QuantumGPS

Multi-Point GPS Visualization System

Request for Proposal

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January 22, 2019
Version 1.1

Version History

Version	When	Who	What
0.9	January 15th 2019	Sterling, Adam	Outline
1.0	January 19th 2019	Hamzah, Adam	Initial Drafting
1.1	January 22nd 2019	Austin, Sterling, Adam, Hamzah, Jamie	Revision

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1.0 Problem Description

QuantumGPS uses ocean-based sonobuoys to collect acoustic data from passing ships, torpedos, and other marine activities to calculate sound intensity of these various activities. QuantumGPS requires a robust system for viewing the locations of these sonobuoys as well as other marine-based objects, such as vehicles, in real-time. For productive analysis of our sonobuoy experiments we require a more configurable, feature-rich, and user-friendly GPS display application.

2.0 Project Objectives

Project DND aims to achieve the following:

- Maximize the amount of data users are able to view from the system
    - Users should be able to easily measure bearing and distances between objects
    - Sonobuoy positions over time should be easily accessible
- Increase the configurability the user has when viewing the sonobuoys
    - Users should be able to configure any solution to different geographical locations
    - The current system has limited data sources and acceptable data types

3.0 Current System

Currently QuantumGPS has a basic GUI application for viewing real-time locational data of sonobuoys, but it has proven insufficient for our developing needs. The current system lacks important features such as:

- AIS information of general marine traffic is not supported or able to be viewed
- QuantumGPS's own ships cannot be viewed in the system
- Display filtering of buoys, vessels, and locational histories are not supported
- Distances, bearings, and GPS coordinates must be calculated manually
- Information about buoys and vessels are not obtained automatically and must be looked up manually

The new system must be able to provide all the functionality of the current system, plus support the new features which we require.

4.0 Intended Users Interactions

The primary operators of this system will be technical and experienced users, but the system must be easily understandable and viewed by non-technical users such as those with no domain experience.

5.0 Interaction with Other Systems

In the discussed system, GPS information will stream in real-time from an internal server to the host running the new system. The new system must be able to communicate with this server and properly decode this GPS data.

The system must support displaying arbitrary background map data so the system must be able to parse the required map formats to display the map.

6.0 Constraints

For the Multipoint GPS Visualization System there are multiple major constraints along with a timeline and budget detailed below.

Data Format
The system needs to be able to display all valid data in the form of a NMEA string, specifically of the type GPRMC. Additionally these NMEA strin

Maintenance and Modification
Once a solution is in place it must be maintained internally or by the same contractors without proprietary licenses. Additionally, if changes need to be made to the system it should be able to be done internally. There is no specification on the programming language, but it should be easily maintainable.

Security
The data needs to be loaded over a closed network with no proprietary IP due to the need to be modifiable in house.

7.0 Project Schedule

Task Name	Start Date	End Date	Assigned to	Progress
RFP	01-15-2019	01-22-2019	QuantumGPS	100%
Initial Client Meeting	01-29-2019	01-29-2019	QuantumGPS and Developer	0%
Requirement Document 1.0	01-22-2019	02-05-2019	Developer	0%
Requirement Document 1.1	02-05-2019	02-06-2019	QuantumGPS	0%
Requirement Specification Document 0.9	02-06-2019	03-12-2019	Developer	0%
Second Client Meeting	02-07-2019	02-07-2019	QuantumGPS and Developer	
Requirement Specification Document 1.0	03-12-2019	03-19-2019	Developer	0%
Requirement Specification Document 1.1	03-19-2019	03-23-2019	QuantumGPS	0%
Requirement Specification Document 2.0	03-23-2019	03-26-2019	Developer	0%
Demonstration	03-26-2019	04-02-2019	Developer	0%

8.0 Project Team

Member	**Role**
Adam Kwan	CFO
Ahnaf Ahmed	Head of HR
Austin Smith	Head of PR
Darian Sampare	Web Development Lead
Hamzah Mansour	CEO
Jamie St Martin	Domain Expert

Julia Todorova	Founder
Sterling Laird	GPS Technician

9.0 Glossary

AIS	Automatic Identification System. An automatic tracking system for marine vessels.
GPRMC	Recommended minimum specific GPS data. Major components include time, latitude, longitude, bearing, and variation
GUI	Graphical User Interface.
NMEA	Data specification for communication between marine electronics including sonars and GPS data
Sonobuoy	A small buoy containing acoustic sensor equipment and GPS tracker