



POLITICAL VISION AND FRAMEWORKS



City of the people

Technology as a means to providing the city with ...

- ✓ More efficient and sustainable mobility
- ✓ Environmental sustainability
- Business friendly and a magnet for attracting capital
- ✓ Social integration and cohesion
- Communication with and closeness to the people
- Knowledge, creativity and innovation
- Transparency and democratic culture
- ✓ Universal access to culture, education and health

Improving the well-being and quality of life of city residents



Economic progress



EUROPEAN COMMISSION

BARCELONA CITY COUNCIL

BARCELONA CITY MODEL



ROMAN (15-10 BC)



MEDIEVAL (1300 - 1600)



CERDÀ PLAN (1859)



UNIVERSAL EXPOSITION (1888)



INDUSTRIAL REVOLUTION (1900)



UNIVERSAL EXPOSITION (1929)



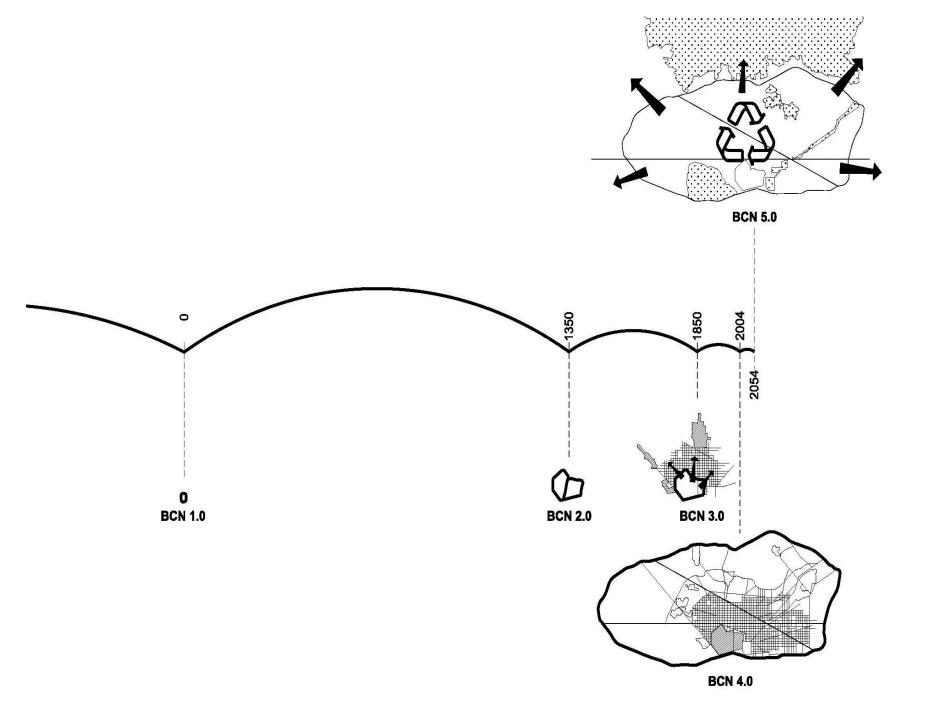
OLYMPIC GAMES (1992)



FÒRUM (2004)

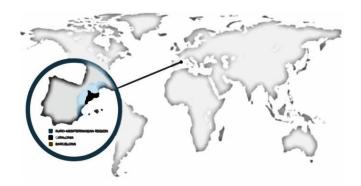


SMART CITY (2014)









1st Global Smart City (Juniper Research 2015)

Top 6 most successful Smart Cities (European Parliament 2013)

6th City in the World in Urban Brand (Saffron European CityBrand Barometer The Guardian 2014)

9th Best Reputed City in the World (Reputation Institute 2014)

1st Most Attractive City in Europe for Organising Events (*Pro Sky Destination Report 2014*)

6th Most Highly Regarded City Worldwide (Guardian Cities global brand survey, 2014)

Top 10 Most Attractive Cities in the World for Sports Events (portalhotels.com 2014)

Top 10 Cities in the World for Cycling (*The Sidney Morning Herald 2014*)

1st Attractive City for Western European Investing (Best to Invest Report 2013)

Top 10 in Transparency in Catalonia (UAB Study, 2013)

3rd Business City in Europe (Cushman & Wakefield 2011)

6th City for Doing Business in Europe(Cushman & Wakefield 2011)

1st City Model in the World (Ernst & Young 2011)

6th Most Attractive City in Europe for Doing Business (Ernst & Young 2011)

2nd City for Organising International Events (City and Country World Report 2010, ICCA)















Barcelona | Capital of Innovation | Capital of Innovation

The European Commission awards BCN using new technologies to bring the city's citizens.

03/12/2013

Bloomberg Philanthrop Mayors Challenge with "Vincles BCN"

"Vincles BCN" is a project that aims to create a network of trust that can break down the isolation of elderly people. It is the project awarded from 155 innovative ideas submitted by cities from all round Europe. 18/09/2014



Novay Networked Innovation

Nova Digital Identity Award 18/10/13



cat Premis Protecció de dades en el disseny

Autoritat Catalana de Protecció de Dades 08/04/2014



"Opendata BCN is the best practice in the country." 20/07/2014



Opentext Heroes Awards

The OpenText Heroes Awards recognize customers for their outstanding efforts in deriving business value from innovative and successful software deployments.

17-21/11/2013

CITY CLIMATE

Intelligent City Infrastructure

C40 and Siemens Honor Cities for Leadership in Tackling Climate Change 22/09/2014



Responsible Tourism

Institute for Responsible Tourism (IRT) 24/07/2011



ENI Interoperability

Awards CNIS Interoperability in Public Administration and Security. 20/02/2014

Sociedad de la Información

VI Information Society Awards

Socinfo Fundation 12/02/2014





Barcelona City Council's Balance Sheet

- •Budget for 2014: € 2,574 Billion (22% increase in investment, i.e. €426 million)
- Robust budgetary management
- Sound financial fundamentals
- •High gross operating surpluses of 24% on average in 2007-2012
- •Sustainable (0 deficit, 0 increase in debt (debt < 60% of current revenues), 0 increase in taxes)
- Liquidity (payment in 30 days)
- •Investment capacity (Savings > 15% current revenues)

MOODY'S: Baa2 outlook: positive (February 2014) S&P: BBB (May 2014)



