

smart city expo  
WORLD CONGRESS



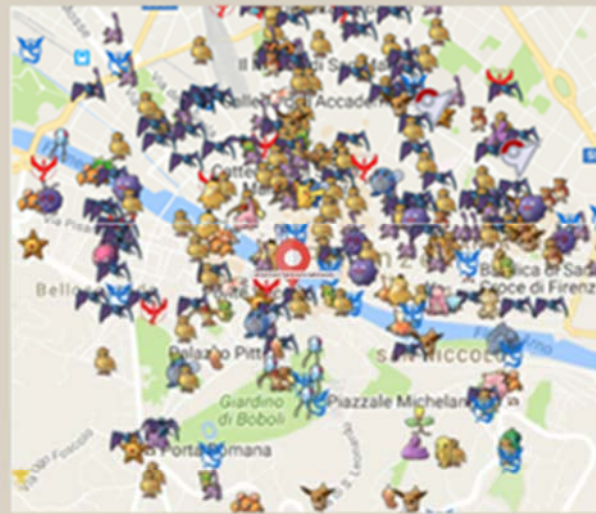
Smart City Expo World Congress 2016  
Barcelona, 15-17 November 2016

**Governing the smart city:  
a gOvernance-centred approach to Smart urbanism  
(GHOST)**  
(23/09/2015 - 23/09/2018)

Chiara Garau, Paola Zamperlin  
DICAAR, University of Cagliari

Under the patronage of the Municipality of Cagliari





There are many ways to **know**, **act**, **manage** and **govern** a City

Is it possible to merge many perspectives, many perceptions  
and go beyond them?

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GHOST  
Covering the smart city:  
a geospatial, control approach  
to Smart Urbanism

