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| Microsoft CityNext  Barcelona Realizes Vision of Innovative City Governance with Cloud, Devices, and Apps |

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| The City of Barcelona has a global reputation for innovation. Many of the technological solutions that the city has adopted in recent years are at the leading edge of city management. Microsoft cloud services and devices play a transformative role in supporting several of the city’s initiatives, from providing data center management solutions that increase city employee productivity, to hosting and analyzing public data. Apps for Windows play an increasing role in citizen engagement and support accelerated opportunities via the Microsoft BizSpark program. | |  | | --- | |  |   **Customer:** City of Barcelona  **Country or Region:** Spain  **Industry:** State and local government  **Employees:** 6,749  **Partners:** [Atos](http://atos.net/en-us/home.html), [Bismart](http://www.bismart.es/), [Seidor](http://www.seidor.com/us/), [Spenta](http://www.spenta.es/en-US/Pages/default.aspx)  **City Profile:** Barcelona is the capital of Catalonia, Spain, and the second-largest metropolitan area in the country, with a combined population of 5 million.  **Cloud Services and Devices Platform:**   * Identity, Security, and Device Management * Communications and Collaboration * Data Center and LOB Platform * Big Data and Analytics * CRM and ERP * Phones, Tablets, PCs   **Microsoft Software and Services:**   * Windows Server 2012 Datacenter * Microsoft Dynamics CRM 2011 * Microsoft Office 365 * Microsoft Services * Microsoft SQL Server 2012 * Windows 8 * Windows Azure * Windows Azure SQL Database * Windows Phone  |  | | --- | |  |   Microsoft CityNext  [www.microsoft.com/citynext](http://www.microsoft.com/citynext)  Customer Success Stories [www.microsoft.com/casestudies](http://www.microsoft.com/casestudies)  Take this story with you!  C:\Users\v-nacamp\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\Barcelona_CityNext_201373162141.jpeg |
| Summary  The [Mobile World Capital](http://mobileworldcapital.com/), a former and future host of [Smart City Expo](http://www.smartcityexpo.com/), and a leader in the [City Protocol Society](http://www.cityprotocol.org/index.html), Barcelona is recognized as being at the forefront of innovation in city management, having implemented many initiatives that use technology to improve delivery of services to citizens, and increase productivity of employees.  Due to their [proven scalability and security](http://www.microsoft.com/casestudies/Windows-Azure/City-of-Barcelona/City-Government-Eases-Transition-to-Cloud-Through-Data-Center-Briefing-and-Tour/710000000815), cloud services and devices from Microsoft support a number of key initiatives that the Barcelona City Council has implemented—both directly and in collaboration with Microsoft partners. These services and devices include:   * **Identity, security, and device management**. An enhanced [virtual desktop infrastructure (VDI)](http://www.microsoft.com/casestudies/Windows-Server-2012-Datacenter/City-of-Barcelona/City-Government-Expands-and-Improves-Desktop-Virtualization-with-Software-Upgrade/710000001552) for field employees, supported by the Windows Server 2012 and Windows 8 operating systems, which enables efficiency and greater productivity. * **Communications and collaboration.** Deployment of Microsoft Office 365 to the city’s police and firefighters. * **Data center and line-of-business (LOB) platform.** Applications, such as [Third Place](http://www.findthirdplace.com/default.aspx?action=changeLanguage&p=en-US), that are supported by Windows Azure. * **Big Data and analytics**. [OpenData BCN](http://www.microsoft.com/EN-US/showcase/details.aspx?uuid=ab775a5c-4095-4923-93ef-2aef89f095b2), supported by Windows Azure and utilizing business intelligence (BI) analysis tools through partner [Bismart](http://www.bismart.es/), which is also developing a Big Data application for the La Mercè festival using Microsoft SQL Server 2012. * **CRM and ERP.** A Microsoft Dynamics CRM implementation supporting the strategic and comprehensive Citizen Care and Engagement initiative. * **Phones, tablets, and PCs.** A partnership supporting third-party developers in creating Windows 8 and Windows Phone apps through the Microsoft BizSpark program.   All this innovation, supported by the power of the cloud and rendered mobile via the flexibility of devices, means Barcelona continues to be a shining example of innovation in the twenty-first century—leading the next generation of cities.  “We will collaborate closely with Microsoft to consolidate Barcelona’s position as one of the leading smart cities in the world.”  Xavier Trias, Mayor of Barcelona |