RESEARCH & INNOVATION CENTERS OF COMPANIES IN BCN









































































PRINCIPLES OF A SMART CITY



- 1. Establishing the city model with "the city's mantra"
- 2. Analysing the city's **structure** and defining its **action plans**
- 3. Re-thinking the city's systems, and not just updating them
- 4. Developing the **economy** of the city's services together with the ecosystem
- Making the city more **resilient** and promoting long-term investment
- 6. Building a habitable city, which increases public space for the people
- 7. Changing the organisation by **smashing** "silos"
- 8. Working with other cities and form part of the City Protocol Society



"To become a city of productive neighborhoods, at human speed, interconnected, eco-efficient, renaturalized, energetically self-sufficient and regenerated at zero emissions, inside a high-speed interconnected Metropolitan Area"

Barcelona is steering its city-development strategy to ensure its citizens enjoy <u>quality of life, social and urban improvements and added value in their neighbourhoods</u>, by focusing all its **urban potential** on **sustainable** development and the green economy, in favour of a city that is **self-sufficient in energy** and where nature plays a notable role in the city's equilibrium. A city connected with a <u>high-speed and hyper-connected</u> Metropolitan Area, which ensures the development of the region and the improvement of the cities that form it.

BARCELONA'S SMART CITY VALUES



SOCIAL DREAM

- + EFFICIENT
- + SUSTAINABLE
- + PRODUCTIVE
- + SOCIAL
- + FREE
- + HEALTHY

STRATEGIC LINES





CITY



COOPERATION

NTERNATIONA

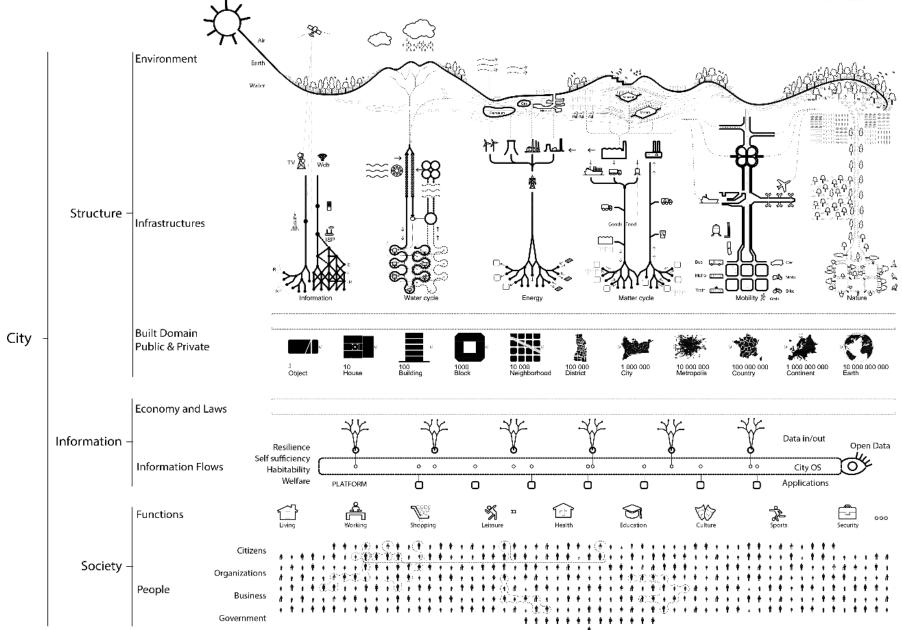
- 3. CloudOpting
- 4. Commons4EU
- 5. DC4Cities
- 6. EUNOIA
- 7. iCity
- 8. INSIGHT
- 9. Open-DAI
- 10. CONDUITS
- 11. FIREBALL
- 12. Green eMotion
- 13. MOLECULES
- 14. smartCEM
- 15. SUPERHUB
- 16. TRANS-FORM
- 17. ECHORD++
- 18. Lighthouse

RAMMES U

- 1. Telecommunications Networks
- 2. Urban Platform
- 3. Smart Data
- 4. Smart Lighting
- 5. Energy Self-Sufficiency
- 6. Smart Water
- 7. Smart Mobility
- 8. Renaturalisation
- 9. Urban Transformation
- 10. Smart Urban Furniture
- 11. Urban Resilience
- 12. citizenry
- 13. Open Government
- 14. Barcelona in Your Pocket
- L5. Smart Waste Collection
- 16. Smart regulation
- 17. Smart Innovation
- 18. Healthcare and Social Services
- 19. Education
- 20. Smart Tourist Destination
- 21. Infrastructure and Logistics
- 22. Leisure and Culture

