



# RELATO SMART CITY EXPO WORLD CONGRESS 2018

## Introduction

Barcelona is working to become **a city with more public housing and fewer private vehicles, more green spaces, which is more sustainable and democratic, with more spaces where we can earn a living, and with more scenarios in which its citizens can become involved, express themselves and be empowered.** This all requires a technology that gives people a central role and promotes the democratisation of the four areas in which citizens live their daily lives: every morning, we leave the place where we live (housing) to travel (mobility) to a place where we earn a salary or spend it (the market) and then spend time on leisure, culture, education or participation (the agora).

We aim to guarantee the right to the digital city in each of these four areas, and we are committed to **making technology into an ally in order to achieve fundamental social rights** and to meet the major challenges the city is currently facing, such as gentrification.

## Barcelona Digital City Plan

The **Barcelona Digital City** plan involves solving the challenges facing the city and its citizens by means of a more democratic use of technology, stimulating technological and digital innovation for **more open government**, as a tool for developing a **plural economy** which fosters **social and environmental transformation**, while taking into account **citizens' empowerment**. This is a broad-based umbrella plan, which sets out the broad outlines of technology policy in three main areas.

### a. Digital transformation

Using technology and data to transform the municipal organisation works, and to provide better and more affordable services.

### b. Digital innovation

Supporting entrepreneurship, promoting business innovation and fostering inclusion in the digital economy.

### c. Digital empowerment

Boosting digital culture, promoting a society that is fairer and more able to use new technologies to address social inequalities and enhance the spaces for participation in the city's government.

## Open digitisation and agile services in Barcelona City Council

With this government measure, the City Council seeks to transform its municipal organisation, in order to provide citizens with services to interact with the Council more efficiently, based on citizens' real needs. It provides for the use of agile development methods, promotes technological sovereignty by increasing the use of free software, fosters a new framework for the procurement of technology-based services, and guidelines for the ethical use of data.



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## Government measure for the ethical use of data

The digital revolution is also the **data revolution**. The city has become a space where mass production of data takes place in real time: 90% of the data we generate as a city today did not exist three years ago, and new technologies such as 5G and the Internet of Things are increasing this trend.

Barcelona provides an overview of the City Council's data management plan and the changes proposed in order to implement it; it sets out the governance structure for this data management, the core values to ensure the data's sovereignty, privacy and security, and presents measures for the internal and external valuation of the data - a highly practical approach based on establishing specific projects with a roadmap, a budget and a calendar.

In order to achieve these goals, the new **City Data Analytics Office** has been created, which works on the capture and storage of data; analysis and predictions in all areas of interest for management of the city (demographics, traffic, cultural habits, waste, air quality, citizens' opinions, empty housing, etc.) and finally, conveying and disseminating all the results.

## Strategy for enhancing digital services

In this government measure, the City Council will use information and telecommunications technologies to achieve the optimum conditions for creating maximum value in the provision of public services. This involves a strategy that accelerates the digitisation of services, and strikes a balance between transformation and increased value in public service. This strategy involves foresight, proposing solutions, tools and resources addressed at the significant challenges that digital transformation entails, both internally, for transforming technological systems and the structure of the management model, and externally, for providing an updated portfolio of digital services.

## The new Electronic Administration Regulation Ordinance

This measure sets out the instruments necessary for implementing public management electronically, and makes the procedures simpler, more agile and more efficient. This paradigm shift from paper to an electronic relationship, will contribute to proximity, to providing a more effective service, and to guaranteeing transparency and public participation.

Among other areas, it regulates the electronic access channels to the Administration, including the Internet portal, the one-stop Electronic Register and the Telephone Assistance Channel, and regulates electronic identification and signature systems for both citizens and the municipal administration.



## Digital transformation guides

To help implement this major transformation process within the City Council, some **Digital transformation guides have been created, which are public and shared:**

[Barcelona City Council open digitisation guides](#)

## Panels

### Housing

Fighting gentrification and people being forced to leave their homes are major challenges that require action at various levels, and one of these areas is the technological sphere. In many urban centres, rising rental prices and the informal replacement of residential uses by activities such as illegal tourist accommodation is leading to the mass expulsion of lower income groups from their homes, to the extent that the neighbourhoods' social and functional diversity is being called into question.

