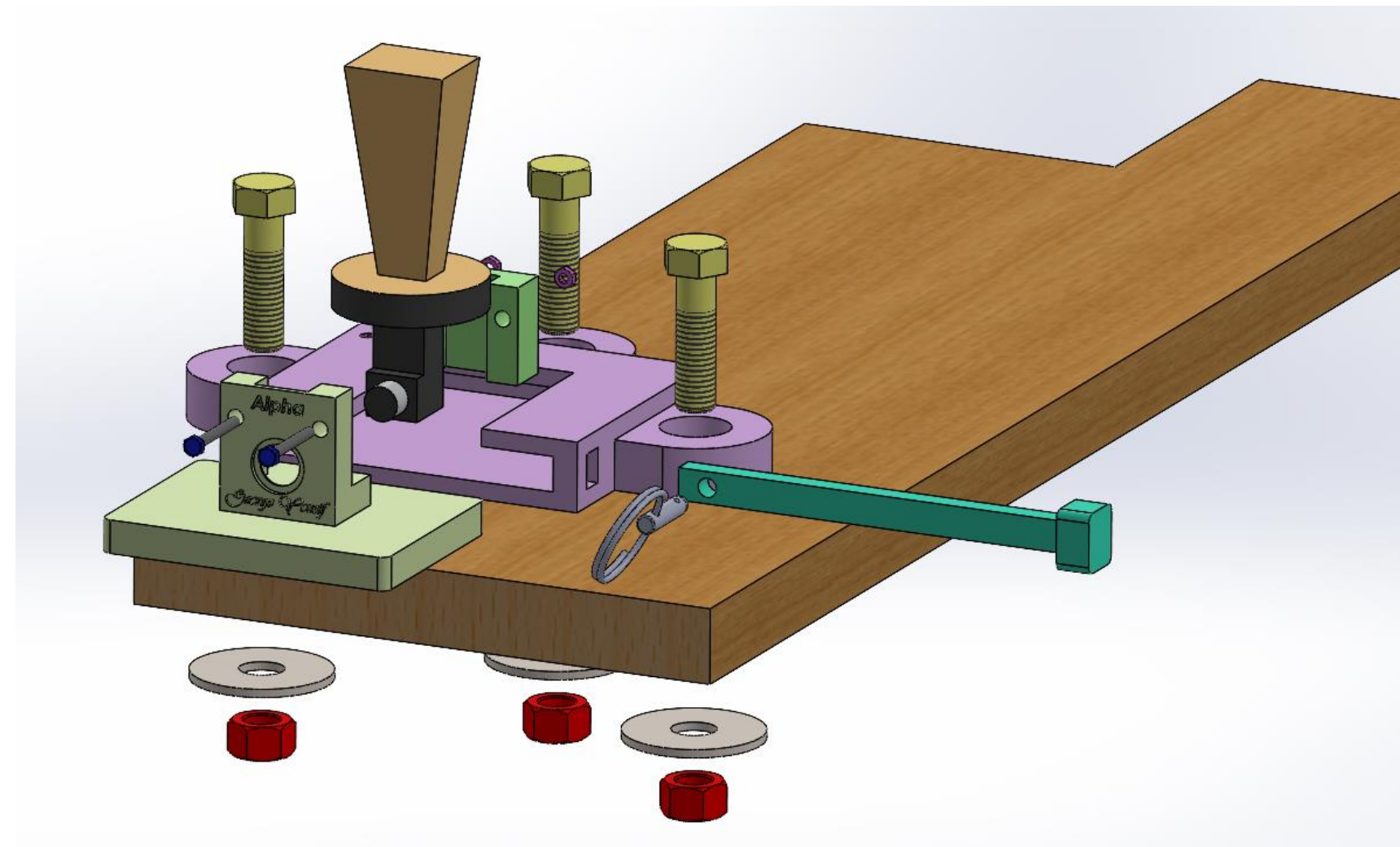


Project Overview

The sponsor, Laird, requested an antenna test fixture to reduce setup time and improve overall productivity of their current test setup for insertion and reflection loss testing configurations.

