



How Canada is Leading the Adoption of Smart City Technology

By Varouj Artokun, Smart Cities, Canada

According to the United Nations, the global urban population has exploded from 750 million people in 1950 to over four billion in 2018. North America is the most urbanized region of the world with 82 per cent of its population living in urban areas today. With this exponential growth comes a number of challenges that include changing traffic patterns, potential mobility problems, evolving safety concerns, and emerging environmental issues.

City officials seeking a go-forward strategy to address the latest wave of urbanization are turning to smart city infrastructure supported by the Internet of Things (IoT). Furthermore, IDC predicts global spending on smart cities will reach \$150 billion by 2022.

City-based IoT solutions gather different types of data that have potential to uncover new ways of optimizing existing infrastructure and systems. Cities have unlimited possibilities to use those insights to create new benefits for residents and local businesses. In Canada specifically, cities such as Ottawa, Hamilton, Toronto, Vancouver-Surrey and Montreal are already leading the way, researching and investing in smart technologies to change the nature

and economics of their local infrastructure. In fact, smart city spending is expected to reach \$3B in Canada by 2022 according to IDC.

Canada as the shining example for smart city adoption

As an early adopter of LED lighting, Canada is primed to take the lead in smart city technology. Of the more than three million streetlights in Canada, 75 per cent have been, or will soon be, converted to LEDs. Canada has gotten smarter with its lighting—and the timing is perfect to take the next step and invest in smart city infrastructure. Adopting technology such as SmartGrid provides cities with data that can enable government employees to be more efficient. Collected traffic data has the ability to help city planners mitigate high areas of congestion, pedestrians avoid traffic, and police and emergency vehicles arrive to a crash scene faster.

Canadian cities like Toronto have already initiated efforts to inspire smart city adoption, hiring a Chief Transformation Officer in 2017 to digitize the city. This movement towards smart city digitization has unlocked the potential for \$1.2 billion in savings over 10 years. The Ontario capital broke into the top 10 smartest cities in the world according to 2018's Motion Index, an IESE Cities report that ranks 165 global cities based on economic and social indicators. Ottawa, Vancouver and Montreal weren't far behind, all placing in the top 30 cities worldwide for smart city adoption.

How CityIQ with Nokia unleashed smart city technology across Canada

Leading technology companies have become valuable partners for city implementation of IoT platforms that essentially give the infrastructure a smart upgrade. For example, communications technology giant Nokia and Current powered by GE partnered to deploy CityIQ sensors in cities across Canada using a system that transforms outdoor street light poles into a digital infrastructure. With this platform in place, CityIQ sensors are activated to collect data and distribute valuable insights to cities via Nokia's safe and secure communications networks.

The goal of this partnership is to use responsive, flexible technology to create a safer and more sustainable environment. The impact of this technology is clear when you consider McKinsey's recent report on smart city digital solutions, which states smart city tools have the capacity to reduce fatalities eight to 10 per cent, accelerate emergency response times 20 to 35 per cent, reduce commute times 10 to 15 per cent, lower disease burdens eight to 15 per cent and reduce greenhouse gas emissions 10 to 15 per cent.

The potential for this data goes even further when integrated with applications designed to improve city life. The City of San Diego in California for example—which currently houses the world's largest IoT platform—demonstrates the benefits of deploying an app bundle

alongside a smart city initiative through its use of apps such as Genetec and Xaqt. Genetec's public safety application aids in real-time response efficiency and Xaqt, a connected data and AI platform, provides insights into real-time and historical mobility patterns for traffic parking and pedestrian movement, leading to reduced emissions from cars and fewer headaches for citizens.

Another future capability of Current's technology is the ability to collect environmental data—air quality, road conditions, etc.—which could help citizens know when it's unsafe to go outside (think about the impact the recent fires in California had on air quality and physical safety.)

Creative ways to fund a smart city

Despite the clear benefits of a smart city infrastructure, it's difficult to ignore the cost associated with investing in these technologies. Canada's solution was to get creative.

Earlier this year, Canada's long-term infrastructure plan, Infrastructure Canada announced a Smart Cities Challenge to communities across the country asking them to work with businesses, academia and civic organizations to design innovative digital solutions that improve residents' quality of life. This challenge promised up to \$50M for the winner. It was also built upon Nokia's agreement with Smart City Capital announced in April 2018, to foster smart city projects throughout Canada, by leveraging a \$2 billion CAD dedicated project fund and a pre-verified ecosystem of partners.

The emphasis Canada is putting on developing its smart city infrastructures is evident by the efforts it has put towards inspiring and funding its cities to pursue smarter, more energy efficient technologies for their communities, and cities like Hamilton have taken quick action to contribute to the movement.

The 1,137-kilometre squared area of Hamilton features 3,000 kilometre of roads and sidewalks re-lamped with 45,000 LED roadway fixtures. Not only is this making streets safer for drivers and pedestrians, but the expected annual reduction in energy is two mega-watts—equivalent to energy usage of 1,000 homes. This kind of energy reduction makes the city greener in both energy and cash. The best benefit is arguably that this retrofit will pay for itself in five years, thanks to significant savings in resources and annual maintenance costs.

Through a combination of smart eco systems including SmartGrid, IoT and innovative app environments, these cost-efficient initiatives help cities reallocate resources and offers the capacity to assist in creating entirely new revenue streams. The result: new jobs for the app creators, better commutes, fewer vehicular emissions, even new revenue streams for businesses on roads drivers wouldn't normally use. The possibilities are endless and Canada is well

on its way to being a leader in smart city implementation to advance its growing city population. ▶

Varouj Artokun has been with GE for over 12 years, all with Lighting and Current powered by GE. In 2017, he became the Country Manager and Roadway Commercial Leader for Canada. Prior to his career with GE, Varouj worked as a Product Manager of NMS/OSS at Ericsson Canada.

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