Garau, Zamperlin – DICAAR Università di Cagliari

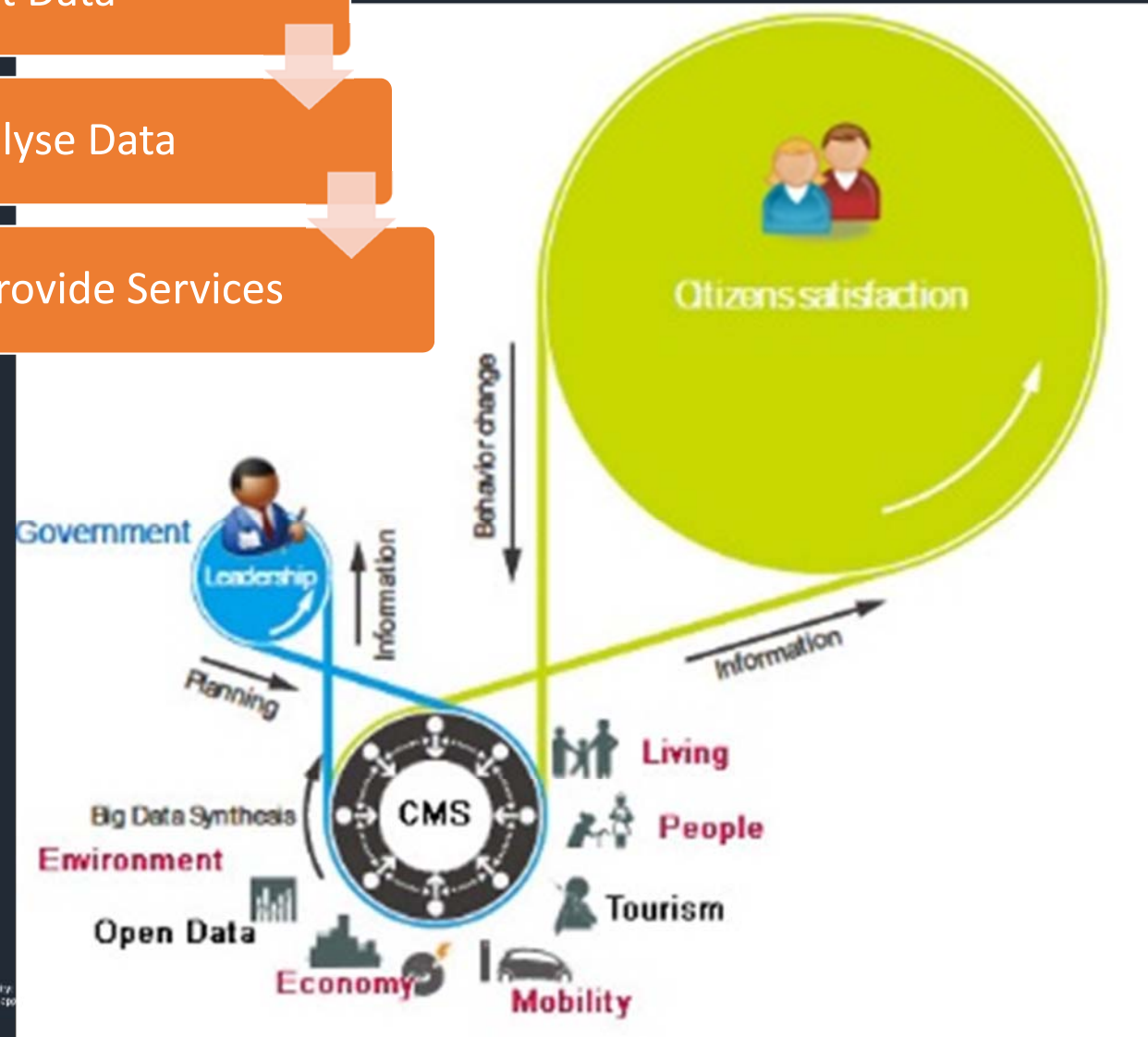
# Main Goal

Valorize different perceptions, points of view, behaviours to enhance the institutional base of smart city initiatives

Collect Data

Analyse Data

Provide Services





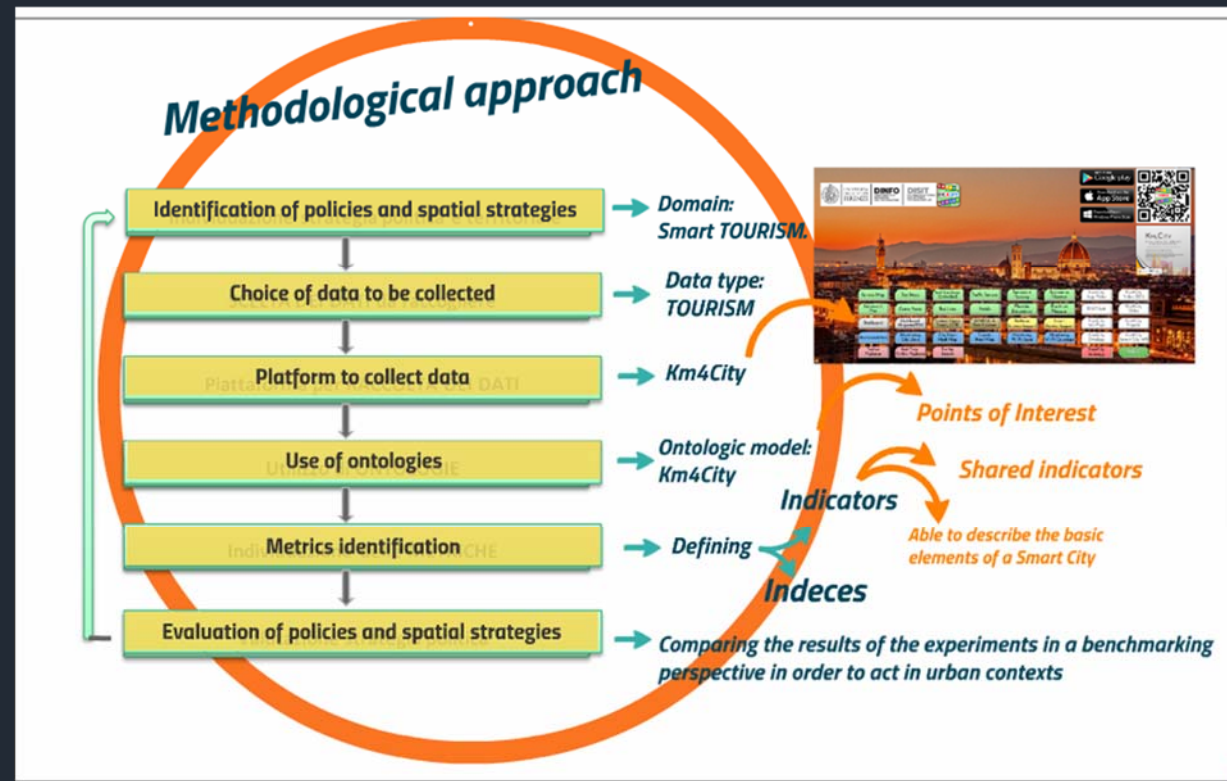
**What data do you need?**

**Data related to citizens behaviours**

**Mobility  
Tourism**

# Why Tourism?

The Tourist is an **active sensor** for responding on general city services  
Tourism helps to define **shared strategies** for sustainable and competitive development of the city, through the measurement of the main phenomena related to tourism sector and through the participation of all actors involved in the city.



