

EuroCAIRN

A blueprint for the next generation research network in Europe

The EuroCAIRN (European Cooperation for Academic and Industrial Research Networking) Project was launched in 1993 to enhance trans-European computer networks for universities and research. Representatives of national funding bodies of 18 European countries and the EC are partners in the project. DANTE was contracted in May 1994 by the EuroCAIRN Committee to report on the high speed networking requirements of the European research networks and to produce a plan for the setting up of a high speed pan-European infrastructure as soon as possible.

The report presents in detail the needs and current plans of national research networks in respect to a high speed national infrastructure as well as an analysis of intercontinental connection requirements and options. It gives an overview of the demands made by international use of advanced applications. It examines potential technical solutions and offers a review of PNO offerings with respect to cross-border advanced services. Based on an analysis of procurement options, funding scenarios and pricing models it also offers a detailed implementation plan for the immediate procurement and establishment of a 34 Mbps backbone for European research. On 8 March 1995 the EuroCAIRN Committee approved the final report.

The EuroCAIRN study subsequently served as a basis for the proposals submitted under the EC Fourth Framework Programme. The full report from the EuroCAIRN Committee - which includes DANTE's report to EuroCAIRN - is available from the EuroCAIRN Project Office. The major findings of the report are summarised below.

Demand

Three factors in particular are driving the increasing demand for bandwidth: continued growing demand for network connectivity; the development of new applications which require a lot of bandwidth; the availability of telecommunications technology suitable for the support of new high bandwidth applications.

National developments

At least six national research networks in Europe are already implementing high speed networks within their country. A complementary pan-European infrastructure is an urgent requirement for them.

Technical options

The most significant development in telecommunications technology is Asynchronous Transfer Mode (ATM) switching. ATM is not yet a mature technology, however, and can not be implemented easily on an international level in a multi-vendor environment.

Planning for ATM should be done in parallel with the immediate deployment of a 34 Mbps infrastructure based on IP technology, which has already proved to be feasible.

Supply

The PNOs have made significant investment in international transmission capacity within Europe which

could be used today. They are unwilling, however, to make these high capacity circuits available, except at unreasonably high cost.

The challenge facing the research community is to establish a clear and defensible position vis-a-vis commercial network operators which avoids the reselling outside the research community of services set up on favourable terms. Under these circumstances cooperation between the research community and the telecommunications operators can be of strong mutual benefit.

Funding

Organising the funds is another major challenge. The European Commission plays a major coordinating role, but there is no organisation with the mandate to collect funds (such as the National Science Foundation in the US for example).

Under a number of programmes of the Fourth Framework Programme the European Commission will make funding available for high performance networking.

Additional funds will have to be collected from the national research networks themselves, some of whom have already budgeted for linking up their national high speed network internationally.

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