Barcelona is committed to technology, open data and innovation, as tools supporting progress in the protection of citizens' right to housing. New tools and policies will increase the public housing stock and encourage a more affordable private housing stock for everyone. All these measures contain initiatives such as public-private co-operation and grants to refurbish the homes of vulnerable people, among others. Furthermore, in order to provide an efficient framework for all these projects, **the Barcelona Municipal Institute of Housing and Renovation** has been established to streamline resources, combine efforts and enhance the capacity of the city's housing services.

### Housing policies from the metropolitan perspective

Barcelona provides various innovative tools to examine and identify trends in the metropolitan area, in order to design public housing policies.

The **Metropolitan Housing Observatory** centralises, integrates and examines a vast array of statistical data on housing in the metropolitan area to obtain data on rentals and sales of empty flats and the refurbishment of homes, among other data.

One of the cornerstones for the capture, management, transformation and integration of the data and its subsequent analysis is the corporate platform CityOS, an advanced data analysis platform that provides a unified perspective on information related to the city.

**CityOS** is currently being fed with data on transactions, i.e., data on the purchase and sale of houses, so that the City Data Analytics Office can perform studies and produce forecasts in order to define strategies to improve the services that the City Council provides for citizens.



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## A city to stay in permanently

We envisage a city in which Barcelona residents can have access to public housing stock and affordable rentals, and be able to remain in our neighbourhoods, preventing gentrification and residents from being forced out. Barcelona City Council has established several initiatives with this scenario in mind.

One of these is **Habitatge Metròpolis Barcelona**, a new metropolitan operator that will increase the range of affordable rentals available, working with public and private sector institutions. Meanwhile, we are continuing with the **Barcelona Rental Housing Exchange** project, and the "You have the key" campaign, which works to make rentals responsible and secure for both the owner and the tenant, offering both parties conditions with guarantees.

To foster decent housing, we are committed to "**Grants for renovation**", a project for the refurbishment of homes and buildings, the terms of which oblige owners to maintain the same financial conditions before and after the refurbishment or extend contracts for at least five years.

Because these are long-term processes, at the same time the City Council is also offering **APROP (Temporary social housing in your neighbourhood)**, a new housing model with fast, sustainable and high quality construction to streamline public housing needs in Barcelona, and to fight against the expulsion of residents from neighbourhoods.

## Urban information queries

To help the public and professionals search for urban information, a new tool has been created: the **Urban-Planning Information Portal (PIU)**. This portal contains information about current planning and architectural heritage within a single application. This information has been transcribed over an urban development plan adapted to the European ETRS89 cartographic\_standard.

The information can be accessed directly using the map or through conventional searches. The search is agile and intuitive, and provides various tools and actions which facilitate filtering.

The project has been developed as a responsive web, making consultation from any device possible.

## Improved and easier administration of authority for the common good

We have created **Autoritas**, a municipal discipline management system. Barcelona City Council performs many inspections every year, and this tool enables its technicians to improve organisation, ergonomics and usability in records management to facilitate their work and decision-making, while at the same time providing open and transparent information in real time.

## Barcelona is quality of life

We want Barcelona to become a city where citizens believe they have a high level of quality of life and therefore feel that they are part of a pleasant city. Given the current technological scenario, the quality of life in cities is closely linked to policies to become a smart city.

The **GrowSmarter** project, in which three flagship cities are participating, contains various solutions for a smart city in the energy, infrastructure and transport fields. It aims to show that these



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twelve solutions are ideal if a city is to become a benchmark in its management of energy, infrastructure and transport. Barcelona is one of the flagship cities, as well as Stockholm and Cologne, where different solutions have been integrated in collaboration with private and public companies. The solutions that have been applied are currently being evaluated from a technical and economic point of view.

These solutions solve common urban challenges, and are focused on improving energy efficiency, and include: the refurbishment of existing buildings, the integration of ICT infrastructures incorporated into urban elements and sustainable mobility.

The **Biodiversity Atlas** contains a set of maps highlighting some of Barcelona's most important biodiversity data: the trees in the streets, the plants that live in the green spaces, and the birds that nest in the city.

## **Maintenance of the city**

Barcelona City Council has developed the **Sewernet** platform for comprehensive management of the city's urban drainage (sewerage) system. This is a multicriteria tool based on free software, which optimises preventive maintenance tasks involving inspection and cleaning of the sewerage system to ensure it remains operational. It is a successful project that the city can share with other municipalities.

