

Smart Cities & Smart Territories: How IoT is helping cities get smarter



**Business
Services**



Foreword



30%

Increase of the urban population density in the next fifteen years

60%

of the world's population will live into cities by 2030

Urban population density should increase by 30% in the next fifteen years. By 2030, cities will house 60% of the world's population.

Territories will need to adapt to this urban boom to ensure a quality of living that matches residents' expectations, ensuring that they retain their economic and tourism attractiveness. Optimizing resources, services offered to individuals, transport and healthcare are some of the key issues that need to be considered.

Barcelona, which hosts the Smart City World Congress every year, is a pioneering city in terms of urban intelligence. Aiming to become self-sufficient and a zero-carbon city in tune with its population, Barcelona has rolled out numerous projects to digitalize its services and infrastructure. For example, its Apps4Bcn portal gives users access to a collection of the best applications to make the most of their city¹.

Montreal, Tel Aviv, Lyon and Hamburg are also noted worldwide for their innovative projects. The success of a city's digital transformation requires a radical change to service and infrastructure management. A change which is already under way.

¹Source: Bloomberg & McKinsey survey on mobility in 2030

²Source: 2015, C. Moreno, "Barcelone, l'esprit pionnier de l'intelligence urbaine" [Barcelona, the pioneering spirit in urban intelligence], La Tribune

Smart Cities: a response to the challenges of urbanization

What are Smart Cities?

A Smart City is one that incorporates digital technology throughout: in construction with connected and eco-friendly buildings; in public transport, by optimizing traffic management and using energy-efficient vehicles; and through eco-responsible neighbourhoods. To do this, all of the stakeholders involved (construction companies, transportation operators, energy resource managers, local authorities, developers, telecoms operators, etc.) must transform their services and products to improve the living standards of residents, tourists and workers within the city, county or region.

Global challenges

Population growth



Urbanization by 2050



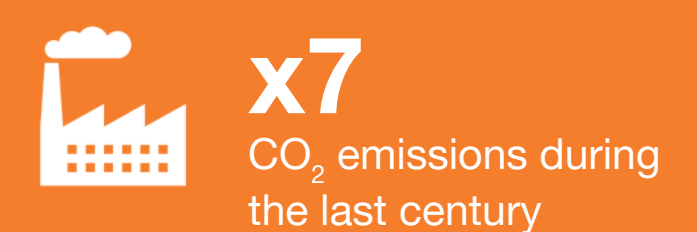
Energy consumption



Water shortages



Pollution



Intelligence at the core of the city

Working towards 100% connected cities

Eco-districts improving residents' daily life

An eco-district is an urban planning project that maintains the principles of sustainable development while adapting to the characteristics of the community³.

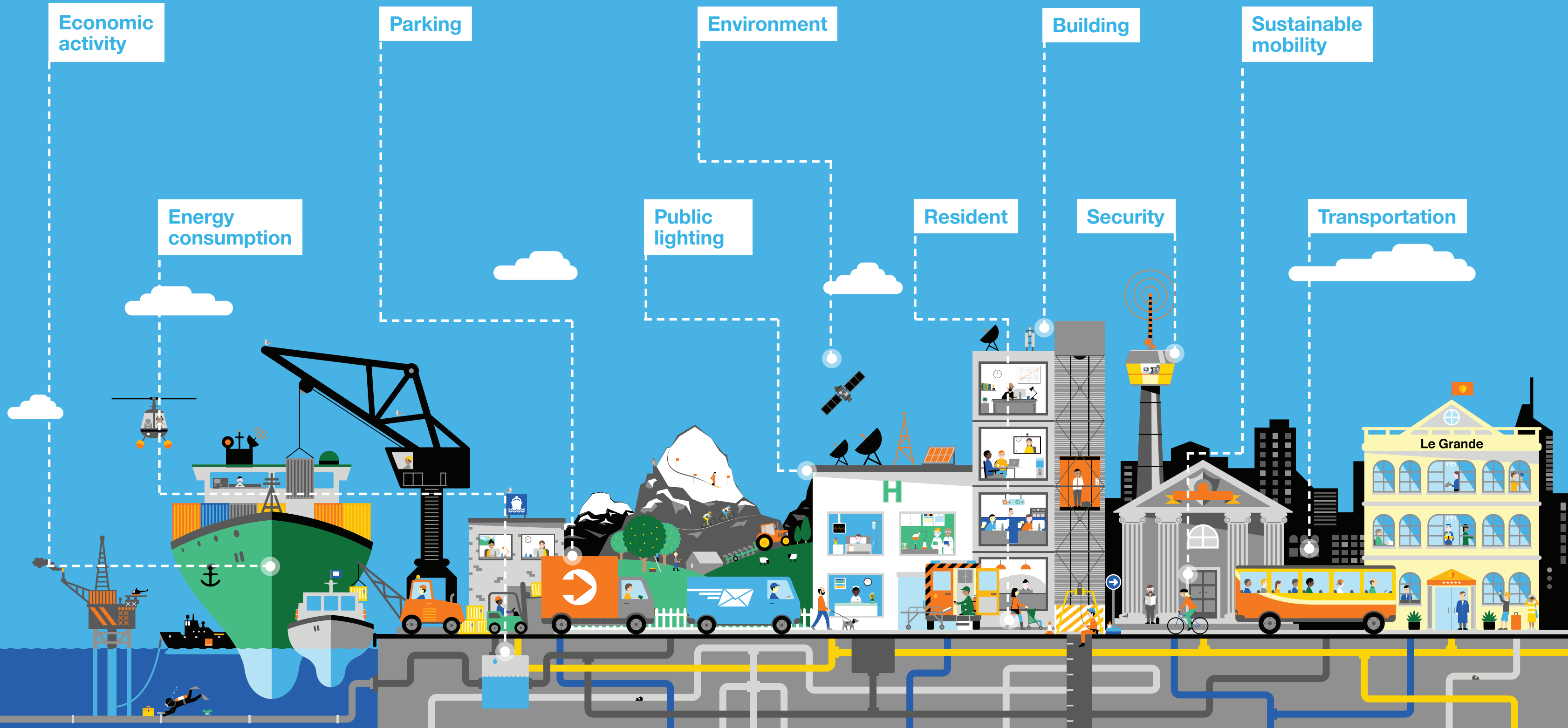
³Source: French Ministry of the Environment, Energy and Marine Affairs

