



# RELAT SMART CITY EXPO WORLD CONGRESS 2017

## Introduction

The target of the Barcelona Digital City Plan is to transform Barcelona into an open, fair, circular and democratic city, and turn the city into an example in the field of technological policies for a public and civil leadership. Its mission is to solve the challenges of the city and their citizens through a more democratic use of technology, impelling the technological and digital innovation for a more open government, as a tool for the development of a plural economy that encourages the social and environmental transformation and that favors the empowerment of citizens.

### EIX 1: DIGITAL TRANSFORMATION

Utilize technology and data to provide better, more affordable services to citizens, making government more transparent, participative, and effective. Strike a New Deal on Data to expand socially beneficial uses of data, while guaranteeing data sovereignty, ethics & privacy. Provide access to Internet for all. High-speed internet connectivity is a right and an absolute necessity for economic development and social mobility in the 21st century economy.

### EIX 2: DIGITAL INNOVATION

Support entrepreneurship and promote inclusion in the digital economy. Support the use of digital technology to address social challenges and promote circular economy models. Invest in research and development, as well as empowering sharing economy alternatives such as platform cooperatives and the maker movement.

### EIX 3: DIGITAL EMPOWERMENT

Harness digital technologies in order to create good jobs in communities across the city and fight inequality. Ensure that advances in digital technology preserve citizen's digital rights, gender equality and social inclusion. Promote participatory democracy, and establish a policy to leverage the collective intelligence of citizens. Build a stronger and more just digital society by boosting social innovation movements.

## Barcelona City Council open-digitalisation Guides

The open digitalization process set up by Town Hall of Barcelona wants to lead the city towards an open government based on the city's participation, placing citizens at its center.



The already initiated digitalization establishes the use of agile methods and proposes to focus on technological sovereignty, based on free software and in accordance with an ethical information strategy. To help impel this process within the Town Hall, a set of guidelines for digital transformation has been established. [This information is public and shared with all citizens](#)

## **Mobility**

Mobility and public space form pairing that has a big impact in the quality of life in the city. The new politics foresees the progress in the field of connecting traffic lights, sensors and acting elements, and the introduction of digital signs.

The application of big data will allow to better manage 20 mobility public services and better define public policies. It also seeks to improve the mobility of persons through the open participation in mobility challenges like the challenge New York and the Barcelona City Council launched jointly to innovative companies all over the world, in order to allow the visually impaired to get around big cities safely and easily, which will make urban spaces more accessible for everyone.

### **C-MobILE**

**C-MobILE** aims to help local authorities deploy the C-ITS services they need and to raise awareness of the potential benefits for road-users. This common approach ensures that interoperability is prioritised and at an acceptable cost for end-users.

Vision: A European road network which is safer, cleaner, more efficient, and more sustainable. C-ITS services designed to deal with specific mobility challenges in eight pilot sites across Europe.

### **InLane**

New generation, low-cost, lane-level, precise turn-by-turn, navigation applications through the fusion of EGNSS and Computer Vision technology.

With the help of crowdsourced real-time updates, it foresees the generation of local dynamic maps, that help Advanced Driver Assistance Systems (ADAS) applications with enhanced dynamic scene information.

### **NeMo**

NeMo is working to create a Hyper-Network of tools, models and services to provide seamless e-mobility services, creating an open, distributed and widely accepted ecosystem. This will make e-mobility more attractive and facilitate its mass adoption in the road transport sector and aims to replicate the success of seamless roaming for e-mobility services.

E-mobility has the potential to drastically reduce CO2 emissions as well as city noise pollution.

### **GrowSmarter - Innovation in the mobility sector: measures to make it more sustainable**

Improved mobility for citizens and businesses can make cities be more attractive and competitive. Meeting Europe's goals requires substantial changes in the mobility behaviour.





The mobility solutions implemented in GrowSmarter include the deployment of a sustainable freight distribution system, the installation of fast charging points for electric vehicles, the research on traffic management and the implementation of intelligent taxi stands among others.

## **Housing**

Housing is one of the main challenges Barcelona is facing. All housing services are being integrated under the same information system. Actions are being prepared to have an impact on the house or rent market, like -for example the detection of empty houses or houses with unauthorized uses, using big data or other technologies. Alternative models of tenancy are also being promoted, and the creation of a digital platform for house and room rental at affordable prices is being studied.

### **The Barcelona Metropolitan Housing Observatory (O-HB)**

The Barcelona City Council, the Metropolitan Area of Barcelona, the Provincial Council of Barcelona and the Catalan Government have created an innovative tool that integrates and analyses the maximum statistical data regarding housing in the metropolitan area. It is the Metropolitan Observatory of the Housing of Barcelona (O-HB), an instrument that, with studies and new indicators, can help design housing politics. At the same time, the same institution can spread information about housing among the citizens.

