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PROJECT R2061 EXPLOIT

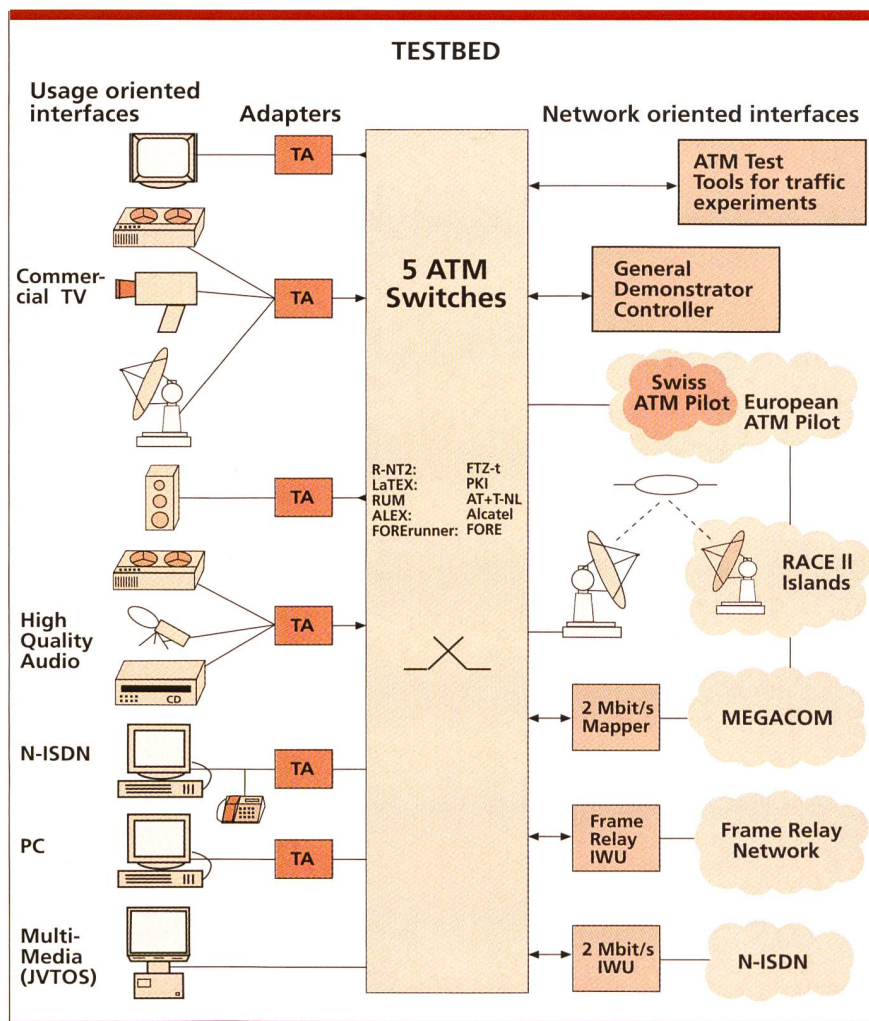
ONE OF THE LARGEST ATM TESTBEDS

The Research and Technology Development in Advanced Communications Technologies in Europe (Race II), project R2061 'Exploit', located in the Swiss Telecom PTT building (Fernzentrum Grosspeter) in Basel, is managed by the Association Swiss Telecom PTT/Ascom (ASPA) and was one of the first sites to use any part of the European ATM pilot network. The connection to the Swiss ATM pilot network was achieved on 8 July 1994.

The Exploit testbed shown in Figure 1 is one of the largest ATM testbeds in Europe. The 30 partners in the project (from PNOs, industries and universities) are concentrating on activities related to interworking be-

Zürich, Köln and Amsterdam) superceded a configuration using the switched 2-Mbit/s MEGACOM system,

Fig. 1 Exploit testbed.



with a corresponding improvement in performance. The transfer rate is now limited by the throughput of the terminals on which the application is installed.

In October 1994, a 4-Mbit/s VP connection to Madrid was shared between two sites in Switzerland for the National Host Conference and ACTS Proposers' Day. Via this link it was possible for the more than 1000 participants in Madrid to communicate (audio and video) interactively with staff at the Exploit testbed in Basel; complex graphical images could also be discussed and modified by researchers at Cern (Geneva) and their colleagues from the Portuguese laboratories of 'LIP', who were seated at a terminal in Madrid.

