

## GLOBAL IPv6 SERVICE LAUNCH EVENT



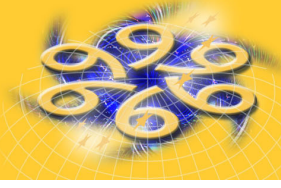
## Euro6IX: a European Test-bed of the future IPv6 Internet

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Spain

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# Telefónica Investigación y Desarrollo

Valladolid



Barcelona



Madrid

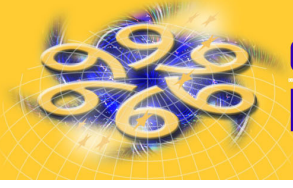


Sao  
Paulo



Madrid

To contribute and to improve Telefónica Group Competitiveness  
through technological innovation.



# Telefónica I+D Experience and Position on IPv6

In previous projects, such as LONG (Laboratories Over Next Generation Networks), IPv6 was identified as an **enabling technology** thanks to its main features.

- **Large IP address space**
  - Optimization of IP addressing distribution, increasing routing performance.
  - New always-on users, including emerging countries' users.
  - Specialized New Terminals connecting through fixed, Cellular and WiFi networks are becoming a reality, demanding high bandwidth always-on connectivity and service platforms.
- **End-to-end Communication** (as originally designed for TCP/IP).
  - Avoiding Private to public Address Translators (NATs).
  - Enabling new Multimedia and Peer-to-peer (P2P) services. VoIP, Videoconference.
- **Mobility and Security** features natively incorporated in the protocol definition.
  - Allowing roaming between different access networks.
  - Enhancing reliable communication platforms to enhance e-commerce services.





# IPv6: New Services and New Business Opportunities

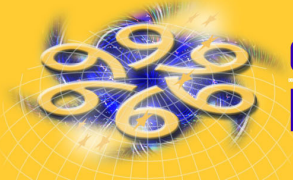
IPv6 means new possibilities and services for European Citizens as well as new business opportunities for European Operators, ISPs and IT related companies.

IPv6 facilitates the massive deployment of P2P, e-learning, e-entertainment, content oriented, e-commerce and Domotic Services as well as PDAs and advanced Mobile devices connected to the Global Network to use these new services.

European Network Operators need to cooperate in these test-beds in order to create and test standard and interoperable infrastructures, protocols and services which will bring new Global business opportunities.

According to Telefonica's view, a Coordinated R&D Action was needed:

- All Internet actors must participate in the evolution: Academic Networks, Carriers, ISPs & Users.
- Large Test-beds are needed to research and experiment new features and services.
- Euro6IX project represents an excellent opportunity to carry out this coordinated action.



