Element I: Testing, data collection and analysis

To collect data on our product, we created a test procedure to evaluate the safety aspect of our design. Safety was the most important design specification to test because safety is vehicles is absolutely necessary, and we wanted to eliminate any possible distractions our solution may entail. While driving, safety is crucial to ensure which alludes to the need to eliminate most, if not all, possible distractions in our prototype. To test this design specification, we simulated a driving atmosphere. We wanted our participants to be actively watching the "road" so that we could accurately evaluate the distraction our prototype would potentially cause. To create this driving atmosphere, we made a slide show of images, and asked the participant to read the color of the lettering shown. An example of this is:

In this example, the participant would be asked to say yellow or orange, NOT blue. Throughout the slideshow, the driver would be alerted at a random time of a code on a different computer. The participant would then read the code and return his/her eyes back to the slideshow. Then a recorder, would time the amount of time the participant averts his/her eyes from the screen to the time he/she looks back at the screen. Our target time that the participant would be distracted was under 4.6 seconds[1]. After, the test was completed; we asked each participant if the code was critical or noncritical. This was to ensure that the participant understood the given information. If, they did not answer correctly or could not give an answer, we disregarded their test.

Results:

We performed this test twice, as we discovered from our first test that our prototype is extremely dangerous. Therefore, after refining our prototype to make the Critical/Noncritical more visible to the driver, we tested the same people a second time. This time, we asked the participant to read the Critical/Noncritical only.

Test #1:

Name:	Time:	Answered Question Correctly:
Mrs. *[redacted last name]*	2.58s	No
Ashley *[redacted last name]*	4.59s	No
Kahlil *[redacted last name]*	7.37s	Yes
Josh *[redacted last name]*	5.42s	Yes
Chris *[redacted last name]*	3.76s	Yes

Andrew *[redacted last name]*	3.53s	Yes
Kimmy *[redacted last name]*	5.68s	Yes
Alyssa *[redacted last name]*	5.50s	No
Mr. *[redacted last name]*	3.31s	Yes
Mrs. *[redacted last name]*	6.40s	Yes
Mr. *[redacted last name]*	4.09s	Yes
Mrs. *[redacted last name]*	5.71s	Yes

Overall Results from Test #1:

Number of People who Passed (under 4.6s)	3 out of 12
Number of Times the Information was not Understood	3 out of 12
Average Time of Participants	4.83s
Longest Time from Test	7.37s
Shortest Time from Test	3.31s

In conclusion, our first test failed. Only three people passed, with numbers close to the 4.6 seconds. This data showed that our prototype needed refining to make the Critical/Noncritical information more prevalent. After, we made revisions by making the Critical/Noncritical on the first line, bold, italicized, and changed the color to red. Once we completed this revision, we did the same test again with trying to use the same people we tested before.

Test #2

Name:	Time:	Answered Question Correctly:
Mrs. *[redacted last name]*	1.03s	Yes
Ashley *[redacted last name]*	1.28s	Yes
Sydney *[redacted last name]*	1.75s	Yes
Josh *[redacted last name]*	0.69s	Yes
Chris *[redacted last name]*	0.80s	Yes
Andrew *[redacted last name]*	1.71s	Yes
Kimmy *[redacted last name]*	1.54s	Yes
Alyssa *[redacted last name]*	1.22s	Yes
Mr. *[redacted last name]*	1.10s	Yes
Mrs. *[redacted last name]*	1.83s	Yes
Mr. *[redacted last name]*	0.93s	Yes
Mrs. *[redacted last name]*	1.47s	Yes

Overall Results from Test #2

Number of People who Passed (under 4.6s)	12 out of 12
Number of Times the Information was not Understood	0 out of 12
Average Time of Participants	1.28s
Longest Time from Test	1.83s

Shortest Time from Test	0.69s

This second test did pass our criteria. The test proved that our second prototype improved and that it meets our safety requirements. After this test, we can conclude that our prototype is safe and readable while driving without giving a distraction to the driver.

Additionally, our data does prove that our second prototype drastically improved from our first. The average time of improvement of our participants was 3.36s. This shows how much the second prototype improved as most participants improved around this number (Most improvement: 4.73s; Least improvement: 1.82s). In conclusion, our second prototype is evaluated as a safe design for inside a vehicle, as it completes our safety design specification found in Element C.

[1] "FindLaw KnowledgeBase." Distracted Driving: It's More than Just Your Eyes. N.p., n.d. Web. 22 Mar. 2013. <**http://knowledgebase.findlaw.com/kb/201 3/Feb /983858.h tml> (http://knowledgebase.findlaw.com/kb/2013 /Feb/983858.html>)**.