

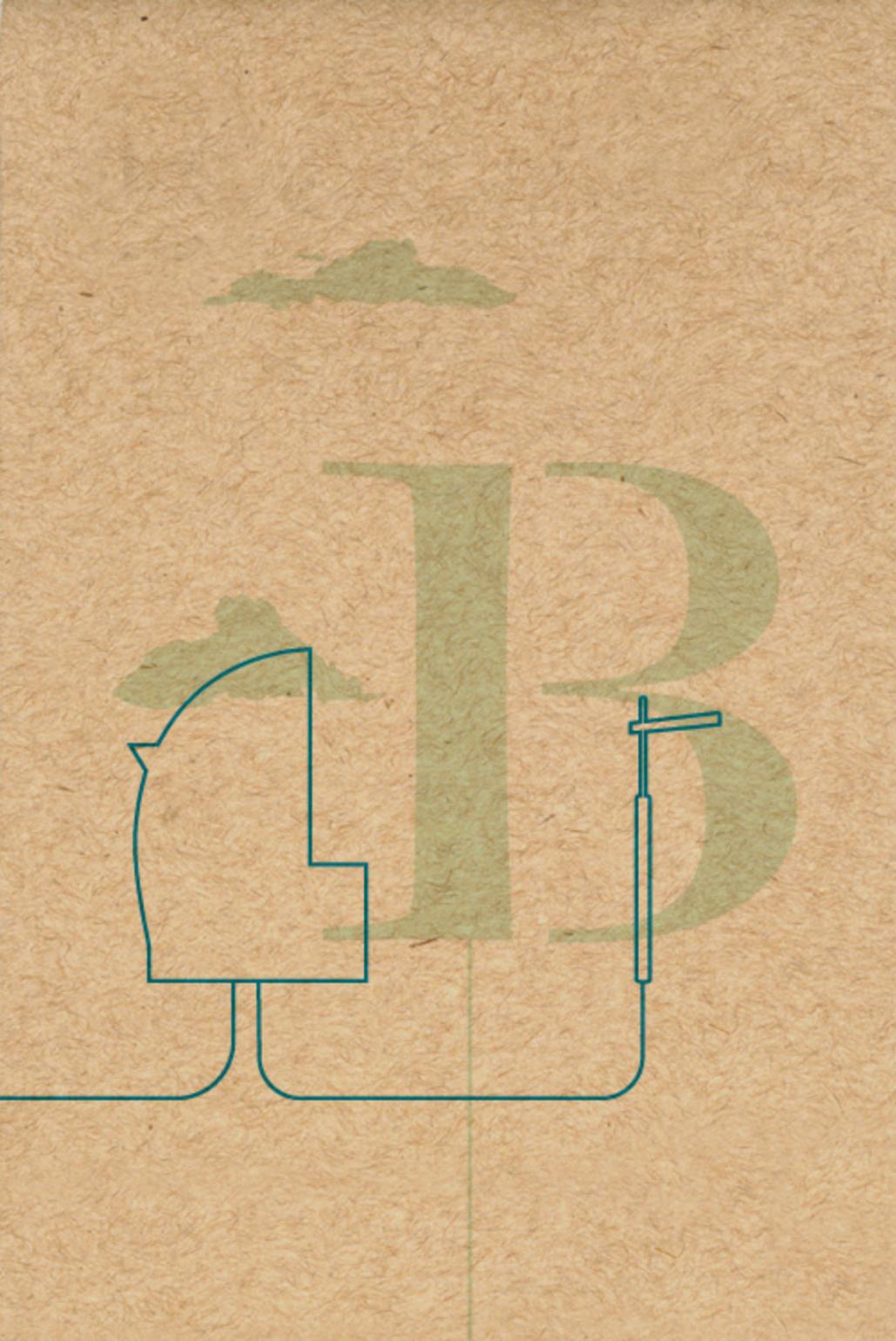
Barcelona Urban Lab

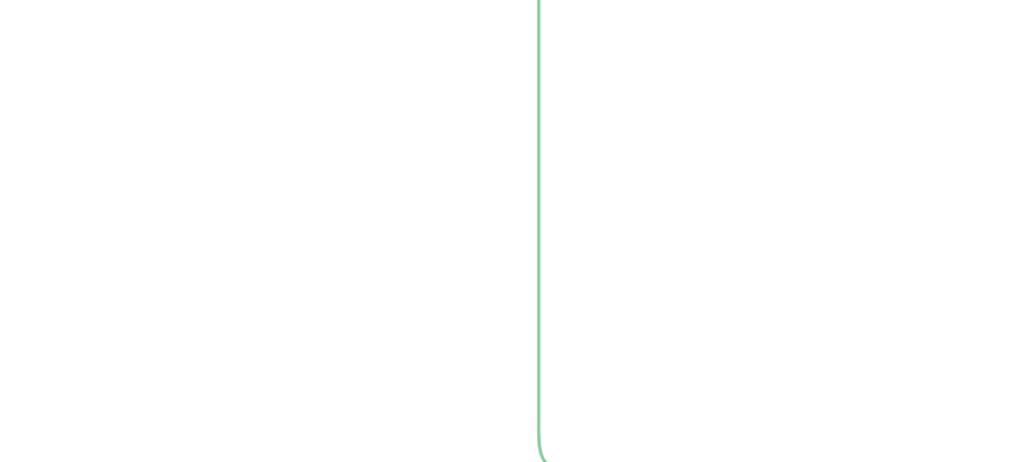


Barcelon**a**ctiva

Ajuntament de
Barcelona







Barcelona Urban Lab
offers public spaces in
the city of Barcelona to
test innovative projects
for the future of cities
in a real environment.

Barcelona Urban Lab

Barcelona Urban Lab was created to facilitate the use of public space in the city of Barcelona as an urban laboratory available to companies that need to test their products and services in a real environment. With Barcelona Urban Lab, Barcelona City Council aims to encourage business innovation, facilitating