The Full Story

Reinventing a City Through Technology

The City Council is reinventing Barcelona, using new technologies as pillars of future growth and sustainability.

Selected by the GSM Association (GSMA) as the Mobile World Capital till 2018, Barcelona expects to become one of the leading “smart cities” in the world. Through its work with the City Protocol society, and technology thought leaders from industry and academia, Barcelona is helping promote new standards and innovations for smart city services that are being adopted by other cities around the world.

Microsoft is a close partner in this effort, helping the city to accelerate innovation, drive new services for citizens and visitors, and create and support new technology-based companies and entrepreneurs, while also enabling the city government to reduce costs through new cloud computing services and devices.

“Thanks to our partnership with Microsoft, we´ve been able to deliver better services from the new workplace environment for our civil servants,” says Manel Sanromá, CIO of the City of Barcelona. “We´ve increased our efficiency in citizen care services thanks to Microsoft Dynamics CRM and also increased our transparency with an Open Data solution based in cloud services.”

*Manel Sanromá,*

*CIO, City of Barcelona*

Modern Infrastructure Drives City Services

By adopting the latest tools for **identity, security, and device management**, the Barcelona City Council is improving services for citizens by providing city employees with the latest technology that they need to conduct their work.

Most city employees use standard desktop or portable computers, but the city also implemented a remote desktop computing model (in this case a virtual desktop infrastructure, or VDI) to better meet the needs of field workers. Users can access their desktops from a desktop computer, portable computer, a thin client (devices with less powerful processors and less memory), tablet, or smartphone. Benefits of desktop virtualization include improved centralized control over desktop environments, anywhere access to applications and data, and lower desktop management and client PC costs.

The city already ran the Windows Server 2008 R2 operating system on most of its servers, and in January 2012 it enrolled in the Microsoft Rapid Deployment Program (RDP) for the Windows Server 2012 operating system. Windows Server 2012 provides several innovations that simplify VDI deployments, including a simpler wizard-based setup of virtual desktops and a unified management console for virtual desktops.

“Participating in the RDP would give us a good opportunity to enhance our VDI setup and also speed our upgrade to Windows 7,” says Eduard Martín, Chief Technology Officer for the City of Barcelona. IT teams can deploy operating systems and applications much faster in a VDI environment because software is installed once, on a data center server, rather than locally on individual PCs.

Martin also felt the RDP could help speed the city’s upgrade to the Windows 7 operating system. However, with support from Microsoft Services and Microsoft partner Seidor, the city decided on a trial of Windows 8 devices in the VDI. After a successful pilot program involving 200 users, the city decided to skip Windows 7 and upgrade all of its desktops to Windows 8.

The new technology is great for employees, but also great for citizens. “On desktop PCs, a drag or zoom action on a map takes about a half-second to process,” says Alex Serret, Engineer for Technology Innovation in the City of Barcelona IT Department. “On the VDI desktops, drag and zoom actions are instantaneous. Faster application performance translates directly to higher employee productivity, and higher productivity translates to better service to citizens.”

Although use of Windows 8 is currently limited to the VDI envi-ronment, Barcelona plans to upgrade more employee devices in the coming year—expanding from the initial pilot group of 200 to installation on 2,000 computers

Key Employees Gain from Cloud Email

In addition to providing employees with the latest devices and infrastructure needed for a modernized workplace, the Barcelona City Council has provided **communication and collaboration** tools to enhance the employee experience while also saving money.