The Horn Antenna Fixture for Network Analyzer (HAFNA) was designed to automate the angle of incidence and distance between the antennas and test material. It uses an intuitive User Interface, providing the user with real time visual adjustments of the angle and distance. A universal mount was also designed to decrease the time spent switching between antennas.

Universal Antenna Mounts

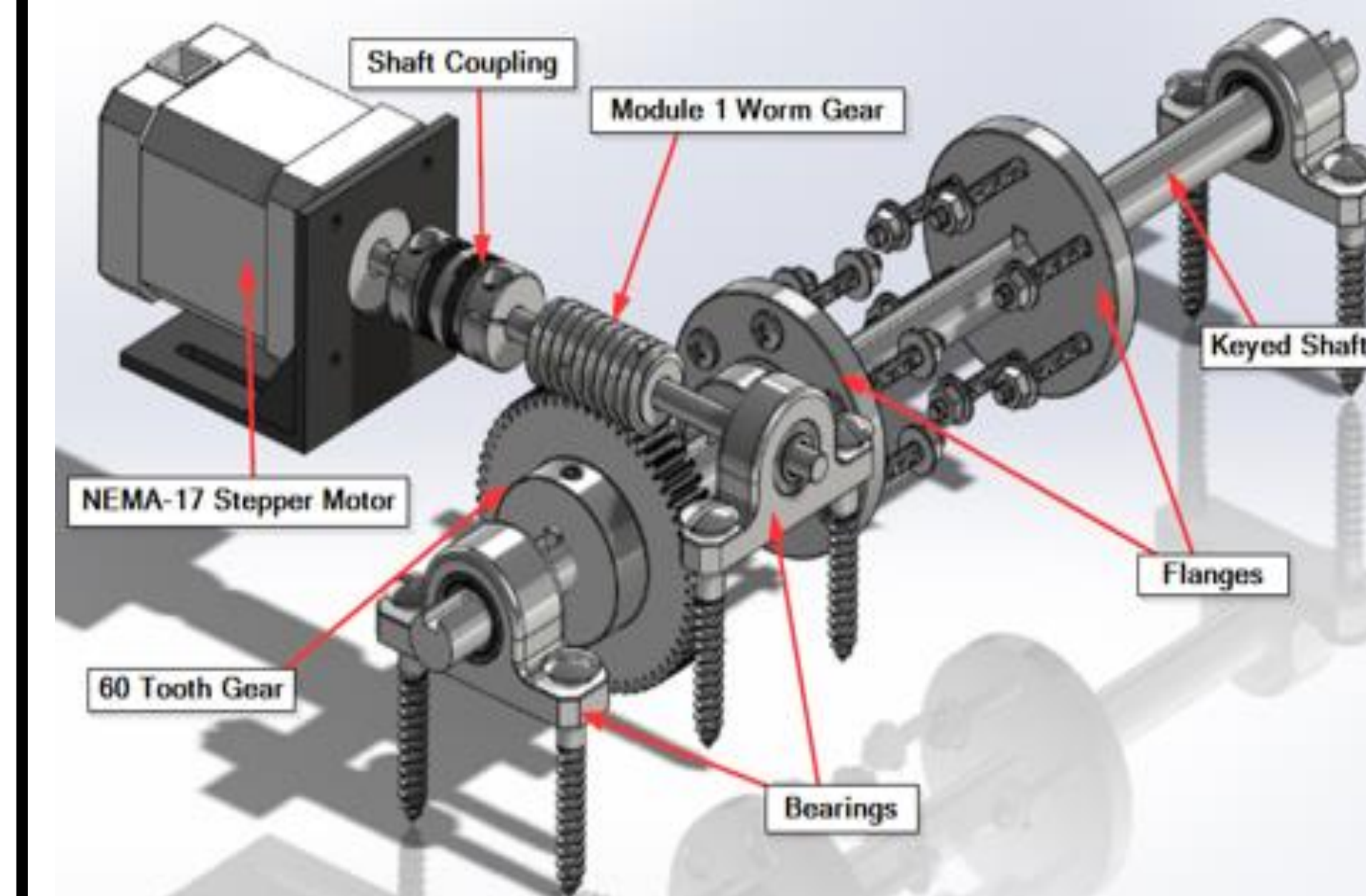


Universal antenna mounts were designed for 3 different models of horn antennas: Alpha 40-60 GHz, Bravo 2-18 GHz, Maverick 18-40 GHz.



