Porto Case: Heterogeneous Sensing Platform for Efficient Mobility
# Porto

## In Numbers

<table>
<thead>
<tr>
<th>Category</th>
<th>Figure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total inhabitants</td>
<td>250,000</td>
</tr>
<tr>
<td>Million citizens in the metropolitan area</td>
<td>1,8</td>
</tr>
<tr>
<td>Municipalities in the Metropolitan area</td>
<td>17</td>
</tr>
<tr>
<td>Qualified jobs</td>
<td>1,500</td>
</tr>
<tr>
<td>University students</td>
<td>31,000</td>
</tr>
<tr>
<td>Intermodal transportation system</td>
<td></td>
</tr>
<tr>
<td>Startups</td>
<td>300</td>
</tr>
</tbody>
</table>

Map showing Porto's location in Europe.
Porto’s Vision

• “Smart City” projects developed at a Urban Scale, corresponding to a step further regarding the district level strategy followed by the majority of European cities.

• The citizen is at the centre of smart decision making, promoting data driven decision making.

• Integrated vision of the management and operability of the city.

• Economic development and Job creation.
Desafios Porto

313 Challenges submitted
- 130 on mobility and environment
- 96 on Digital City
- 16 on Energy
- 71 on Health and wellbeing
PORTO INNOVATION HUB
<table>
<thead>
<tr>
<th>Porto Infrastructure</th>
<th>22,000 connected things</th>
</tr>
</thead>
<tbody>
<tr>
<td>183 Km Optic fiber infrastructure</td>
<td>+4000 Km linear optic fiber</td>
</tr>
<tr>
<td>300 connected vehicles</td>
<td>1500 Ibeacons, NFCs and Qr codes foreseen</td>
</tr>
<tr>
<td>FIWARE NODE</td>
<td>151,770 Water consumption sensors</td>
</tr>
</tbody>
</table>
City Operator and Infrastructure

• Develop a Urban Platform that integrates data flows within and across city systems;

• Enable the city to shift from fragmented operations to include predictive effective operations, and novel ways of engaging and serving city stakeholders;

• Promote an efficient data compilation and analysis with an impact on the living conditions and wellbeing of the city;

• Improve initiatives outcomes at local level and create a new level of integrated management services.
Main Areas

- Mobility as a Service
- Energy Communities
- Smart Citizen

CITY OPERATOR
- BIG DATA
- PREDICTIVE ANALYTICS
- Holistic Management
- OPEN DATA

CITY INFRASTRUCTURE
- Wireless Comm.
- Optical fiber
- IoT
- Cloud

Smart Impact
- CO2 Emissions
- Travel Time
- Comfort
- Business
- Innovation
Integrated Management Centre
TRAFFIC MANAGEMENT SYSTEM

• 294 traffic lights

• 128 have a remote control system with GERTRUDE software

• A total of 979 traffic sensors

• The system is implemented in 10 subareas, interlinked to a central server through a dedicated communication network.

• Porto has full actuated traffic lights, with traffic sensors in all the roads of intersection and semi-actuated traffic lights.
VEHICULAR NETWORKING

MAIN GOALS

• vehicle-to-vehicle and vehicle-to-infrastructure connectivity
• provide Wi-Fi access to taxi and bus passengers
• get data from the vehicle’s OBD unit
• Mobility Scanner
PORTO OASC/FIWARE NODE
FutureCities sensors data in NGSI: Environment and Traffic events
NEXT STEPS

New infrastructures and projects:

• 1000 Ibeacons in bus stops
• 250/500 Ibeacons in the city centre
• Cameras and images analytics for parking management
• Sensors for parking and traffic management

Image: Partners in the new solutions
THANK YOU!

Margarida Campolargo
Head of Smart Cities Unit, Porto Digital
margarida.campolargo@portodigital.pt