

Introduction

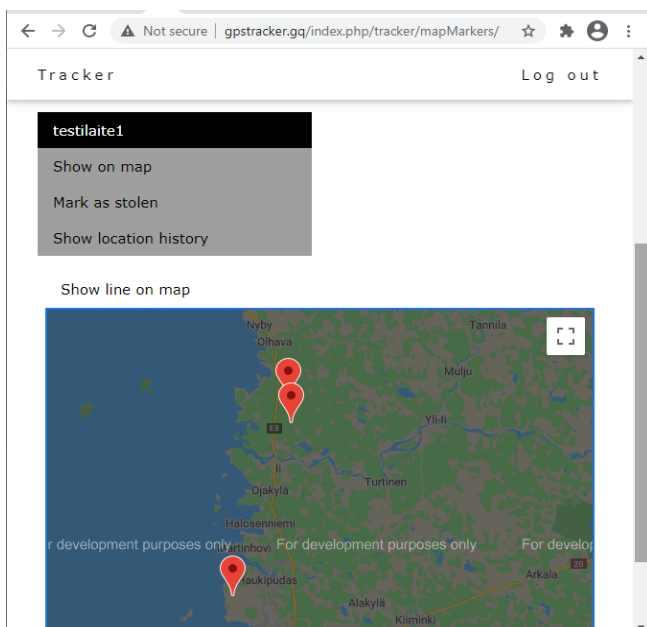
The aims of this project were to make a LoRa connected GPS tracker, which could be controlled through a web browser, and to learn skills required to develop such IoT devices.

Objectives

The basic aims included a GPS tracker that could be tracked from the website (figure 1). It also included safe/stolen status, which could be changed from the same website.

Other more optional goals were power efficiency, small form factor and portability.

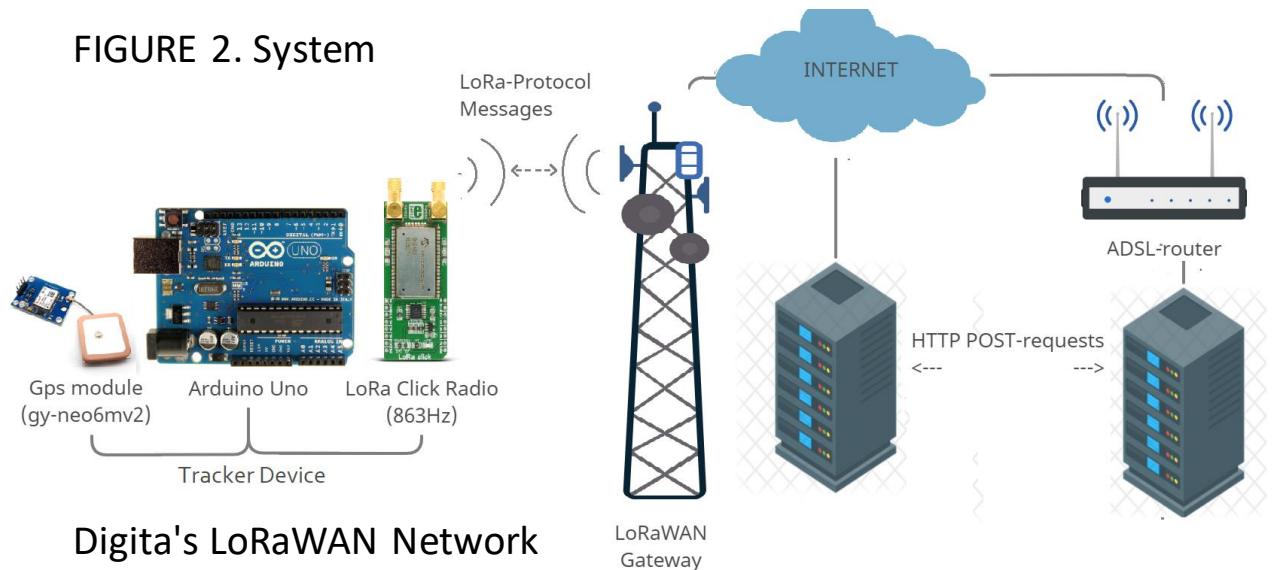
FIGURE 1. Website



Methods

The Device was constructed with microcontroller, NEO-6M GPS module and RN2482 LoRa HAT.

FIGURE 2. System



Digita's LoRaWAN Network provided the connection between The Trackers and The Server.

The Server and Website are run by Linux and is based on MySQL database and CodeIgniter program where HTML, PHP and CSS were used.

Tracker Devices were coded with C and C++ languages.

Results

The system worked quite close as planned. Trackers send data even from moving car. GPS module weren't as mobile and new location data was got mostly when standing in traffic lights or parked.

Other ways LoRa telecommunication was successful and Trackers can receive and send data to Server.

Website has working sign in function and Website shows user's own devices and their locations. When user marks device stole, downlink is sent to device in next location update sent by Tracker.

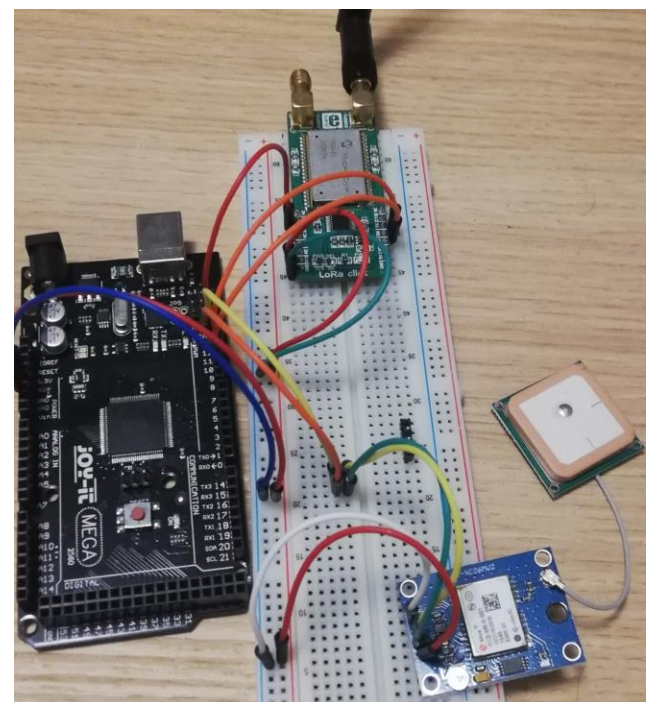
Conclusions

More mobile GPS module should be reconsidered.

Tracker has lots more potential functions that could be made in future projects.

Team learned lot during the project about CodeIgniter, IoT devices, Telecommunication, Protocols and LoRaWAN.

FIGURE 3. The Latest Prototype



References

1. Project GitHub: <https://github.com/tiimi10/sovellusprojekti>