Santander Smart City: from utopia to reality

Poznań, 12th September 2018
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Contents

Introduction

¿Do a city need to be special to become Smart?

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1. Introduction

- Located on the north coast of Spain, Santander is the capital of the Region of Cantabria

- 180.000 inhabitants, occupying a land area of 33 km^2

1. Introduction

- Transport
    - Port (406,108 Tn), goods and touristic connection to UK
    - Airport (875,000 passengers/year, 2015)
    - High capacity roads (horizontal and vertical axes)
    - Train (horizontal and vertical axes)
    - Urban public transportation (buses)

1. Introduction

- Knowledge and Technical resources

  - University of Cantabria (13,500 students, 1,250 academic staff)

  - Cantabria Scientific and Technological Park

  - ICT sector

1. Introduction

- Urban lab
    - Determined & continuous authorities support
    - R&D : University of Cantabria
    - Implementers: Innovative companies

2. Santander's strategy

Strategic Plan 2010-2020 → Innovation Management Plan

1. Santander Smart City

2. Santander open innovation

3. Public body modernization

2. Santander's strategy

- EU projects
- Private partners agreements

- Pilots
- Experiments

Active innovation

Ideas in action

City projects

Lessons learned

- Innovation projects
- Procurement IT requirements

- Technical
- End-users (citizens)
- Municipality workers
- Private companies
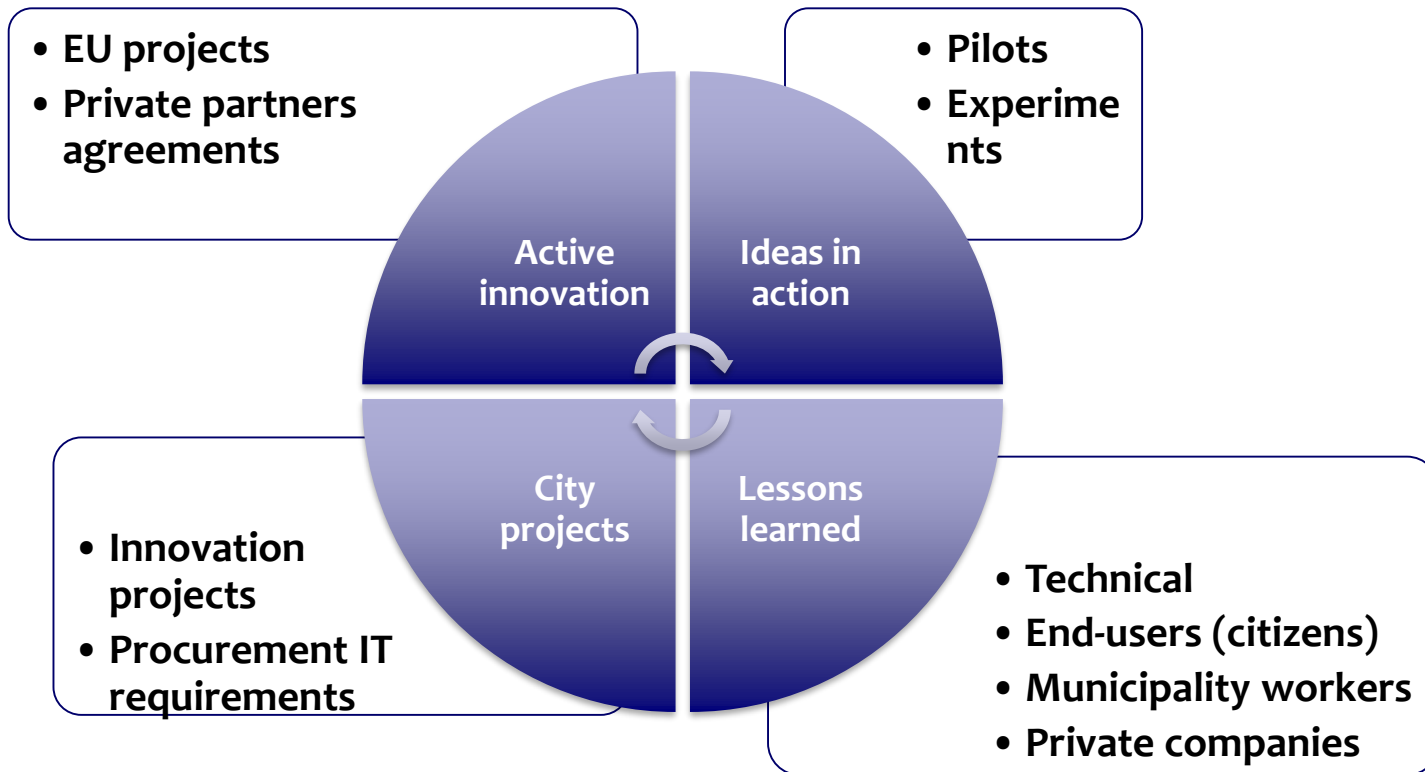
2. Santander's strategy

