Partnership for Urban Innovation

Commission 5

Report

2011

metropolis ●

Partnership for Urban Innovation

Presidency:	Barcelona
Vice Presidency:	Bangalore – Government of Karnataka
Presidente:	Jordi Hereu, Alcalde de Barcelona
Participating Cities:	Abidjan, Addis Ababa, Amman, Athens, Bamako, Bangalore (Government of Karnataka), Bangui, Barcelona, Belo Horizonte, Berlin, Brasilia, Brazzaville, Brussels, Cairo, Colombo, Cordoba, Daegu, Dakar, Diyarbakir, Douala, Gauteng Province, Guadalajara, Guangzhou, Guarulhos, Gyeonggi Province, Istanbul, Kampala, Kinshasa, Madrid, Manchester, Mashhad, Melbourne, Mexico City, Montreal, Moscow, Niamey, Nouakchott, Paris-Ile-de-France, Porto Alegre, Rabat, Rio de Janeiro, Santiago de Chile, São Paulo, Seoul, Shiraz, Stockholm, Tabriz, Taipei, Teheran, Wuhan, Yaounde.
Other Organizations:	CISCO, The Climate Group, IBM, Leuven University, Abertis, INEC/City Net, Telefonica, Urban Age Institute, Centre for Urban and Regional Excellence (India), Evensen Dodge, INTA, National Institute for Urban Affairs India (NIUA), Society for Development Studies (SDS – India), UN-Habitat

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01.

INTRODUCTION AND OBJECTIVES

The Partnership for Urban Innovation (PUI) is a standing commission approved by the Metropolis General Assembly within the framework of the 2009-2011 Strategic Plan.

Metropolis is keen to explore innovation processes in cities and transmission mechanisms between them. It therefore asked the Commission to analyze and make recommendations on procedures to:

1. Foster innovation in cities.
2. Strengthen and publicize innovative solutions among cities.

The Commission proposed working in close alliance with the private sector and other interested institutions. It assembled a group of experts from around the world to reflect on and offer advice regarding **what to do** and **how to help** local and city governments and their stakeholders to foster and publicize urban innovation.

The Commission's action plan covers three types of actions:

1. A reflection on the processes of innovation and transmission of urban innovations.
2. Specific partnerships for urban innovation in cities.
3. General promotional activities regarding urban innovation.

02. ACTIVITIES

The main activities the Commission carried out during the 2009-2011 period were:

2.1. Meeting to launch Commission 5: Partnership for Urban Innovation

(Barcelona, 15-16 June 2009)

This meeting assembled 36 delegates from Metropolis member cities and private enterprises engaged in fostering innovation in cities. The delegates also had the chance to attend the World Summit for Innovation/HIT Barcelona, a congress which drew over 2,000 innovation experts from the public and private sectors.

A **"Development Framework for Innovation for Cities"** was discussed at the meeting, along with the Commission's work plan.

2.2. Second Commission 5 meeting

(Barcelona, 6-7 October 2010)

The second Commission 5 meeting was held on 6 and 7 October 2010 and included the participation of 43 Metropolis member cities and 8 collaborating institutions.

The meeting involved various sessions that focused on innovation as a driving force in cities. Speeches were presented on urban innovation and there was a conference and debate session entitled "Innovative Solutions for Emerging from the Crisis", during which the OECD's LEEDs program and the study "Barcelona Principles 2010" were presented. A workshop on innovation, environment and mobility was held, which saw interesting ideas and proposals for cities emerge from the contributions of speakers from London, San Francisco, Rio de Janeiro, Paris, Berlin, and Barcelona. Technical visits were organized to 22@Barcelona, the new innovation district; the Barcelona Biomedical Research Park; and the Delta del Llobregat, a logistics and environmental transformation project.