### **The Census of Empty Houses and the Houses for Rent Market**

The Barcelona City Council is promoting two pioneering and complementary projects that allow the detection of empty apartments in order to put them at the disposal of the citizens at a lower-than-market price, thanks to the Houses for Rent Market.

First, a team verifies on the spot the real situation of the potentially empty apartments. If it gets a confirmation that an apartment is not in use, the owner is informed of the benefits and the guarantees to include it in the Market.

### **La Borda, a pioneering Project of co-housing**

The neighbors' cooperative La Borda is building a house to implement its project of common coexistence. It is based on the model of co-housing: allowing a persons' community to live in a building without being owners or lessors, at a price below that of the market.

The Barcelona City Council supports this alternative formula with the lease of the soil. In addition to this one, it has awarded already five more plots for co-housing projects.

### **GrowSmarter: Low energy districts as a key step towards Smart Cities**

In Barcelona, the residential and tertiary buildings energy consumption accounts for more than 50% of the city's final energy demand. One of the focus of GrowSmarter in our city is to deploy energy efficient measures in order to lower the environmental impact of the existing building stock. In total, 51.000m<sup>2</sup> are refurbished in the city, and local energy generation is promoted by using District Heating and Cooling networks, on-site renewable electricity production and advanced smart energy management systems. Finally, the project promotes the deployment of Home Energy



Management Systems to raise awareness on energy efficiency and energy savings among the citizens.

## **Social Innovation**

The complexity of urban problems and the new possibilities offered to achieve an active citizenship, the new technologies and the revitalization of the social spaces collectively open a new scenario that calls for new democratic infrastructures.

The Barcelona City Council wants to research and develop new functioning models in all its structure, and innovate in procedures, devices and mechanisms of participation in the city, creating spaces and mechanisms that make possible a collective and democratic administration of public and common matters.

### **DECIDIM Open-code participatory democracy for cities and organizations**

Decidim is a project and digital platform of open infrastructure that includes a code, documents, design, preparation, a legal framework, cooperating interfaces, a community of users and facilitators as well as a global vision. It makes possible that thousands of persons can organize themselves democratically putting forward proposals, being present at public meetings, or creating deliberative discussions, among other things. It helps to structure and implement practically any type of process.

### **The Barcelona City Council map and files of civil entities**

The General File of Civil Entities is the tool of relational and administrative character between the Barcelona City Council and the civil entities and the de facto groups in the city and the districts. Its purposes are:

- Know the associational activity in the city
- Promote the study of the reality of the universe of associations
- Facilitate the work and the municipal management, and the self-management, of the entities
- Promote these entities incorporation in the participatory processes, in the organs of participation, as well as in public hearings and civil consultations regulated in the Regulation of Civil Participation.

### **Ethical and Good Government Mailbox**

The Ethical and Good Government Mailbox is a sure channel that allows the anonymous participation of the citizens in order to uncover any action or lack of action against the principles of good government, seeking in this way to reinforce public management.

Presented and created by the independent organization Xnet, it has been developed and implemented by the Barcelona City Council as an extension of the Globaleaks software, developed by the Hermes Center for Transparency and Digital Human Rights.

Its code is free, modifiable and replicable, provided it is recognized and as long as the authorship is clearly shared in equal parts by Xnet and the Barcelona City Council.





## **La Comunicadora Barcelona Activa's program to support projects of cooperative economy**

This program supports and accompanies projects of cooperative economy placing them in the frame of the "pro-common" economy, taking into account social and equitable parameters.

In order to do so every project viability is explored using models of sustainability and systems of organization based on the Social and Solidarity Economy. The projects follow one or more of the following axes: design and development of free and open software, circular economy, on-line platforms and free culture.

### **DECODE - DEcentralised Citizens Owned Data Ecosystem**

DECODE is a three year, European Commission funded project that aims to put individuals in control of whether they keep their personal data private or share it for the public good.

Fourteen organisations are involved in developing and testing new technologies that help citizens reclaim their digital sovereignty.

Four pilots in Barcelona and Amsterdam will explore how the tools can help strengthen local democracy, develop new businesses and empower citizens.

## **Environment**

Energy, water, waste management... all are part of the big urban challenge of Barcelona to become a more human and ecological city. The City Council is developing a municipal energy operator in order to encourage the generation and commercialization of energy from renewable sources.