# Km4City Dashboard

A monitoring system of the factors that contribute to forming the quality of the destination consists of an analysis of:

Impact of transport

Quality of life of residents

Quality of work

Active conservation of cultural heritage

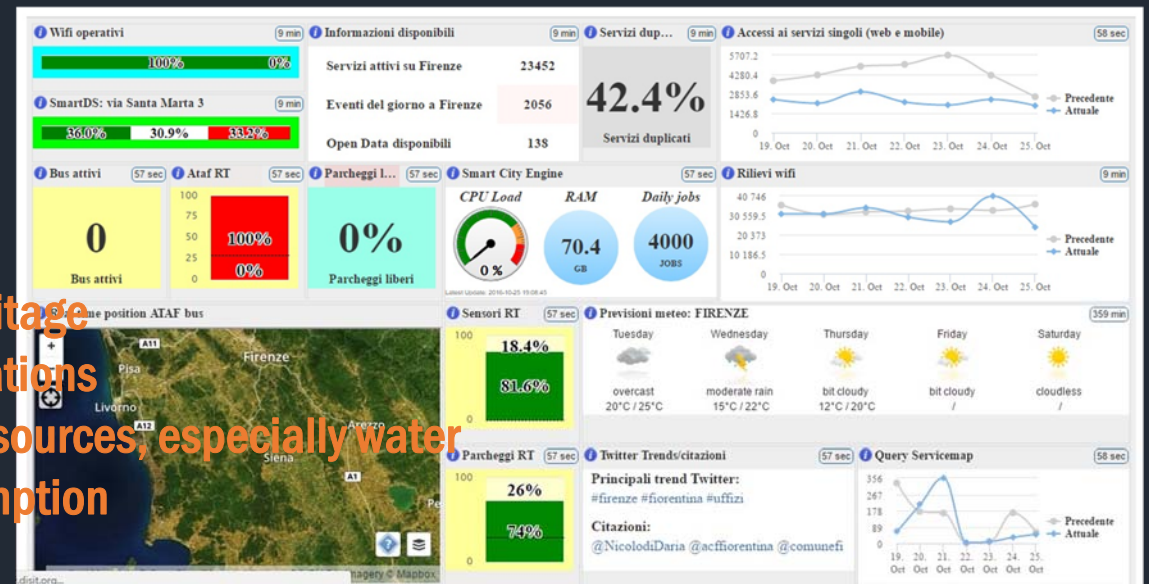
Active conservation of the Environmental Heritage

