

# Connected Boulevard Initiative Generates IoE-Driven Benefits for Nice, France



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## EXECUTIVE SUMMARY

### Objectives

- Enhance urban life experience of Nice residents
- Improve city services while maintaining the same cost basis (or by cutting costs)
- Capture new economic development opportunities via open-data sharing

### Strategy

- Attain top-level support to move forward on Internet of Everything applications
- Employ open architecture system that allows addition of new technologies and projects in the future

### Solution

- Ultra-high-broadband network, sensor network, and data warehouse to aggregate data and conduct analyses
- Sensors are placed on waste receptacles, streetlights, and in curbing next to parking spaces
- In addition to monitoring light, streetlight sensors monitor air quality, noise levels, temperature, humidity, and traffic flow
- Sensor data is sent to city's data center via Zigbee and Wi-Fi networks

### Impact

- Smart-parking and smart streetlighting initiatives have shown the most initial promise

## Background

In January 2014, Cisco released the results of an in-depth analysis of the economic benefits of the Internet of Everything (IoE) for the public sector. Cisco's model revealed that some \$4.6 trillion in "Value at Stake" would result from the adoption of IoE capabilities across 40 key public sector use cases over the next 10 years, including smart water, smart buildings, smart energy, smart parking, and more (<http://bit.ly/1aSGlzn>).

As a next phase of its analysis, Cisco engaged Cicero Group, a leading data-driven strategy consulting and research firm, to undertake a global study of IoE capabilities across these 40 use cases – how the best public sector organizations are "connecting the unconnected," as Cisco terms it. To that end, Cicero Group conducted interviews with dozens of leading public sector jurisdictions – federal, state, and local governments; healthcare organizations; educational institutions; and non-governmental organizations (NGOs) – to explore how these global leaders are leveraging IoE today.

The research examined real-world projects that are operational today, are being delivered at scale (or through pilots with obvious potential to scale), and that represent the cutting edge of public sector IoE readiness and maturity. The aim of the research was to understand what has changed in terms of the jurisdictions' people, processes, data, and things, and how other public sector organizations can learn from (and replicate) the trail blazed by these global IoE leaders. In many cases, these jurisdictions are Cisco customers; in others, they are not. The focus of these jurisdictional profiles, therefore, is not to tout Cisco's role in these organizations' success, but rather to document IoE excellence, how public sector entities are putting IoE into practice today, and to inform a roadmap for change that will enable the public sector to address pressing challenges on multiple fronts by drawing on best practices from around the globe.

“The first objective was to improve the urban life experience of our citizens, so that they feel better in the city.”

Christian Tordo,  
Deputy Mayor,  
Nice, France

## About the Nice ‘Connected Boulevard’ Initiative

The Connected Boulevard initiative implements IoE technology along one of Nice’s most prominent boulevards. The program includes applications that monitor parking, lighting, air pollution, and solid-waste levels. The system is currently in active use, with implementation starting in June 2013. The first year of implementation is seen as a trial period to help the city understand which applications may be useful and easily scalable for broader implementation throughout the city.

All programs are operated from the same open IP platform, which allows easy system expansion. The Internet of Everything concept forms a core element of the initiative by providing increased access, monitoring, and control capabilities via open architecture computing and network platforms, and by engaging disparate elements of the city to provide for common improvements.

Christian Tordo heads economic development and digital innovation for the greater Nice Cote d’Azur region.

Prior to his current role, Mr. Tordo worked with Texas Instruments. From 1994 to 2013, he was general manager of Texas Instruments’ operations in France, a role in which he was heavily involved with near-field communication (NFC) and wireless technologies. Before his work with Texas Instruments, Mr. Tordo studied at HEC in France, where he earned his MBA.

## Objectives

The Connected Boulevard initiative is an experiment (pilot) to see which benefits can be derived from IoE applications in the city. The goal is to utilize this experiment and the benefits achieved to justify future expansion and further initiatives.

According to Mr. Tordo, innovation was a key piece of the mayor’s platform when he was originally elected in 2008. This led to direct support from the mayor for Nice’s Smart City initiatives. It also equated to a public mandate for such change. This gave senior city administration officials extra motivation to push forward on initiatives, providing Nice with an advantage over other urban areas in terms of Smart City implementation.