Here’s one example: It is a legal requirement for employees to receive a payroll receipt each month. For police and firefighters who did not have easy access to electronic mail, this necessitated use of traditional mail. “The sending of payroll receipts was a manual and costly pro­cess,” says Martín. “Finding a solution to avoid this cost, and also improve the ease of payroll interactions for employees, was a priority.”

Microsoft Exchange Online, a cloud-based email service that is part of the Microsoft Office 365 communication and collabora­tion platform, proved to be a solution that met the requirements of the city for a low-cost and security-enabled cloud email service that could be accessed on a variety of devices.

Deployment of Office 365 started in December 2012 and was completed by March 2013. Now police and firefighters receive their payroll receipts by email—saving the city 30 percent of the cost of an on-premises solution.

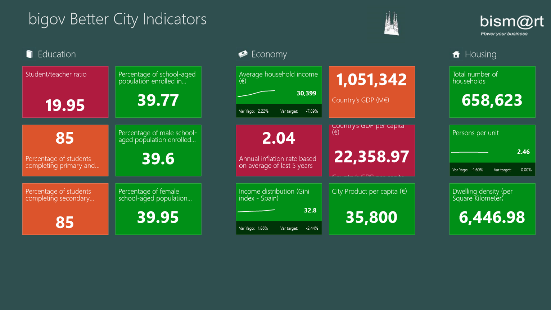
Citizens Access Information in the Cloud

While employees benefit greatly from the city’s investments in technology, the main beneficiaries are Barcelona’s citizens. One of the many ways the City Council has used technology to enhance its relationship with its citizens is by becoming an early adopter of public cloud solutions for its **data center and LOB platform**.

In 2011, the City began to use cloud-based services to make information available to citizens, which could be easily accessed over the Internet. It then wanted to expand its use of cloud services by moving more information and applications to the cloud. However, the city only had experience with private cloud solutions, which were set up within its firewall. “Our strategy shifted to include the use of a public cloud service to share useful public data with our citizens,” says Martín. “We determined that it made sense for us to use public cloud services both for economic reasons and for the ease of technological evolution.”

Barcelona gained a higher degree of comfort in its cloud strategy as a result of its visit to the Microsoft Dublin data center. “Both the Data Center Briefing and tour confirmed our expectations about the care that Microsoft takes―with everything from security and equipment, to the way that it organizes data,” says Martín. “It quickly became clear that Windows Azure is a platform that offers the scalability that we want at our disposal, delivered by a company that has made a sustained commitment to its customers.”

One way in which Barcelona has utilized the power of Windows Azure is in the creation of the “[Third Place](http://www.findthirdplace.com/default.aspx?action=changeLanguage&p=en-US)” portal. With the dual goal of helping businesses be more productive and drawing more visitors to the city, Barcelona city officials and the Microsoft Innovation Center for Productivity decided to launch a portal aimed at helping mobile workers find ideal locations to work no matter where they are in the city.

To showcase its IT excellence, the City of Barcelona wanted to have the portal in place by the Mobile World Congress― just eight weeks away from the start of development. “It was important to us to have the service available before our city would be visited by a huge number of professionals who have mobility as a main priority,” says Francisco Rodriguez, Director of Telecommunications for the City of Barcelona.

Launching the cloud-based portal on Windows Azure took just six weeks, about half the three months it would have taken if the city purchased and configured its own servers. Because the solution is hosted on Windows Azure, it can be easily scaled to offer users a seamless experience, even during peak demand times.

Open Data Enables Economic Growth

The main driver for adoption of a public cloud was better management of the public data that is collected by the city’s municipal operations and recordkeeping practices. In addition to storing data in the cloud for others to analyze, the Barcelona City Council is harnessing the opportunities that city data presents through **Big Data and analytics** solutions.