Ongoing (8 projects)

Energy and environment

NETfficient Storage for Life

EMPOWER Interreg Europe

URBAN WASTE

Mobility

WISE IoT

SETA

Technology and citizenship participation

FIESTA-IoT

ORGANICITY

m-Sec

SYNCHRONICITY

(FED)4SAE

POSEIDON

Ended (13 projects)

SmartSantander

Radical Rapid Deployment for Intelligent Cities And Living

burba

MobiWallet

CLOUT

FESTIVAL

Streetlight-EPC

BUTLER SMARTLIFE

smart

sociotal

lexnet Low EMF Exposure Future Networks
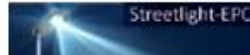
OUTSMART

innovation projects

Waste management.

Water management.

Streetlight management.

Traffic management.

Parking management.
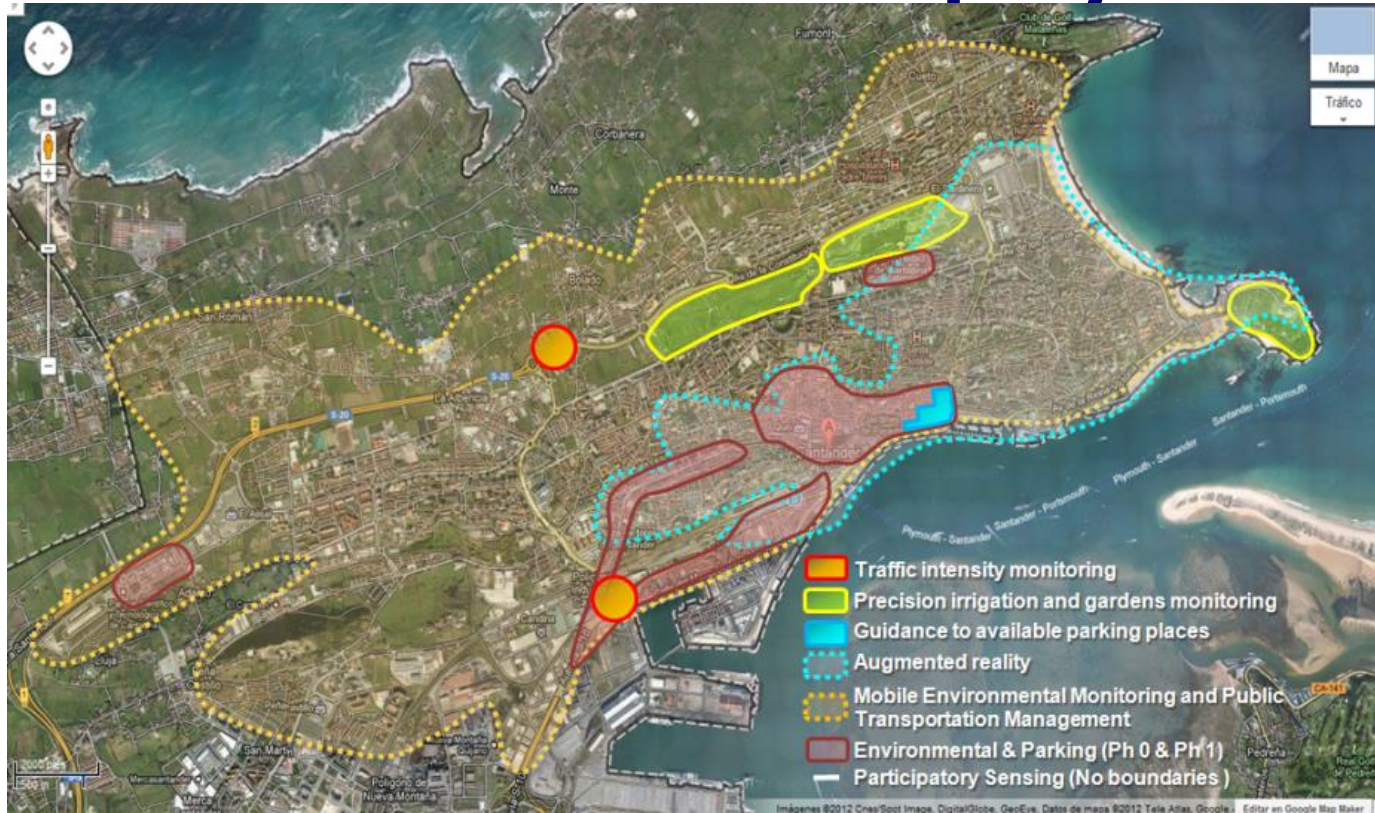
Smart city Platform.