2.3. Collaboration with innovation-friendly businesses, institutions and networks

(CISCO, Curitiba, CEOs for Cities, Climate Group, and IBM)

2.3.1. Collaboration with CISCO

At the proposal of the Commission, Metropolis entered into an agreement with CISCO, signed by the Metropolis president Jean Paul Huchon and the CISCO vice-president Wim Efrink, which covered the following matters:

- Participation in the Commission, viability analysis on the creation of ITC-based urban innovation centers and collaboration in the Shanghai Expo 2010 activities.
- Use of a CISCO-designed digital collaboration platform for Metropolis Commission activities and use of the CISCO video-conferencing facilities for virtual Metropolis meetings.
- oint development of training activities, taking advantage of CISCO's experience in its "Leadership Academy".
- Participation and collaboration in a survey to analyze the 2030 vision on sustainable cities.

Specifically, the following activities were developed in conjunction with CISCO:

- CISCO representatives took an active part in all the Commission's activities and Commission representatives did likewise in CISCO activities, especially with regard to its Connected Urban Development program. In particular, the two associations worked together on organizing the **Partnership for Urban Innovation world conference within the framework of the EXPO de Shanghai** (Shanghai, 17-18 June 2010).

- CISCO and Barcelona ran a viability study for the creation of the *Barcelona Innovation Center[1]*, pilot project for fostering information and communication technology platforms in very dense cities and to promote it among other cities.

- Metropolis and CISCO publishe *Innovation and the Urban Sustainability Agenda[2]*, the result of a joint survey carried out with Metropolis members to learn about city leaders' plans, priorities and challenges in relation to sustainability. The study sought information on the main priorities of municipal leaders from around the world and the efforts they are making to create more sustainable cities. The study is part of a research project analyzing the challenges facing cities, the way for municipal leaders to introduce innovations, where cities stand today regarding the search for more sustainability, and the perception the leaders have with regard to information and communication technologies (ITCs) in fostering greater sustainability.

[1.] See Appendix 1

[2.] Authors: James Macaulay and Shane Mitchell, CISCO Internet Business Solutions Group (IBSG)

- The Metropolis Training Institute in Montreal prepared the publication *"Climate Change. Cities in Action"* in conjunction with CISCO. It sets out actions in favor of sustainability and technological innovations undertaken by Metropolis member cities, the participants in the *'Connected Urban Development'* program and other leading cities from around the world. The measures are an incisive and stimulating good practices reference point with which to deliver on the goals of the Smart+Connected Communities initiative. It involves the appearance of a new way of understanding the role of technology in the sustainable development of cities, i.e., the urban services platform. The Metropolis/CISCO publication is an important contribution to the creation of a detailed good-practices program for economic, environmental, and social sustainability; technological platforms; and methodologies that can be used as a reference for other cities from around the world.
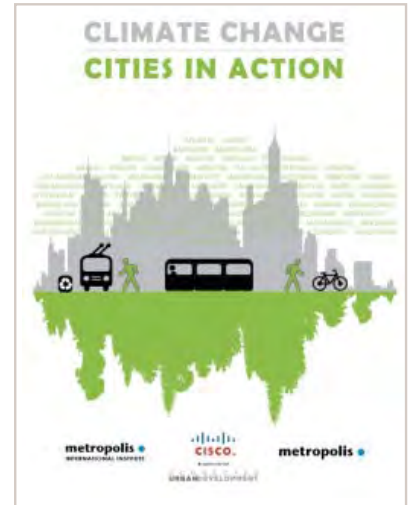
- CISCO created the Smart+Connected Communities Institute, an online community to foster sustainable cities. Metropolis and the Training Institute are collaborating in the initiative and negotiating the signing of a collaboration agreement.

2.3.2. Collaboration with other institutions

Commission representatives attended and participated in various meetings on innovation organized by collaborating enterprises and institutions. In particular we would mention The Climate Group, IBM, CEOs for Cities and the International Conference on Innovative Cities (ICIC) in Curitiba.

The Commission participated in and supported the International Conference on Innovative Cities[3] (10-13 de marzo de 2010) d(10-13 March 2010) in Curitiba and the activities of the innovative cities network organized within the framework of the conference.

