Canadian Organizations Should Make IoT Initiatives a High Priority in 2018

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IDC ANALYZE THE FUTURE

IoT Should be Top of Mind for Canadian Executives

Allocating resources is among the most critical tasks for management. Making the right decision between projects that deserve funding is one of the elements that separates successful organizations from their counterparts. IDC believes that the Internet of Things (IoT) needs to be top of mind for executives in 2018. IoT solutions quickly help achieve business goals while frequently driving additional unexpected benefits.

Whether smart cities, "click and mortar" retail, "lights-out" factories, or autonomous tractor-trailers, research shows that Canadian organizations are using connected sensors to enhance customer experience, create process efficiencies, reduce costs, optimize IT, and generate new revenue opportunities.

Canadian IoT users (in production) have jumped

FROM 52% IN 2016 TO 70% IN 2017

a further 21% are piloting or considering an IoT solution.

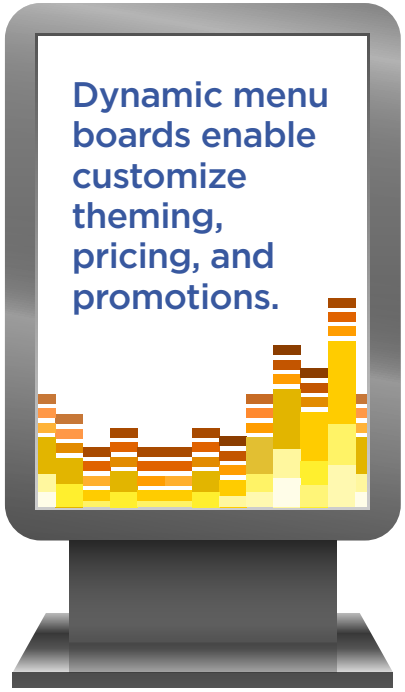
Retailers Embrace "Click and Mortar"

Canada's retail sector is transforming itself in response to ever-changing consumer expectations. As online players take a growing share of the market, "brick and mortar" vendors are evolving into "click and mortar." The retail journey to omni-channel is a connected one. IoT solutions are already helping merchants evolve their business processes, from supply chain to customer experience.

Let's take a closer look.

Retailers in major cultural venues like arenas and concert halls now use **digital signage** in new ways. Dynamic menu boards enable Los Angeles' Staples Center's concession stands to customize theming, pricing, and promotions in response to different events or fluctuating weather. So far, it is yielding a **10% increase per cap spend and a 400% increase in select promotional item revenues.**

Retailers have large buildings to heat and light. Using data from occupancy sensors, **smarter HVAC and lighting** save on energy costs through automatically adjusting to variations between peak and off hours.



That's standard energy management, which is going to be even more important with the rise of cross-Canada carbon emission taxation regimes. What's intriguing is that leading retailers are using the **same sensor infrastructure to improve their business.** The data from in-store sensors helps optimize staff utilization, increase conversion rates, improve bounce rates, lower wait times, and improve merchandising layouts. Retailers use heatmaps, footfall analysis, and even change room door monitors to offer better customer service by adjusting staffing to meet demand in real time. Data drives better decision making — even if it was originally intended for other departments and purposes.

Retailers walk a fine line of minimizing their inventory levels without being out of stock. Restocking needs to become virtually autonomous. Integrating sensors in the supply chain addresses this challenge. Point-of-sale and shelf sensors can direct warehouse and distribution centre actions. With the rise of minimum wages, IDC anticipates further investments in automation across the retail sector.

From Alexa to Dash buttons, from Kiva warehouse robots to Amazon Go employeeless stores, Amazon is bringing new innovations to its customers every day. "Brick and mortar" retailers need connected solutions to compete. Every division in legacy retailers needs to consider how IoT can help it become more efficient while delighting its customers.

