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Canadian low power networks connect municipal and industry to the Internet of Things

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VANCOUVER – In time for its recent open house in Vancouver, the LoRa (**Lo**ng **Ra**nge) Alliance announced a new partnership with Google Cloud as one of the major multi-national companies backing the LoRaWAN standard which is aimed at connecting the internet of things (IoT).

That cloud service provider with clout is the latest of 500 members around the world – including IBM, Cisco, Foxconn, Schneider and Bosch – to join **the Alliance**, whose work is to ensure a protocol that meets the varying worldwide standards and to certify devices to ensure interoperability. This is important stuff.

Travis Hagens, head of IOT operations for Google Cloud, gave a keynote address on May 31st to LoRa Alliance members titled: "Accelerate IoT ROI with data driven insights." Loosely translated: using the data accumulated by all these connected devices to scale solutions and spark new business opportunities. Member organizations have already announced partnerships with Google Cloud to use its secure IoT architecture and data management tools.

What is LoRaWAN?

LoRaWAN is a low-power, wide-area (LPWA) networking protocol that can connect inexpensive, battery-operated devices over long distances, suited to applications requiring high numbers of connections per gateway and low data speeds, along with more than 10 years of battery life.

Generally, business solutions are a partnership between various companies to provide the network – which uses the unlicensed ISM (industrial, scientific and medical) band – the gateway, and devices equipped with sensors.

Solutions deployed by LoRa Alliance members include smart city and smart building initiatives, monitoring soil and agricultural crops, and health and safety monitoring – detecting when a senior has fallen, for example, or when doors have been opened. Among the quirkier deployments have been tracking endangered black rhinoceroses in Tanzania, assisting reindeer herders in Finland, measuring toilet flushes to track traffic in a shopping mall, sensing when packages have been dropped or opened, and remotely monitoring noise levels.

"What you're seeing right now is the tip of the iceberg," said Donna Moore, the LoRa Alliance chair and CEO. "What's exciting is what's below that."

LoRaWAN in Canada

As of May 2018, about 100 countries have LoRaWAN deployments, with both public and private networks offering connectivity. In Canada, eleven-x out of Waterloo and Oakville's QuaeNet are the public LoRaWAN network providers – the Rogers/Bell of this spectrum, if you will.

In operation since 2014 and in 24 cities, eleven-x – whose COO and CTO came from Blackberry – boasts the only coast-to-coast public network optimized for the internet of things. QuaeNet, who also operate in Italy, have less geographically comprehensive coverage in Canada so far, though they claim to have two-thirds of the country's population covered.

One of eleven-x's recently announced deployments is a partnership with the University of British Columbia for waste management and parking. Sensors will be placed in garbage bins to alert staff when they are getting full and should be emptied, and in parking spaces to monitor use. The data will allow the university to track parking needs, particularly for people with disabilities, and evaluate expansion and reallocation.

The company has also launched an interface to collect and monitor near-real-time information from already-deployed water and gas meters, and detect levels in fuel and water tanks, supporting municipal and enterprise-level internet of things solutions.

Among QuaeNet solutions are smart street lighting, soil monitoring that can reduce water use and increase crop yields, and monitoring fuel tanks used to heat residential and commercial properties, designed to save on delivery costs and predict fuel usage. It also has plans to work with the food services industry, pharmacies and hospitals to monitor temperatures in refrigerators and freezers and create alarms if temperatures go outside of a safe zone.

In Europe and South Korea, traditional wireless companies have been quick to offer LoRaWAN solutions, but North American legacy companies have not yet entered the space in a meaningful way. SK Telecom, for example, completed a deployment of a LoRaWAN-based network in South Korea in conjunction with an LTE-M network for solutions requiring speedier data transmission, while Swisscom in Switzerland set up a LoRa network with the aim of connecting devices such as fire hydrants, bicycles, umbrellas and more.

"With the Internet of Things, it's not a zero sum game. When we first started to see traction for LoRaWAN, I think some of the traditional wireless carriers got a bit defensive," said Sara Brown, the LoRa Alliance marketing committee co-chair and senior director of marketing for alliance member MultiTech. "I think

now they're beginning to see – and it's totally customer driven – the opportunities for convergence. There are real applications that could and do use LoRaWAN as part of their solution. There's definitely a place for cellular carriers and LoRaWAN to work together."

"In the end, the companies that are adopting this don't care what protocol you're using, they want to know that you're solving their problem."