

**Zeitschrift:** Technische Mitteilungen / Schweizerische Post-, Telefon- und Telegrafienbetriebe = Bulletin technique / Entreprise des postes, téléphones et télégraphes suisses = Bollettino tecnico / Azienda delle poste, dei telefoni e dei telegrafi svizzeri

**Herausgeber:** Schweizerische Post-, Telefon- und Telegrafienbetriebe

**Band:** 73 (1995)

**Heft:** [1]: Spezial Edition ATM

**Artikel:** Demonstration of broadband and multimedia

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**DOI:** <https://doi.org/10.5169/seals-876027>

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## FIRST EXPERIENCE OF COMPUTER-SUPPORTED COOPERATIVE WORK OVER THE EUROPEAN ATM PILOT

# DEMONSTRATION OF BROADBAND AND MULTIMEDIA

JVTOS (Joint-Viewing and Tele-Operation Service) is a tool that makes it possible for people to meet and work together using a computer desktop. It offers the possibility to see and hear other partners (picture phone), to work together on the same document (application sharing) and to use a pointer in a shared application window that can be seen by all the other partners (telepointing). Any X-Window and Macintosh application can be shared across the platforms.

In the second half of 1994, a number of demonstrations using JVTOS were given on the European ATM pilot net. These demonstrations signaled the start of a new phase in which JVTOS will be used extensively on the emerging broadband networks in Europe.

MIKAEL HEDLUND

These demonstrations have given an indication of the possibilities that broadband communication and multimedia applications can offer together. Two important demonstrations in which Switzerland participated from the EXPLOIT ATM test bed in Basel were 'Journées techniques de la DER' and 'The European ATM Pilot Opening Day'. During the process of preparing and setting up these demonstrations, valuable technical and organizational knowledge was gained.

### European ATM Pilot Opening Day

On 24 November 1994, the official opening day of the European pilot net took place. The EXPLOIT test bed

was invited to participate in one demonstration that was carried out between the three sites: Hamburg, Norwegian Telecom Research (NTR) in Kjeller and EXPLOIT Basel. In Hamburg and Kjeller, audience and press were present. The demonstration was based on a scenario which included Teleteaching, Remote Expert Consul-

tation, Remote Presentation and Distributed Cooperation. A lecture about JVTOS was prepared as a Frame-Maker document, which was presented to the audiences in Berlin and Kjeller and to the participants in Basel. The demonstration ended with a guided tour around the test site in Basel given by the EXPLOIT project manager. The presentation was supported by a set-up of three cameras that were connected to a video switch.

### Journées techniques de la DER

On 18 to 20 November 1994, Electricité de France (EDF), Paris, organized the 'Journées techniques de la DER', where the research work carried out at the site of the Direction des études et recherches (DER) at Clamart (France) was demonstrated to a professional audience. At 25 stands, every aspect of the theme 'The flow of information' was demonstrated.

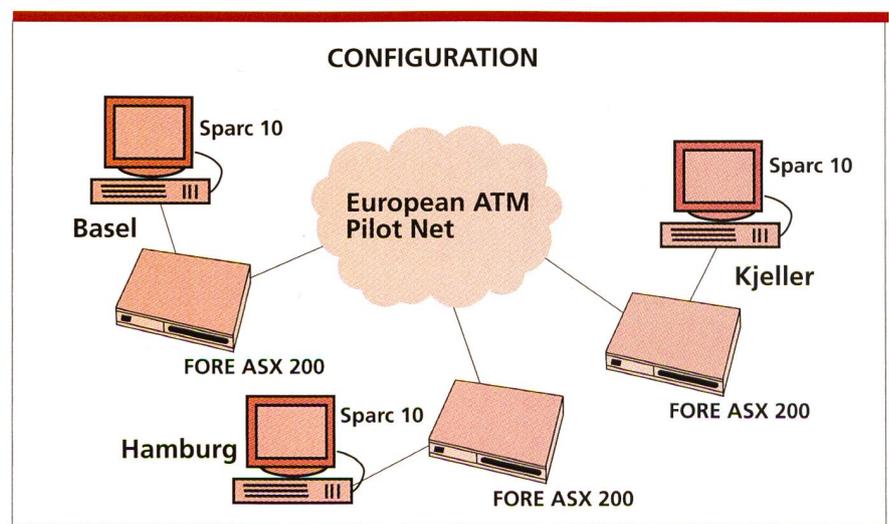


Fig 1. Network configuration for the demonstration. There were direct physical links from Basel to Kjeller and from Kjeller to Hamburg. The logical link between Basel and Hamburg was switched in Kjeller.

The JVTOS demonstration was carried out in the framework of the theme 'The office of the future'. The demonstration involved EDF, EXPLOIT and NTR, all connected with VPs of 6 Mbit/s capacity. More than 2000 people visited this event.

