1. Introduction

1.1. Problem Statement

What problem is your project trying to solve? This section should be written in paragraph form and tell the story of your design problem. Describe the broader user/societal/global context in which you're designing. What issues exist in that context? Why are they important? How are you attempting to address those issues?

Many labs across the country deal with signals and display them almost daily to understand their experiments better. This causes them to extensively use oscilloscopes (devices that display signals/waveforms) that have large BNX cables in order to gather the data. In certain applications the devices the oscilloscopes are attached to are rotating or moving which causes the BNX wires to become tangled. This obviously prevents people from conducting tests with these kinds of setups without hassle. Furthermore, these cables take up a lot of room, taking time to untangle the cords from each other and need to be replaced every so often. It would be very beneficial to the scientific community if these devices were able to be utilized without cables. Our project directly addresses all of these problems, by creating a device that can do everything a conventional oscilloscope can without the cables, transmitting the data over wifi. Such an invention would revitalize labs across the world, by freeing up immense amounts of storage and laboratory space; it would also allow for new experiments to be conducted by freeing them from the constraints of wired oscilloscopes. This also allows for the oscilloscope to be moving and can allow for the device to be used in other experiments.

1.2. Intended Users

Who will use the product you create? Who benefits from or will be affected by the results of your project? List as many users or user groups as are relevant to your project (at least three). For each user or user group, (1) describe the user and their key characteristics (e.g., a persona), (2) identify their need(s) related to the project (e.g., a needs statement), and (3) discuss how they might benefit or derive value from the product you create. Justify how these benefits/this value connects to your overarching problem statement.

Some people that may use the wDAQ include lab technicians, students, and faculty alike. The lab technicians using the wDAQ will be taking multiple measurements in quick succession, so they need a device capable of rapid use in the specific situation they provided to us of the rotating arm. They would benefit from the wDAQ because it would enable them to take measurements from devices that are spinning that would otherwise not be as useful or time efficient. The students will be using labs once a week and don't want to be present longer than necessary to complete other work, school and home related. This causes them to want a device with an easy to use interface to minimize difficulties during lab sessions. They would benefit from a wDAQ because they would be able to project results directly to their personal devices which remove a considerable amount of hassle during lab sessions trying to find a way to gather the information from the oscilloscope. Lastly, the faculty use multiple different oscilloscopes in multiple different locations, so they need an oscilloscope that is portable and easy to take to and from different locations. The faculty would benefit from a wDAQ because they could use the same device in multiple locations that would already be formatted to personal preference.