SMART CITY TECHNOLOGIES

TECHNOLOGY EXPERTISE

SOLUTIONS FOR MOBILITY

People and goods must be moved more effectively, to assure quality of life and low impact on the environment:

- Applications for active management, traffic information and smart mobility
- Smart parking solutions
- Creation of dynamic traffic models
- Modelling, simulation and optimization of goods transport
- Design of algorithms to improve the efficiency of airlines’ flight paths

DYNAMIC ROUTING
EVS

SOLUTIONS FOR THE ENVIRONMENT

Improvement in the management of natural resources, recycling and reuse, to boost efficiency and reduce carbon emission:

- Improvement in environmental pollution control solutions
- Applications to improve the production and management of energy in cities: smart grids and urban renewable energies
- Development of tools and solutions based on hydrometeorological forecasting models and early warnings
- Design of water management systems. Advanced water purification treatment, water reuse and recycling

ECO-INNOVATION
RECYCLING
POLLUTION

SOLUTIONS FOR PEOPLE

Collaborative solutions to efficiently integrate citizens in the administration and improve well-being:

- Mobile apps with geolocation and augmented reality for the fields of health, sports and citizens services
- Integration of social networks into collaborative environments
- Tools for the dissemination of emergency messages to the population. Open data access tools

EMERGENCY SERVICES
OPEN GOVERNMENT
HEALTH AND WELL-BEING APPS

SOLUTIONS FOR PUBLIC SPACE AND INFRASTRUCTURE

Urban planning and construction of spaces to organize human activities, taking into account available natural resources and financial requirements:

- Design of buildings that produce more energy than they consume
- Cooperative robotics solutions for assembly and construction of structures
- Design of safer urban spaces, taking into consideration how people work and live in them
- Optical engineering for energy efficiency in lighting

INTEGRAL NETWORKS
SUSTAINABILITY

SOLUTIONS FOR CONNECTIVITY

Efficiency improvements and carbon footprint reduction in the ICT sector:

- New green technologies for responding to growing needs for information transmission
- Improvement of the efficiency and reduction of carbon footprint in the ICT sector
- Development of data routing protocols for infrastructureless wireless networks
- Design of ‘Eco Networks’ in the context of green wireless communications to reduce the carbon footprint in the Telecom sector
- Internet of things and cloud computing solutions

BIG DATA
SECURITY
SMART CITY TECHNOLOGIES

SOME R&D PROJECTS

AERIAL ROBOTICS COOPERATIVE ASSEMBLY SYSTEM

Development and validation of an aerial robotics cooperative system for the assembly and construction of structures. Applications in urban areas are remarkable and include the transport of objects, the assembly of structures in hard-to-access areas and the transport of platforms to elevated areas, among others.

EFFICIENT CITIES, METROPOLITAN AREAS AND URBAN REGIONS

City Data visualization for representing the morphological evolution, the social fabric, metropolitan projects, bioproductive areas and the energy potential of the Barcelona metropolitan area.

DATA COMMUNICATIONS AND DISSEMINATION OF EMERGENCY MESSAGES IN SMART CITIES

Design of geographical opportunistic routing protocols for infrastructureless wireless networks, specifically for vehicular ad hoc networks in urban scenarios.

MANUFACTURE OF A LIGHTWEIGHT HYBRID VEHICLE FOR URBAN USE

Development of a urban lightweight hybrid vehicle to reduce the cost of the propulsion system and manage power among the various elements of traction, generation, storage and control.

DESULPHURIZATION OF ENERGY-RICH GASES

Biotrickling filters for the biological oxidation of sulfur compounds of biogas, eliminating corrosive compounds (mainly H₂S) from biogas generated in urban wastewater treatment plants and landfills.

PROJECT I-NMOTICA, AMBIENT INTELLIGENCE SYSTEM FOR LIGHTING MANAGEMENT IN COMMERCIAL BUILDINGS

A novel system, based on ambient intelligence techniques, for the management of lighting in tertiary buildings, using LED systems that incorporate communication capabilities and remote management.

SUPERHUB PROJECT, SUSTAINABLE AND PERSUASIVE HUMAN USERS MOBILITY IN FUTURE CITIES

The aim of this project is to enrich a user’s travelling experience by extracting mobility patterns, combining them with user preferences, and using them as the basis for a recommendation. These services can be used in combination with an existing travel planner/navigator to incorporate user preferences and user mobility patterns in the formation of a travel plan.

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