ANATOMY OF THE CITY

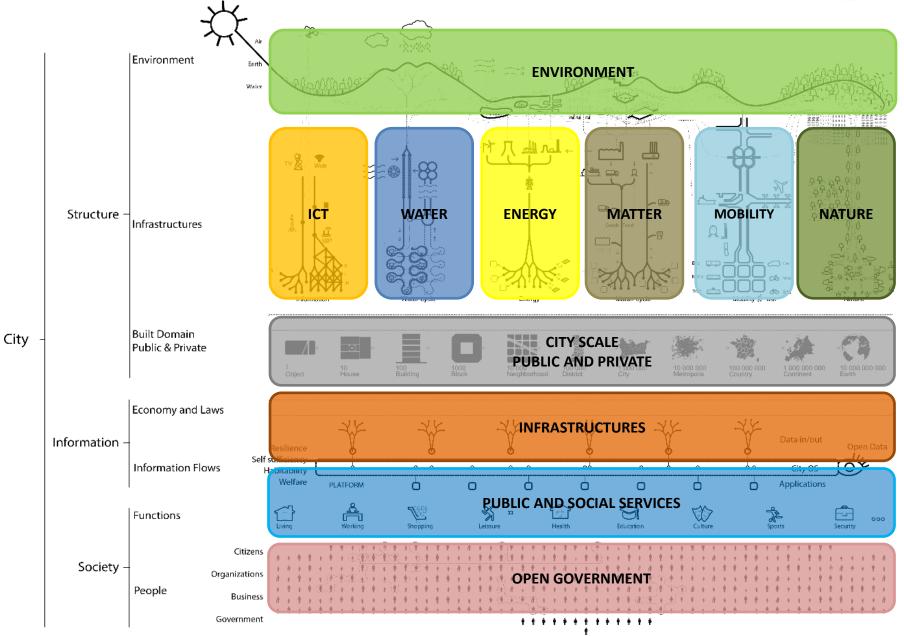






CONCEPTUAL MODEL OF BARCELONA







22 SMART LOCAL PROGRAMMES

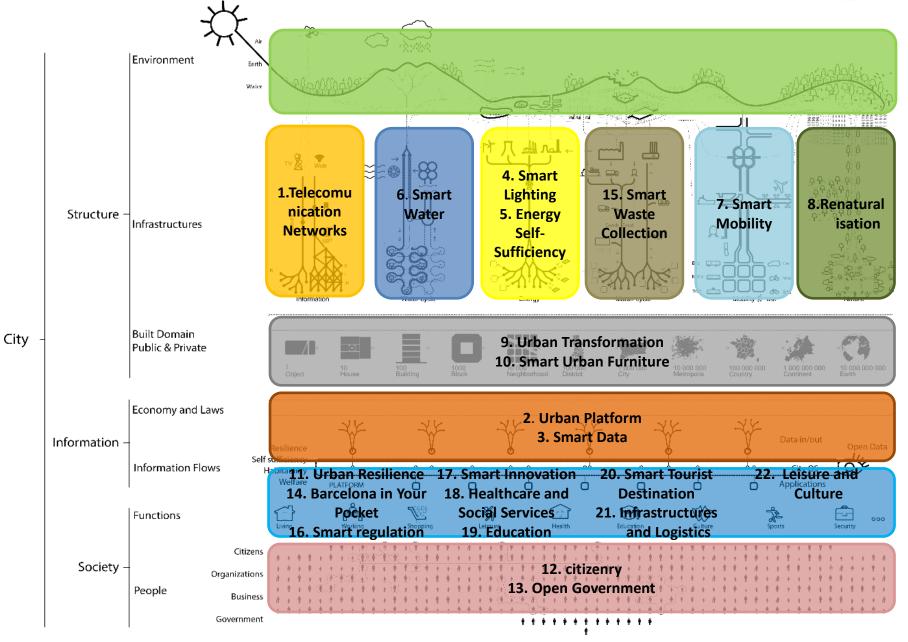


- 1. Telecommunications Networks¹
- 2. Urban Platform¹
- 3. Smart Data¹
- 4. Smart Lighting
- 5. Energy Self-Sufficiency
- 6. Smart Water
- 7. Smart Mobility
- 8. Renaturalisation
- 9. Urban Transformation
- 10. Smart Urban Furniture
- 11. Urban Resilience
- 12. Citizenry¹
- 13. Open Government
- 14. Barcelona in Your Pocket
- 15. Smart Waste Collection
- 16. Smart regulation
- 17. Smart Innovation
- 18. Healthcare and Social Services
- 19. Education
- 20. Smart Tourist Destination
- 21. Infrastructures and Logistics
- 22. Leisure and Culture



THE 22 PROGRAMMES IN THE 11 AREAS







24 SMART GLOBAL PROGRAMMES

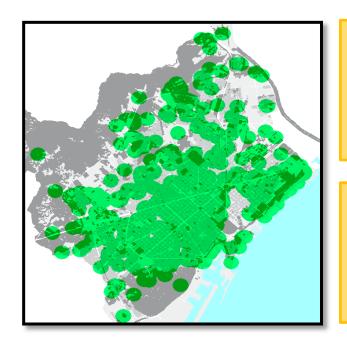


- 1. Telecommunications Networks¹ (Paco Rodríguez)
- 2. Urban Platform¹ (Paco Rodríguez)
- 3. Smart Data¹ (Eduard Martín)
- 4. Smart Lighting (Cristina Castells)
- 5. Energy Self-Sufficiency (Cristina Castells)
- 6. Smart Water (Cristina Vila)
- 7. Smart Mobility (Jordi Ortuño)
- 8. Renaturalisation (Margarida Pares)
- 9. Urban Transformation (Maria Sisternas)
- 10. Smart Urban Furniture (Paco Rodríguez)
- 11. Urban Resilience (Ares Gabas)
- 12. citizenry (Jordi Reynes)
- 13. Open Government (Carles Agustí)
- 14. Barcelona in Your Pocket (Alexis Culubret)
- 15. Smart Waste Collection (Jordi Ametlló)
- 16. Smart Regulation (Maria Galindo)
- 17. Smart Innovation (Maria Galindo)
- 18. Healthcare and Social Services (Pilar Solanes)
- 19. Education (Eduard Martín)
- 20. Smart Tourist Destination (Xavier Suñol)
- 21. Infrastructure and Logistics (Pendent)
- 22. Leisure and Culture (Inés Garriga)
- 23. International Positioning¹ (Júlia López)
- 24. International Cooperation¹ (Júlia López)



1. TELECOMMUNICATIONS NETWORK





Aims

To achieve **maximum coverage** to enable the **sensorisation of the city**, ensuring compliance and **deployment of aerials**.

Description

Integrating the various existing networks in Barcelona into a single one by promoting the deployment of infrastructures for mobile phones and new-generation networks.

Strategic Projects

- 1. Aerials Plan
- New telecommunications network
- 3. WIFI (Extension to 1527 hotspots)
- 4. FTTH deployment

Principal Partners













5. Video-conferencing



1. TELECOMMUNICATIONS NETWORK





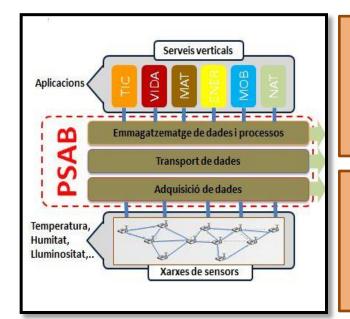
WIFI WITH ENVIRONMENT AND LOCALISATION SENSORS

22@ Barcelona District



2. URBAN PLATFORM





Aims

To make app and sensor suppliers independent, by allowing a multi-supplier scheme.

Description

Opening up infrastructures, information, etc., to separate technological solutions from their suppliers, by standardising sensors and creating simpler apps with more solidarity.