Practical example

Orange is supporting the Msheireb Downtown Doha district in Qatar with the digital refurbishment of all the buildings and infrastructure in its city center. It is supervising the design of the primary Smart City control center, which is responsible for controlling the operation of buildings and services, such as video surveillance, building access control, fire alarms, street lighting, automatic waste collection, parking lots and public display systems. Orange has also developed applications for users in the areas of public services, online payment, energy and navigation.

[Find out more >](#)

IoT: boosting the attractiveness of the territory



Transportation infrastructure goes digital to improve mobility

The Internet of Things (IoT) and Global Positioning System (GPS) tools in vehicles or embedded in infrastructure itself (roads, traffic lights, etc.) can reduce travel time and help limit congestion. By integrating sensors into parking lots, drivers are able to locate available parking spaces.

Smart buildings streamlining intra-site organization

Connected buildings optimize resources and working spaces, while improving the safety and comfort of occupants and reducing environmental impact. To make this happen, Orange works with property developers, starting with their project design.

Promoting an “inclusive city” with connected residents

Residents are increasingly connected and have more devices than ever, and they are playing a key role in the digital transformation of their cities.

More information services for residents

Information is available in real time and can be accessed directly on mobile devices, which allows users to get around more easily (with augmented reality, for example) and optimize travel time, and also to stay up to date with news and local events.

With the “my city in my pocket” urban services portal developed by Orange for various cities and agencies, including Nantes and the Orne Departmental Council in France, residents can

get information about nearby infrastructure, events or local life and can quickly find the places they are looking for.

Residents become players and information producers

Residents are increasingly more informed and therefore more involved in their cities: they want to take part in the development of new city services.

Increased participation is an opportunity to give residents a role in the city’s economic development and to include their opinions when making strategic decisions.



Orange Gardens, the new Orange campus near Paris, brings together more than 3,000 people from seven different locations. The complex, with more than 72,000 square meters across four buildings, was envisioned as a highly-environmental urban eco-campus open to the city.

Orange Gardens embodies a state of mind resolutely focused on innovation, growth and jobs of the future. This site promotes new ways of working to leverage the Orange innovation capabilities.

[Find out more >](#)

Promoting a “flexible and dynamic city”

Orange helps various cities to collect, process and use the data from their installed digital sensors. Via a secure area, they can visualise the data, manage sharing and ensure traceability. This wealth of information helps create and constantly enrich a monetizable catalog for companies wanting to develop new services based on actual customer usage.

Optimizing the infrastructure offer

By analyzing the influx of crowds in different areas, cities can optimize transport management by adapting bus routes and schedules based on traffic.

Orange helped the National Association of Mayors of Mountain Resorts (ANMSM) by setting up monitors to observe the number of visitors at resorts. With the Orange Flux Vision solution, ANMSM has been able to better understand the needs of travelers and develop resources, infrastructure and transport based on their actual behavior.