## **Mobility**

The mobility habits that have been established over the last fifty years are evolving towards new healthier ways of travelling, which means that the public space can be recovered for citizens. Barcelona is adapting its urban space to ensure a fairer distribution of space for the various means of transport, opening up traffic areas for cyclists, improving the bus network and giving priority to pedestrians, by widening pavements and increasing the number of streets with restrictions on cars that provide peace of mind and safety.

It is essential to promote sustainable, accessible, safe and smart mobility for pedestrians and cyclists, making it easy to reach any destination on efficient public transport, which is clean and affordable for everyone.

## **Bicycle**

Cycling is synonymous with healthy living and respect for the environment. Cycling does not pollute, creates no noise and frees public space; and cycling saves on time and costs.

In order to meet citizens' mobility needs, the new **Bicing** service will be launched early next year. It will provide increased territorial coverage, more electric and mechanical bicycles, and stations equipped with new access mechanisms.

## **Smart parking meters**

Barcelona is innovative in terms of regulating parking in the city's streets. In 2019, new smart parking meters will improve the management of the city's sustainable mobility, and they will be installed with no interruptions to the service.



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The innovative design of the new parking meters is the result of Barcelona's specific mobility needs, and it has been possible thanks to co-operation between the public and private sectors.

The new meter is designed to be a contributory factor to improving air quality; it will be able to recognise the environmental label on vehicles, which means it will be possible to apply specific pricing policies related to pollution events.

Barcelona's smart parking meters are a result of listening to users actively. They are linked to the **apparkB** and **areaDUM** regulated municipal parking applications, giving users even greater flexibility to interact with the **AREA** system, and increasing the system's potential at an overall level and in multichannel terms. The entire new design has been conceived to benefit users, who will have increased comfort and save time.

## **Sustainable mobility**

*Car sharing, motor sharing, bike sharing, car-pooling...* These mobility services are increasingly common in cities. **MAAS (Mobility as a Service)** is a response to this situation.

**MAAS** will give fresh impetus to the integration of public and private transport, guaranteeing a more balanced, sustainable and responsible ecosystem in people's everyday lives.

It involves integrating various means of transport into a single service accessible to the user on demand, and also includes payment.

## **Barcelona in electric vehicles**

At present, electric cars allow us to reduce the pollutant substances that contribute to climate change, as well as noise pollution in the city and the associated health problems.

The **NeMo** project boosts the interoperability of electric vehicles by improving the user's accessibility to recharging infrastructure through technology and with a more extensive and broader B2B interconnectivity.

The **Electricif** project aims to improve the performance of electric vehicles, and to integrate them into the transport system on the electricity grid, thereby helping to improve overall sustainability.

## **Connected mobility**

Transport vehicles are currently highly interconnected, and are more cooperative and automatic. We live in a situation in which the levels of information, data exchange and growing levels of automation are increasing.

Barcelona is implementing innovative solutions in the management of its mobility services to improve its citizens' quality of life and maximise their protection.

The **C-MoBILE** project is one of those solutions. It involves the implementation of technology in the various means of transport in the city of Barcelona, in order to reduce the environmental impact of road transport and road accidents. The main objective of this project is to ensure a safe, clean, efficient and sustainable road network, without neglecting complex urban areas and attention for vulnerable users of the road network.

At the same time, we are working on the **Autonomous Ready** project, for the development and implementation of a methodology to drastically reduce accidents in urban areas. It aims to develop



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aspects related to the concept of the safe city by means of initiatives including promoting the use of non-motorised vehicles, incentives for using driver-assistance systems in order to protect vulnerable users, mobility management based on connectivity, with users notified of incidents in real time in order to prevent accidents, among other areas.

## **Learning new urban mobility values**

Our aim is to raise public awareness of the quality of the urban environment in order to foster a transition towards more sustainable and healthy mobility options. **MUV (Mobility Urban Values)** is a research and innovation project in the development phase. Its primary objective is to encourage behavioural changes in mobility by means of new technologies and innovation.

## **Market**

Economic activity has a direct impact on peoples' lives and on the ecosystem where these activities take place. The level of economic dynamism has a decisive impact on opportunities for personal development, for generating wealth, reducing inequalities, guaranteeing opportunities for all, and creating a society that is committed to the environment and its people.

Barcelona is committed to innovation, and believes that the city is a scenario and a platform for relationships, and as a space for social and urban innovation. Barcelona considers itself a large laboratory for its creative talent, its public communities and its knowledge centres.

