PSU Robot Snowmobile

Overview
The original problem that was presented to us was to design and build an autonomous unit that could be mounted to a snowmobile to replace a person so that the people who would be piloting it would be safe from the elements and their time could be used more effectively. The project was refined as the semester progressed and the final design and expectation was to fulfil three base cases.

Objectives
Our objectives for the revised project were to complete the software and chassis design so that the mount would be able to complete three tasks:

- Make the snowmobile go and stop after 100m
- Make the snowmobile go \( \frac{1}{4} \) throttle for 50m and then \( \frac{1}{2} \) throttle for 50m and stop
- Make the snowmobile go and then stop within 10m of a gps point

Approach
Due to the nature of the project the group dove into research and design of the project. We began by meeting with the sponsor and got the general idea of what they wanted and the conditions it would be used in. Then we used that to gather our parts list so that the parts would be able to withstand the -20 degrees that we would design to. Then once we got parts we began to focus on software and found it to be a much harder struggle than we anticipated. Due to the time restrictions we began building a prototype and testing what we could on the prototype. As portions of the project were completed they were mounted to the prototype and validation was done. The tests were purely software because we had no physical model to do the testing on. As problems appeared in the prototype they began to snowball. They were ironed out and the model made it to the showcase with an extra user interface for the demo.

Outcomes
From our research and construction of this project the net results for the sponsor are:

- The sponsor has a direction for further research and testing
- The sponsor will be able to test and have limited use of the prototype
- The sponsor will be able to have a definite direction for another semester to undertake the rest of the project that was not sought after this semester.