

School of Electronics and Computer Science

ELEC6245 Wireless Networks Group Project

Project Brief

Title	LPWAN2
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Abstract	Design a remote data collection device (of low-rate sensor data, measured every 10 minutes) and send it to a remote location viewable on a web browser via a local LPWAN network.

Primary use case:

Integrate a noise sensor to provide readings of the noise levels changing throughout the day. Such sensors could be deployed near schools, offices, living areas to help us understand the generated noise and possibly implement means of reducing it if it is undesirable.

Secondary use case:

Integrate basic meteorological sensors like temperature, humidity, pressure and keep track of daily changes of these parameters. By deploying such sensors in various locations in cities it would be possible to understand the minor changes in the weather conditions and possibly provide more accurate/ adequate forecasting based on persons proximity to a specific sensor.

Minimum project requirements:

- Integrate a simple sensor with Arduino based microcontroller (e.g. noise sensor).
- Using LPWAN enabled device establish connection with local gateway (take advantage of University base station).
- Transmit sensor data once every 10 minutes.
- Ensure LPWAN gateway is redirecting data packets to a web server.
- Perform necessary measurements (e.g. signal strength at various locations, link margin, antenna gain, transmitter power, free space loss etc.) to determine the performance of the LPWAN wireless network.
- Implement basic database where sensor data is stored and accessed by the website.
- Create a simple dashboard website for displaying the data (using e.g. Bootstrap or React).
- Host the website on the cloud service (utilizing AWS EC2/S3 server).