New services to streamline the use of infrastructure

In addition to real-time information, it is now possible to display a transport ticket directly on your mobile device, using NFC technology.

Services for increased security

Security is a significant issue for our society, particularly for transport. GPS location, ambient recording and video surveillance systems help deal with this problem.

Orange has set up a video surveillance system on buses, which includes real-time alerts known as Alerte Video Transport. All stakeholders have secure, real-time access via smartphones and tablets to view the images from cameras inside the bus.

Practical example

To facilitate travel for motorists in Lyon and allow them to park their vehicles more easily, Orange has created a mobile app for Lyon Parc Auto (LPA). The paperless ID Pack solution by the NFC Service Center operates on NFC smartphones and can locate available spaces in the nearest parking lot, guide users to the lot and offer contactless payment.

[Find out more >](#)

Developing a “green city”

Controlling energy, noise and pollution

Optimizing energy resource consumption, dealing with disturbances of all kinds (for example, sounds, odors, etc.) and reducing greenhouse gas emissions are some of the major problems experienced by local authorities.

Smart lighting

By using data analysis and promoting lighting on busy streets rather than on quiet ones, a city can reduce expenses and better manage energy consumption.

Smart grids

Remote monitoring of electricity, gas and water meters helps quickly identify malfunctions and provides greater responsiveness to problems.

To become a smart city, cities must focus on innovation and services.



Practical example

Orange has helped the city of Alba Iulia in Romania to optimize operational management in the city, improve its residents' quality of living, increase tourist appeal and become the first Smart City in the country. Transport, traffic, waste and street lighting management services, in addition to GPS location and information solutions, have been rolled out in the city with the implementation of the Orange IoT network (Lora®) and the associated data analysis solution.

[Find out more >](#)

