

# 1 Introduction: Part 1

## 1.1 PROBLEM STATEMENT

What problem is your project trying to solve? Use non-technical jargon as much as possible. You may find the Problem Statement Worksheet helpful.

We are trying to solve the problem of measuring and modeling an Antenna's Radiation pattern. We are confined to a small space and strict design requirements due to our product having a specific, non-modifiable, special requirement.

## 1.2 INTENDED USERS AND USES

Who will use the product you create? Who benefits from or will be affected by the results of your project? 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.

The main customer for our product is researchers at a NDE lab here at Iowa State. They will benefit from this project because they will be able to have a more verifiable result for antennas used in the lab. They will also be able to prove or acknowledge antenna design deficiencies or efficiencies. The individuals who care that the product exists are firstly the researchers in the lab. It is also the 3rd party entities who use the lab to be able to perform their research through the lab.

### User Groups:

#### Undergraduate Student Researcher

##### **Key Characteristics:**

Learning about antennas, minimal amount of time to configure, lacks complete understanding of how the system is intended to work.

##### **Needs:**

They need the system to be simple to use, provide easy to obtain, justifiable results.

##### **Benefits:**

They will benefit from the product by being able to perform experiments on antennas and gain an understanding on different types of antennas and their radiation patterns

## **Graduate Student Researcher**

### **Key Characteristics:**

Fleshed out understanding of antennas, they have an idea of the expected results, they also may know more about the experiment environment.

### **Needs:**

They need the system to be simple to use, provide an abundance of information in regards to the radiation pattern of the antenna. (I.e S-Parameter information at a specific angle) It will also need to be radar absorbent so that possibility of the antenna rotating assembly does not provide any additional erroneous information that skews results.

### **Benefits:**

They will benefit from this product by being able to analyze and experiment with differing type of antennas and their radiation patterns. They will be able to duplicate and change specific measuring methods to ensure reliability of information.