**GrowBro**

# Software Requirement Specification

1. Introduction
   1. The GrowBro ™ is an environment monitoring device that monitors the cultivation of plants. The goal of this system is to provide a reliable and scalable solution capable of supporting both home growers to grow centers. In addition to the main GrowBro ™, there will be a line of single-plant auxiliary wireless sensors that connect to the hub via Bluetooth LE.
2. Software Requirements
   1. GrowBro (Hub)
      1. WiFi Connectivity
         1. The software shall connect to the wireless network via IEEE 802.11 standard (WiFi).
         2. The software shall store the wireless network SSID and WPA key in a safe manor.
         3. The software shall try to automatically reconnect after a wireless network drop.
         4. The software shall transmit data to the external user interfaces via a WiFi connection.
         5. The software shall receive data from the external user interfaces via a WiFi connection.
      2. Bluetooth Connectivity
         1. The software shall be capable of transmitting data and commands to individual sensors via the Bluetooth LE protocol using the external user interface.
         2. The software shall be capable of receiving messages from the sensors periodically containing telemetry data, status info, and more via the Bluetooth LE protocol.
         3. The sensors will be paired with the GrowBro hub with a unique user specified ID prior to beginning standard operating procedure.
      3. Functionality
         1. The software shall receive Bluetooth messages from the sensors containing telemetry data, status info, and more every five minutes. The external user interface retains the ability to modify this report interval as desired.
         2. The software shall implement the ability to transmit Bluetooth messages from the GrowBro hub to individual sensors at the request of the user via the external software interfaces.
         3. Upon receipt of sensor data, the software shall push that data to the cloud.
   2. Wireless Temperature/Humidity
      1. Bluetooth Connectivity
         1. The software shall run an internal periodic script that takes temperature and humidity readings on a user specified interval. The user retains the ability to change this interval.
         2. The software shall relay back Bluetooth messages to the main hub that contains temperature and humidity data.
      2. Sensor Reading
         1. The software shall read the temperature from the sensor.
         2. The software shall read the humidity from the sensor.
   3. Wireless Moisture Sensor
      1. Bluetooth Connectivity
         1. The software shall run an internal periodic script that takes temperature and humidity readings on a user specified interval. The user retains the ability to change this interval.
         2. The software shall relay back Bluetooth messages to the main hub that contains moisture data.
      2. Sensor Reading
         1. The software shall read the moisture from the software.
   4. Phone Application
      1. Application Functionality
         1. The software shall gather information from the cloud.
         2. The software shall display information to the user.
      2. GUI
         1. Main Display
            1. The software shall display current temperature, humidity, and moisture sensor data as the main focal point.
         2. Tabbed Interface
            1. Settings

The software shall allow the user to change the interface color.

* + - * 1. Connect/Disconnect

The software shall add WiFi connection to the hub.

The software shall change the Wifi connection to the hub.

The software shall add a new Bluetooth device.

The software shall remove a Bluetooth device.

The software shall allow the user to specify a unique ID for each wireless Bluetooth sensor. A unique ID will be created if one is not provided by the user.

* + - * 1. Charts

The software shall display 6 month, 1 month, 1 week, and 1 day options.

Upon selection of options, must query the database on the cloud for the data and neatly print a line chart.

* + 1. WiFi Connectivity
       1. The software shall connect to a wireless network.
  1. Website Interface
     1. Application Functionality
        1. The software shall gather information from the cloud.
        2. The software shall display information to the user.
     2. GUI
        1. The software shall display current temperature, humidity, and moisture levels as the main focal point.