access to the business market and creating new products that provide improvements to the daily lives of the people of Barcelona.

The pilot products and services that may be tested have to respond to an unmet municipal need and must provide a new service that helps to improve people's quality of life.

From the start, more than 12 companies participated in testing unique and innovative services in different spheres such as urban development, mobility, ecology and ICTs.

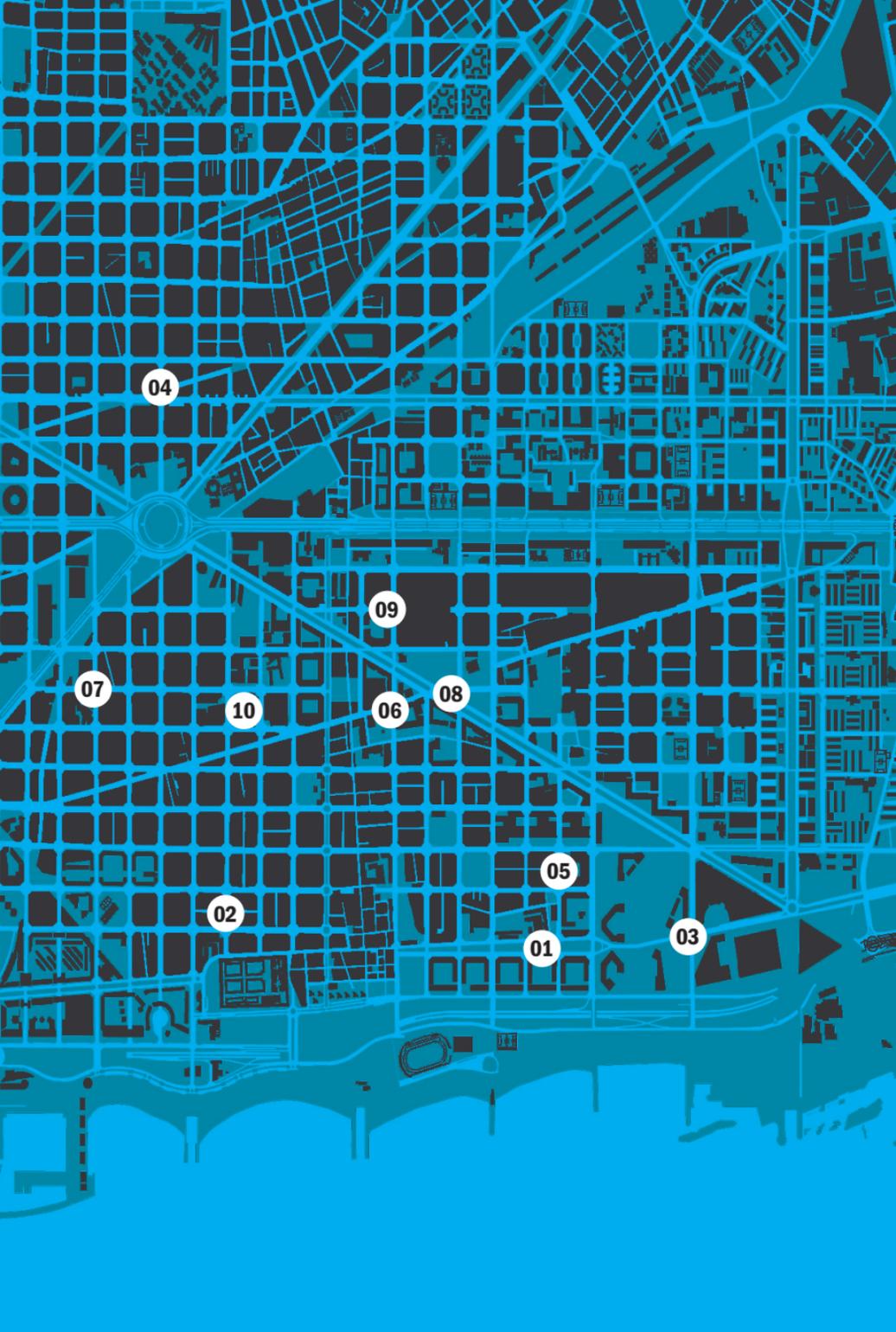
Below you'll find detailed information on some of the most notable pilot products and services.