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3. Developed projects

From Utopia to Reality

3. Developed projects

- Massive IoT urban deployment

- Waste management

- Urban mobility

- Smart City platform

3.1 Massive IoT urban deployment

3.1 Massive IoT urban deployment

Phase 1:	23 GW, 1,071 Fixed Nodes	2,322 fixed sensors
Phase 2:	5 GW, 115 Fixed Nodes, 150 Mobile Nodes, 2,500 Tags, 10,000+ Smartphones	377 fixed sensors, 1,500+ mobile sensors 20,000+ smartphone sensors
Phase 3:	3 GW, 330 Fixed Nodes, 25 Mobile Nodes, 30 Tags	330 fixed sensors, 250+ mobile sensors
Total:	31 GWs 1,516 Fixed Nodes 175 Mobile Nodes 2,500 Tags	3,029 fixed sensors 1,750+ mobile sensors 20,000+ smartphone sensors

3.1 Massive IoT urban deployment

Massive deployment of IoT devices

Fixed nodes
Mobile nodes
Citizens as sensors
Citizens Apps
Urban services

Experimentation

Native Experimentation (at Node Level)
Service Experimentation
Tesbeds Federation

Service Provision

On street Parking and Parking Guidance
Traffic intensity Monitoring
Environmental Monitoring
Irrigation in Parks and gardens
Participatory Sensing
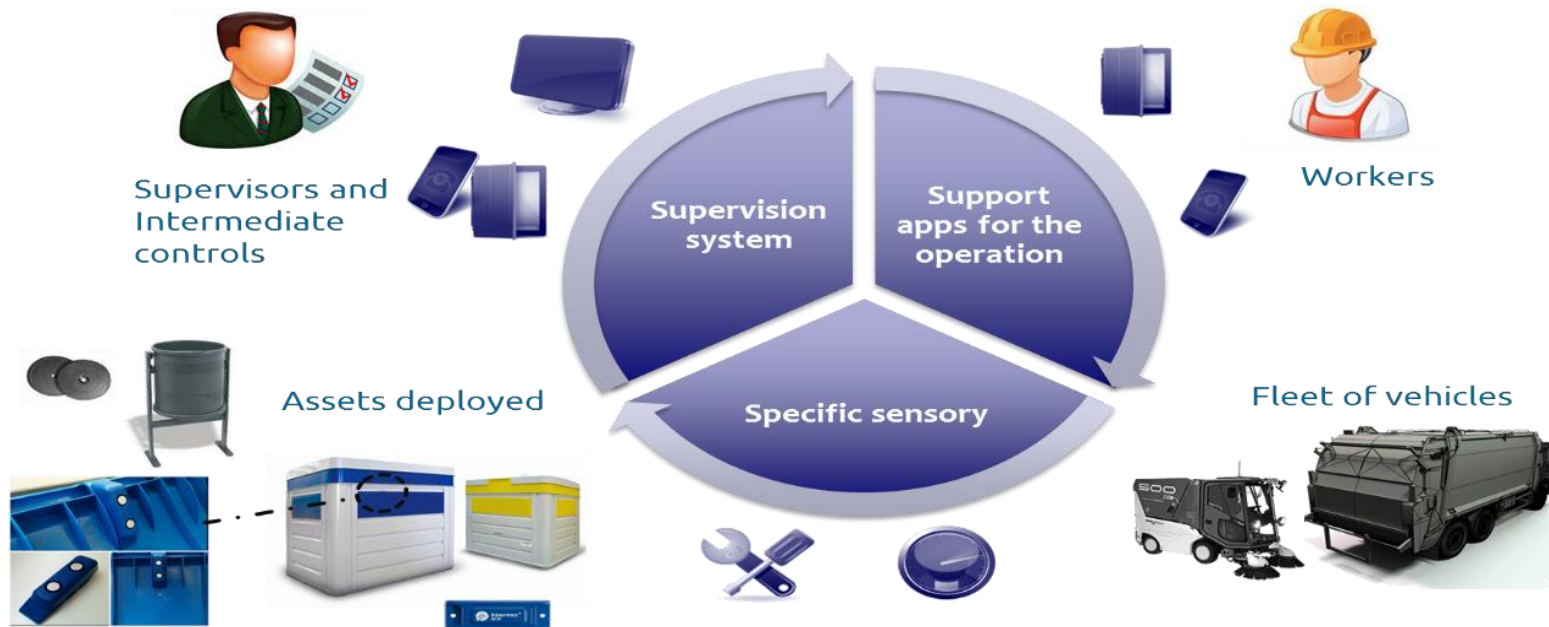Augmented Reality
….

