Boeing Hovercraft

Overview
The purpose of this project is to fabricate a working hovercraft to race around an obstacle circuit with a one-pound payload. The obstacle circuit will consist of turns, ramps, and bumps, and will contain a pit stop where the hovercraft can be stopped to offload some of the payload. The hovercraft is restricted to 18”L x 12”W x 12”H during the time of operation, and the payload must be carried in a container at least 6” above the base of the hovercraft.

Objectives
Our objective for this project was to complete as laps of the obstacle course as possible in 15 minutes. To achieve this we designed, built and tested a remotely piloted hovercraft with a budget of 1000 dollars.

Approach
- We gathered customer needs and obstacle course information from our sponsor
- We did external research to gather information about patents and other existing products
- We developed engineering specifications, established target specifications and related them to our customer’s needs
- We clarified the problem and developed the black box model and the problem decomposition tree
- Using the problem decomposition tree, we developed 4 different concepts
- We used the concept screening and scoring matrices to select the final concept
- We created CAD models of this final concept and created an Alpha prototype based on these models
- We tested this prototype to determine lift and skirt performance
- We updated our CAD models and built a final prototype based on our testing of the Alpha prototype
- We completed a reliability growth test to determine if our hovercrafts reliability increased over time.

Outcomes
- Our hovercraft was easily controllable, but was not as durable as we would have liked.
- Boeing was able to give their employees project management experience through this project.