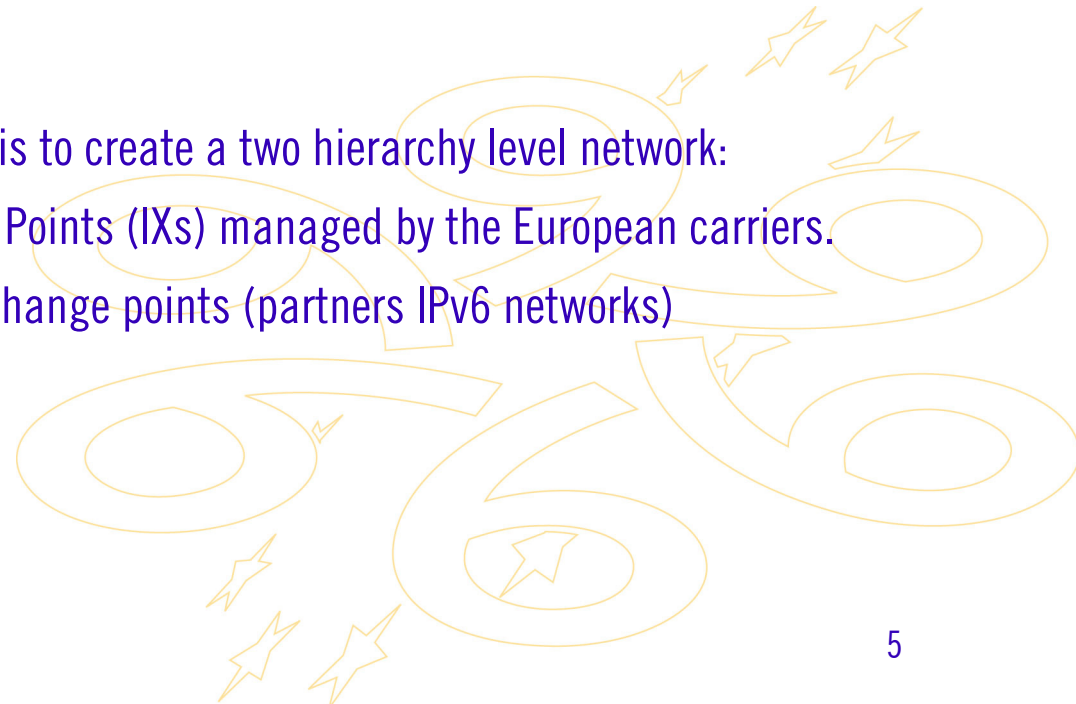
# Euro6IX: Concept and Main Objectives

Euro6IX aims to stimulate IPv6 adoption by European Carriers and ISPs by creating a large testbed as a model of the future IPv6 Internet.

Euro6IX aims to perform research activities and develop new services in a pre-commercial manner, which means involving business units and external beta-testers thanks to Access pilots/services development.

Regarding infrastructures, Euro6IX main objective is to create a two hierarchy level network:

- A European backbone of IPv6 Traffic Exchange Points (IXs) managed by the European carriers.
- A set of IPv6 local sites connected to these Exchange points (partners IPv6 networks)

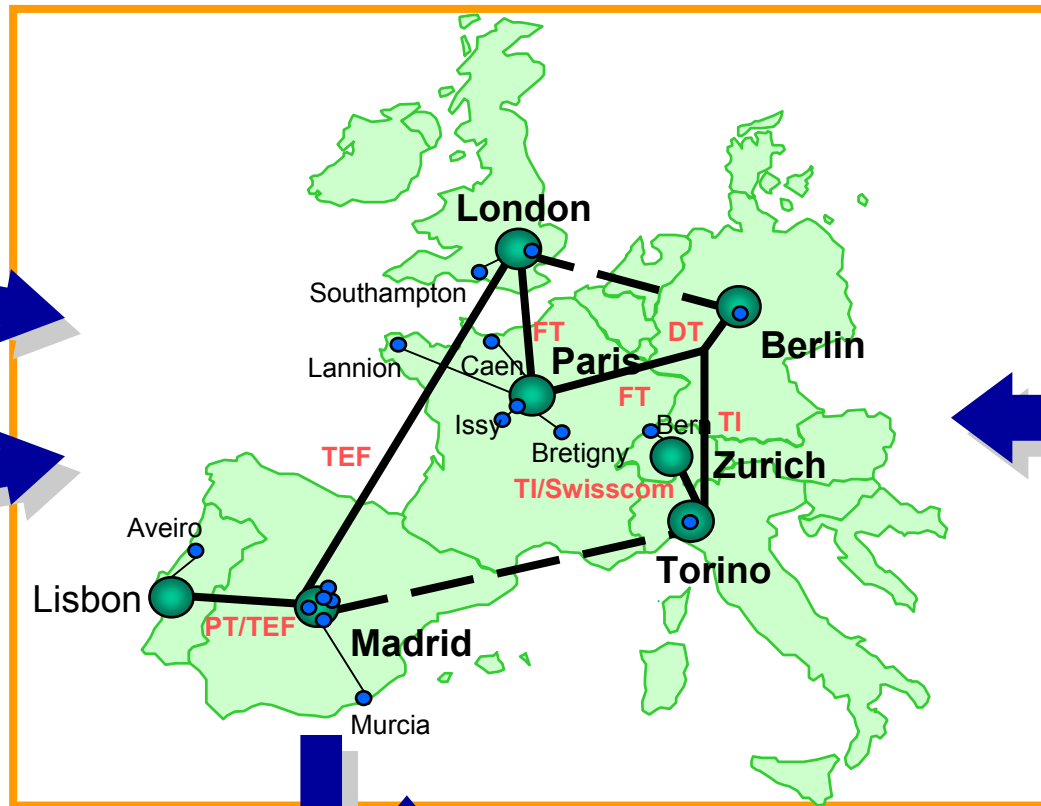




# Euro6IX European IPv6 Backbone

Peerings to  
North America  
(BT)