The Commission is also in contact with *CEOs for Cities*, an active organization from the US which focuses on innovative ideas and projects for American cities.

Metropolis has signed a collaboration agreement with *The Climate Group*, which will provide continuity to the activities with CISCO and foster Metropolis's activities in relation to climate change.

Metropolis maintains contacts with IBM and its *Smart Cities* program in view of signing a collaboration agreement.

[3.] Metropolis provided institutional support for the event.

03.

CONCLUSIONS AND RECOMMENDATIONS

3.1. A reflection on the processes of innovation and transmission of urban innovations

The Commission presented a **"Development Framework for Innovation for Cities"** at the first meeting. This is a theoretical outline for analyzing and discussing innovation processes in cities.

Firstly we should mention that two distinct but interrelated themes overlapped in the concept of urban innovation: on the one hand, large metropolitan areas play a key role as regional innovation systems, which must permit innovating enterprises and institutions to appear in different sectors and activity clusters. On the other hand, local governments and city administrations are at the same time one of the sectors or clusters that must foster the introduction of innovation in their services or actions.

The public services sector is part of the same dynamic as other production sectors. Although private enterprise is usually considered a main player in innovation and competitiveness, the administration sector and public enterprises should follow similar steps. Technological innovation, product and market innovation, managerial and organizational innovation, innovation in the supply and value chain, open innovation, creativity, and the creation of 'culturally' innovative environments that attract universities, innovation centers, business start-ups, and new talent are all concepts that should form part of the language and action of the new innovative public administrations.

The Commission focuses on innovation within public administrations and for metropolitan area services. It wishes to analyze innovation processes in local and metropolitan governments and the mechanisms used to transfer innovations between governments at the national and international levels.

The first statement refers to the need for partnerships between the public and private sectors for the development, implementation, and transmission of innovations.

The innovation process is a complex process that currently requires joint work in the different aspects of innovation. Public administrations are not organized to assume the complexity of this innovation process and require help and collaboration form the private sector.

Increasingly fast technological changes in fields as distinct as biomedicine, genomics, ITCs, photonics, and energy, to give just a few examples, have specific impacts on different public services and require joint action with the agents involved in technological innovation.

Public administrations are forced to also promote an innovative revolution in the definition of markets and public products. Innovation to satisfy new requirements on the part of the public is taking place both in developed countries (which are reviewing their welfare states) and in developing countries (which are seeking new urban sustainability models). The slogan of what is known as 'Gandhian engineering', i.e., "more for less for more" is producing a paradigmatic change in urban innovation. Two examples of this Gandhian engineering can be BRTs (Bus Rapid Transits) and generic medicines: more mobility or health at a lower cost and for many more people.

Managerial and organizational innovations are difficult in any organization but probably even more so in a public one. Four key aspects emerge when analyzing the internal procedures of local and city governments to foster innovation:
1. the perception of symptoms of change;
2. the definition of a clear future model;
3. leadership that fosters transformation; and
4. change management and implementation.

Each of these aspects has its problems in public administrations, which are normally more resistant to change and have a greater aversion to the risk of failure.

Innovation in the supply and value chain is another key aspect in the private/public sector relationship. The borders between the two are enormously diffuse at present. In what we could call the value chain of any service we can find that it involves different phases of public responsibility, private licenses, subcontracting, and the joint participation of members of the public.

If we were to analyze a typical local government service such as the garbage cycle we could find the following process: members of the public are the suppliers of the garbage and co-participate in an initial garbage separation phase in a campaign promoted by the local government, which offers different private licenses for selective collection and also sets and collects public rates for the service. Waste treatment, by requiring economies of scale and strong investment in infrastructure, usually depends on a higher level of government than the metropolitan or regional one, which is in charge of controlling and awarding the waste treatment service to a specialized private company that in turn can subcontract out some of its services. The members of the public also usually pay a rate or special tax for waste treatment. The complexity of this value chain shows the difficulty that emerges from introducing innovations in a waste collection and treatment process that appears to be quite simple but which, however, requires the coordinated action of a number of interconnected public and private agents.

