This document is subject to change. The latest version may be found at https://github.com/ashawnbandy/cecs491/tree/master/docs

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CSULB Marine Biology Department Software Project

*Requirements Analysis (Preliminary)*

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# Introduction

## Purpose of the System

The CSULB Marine Biology department collects data from marine life that has been tagged with an acoustic transmitter. Data will be collected by a receiver located off of Manhattan Beach Pier (MBP), which will record the ID number of tags, associated sensor data, date, and time of detection. The receiver in turn will be connected to a computer through a serial port connection. The purpose of the system will be to interface with this computer remotely in order to control the receiver and receive data from it.

## Objectives

1. Ability to connect remotely to the computer managing the receiver
2. Ability to control the receiver remotely through that connection.
3. Ability to optionally stream real-time data from the receiver.
4. Sending an email alert when a detection is recorded.
5. Archive recorded data and recording metadata.
6. Website with public access with detection records and streaming data.

## Definitions

1. “The system” will refer to the software being created by this project, and not the firmware on the receiver equipment.
2. Software at a remote site (e.g. Manhattan Beach Pier) will be referred to as the “server” or “backend”.
3. Software running locally by an end-user will be referred to as the “client” or “front-end”.
4. In general, a collection of server and clients will be referred to as the “application network” with each site as “nodes”.
5. “Phase I” refers generically to the software previous defined.

## References

1. “VR2C wired acoustic receiver”, submitted on 2012-09-17

# Functional Requirements

1. Connect to receivers located remotely (e.g. MBP)
2. Start and stop recording data from receiver to server for later retrieval
3. Provide direct access to receiver through serial console
4. Parse and aggregate data sent from receiver
5. Access and query recorded data
6. Stream status information from acoustic receiver using “Real Time Mode”
7. Email alerts will be sent out when the system detects user defined parameter
8. Transfer the data to a local computer from the server including the following fields:
   1. Number of pulses detected per day.
   2. Number of Syncs detected per day.
   3. Number of detection per day.
   4. Tag ID
   5. Date
   6. Time
   7. Temperature
   8. Depth

# Non-Functional Requirements

## Usability

* The application will minimize network configuration.
* Additional receiver nodes with up to *N* receivers will also require minimal configuration by a remote operator.
* The application will allow more than one client to connect to the server.
* The front-end user interface will follow familiar design practices.

## Reliability

* The server should be continuously available. To this end, the system should detect critical faults and reset without end-user administration.
* Non-critical faults will be either logged or reported to a connected user.

## Safety

There are no known safety requirements.

## Security

* Access to the server will be limited to authorized users through the use of configurable access control lists.
* Data identified as sensitive will be encrypted when transmitted over open networks (e.g. the internet, the CSULB network, etc.)

## Performance

* Commands to receivers and their effects should be sent and received in near-real-time.
* Data from the receiver may be buffered by the server to extend storage capacity and facilitate lower latency data transfers.
* Remote servers should enter ready status within *N* minutes of a cold start.

## Supportability

Sufficient documentation will be provided to the customer to allow for future bug fixes by a third-party.

## Implementation – To Be Determined

## Interface

* The system will interface with the firmware (current at time of implementation) on each receiver.
* The system will generate data consistent with existing output formats (e.g. CSV, SQL).

## Packaging

* + Server software will be installed at a remote site.
  + All software will also be packaged in a manner that facilitates additional installations.

## Statistical Data – To Be Determined

## Legal – To Be Determined