Peerings to  
South America  
(Telefónica)



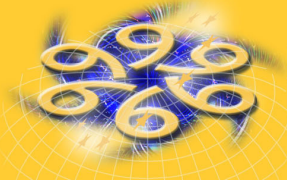
34/155 Mbps IPv6  
Native Links



Peerings to  
Asia Pacific  
(BT)

Peering to  
6net European project

A relevant result has been to deploy an IPv6 native infrastructure to test IPv6 features and IX nodes new Services and business models.



# Euro6IX: European IPv6 Consortium

Euro6IX is a project funded by the European Commission under the 5<sup>th</sup> Framework Programme.

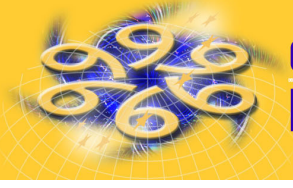
Euro6IX total budget invested is 15,5 MEuro, which means a significant part of IPv6 research efforts in Europe. Timeframe: 2002-2004.

Euro6IX was considered as a good opportunity to coordinate R&D efforts with other European carriers and organizations. This has been Telefónica I+D's main reason to assume the prime contractor and networking deployment coordination roles in the project.

Euro6IX puts key European players together to cooperate in IPv6 research:

- R&D Branches of European Carriers: British Telecom, Deutsche Telecom France Telecom, Portugal Telecom and Telecom Italia.
- Consultants and other SMEs: Consulintel, Telscom, Écija Abogados.
- University of Southampton, University of Murcia, Technical University of Madrid (UPM).

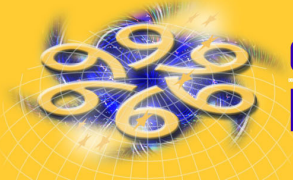




# Euro6IX: Main results until January 2004

- European native IPv6 Backbone of IXs and Local IPv6 sites connected
  - Peerings/Transits to other IPv6 enabled regions thanks to a Common Routing Policy agreed among all carriers.
- Development of Management Applications:
  - “Magalia”: Real time network monitoring system for IPv6 NOCs.
  - A complete IPv6 PKI (Public Key Infrastructure) environment to allow application level security and an Intrusion Detection System (“Topaz”).
- IPv6 End user services and Access Systems in Euro6IX
  - e-learning: Interconnection of remote classes/auditoriums in large events involving more than 25 sites.
  - e-entertainment/P2P: Video on-demand, on-line games, instant messaging, etc.
  - Mobility: devices changing access (fixed, cellular, WiFi) keeping active services.
  - Telefónica I+D Tunnel Broker: More than 200 external users.
  - External Users Native IPv6 Access pilots to be tested during year 2004.