In the analysis of the mechanisms for transferring innovations between administrations, there is the importance of creating communication channels to publicize innovations between cities. City associations and networks have a responsibility and the capacity to help turn an individual innovation in one city into a shared good practice at the regional, national and international levels; however, their capacity to do so is not always well developed. It is important, though, to point out that experts say that innovations are not assessed on the basis of objective scientific studies, and that more importance is given to the subjective evaluation an individual has when he or she receives information directly from the parties responsible for the innovation in another city. Publicizing innovation therefore appears to focus on the dissemination between peers through horizontal networks based on informal assessments of the innovation. Open innovation has a special meaning and repercussion for a network of major metropolises facing similar innovation problems in different corners of the world and which work in partnership with different businesses.

Some of the main barriers to the implementation of innovations in local administrations are also analyzed. Barriers to innovation can stem from individual values and attitudes and the values and attitudes of society or the administration itself. The implementation of innovations requires working on these aspects, i.e., individual and social values and attitudes, at the same time. For example, if we want urban mobility to contribute to a reduction in the levels of CO_2 emissions, it requires a change in the values and attitudes of administrations to curtail the use of private vehicles and, at the same time, to promote an efficient and extensive public transport system. Change towards an innovative culture, at the individual and social level at the same time, is an indispensable condition for innovation policies in metropolitan governments to be a success.

Cultural and institutional factors are often behind the failure of urban innovation projects.

3.2. Specific alliances for urban innovation in cities

As a long-term goal, the Commission established seeking public and private pilot alliances in four areas of particular political interest:

• Municipal service management
• Environment, mobility and energy
• Public collaboration
• Social services

Other sectors could be added in the future, as they are incorporated into the new cities' and companies' initiative.

Metropolis therefore seeks alliances between cities and international companies that have shown they can play a leadership function in the development of innovative ideas and services for cities.

In the initial phase of the plan, Metropolis sought a limited number of alliances. A partnership ought to focus on the existing programs developed by companies which could be related to interested cities.

During this period a pilot operation was carried out between CISCO and Barcelona to design an urban innovation project on information and communication technology platforms (see document Appendix 1). Barcelona and CISCO pooled a taskforce which, based on the needs of the city and CISCO's experience and knowledge regarding ITCs, would be able to address the creation of an urban innovation center with an international projection.

Barcelona Urban Platform Model: From Silos to Integrated Services

INFORMATION SHARING AND INDUSTRIALIZATION OF CREATION AND MANAGEMENT OF SERVICES


Source: Barcelona City Council
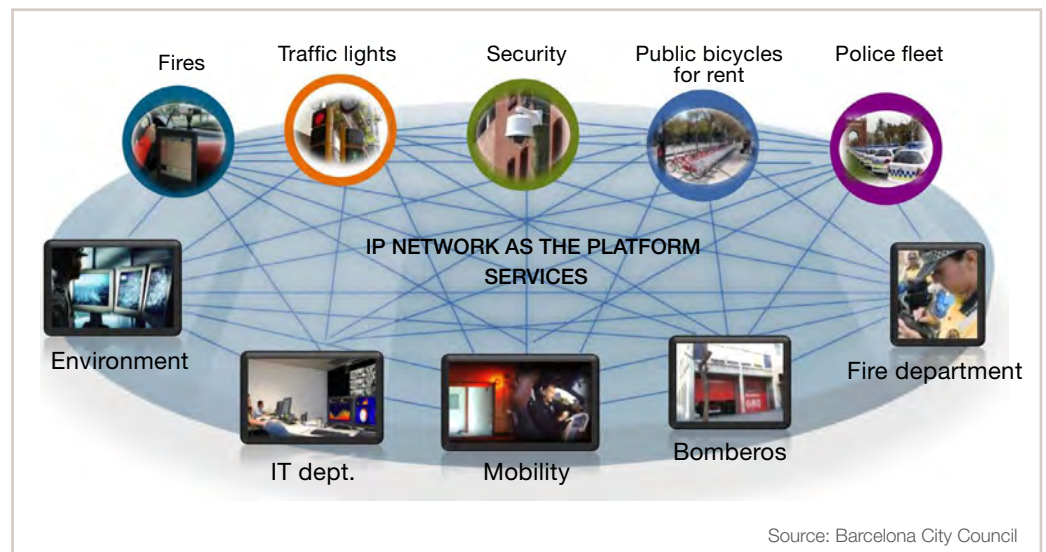
This is a pilot project to explore the viability of creating public/private centers between a city and one or various businesses that engage in sectors of urban innovation. Metropolis will make its contacts network available to Barcelona and CISCO so that urban innovation can be transmitted to other Association members for their benefit as well.

