

**Subject:** Phase 1 - Alex Riddell-Webster: A Mobile Ad-Hoc Network (MANET) to facilitate collision avoidance in rowing boats

### **Phase 1 Project Selection Status Report**

**Name:** Alex Riddell-Webster

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**CRSID:** ahr38

**Director of Studies:** Luana Bulat

**Title:** A Mobile Ad-Hoc Network (MANET) to facilitate collision avoidance in rowing boats

#### **Question 1:**

My project will implement a routing protocol in a Mobile Ad-Hoc Network (MANET). The MANET will represent a set of rowing boats, with each boat being a node in the network. The intended application is the sharing a set of locations between boats.

I intend to implement the project in hardware. My initial test environment will be a large field, then will move to rowing boats.

The project will implement either the Babel or BATMAN routing protocols. I will decide between the protocols during the research phase of the project. Both can be used for wireless MANETs and therefore my project. They have different approaches to solving the problems presented by MANETs, including distributing routing information, short lived and asymmetric links, and frequently changing network topology.

My project will be implemented using with Circuit Python, Micro Python or C on Layer 3 of the OSI stack.

Layer 2 will either be implemented through pre-existing libraries or by me. Layer 1 will be provided by my own hardware.

#### **Question 2:**

Mr Matthew Ireland - in discussion, willing to supervise.

#### **Question 3:**

I plan to use my laptop to implement, evaluate and write up the project. It has a comprehensive system of backups through OneDrive and disk images.

A backup of the project will exist with Git version control, hosted on GitHub.

My own hardware, including Raspberry Pi Picos, breadboards and AdaFruit radio and GPS modules (all already owned), will be used to develop and implement the project.

My project will partially rely on the mathematical correctness of the BATMAN or Babel routing protocols, work that others have already published. [[https://www.open-mesh.org/projects/batman-adv/wiki/BATMAN\\_IV](https://www.open-mesh.org/projects/batman-adv/wiki/BATMAN_IV)] [<https://www.rfc-editor.org/rfc/rfc8966.html>]

As the project has a real-world implementation, I have permission from Cambridge University Boat Club to test devices on their boats.