Exploit also participated in the third International Summer School on Advanced Broadband Communications Brain from 26 to 30 June 1995. During this event, Basel played a major role. It was responsible for distributing signals over the European ATM pilot network from Madrid to the universities of Linz, Bern and Turin, using a CISCO Router with IP multicasting functionality. Links across the European ATM pilot

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tween ATM and existing/emerging networks and terminals, on ATM-sensitive traffic aspects (CAC, UPC, resource management, routing, network performance) and on broadband signaling. It comprises five ATM switches from different manufacturers, adapters, mappers, interworking units for N-ISDN and Frame Relay, end-user systems, and ATM test tools for traffic experiments.

Demonstrations of broadband

Since being connected to the European ATM pilot network, Exploit has made many demonstrations of broadband applications between Basel and other locations in Europe.

For example, a PC-based image and data retrieval application has been demonstrated on several occasions between the Exploit testbed and a similar Race platform, 'Tribune' in Leidschendam, operated by the Dutch PTT Research Department. The communication via the ATM pilot network (a 4-Mbit/s VP connection through

network are currently being used by Exploit not only for demonstrations of broadband applications, but also for ATM traffic experimentation purposes. A 10-Mbit/s VP connection was used between Leidschendam and Basel for the conveyance of sources of ATM traffic from Tribune which were, importantly, completely uncorrelated from local sources generated on Exploit. Similarly, a 4-Mbit/s VP connection has been used between Basel and Copenhagen for sending ATM test traffic from Exploit, which is destined to load a connectionless server installed on the Batman testbed by the Race project 'Combine'.

The European ATM pilot network is therefore enabling the performance of traffic experiments and collaborations between Race (and non-Race) projects which would otherwise have not been possible. Further experiments (including Frame Relay over ATM) and interoperation verification (using standardized broadband signaling procedures) are planned for the near future (end of 1995).

Through the demonstration and validation of prototype broadband applications and ATM traffic issues, testbed projects such as Exploit, Tribune and Batman are contributing towards stimulating the demand for broadband services and ensuring their introduction as dependable services.

National Host

At the end of 1995, the Phase Race II is coming to its conclusion. The European Commission decisions on the fourth Framework program have set out the orientation of future collaborative research and development (R&D) in Advanced Communications Technologies and Services (ACTS). ACTS represents phase III of a demand-driven R&D support of trials, which are preparing the ground for a Europe-wide internationally competitive information infrastructure. The National Host approach to the implementation of the ACTS program serves as access to the users and as a point of focus of usage trials for European projects.

The Swiss National Host, located in the same Telecom PTT building in Basel as Exploit, will be developed on the basis of the former Exploit testbed, whose facilities have gained good European reputation. A series of



Fig 2. Swiss National Host organization and relationships.

additional features will be added during its set-up phase in order to achieve all necessary functional requirements for the Swiss National Host. Among others, the interconnection capabilities to the national and the European ATM network and its interfaces to the most important other communication services represent major extensions.

In order to facilitate the choice of a National Host for a particular project among the group of European National Hosts, the following list of special properties of the Swiss National Host may be helpful:

- The Swiss National Host is interconnected by real IBC national and international links (ATM Pilot/JAMES).
- The Swiss National Host provides for a large number of supported interfaces to different networks and protocols.
- The Swiss National Host staff owns a high degree of specific experience gained during its Exploit testbed activities.
- High-level expertise of international specialists was acquired during the work done on the Exploit testbed in Race.
- The installations include highly sophisticated test instrumentations,

supported with the necessary expertise.

The organization and relationships of the Swiss National Host is shown in Figure 2. The facilities in Basel include a total of 1200 m² of lab and office space, equipped with modern office installations (PCs, printers, communication softwares, etc.) and state-of-the-art test instrumentations. A cantine and secretarial support is available as well. Visiting project teams may make use of all of these facilities and have access to the meeting rooms equipped with various conferencing possibilities.



Heinrich Blaser, El.-Ing. HTL, holds the position of head of Service Engineering within, Division for Switching and Transmission. He is a member of the project team ATM Pilot Switzerland and he is also head of the Subproject-Team Base Network and Operation. Within the European ATM Pilot, he represents the Swiss Telecom within the Operational Group (OWG). Besides this, he is project coordinator of the European Research project 'EXPLOIT' and he also supervises the Superworkpackage 'Support, Extension and Enhancement of the ATM Testbed'.