Smart Cities in Spain

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Smart Cities - a broad concept

- Smart cities is a broad concept, offering a wide variety of services to different clients, including the citizens but also the business and government sectors.

- **Main research fields and technologies:**
  - energy-efficient buildings and neighbourhoods,
  - (real-time) intelligent energy supply/demand management,
  - smart metering,
  - smart grids, communications grids,
  - integration of renewable energy production in the grid,
  - water management,
  - smart and sustainable mobility,
  - integration of the electric vehicle in the cooperative transport infrastructure and smart city logistics.
ICT and Energy
Smart Grids a relevant example

ICT is necessary for interconnecting the electricity grid, road and telecommunication networks

ICT is necessary for information management, processes, automation, population education and awareness, etc.
Spain has invested heavily in the **development of renewable energies**, in **energy efficiency** and in greenhouse gases reduction. Both through R&D, Infrastructures and market development (feed-in tariffs).

- Develop a **thriving industry founded on technological innovation**.
- The roll-out of renewable energies, transformation of energy grids, and basically our **new energy model**, has become an interesting model, taken in many cases as a **good example of cooperation between the public administration, business and social institutions**.
- At the end of 2009, renewable energies covered approximately 11% of our final energy consumption, and forecasts for 2020 indicate that we are going to achieve 20% target in 2010.
- There are numerous and successful smart actions carried out in Spanish cities that combined the previous work for promotion of renewable energy and energy efficiency.
There are several Spanish cities that are successfully carrying out pioneer smart city projects.

The Spanish cities that are carrying out smart city actions cover a wide range of population size, climatic conditions, geographic location, city structure and activities.

Some cities are emblematic in Europe and have received several awards and distinctions.
**Santander**
182,700 inh  
Important Port on the N coast.  
Tourist city.  
FIRE initiative (ICT)  
OUTSMART Project (ICT)

**Burgos**
178,674 inh  
Important historical-artistic patrimony. Research centre  
European projects: sustainable energy, planning, energy and social issues.

**Málaga**
570,000 inh  
Important tourist center  
SMARTCITY Málaga: demonstration project of smart energy in cities
**Vitoria-Gasteiz**

238,247 inh
2012 European Green Capital.
Smart actions in sustainable mobility, public lighting, energy efficiency, waste and water management.

**Barcelona**

2nd largest city in Spain:
1,600,000 inh. Urban area:5,012,961.
One of the World’s major global cities.
Urban Innovation lab&dev (BUILD): enhance private initiative participation in smart actions and urban management.

**Valladolid-Palencia**

V: arround 400,000 inh.
Administrative centre
VyP closest capitals in Spain: enables interurban mobility actions
Smart City VyP: smart technological and innovative actions.
San Sebastián
183,090 inh. 400,000 inh. in metropolitan area.
Main activities are trade and tourism.
Smart projects in energy efficiency, urban lighting, sustainable mobility and ICT applications.

Bilbao
Largest metropolitan areas.
Fifth most populated area in Spain.
Second industrialized region in Spain.
Smart actions related to water management.

Cáceres
94,179 inh
World Heritage City by UNESCO
Smart CityZens Project (smart actions in energy efficiency, mobility and citizen participation) to be launched.
City’s example: Malaga

PROJECTS

- Smartcity Málaga.
- Energy Management System.
- Public Lighting Improvement
- Municipal PV network.
- Green eMotion.
- Zem2aLL.
- eMob.
- Multimedia and internet apps.
- Municipal ICT network.
- Green Apple.
- Malaga Living Lab.
- Sustainable schools.

Structural Funds

FP7 GC

Spain + Japan

City’s own investment
Regional’s Example: PRICE: “Smart Grid Project in Henares Region”

Goals

- Monitor and automate the MV/LV power network, improving its operation and maintenance
- New power management system
- Improve the integration of already existing distributed generation, (73300 kW)
- New options and services to integrate demand
- Facilitate the integration of electric vehicles
- Contribution to interoperability and common open standards, (using previous results coming from European projects with the same open philosophy such as Open Meter, Open Node, etc)

Key figures

- 500,000 inhabitants involved
- 200,000 customers
- 1,500 MV/LV substations
- Rural, Urban and Semi-urban network topologies
- Budget: 34 M€ (excluding meters cost)
- Large collaboration: 22 partners
- Execution period: 2011-2014
Covenant of Mayors:
- Spain, with 836 Town Cities is the second country after Italy in representation.
- Among the Spanish cities members of this Initiative are: Madrid, Barcelona, Bilbao, Valencia, Málaga, Palencia, Valladolid and Vitoria (one of the 5 cities with the Strategic Energy Action Plan approved).

CONCERTO Initiative:
- Vitoria Gasteiz (PIMES project)
- Cerdanyola del Vallés (part of the project POLYCITY)
- Tudela (part of the project ECO-CITY), Vitoria
- Zaragoza (part of the project RENAISSANCE)
- Viladecans (part of the project CRRESCENDO)

CIVITAS:
- San Sebastián (CIVITAS ARCHIMEDES) and Vitoria (CIVITAS MODERN) have participated in CIVITAS PLUS.
- In CIVITAS II Burgos has participated (CIVITAS CARAVEL) In CIVITAS I Barcelona has participated in the project CIVITAS MIRACLE.