## **A market designed for the neighbourhood**

Barcelona City Council wants to promote **Sant Antoni Market** as a space focusing on the neighbourhood and its residents, and has allocated 700 square metres to shared uses to meet their needs. Priority has been given to limiting the opening of new establishments and shops that might change the neighbourhood's unique character and its local traders, and to applying the Plan of Uses to ensure a diversity of commerce.

The **Sant Antoni Market** is also committed to sustainability. The new market contains renewable energy generation solutions to reduce its environmental impact, involving exploiting geothermal energy, which provides heating and air conditioning for the entire market.

## **The solidarity economy**

Barcelona is working to be a city where the local economy and local commerce are encouraged, to foster social networks in its neighbourhoods. The City Council wants money to flow in the area; this is the reason why we have established the citizen's currency known as the **REC (Citizen's Economic Resource)**. The rec is an exclusively digital currency that can be used with a mobile application, to make payments instantly and with no difficulty, but only at businesses and associations that are part of the rec network. This system has been introduced for vulnerable families to collect some of their benefits, while stimulating the neighbourhood's life and economy.

## **Barcelona stands with local traders**

Together, we can all help each other to have a city where the neighbourhoods are livelier, more sustainable and more responsible.



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To help local traders, we are starting the **Viba Barcelona** project - a loyalty system that works with a card that can be used in affiliated establishments. Points are accumulated, discounts are obtained and special promotions are available every time a purchase is made at the markets and shops in the neighbourhood with the Viba card.

The loyalty card is being launched in the Sant Antoni neighbourhood, and it will subsequently be rolled out to the rest of the city. This measure is part of the strategy to make progress in the city's digitisation of local trade.

## **We are committed to innovation**

**5GBarcelona** is a strategic alliance between the public sector and private enterprise to make Barcelona into a European centre for 5G technologies, which can influence the future development of this technology.

The main objective of the alliance is to position Barcelona as the ideal place in Europe to carry out pilot projects or cases of use that will help companies, researchers and citizens explore new applications for 5G technology together.

The aim is to stimulate the creation of testing fields based on the early deployment of these 5G technologies in different areas in the city, and to encourage the creation of work teams with pioneering companies and the local business fabric, research centres and universities.

Barcelona City Council is participating in two European projects related to technologies and services associated with 5G, which are **FLAME** and **5GCity**.

The first, **FLAME**, will give citizens faster mobile internet access with its *edge computing* technology, which consists of giving users access to applications' virtual servers and enabling data to be processed near their source.

Estimates suggest that the future deployment of the 5G network will require many more antenna than those in the street at present. **5GCity** will give the city of Barcelona first-hand information about the potential for configuring future deployments of 5G antennas. It can also assess whether a public institution can act as a neutral operator, in order to guarantee coverage and usability throughout the city, regardless of the residents' financial capacity.

**Ca l'Alíer** is Barcelona's new Urban Innovation Centre. Its remit is to foster social, economic, urban and technological innovation, while promoting initiatives aimed at creating a more inclusive and sustainable city.

The **i.lab**, based in Ca l'Alíer, embodies Barcelona's commitment to accelerating urban, sustainable and social innovation. It aims to provide a response to the new demands of the city and the public, on an open and collaborative basis, between the public, private, social and academic sectors, and engaging in an open exchange with other cities. The result is better public services for people, using technology ethically.

Barcelona is also a benchmark in digital social innovation through **DSI4BCN**, which is linked with Europe with **DSI4EU**, supporting new models for an alternative, shared and collaborative economy, and committed to free technologies that respect citizens' digital privacy.



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## **Barcelona: an engine for creating free open software**

Barcelona City Council has been developing software for its daily administration for more than fifty years. For some years now, some of these products have been designed from the outset so they can be used by other administrations and companies with similar needs, and are open to everyone so that they can be widely used.

This applies to **Sentilo**, the Internet of Things platform (IoT) that we developed six years ago and which as well as in Barcelona, we know that it is being used by Barcelona Provincial Council, Valencia Provincial Council, in Terrassa and Reus, and by the Catalan Water Agency, among other institutions. **Sentilo** has been the subject of extensive interest worldwide, and has received awards including the European Commission's Sharing and Reuse Awards, and the Open Expo Europe Open Awards.

## **A city with renewable energy**

Barcelona Energia, **the public electrical energy distributor**, is a tool that we have created in order to promote renewable energy generation in the city, to contribute to the transition towards an energy model based on energy savings and efficiency, and to enhance self-consumption and local generation.