Antennas from left to right: Bravo, Maverick, and Alpha

Gear Train Design

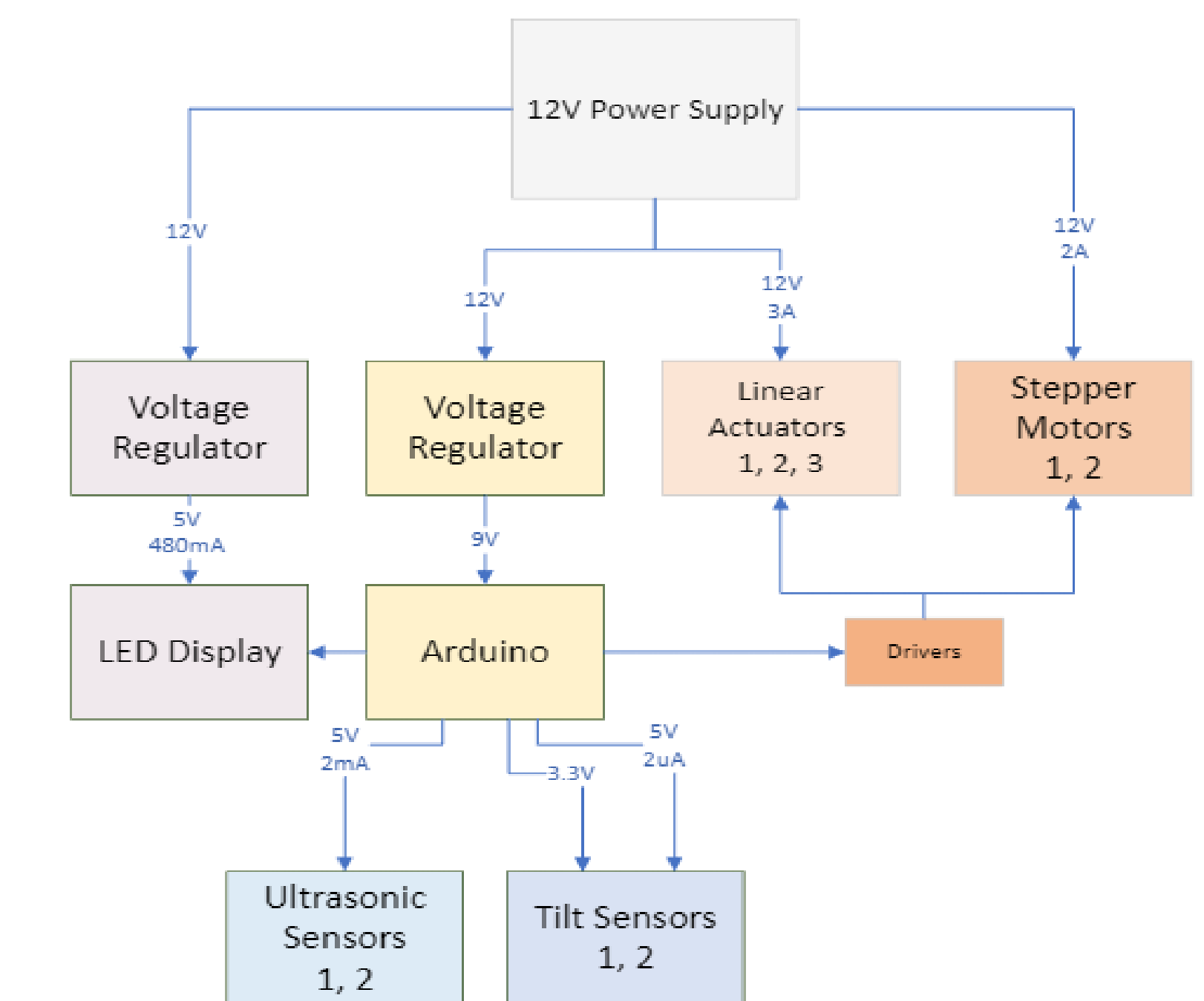


Final Product

The Final Project Design features a control panel and two mechanical arms. The mechanical arms utilize the stepper motors, linear actuators and sensors to automate the distance and angle of incidence for either Insertion or Reflection Loss tests. Additionally, these mechanical arms have a universal mounting system to easily swap between the different antenna models. The control panel utilizes the