Manufacturers Invest in Automation

Manufacturing businesses in Canada invested an estimated C$15.9 billion in new capital in 2016, including C$12.1 billion in machinery and equipment. To stay competitive and enhance productivity, firms are investing in automation, sensors and robotics. Successful firms in Canada embrace the opportunity to digitally connect their value chain, from plant floor to distribution network to customers. Given the uncertainty around access to our largest export market, it is more important than ever to drive efficient automation and optimize decision making through better and faster data, while adding new service capabilities.

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What has IoT meant to the manufacturing sector?

Johnson Controls has over 4 million returnable containers in its Automotive Experience division. These carry components from its multiple plants to distribution centres and, from there, transport finished products to customers. The containers cost up to C$1,500 each, and were not returning to their originating plants. After installing asset tracking, Johnson Controls now does cycle counts in minutes instead of days. **The firm recouped its investment in less than a year.**

Canadian coffee machine manufacturer Cafection resolved one of its ongoing operational costs through remote monitoring. Each service call can cost $200–$300 — and impairs customer satisfaction. Remote access enables the firm to monitor ingredient levels, proactively refill the machine, save costs through remote servicing, and lower downtime through better scheduled maintenance.

Food processing firms have adopted item-level tracking through their supply chain to improve their ability to improve food quality, deal with recalls, and respond to regulatory changes like the 2017 U.S. Food Safety Modernization Act or Canada's Safe Food for Canadians regulations. Successful firms will reposition the compliance challenge as an opportunity to ensure food safety and improve logistics through geolocation and cold monitoring. Smarter food processing firms like Barilla turned that data stream into marketing material. Barilla's pasta packages encourage consumers to trace their food literally from the farmer's field to their table, an advantage when dealing with today's ever-more-demanding consumers.

Canadian manufacturers compete in a global marketplace, where the advantages of local labour and resource inputs decline every year as equity investors keep their eyes on marginal cost. The future of the factory hinges on real-time data flows between inputs, processing operations, logistics, warehousing, and sales. Successful manufacturers create new lines of recurring revenues from launching connected products (from toys to windmills) or selling "products as a service." Equity markets have been willing to pay premiums for these recurring revenues, which are literally built on the IoT architecture.

Smart Cities Digitally Transform Urban Communities

Cities and provinces are struggling with a static funding envelope, reluctant to raise taxes or cut services, even as the expectations of their citizens keep rising. Smart cities digitally transform the urban ecosystem to deliver environmental, financial, and social outcomes — which is why the Government of Canada launched its $300 million Smart Cities Challenge to promote innovation across the country.

Here's how the appropriate use of technology and data improves everyday life for Canadians — and around the world.

Ontario's Richmond Hill connected its storm water pond monitoring stations to ensure that the city's public works crews intervene before flooding impairs road safety or damages infrastructure or property. In light of changing climate conditions that have led to expensive floods in Manitoba, Calgary, Toronto, Quebec, and elsewhere, this early-warning system is more valuable than ever before. In Seattle, similar flood monitoring stations are linked to an SMS warning system that notify nearby property owners of the threat.

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San Francisco has enabled "demand responsive" pricing. In other words? Surge pricing for parking. Because the metres are connected, SF adjusts pricing in response to time-of-day or special events to optimize parking turnover and minimize the pollution from circling vehicles. The parking solution uses an API enabling smartphone app payments instead of feeding the metres. Subject to time limits, drivers add time without even returning to their car. Burlington, Ontario, is rising to the congestion challenge by monitoring 1,337 parking spots in the city centre. Smartphone applications and dynamic message signs indicate open spots, reducing traffic circulation.

Up to 20% of treated water is lost to leaks in municipal mains and pipes. The obvious cost is to the water department, which needs to find more efficient ways to treat and deliver the water. But the gains to cities from smart water management go much further. Water main breaks stop traffic, erode city roads, and significantly damage property like basements. Adopting smart, connected water monitoring saves significant amounts for multiple city departments — without even being part of their budget. The City of Medicine Hat has deployed a water leak detection solution to find issues earlier, minimizing infrastructure damage at much lower costs.

St. Catharines, Ontario, deployed digital kiosks providing WiFi hotspots and cell phone charging stations in popular public areas. The kiosks' digital displays create awareness of city events and generate advertising revenue. Each kiosk includes two closed-circuit cameras, enhancing public safety.

