Accelerating Business Success with IoT in Canada

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IDC Analyze the Future

5,000 New Connected Endpoints Per Minute

The rise of intelligent devices is staggering. IDC estimates that the number of sensors in use is in the trillions. There were 10.3 billion connected intelligent systems in 2014, growing to 29.5 billion by 2020. This means that there are more than 5,000 connected endpoints being added every minute. Aside from the right software and services, connectivity - wired or wireless - is the fundamental enabler of IoT.

What is IoT? **The Internet of Things (IoT) is an aggregation of endpoints — or "things" — that are uniquely identifiable and that communicate over a network without human interaction using some form of automated connectivity, be it locally or globally.**

Apache Corporation, a major oil and gas exploration and production company, has deployed IoT solutions to monitor and predict onshore and offshore oil pump failures to help minimize lost production. Executives at Apache claim that if the global oil and gas industry improved pump performance **by even 1%**, it would increase oil production by half a million barrels a day and earn the industry **an additional $19 billion a year.**

Canada is Behind in IoT Adoption And Productivity

Globally 48% of medium and large organizations have adopted IoT, according to IDC's fall 2015 survey. **The U.S. is leading the world in terms of aggregate adoption at 54%, while Canada lags behind at 45%.** It is encouraging that almost half of Canadian organizations have deployed IoT solutions, but IDC believes that most are just getting their feet wet with limited deployments as evidenced by the more basic solutions Canadian organizations are deploying and the limited awareness at the executive level. Canadian firms are behind in actions, intent and achieving the benefits of IoT.

Canada's future success depends on improving its productivity. Falling commodity prices — from natural gas to crude oil, metals, and lumber — reinforces the need to become more productive. Canada's organizations, both public and especially private, systematically under-invest in innovation and technology, according to the Centre for the Study of Living Standards (CSLS). This is particularly troubling given the world-class telecommunication networks deployed in Canada. The foundations are in place to ramp up fast.

Canada lags U.S. productivity by

30%
per worker.

IDC believes that IoT will be a meaningful contributor to Canada's improved productivity through two aspects: **optimized efficiency and new revenue streams.**

What Are the Benefits of Investing in IoT?

IoT solutions create significant quantifiable benefits:

- **Reduced downtime** for machinery and assets through predictive maintenance.

- **Increased efficiency** for logistics and supply chain as improved inventory accuracy and travel routing reduce out of stock or costly fulfillment issues.

- **Reduced spoilage and shrinkage**, and **reduced travel and expense costs** as staff and vehicles travel only when needed.

Other benefits can be harder to measure but are extremely valuable:

- Real-time alerts for environmental issues (leaks, floods, and exposure), **reducing damages** and **regulatory compliance** pain.

- Insurance firms use telematics to offer **usage-based insurance**.

- Employers make their **workforces more secure** through geophysical tracking, lone worker safety, chemical analysis alerts, and more.

- Retailers offer **individually specific discounts**, tailored to customers' past shopping history by combining beacons with advanced databases and mobile apps to elevate customer experience.

- Local and regional governments can use telematics to track and **optimize the performance** of their public transportation fleets, and offer variable pricing for parking spaces and toll highways.

IoT Creates New Revenue Streams and Business Models

Overall, IDC already sees better decisions being made faster as a result of IoT deployments around the world. Even more exciting than seeing firms enhance their operational processes is seeing them create new revenue streams and business models:

- IoT provides more accurate data for warranties and other aftermarket services, and more opportunity to sell value-added services such as predictive maintenance.

- With IoT and accurate connectivity, it becomes possible to sell complex assets on a per-use basis, instead of selling them outright.

Predictive maintenance can **save** up to

12%
over scheduled repairs

30%
Maintenance Costs

70%
Breakdowns

General Electric (GE) is moving away from selling parts and carrying out repairs and towards contractual, risk support services. GE competes by aggregating massive amounts of customer data through its industrial analytics software Predix to optimize equipment performance and reduce operating costs. IoT allows GE to provide a service that improves their clients' profitability.

Manufacturing

IoT has already been employed by many firms in both discrete and process manufacturing. This will accelerate given the increasing pressure to automate and drive out inefficiency in the manufacturing process, develop new revenue streams with remote services, and improve production uptime.

Common IoT solutions are:

- Bidirectional plant floor communication PLCs
- Operations control and measurement
- Industrial machine maintenance
- Next-generation supply chain management
- Inventory management
- Process control for continuous manufacturing

Case Study: Barilla

Barilla is using IoT technologies to establish greater trust with its consumers with a technology solution called Safety for Food (S4F). A digital footprint is created through industry-specific sensors, wireless networks, and cloud-based solutions at every stop on the agricultural food chain. By scanning a QR code with their smartphone, customers are shown the wheat variety, the farm, harvest, and the milling — all the logistics from farm to table.

