IN THIS PRESENTATION

- SMART CITIES & ITS DYNAMICS
- BIG SENSOR DATA
- RESEARCH PROJECT
- COLLABORATIVE SMART CITY
Cities & Problems in Cities

Always changing status
SMART CITIES & ITS DYNAMICS

SMART CITY
CHARACTERISTICS & FACTORS

- **Transportation and ICT**
- **Mobility**
- **Economy**
- **Environment**
- **People**
- **Living**
- **Governance**
- **Participation**
- **Natural Resources**
- **Social and Human Capital**
- **Quality of Life**

Griffinger at al, 2007
TRACING DYNAMICS
BIG SENSOR DATA & COLLECTIVE INTELLIGENCE

Big Sensor Data

- In-situ geo-sensors
- Mobile sensors
- Human sensor (social media)

Heterogeneity | Amount | Complexity

From: http://www.stadsbyggnad.lth.se

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A SMART SYSTEM
ROLE OF A SMART SYSTEM TO SUPPORT SMART CITIES

URBAN DYNAMICS

Urban Environments

Human Activities

Generates

Traces

Big Sensor Data

Social Media

Complements

Bridges

DATA EXPLOITATION

- Data integration
- Spatio-temporal processing and mining
- Platform for application developers

Smart System

Supports decisions

Residents, Visitors & Governments

Drives behavior & supports decision

Innovative applications

Smart City concept

Generates
MIDDLEWARE ARCHITECTURE FOR ST-PROCESSING
(UNDER DEVELOPMENT)
AN EXAMPLE: SANTANDER, SPAIN
A CITY WHERE SENSOR ARE PERVERSIVE

BIG SENSOR DATA:
~ 2000 fixed nodes
150 mobile nodes
350 parking nodes
40 nodes for monitoring traffic.

- 139,370 environment observations per day
- 8,365 irrigation observations per day
- 82,726 mobile environmental observations per day
- 13,489 parking occupancy observations per day
- 54,720 traffic management observations per day

V. Gutiérrez, et al 2013

http://maps.smartsantander.eu
EXAMPLE: BIG SENSOR DATA TO SUPPORT CITY ADMINISTRATION

PM CONCENTRATION

Data from: http://maps.smartsantander.eu
PROMOTING SMART CITIES
CASES IN LATIN-AMERICAN

Leading cities:
Rio de Janeiro, Brazil
Bogotá, Colombia

- Technology as means to trigger development of smart cities.
- Application in different contexts.
A SMART CITY: FOR WHOM?
FOR THE CITIZENS

URBAN DYNAMICS

Urban Environments

Human Activities

Generates

Smart City concept

Supports decisions

Residents, Visitors & Governments

Innovative applications

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Complements

DATA EXPLOITATION

COLLABORATIVE SMART CITY

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Our Philosophy:

By promoting spatio-temporal data integration to develop a smart environment and living in cities; a dynamic and robust system for big sensor data analysis and knowledge discovery will contribute with the realization of a smart cities.

Which components and how to connect them?  
Which other urban phenomena (problems) can benefit?  
How can we support citizens to make their city smart?
Manuel G. García
GIP, ITC Faculty
m.g.garciaalvarez@utwente.nl