MOBILE TECHNOLOGIES
RESEARCH, DEVELOPMENT & INNOVATION AT THE UNIVERSITAT POLITÈCNICA DE CATALUNYA (UPC)

The Universitat Politècnica de Catalunya (UPC) specializes in the areas of architecture, science and engineering, including Mobile Technologies. In this field, the main focus areas are:

- Cybersecurity
- Energy efficiency
- Cognitive networks
- Satellite communications
- New processors
- New architectures
- Antenna systems
- SDN/NFV radio access network
- eHealth

As a result of the UPC’s recognized research track record in its areas of specialization, we can offer a wide range of services:

- R&D technology transfer projects
- Consortium for national and Horizon Europe projects
- Patents
- Technology assessment
- Specialized facilities

The UPC is the leading university in Spain in volume of research and technology transfer to companies, and has become one of the major hubs of knowledge in Southern Europe.
ANTENNA SYSTEMS
- Multielement antennae for vehicles connected with technology based on beamforming
- Data modulation for WiFi devices to communicate with non-WiFi devices
- IoT mesh networks with low-power radios
- Management of interference in communications and information processing

SDN/NFV RADIO ACCESS NETWORK
- Signal protocol models to improve efficiency in handover mechanisms via a software-defined network (SDN)

EHEALTH
- Serious games for remote rehabilitation
- Devices for low-cost, remote cardiovascular monitoring
- Image processing to diagnose anterior cruciate ligament injuries in the knee and to identify and characterise epigastric perforators
- Differential diagnosis in patients with Parkinson’s disease using biomechanical tests
TECHNOLOGIES

SATELLITE COMMUNICATIONS
- Improved geolocation for shared vehicles in critical areas of the city through Galileo

NEW PROCESSORS
- Efficient processors for intelligent computing systems that can carry out cognitive functions
- Faster processors with lower energy consumption for artificial intelligence and automatic learning

NEW ARCHITECTURES
- Architectures and technologies for the control and management of virtual infrastructure resources for the optimal supply of end-to-end services
- Optimisation of massive multiple input multiple output (MIMO) communications
- Miniaturised, wireless graphene antennae that can operate in the terahertz band

ENERGY EFFICIENCY
- Algorithms for energy optimisation for 5G networks
- Low-cost radiofrequency (RF) links with low energy consumption
CYBERSECURITY
- Algorithms to detect cyber-physical attacks
- Intrusion detection system (IDS)/intrusion prevention system (IPS)
- More efficient, safer hardware security systems for memory devices (memristors)

COGNITIVE NETWORKS
- Advanced management and control system for 5G networks

APPLICATIONS
Industry 4.0
Digital economy
Data science
Internet of things
Mobility
Sustainability
Health
Artificial Intelligence
Smart agriculture
Connected vehicle
Cognitive networks