VDR3: Prototype

Team 502: ASU/Psyche

EML 4551

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Currently, we have used cardboard to prototype a few concepts to scale. These prototypes have given us a rough idea of which concept we will be further developed. We are in the process of developing the first functional prototype and individually testing the electronic elements. The current design does not use screens or projectors to present information to users; instead, we are looking into having text panels on pedestals that can feature interactive elements. Interactive elements may include buttons, motors, and physical “doors” that reveal information.

The IR prototype features an IR remote, an IR receiver and an LED all connected to a microcontroller. The microcontroller runs a demo code that displays the detected IR signal onto the computer screen. A power module is used for the IR remote, and when pointed at the IR receiver, triggers the IR receiver to send a signal to the computer.

The dance pad prototype is currently being researched. The high overall cost of the materials and electronics for this prototype means that research must be done before purchases to prevent overspending. The current idea is to cut large sheets of MDF boards in combination with polycarbonate panels to create the main structure. The interactable panels would have weathering foam under each side to reset each user input. Strain gauges are being considered as a method of detecting user input, but the cost of these could cause problems.

The physical construction of the project is an expected problem area. It is expected that we will face challenges to create efficient building techniques and interesting designs while using affordable materials as the exhibit is built. It will take multiple attempts to make the exhibit look professional and interesting. One specific issue that will need to be addressed is how we will wire the LEDs and sensors in the asteroid to an external power source through a rotating

body while preventing the wires from getting twisted around the rotating shaft. To prepare for unforeseen problems we will keep all our resources at hand while we create our project, with the expectation that we will need to adapt and improvise along the way.

The work ahead of us is finalizing what we want the IR sensors to communicate for our exhibit. Further discussion and work on the exhibit's story about Psyche that we want to tell is needed to determine the IR sensor's final purpose. Other work ahead is incorporating the DDR pads and IR sensors into one unifying experience. The asteroid is a main feature of the exhibit but has yet to be decided on how the scale model will be built. The final size is expected to be around 3 feet in diameter. Current ideas of building the asteroid are 3-d printing, papier-mâché, or foam construction. We will be further testing out multiple ways to build the asteroid and information panels.