



TECHNOLOGY CENTER

UNIVERSITAT POLITÈCNICA  
DE CATALUNYA  
BARCELONATECH

# [ MOBILITY AND LOGISTICS ]

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# RESEARCH, DEVELOPMENT & INNOVATION AT THE UNIVERSITAT POLITÀCNICA DE CATALUNYA (UPC)

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

- Logistics
  - Warehouse management
  - Goods transport
- Mobility
  - Passengers
  - City
  - Vehicle
    - Sustainability
    - Security
    - Infrastructures

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.



# WAREHOUSE MANAGEMENT

- Process optimization
- Smart warehouse management
- Supervision of smart processes
- Cooperative robots: exoskeletons, handling and assembly tasks in collaboration with humans
- Autonomous robots (co-workers)
- AGV, autonomous vehicles
- Learning and task prediction via artificial intelligence
- Drones in the supply chain

# GOODS TRANSPORT

- Shortest path: route optimization
- Study and optimization of the logistics chain
- Dynamic models of transport and management (land, air and maritime)
- Sizing of the logistics chain
- Robot-human collaboration



## PASSENGERS

- Learning systems and qualitative decision making
- Technology trends
- Social trends
- Predictive user studies
- Human-machine interaction
- Social inclusion/digital gap
- Prediction of passenger demand
- User acceptance
- Security

## CITY

- Multimodal mobility strategies
- Big data and smart systems
- Mobility as a Service (MaaS)
- Autonomous and connected mobility solutions
- Drones: flow monitoring



# VEHICLE

## SUSTAINABILITY

- Alternative propulsion systems
- Electric, wireless, hydrogen vehicle
- Energy efficiency, battery life cycle
- Robotics, artificial intelligence, sensor of interaction/ optical recognition
- Circular economy (materials, etc.)

## SECURITY

- Autonomous vehicle (security)
- Road safety and comfort



## INFRASTRUCTURES

- Public transportation
  - Ticketing
  - New mobility services
- Demand prediction
- Sustainable urban design and accessibility
- Dynamic models of transport and management (land, air and maritime)
- Simulation of urban data (land use, dwelling, urban mobility plans) and virtual reality





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