### Experience gained

Running experiments and demonstrations on the ATM pilot is not yet 'plug and play', but rather needs careful planning and coordination. Setting up and preparing these demonstrations have taken a considerable effort – problems on many levels have been

encountered and solved. We have identified a number of issues – on both the local and global level – that need to be addressed in this process (i.e. need for coordination, assurance of compatibility, etc.). However, this experience is now being utilized in further activities involving the use of CSCW tools and video conferencing over the ATM Pilot.

**Note:** This work was carried out in the framework of the RACE project CIO, Coordination, Implementation and Operation of Multimedia Teleservices (R2060). The author was, at the time of the demonstrations, working for Ascom Tech AG and is now engaged in the project ATM Corporate Networks at the Swiss PTT.



Mikael Hedlund graduated in 1984 with an M.Sc.E.E at the Chalmers University of Technology, Gothenburg, Sweden. He has been engaged in a number of projects in the fields of Informatics and Data Communications: compiler development at the Rutherford Appleton Laboratories, U.K; development of Artificial Intelligence systems at Ericsson and Telia, Sweden and development and application of Multimedia Systems over broadband networks at Ascom Tech AG, Berne. He is currently working on the ATM Corporate Networks Project within the department FE315.

### TELETEACHING

Lectures can be held at one of the four connected universities and transmitted simultaneously to the others. This application is being investigated by the universities of Bern and Geneva and the Swiss Federal Institutes of Technology in Zurich and Lausanne within the framework of the ATM pilot (Fig. 1). The FDDI LANs of the four participants are connected to a Data Service Unit (DSU) via a router which provides access to the ATM pilot network. The DSU adapts the ATM E3 connection to the SMDS (Switched Multimegabit Data Service). The transmission profile (peak rate) for this application is 21 600 cells per second, which corresponds to a data signalling rate of approx. 8 Mbit/s. The teaching concept is very simple. A lecture is held at one of the four universities and transmitted simultaneously to the other three. If this application is successful, lectures by highly qualified specialists who are difficult to sign on can be conducted much more efficiently and economically.

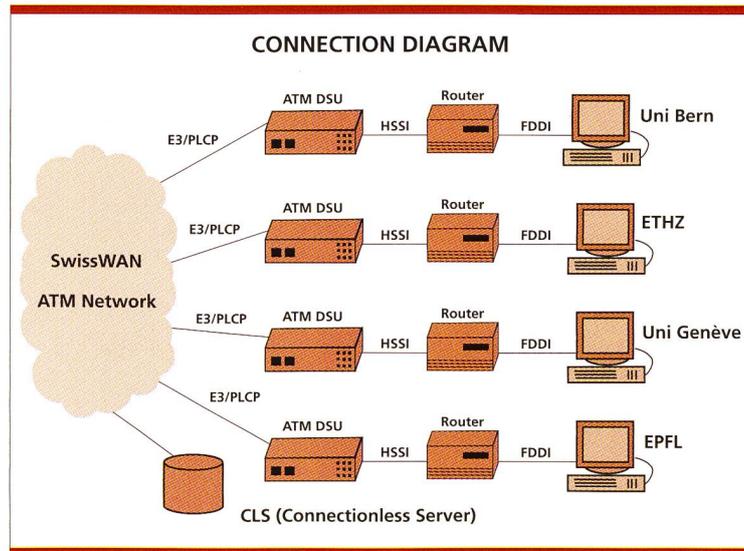


Fig. 1. Structure of the link between the individual universities.

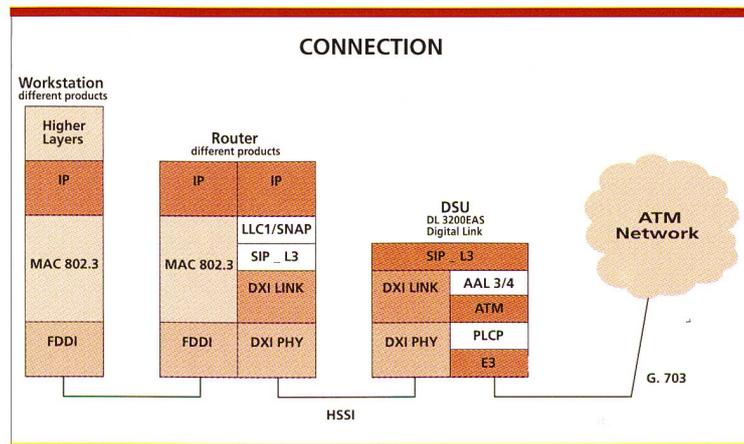


Fig. 2. Connection of the LAN to the Data Service Unit.