FM4017 Project

Title: Development of Internet of Things Platform using LoRaWan Infrastructure for Storing and Presenting Sensor Data

USN supervisor: Hans-Petter Halvorsen

External partner: Dimension Four, Altibox

Task background:
Data from different Sensors located at USN need to be stored and monitored. In this project the LoRaWan Infrastructure from Altibox should be used and data should be stored within the Dimension Four IoT platform.
Since the autumn of 2018, the Altibox and Altibox partnership has expanded the LoRaWAN Sensor Network in Norway and currently has coverage for more than 1,000,000 households in 100 municipalities. The LoRaWAN Sensor Network is a natural extension of the fiber network with major synergies of established infrastructure and the development continues. Altibox and Partners now offer IoT Access as a commercial service, so that more people can use the Sensor Network for their own sensors. More information:
https://www.altibox.no/iot/

Dimension Four (https://dimensionfour.io), a local company in Grenland Norway has developed a new IoT platform, which may be relevant to use by USN in the future. The IoT platform uses MQTT and GraphQL.

Task description:
In this project the following activities should be performed:
- Give an overview of LoRaWan in general and in context of this work.
- Give an overview of the Altibox LoRaWan Infrastructure.
- Give an overview of the Dimension Four IoT platform and their GraphQL API.
- Create a proper Data Structure within the Dimension Four platform for storing Data.
- Create a Datalogging platform for storing Sensor data through the Altibox LoRaWan Infrastructure and into the Dimension Four IoT platform.
- Create a Monitoring Application that present the Data (that are now stored in the Dimension Four IoT platform) in intuitive and user-friendly way. This should preferable be a Web Application. The Monitoring Application should be deployed to a proper Cloud platform and be public available when the project is finished, so the weather data is available for the public, including students and staff at the university and people in Grenland.
- The system should be Open-source and should be available at GitHub with proper documentation.
- GitHub should be used during project planning and development.
- The system should be properly documented in form of a technical report, documentation in GitHub and on YouTube.

Student category: IIA

The task is suitable for students not present at the campus (e.g. online students): Yes

Practical arrangements: None

Signatures:

Supervisor (date and signature):

Students (write clearly in all capitalized letters + date and signature):