Minutes

Location: School of Computing Common Room
Date: Tuesday 26th October
Not In Attendance: Daniel Knox

Attendance: Daniel Carl Beauchamp, Dharius Robinson, Natalie Mclaren

What's Been Done since the Previous Meeting:
N/A

Topics discussed:

- **Unit testing:**
  - Looking into Unit testing. One particular framework found - ArduinoUnit
  - We question whether it should be documented or coded? - document templated created: https://docs.google.com/document/d/1o76Q-ja6XgA6W5Tj12clQf7Zpi1FPvO5L_Ege45fGLQ/edit

- **Ultrasonic sensor:**
  - In this meeting we fully decided to go with an ultrasonic sensor over a laser.
  - Resolutions - best to have narrow beams.
  - Range - we agreed that a 5m range would be more than enough.
  - Giving resolution and range, we chose this specific sensor from the Maxbotix website:
    - https://www.maxbotix.com/Ultrasonic_Sensors/i2c_distance_sensors-2.htm

- **Casing:**
  - Looked into the Oxford Floor project and the FloodHack 16 (where it was built) - specifically how they provide a case for their sensor.
  - Our case designs will be based on their case (giving we will be using the same ultrasonic sensor):
    - https://static1.squarespace.com/static/55cba7c2e4b04639c1e746a8/t/56df0ef2c6fc085f1d0e98cf/1457518527117/?format=750w
    - https://static1.squarespace.com/static/55cba7c2e4b04639c1e746a8/t/597f907b9f74561f777e3feb/1501532516227/p1050051.jpg?format=2500w

- **Response from the environmental agency:**
  - *Q: Would you expect the device to be self powered (e.g. solar powered)?*
  - A: Our monitoring sites range in complexity depending on the monitoring required. Typically we will have a control unit (logger, telemetry outstation or similar) which allows for the collection of data from multiple sensors. The entire setup would then be powered according to the requirements of the

equipment as well as the resilience required for the site. We prefer a mains or solar powered supply with a battery backup on site should the input fail.

- *Q: What information would be most important to receive from the sensors (e.g. water levels, speed, rate of level change over time, etc..)?*
- A: Our sensors are purchased in response to the data requirements for each site. For each data type there are a number of options, with preference given based on site specific details such as location, budget, risk of vandalism, power requirement etc. For instance, if we needed to monitor river level, we could select from a pressure transducer, shaft encoder or radar unit. It is difficult to answer this question as we don't rely on a single 'flood network sensor'.

- *Q: What would be the best way to have this information displayed (e.g. graphs, heat maps, etc..)*
- A: All of our current monitoring equipment provides values through a variety of outputs to the on-site logger/outstation. There are typically sent via 4-20mA loops, SDI-12, or Modbus. Once the data has been written to the logger/outstation, we are then able to transmit it via our telemetry system or manually attend to download the dataset. On site we do have local displays but again this depends on the requirements of each monitoring site. Typically, all of our graphical displays are presented to users through our telemetry system once data has been transmitted.

- In summary - their monitoring depends a lot on the site the sensor is at. They have different sensors on different sites therefore its monitoring changes. Similarly, they have different data requirements depending on the site.
- We agree we will not use solar powered supply.

- **Diagrams:**
  - We feel that we need to work on more diagrams to show how our components are connected.

What's Being Done:

Emailed Dan K for confirmation on our chosen ultrasonic sensor.

Natalie has collected an SD card reader breakout to test the pseudo code.

All members to continue on pseudo code & Natalie on case designs (providing this ultrasonic sensor is confirmed).

We agree to meet more often next week during project week.

Further Discussion:
Chosen Ultrasonic sensor: https://www.maxbotix.com/Ultrasonic_Sensors/i2c_distance_sensors-2.htm