Telefónica R&D has succeeded in achieving considerable maturity for its business support systems and services in 2000.

Research and Development

R&D has broadened its horizons internationally with the transfer of advanced solutions to various Latin American countries

Telefónica Investigación y Desarrollo

Telefónica Investigación y Desarrollo's research and development activity during 2000 has basically centered around four main areas: development of new services as a differentiating factor within the current competitive environment both for fixed and mobile telephony and the Internet; activities focussed on the optimization of business processes, especially in the areas of customer service and customer relations management; development of network and service management systems and medium to long-term actions forming part of the Innovation Program designed to detect, develop and apply factors, singularities, opportunities and technologies likely to have an impact on the future of the Group's businesses.

These four areas also have an international side, and the solutions developed have been transferred to those countries, particularly in Latin America, where they are considered competitive.

A further significant aspect of research and development activity in

2000 has been the 20% increase in the volume of activity compared to the preceding year. Also, the content developed by Telefónica R+D (Art Media) has been transferred to Telefónica Media, and the new Boecillo Center has been opened in Valladolid.

Development of new products and services

A set of new services has been developed for the Mobiles business, which will strengthen its strategic and competitive position. The most significant of these new developments are the new intelligent network platform supporting the services associated with the Movistar Activa product; various developments related with the mobile Internet platform (voice access to the content of mobile portals, etc.); development of applications and engineering for GPRS based services; various platforms aimed at providing geographically localized services; and products oriented towards planning, metering and optimization of new third generation mobile systems (UMTS).

In the field of broadband interactive services, the construction and integration of platforms and the development of innovative multimedia services using VDSL and ADSL technologies have continued apace. Further work has also gone into the development of new operational capacities and the extension of the range of services offered for Vía Digital carried on the interactive digital TV platforms.

The task of developing broadband multi-media services using VDSL and ADSL technologies has continued apace

In the field of data services and Internet access, various improvements have been made to the Telefónica Data IP network, and Telefónica R+D has been deeply involved in the design and configuration of the new NURIA network for the provision of corporate broadband (ADSL) services.

Various value added products and services have been developed for Terra-Lycos, such as the product search engine to locate virtual retailers, voice portals, chat services, and on-line games. Telefónica R+D has also made a decisive contribution to the operational roll-out of Terra-Mobile with such as messaging and the Web channel.

In the public payphones business, work has commenced on the roll-out of the new STP-2000 system permitting centralised management of the system and remote loading of new versions to terminals. Various new capabilities have also been added to the terminals commercialized by TTP.
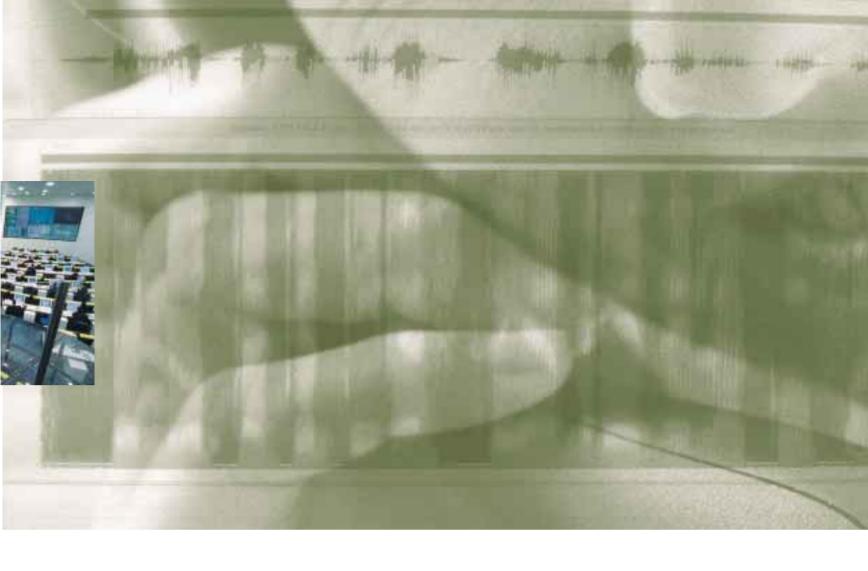
In the field of fixed-line telephony, a solution based on intelligent networks has been implemented for Telefónica de España to support card payments for data calls, as well as the "fonomail" system, which uses speech technology to permit users to read and reply to e-mail. Network management capacity and multimedia access have been extended for the on-line Multi-client Internet Call Center, which supports all sales services of Telefónica de España and Telefónica del Perú. Telefónica R+D has created leading-edge speech-technology products in European and Brazilian Portuguese, Spanish and other official minority languages used in Spain which are used in numerous fixed telephone and mobile services.

Significant progress has been made during 2000 with the development of a natural language recognizer and voice/text converters designed to permit voice access to Internet content.

Business process support systems

During 2000, Telefónica R+D has successfully brought Marketing support systems such as Data Warehouses (DW) and CRM (customer relations management) applications to an advanced stage of maturity. Telefónica R+D has created DWs for Telefónica Móviles (MINERVA), Telefónica de España (SIETE Project), Unifón (Argentina), Telerj (Brazil), Telefónica del Perú and Telesp (Brazil). At the same time, Business Indicator Systems and Executive Information Systems (EIS) have met with an excellent response, and their extension to the whole of the Group is now expected.

In the e-business area, Telefónica R+D has contributed to the definition and testing of the reference architecture (Web Foundation) for fixed and mobile telephony, data, etc. Telefónica R+D has also been actively involved in the launch of the Canal On-Line channel and the Innovatel customer loyalty system implemented by Telefónica de España. The FILON system developed for global purchasing process management has been implemented in various Latin American countries.

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The Multi-Service Provision System (MPS) has begun to produce results for Telefónica de España through the Installed Multi-Service module, which permits Web consultation of a data base showing all services contracted by each customer. The Service Order Management System (SOMS) and the Fault Report Management System (FRMS) modules have been implemented in Telesp (Brazil).

The Complaints and Incidents Manager (CIM) solution, designed to handle customer complaints, the SIRIO customer complaint system and the SAR system have all been further refined. Also, the Actions Management (AM) system is now operational in Telefónica de España and the Mobile Actions Management systems in Telefónica Móviles.

Network and service management systems

The Network Access Operation System (NAOS) and the ADSL service provision management system (SIGA) have been implemented in Telefónica de España. The new Operator Management System (OMS) will support the management of relations between Telefónica de España and other operators in areas involving service requests. The Traffic Management System as well as the network oversight and operation systems (EOC Energy, EOC Switching and EOC Transmission) have been successfully implemented in Telesp. Meanwhile, the SOC mobiles system has entered service in Telefónica del Perú.

Finally, the Telesp Operational and Oversight Status Center has been created with the active assistance of Telefónica R+D, which provided management systems to facilitate oversight and operation of the various plants, manage traffic, analyse network infrastructure, manage the signals network and analyse the quality of service. In the near future, complaints and incident management solutions will be added.

Innovation

A key part of the work of Telefónica R&D has been the identification of factors which are likely to affect the evolution of Telefónica's business in view of the market, the competitive and regulatory environments and technological developments.

During 2000 the Innovation Program has focused basically on identification and assessment of emerging technologies and experimentation, and the analysis of new business models. Specifically, work has been carried out in the area of intelligent homes, Next Generation Networks, evolution of the internet, advanced multi-media services, security and fraud studies, evolution of mobile networks and services, traffic modelling studies, human factors, speech-technology and terminals.