Telematic Engineering Department

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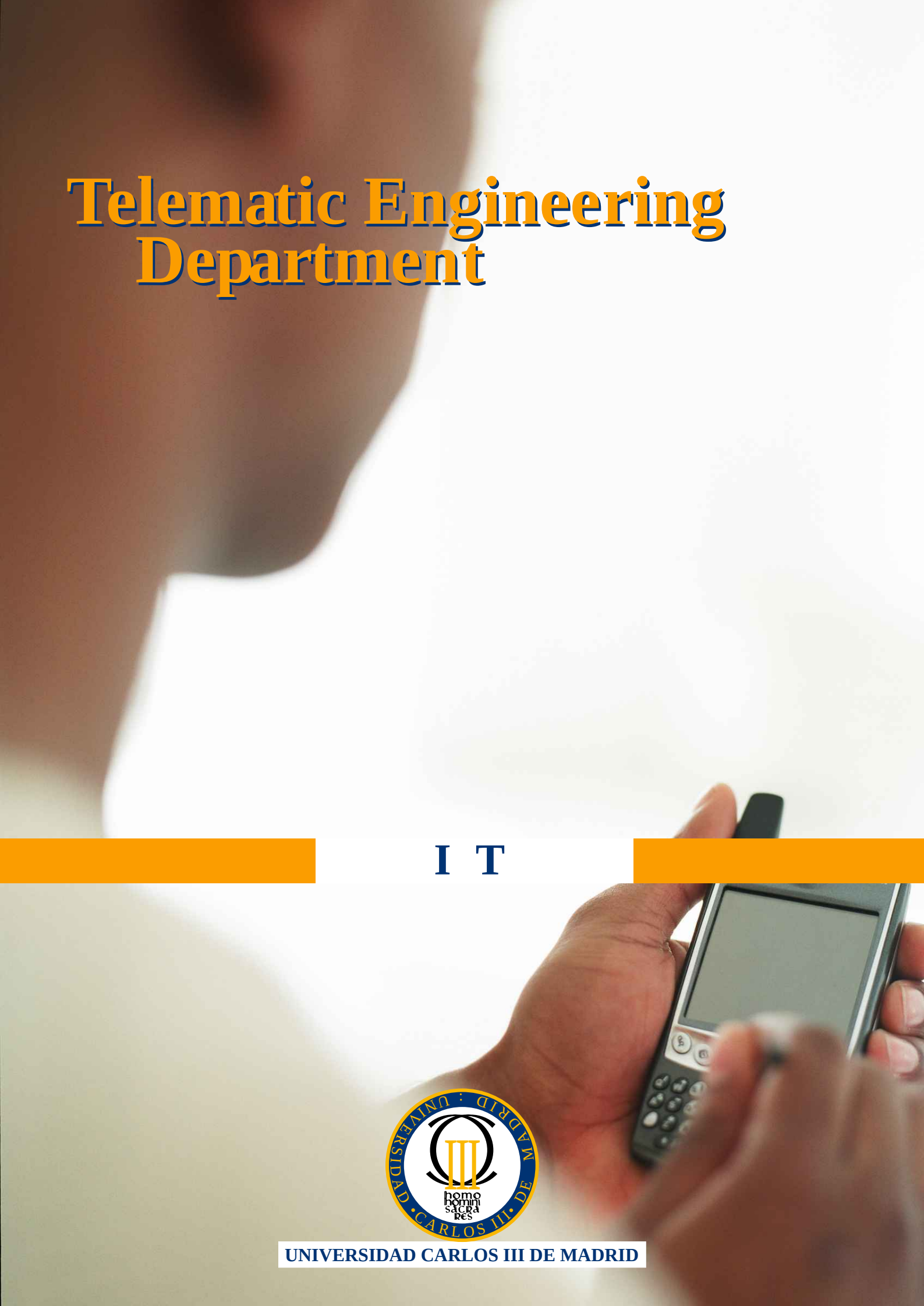
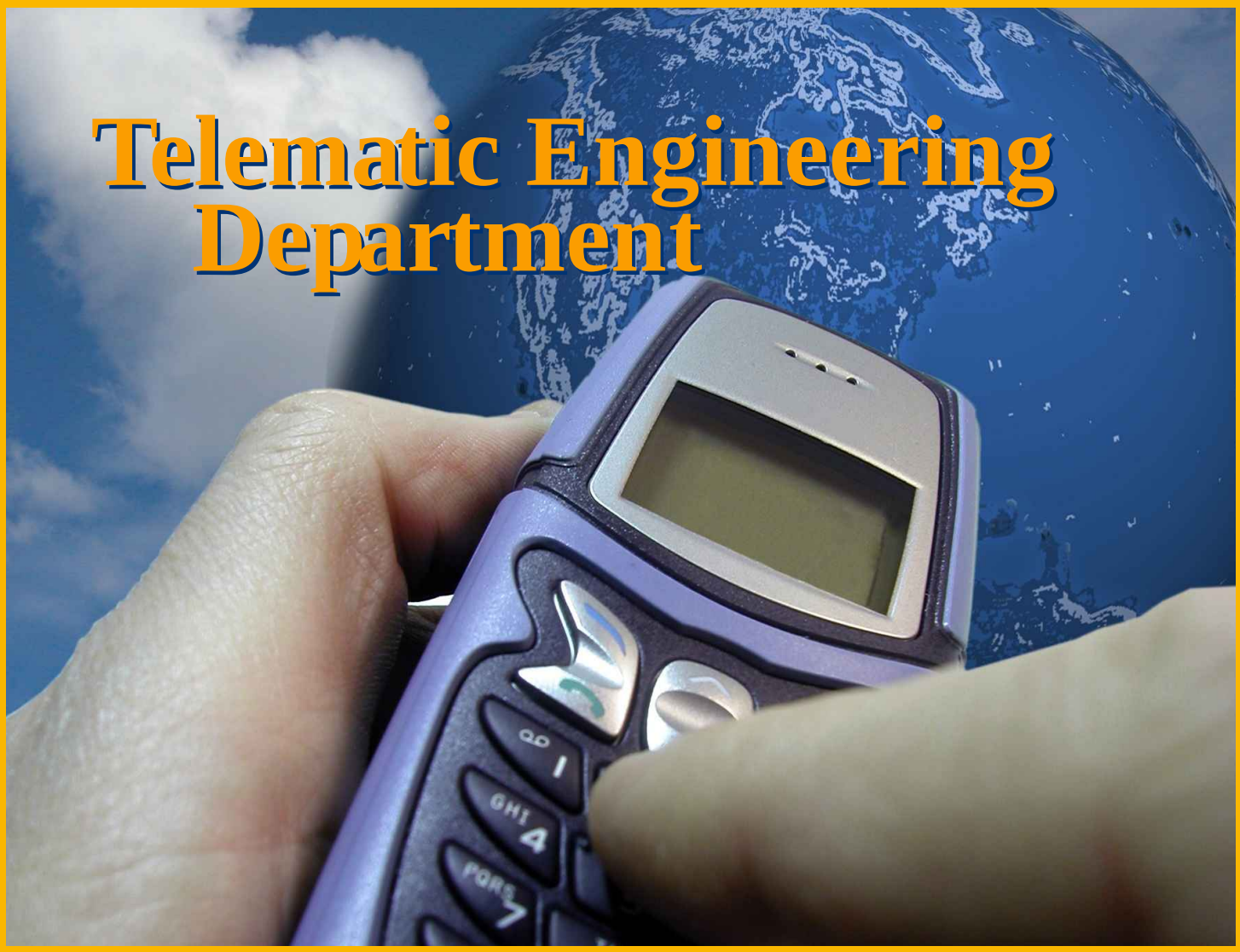