The idea behind the project is to develop an operational concept of a smart city for a densely urbanized Western city where different technologies for different types of urban services have been implemented. The local government was aware of the need for new and more-integrated urban infrastructures and information systems to enable the implementation of new urban services.

Barcelona Innovation Centre
FUNCTIONAL ILLUSTRATION
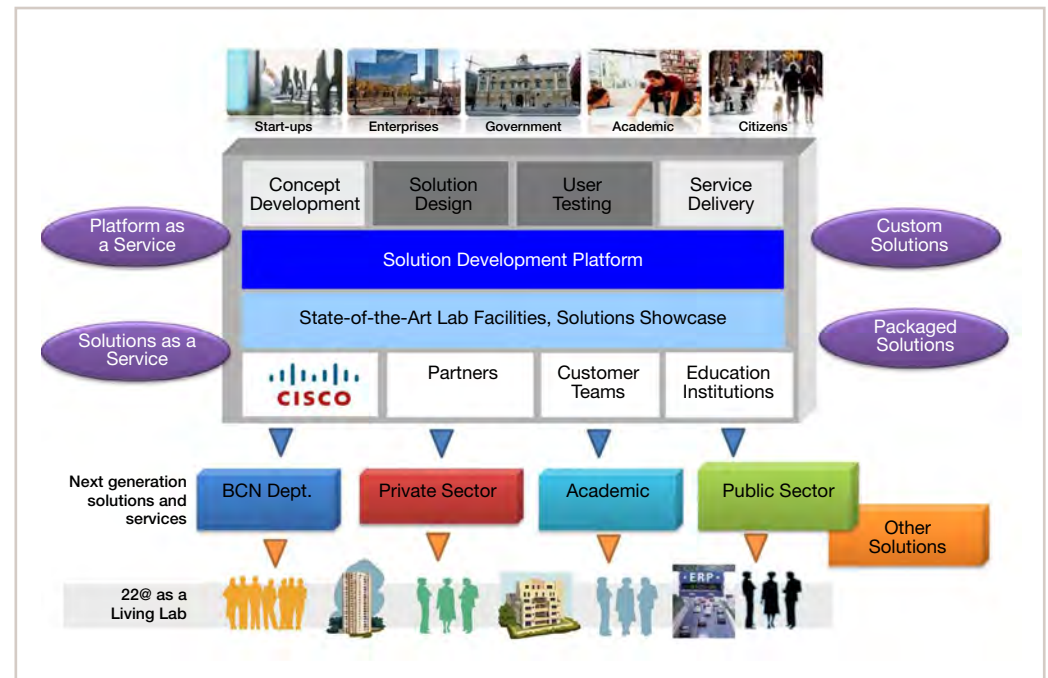
The project goals are to:

1. Optimize the urban platform of information infrastructures and services.
2. Establish an innovation center that can develop and test new services on the integrated platform.
3. Seek a management and business model that facilitates the implementation of new innovative services in the city.

The existence in Barcelona of a new 'technology' neighborhood that is being developed (Distrito 22@), with new information-related infrastructures and services, together with the city's experience as an 'urban lab', in which it is possible to run tests on new technology products in a real urban environment, was a good starting point for the project. The local government got firmly behind the initiative.