*The Bismart bigov Better City Indicators dashboard, available as a Windows 8 app*

Having gained confidence in the scalability and security features of Windows Azure, the City Council embarked on the [OpenData BCN](http://opendata.bcn.cat/opendata/en/?cl=1) initiative, intended to standardize digital formats and streamline data analysis. The ultimate goal of the initiative is to promote economic growth by encouraging data sharing between city government and the private sector.

“Open Data is the material for new business in a city,” says Lluis Sanz Marco, Director, Institut Municipal d’Informatica, City of Barcelona. “We are looking to support economic development in the city with all the data that we can supply.”

To realize this vision, the city worked with local partners, including Spenta, a BI and Open Data strategy partner, and Bismart, a [Microsoft Business Intelligence Partner of the Year](http://www.microsoft.com/en-us/news/Press/2013/May13/05-20WPC13PR.aspx).

Bismart helped upgrade the city’s IT systems by deploying Microsoft infrastructure software, including Windows Server 2008 R2 and Microsoft SQL Server 2012. Bismart also deployed a cloud-based business intelligence solution, hosted in Windows Azure and utilizing Windows Azure SQL Database analytics capabilities, called bigov. The bigov solution transforms certain information, previously accessible only at a corporative level, into Open Data information. This means it is open to the public and can be turned into an asset for new business creation and promotion.

With the OpenData BCN initiative up and running, the city offers its citizens a more open, accountable, and efficient government, by transforming the traditional information repository into service information in the cloud. The project includes a dashboard, which uses SQL Server 2012 technologies and is available as a Windows 8 app, called [bigov Better City Indicators](http://apps.microsoft.com/windows/en-us/app/bigov-better-city-indicators/66a37a7a-c1ba-467d-8431-23db8966cb36). The dashboard provides 120 key city indicators that, through Barcelona’s work with the City Protocol Society, will become a benchmark for the city’s level of development and how attractive it is to live or develop a business in.

Big Data Provides Usable Insight

Bismart is also has expertise in Big Data, and is bringing that expertise to its work with the city of Barcelona.

The most important event in the city is the annual festival La Mercè. This is the time when most interaction between citizens and the City Council occurs. Around festival dates, the Barcelona website receives the highest number of visits per day and the highest number of downloads (apps and event programs, for example). The city also receives the highest number of inquiries at its call centers.

All of these interactions yield information, which can be analyzed to ensure optimal experiences for visitors to La Mercè. With the emergence of Big Data tools and techniques for collating and analyzing structured and unstructured data, the question arose: What other information could be useful to optimize the festival experience? Examples include:

* Comments that participants post in social networks about which events they are attending, how much they enjoyed them, or which ones they would never want to see again
* Which music groups visitors will go to see and which of them they didn’t like
* Pictures shared on the Internet
* Positioning information generated by mobile phones

All these sets of data could be valuable if converted into analyzable form for the City Council. The difficulty is that there is an immense variety of data coming from different sources, and only a tiny part can be analyzed via traditional methods.

However, using Microsoft Big Data technology such as SQL Server, SQL Database, and HDInsight, Bismart can capture, manage, and process all this data, and convert it into knowledge that can help decision making. This analysis will enrich government knowledge about everything that is happening around the city’s main event of the year.

As an initial test for the solution, Bismart analyzed social network comments regarding the international music event Primavera Sound. A lot of feedback was captured about the event and about individual music groups. This test will inform the full implementation at the La Mercè festival, when Bismart will compare this unstructured information with structured information like previous and future music sales and Spotify song downloads, in order to know the festival’s impact on a group’s popularity and to predict a group’s future sales.

Moving beyond the music industry, at the La Mercè festival Bismart will also analyze citizen and visitor mobility within the city, in order to efficiently organize facilities and security and emergency systems.

Personalized Citizen Services Foster Engagement

Many cities use relationship management systems to manage their interactions with citizens, either to support call-center workflows or back-end processes related to e-government portals. However, with the right platform and implementation, **CRM and ERP** can provide more value that just managing interactions.

