

## 1.1 PROBLEM STATEMENT

Our project is focused on solving the problem of professional farmers and hobby gardeners needing to manually test, record, and chart IoT sensor data. The solution we will be working towards will include the farmers deploying IoT sensors and a base station to aggregate data. From that base station data will be uploaded to the cloud for storage. We will then develop a front end application for accessing this data. Our solution will include a number of different charts and graphs to help the users track crop progress and health over a selected period of time. We will also allow specific users to run different intrusion detection algorithms on the data that has been collected. These algorithms will produce alerts for the user if there are any issues with the data collection, if there are any data values that are out of the ordinary, or if there has been an indicator of compromise.

## 1.2 INTENDED USERS AND USES

Who will use the product you create?

1. Large Scale Farmers
2. Gardeners (Smaller family farms)
3. System Administrators
4. People who need to monitor plants from a distance (Corporate or Co-Op)
5. Owners of only house plants (Students)
6. People learning to take care of plants

Who benefits from or will be affected by the results of your project?

All the users listed above will benefit from our project since it is meant to allow them to easily see the conditions of their plants and soil. Some of the benefits will include increased free time and less monetary overhead for monitoring their crops.

Who cares that it exists?

List as many users or user groups as are relevant to your project. For each user or user group, describe:

- (1) key characteristics (e.g., a persona),
- (2) need(s) related to the project (e.g., a POV/needs statement), and
- (3) how they might use or benefit from the product you create. Please include any user research documentation, empathy maps, or other artifacts as appendices.

Who cares that it exists?

**Large Scale Farmers Persona:** Majority are white, older males. Their hobbies and interests include farming. They are motivated to make a living and feed the world. Their personalities are usually more business oriented and value quantity and value of their produce.

**Need For this Product:** This product gives the large scale farmers the ability to collect more data about their field, get immediate alerts if problems occur, and track data trends over time.

**Gardeners (Smaller family farms) Persona:** Majority are male and own their family farm. Their hobbies include gardening and farming. Their motivations to do this are for retirement and their own personal interests. They are also very personally interested in the farm's success with a community focus.

**Need For this Product:** This product will give gardeners the ability to monitor water levels while being away from the field, get notification reminders, and reduce time spent collecting data.

**System Administrators Persona:** SA's demographic would be technically oriented people who make a living off of this product. Hobbies for these people would be technology, and agriculture. Their motivations would be to help farmers and earn a paycheck. Their personality would be very technical and problem oriented. They would value customer satisfaction.

**Need For this Product:** This product will give System Administrators the ability to set permission levels for different users.

**People who need to monitor plants from a distance (Corporate or Co-Op) Persona:** These people would be businessmen or women who may not actually be on the farm too often. Their hobbies would include analyzing data and discovering new products and ideas, as well as being around people. Their work motivation would be business oriented and growing their farms. Their personality would be outgoing and personable. They would value company satisfaction and profit.

**Need For this Product:** This product will give Corporate/Co-Op users the ability to analyze their farms and fields over time and get consistent, immediate data from the fields.

**Owners of only house plants Persona:** This demographic of people would be homeowners or students who want to improve their living conditions with plants. Their hobbies are very open ended but all would at least have some interest in plants. Their work motivation wouldn't be very relevant since they aren't making money from our product. They could have a wide range of personalities since the demographic is so broad. They would value their time and ease of information.

**Need For this Product:** This product will give house plant owners the ability to monitor water levels while being away from the house and get notification reminders.

**People learning to take care of plants Persona:** This demographic lean towards students. Their hobbies would include learning about agriculture and horticulture. Their work motivation would be related to school and their own interests. Their personalities would be very broad but all would be eager to learn about plants and soil conditions. They would value and have aspirations of bettering the field of agriculture and horticulture.

**Need For this Product:** This product will give people learning about plants the ability to monitor water levels, get notification reminders, and easily see what needs the plants have as well as how to fulfill those needs.