Identity of the active protection of the destinations

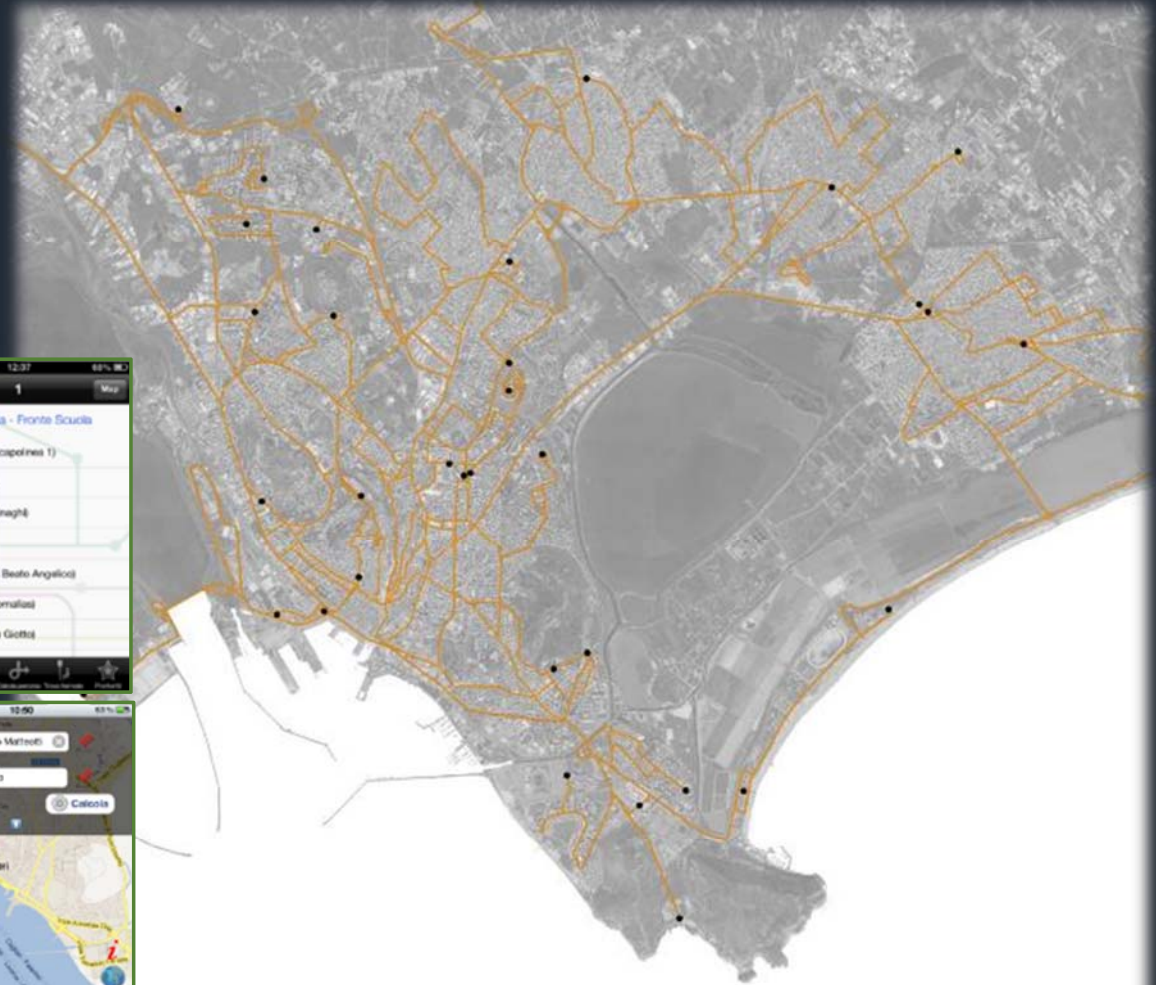
Decreasing / optimizing the use of natural resources, especially water

Reduction and optimization of energy consumption

Decrease and waste management



# Why Mobility?





Variables	Indicators	Specific
Public transport	I <sub>PT</sub>	I <sub>BND</sub> Bus network density
		I <sub>DPT</sub> Demand for public
		I <sub>TLC</sub> Traffic lights centr
Cycle lanes	I <sub>CL</sub>	I <sub>CLD</sub> Cycle lanes density
		I <sub>CLI</sub> Cycle lanes for ten t
Bike sharing	I <sub>BS</sub>	I <sub>BSD</sub> Bicycle station dens
		I <sub>BPI</sub> Bieycle per thousan
Car sharing	I <sub>CS</sub>	I <sub>CI</sub> Car for ten thousand
		I <sub>SI</sub> Station for ten thou
Private mobility support system	I <sub>PMSS</sub>	I <sub>VMS</sub> Variable message si
		I <sub>STA</sub> SMS service for tra
		I <sub>EPPS</sub> Electronic payment
		I <sub>AMD</sub> Applications for mo
Public transport support system	I <sub>PTSS</sub>	I <sub>EBSS</sub> Electronic bus stop
		I <sub>ETPS</sub> Electronic ticket pay
		I <sub>RSWT</sub> Information on rout
		I <sub>TPC</sub> Travel planner for t
		I <sub>TTO</sub> Travel tickets online

### Cagliari

#### • Public Transport

Bus network density (I <sub>BND</sub> )	→	Bus network	120 km
	→	Area	86.05 km <sup>2</sup>
Demand for public transport (I <sub>DPT</sub> )	→	Passengers per year	43.800.000
	→	Inhabitants	385.000
Traffic lights centralized (I <sub>TLC</sub> )	→	N°	65
	→	Total	65