Barcelona’s vision was not only to improve the efficiency of citizen services but also to build a more personalized relationship with citizens. In order to achieve that, the Citizen Care Department needed a platform that could not only manage traditional, reactive, call-center interactions with citizens but also include tools to proactively communicate with citizens. This meant using modern social media marketing tools to get closer to citizens in their daily lives, enabling a model where opinion could be captured much more frequently than once every four years with a census.

“This is not just a call center project,” says Sanromá. “It is a critical tool to improve the relationship with citizens.”

The Citizen Care Department knew that a completely new platform would be required to support the Citizen Care and Engagement initiative—a solution capable of much more than operational customer relationship management (CRM). After evaluation, Microsoft Dynamics CRM was determined to meet the requirements.

Since the beginning of 2013, 16 line-of-business applications have been integrated in the new CRM system. In September, the citizen engagement campaigns will begin, and in November the full call-center interactions will be enabled—providing a single window model, which is positive for city employees and ultimately increases citizen satisfaction.

The Citizen Care Department will use Microsoft Dynamics CRM to record the history of interactions between citizens and government, including via social media, identify segments, and analyze them for common characteristics or experiences. This will lead to awareness of citizens who act as “promoters"—information that can be shared with all departments.

In turn, this will inform a proactive and personalized approach, through direct and personalized communication channels, taking advantage of new communication technologies, such as mobile, email, web, and social networks.

Devices Enable New Level of Interaction

In addition to having new channels through which they can interact with city government, citizens have a choice of methods for accessing those channels: **phones, tablets, and PCs**. As host of the Mobile World Congress, Barcelona city officials are keenly aware of the importance of providing anytime/anywhere access to services for twenty-first century citizens.

Microsoft has long supported mobility initiatives with the Barcelona City Council, starting in 2004 with a mobile police application, developed on Windows Mobile 6.5, that enabled tasks such as the reporting of public disturbances via mobile device.

Enabling and interacting with mobile citizens is the next step for a smart city, and Barcelona recognized this by becoming the first customer for MyCity solutions from Microsoft partner Atos. Today citizens can take advantage of service and transportation apps on Windows Phones and tablets.

Mobility can support not only efficient communication of data and related services to employees and citizens, but also economic growth as a major new industry. For that reason, mobility is a major part of the recent public innovation agreement between Microsoft and Barcelona.

The agreement, signed in June 2013 and valid for four years, aims to support entrepreneurs via the Microsoft BizSpark program, creating startups, enabling collaboration on proofs of concept, and developing new products and common standards

*Xavier Trias, Mayor of Barcelona, and María Garaña, President of Microsoft Ibérica, at the signing of their collaboration agreement*

Says Xavier Trias, Mayor of Barcelona, “This is a very important initiative enabling Barcelona to consolidate its position as a city of culture, knowledge, creativity, innovation, and quality of life. A city that focuses on helping businesses and entrepreneurs, opening new opportunities for future job creation.”

The Microsoft BizSpark program is at the heart of the agreement. By enrolling in BizSpark, developers get savings on cloud services and software from Microsoft. Already about 120 companies have connected with BizSpark in Barcelona, and 30 percent of them are focused on mobility—with a strong focus on tourism apps.

Partnership Fuels Common Innovation

Another core part of the public innovation agreement creates a Common Innovation Center, which will support mobility and smart city initiatives and collaboration on new technological solutions within the city.

Fostering cooperation between industry, academic, and administrative bodies, the innovation center will serve as a metaphor of Barcelona’s vision to drive the technological progress of twenty-first century cities, making public services more efficient by promoting the development of the information society.

Microsoft is proud to be considered a key partner with the City of Barcelona on this journey, collaborating with the city to, in the words of Trias, “consolidate Barcelona’s position as one of the leading smart cities in the world.”