Strategic **Projects**

Sensor Platform (SENTILO)

http://www.sentilo.io/wordpres 5.

s/

CityOS

iCity 1

4. CityDB

BCN Cloud

Cloud Opting 1

City SDK 1

Principal Partners



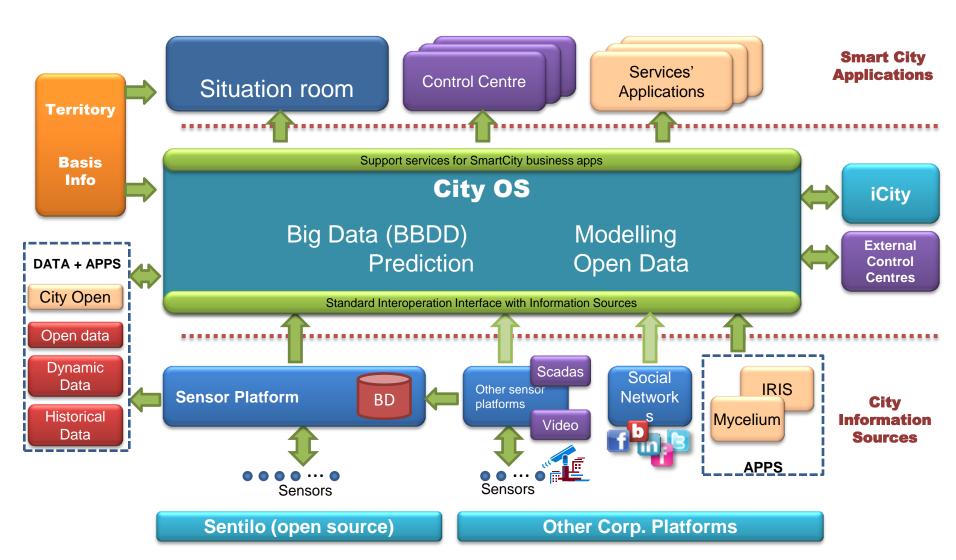






2. URBAN PLATFORM





NEW ARCHITECTURE





Aims

Integrating, analysing, sharing and measuring the information on the city and its services.

Description

Having **tools** with city data that enable the city's level of development to be measured and its **governance** improved.

Strategic Projects

- 1. City Indicators
- 2. Situation Room (Project with Cityzenith included)

Principal Partners

Microsoft bism@rtBusiness Intelligence











CONTROL PANELSITUATION ROOM

4. SMART LIGHTING





Aims

Ensuring compliance with **lighting criteria** (colour temperature, levels, uniformity, contrasts, etc.) required by the city for **more efficiency**.

Description

Implementing a lighting plan that follows the guidelines of the smart lighting concept, i.e. a lighting technology designed for energy efficiency.

Strategic Projects

Deployment of lighting systems according to their operational type,
 LED technology and sensors.

Principal Partners

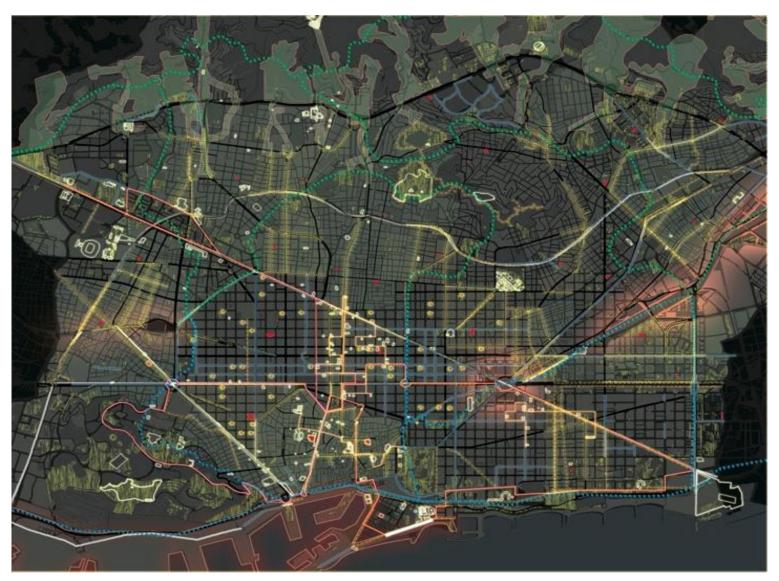






4. SMART LIGHTING





LIGHTING MASTER PLAN

Barcelona



5. ENERGY SELF-SUFFICIENCY





Aims

Promoting full **independence** in the realm of **energy**, including buildings.

Description

A series of initiatives aimed at energy self-production and self-consumption by raising awareness among the population.

Strategic Projects

- 1. Energy Self-Sufficiency in buildings
- 2. Distribution and consumption network
- 3. Heating and cooling networks
- 4. Energy Self-Sufficiency Catalogue
- 5. Electric-panel monitoring
- 6. Wind Turbine
- 7. Municipal Energy Operator

Principal Partners









5. ENERGY SELF-SUFFICIENCY





BARCELONA ENERGY SELF-SUFFICIENCY PLAN Barcelona

6. SMART WATER





Aims

Providing the city with smart management of water resources, both in the administration of ground and underground water and in the rationalised use of public services (irrigation and fountains).

Description

Automating, testing and remotecontrolling irrigation, fountain and sewer systems to make more efficient use of water resources.

Strategic Projects

- **Remote-controlled irrigation**
- Remote-controlled ornamental fountains
- **Smart sewerage systems**
- Urban robots¹

Principal Partners













6. SMART WATER





SMART IRRIGATION

Gardens along Pg Taulat at the junction with C/ Josep Pla

7. SMART MOBILITY





Aims

A holistic vision of mobility, by introducing ICT components, to improve urban mobility and make electric vehicles a Barcelona benchmark.

Description

Adding ICT elements to the various players involved in **Mobility** (Vehicles, Energy, Infrastructures and Individuals), to achieve Smart Mobility

Strategic Projects

- **Electric Vehicle Board**
- **Live Platform**
- **Smart Parking**
- **Green eMotion**
- **Sustainable Mobility Plan**

- eBici
- MOTIT
- **Automated Driving (BB-CAD)**
- 9. **DUM** area
- 10. Kan Go

Principal Partners





























7. SMART MOBILITY



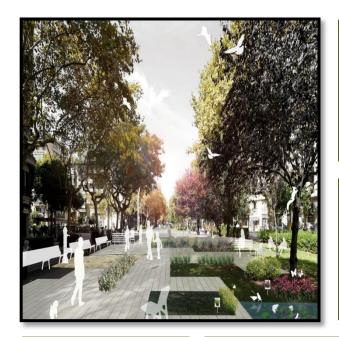


Electric Vehicle Recharging Point Glòries



8. RENATURALISATION





Aims

Preserving the biodiversity and achieving an ecological infrastructure capable of offering socio-environmental services, bringing nature into the city and making it more fertile. Promoting a nature-territory-public connection.