UNIVERSIDAD CARLOS III DE MADRID



The Telematic Engineering Department comprises a consolidated team of Telecommunications and Computing professionals and university professors currently numbering nearly 100 people. Our team has a proven track record at both national and international levels, in R&D projects, in teaching and training and in consultancy. We carry out these activities on behalf of, or in collaboration with, our partners in the service-industry, manufacturing and public administration sectors.

Our philosophy is to offer novel solutions based on cutting-edge technologies. We have applied our approach to the whole range of problems in the telematics field from the development of solutions to highly-complex specific problems to the development of complete, integrated solutions. The breadth of expertise in our group is one of its main strengths, enabling us to combine very specialised knowledge in order to tackle problems from multiple perspectives and integrate the most efficient and advanced technologies.

Along these lines, we currently maintain a large number of collaborations and are continuing our involvement in offering a wide range of services including technical and strategic consulting, coordination and management of large projects, execution of system integration projects, development of service pilots based on new technologies, application of research results to the development of innovative products and services, development of customised software, services and applications, and provision of tailored, specialised training courses.

READY FOR CHANGE?

The Internet has become an essential part of the way we establish relationships, learn, enjoy our free time, and of course, do business, becoming a very significant business in itself. As the role of the internet becomes more and more important, increasingly strong requirements are being placed on the technologies that make it possible, such as higher levels of reliability, greater and greater bandwidth, mobile access, new application services, greater security, etc. To satisfy these growing demands, new technologies and standards are being developed and implemented at an ever-increasing pace. One of our department's principal strengths is our members intimate knowledge of these technologies, achieved through participation in their development and through experience of their integration in real environments.

• **Application development technologies and middleware:** XML, Web services, ontologies and Semantic Web, J2SE, J2EE.

• **Internet connectivity solutions:** IPv6, Internet network architecture, design deployment and operation of IP networks; multi-homing, mobile IP, private virtual networks, Internet security architectures, IPsec; GRID, MPLS, programmable network technologies, multipoint routing, IP over Optical Networks. New transport technologies: optical networks, DWDM, GMPLS, evolution of IEEE 802.

•**3rd and 4th generation mobile connectivity solutions.** WLAN IEEE 802.11 / 802.16, Bluetooth, ad-hoc networks, support for quality of service in mobile networks, AAAC, service platforms for mobile networks, security, gateways to networks and mobility, and domotic services.

• **Ubiquitous computing solutions:** security aspects, PKI evolution, trust models, authorization, access control, SSO, intelligent cards; application development for mobiles and PDAs, J2ME, Symbian, agents and mobile code; user modelling techniques, service customizations, localization and applications based on context.

• **Domotic and inmotic solutions:** service gateways, automatization and entertainment networks, LonWorks networks, OSGi services, integration of applications and domotic services.

• **Intelligent tutor technologies:** development of open-source platforms and of SCORM contents, IMS, DOTLRN, OpenACS.

• **Design and deployment of multimedia solutions:** H.323, SIP, telephony and data network integration, ENUM, quality of service in packet networks, multiplatform publishing.

• **Development of real-time systems:** resource planning and management. Support for real time in middleware for distributed systems. RMI. Languages: Java and Real-Time Java (RTSJ), Ada and C/C++. Design oriented methodologies (HRT-HOOD and RT-UML). Aerospace, consumer electronics and transport sectors. Embedded software.

High performance communications infrastructure of the Telematic Engineering department

