SEMTECH

LoRa®

SMART CITIES USE CASE

Calgary

LoRa Technology: Transforming Golf Courses with IoT

ENABLING NEW EFFICIENCIES AND COST SAVINGS

FIRST PUBLIC GOLF COURSE IN CALGARY

In 2015, the City of Calgary celebrated 100 years of municipal golf at its first public course. Shaganappi Point began as a bare-bones 18-hole golf course serving a community of 80,000 Calgarians. Calgary's population has grown to more than one million and Shaganappi Point has expanded to 27-holes, a 44-stall driving range and a club house. During its annual season, from April to November, golfers play an average of 90,000 to 100,000 rounds of golf.

Calgary Recreation is working with Information Technology at The City of Calgary to test Internet of Things (IoT) sensors, software and the City's municipal LoRaWAN-based network to determine if a low-cost solution exists to effectively track pace of play at the Shaganappi Point Golf Course. Slow play may diminish the overall golf course experience and ability to retain customers.

PACE OF PLAY PROOF OF CONCEPT

Tracking golf carts embedded with sensors gives insight into pace of play. In addition, with real-time golf cart location information, guest experience will be enhanced. As pace of play anomalies are detected, course marshals may be dispatched to support golfers in need of assistance.

Semtech's LoRa®-enabled location monitoring sensors provide detailed information about the time it takes for customers to complete the entire course and how long they stop at key locations. Small units of LoRa-based-sensors are placed underneath the seat of each golf cart. Sensor data is transmitted via a LoRaWAN-based network to a TEKTELIC Communications KONA Mega IoT gateway placed on a 100-meter City-owned radio tower seven kilometers from the area. The gateway is connected to a TEKTELIC network server and the GPS sensors used were provided by GlobalSat. Custom software, developed by SensorUp, provides the necessary real time and historical course usage data on a web-based dashboard that can be viewed on a computer or mobile device.

Depending on the results of the pace of play proof of concept (PoC), the Golf and Sport Development leadership team will be able to:

- Compare the total cost of ownership of an in-house solution against off-the-shelf industry products
- Determine whether an in-house solution of sensors for City-operated golf courses tracking pace of play should be pursued

DNA of IoT Use Case

IoT Challenge

- Ability to monitor golf cart locations without wiring into the carts
- Determine amount of time to complete round of golf
- Monitor anomalies in course pace of play
- Account for when the cart is on the course versus travelling to and from other amenities (e.g. driving range, parking lot, etc.)

LoRa Technology Used

- Semtech's LoRa Technology selected by City of Calgary
- City-owned LoRaWAN-based network provides extensive coverage
- Wirelessly connected sensors communicate data to Cloud

Business Value

- Track pace of play
- Detect and respond to anomalies in pace of play

HOW IT WORKS: SHAGANAPPI POINT GOLF COURSE

The step-by-step process of Shaganappi Point's LoRa-enabled solution.

"Understanding how fast people are playing on a golf course will help staff tackle pace of play issues in order to elevate customer experience and support revenue maximization."

– Dawn Burke, Golf & Sport Development, Calgary Recreation, The City of Calgary

SMART CITY INVITES IOT INNOVATION

The City of Calgary is one of the first cities in North America to build a municipality-owned, carrier-grade LoRaWAN-based network. LoRa Technology has been in place for over one year and is a part of a City Network of Things (CNoT) platform created by the Innovation & Collaboration team at the City of Calgary.

Calgary envisions its CNoT will be used by many of The City's 32 business units to eventually connect tens of thousands of sensors. It can also be used as part of Living Labs, an initiative The City is progressing to offer City infrastructure and assets to companies, researchers and individuals. Living Labs allows the testing of ideas in a real-world environment, fostering growth and supporting investment in Calgary's local economy.

"With LoRa Technology and LoRaWAN, we have the opportunity to provide data visibility to processes and services that we were unable to previously."

– Colin Adderley, IT Engineer, City of Calgary

For more information about Shaganappi Point Golf Course, visit: www.calgary.ca

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Semtech's LoRa devices and wireless radio frequency technology is a widely adopted long-range, low-power solution for IoT that gives telecom companies, IoT application makers and system integrators the feature set necessary to deploy interoperable IoT networks, gateways, sensors, module products, and IoT services worldwide. IoT networks based on the LoRaWAN™ specification have been deployed in over 100 countries and Semtech is a founding member of the LoRa Alliance™, the fastest growing IoT Alliance for LPWAN applications.

Semtech Corporation is a leading supplier of high performance analog, mixed-signal semiconductors and advanced algorithms for high-end consumer, enterprise computing, communications, and industrial equipment. Semtech, publicly traded since 1967, is listed on the Global Select Market under the symbol SMTC and has more than 32 sales and application support offices in 14 countries as well as representatives and distribution support locations in more than 30 countries. Semtech is dedicated to providing proprietary platforms, differentiated by innovation, size, efficiency, performance, and reach.

The LoRa Alliance is an open, nonprofit association that has become one of the largest and fastest-growing alliances in the technology sector since its inception in 2015. Its members closely collaborate and share experiences to promote the LoRaWAN protocol as the leading open global standard for secure, carrier-grade IoT LPWAN connectivity. With the technical flexibility to address a broad range of IoT applications, both static and mobile, and a certification program to guarantee interoperability, the LoRaWAN protocol has already been deployed by major mobile network operators globally and connectivity is available in over 100 countries, with continuing expansion ongoing.