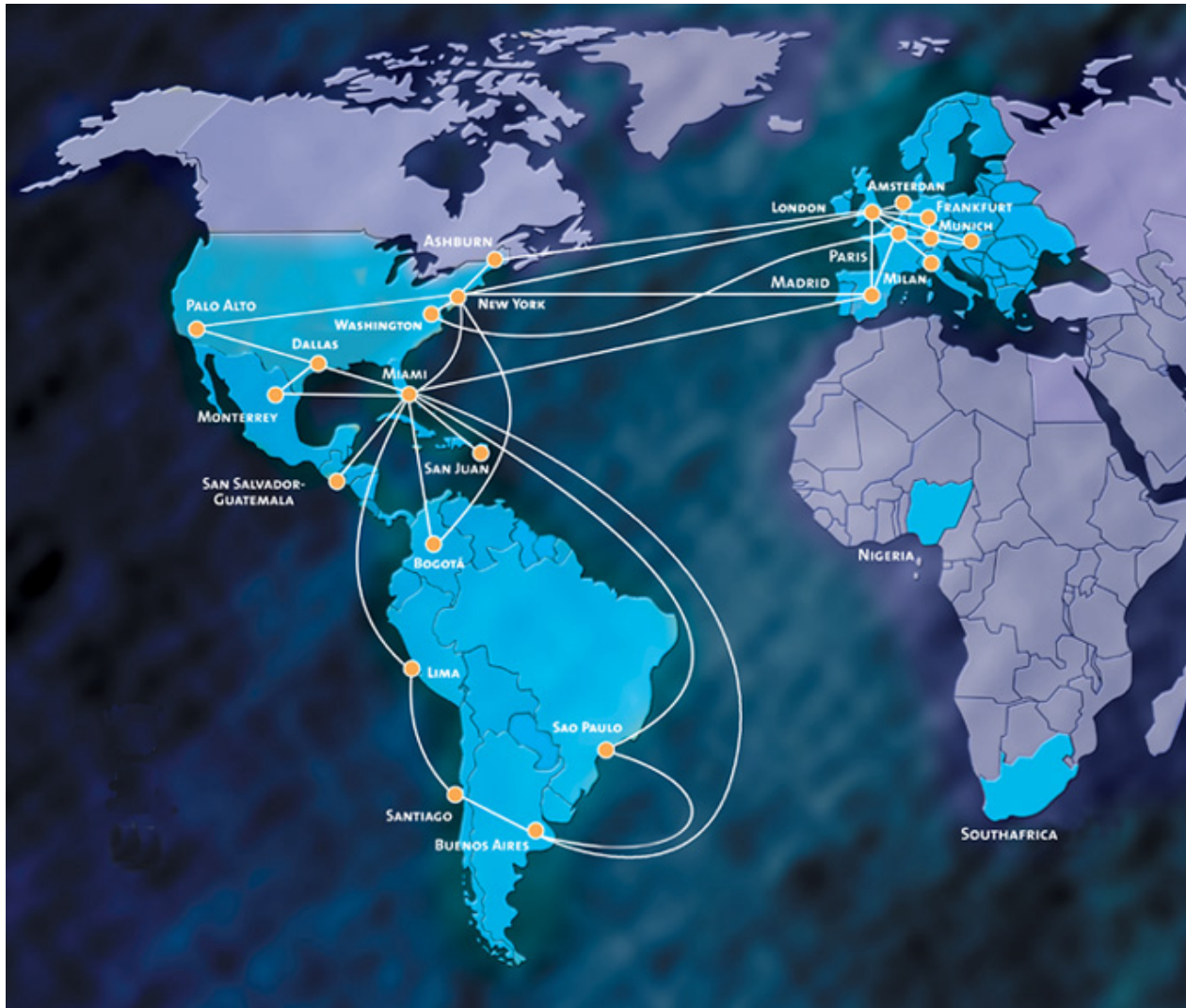
# Telefónica Group Activities in Euro6IX

Telefónica I+D is leading Euro6IX networking activities. Business units supporting TI+D:

- **Telefónica de España:**
  - Sponsorship of Madrid-London and Madrid-Lisbon (shared with PT) links.
  - Sponsorship of the first Spanish IPv6 Exchange point (MAD6IX).
- **Telefónica Móviles**
  - Support to create IPv6 access pilots over Mobile networks.
- **Telefónica Empresas**
  - Testbed to connect Spanish enterprises and Content providers to Euro6IX.
  - **Telefónica Empresas is now offering IPv6 connectivity services to Spanish enterprises as part of their “DataInternet” commercial service.**
  - Telefónica Empresas Brasil unit has succeeded to connect to Telefonica Wholesale’s node in Sao Paulo and RNP (Brazil National Research Network).
- **Telefónica International Wholesale Services**
  - **Telefónica International Backbone offers now IPv6 native connectivity services in Madrid, London, Amsterdam and Sao Paulo as a first step in the IP operational backbone upgrading.**
- Thanks to this infrastructure, the Telefonica Group will increase its cooperation to develop the Information Society in Latam, in the frame of ALICE.



# IPv6 Connectivity to Brazil



## Telefónica International Wholesale Services

- Sponsor of South America Euro6IX Connectivity.
- IPv6 end-to-end Native Service
- Madrid-Sao Paulo Direct Connection
- 40 Gbps Backbone  
(Upgradeable to 1.96 Terabps)
- Over 45,000 Km of fiber optic cable