



Inferring Individual behaviour in urban daily activities from mobile phone traces

Pereira, Francisco
mpereira@cm-portimao.pt

Advisor:
Prof. Dr. Rute Sofia

Motivation

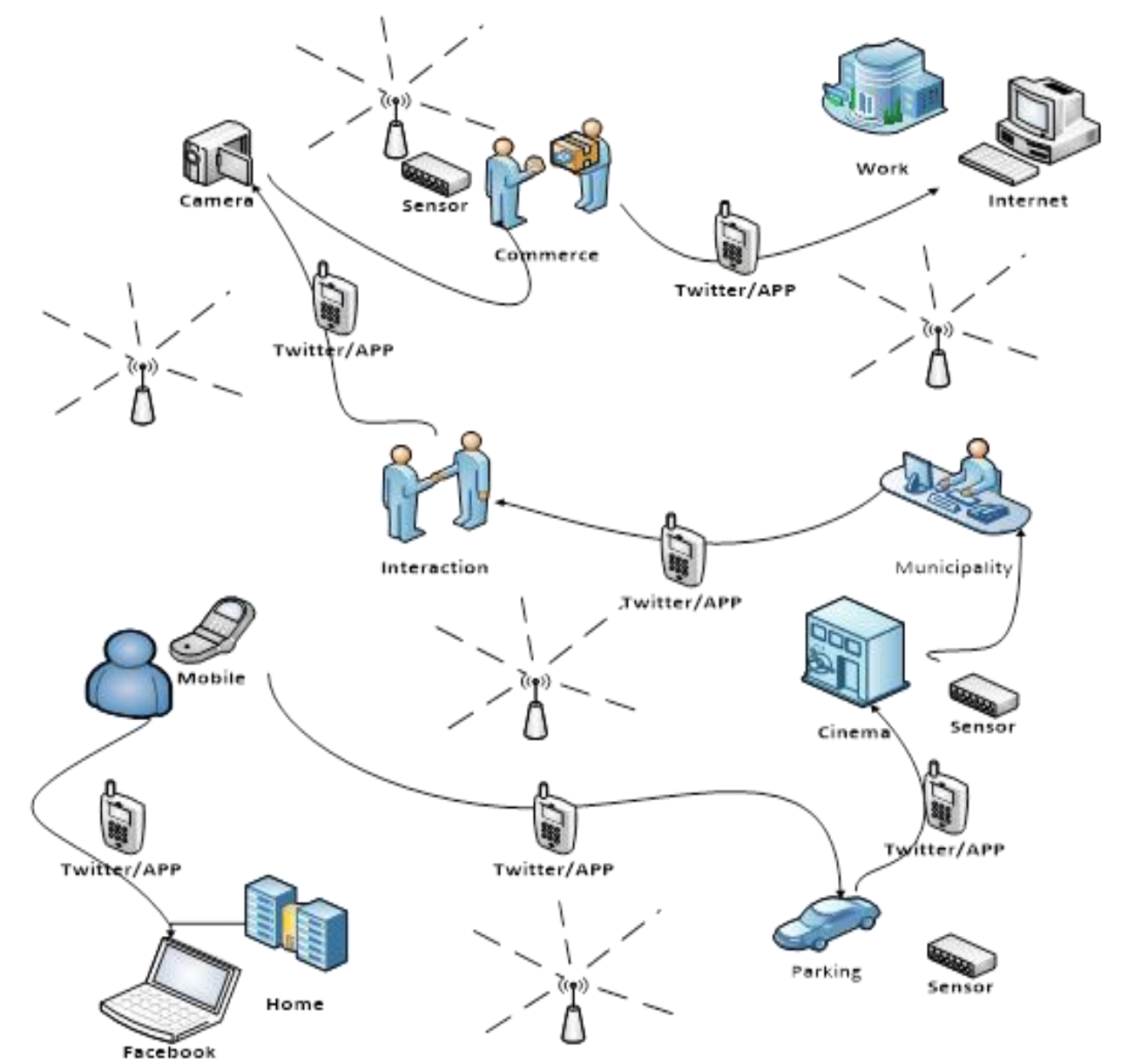
- Growth of human population with production of Big Data
- Listen to cities
 - Bi-directional communication with citizens
- Create City Open Data
- Creation of new models of City Control
- Contribute to social cohesion

Problem

Degradation of City Control due:

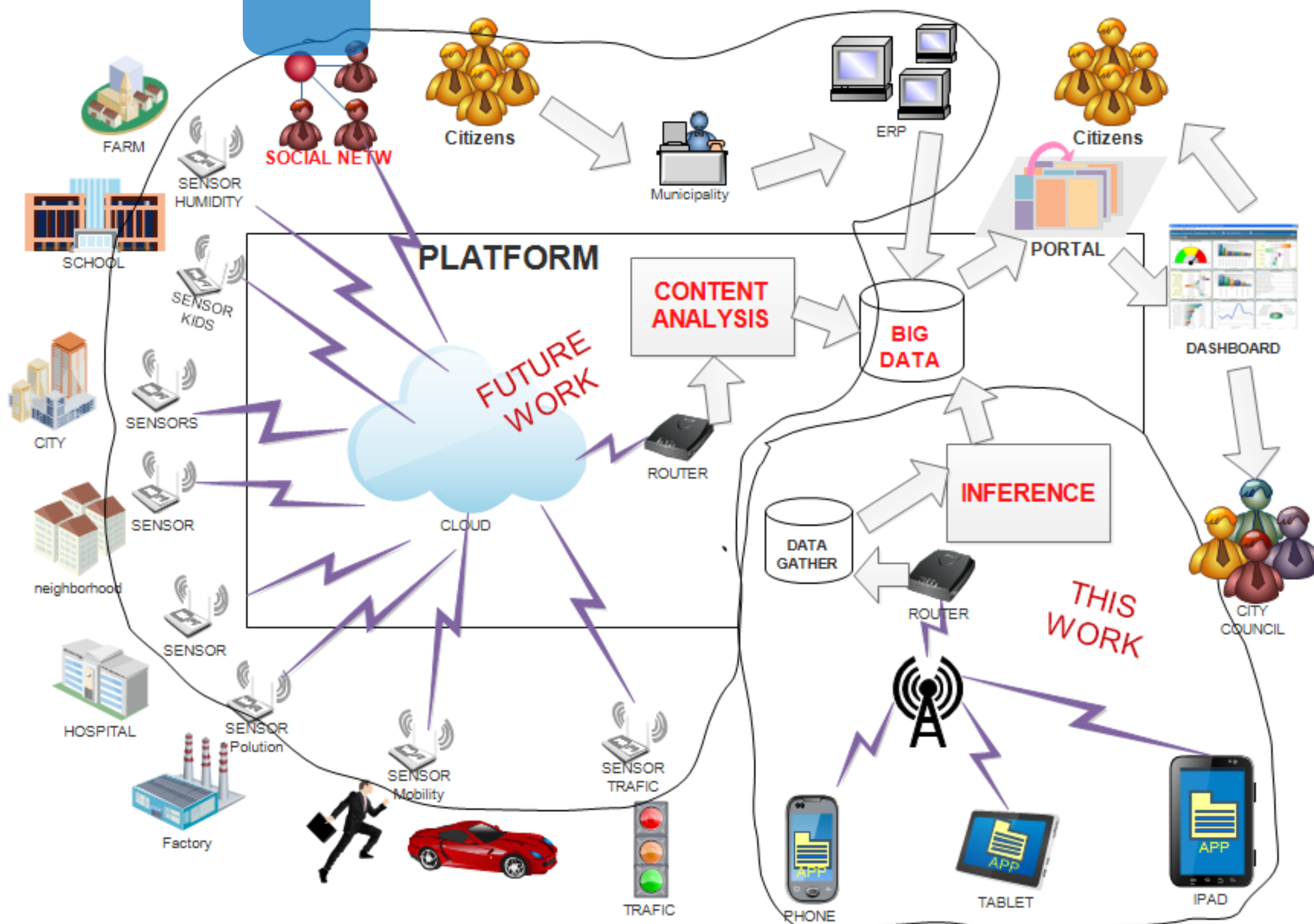
- Demography
- New Paradigms of social living
- Evolution of technology
- More demanding Citizens
- Insufficient response of municipalities to new challenges
 - lack or bad information
- Non-existence of treatment of Big Data produced by cities
- Lack of models to create a solution

Collecting Data from citizens



Goals

- Understand City Complexity
- Manage Opportunistic and participatory sensing from citizen's mobile devices
- Infer collective and private behaviour of citizens in their daily life
- Understand Social Interdependence
- Creation of models of mobility in city
- Creation of better infrastructures
- Improving Social Cohesion



Awareness

Concepts Used

- Smart Cities
- Big Data
- Open Data
- ERP
- WI-FI connections
- Opportunistic Sensing
- Participatory Sensing
- Statistical Inference
- Mobility

Constrains

- Engage citizens to project
- Heterogeneous devices
- Locked devices
- Systems not updated
- Mistrust to trust
- Security and Ethics
- Local Data Storage
- Synchronization
- Transmission
- Weather

Scenario/Case Study

- City of Portimão
- Engage ~5% of citizens out of 50000.
 - Infer the use of facilities and mobility of citizens based on their behaviour
 - Creation of Models for people and traffic mobility
- Extension to other Cities

Challenges

- Gather Big Data from:
 - Social Networks
 - Sensor Network
 - ERP
- Make context analysis from data Collected
- Return data to Citizens as useful information