AT&T Design Project

ACES Notification System

TEAM NJSB

Brandon Bernstein
Jason Everett
Sean Rothenberger
Nicholas Zern

Table of Contents

- Design Process Overview
- Our Solution
- An Indepth Look at ACES Notification System
- Appendices

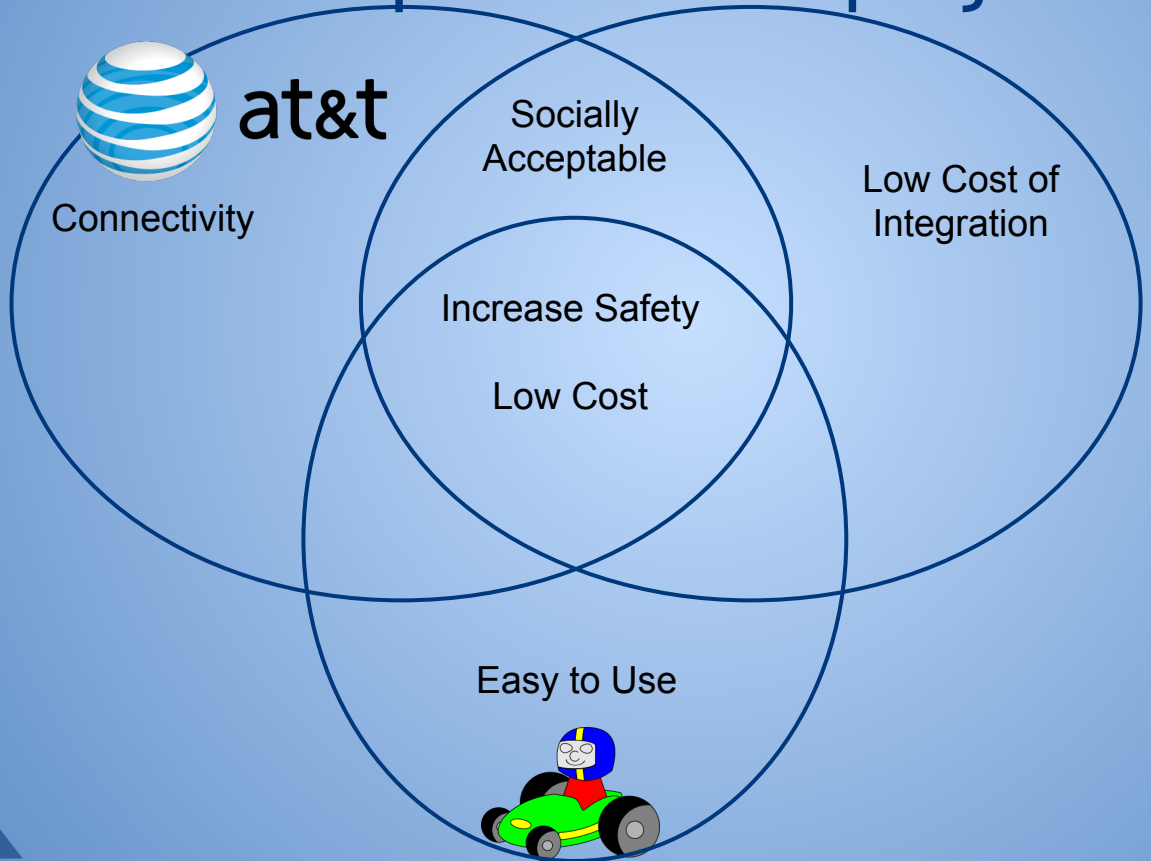
Problem Space

AT&T identified the opportunity to improve everyday life by utilizing the Internet of Things to create a connected home, connected car, or innovative wearable device

Goal

To improve everyday life by utilizing constant connectivity between drivers' phones and their vehicles.