Description

Plan with the 10 strategic lines and 68 initiatives it contains.

Strategic Projects

- 1. Drafting protocols for biodiversity preservation
- 2. Implementing Green Corridors
- 3. Rooftops and green roofs plan
- 4. Dividing walls plan
- 5. Buits plan

- 6. Monitoring and mapping out the state of our natural heritage
- 7. Park on Sants old train tracks
- 8. Farm Labs and Collserola terraces
- 9. Air quality improvement plan
- 10. Block interiors

Diputació

Principal Partners























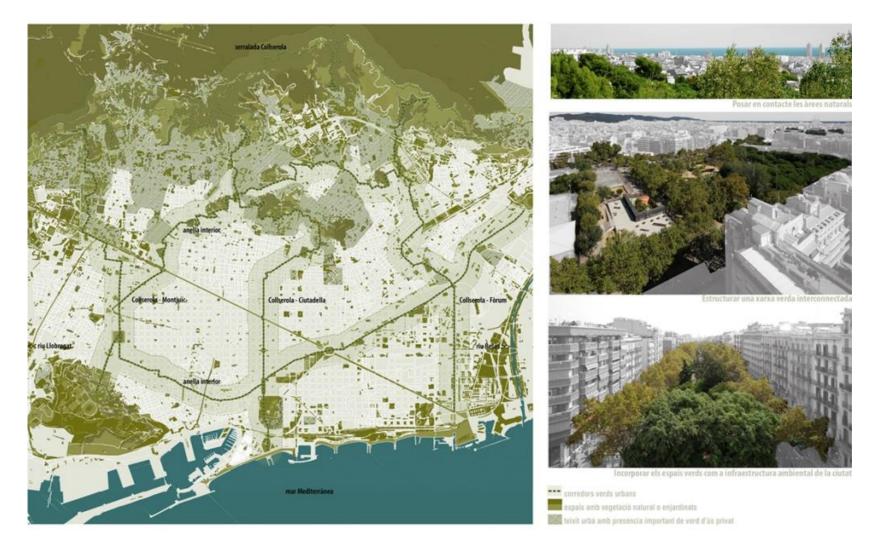


Associació de Professionals dels Espais Verds de Catalunya



8. RENATURALISATION





GREEN URBAN CORRIDORS

Barcelona



9. URBAN TRANSFORMATION





Aims

Remodelling the city's main roads, zones, areas, etc., by taking on board feasible, sustainable, efficient and effective criteria.

Description

Incorporating smart components (energy efficiency, connectivity, mobility, etc.) into the transformations of the city.

Strategic **Projects**

- Passeig de Gràcia
- Avinguda Paral·lel
- **Passeig Sant Joan**
- Montjuïc's New Museum Centre
- **Glòries**

- **Diagonal Avenue**
- **Super blocks**
- Integral plan for the improvent of public spaces.
- Microdevelopments 9.

Principal Partners



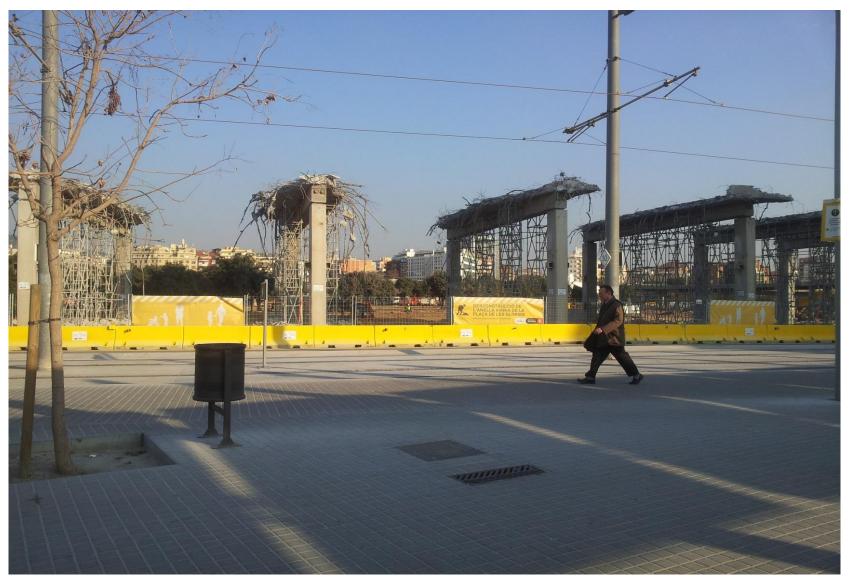






9. URBAN TRANSFORMATION





REMODELLED URBAN ZONE

Plaça de les Glòries



10. SMART URBAN FURNITURE





Aims

Redesigning public objects put up in Barcelona to make them **sustainable**.

Description

Designing urban furniture in line with the criteria and the smart-city strategy (Habitability, Feasibility and Sustainability).