With Orange,
you have the expertise
and solutions to
transform your city

250 million
B2C customers worldwide

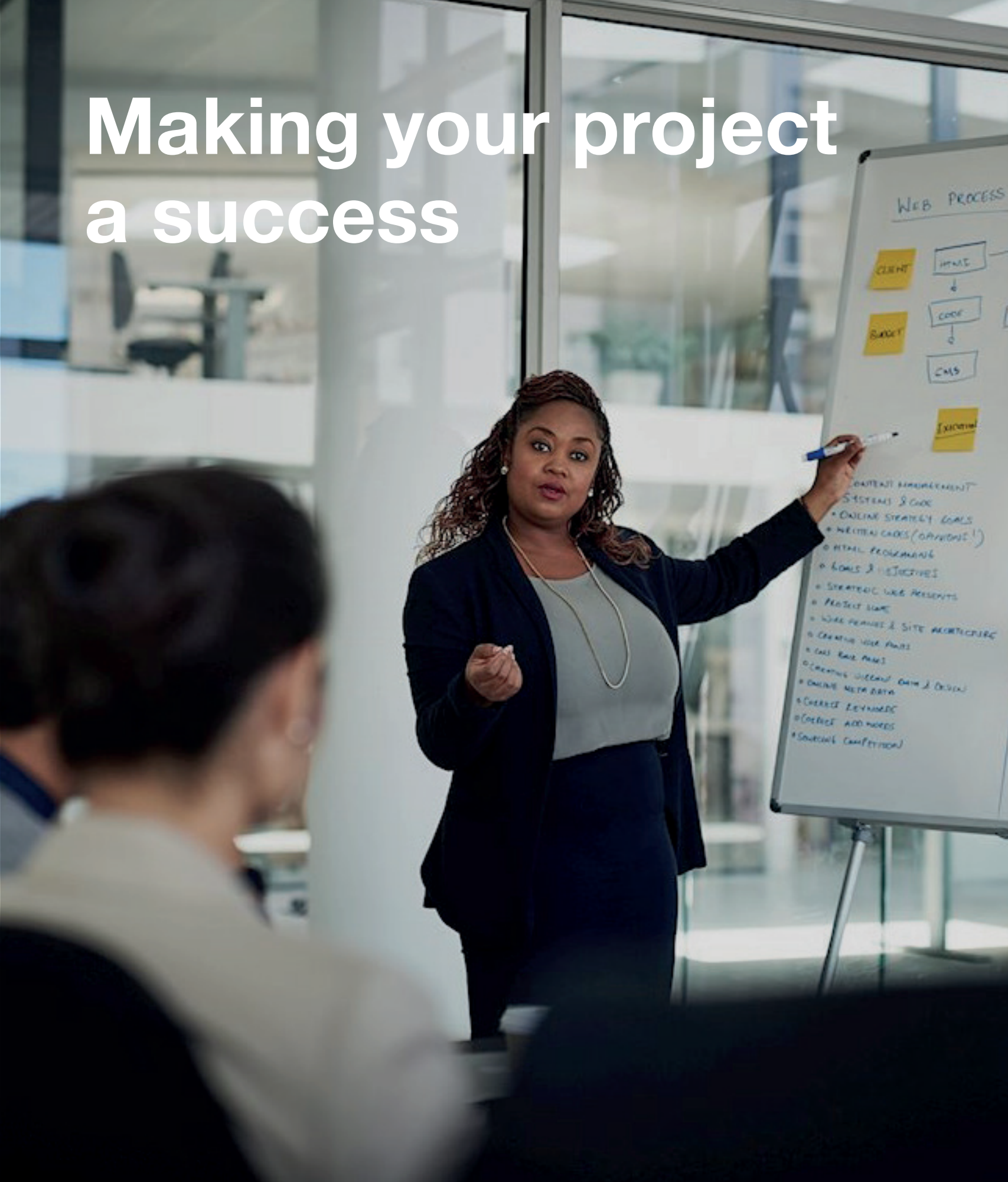


5 000

researchers and engineers
and 12 research centers

- Connectivity solutions for any requirement: fiber, 3G, 4G, Wi-Fi and **an LPWAN network based on LoRa® technology**,
- **780 million** of annual investment in research and innovation projects
- **10 Orange Fabs** (startup accelerators) worldwide
- Complete ecosystem of partners: startups, manufacturers, institutions, economists, suppliers and clients

Making your project a success



Establishing a major project and prioritizing it

Your digital transformation project must be major in scope and not limited to an experiment or a communications campaign. It is very important to give it priority among other projects in the city, identify accompanying resources and define an associated budget.



Identifying specific issues in advance

It is vital to focus on the desired benefits for residents and city managers. You can then roll out the ideal long-term solution, meeting the needs and habits of residents, employees and tourists.



Choosing a partner able to support your project in the long term

The role of Orange Business Services is key: our skills and expertise, as well as our capacity for innovation and integration of partners, allow us to support your project in a reliable, sustainable and progressive manner by controlling the impact of your digital transformation.

Datavenue: our IoT and data analytics offer



Select

Select your objects and your data sources



Connect

Connect your objects securely, based on your needs



Manage

Manage the lifecycle of your objects and data



Control

Control your project's key success factors

Our modular Datavenue offer includes end-to-end support to help you create and roll out your IoT and data analytics projects successfully and securely.

Select

We help you transform your devices into communicating objects or choose new ones from our catalog of tested and certified equipment.

Flux Vision analyzes the data from our mobile network in real time and converts it into statistical indicators, allowing you to measure the frequency of use and movement of people in a geographical area.

Connect

We help you select the most suitable network solution for sending your data in order to ensure reliable feedback that matches your performance, quality and cost requirements. We guarantee all the key network parameters: optimal availability and security, adequate speed, robust technology and controlled energy consumption.

Manage

We incorporate and store, on a highly-secure platform, the data collected from your equipment. You can manage your connected devices in real time, generate performance indicators and monitor analyzed activities (transport management, street lighting, etc.) from your workstation or in API mode for your information systems.

Control

Our 700 IoT and data analytics experts (data scientists, developers, integrators, consultants, etc.) support you throughout your project:

- providing solution security and sustainability,
- helping you analyze your data,
- guiding you through the implementation of your open data strategy,
- supporting the implementation of new processes and change management within your organization.



VINCI Autoroutes



VINCI Autoroutes wanted to optimize maintenance at its rest areas. We helped them set up a connected area in Boutroux (Autoroute A10, France).

Fully deployed by Orange using Datavenue, this next-generation connected rest area project included: the selection and fitting of sensors, uploading data via the LoRa® network and data transmission on the supervision portal, where maintenance at the Boutroux rest area can be managed in real time via a dedicated screen.

Automation of feedback allows us to:

- Inform VINCI Autoroutes regarding the use of restrooms (number of users, levels of soap and consumables stock, etc.),
- Install temperature sensors in the road to optimize the launch of winter service operations (salting and snow removal),
- Ascertain customer satisfaction through the VINCI Autoroutes “smiley box”,
- Remotely monitor waste container levels so they can be emptied if needed,
- Detect when the service access portal at the rest area is opened and closed.

VINCI Autoroutes can now improve their maintenance responsiveness in accordance with their service contract commitments, and the rest area user experience is improved as well.

Other new services are being tested at the Boutroux rest area:

- Remote detection of available parking spaces
- Automatic reading of water and electricity consumption

This experiment, launched in July 2016 for one year, allows Orange and VINCI Autoroutes to measure the benefits of LoRa® technology (a low-power and low-speed wide area network) in situ.

[Find out more >](#)





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