Traceability ensures safety and quality through the food chain, reducing fraud and counterfeiting. Viewing data from "farm to table" should improve consumer confidence and loyalty. IoT improves Barilla's ability to track sustainability and carbon usage, an increasingly big deal for CFOs with the rise of carbon taxes and "carbon cap and trade" agreements. The firm compares carbon footprint, water footprint, and traditional financial measures between its 30 global production sites, finding and disseminating best practices across them all. IoT is moving the 139-year-old company into the future.

Transportation

The transportation sector also shows tremendous IoT opportunity. IoT helps transportation and logistics companies maximize capacity and improve efficiencies while meeting increasing governmental regulations.

Common IoT transportation solutions are:

- Fleet tracking and telematics
- Wide area item location
- Freight monitoring
- Quality of shipment conditions
- Storage incompatibility detection
- Passenger ticketing solutions

Case Study: Port of Hamburg

The Port of Hamburg, the world's second largest after Rotterdam, handles 9 million containers per year.

The Hamburg Port Authority employs a smart port logistics system which uses sensor data from container terminals and transport companies, cargo ships and containers, bridges, and parking spaces to communicate in real time to shipping companies such as Hapag-Lloyd about which slots are available at the container terminals and when bridges need to be closed to allow cargo ships through.

The solution lets the carriers communicate with drivers directly and enables smoother and more efficient flow of goods through the port. This vastly improves the overall efficiency of the port, boosting its competitiveness in the low-margin, super-high-volume world of global intermodal shipping.

Retail

From product logistics to vending machine telemetry, IoT has penetrated the retail vertical. IoT solutions can optimize inventory, personalize in-store promotions, or even handle payment services.

Some common IoT retail solutions are:

- Touchless payment solutions
- Geolocation-based customer engagement
- Digital signage
- Real-time inventory data
- Smart connected vending machines

Case Study: American Apparel

In the case of American Apparel (AA), the initial impetus for adopting RFID was to improve the flow of inventory to the store floor, ensuring customers always had access to any available colour/style/ size combinations.

But post-implementation, AA also benefited from increased inventory accountability and visibility. The company no longer conducts biannual physical inventory, which generates considerable cost savings, and instead performs frequent RFID-enabled cycle counts. AA now knows when a product has been removed from any physical location within the store without being properly accounted for and can take action to identify root cause. This is reducing loss, particularly related to internal theft and lack of process compliance.

Smart Cities

Many government processes will be enhanced by IoT, such as public safety, traffic management, asset monitoring, surveillance, and toll collection — improving the daily lives of citizens. Connected sensors will monitor and automate important civil functions.

Some commonly adopted IoT government solutions are:

- Infrastructure asset maintenance and management
- Public safety, law enforcement, and surveillance
- Smart buildings
- Smart street lights and parking
- Water management, waste systems, snow removal
- Traffic and transportation systems
- Environmental monitoring detection
- Connected workforce

Case Study: Barcelona

The historic capital of Catalonia is also famous in technology circles for its innovative approach to civic infrastructure. Building on fibre-optic investments made for the 1992 Olympics, Barcelona is wiring itself into a smart city.

Garbage bins have embedded sensors, enabling more efficient collection routing for trucks, emptying only those that are full. Bus stops have digital signage linked to the real-time status of each next bus, with added information relevant to the specific neighbourhood. A mobile app links parking spaces to mobile drivers, minimizing traffic circling in the hunt for an open spot. Street lights are connected to the city's network, so adding incremental sensors to them is inexpensive. This has enabled 24 x 7 noise and traffic monitoring, minimizing complaints from residents in the popular tourist districts. Nearby, the region of La Garrotxa is using IoT to monitor forest fires, flooding, and air pollution to improve the quality of life and safety of its residents. The power of those solutions should be immediately apparent to Canadians — similar safeguards might have saved Calgary $6 billion in flood damages in 2013 or the province of BC the $300 million it spent fighting forest fires in 2014.

Canada's Next Steps

Canadian businesses need to accelerate their productivity to remain competitive both locally and globally. **Adopting IoT solutions provides organizations with an effective means of cutting costs, improving customer experiences, enhancing safety and increasing revenues.** Given that IoT offers so many benefits, why aren't more Canadian public and private organizations embracing it more deeply into their core business processes? IDC's research shows that organizations have three key concerns:

- Cost and demonstrating ROI
- Security and privacy concerns
- Lack of corporate vision

With the right partners and tactics, Canadian organizations can *definitely* overcome these concerns to improve growth, customer and citizen experience and their competitive position.

To learn more about how to transform your business using IoT, contact a Bell Business Representative now or visit: www.bell.ca/IOT