

WE BUILT THIS CITY WITH IOT

Technology solutions running on the Internet of Things (IoT) are behind a new wave of smart cities



Not all cities are considered smart. The International Organization for Standardization (ISO) and International Electrotechnical Commission (IEC) defines the “smartness” of a city as how well all the city’s systems, people, organisations, finances, facilities and infrastructure are working efficiently and acting in an integrated way. In other words, a smart city should be highly integrated to provide value to its citizens.

Therefore, the key goal of a smart city is to increase the quality of its services while reducing costs. Deploying IoT-connected smart technology can go a long way to help municipalities reach this goal. Whether it’s smart traffic, smart lighting, smart water...all the way down to trash collection, there are many ways a city can use IoT technology to better serve its citizens.

The McKinsey Global Institute estimates the potential economic impact of IoT applications to reach up to \$1.7 trillion per year by 2025. The primary drivers of this value are air and water monitoring (reducing lives lost to pollution), adaptive traffic management (less time spent in traffic and looking for parking) and a reduction in deaths and injuries from self-driving cars. Coming in fourth is resource and infrastructure management, with a projected value of \$33–64 billion a year owing to 35 percent fewer electric outages, a 50 percent reduction in water leaks and a 10 percent reduction in theft.

IT STARTS WITH SMART STREET LIGHTS

Street lights provide safety and security to citizens, but they can also account for up to 40 percent of an city’s energy bill. This is largely due to outdated halogen lights that stay brightly lit for up to 12 hours a day. By switching to LED bulbs and integrating smart sensors, cities can cut costs by more than 60 percent. Here’s how:

- Increase or decrease lighting based on traffic patterns, instead of remaining at the same level
- Cameras and sensors detect people in the area and adjust lighting accordingly
- Replace emergency kiosks with mobile apps that allow citizens to increase illumination or make lights flash during emergencies
- Longer shelf life – LED street lights only need to be replaced every 15–20 years



Street lights are the backbone of a smart city – their wireless networks can also support Wi-Fi access points, smart utility metres, traffic sensors and more. Having access to public Wi-Fi can help citizens complete everyday tasks, from looking for jobs to accessing city services online. The data from these devices can also help a city determine whether a road needs to be upgraded or a traffic signal retimed to better serve its residents, among other uses. IoT connected devices can help attract and retain residents, businesses and tourists, allowing the city to grow and thrive.

SMART PARKING

Smart parking solutions use video monitoring to find available parking spaces, and digital signage – or a mobile app – to let citizens know how many spaces are available. Smart parking lots can also save energy by turning lights off until a car approaches.

As part of its Urban Pilot Program, the city of Toronto is looking at deploying a parking system to count vehicles, manage space and deliver advertising. And in the private sector, some smart parking lots allow drivers to book parking spots in advance. Frost & Sullivan found that the smart parking market in Europe and North America earned \$7 billion in 2014 and predicts that number to rise to \$43 billion in 2025.

SMART BUILDINGS

A smart building automatically senses and captures information like temperature, light and room occupancy. That data is analyzed and used to help building managers and facilities staff make daily decisions. Smart buildings can reduce downtime and equipment failure by providing early warning alerts, while improving staff productivity by allowing them to focus on areas that require attention.

Under the Government of Canada's Smart Buildings initiative, federal government buildings are implementing a system that collects data on temperature, air pressure and energy use in various rooms, providing information that goes beyond what a maintenance worker could detect in-person. For instance, the system might find that a room is being heated and cooled at the same time – and alert building management so they can fix the problem.

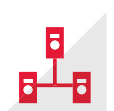
SMART WASTE MANAGEMENT

By installing sensors and smart technology inside garbage bins, cities can ensure that the bins are emptied when they need to be. A smart garbage bin can alert the sanitation department when it's almost full, rather than waiting for its next scheduled pickup – while bins that aren't nearly as full don't need to be emptied as often.

Smart technology and data can also be used to optimize the schedules and routes of garbage trucks, allowing pick-up and disposal to be done more efficiently. This can help cut fuel costs, reduce CO2 emissions and provide better service to citizens.

THE FUTURE OF SMART CITIES IN CANADA

Artificial intelligence, Big Data and machine learning can help shape the future of smart cities. This technology provides city officials with data and insights to help solve municipal problems, whether by tracking city vehicles, detecting pedestrian patterns or helping to manage traffic and parking.



As part of Infrastructure Canada's Smart Cities Challenge, municipalities across the country are proposing solutions that would use technology to help improve the lives of their citizens. The City of Yellowknife, for example, is looking to turn lampposts into "a beacon for sustainability" by reducing light pollution and using data tracking to increase efficiency. Their proposal comes with a variety of benefits, from reducing greenhouse gas emissions to increasing tourism and encouraging citizens to be more active.

But, at the end of the day, it all starts with a smarter street light.

PARTNERS WHO GET IT

The Aruba logo consists of the word "aruba" in a lowercase, rounded, orange sans-serif font.The Cisco logo features a stylized blue signal tower icon above the word "CISCO" in a blue, uppercase, sans-serif font.The Intel logo is a blue oval shape with the word "intel" in a lowercase, blue, sans-serif font inside.The Microsoft logo features the four-pane Windows logo (red, green, blue, yellow) to the left of the word "Microsoft" in a grey, sans-serif font.The Ruckus logo shows a black silhouette of a dog with an orange collar and three orange lines above its head, followed by the word "RUCKUS" in a bold, black, uppercase, sans-serif font, and "an ARRIS company" in a smaller, orange, lowercase, sans-serif font below it.The Toshiba logo is the word "TOSHIBA" in a bold, red, uppercase, sans-serif font.

To learn more about smart city solutions, contact your CDW account manager at 800.972.3922 or visit CDW.ca/government



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