#### • Cycle lanes

Cycle lanes density (I <sub>CLD</sub> )	→	Cycle network	70 km
	→	Area	86.05 km <sup>2</sup>
Cycle lanes per ten thousand inhabitants (I <sub>DPT</sub> )	→	Cycle network	70 km
	→	Inhabitants	154.019

#### • Bike Sharing

Bicycle station density (I <sub>BSD</sub> )	→	N° station	10
	→	Area	86.05 km <sup>2</sup>
Bicycle per thousand inhabitants (I <sub>BPI</sub> )	→	N° bicycle	105
	→	Inhabitants	154.019

#### • Car Sharing

Car for ten thousand inhabitants (I <sub>CI</sub> )	→	N° station	10
	→	Inhabitants	154.019
Station per thousand inhabitants (I <sub>SI</sub> )	→	N° station	5
	→	Inhabitants	154.019

#### Cagliari - Private mobility support system

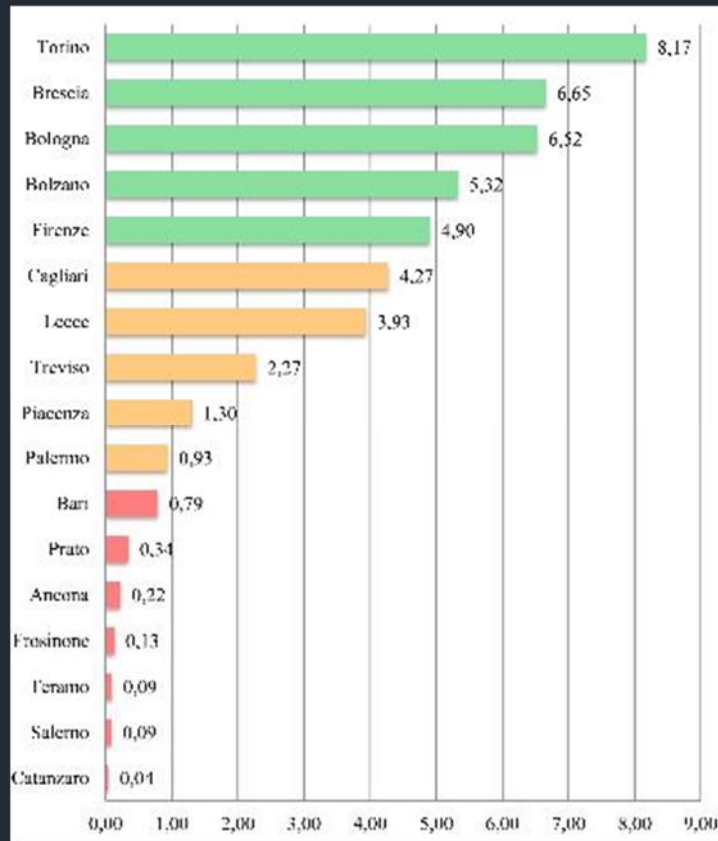
Variable message sign (I <sub>VMS</sub> )	😊
SMS service for traffic alerts (I <sub>STA</sub> )	😞
Electronic payment park systems (I <sub>EPPS</sub> )	😞
Applications for mobile devices (I <sub>AMD</sub> )	😞

#### Cagliari - Public transport support system

Electronic bus stop signs (I <sub>EBSS</sub> )	😊
Electronic ticket payment system (I <sub>ETPS</sub> )	😊
Information on routes, schedules and waiting times (I <sub>RSWT</sub> )	😊
Travel planner for the route calculation (I <sub>TPC</sub> )	😞
Travel tickets online (I <sub>TTO</sub> )	😊