According to Mr. Tordo, Nice began to pursue its technological focus in earnest following the election of the current mayor in 2008. Before 2008, Nice had earned the reputation as a somewhat “sleepy city.” A pillar of the new mayor’s platform had been to change Nice’s global image and place the city among the most dynamic in France and Europe. With central government support, Nice began a new sustainability initiative, along with a new tech initiative, all aimed at improving the city’s image among its own citizens and beyond. According to Mr. Tordo, this top-down, strategic approach was critical to ensuring support for the initiatives that were to follow.

“...there was strong leadership from the mayor on this project, so all people understood that it was backed by the mayor, by all the key elected executives. The matter was not whether we do it or not, but how can we implement. That’s where the city administration plays a role.”

Christian Tordo,  
Deputy Mayor,  
Nice, France

Mr. Tordo stated that the Connected Boulevard initiative has three main objectives:

1. Improve the urban life experience of Nice residents
2. Improve city services while maintaining the same cost basis (or reducing costs)
3. Capture new economic development opportunities via open-data sharing

## Strategy

Nice’s efforts toward becoming a smarter city originated with the election of a mayor whose platform included developing a new image of sustainability and innovation for the city. Top-level support has been key in Nice’s moving forward on Internet of Everything applications in the city.

Nice IoE projects have included an initial virtual city hall project, which allowed residents to interact with city officials remotely. This was followed by the higher-profile “Connected Boulevard” initiative, which includes a smart parking system, smart streetlighting, smart waste management, and environmental monitoring.

City officials started with a vision of having an open-architecture system that would allow them to add new technologies and new projects in the future.

The primary challenge of the initiative was garnering cooperation from lower-level city management personnel. These administrators first had to be convinced of the validity of the initiative, and then they needed to help solve the various issues surrounding implementation.

The project has been fully directed and owned by the city. All hardware, software, and equipment involved in Connected Boulevard is owned by Nice and managed the city’s partners. Nice has the option to add applications as it sees fit. The city manages the infrastructure and collects the data, which is then shared openly (for example, via a parking app in the case of the smart parking system).

The Connected Boulevard initiative is paid for with public funds, utilizing allocations from the city’s overall budget. According to Mr. Tordo, given the political backing from the mayor, the budgeting process has been relatively simple from the beginning. The key point to note is that given Connected Boulevard’s experimental status and the pending June 2014 review, the ability to document benefits will play a significant role in terms of the amount of the city budget available for future phases or expansion.

## Solution

Nice’s city technology architecture is based on four layers:

1. Ultra-high broadband network
2. Sensor network to gather data
3. Data warehouse to aggregate data and conduct analyses
4. Services and applications that communicate and automate response to data

According to Christophe Junac, director of digital Innovation for the city, the Connected Boulevard project is seen as a test of the first two layers, and the extent to which the data could be useful for improving city management and enhancing quality of life in Nice.

The Connected Boulevard project involved the installation of sensors throughout the Victor Hugo Boulevard area. These include sensors on waste receptacles, on streetlights, and in curbing next to parking spaces. In addition to monitoring light, streetlight sensors also monitor air quality, noise levels, temperature, humidity, and traffic flow. Data gathered from the sensors is sent to the city’s data center via Zigbee and Wi-Fi networks. The establishment of the Wi-Fi network has provided added benefit by allowing city employees to access the city intranet from various locations around the city.

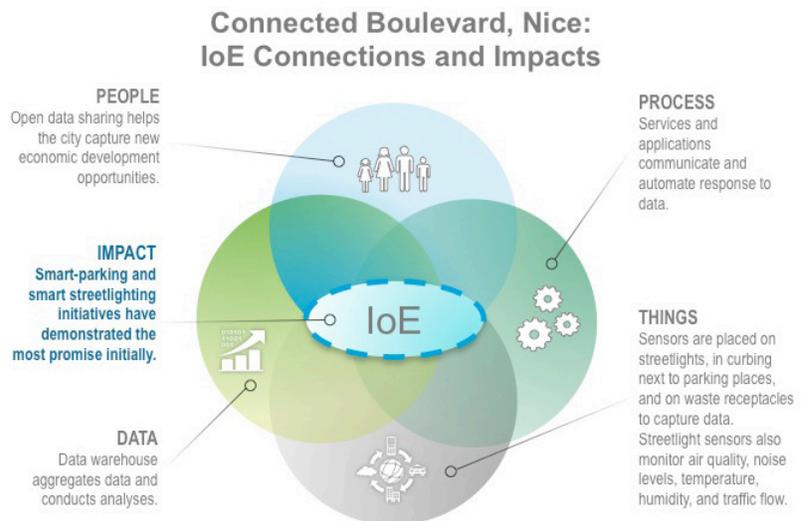
“We wanted this project to be technologically agnostic from the city’s standpoint. We wanted, obviously, not to be bound to a proprietary solution with hardware or software, and to be able to have it open enough so we can add features and use it as we wish.”

