



## Smart, safe and sustainable services for cities

### Use case

**To cope with long-term urbanization, smart cities must start today to deploy services based on the Internet of Things (IoT) to enhance their livability, sustainability, mobility and overall efficiency.**

Even if the concept of the “smart city” is now broadly understood, many cities still have an unclear view of where and how to get started. Smart cities applications are making an impact in four main domains: mobility, environmental sustainability, public services and livability. But to quickly and fully benefit from these services, an end-to-end approach is needed combining applications, connectivity and platforms.

This use case describes how Nokia can help you develop and deploy such new smart city services that will firmly put your city on the path to become more sustainable and attractive.

## Challenges

The global population shift toward cities is bringing increased pressure to urban areas in terms of energy use, environmental protection and citizen safety. Concretely, here are a few important areas where cities are facing strong challenges today:

- **Urban competition and the economy:** Attracting business and talent is a priority. New commerce has a direct impact on a city's jobs, economy and its overall development. Developing new digital infrastructure to provide ubiquitous broadband access and new services that enhance citizens' quality of life is becoming essential to retain or attract businesses.
- **Environmental impact:** Seventy-six percent of global energy use and carbon emissions is from cities and the impact of emissions in the air from road transport is estimated at \$1 trillion annually, according to the United Nations Intergovernmental Panel on Climate Change (IPCC).
- **Economic pressure:** As cities have to do more with less amid increased competition, they must find more efficient and sustainable financial models, optimize infrastructure and offer smarter services.
- **Traffic congestion:** The combined annual cost of traffic gridlock in Europe and the US will soar to \$293.1 billion by 2030, almost a 50 percent increase from 2013, according to INRIX and the Centre for Economics and Business Research.
- **Safety:** This is a growing problem as cities get larger. When the population of a city doubles, crime rates per capita rise 15 percent on average. (IDC, 2012)
- **Social responsibility:** Authorities need to take care of citizens' wealth, security, privacy and well-being. Urban communities should be inclusive, participatory and social.

Even if cities understand the benefit of developing new smart city services that will help them address these challenges, the answers to the questions of where to focus first to generate a significant and measurable impact and how to go there without creating silos are still often unclear, given the early market stage.

## How we help you

To help cities quick-start their smart city journey, Nokia is proposing state of the art end-to-end smart city services. They allow you to quickly deploy and benefit from these new services, while protecting your investment as your smart city program grows. Addressing the key concerns of most cities across the world, our smart city end-to-end applications are focusing on the following domains:

- **Smart mobility services:** To improve the flows of cars and people within the city, our smart mobility suite encompasses following applications:
  - Smart parking: To provide drivers with a real-time view of free parking spaces and reduce the time to find a space
  - Connected bus shelter: Modernized, connected bus shelters that are able to interact with people and inform them about traffic, points of interest, promotions, etc.

- Real-time crowd monitoring and analytics: To monitor real-time traffic flow in public venues and analyze traffic patterns.
- **Smart energy services:** A set of applications to both reduce the cost and enhance the quality of the city's services:
  - Smart public lighting: To save energy and improve safety while enhancing public information provided to citizens and tourists
  - Smart building and smart home: To monitor and tweak resources usage and operational cost of public infrastructures.
- **Safe city services:** leveraging latest video analytics and IoT technologies to improve city safety:
  - Video-surveillance analytics: Surveillance cameras video feeds are analyzed to generate real time alerts when (traffic accidents, speeding vehicles, crowd riots, unauthorized entry, stolen car recognized, ...) anomalies occur.
  - Integrated operations center: To build a unified view of all information coming to the command & control center, analyze and correlate it to make better decision and react faster.
  - Group communications: to enhance the situational awareness of first responders in the field, with a secure push-to-talk/Push-to-video solution.
- **Smart venue services:** To improve the quality of life and the experience of events and tourism activities taking place in your city. This includes the following applications:
  - Large events analytics and multimedia: To monitor and analyze crowds during large events and augment the real-life experience with video applications
  - Smart tourism: Through interactive communications and augmented reality, enhance the visitor experience and push content based on context.
- **Healthcare services:** A set of applications to improve citizens' health and well-being and keep healthcare costs under control at the same time:
  - Remote patient monitoring: Empower patients to engage through smart devices and connect them to their healthcare team, which can analyze and prevent chronic conditions
  - Corporate wellness: Engage your city's employees in their healthcare to improve workplace wellness.

## Why our approach is different

- A horizontal approach, where the same underlying mission-critical connectivity infrastructure and IoT platform is shared and used by the different applications to create synergies between applications and minimize TCO.
- We work with an open ecosystem of more than 300 partners to rapidly create, deploy, integrate and test new services and ensure they can evolve.
- Our applications and platform offer a high level of security and data protection against cyber threats.

## How you benefit

- Municipalities can speed up the deployment of innovative smart city services.
- Experience a positive economic impact, as the deployment of these services reduces the city's OPEX and environmental impact.
- Increase the city's attractiveness by providing citizens and visitors with services that improve their quality of life.

## Let us help you

A successful smart city must incorporate the six s's: a shared, secure and scalable infrastructure that enables a smarter, safer and more sustainable city development. To achieve this vision, Nokia has invented and now delivers smart broadband networks and platforms connecting sensors, machines and citizens to cloud-based IoT applications.

For more information on our solutions for smart city, visit <https://networks.nokia.com/government/smart-city>.

### About Nokia

We create the technology to connect the world. Powered by the research and innovation of Nokia Bell Labs, we serve communications service providers, governments, large enterprises and consumers, with the industry's most complete, end-to-end portfolio of products, services and licensing.

From the enabling infrastructure for 5G and the Internet of Things, to emerging applications in virtual reality and digital health, we are shaping the future of technology to transform the human experience.

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