Strategic Projects

- 1. Smartquesina
- 2. Kiosks
- 3. Cyclist Panel
- 4. Smart Slabs

Principal Partners



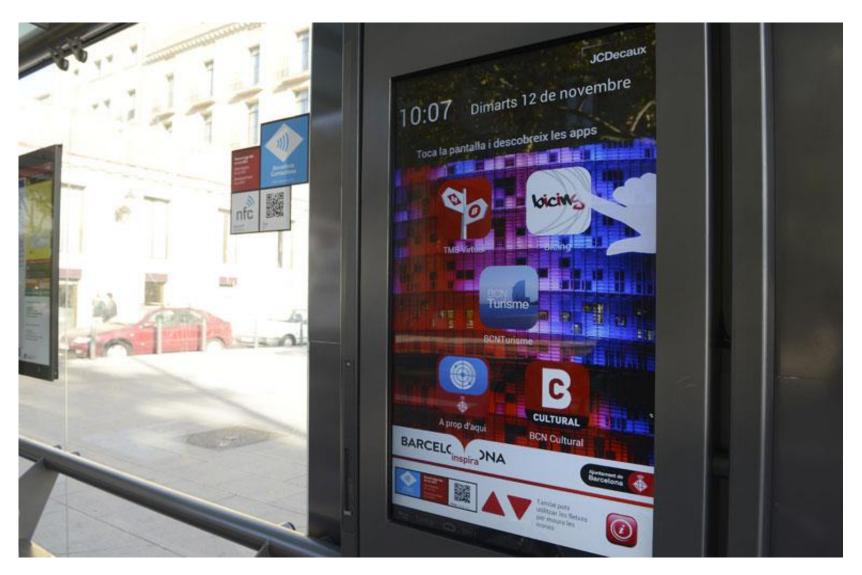






10. SMART URBAN FURNITURE



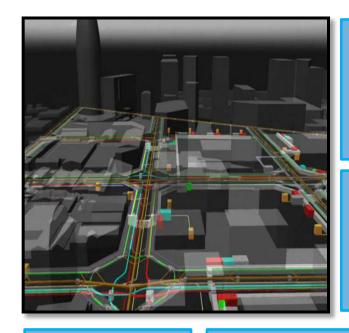


SMARTQUESINA

Fira Gran Via

11. URBAN RESILIENCE





Aims

City's **prevention**, **resistance** and rapid **recovery** from impact or situations of crisis, which put the continuity of its services at risk.

Description

Detecting, analysing and predicting the city's **risks**.

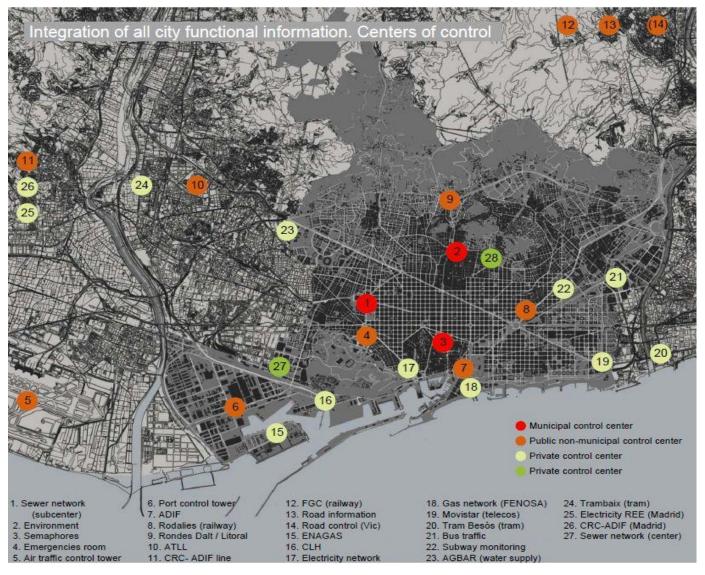
Strategic Projects

- Joint Control Room
- 2. Resilience Board
- 3. United Nations Programme
- 4. Technological Security



13. URBAN RESILIENCE

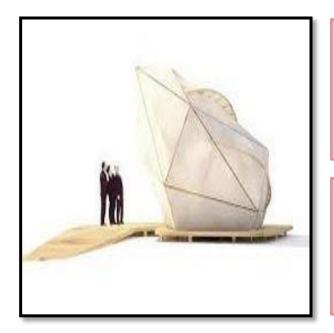




Control Centres

Barcelona





Aims

Exploiting the city's resources and services to the full, for its own and its residents' benefit.

Description

Endowing the public with the city's resources for their own development and profit.

Strategic Projects

- **Manufacturing Centres**
- **Manufacturing Laboratories (Fab Lab)**
- Barcelona + Sustainable Map
- **Spaces for inclusion**
- **ICT volunteers plan**













FABKIDS WORKSHOP

Fab Lab Barcelona

13. OPEN GOVERNMENT





Aims

To promote interaction among the public, administrative procedures and services of the city.

Description

Having an efficient e-Government service on which basis, public data can be opened, exploited and ultimately used to the full.

Strategic Projects

- **Open Data**
- **Virtual Citizen Help and Information Office (OVAC)**
- eGovernment
- Open Government (GO) http://governobert.bcn.cat/

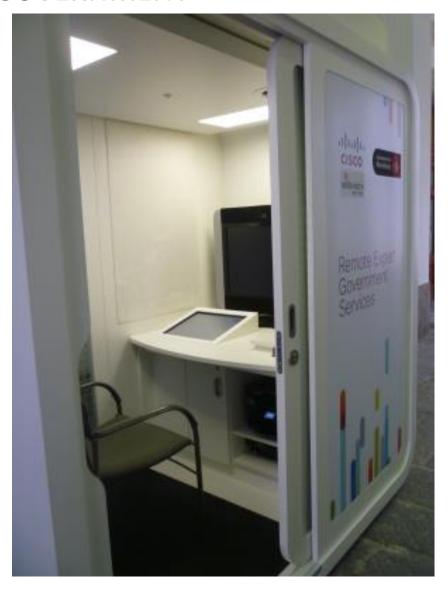






13. OPEN GOVERNMENT





VIRTUAL CITIZEN HELP AND INFORMATION OFFICE - OVAC Casa del Mig 2



14. BARCELONA IN YOUR POCKET





Aims

Promoting the use of mobile
technologies for accessing city services,
boosting the mobile industry and
positioning Barcelona as a mobiletechnology benchmark.

Description

Developing and promoting apps that make life easier and more comfortable for residents and visitors to Barcelona.

Strategic Projects

- L. Barcelona Contacless
- 2. Mobile apps
- 3. Digital Identity in mobiles
- 4. Apps4bcn















14. BARCELONA IN YOUR POCKET





BCN ID

Towing - Procedures

15. SMART WASTE COLLECTION





Aims

Optimising the management of urban waste.

Description

Providing a **smart**, automated **waste**-collection **system** and improving the planning and rates for recycling.

