

CSCI491

Vision and Scope Document

Water Telemetry

Version 1.0

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Revision History

Name	Date	Description	Version
D.W & J.A.	02-08-2021	Initial Document	1.0

1. Vision of the Solution

1.1. Background

The SEA Discovery Center in Paulsbo, Washington, aims to help educate young students on cybersecurity in computer science as well as electrical engineering. These students can take home their own Water Telemetry Station to take their own readings of water conditions.

1.2. Vision Statement

We will assist in creating a system for students to learn about cybersecurity through the use of devices for measuring various qualities of water. This is run by the SEA Discovery Center, and the measurements taken is determined by their wants. Our system will include the data collection devices, an Android app for retrieving data from the devices, and a web interface and database for storing the data and accessing it from anywhere.

1.3. Major Features

This project is divided into three major areas of development: water telemetry station hardware code, application code for Android devices that connects to the weather station via Bluetooth, and web interface code that's used to display the data collected by the water telemetry station. The web interface also includes a database for the data to be stored and retrieved.

1.4. Assumptions and Dependencies

This project depends on the continued cooperation of the SEA Discovery Center for the use of the system in educating students. For operation, we rely on the use of an Android device with an internet connection to gather data from the device and send the data to the database.

2. Scope and Limitations

2.1. Scope of Initial Release

This project is an on-going one, having already been worked on by multiple teams. For the initial release of our team, we will implement better user security with the water telemetry station devices. We are planning on having users being able to log in to the water telemetry stations from Android devices with both a public key and a private key. This will provide better security as well as better demonstrate cybersecurity concepts to the users. We will also implement the ability for the water telemetry station to record data even if it's not currently connected to an Android device, as opposed to our current solution which only has the water telemetry station start recording data once an Android device connects.

2.2. Scope of Subsequent Releases

As an ongoing project, subsequent releases will likely include features for ease of use and access. Other refinements like improving power consumption of the device and efficiency of the apps are also secondary goals.

2.3. Limitations and Exclusions

The devices will not be capable of sending data directly to the database, relying entirely on the Android app to unload data. The physical structure of the device is also not currently subject to redesigns, meaning the limits of the current device design will remain limiting factors (such as the size of computing circuitry).

3. Context

3.1. Stakeholder Profiles

- **SEA Discovery Center**

The SEA Discovery Center will benefit from having students learn even after they've left their campus. The take home water telemetry stations will provide students with better retention as well as provide them an opportunity to keep on learning.

- **SEA Discovery Center Students**

Students will be able to create and collect information by using the knowledge they gained from the cyber-security camp. This helps demonstrate the importance of cyber-security as well as offers something new for the students to learn about.

- **General Public**

The general public can access the web application for free to see what information the water telemetry stations have collected.

3.2. Operating Environment

Each part of the system will have a different operating environment. The water telemetry device is designed to be used in any body of water, and only provides the data to a nearby Android device. The Android app will be designed to run on any Bluetooth capable Android device to connect to a nearby water telemetry device on a routine basis, and also then connect to the internet to upload the data to the database. The database will be accessible from a web app hosted on a server connected to the internet, and should be accessible from any internet connection. Each transfer from water telemetry device to database will be done securely, only allowing certain users/devices access.