For its part, CISCO is involved in a great deal of activity regarding innovation in urban environments, both through reflection programs and pilot projects (see its _Connected Urban Development program_) and the implementation of particular business solutions. The city of Bangalore, the site of CISCO's operational center in this urban technologies sector, has assumed the vice-presidency of the Metropolis Commission on Innovation.

The local government has got behind the project to find ways to:

4. Increase efficiency and effectiveness in urban area and services management.
5. Drastically reduce the cost and time of implementing new services, boosting flexibility in new developments.
6. Improve the accessibility, control and exchange of information between departments and administrations.
7. Raise public trust in local governments and their ability to provide quality services in the right time.
8. Foster its collaboration agreements with other levels of government and private enterprises.

Metropolis, for its part, hopes that the project can be used to establish an innovation center that will make it possible to test new urban services and support the exchange of experiences and best practices among the Association's members.

Finally, cities and businesses must learn to jointly develop new management and business models that facilitate the implementation of new urban services. In the same way that the internet and new technologies are leading to drastic changes in sectors such as music, film and books, the urban services sector should seek new management and business models and question a number of its legal regulations that can sometimes hamper the introduction of innovative services. Institutional and legal questions are some of the elements that currently block change in the introduction of innovations in urban services.

3.3. General promotional activities regarding urban innovation

Metropolis, as a network of cities and metropolitan regions, has a special responsibility with regard to the promotion of innovations. Indeed, the key question the Commission's members asked themselves was: "Why should innovations and good practices take so long to be transferred between members and why does it seem that we always have to start again from zero every time we try to transfer an experience from one city to another?"

A network of cities, in partnership with businesses and institutions, would appear to be a good channel for speeding up innovation in urban environments. The city network could also facilitate the addition of demand-side markets, which would speed up the introduction of innovations that require markets that are bigger than a single city or whose development costs cannot be absorbed by a small market.

The reality, however, seems to confirm the difficulty in sharing solutions. Local governments - and metropolitan ones as well - act as isolated institutions, depending on a culture, institutions and legal and economic regulations that impede standardization and the scalability of solutions between different cities. The need for strong leadership to promote innovation makes it even harder to extend solutions to other cities.

However, innovation in urban services should find new models of collaboration and partnership between cities and businesses. These new models must promote mutual learning but may need to go beyond the exchange of best practices and experiences. It is necessary to anticipate future changes. The reflections and analyses of the future of cities which are on the agendas of cities, universities and a number of global businesses should be shared. Only with information from each of these city stakeholders can we create the knowledge needed to address the future changes of cities.

04.

SUMMARY OF RECOMMENDATIONS

4.1. For city governments

- Innovation management should be clearly introduced into the organization of local and city governments. Its introduction will require training in individual skills and organizational abilities, which should be developed at the same time.

- Innovation must be across-the-board, covering different organizational areas at the same time. It seems to be reasonable to create the figure of CTO (Chief Technology Officer) or CIO (Chief Innovation Officer) within an organization, with cross-cutting responsibilities with regard to technology and organizational change.

- Innovation in city governments is mainly based, as in other sectors, on technological changes, changes in the public's needs or demands, and changes in supply chains.

- Public/private sector partnership for the development, implementation and transmission of innovations is absolutely indispensable. At the same time, innovation requires competition and cooperation. The public/private partnership should find new legal formulae that facilitate cooperation and innovation.

- Leadership for innovation and public sector transformation must come from a leader with a vision, capable of sensing the need for change, initiating the transformation and carrying it out.

- The perception of change and necessary innovations can be fostered by personal knowledge of the experiences of other cities or collaborating businesses and institutions. Open innovation and shared experiences require participation in international networks of mutual learning.

- Local and metropolitan governments should promote pilot innovation projects in collaboration with external businesses and institutions.

4.2. For Metropolis:

The Commission has suggested different actions to promote urban innovation in cities and within the Metropolis network:

- **Creation of a network of innovative professionals:** Metropolis will seek to create a network of innovation professionals and put Metropolis's social networks at its disposition to facilitate contact and the exchange of information.

