SMARTSANTANDER: MAKING THE SMART CITY PARADIGM A REALITY

Prof. Luis Muñoz
Laboratories for R+D+I in Telecommunications, 39005-Santander; Spain
University of Cantabria
luis@tlmat.unican.es
Outline

• What is a smart city?

• What is SmartSantander about?

• SmartSantander duality and catalyst

• SmartSantander architecture and IoT topology

• Technologies and services

• The urban platform
What is a smart city?

• It is a complex ecosystem characterized by the intensive use of information and communications technologies (ICT) aiming at making the cities more **attractive**, more **sustainable** and a unique place for **innovation** and **entrepreneurship**.

• Making the smart city a reality does not mean that we have to start from scratch but that we will take advantage of what the city has already got, while evolving with a clear strategy and determination.

  ▪ Static nodes deployed in the city around an IoT multihop backbone network which easily enable the addition of new infrastructures in a plug & play way
  ▪ Mobile nodes mounted on public bus transportation system, taxi fleet, police cars, etc.
  ▪ Participatory sensing supported by group of users committed to the Municipality
What is Smart Santander about?

Smart Santander aims at providing a European experimental test facility for research and experimentation on architectures, key enabling technologies, services and applications for the Internet of Things (IoT) in the context of the smart city.
Smart Santander duality and catalyst

• SmartSantander is going beyond the traditional smart city concept. Why?
  ▪ Because of its unique duality:
    • Deployment of an IoT facility for experimentation
    • Service provision in the smart city context, maximizing benefits of the experimentation platform
  ▪ Hence, setting up an innovation ecosystem in which the main stakeholders meet:
    • Technology providers
    • Research centers
    • Urban service providers
    • Municipality
    • Finance sector
Smart Santander architecture
Smart Santander architecture

• Complete software architecture at the end of 2012
Smart Santander architecture

- Architecture for the fixed nodes

**Parking sensor node.** To be deployed buried in the asphalt. At the corresponding load/unload area, bus stop or handicapped-reserved space.

**Repeater.** To be deployed at available street lights or traffic lights.

**Gateway.** Connected to Internet/Intranet.

- Parking lots, environmental control and **smart irrigation**
Deploying IoT irrigation nodes
Smart Santander architecture

• Architecture for the mobile nodes
Deploying mobile nodes
Technologies and services

• Some of the services are:
  ▪ Environmental monitoring
  ▪ Traffic management (parking control, bus stops, loading/unloading areas)
  ▪ Irrigation optimization in parks and gardens
  ▪ Augmented reality
  ▪ Participatory sensing
  ▪ Public street lighting
  ▪ Waste management

• The citizens and the smart city
  ▪ KPIs addressing QoS vs. QoE
Technologies and services

- **Participatory Sensing**: Supported by Android and IoS. Both already available in the market
Technologies and services

- **Augmented Reality**: Supported by Android and iOS. Both already available in the market.
Technologies and services
Technologies and services
The urban platform

L. Muñoz et al., “Boosting Smart Cities through the Synergies with the Utilities”, submitted to the IEEE Communications Magazine special issue on Smart Cities, January 2013
...moving forward!

http://maps.smartsantander.eu/