> www.bcn.cat/urbanlab



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Sensors in containers

Monitoring container's filling level to optimize collection routes

In this pilot project, a system for monitoring filling levels in rubbish containers was installed along a stretch of road in the 22@Barcelona district. This system is based on sensors placed in rubbish containers and containers for separate collection (glass, paper and plastic).

The sensors report the containers' filling level data, which will be transmitted in real-time so that it may change rubbish truck collection routes, thereby potentially saving money and improving service. At the beginning of 2012, there were 8 containers with sensors for loading that alerted the waste management company when the containers reached 70% capacity.

The pilot project was evaluated as satisfactory by Barcelona City Council and the company Urbaser, in charge of removing waste in the east of the city, as well as by the company Urbiotica, which was able to work with municipal managers and use the demonstration pilot in many visits with potential clients.

- **Project led by Urbiotica**



SIUR project

LED public lighting and integration of urban services

SIUR (Comprehensive Solution for Urban Infrastructure) is an innovative project that integrates services and urban infrastructure to manage cities in a smarter and more efficient way. SIUR has a new lighting system equipped with LED technology and sensors that process environmental information and detect presence, temperature, humidity, noise and pollution. It also includes new Wi-Fi access points, a public information point, fibre optic services for the home and two charge points for electric vehicles.

The objective of the project is twofold: to test out new efficient lighting systems and integrate new technological equipment to develop a real smart city environment. The new integrated lighting system improves the quality of the light and the aesthetics of the public space and reduces energy consumption and economic expenses (energy savings over 50% compared with current facilities).

The project has set the stage for the current rolling out of local and national infrastructure consisting of charge points for electric vehicles, since the two charge points installed by SIUR in Barcelona were the first ones in Spain. SIUR won the Living Labs Global 2011 contest from among more than 245 submissions and has received a proposal to develop smart and sustainable lighting solutions in Eindhoven.

- Project led by Barcelona Digital Technology Centre.
- Consortium formed by: Arelsa, Circutor, E-controls, Prysmian, Santa&Cole, SECE and Semai Lighting.



Noise pollution

Noise map of the city

This pilot project involved the installation of noise microsensors in various public street lights to evaluate their viability and reliability in detecting levels of urban ambient noise. These microsensors are much more affordable than traditional sound level meters and communicate in a wireless network to generate a noise map for an area, sending the data to a monitoring software program created to produce noise pollution maps of the city almost in real time.