- **Knowledge-pooling:** the members asked to promote a process of monitoring best practices, consolidating an inhouse format that would make it possible to share innovative experiences.

- **Pilot projects:** promote a limited number of pilot projects between cities and businesses that could be used as demonstration projects and make it possible to roll out new public/private partnership models regarding particular aspects of urban services.

- **Training and education in cities:** introduce the topic of innovation management in training and education courses to facilitate the training of the heads of local and metropolitan administrations. Metropolis will also work in conjunction with companies and institutions. The Metropolis Training Institute will coordinate the training and education activities.

- **Awards for best urban innovations:** propose an international award for the best urban innovations.

- **Promote a discussion and reflection platform on innovation in cities:** seek the collaboration of cities, businesses and institutions that are fostering reflections on innovation and the future of cities to establish common discussion and reflection infrastructure.

APPENDIX 1

DEFINITION OF THE BARCELONA INNOVATION CENTRE

The SMART CITY model

In the current framework of technological and economic changes brought about by globalization and the incessant process of integration, the world's cities are facing the challenge of combining competitiveness with sustainable urban development at the same time.

Clearly this challenge and the model for a solution will necessarily have a series of impacts on aspects of urban quality such as buildings, the economy, culture, and social and environmental conditions.

The Smart City model was established as a response to this challenge for cities in the current panorama and is a strategy that involves different aspects of the development and management of the urban space, awarding increasing importance to information and communication technologies (ICTs).

That is why the development of the Smart City concept has started to form part of the goals of many cities, and Barcelona is no exception.

From the viewpoint and suite of powers concerned, Barcelona City Council understands that good city management and good administration of the public space are crucial to the promotion and operation of the city and the quality of life of its people.

The Barcelona Innovation Center (BIC) Development Model

The development model being carried out in Barcelona consists of three levels: infrastructures located on public roads; the urban platform, which acts as a bridge between physical urban services and devices (sensors and actuators) and, finally, the development of new services themselves.

Within the first level, i.e., **infrastructures on public roads**, the city of Barcelona has an extensive fiber-optics network which is being complemented with wifi access points.
The fiber-optics network is used to provide services that require high levels of broadband (basically connection with municipal buildings and video signaling in transportation).

By rolling out wifi access points, the other services based on sensors and actuators on public roads are provided. This wifi network presently covers the main streets in the city, with over 400 access points.

The second level, i.e., that of the **urban platform**, is where the CISCO draft agreement comes in. This agreement consists of the development of a platform to manage information, from acquisition through to when it is made available for service development via the Open Data model.

The third level involves **service development**, in which Barcelona has a long history, both with regard to e-government and e-democracy matters and traffic management.

The end goal the model pursues is that anybody will be able to roll out new services based on Open Data standards and configure something similar to a set of tools for application development (also called SDK, or "Software Development Kits") for Barcelona. Any organization or agent (public or private) can draw on this framework of development facilities to roll out an application based on free-access data and predetermined regulations.

Silo management systems

Historically the services the city provides have been in response to needs from different sources and of different types. To solve these needs, which emerged at a given point in time, the best technology available in terms of information and communication was used, which has given rise to a large number of disparate and unconnected technologies, each aimed at solving a particular problem.

This disparity of requirements has led to different City Council departments which each have their own systems based on proprietary technologies (to a greater or lesser degree) that have historically been offered and implemented by local providers (sewerage, public lighting, traffic light management, different information panels, etc.)

Today, this disparity justifies the existence of organizational models with silo management systems (colloquially known as 'fiefdoms') which make it very complicated to develop Open Data systems.

System unification

The appearance of the IP standard on which modern telecommunications networks is based represents an opportunity to unify and subsequently industrialize information management.

The goal of this unification is to have a system which on the one hand can be used to connect physical devices like sensors and actuators and on the other hand to use the resulting data, processed to a greater or lesser extent, to develop services.

This urban platform, essentially established by an intermediate layer that implements communications and data processing, is the object of the developments we want to carry out with CISCO.