## **AGORA**

Barcelona is a dynamic, open, creative city with a very valuable human and social fabric. Citizens' day-to-day lives largely take place in the city's cultural, educational, social and participatory spheres, where everyone can learn, think, share and exchange experiences.

Public participation in the establishment and co-creation of public policies is fundamental. New technologies are a basic factor in the emergence of forms of cultural co-production, participatory self-management (**Decidim Barcelona**), transparent government (**Barcelona Open Data**) and even in the political activation of the urban space.

## **An administration accessible to everyone**

Citizens have a system of channels at their disposal, through which the City Council responds to requests for information and guidance, facilitates administrative procedures, and deals with suggestions and queries. **Public information and service channels** make the relationship between citizens and the City Council more agile and transparent, and make it easier for people to exercise their rights and obligations.

One of these channels is the **online service**. Information is available on the municipal website *barcelona.cat*, and through the Procedures Portal *ajuntament.barcelona.cat/tramits* can be used for carrying out administrative procedures and queries electronically. Mobile devices can be used for easy access to several municipal services. On the social networks, the City Council can be contacted via the Twitter account @barcelona\_010.

There is also the 010 **telephone hotline**, which provides municipal and general information on facilities, a diary of events and services, which can be used for administrative procedures. It also deals with notifications and complaints from citizens related to cleaning, maintenance of the urban space and municipal services.



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For obtaining information and carrying out municipal procedures on a **face-to-face** basis, there are thirteen citizen attention offices (OACs) located all over the city. "Kiosks", self-service terminals in the OAC offices and elsewhere in Barcelona, can be used to carry out the most frequently requested procedures and to obtain information.

## Control your data

The movement of data within networks can currently cause problems for users related to security and protection of data. **DECODE** was created in response to citizens' concerns about the loss of control of their information. The objective is to encourage citizens to take their own decisions about what happens to their data, their actions through technology and their use.

Two pilots have been designed and set up in the city of Barcelona to demonstrate **DECODE** technology in real cases of use, and two more pilots are expected to be added in the city of Amsterdam in the coming months.

**DECODE** boosts a process of reappropriation of data by citizens, by providing control over who uses the data, how and why, and the results they obtain by doing so.

## Discover the city's points of interest

The district of Sant Andreu is launching a new technological system, through which people passing by the district's places of interest will receive information directly on their cell phone through **beacons**, a low-power device that emits a signal and transmits the messages. The idea is for the information to be used as a tourist guide; to that end, it includes images, maps, explanatory videos and detailed descriptions, which are also adapted to people with visual disabilities. The project is being launched in Sant Andreu on a pilot trial basis, to be gradually rolled out in the city as a whole.

## Promoting the use of the Open Data BCN portal

**The Barcelona Open Data Challenge** is a competition that positions Barcelona as a leading city in the introduction of knowledge and use of open data in education. It is aimed at students in the third and fourth year of secondary school and training cycles and their teaching staff, and culminates with a final public event presenting the projects.

By studying their environment and using the data published on the **Open Data BCN** portal, students can visualise displays and draw conclusions from their analysis of these data, which enhances their critical faculties and civic awareness.

## Connected seniors

**Vincles BCN** is a social innovation project that aims to strengthen the social relationships of older people who feel alone, and to improve their well-being using digital technology and support from social organisation teams.

The service uses an application installed on a tablet as a communication tool, which puts users in touch with their families and friends, and enables them to communicate with other users and create communities of senior citizens who have shared interests.

## Digital empowerment



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The digital society must be built with the people! Take advantage of digital technologies to create quality jobs in all communities of the city and fight against inequalities. Preserve digital rights, gender equality and social inclusion of citizens. Promote participatory democracy and establish a policy to harness the collective intelligence of the citizenship.

In this context Decidim is born, a digital platform of participatory democracy for cities and organizations. Developed in free software by the Barcelona City Council, this network enables the articulation of participatory processes. Decidim provides transparent, trackable, non-manipulable participatory processes that are open to citizen collaboration. Currently, Decidim is installed and functioning in dozens of cities and organisations all over the world.

The first participatory process that has been carried out through Decidim was the Municipal Action Plan, the strategic planning of the government of the city of Barcelona for the 2016-2019 term. The main result of this process is a city plan that includes almost 7000 citizen proposals. Decidim makes it possible to monitor the implementation of these results and Barcelona City Council has so far executed 80% of the proposals.