# Mobility city ranking



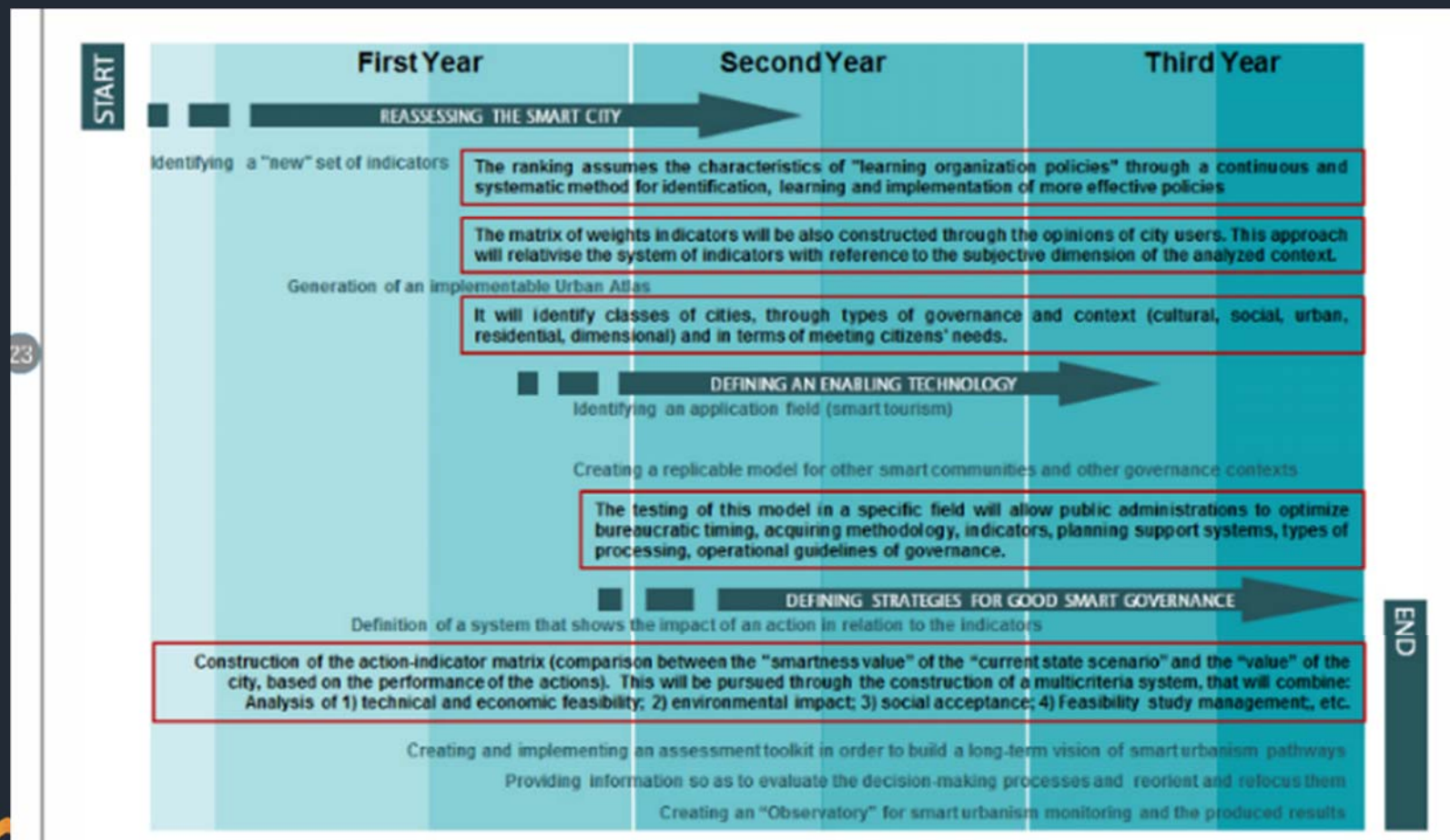
# What data sources?

- Sensors
- Twitter Vigilance
- Open Data
- Mobile App
- Wi-Fi

Comune di Firenze  
App



# GHOST Road Map



23



# Research group

## University of Cagliari

Chiara Garau, Principal Investigator, DICAAR (Dipartimento di Ingegneria Civile, Ambientale e Architettura)

DICAAR (Dipartimento di Ingegneria Civile, Ambientale e Architettura)

Corrado Zoppi, Antonello Sanna, Ginevra Balletto, Francesco Pinna, Luigi Mundula

DMI (Dipartimento di Matematica e Informatica)

Michele Marchesi, Katuscia Mannaro, Gavina Baralla

## University of Florence

SAGAS (Dipartimento di Storia, Archeologia, Geografia, Arte, Spettacolo)

Margherita Azzari, Paola Zamperlin (research fellow at Cagliari University)

DINFO (Dipartimento di Ingegneria dell'Informazione)

Paolo Nesi

## University of Sassari

DADU (Dipartimento di Architettura, Design, Urbanistica)

Alessandro Plaisant

## University of Turin

ESOMAS (Dipartimento di Scienze economico-sociali e matematico-statistiche)

Ugo Rossi, Simona De Simoni