http://maps.smartsantander.eu/

3.2 Waste management

- **Public procurement including IoT requirements**
- More than 1,000 devices deployed
- Measurement of status including fill level
- Identification: RFiD & NFC tags
- GPS/GPRS location
- App: information about waste pickup, schedules, report events

# 3.2 Waste management

3.3 Urban mobility

Traffic Management

Real-time traffic control:

- Sensors and inductive loops in city entrances and main streets measure traffic intensity.
- Control program of the traffic lights management of the city.

3.3 Urban mobility

- **10 outdoor parking panels** providing status of almost 400 parking lots.

- **5 traffic panels** which show the traffic status at adjacent streets in the city center.

- **NFC tags at bus-stops:** bus routes & schedules, arrival time,… (Almost 1million of uses)

- **App:** provides information of public means of transportation: buses, taxis, bicycles, the status of the traffic and traffic events
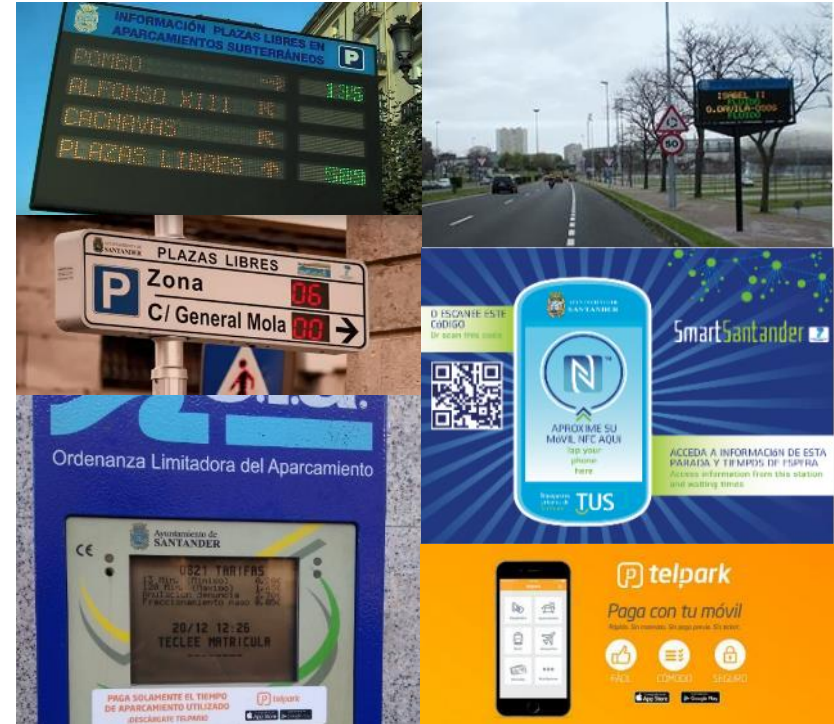
4. Ongoing and future projects

What is next…?

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4. Ongoing and future projects

- Smart City platform

- European Innovation projects

  - SETA: An open, sustainable, ubiquitous data and service ecosystem for efficient, effective, safe, resilient mobility in metropolitan areas. H2020 No. 688082. http://setamobility.eu/

  - SynchroniCity: Delivering an IoT enabled Digital Single Market for Europe and Beyond. H2020 No. 732240. https://synchronicity-iot.eu/