Strategic Projects

- 1. Pneumatic waste collection
- 2. Sensorisation of containers
- 3. Organic waste recycling
- 4. Waste prevention plan





15. SMART WASTE COLLECTION











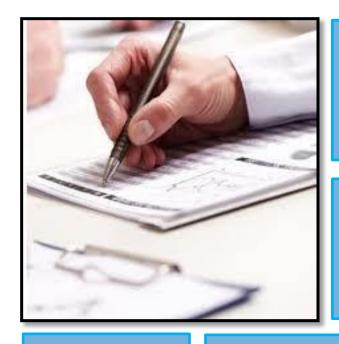


PNEUMATIC WASTE COLLECTION

Plaça Lesseps

16. SMART REGULATION





Aims

Integrating smart city projects in the city and progressively applying these types of solutions.

Description

Including in **smart-city contractual clauses in public tenders**, for both the provision of equipment and services.

Strategic Projects

- 1. Tenders
- 2. Government measures
- 3. ICT Master Plan: Deployment of ICT services in public roads (PDTIC)
- 4. Agreements
- 5. Acefat: integrated management of utility related urban works.

Principal Partners

Cercle Tecnològic

abertis





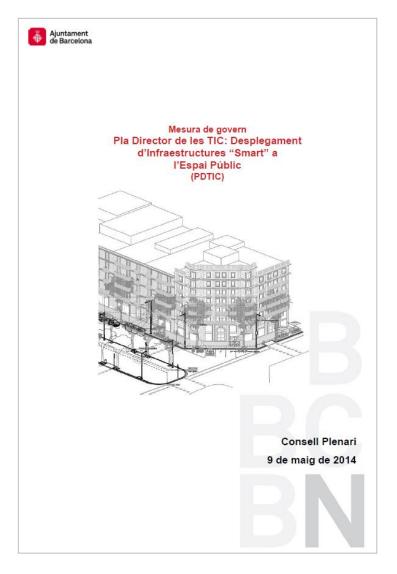






16. SMART REGULATION





GOVERNMENT MEASURE PDTIC May 2014



17. SMART INNOVATION





Aims

Creating a forum for dialogue and experiments, to innovate and investigate on behalf of every kind of association, organisation etc., within the smart city realm.

Description

Setting up and promoting collaborative spaces on behalf of any type of body that can develop and test its innovative smart-city solutions.

Strategic Projects

- **Smart City Campus**
- **Smart City Tour**
- **Smart City Cluster**
- **Mobile World Lab** 4.
- **Spark Lab**

- **Barcelona Institute of** Technology (BIT)
- **Barcelona Open Challenge**
- **Barcelona Growth**
- **mStartUp**













17. SMART INNOVATION





SMART CITY CAMPUS

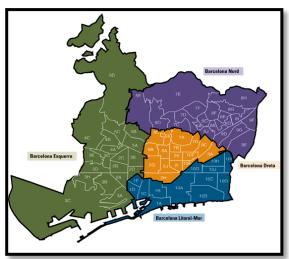
22@ District



18. HEALTHCARE AND SOCIAL SERVICES



Holistic Areas of Healthcare of Barcelona



Aims

Transforming Barcelona's **Healthcare** and **Social Services system** and leveraging ICTs to bring it closer to the citizens.

Description

Developing tools and deploying the information network to make it
available to professionals and citizens.

Strategic Projects

- 1. Comprehensive Ageing
- 2. Telephone helpline service ICT services for the elderly and dependent people
- 3. Radars and Vincles

- 4. Online Consultation
- 5. Digital Identity: My Healthcare
- 6. House Puerperium
- 7. Electronic prescripction
- 8. Urban desfibrillators







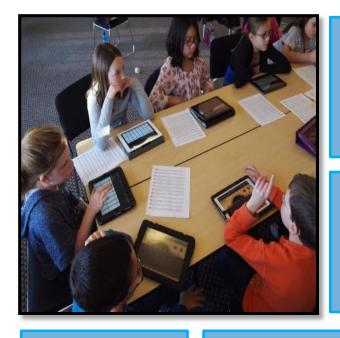
18. HEALTHCARE AND SOCIAL SERVICES





TELE-CARE





Aims

Promoting, educating and raising awareness among children on mobile technology.

Description

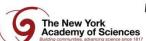
Developing every type of mobile initiative in schools and other areas, by providing the suitable material (tablets, sensors, etc.).

Strategic Projects

- 1. Educat
- 2. mSchools
- 3. Raspberry BCN (Smart Hort)
- 4. 4DLife
- 5. STEM

- 6. Mobile Social Day
- 7. mLearning
- 8. Leaders in ICT promotion
- 9. Mobile Class
- 10. Smart education track





























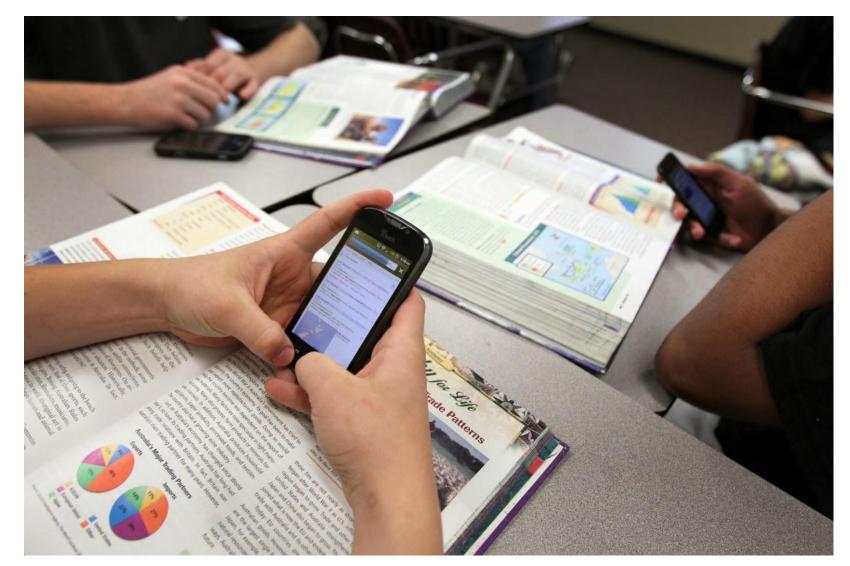






19. EDUCATION



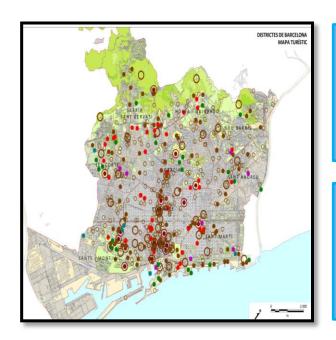


mSCHOOLS Barcelona School



20. SMART TOURIST DESTINATION





Aims

Promoting and developing a responsible and sustainable tourism.

