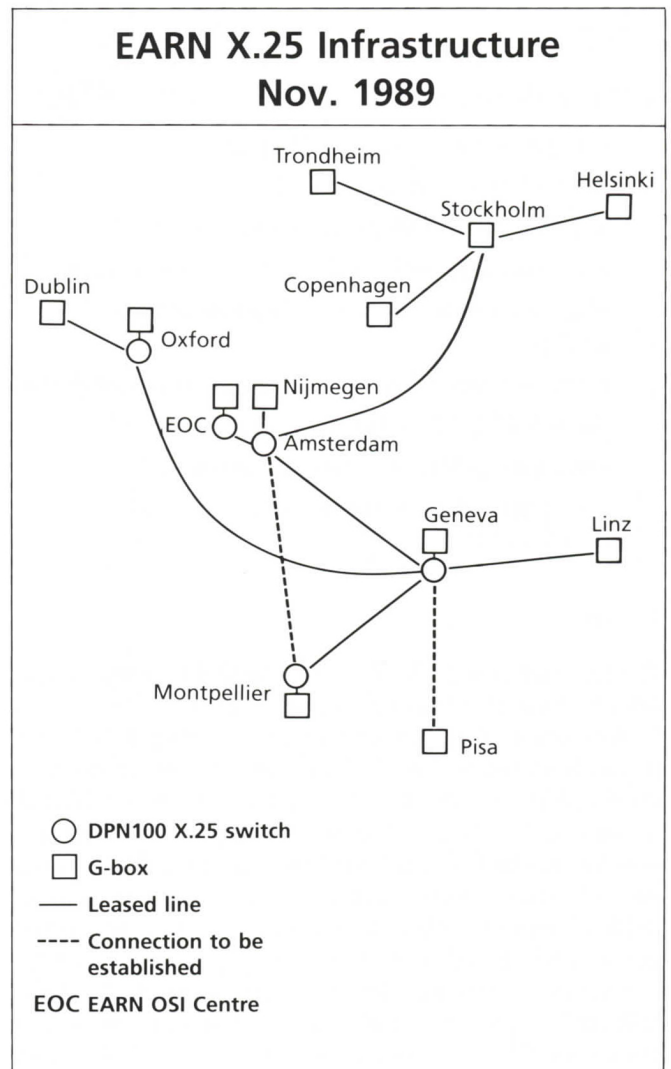
# Financial Report

## January 1988 - September 1989

### 1988

1988 was the beginning of a new era for EARN : all tele-communication costs were now fully supported by the EARN membership. Up to the end of 1987, all the international lines and some national lines were funded by IBM, and the support ended, as scheduled for 3 years, on January 1st 1988.

This major step was accomplished very smoothly, the needed 1988 budget was decided by the BOD at its fall 1987 meeting, and all countries except one (Ivory Coast) paid their contribution, although quite a few did it a bit late.

The 1988 central EARN operations were funded by EARN membership (141,757 ECU) and by IBM Europe (161,058 ECU, part of a 250 KECU cash grant, given in 1987 to support the EARN office and president office for 2 years). IBM Europe, in addition to the cash grant to support EARN offices, seconded Alain Auroux as EARN Manager for a total duration of 2 years (September 1987 - August 1989). This period was later prolonged for some months.

In addition two other manufacturers provided support in 1988 to EARN development :

- Digital Equipment contributed to EARN 126 KECU (150 K USD) as part of a committed cash grant of 280 KECU to line rental and 9 "G-Boxes" for a total values of 1,026 KECU (1,200,000 USD). This donation, for a total value of 1,152 KECU, was granted to help EARN in its planned migration to OSI.

- Northern Telecom contributed to EARN five X.25 switches valued at 350 KECU (491,625 Canadian Dollars).

The 1988 accounts showed at the end of 1988 a net consolidated surplus 1,561,125 ECU consisting of 1,375,670 ECUS of equipment (1,025,670 from DEC and 350,000 from NT) and 185,455 ECU in cash (including 125,509 ECU from Digital to be used for line rental).

### 1989

During its 1988 fall meeting the BOD adopted the 1989 budget and the sharing of EARN central expenses among countries.

The sharing is based on both EARN keys (extrapolated from RARE keys) and on Gross National Product (GNP).

This 1989 budget is a significant increase over 1988 because:

- EARN had to cover all central expenses for most of the year, (the remaining part of the IBM office grant covered only 3 months of basic operations).

- the BOD decided to build up an EARN staff and to subcontract some technical tasks.

- the BOD decided to build up a contingency fund.

To cover the above mentioned points, the 1989 countries contributions amounted to 595 KECUS.

In addition, the building of the EARN OSI backbone leads to some spending during the second half of the year, the money coming from the 1988 DEC cash grant.

### 1990

The budget for 1990 was decided at the BOD meeting in October 1989.

The budget is increased for essentially two reason:

- It was decided to build up staff to four full time professionals plus secretaries. Furthermore the EARN manager must be paid by EARN funds.

- A significant development effort is planned, especially in the OSI area. However, this plan builds on on assumptions of support for this effort. If that support does not materialize, the development effort will be reduced accordingly.

*Alain Auroux*

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# Income Statement 1988 and Budget 1989 & 1990
## for the EARN Association

| | Accounts 1988 (1000 ECU) | | Budget 1989 (1000 ECU) | | Budget 1990 (1000 ECU) | |
|---|---|---|---|---|---|---|
| | Expenses | Income | Expenses | Income | Expenses | Income |
| President's office | 105 | | 45 | | 40 | |
| EARN office | 56 | | 96 | | 149 | |
| EARN staff | - | | 165 | | 248 | |
| Other expenses | 42 | | 80 | | 88 | |
| EARN intercontinental line | 99 | | 115 | | 115 | |
| Development | - | | 103 | | 750 | |
| Contingency | - | | 148 | | 150 | |
| International lines [1] | 1350 | 1350 | 1350 | 1350 | 1283 | 1283 |
| Countries' contribution | | 142 | | 595 | | 840 |
| Suppliers' contribution | | 1501 | | 179 | | – |
| Other income [2] | | 10 | | – | | 700 |
| Total expenses | 1653 | | 2102 | | 2823 | |
| Net surplus | 1350 | | 22 | | | |
| | 3003 | 3003 | 2124 | 2124 | 2823 | 2823 |

## Balance sheet 31/12 1988

| | Accounts 1988 (1000 ECU) | |
|---|---|---|
| | Assets | Liabilities |
| Outstanding contribution | 1 | |
| Liquid assets | 186 | |
| Dataprocessing equipment | 1377 | |
| Expenses due | | 3 |
| Net surplus 1988 | | 1350 |
| Net capital | | 211 |
| | 1564 | 1564 |

[1]The international lines are paid by the countries, and the exact cost has not been audited. The estimated cost of the international lines is included to show the total cost of the network.

[2]The other income shown for 1990 involves a number of assumptions, and the development expense in 1990 will be adjusted as the validity of the assumptions can be ascertained.

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