According to Mr. Tordo, Nice’s administration wanted this project to be technologically agnostic from the city’s standpoint. The platform is open, and applications can be added. “We wanted, obviously, not to be bound to a proprietary solution with hardware or software, and to be able to have it open enough so we can add features and use it as we wish,” Mr. Tordo explained.

Nice initially implemented its “virtual city hall” kiosks by hardwiring a touchscreen display system to the telecommunications backbone at various shopping malls. These terminals would then provide a live video-conference connection to a city employee who could assist with conducting various services. The kiosks would also provide a Wi-Fi hotspot to those in the area.

Christian Tordo,  
Deputy Mayor,  
Nice, France

Figure 1. Nice, France: New and Better Connections.



Source: Cisco Consulting Services, 2014

Referring to the specific applications that have been implemented in Nice, Mr. Tordo indicated that the smart parking and smart streetlighting initiatives have shown the most initial promise.

## Impact

Broadly speaking, Mr. Tordo stated that his government has recognized two unique and unforeseen benefits of the Nice Smart City initiatives. The first is that the coordination across governing bodies required to implement the projects has created a more “transversal” governing structure (i.e., eliminated departmental silos within city government). This has greatly enhanced the municipality’s ability to operate effectively. “We tried developing a key element to fight silo management with our Connected Boulevard experience. It has become a positive side effect of our willingness to play a very active role in the smarter city initiative,” Mr. Tordo stated.

The second unanticipated benefit was a sense of what Mr. Tordo called “mutualization,” or the move toward a common architecture and systems framework across departments. This move has also helped eliminate departmental silos.

Referring to the specific technology applications that have been implemented in Nice, Mr. Tordo indicated that the smart parking and smart streetlighting initiatives have shown the most initial promise. “In our vision, smart parking is just one brick in the total wall we would like to build, and in the ultimate services we would like to offer citizens,” he stated, referring to the goal of providing additional analytics and solutions to help residents pick the most efficient transportation methods in real time. Mr. Tordo indicated that smart lighting also shows clear benefit because it is easy to track the cost savings associated with a dynamic lighting system.

Mr. Tordo averred that it has been more difficult to document quantifiable benefits associated with environmental monitoring and waste management projects. He indicated that, in June 2014, there would be an assessment of the project as a whole to identify all benefits and value added by the various projects.

## Lessons Learned / Next Steps

Asked what advice he would give other city leaders seeking to implement similar Internet of Everything type initiatives, Mr. Tordo said it is very important to determine what is important to the citizens and to understand their expectations before deciding on an application. “The prime objective was to improve the urban life experience, and I think this is a key element in any initiative in that area,” he explained.

Mr. Tordo indicated that the Connected Boulevard project will reach its one-year milestone in June 2014. At that point, the government intends to evaluate results and determine next steps. Initial indications, though, are positive, particularly on the smart parking and smart streetlighting portions of the project. Mr. Tordo stated that the next vision is to look for ways to more proactively utilize the parking data that the system is collecting and integrate it with traffic management to provide added analytical services and information to city residents.

Nice's administration has a broader vision to link traffic predictability with public transportation information to give citizens real-time information on the fastest method of transportation to their desired destination.

Nice's administration has a broader vision to link traffic predictability with public transportation information to give citizens real-time information on the fastest method of transportation to their desired destination. "The ultimate vision of the smart-parking initiative would be to allow, on probably a smartphone platform, provision of real-time information to allow each citizen in the city to take the most advantageous solution between public transportation, train, or electric car, or even free bicycle," Mr. Tordo explained. "If traveling by car, this would allow [a resident] to know that if he takes his car to go downtown at a certain time of the day, he may have a traffic jam. [The system] would also provide parking information, which is what we are trying to do right now. So, you see on the smart-parking initiative, again, we have a much broader vision. It is not implemented yet, but is an idea that we would like to pursue."

Mr. Tordo foresees broader application and development of current initiatives once the June review is completed. By that time, he hopes that the "experiment" will have gathered the necessary data to convince the citizens of Nice to feel the same.



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