The aim of this project was to test a technology in situ that had so far only been tested in a laboratory. It was noted that the principle of measurement and the generation of large amounts of data provide a great deal of accurate – and therefore, very useful – information on noise levels in the street, doing so with unprecedented availability in the market.

Implementation of the project as part of Barcelona Urban Lab has also brought additional benefits like improved product specification for example, which is now much more adapted to Barcelona City Council's needs and its real uses in the urban environment.

- Project led by Zolertia



Traffic flows

Implementation of traffic control sensors

This pilot programme consists of a smart system to control and manage traffic automatically with data sent through 3G by the 50 sensors installed in different points in the city.

The project's aim is to evaluate the potential advantages for both government and the general population. Currently, the data obtained by the sensors is used to calculate travel time and only municipal authorities have access to it. For the future, it is proposed to make the data available to people through different channels (variable panels, websites, etc.).

The benefits for government include an accurate view of the traffic situation, which enables authorities to intervene in it in real time. Furthermore, the platform will allow for better understanding of traffic movement inside the city, identifying main flows in order to expedite decisions on mobility and offer new services. For the populace, it is a system that facilitates decision-making when choosing the fastest route or the most suitable means of transport and allows users to calculate how long a trip will really take.

- **Project led by Mobility and Transport Areas, Barcelona City Council**
- **With the collaboration of: BITCARRIER**



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Parking spaces

Installation of occupancy sensors

This pilot project involved the installation of parking sensors that communicate the occupancy status of parking spaces and use this information to guide drivers to vacant parking spaces more efficiently through information panels in the street or mobile applications. In total, 70 sensors were installed in blue zone parking spaces and in loading and unloading areas as a system to control their occupancy.

The aim was to test the sensor system for detecting ground-level parking space occupancy in order to guide drivers to empty spaces more efficiently and provide information to Barcelona City Council for developing and implementing measures in the future.

Although the system is not yet fully operational, the results obtained so far exceed the company's initial expectations. These early stages of the project have led to a product that has been more suited to the technical and functional requirements since the design stage, which has reduced development time.

- **Project led by Worldensing**

Fibre optics

Installation of a new FTTH fibre optic network

FTTH (Fibre To The Home) technology is based on bringing fibre optics to the home. The project includes the vertical section of a facility of this type, which ranges from the RITI (Lower-Level Telecommunications Facilities Premises) or communications room of the building to the scale record found on each landing (leaving enough fibre optics to reach the home).

The aim of this project was to reach homes in the Sant Martí district with an FTTH fibre optic network in order to multiply the bandwidth in comparison with the traditional copper cable system, going from the current maximum of 20 Mb to a minimum Internet bandwidth of 100 Mb/20 Mb. It is intended that the creation of this neutral infrastructure will lead to the arrival of different service providers and open the door to new telecommunications-related services and business models.

- Project led by 22@ - Barcelona City Council
- With the collaboration of: Adamo, FOC and ELECNOR

Bicycle lanes



Implementation and evaluation of different types of bicycle lanes

This pilot project involved the implementation of bicycle lanes on the pavement, separated with paint or with urban elements, and roadway bicycle lanes separated with paint or with a separating piece. One-way and two-way lanes were tested in both cases. The pilot project enabled the testing and evaluation of different types of bicycle lanes in the 22@ district in order to detect which of them contributed to better circulation and safety for cyclists, while not preventing traffic from flowing normally.

A change in tendency has been noted in the types of bicycle lanes in the city, moving from bicycle lanes to the left of the road and going the same way as the road to two-way lanes separated from traffic by means of small pieces.

- Project led by Barcelona City Council

Traffic control

Implementation of traffic optimisation systems

The pilot project involves the installation of cameras connected to the public roadway to control traffic in real time and to be able to evaluate a new system for controlling traffic and monitoring road accidents.

After measuring parameters like traffic density, reaction time to road accidents and polluting emissions, it was concluded that the new regulatory system is not as effective as was expected. Barcelona City Council's Mobility Department didn't implement it on a large scale. However, after the pilot project ended, the installed cameras have continued to be used for controlling traffic and counting vehicles.