The City Council is also working to reduce the energy consumption in public buildings and houses, and to encourage a rational use of the energy among the population. The City Council will also implement a water-balance irrigation system for green areas, based on the SCADA technology

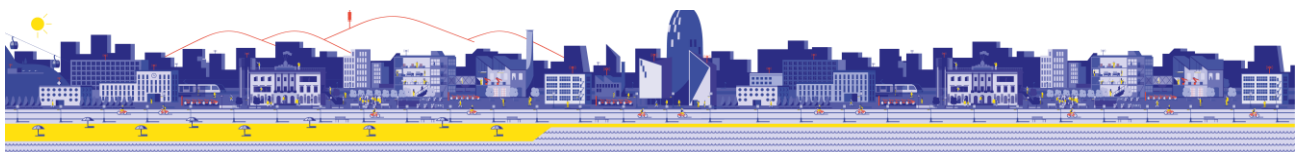
### **NEV Mobility - App for the Management of Forests**

The application is a part of the NEV Mobility ecosystem. It allows monitoring the inventory of the trees of the Parks and Gardens. Office during its first three years of life, making possible for the workers to have updated information in real-time, avoiding delays in data introduction, visits to the office and eliminating the use of paper.

### **IoT and big data in the analysis of flows at the Sagrada Família**

Barcelona is one of the first tourist destinations in Europe, which poses management challenges to the city, especially in spaces that concentrate a large number of visitors.

This project analyzes the patterns of concentration and mobility of these visitors, as well as their profile, crossing information from the CDR (Call Detail Records) of a national telephone operator, 9 wifi sensors, 1 GSM sensor and 3 3D cameras installed in the área of the Sagrada Família.





## **Energy calculator**

The Energy Calculator is a tool that can provide to the population the consumption of their homes. With this tool the value of energy consumption and of the ideal power installed in the house can be obtained. Once the information on the house is introduced in the application, the tool calculates how much energy saving can be made, what reduction of installed power is feasible, as well as an estimate of annual economic saving. It also provides a series of practical tips to save electric power. The tool also compares the consumption of your house with that of similar houses, in order to be able to compare your situation to the average

## **Program for the promotion and monitoring of solar energy generation**

The program to promote solar energy generation in Barcelona is based on increasing the generation of solar energy from renewable resources implementing systems of solar use (thermal photovoltaic and solar energy) in the city.

All the generation facilities in public buildings or in public spaces are monitored from the point of view of energy, as well as the consumption of some of the most energy-demanding municipal buildings. Every minute more than 11,000 pieces of information are sent to Sentilo, and from there to the visualization platform of the Barcelona Energy Agency.

## **Infrastructures**

To make sure that Barcelona has the city digital infrastructures that allow to manage the city in a complete way, assuring all citizens are reached in a homogeneous way in all the territories.

On the other hand, the purpose is to guarantee that these technological infrastructures are the way to improve public services that are being offered to citizens in order to face urban challenges as essential as housing, unemployment, social exclusion, health, energy or mobility

## **Open Data BCN**

Open Data BCN is the service of the Barcelona City Council that publishes information of the city management in open and standard formats, presenting them in a web site in order to provide easy access and allow them to be used.

This is within the framework of the Barcelona Digital City that seeks to encourage a plural digital economy and to develop a new model of city innovation based on the transformation and the digital innovation of the public sector.

## **Barcelona Urban Platform**

The TIC Platform that industrializes the management of the information of the city and its analysis in order to share it in a sure and formal fashion with the different actors who need it, both internal and external.

CityOS gathers, standardizes, enriches, keeps and securizes information of the city to analyze what has happened, why it has happened, what can happen and to foresee the potential future scenarios, improving the management of the city and contributing added value.





Sentilo is the IOT platform that gathers the information of the sensors, it disconnects them from the applications, and creates and maintains the sensors catalog and helps to break the vertical solutions.

## **Barcelona Smart Multifuncional Tower**

Barcelona is introducing the Smart Multifunctional Towers concept by converting traditional lamppost in new services micro sites. Smart Towers integrate WiFi access, environmental sensors, and the capability to install new communication technologies such as pre5G small cells.

The towers:

- Rationalise the use of public space improving its energy efficiency
- Group services in common infrastructure (lighting, power, WiFi,...).
- Monitorize energy performance

## **5GCity – FLAME**

Edge computing model enables a cloud-like 5G infrastructure capable of supporting rapid, dynamic, and customisable deployment and operation of virtualised network functions (VNFs) and services.

**5GCity** demonstrates, in operational conditions, a distributed cloud and radio platform for municipalities and infrastructure owners acting as 5G neutral hosts.

The **FLAME** platform will be rolled-out to smart city infrastructures around Europe, providing a ground-breaking media delivery platform. It will provide a tighter integration of media services within the infrastructure offered by Telco operators, allowing placement of media services at the very edge of the network for more effective and personalised service offering and consumption.