Public works departments around the world are embracing LED lights for the energy efficiency improvements. Some cities are going one step further. Barcelona connected its LED street lights to a fibre-optic connectivity network. Initially, this was for remote maintenance reasons, but the Catalan city quickly realized it could use the infrastructure for much more. Barcelona augmented its luminaires with other sensors to monitor vehicle and pedestrian traffic, noise levels, and air pollution. By starting one connected solution, the incremental costs of adding other IoT solutions were minimized while the data was repurposed in novel ways. For instance, rain and humidity sensors now determine the amount of additional water required to irrigate public parks.

Cities, provinces, regions, and nations are now digital rivals. They compete on factors beyond physical resources and their human capital to attract citizens and businesses. Staff, residents, and visitors can make better decisions faster with IoT, improving efficiency.

IDC believes that smart cities will deliver services in ways that were not previously possible, improving the lives of Canadians.

IoT Delivers Efficiency and Compliance for Transportation

Time is literally money to transportation companies. Couriers and freight/trucking firms are low-margin, high-volume businesses that cannot afford delays, inefficiencies, or compliance infractions. IoT keeps goods moving. Just as importantly, logistics is the glue that pulls together the manufacturing, wholesale, and retail sectors. Delivery of goods on-time and in the expected condition is the new table stakes for the industry, whether with real-time routing or digital cold chain solutions.

The connected transport truck is already here. Volvo has 600,000 on the road already, with over 200,000 in North America. Why? Connectivity enables improved uptime through remote diagnostics and over-the-air engine drivetrain software updates. Drivers and their bosses are instantly notified of key ECM trouble codes like low engine coolant or emissions control systems. Operators can pre-position parts to enable critical repairs and ensure that trucks and their loads are not stranded in remote locations. Truckers also see ancillary benefits — like recall notices appearing on the driver display systems, instead of being mailed to the home depot. IoT keeps rigs on the road.

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The North American trucking industry faced mandatory electronic logging for hours-of-service rules through the U.S. FMCSA in 2017, with Canada to follow shortly. Given that drivers now digitally monitor their hours of service, smart logistics firms have embraced connected solutions beyond the bare minimum needed for electronic logging device (ELD) compliance. Value-added capabilities like mobile dispatch, tracking, cold-chain monitoring, geolocating fleet and freight, engine mechanical monitoring, driver performance monitoring, and even traffic video recording are all being adopted across the industry. In many cases, preventing just one theft or accurately disputing one accident will pay for the deployment through insurance savings.

Businesses as diverse as landscapers to construction contractors have found that the time and location data from their ELD GPS solutions can be utilized a second time — to transform billing processes. Syncing geofences of client locations with the time of arrival and departure of their trucks enables digital reconciliation of customer billing, driver time cards, and simplified customer/driver reconciliations with accurate documentation. A side benefit for the trucking industry is that it can now demonstrate to shippers and receivers how its loading docks are causing delays that eat into the drivers' time on the road. The supply chain is improving as a result.

The future of logistics is digital. Connected cameras detect damaged goods. Automated inventory management prevents costly out-of-stock situations in warehouses. Sensors on forklifts and pallets help prevent accidents. Cold chains are continuously monitored. What's next is also driven by IoT. Autonomous vehicles will be moving cargo before we know it.

What's Next for IoT?

IDC research has shown that, like the long-running "Betcha can't eat just one" campaign from Lay's potato chips, organizations that adopt IoT don't stop at one solution. **In fact, Canadian IoT adopters have an average 3.9 solutions in their businesses.**

Why is that?

IDC believes that once business executives experience the benefits of a connected solution, they understand how it can help achieve their business priorities. **Forward-looking executives prioritize IoT investments, applying them to other areas of the business to improve operating efficiencies, optimize customer experience, and create new revenue opportunities.** Organizations around the world have already used IoT to improve their businesses and it is critical that Canada keeps up.

See www.bell.ca/iot for more.