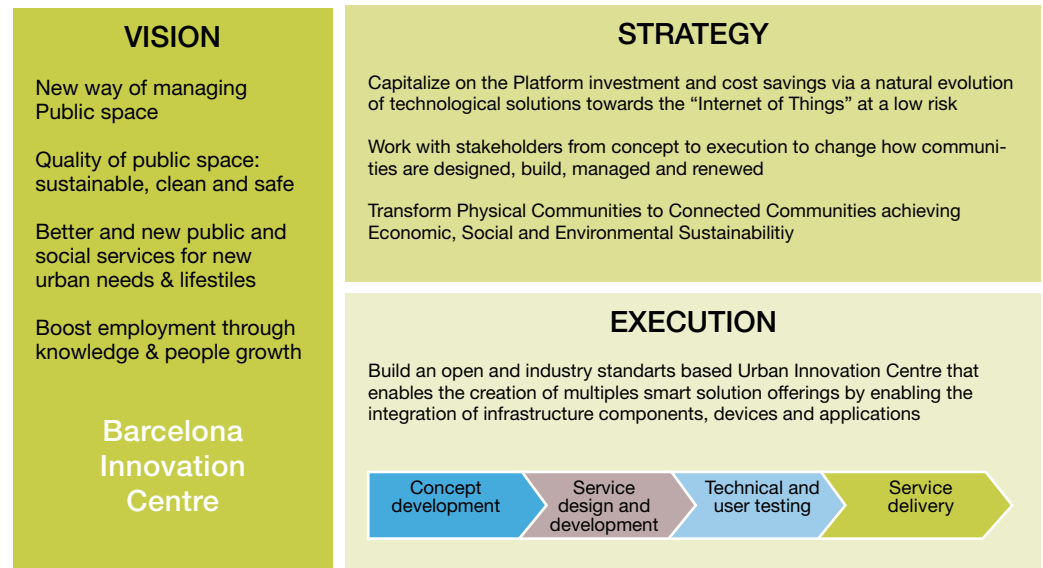## Results of the BIC development model

The urban platform created (see Table 1) and which acts as a bridge between devices and services, between the physical and the logical, joining the different points of the structure via fiber optics or the wifi system, enables:

- Ubiquitous service provision
- The simple connection of new sensors or actuators on public roads: you just have to connect them to the platform, which recognizes them by identifying the dimensions they work on, the type of units handled, how their data are inventoried and who has access to the data and how, etc.

- The monitoring of information by time and by geographic location.
- The system's self-generating inventorying means we always know what is and what is not available at any time.

This industrialization is the ultimate aim of our collaboration with CISCO.

Table 1. VISION – STRATEGY - EXECUTION

VISION	STRATEGY
New way of managing Public space	Capitalize on the Platform investment and cost savings via a natural evolution of technological solutions towards the "Internet of Things" at a low risk
Quality of public space: sustainable, clean and safe	Work with stakeholders from concept to execution to change how communities are designed, build, managed and renewed
Better and new public and social services for new urban needs & lifestiles	Transform Physical Communities to Connected Communities achieving Economic, Social and Environmental Sustainabilitiy
Boost employment through knowledge & people growth	**EXECUTION**
Barcelona Innovation Centre	Build an open and industry standarts based Urban Innovation Centre that enables the creation of multiples smart solution offerings by enabling the integration of infrastructure components, devices and applications

Concept development → Service design and development → Technical and user testing → Service delivery

Agreement between CISCO and Barcelona

CISCO and Barcelona City Council signed a collaboration agreement on 16 February to make Barcelona a global reference point in urban development and economic growth.

The initiative is designed to develop an intelligent urban Platform based on a network that employs different devices to connect a great many service areas including logistics, health, education, transport, and security. Plans for the second phase involve the creation of the Barcelona Innovation Centre, which will produce jobs and bring down telecommunications costs in the city. The model will also be exportable to other cities.

Commission 5

Partnership for Urban Innovation

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