Description

A series of initiatives aimed at developing tourist activity in Barcelona that is noted for its economic, social and environmental sustainability.

Strategic Projects

- Tourist Information and Management System
- 2. Virtual Tourist Office
- 3. Tourism Biosphere Certification 8.
- 4. Tourist Management Spaces
- 5. mTourism

- 6. Database on points of interest for tourists
- 7. Catalunya Experience
- 8. Tourism GIS
- 9. Smart Shopping BCN

Principal Partners





















Generalitat de Catalunva













20. SMART TOURIST DESTINATION





VIRTUAL TOURIST OFFICE http://www.bcn.cat/



21. INFRASTRUCTURES AND LOGISTICS





Aims

Understood from a comprehensive perspective of the city, it involves managing the flow of goods and services to achieve public satisfaction.

Description

A series of initiatives aimed at managing and planning the city's infrastructures and logistics as efficiently, effectively and competently as possible.

Strategic Projects

- 1. Smart Port
- 2. Smart Airport
- 3. Micro-distribution of goods
- 4. Industrial Ring
- 5. Model for integral management of urban tunnels.

Principal Members



















21. INFRASTRUCTURES AND LOGISTICS





BARCELONA PORT

22. LEISURE AND CULTURE





Aims

Acquiring new values, attitudes and forms of behaviour towards technology, innovation, participation, etc., in the city.

Description

Activities that promote the culture of innovation, experimentation, etc., while also enabling the personal growth of Barcelona city residents and/or tourists.

Strategic Projects

- Barcelona Laboratori
- 2. Anella Creativa
- 3. Canòdrom
- 4. Creatifi BCN
- 5. Mercè Tecnològica

- 6. Escolab
- 7. Petits Talents Científics
- 8. Grec Innovació
- 9. Technology and Sport





















22. LEISURE AND CULTURE





GIANTS Plaça Sant Jaume



23. INTERNATIONAL POSITIONING















Positioning Barcelona in the world as a centre for knowledge, development, citizen quality of life and sustainability.

Description

Playing host to every kind of trade fair, event, congress, etc., in the realm of smart cities (Habitability, Feasibility, Sustainability).

Strategic Projects

- **Participation in international events**
- International events and relations (SC Expo, MWC, City Next, etc.)
- Compromís Ciutadà 22
- **BCN Model**

Principal Partners











































CITRIX Gartner ORACLE









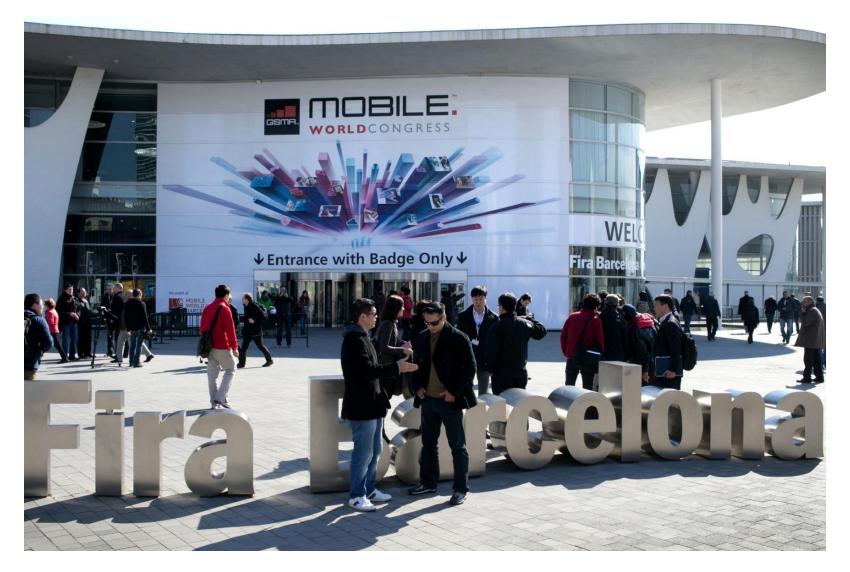






23. INTERNATIONAL POSITIONING





MOBILE WORLD CONGRESS 2013

Fira Barcelona



24. INTERNATIONAL COOPERATION





Aims

Working jointly to achieve several of the same goals for groups and all those interested who are directly or indirectly connected to smart cities.

Description

Making the most of knowledge and experiences of every member with a connection to smart cities, to speed up the habitable, feasible and sustainable transformation of cities.

Strategic Projects

- **City Protocol**
- **European Relations (European Projects)**











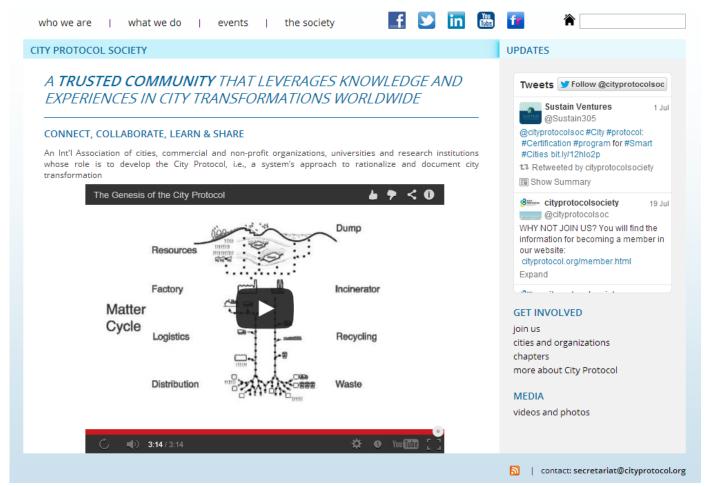
24. INTERNATIONAL COOPERATION





BUILDING TOGETHER BETTER CITIES

> > INTRANET > WIKI



CITY PROTOCOL SOCIETY

http://www.cityprotocol.org/

http://smartcity.bcn.cat/en/

Municipal Institute of Information Technology