Arduino Mega 2560, a 7" LED Display and push buttons to provide an intuitive way for the user to control the automation capabilities.



Power Distribution

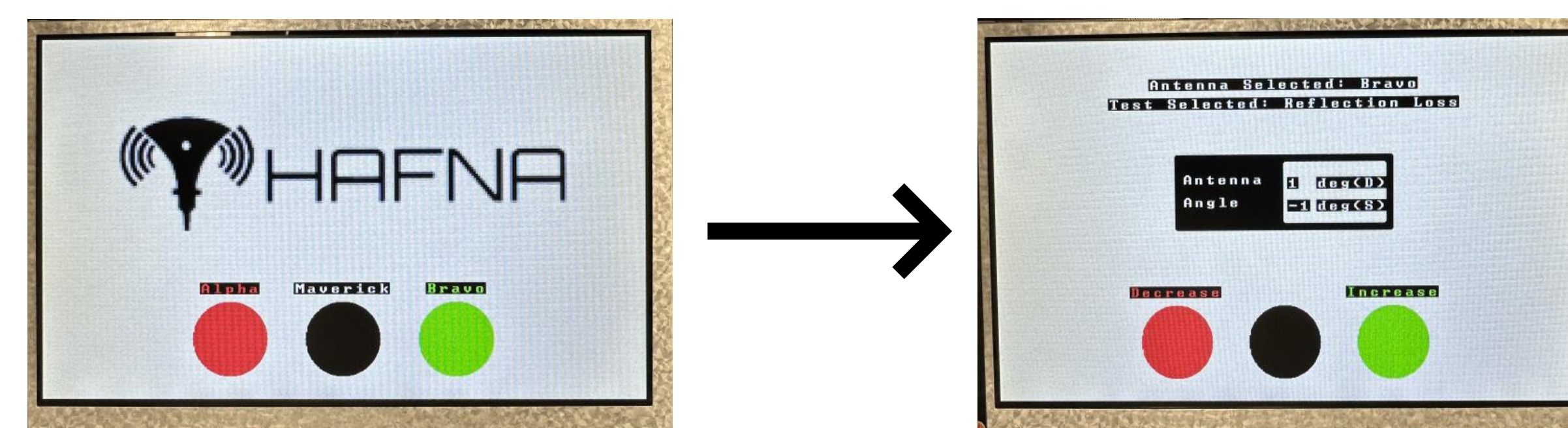


Team Members



Top: John Pateros, Conor O'Mahoney, Caleb Nieto, George Yousif, Livar Mikha
Bottom: Peter Marrone, Cindy Rios, Chris Rodriguez, Christian Suatengco, Tyler Simmons

Operation



1. Select horn antenna being used
2. Select test to be performed
3. Modify antenna distance
4. Modify angle of incidence

Isometric CAD View