4.1 Urban Smart City Platform
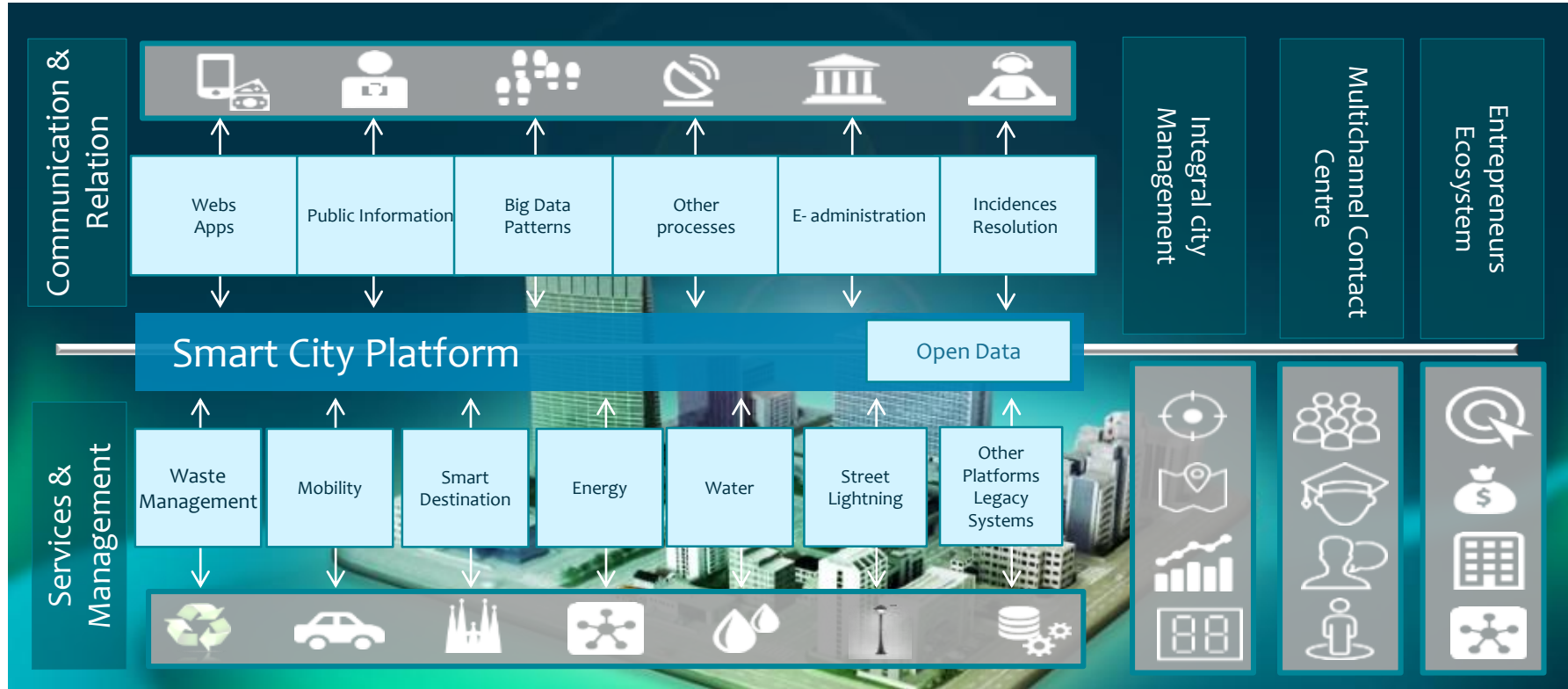
4.2 SETA EU project

- Use cases

  - Public bus occupancy: planning fleet resources. Bluetooth, WiFi adapters counting

  - Public transport QoS: real time surveys. Beacons.

  - Pollution in tunnels: tailor ventilation systems power. Informing citizenship

  - Tunnel congestion: real time analysis of traffic cameras

4.3 SynchroniCity EU innovation project

- Unique market of solutions scalable, replicable and adaptable to different cities

- Companies benefits for market scale.

- Cities benefits from cost-effective, adaptable, well-known and proved solutions

4.3 SynchroniCity EU innovation project

- https://synchronicity-iot.eu/

5. Final thoughts and conclusions

What we could have done better?

Which are the main obstacles encountered?

What is our aim now?

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5. Final thoughts and conclusions

- How to manage expectations sensibly and honestly?
  - Internally and externally
- How to communicate effort, results and evolution…?
  - Internally and externally
- How to involve citizens?
  - Citizenship
  - Associations
  - Other stakeholders…
  - And how about to obtain significant participation…
- How to manage change…?
  - Internal: in a public body
  - External: externalized services (private companies)

5. Final thoughts and conclusions

- The city will try to consolidate itself as a reference in the field of **smart cities and the IoT** at an international level

- Addressing the **transformation of services** and implementing the model of **integrated management of the city**, with the involvement of technicians and municipal managers

- **Building a more human city**, centered on the citizen, where technology is not a barrier but an enabler to improve their quality of life.

Thank you very much

SANTANDER Smart City