- **Project led by ACISA**
- **With the collaboration of: DOYMO, PANASONIC and LANACCES**

Smart traffic lights



Implementation of sound traffic lights for blind people

This pilot project involved the installation of new traffic fixtures that are activated via remote control and emit three types of sounds (of orientation, of walking and of stopping walking) at some intersections in Barcelona's 22@ district.

The objective is twofold: first, to make it easier for blind people to cross intersections and second, to reduce noise pollution compared with other traffic fixtures that emit constant sound signals.

The evaluation of the pilot project, conducted by Barcelona City Council and ONCE (Spanish organisation focus on the improvement of the quality of life of people with blindness), was very positive, even though they ruled out implementing it in the rest of the city of Barcelona due to its high costs. Nevertheless, companies are already marketing the product in an improved version in other cities like Valencia.

- Project led by ACISA
- With the collaboration of: INDRA, FUNDOSA i DOYMO



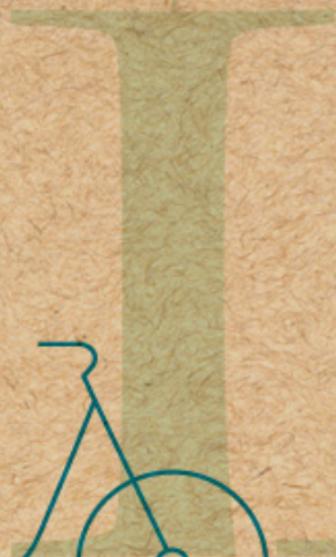
Electronic meter readouts

Implementation of an electronic readout system for gas and water

The pilot project involved the installation of electronic readout systems for household gas and water and facilitated individualised access to consumption through the Internet.

The aim of the pilot project was to provide users with access to their consumption data via the Internet. The information collected enables consultation of consumption histories by the month, week, day and hour. It also provides companies with the ability to perform real readouts without the need to move around.

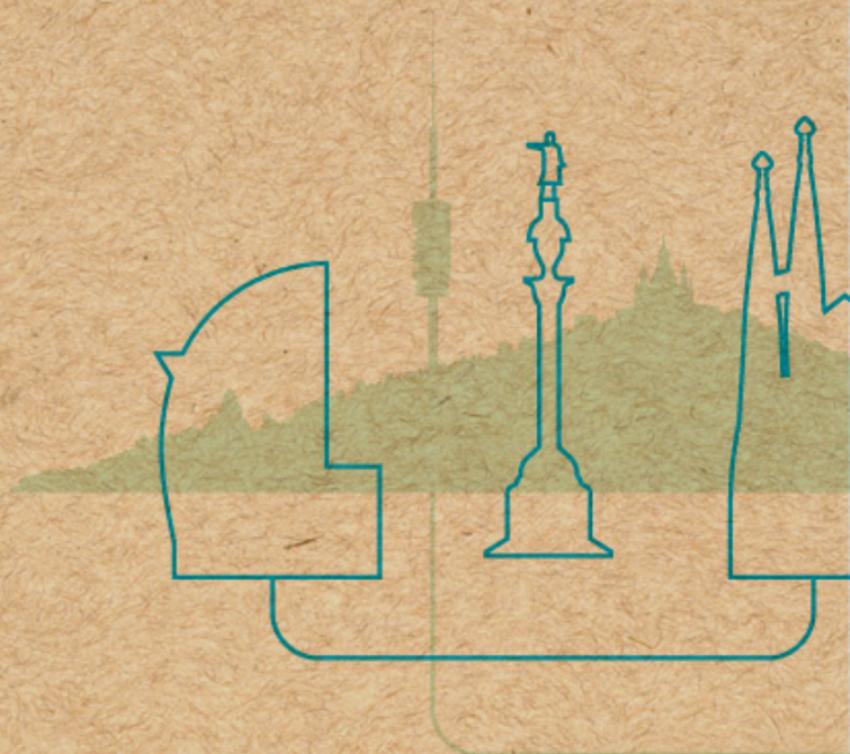
- Project led by Wimet



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