## 1.2 Customer Needs

After interviewing the customer, a need was identified for a product that increases vehicle safety by sensing the vehicle sinking, delaying the rate of sinking, and creates a means for the passengers to escape. The customer declared a maximum budget of $1000 with the project focusing on saving the lives of the passengers in the vehicle. The final product will limit any potential hazards that could threaten the passengers while in egress.

**Specifications determined from sponsor interview**

1. The project budget cannot exceed $1000.
2. The priority of the product is to save the lives of the passengers in a sinking vehicle situation.
3. The product will limit any potential safety hazards such as breaking glass during egress.
4. The product incorporates a sensor to sense the vehicle sinking under the water surface.
5. The sensor transmits lifesaving information such as GPS location to first responders once sinking has been detected.
6. The product will decrease the rate of sinking in the vehicle.
7. The product will create a less time consuming process of egress for the passengers in the sinking vehicles
8. The product will be designed in metric units

**Customer Interview Questions**

1. Maximum estimated cost?
2. $1000
3. Priority in saving life or vehicle?
4. Priority in saving all passengers
5. Safety concerns and Potential hazards?
6. Shattered glass could hurt escaping passengers
7. Passengers could be incapacitated
8. Device requirements?
9. None given from customer
10. Research Google Patents
11. Existing products?
12. Dislike: JSK Glass Breaker - device connects to door and breaks glass in emergency resulting in a hazard to escaping passengers
13. Like: RESQME - Individual device to cut seat belt and break window.
14. Are they any similar products in the market you know about?
15. Automatic window dropping system: <https://www.cogentoa.com/article/10.1080/23311916.2017.1347990.pdf>
16. Sensor that detects vehicle sinking under water surface and automatically drops window: <http://www.freepatentsonline.com/DE102010046765.html>
17. Side Window safety device designed for side collisions: http://www.google.com/patents/US5318145
18. What improvements could be made to existing products?
19. Drops window instead of breaking glass
20. Sends lifesaving information to first responders
21. Delays sinking rate of vehicle
22. Units to work in?
23. Metric
24. Specific product functions?
25. Sense vehicle sinking
26. Delaying sinking rate
27. Allow for easier egress of passengers
28. Universal design for all types of vehicles?
29. Yes; if possible
30. Expectations for prototype?
31. Demo to show ability:
32. Sensing vehicle sinking
33. Delaying sinking
34. Window dropping
35. Assume driver is not incapacitated