**Overview**
Apparatus X is a self-sufficient, mobile workstation and temporary living area intended for use in New Orleans, Louisiana and other areas struck by natural disaster. The goal of our team is to provide a water delivery and filtration system for Apparatus X using minimal power input and sewage output.

**Objectives**
The main objectives of the project are:
- The water delivery system must demonstrate innovative approaches to water conservation and reuse that can be applied in homes today.
- The design will minimize potable water input, power input, and waste output.
- Diversity of water sources will be promoted (public main, well, river, and rain).
- The system must be didactic, so that the designs can be applied in small housing as well.

**Approach**
- After understanding the needs of our sponsor, a customer needs table was generated.
- Target specifications were then set according to the customer needs.
- Detailed research was done on the existing patents related to the project.
- Concepts were generated based on customer needs, such as min. power input, potable water input, and sewage output.
- After generating all the concepts, the final design was chosen by performing concept screening and scoring.
- The team met the sponsor every Friday to discuss the progress and take his views on it.
- After the final design was laid out, a CAD model was created using SolidWorks.
- Since there were budget constraints, the team was not able to make the complete prototype. More than half the system was prototyped and tested.
- A detailed theoretical analysis was done and then the pumps and filters were tested for their flow rate and pressure.

**Outcomes**
Ultimately, the final design of the water system for Apparatus X was a success. The full design costs $2,228. The most important customer needs included minimum potable water input, minimum wastewater output, minimum energy use, and a didactic design. By maintaining focus on these four criteria, the design of the water system for Apparatus X was completed successfully.