Smart Cities: Reducing the Gap Between the Ambition and the Reality

By taking a platform-based approach to IIoT technologies, cities can set themselves up to improve citizen services and safety.

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Perhaps no other use case or industry has captured the popular imagination around Industrial Internet of Things (IIoT) technologies like smart cities.

The potentially pervasive reach of smart cities — which could one day envelop traffic and parking, law enforcement, and the use of data to improve service delivery for everything from filling potholes to stocking library shelves — plays into people's science fiction fantasies about the technology behind industrial automation. And, more than specialized fields like mining or financial services, smart cities offer the average person a window into how this new industrial revolution might affect their daily lives—as well as boost public safety, improve citizen services, and increase efficiency throughout city operations.
There are many examples of how forward-looking cities such as Chicago, New Orleans, and Kansas City have used IIoT and data analytics for immediate impact. Chicago developed an algorithm that processes 11 different variables to prioritize restaurants for health inspections, resulting in a 15% increase in the number of critical violations. New Orleans officials used Census data to identify the city blocks most likely to contain homes without smoke detectors, then targeted those areas for a smoke detector distribution program. And Kansas City is using sensors along a 2.2-mile light-rail line to gather data about traffic and available street parking, which residents can access in real time.

Despite all this movement, though, there remains a wide gap between the long-term possibilities of smart cities and the present-day reality. At the moment, most smart city initiatives revolve around practical, grounded use cases, such as finding better ways to offload, store, and process body camera video footage. Some communities are also experimenting with smart, connected, and efficient LED street lighting as a way to cut costs and establish a more sprawling network capable of supporting endpoints like sensors and video cameras.

The Smart Way to Pursue Smart Cities

While pilot programs and proof-of-concept solutions like connected LED lighting can help cities trim operation costs, it’s important to realize that these are not the true “end game” of smart cities.

The long-term goal of smart cities initiatives should be creating a scalable network that allows communities to add sensors—which will expand use cases and benefits over time. This sort of scalability simply isn’t possible with silo’d, proprietary IIoT solutions. If a city invests in a one-off infrastructure dedicated to single use cases, leaders will soon find themselves trying to place 50 different cameras and sensors on every light pole in town – an eyesore and an economically unviable plan.

Instead, communities should take a platform-based approach to smart cities and automated public safety technologies. An approach, where the same underlying connectivity infrastructure and IIoT platform is shared and used by different applications to both maximize value and minimize the total cost of ownership.

“In and of itself, any one use case is not as valuable as the aggregate value of investing in a platform-based approach,” says Arnaud Legrand, marketing executive for Nokia.

Municipal services are really a collection of different industries, often including recreation and entertainment, public safety, healthcare delivery, utilities, waste management, transportation, and others. The convergence of operational technology (OT) and information technology (IT) – which lies at the heart of what is often referred to as the “Industry 4.0” revolution – is occurring at different paces in each of these areas, and communities need to be ready to take advantage of new opportunities as they arise.

“The best approach in smart cities is to essentially look for leverage. Look for ways in which you can amplify the benefits across a multiplicity of departments. You get a shared cost, and you get amplified benefits, because everybody isn’t trying to recreate the wheel. Collaboration is key. It’s not one group vs another,” Legrand says.

By embracing a platform-based approach to IIoT, communities can incorporate as much data, from as many sources as possible, into their smart cities initiatives – and can tie together different applications, which may yield entirely new use cases and insights. This open, horizontal architecture gives cities their best chance to boost public safety, improve citizen services, and increase efficiency throughout their operations.
The Impact of Smart Cities Technologies

Broadly speaking, smart cities technologies stand poised to eventually transform any city process where data analytics could lead to better decisions or improved efficiencies. Take something as simple as waste management. In most communities, trucks have likely been driving the same routes for years, emptying public waste receptacles on a regular schedule, whether the receptacles are full or not. By using sensors to track the rate at which containers fill up and running the resulting data through an analytics program, a city could optimize routes and collection schedules — helping to maximize employee productivity, reduce unnecessary mileage on public vehicles, and prevent overfull bins.

Other potential smart city use cases include:

- **Smart Mobility** – IIoT sensors can help monitor crowds, traffic and vehicle flows as well as free parking spaces. Combined with analytics and patterns records, this information can help cities better prevent congestions. Public transportation systems can also adapt, almost in real time, their capacity to the situation, and commuters can be better informed (through mobile apps, connected bus shelter or metro station) of the different options to optimize their transport within the city.

- **Smart Energy** – As mentioned earlier, LED retrofits for streetlights can save energy and improve safety, while also serving as network points that can gather, store, and transmit information. Additionally, smart public buildings can help officials to monitor and optimize resource usage and operational costs. Finally, smart meters at homes and businesses allow public utilities to improve efficiency.

- **Public Safety** – Video surveillance analytics can generate real-time alerts for incidents including traffic accidents, crowd riots, or other threats to public safety. Eventually, data from different public safety solutions can be combined into an integrated operations center, presenting a unified view of information and enabling faster and better decision-making. To close the loop this rich information can then be provided in real-time to responders in the field to allow them to act more efficiently.

To learn more about Nokia’s smart city approach, download the [Turn your city into a platform for digital service creation white paper](#).