

Tektelic is a Canadian provider of best-in-class IoT gateway sensors and applications deployed globally.



## Challenge

The client needed a solution to calculate the approximate coordinates of their LoRaWAN sensors which signal to multiple gateways.

Traditionally, a GPS sensor would have to be installed to track a device's location (moving or static). But while this is a common solution for 3G/4G GPRS trackers, GPS isn't a good fit for LoRaWAN solutions. By design, these solutions are low-power, but have a long battery life of up to 10 years.

The solution is a new way to locate devices in rural and urban areas based on LoRaWAN sensors which have higher energy efficiency over GPS sensors.

## Solution

To ascertain the relative location of LoRaWAN sensors, we implemented the architecture and algorithm based on signal time of arrival from a sensor to the gateways and the known locations of the gateways.

The solution is based on LoRaWAN, which is a much cheaper alternative to GPS. Also, it allows receiving a wider range of data from the sensors.

## Tools and technologies

- Java
- Spring
- AWS Kinesis Data Streams
- AWS Kinesis Data Analytics
- AWS Lambda
- Apache Flink

## Scope of work

- Architecture engineering
- Decisions on the technical stack
- Front-end development
- Back-end development
- Quality assurance

## Results

- In 2 months, one engineer implemented the architecture and algorithms that can handle the high volume of incoming signals.
- The solution is developed both as an independent application and an application that integrates into the client's existing network server.