RESEARCH AND DEVELOPMENT

New products and services are born with the support of solid research and quality control, ready to compete with throughout the world

In 1993, Telefónica's Research and Development activity focused on providing the company with advanced Telecommunications services, in order to enhance our competitive capacity in a fully competitive marketplace dominated by interactive multimedia services.

As regards broadband services, the demonstrator RECIBA was endowed with new concepts, functions and elements relating to the network, services and operations to transform it into a superb "showpiece" for demonstrating to our clients and to the various world telecommunications sectors the scope and range of possibilities of broadband multimedia communications.

An agreement was signed with Madrid Polytechnic University (UPM) to create a direct communications infrastructure between the ETSI-UPM and Telefónica offices. Under this agreement, the CIBELES project was drawn up to research into multimedia technologies.

In addition, work on the ISABEL project continued. This is a collaboration project between Telefónica and Telecom Portugal to interconnect the RECIBA (Madrid) and RIA (Aveiro) demonstrators and is a European Union iniciative. Under the project, there have been demonstrations of distance education (a Summer School) and in October, one of the first European 34 Mbit/s communication lines was established with ATM technology.

As regards the ISDN, demonstrators were developed of new services, such as videotex, multimedia, videotelephony, multiconferencing and telepayment.

High quality customer care and service require advanced management systems. A qualitative step forward was taken in this direction, with management systems even being made available to the clients themselves. In this respect, management facilities of the Basic Telephone Network, the Iberpac Network and Ibercom were extended. Development also began of management systems for future broadband networks and operating systems. In addition, development of management systems for mobile networks also got underway.

As regards upgrading of electromechanical systems, field tests were carried out on the new electronic register (MORE) on PC-1000 equipment. The application of this system will facilitate services such as multifrequency dialling from user terminals, detailed call register and numbering extension.

An area was also set up to attend to the strategic Access Systems and work continued on the analysis and planning of networks, testing and qualification systems and quality upgrading.

On the international front, we took part in preparations for the implementation of a European broadband pilot network based on Asynchronous Transference Mode switching techniques. This project is being developed by 18 operators in 15 different countries. The technologies corresponding to the international node and to the nodes for the domestic section have already been selected.

We also continued to play an active part in the main international programs, participating effectively in supranational standardization. This activity was centred in EURESCOM, the European programs RACE, ESPRIT and COST and in the consortium TINA.

Local area network interconnection tests proceeded on the VSAT networks and a satellite data transmission experiment began, consisting of bringing data from remote points to use for environmental control, fire detection, etc.

As regard intelligent network services, work was completed on the specification and analysis of the necessary equipment for the provision of virtual private networks through the Intelligent Network. Work also continued on the development of the current Intelligent Network towards the Standardized Intelligent Network, which must give Telefónica control over software for the creation of services and consequently autonomy in the provision of services to our clients.

With regards to mobile communications, experiments were carried out on data transmission for analog cellular systems on 900 MHz and the finishing touches applied to the technology for the pan-European digital mobile communications system (GSM) on the same band.

Research was also carried out into different telephone terminal technologies with a view to increasing Telefónica's range of products, with special emphasis on upgrading functions and quality. As regards the Network Connection Point, modifications were introduced in order to enhance

performance, giving rise to the qualification of new versions, among them those that facilitate the connection of various lines to one single equipment.

During 1993 special attention was paid to operating systems. Development continued of the Operation and Maintenance Structure (EOC), the different elements of which were progressively introduced into the plant, increasing efforts to achieve functional optimization and reduction of costs. Also incorporated was a version of the Operation and Maintenance System (SOC) which includes new facilities for transmission and radio plant and also allows connection of various systems of this type through the Iberpac Network.

In addition, testing began on another version of the SOC which incorporates the first phase of the EOC-Exterior Plant with the connection to the SOC of the Centralized Cable Supervision System. The specifications of the module for the management and control of the compressor-desiccator equipment were defined, as well as those for the interface for communications with the flow distribution and control panel. This will improve network conservation levels and, at the same time, optimize the use of maintenance resources.

Also incorporated into the plant was a new Reduced Sectorial Control System (SCR-R) and the Concentrated Channels Plant terminal (TPCC), designed to pick up alarms and remote controls, as well as guaranteeing clear connections. Moreover, the necessary work began on development of a Traffic Management System (SGT), owned by Telefónica, which will control telephone traffic both nationally and internationally.

The requirements were also established for the future Optical Access Network Operating Systems and tests began on the Buildings Alarms and Teleservices Centralization System. This system picks up, processes and sends to the operator information relating to the maintenance of buildings. It is likely to be available on a provincial level and development is anticipated of a multiprovincial system controlling the provincial centres.

Related to Research and Development activity is the management of Telefónica-owned technologies developed by the company or acquired from third parties. This involves their protection through registration in the Official Industrial or Intellectual Property Registers and the administration of the resulting operating rights.

During the past year, Telefónica reached the figure of 1,092 title deeds in Spain and abroad, either already granted or in the process.

These Technological Holdings give Telefónica the opportunity to assimilate and control the features of the different technologies and their development, give us a distinctive mark in the face of competitors and also diversify supplies.