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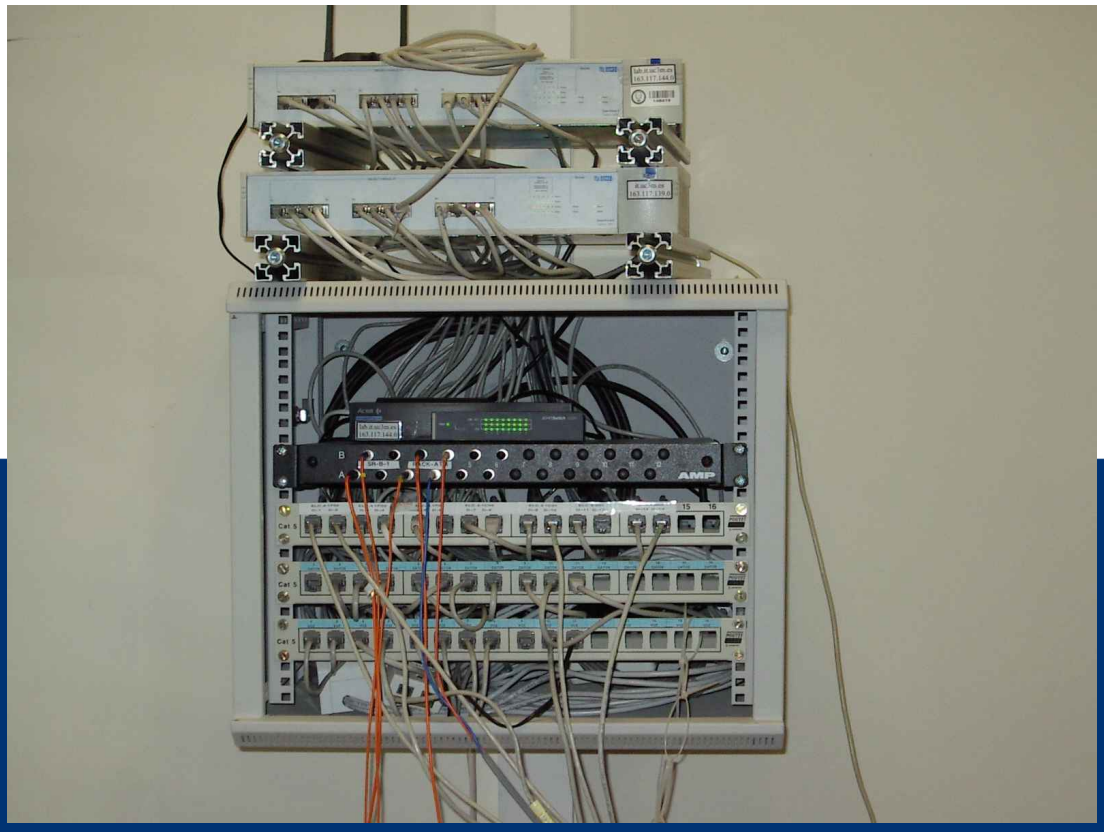

OUR EXPERIENCE

We have established a large number of successful collaborations with institutions and companies, both Spanish and foreign, through R&D projects, consultancies and service provision. We count among our main partners the Ministry of Science and Technology (Ministerio de Ciencia y Tecnología), the Madrid regional government (Comunidad de Madrid), Telefónica, Agencia EFE, Ericsson, Portugal Telecom, Bankinter, Deutsche Telecom, Philips Research Eindhoven, ABB Norway y Nokia Finland. We have established mutually-beneficial long-term strategic alliances with Nortel, Nokia and Telefónica. We are acting as project leader in several projects of the European programs IST, @LIS, MEDEA+ and ITEA.

Telematic Engineering department researchers participating in the IPv6 Forum (Madrid)

INNOVATIVE SOLUTIONS

Our own work and the collaborations we are involved in have given rise to novel solutions, some of which are operational in client installations.

• **REDI-Madrid - Madrid regional research network (Red de Investigación de la Comunidad de Madrid).** Our team is responsible for the design, implementation, and management of REDI-Madrid. This high-speed research network between the public institutions of the Madrid region that have some research activity, one of the most technologically-advanced in Europe, is connected to other national and international networks through RedIRIS. The transmission technology used is DWDM, offering flexibility, high-performance and scalability, and the IP protocol. The network topology comprising three rings provides each entity with a Gigabit Ethernet link to the central node; the connection to RedIRIS is via a 2,5 Gbps STM-16 link. The network provides its more than 200.000 users with extremely high levels of availability.

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