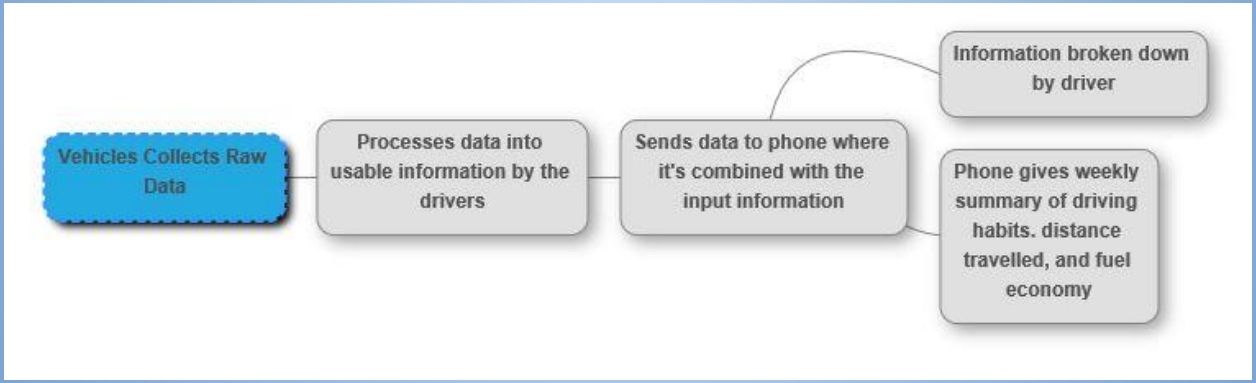
Getting information from our stakeholders lead to initial specs for our project.



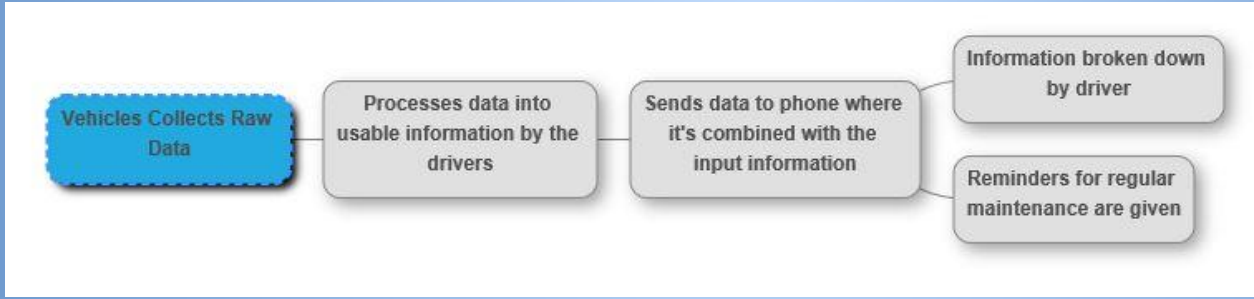
Brainstorming

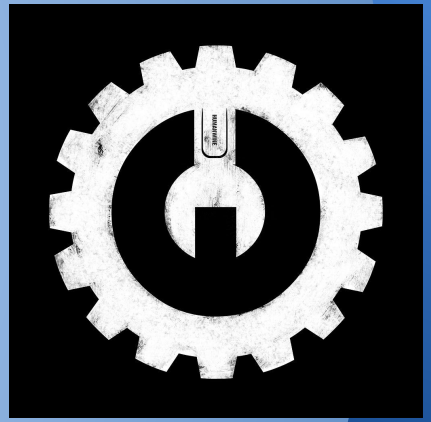
We came up with a variety of solutions during the design process.

Weekly Summary App

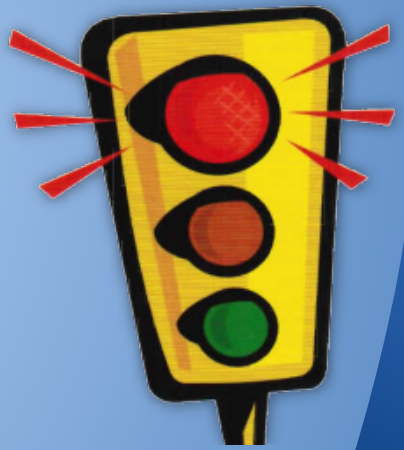


Maintenance Reminder App

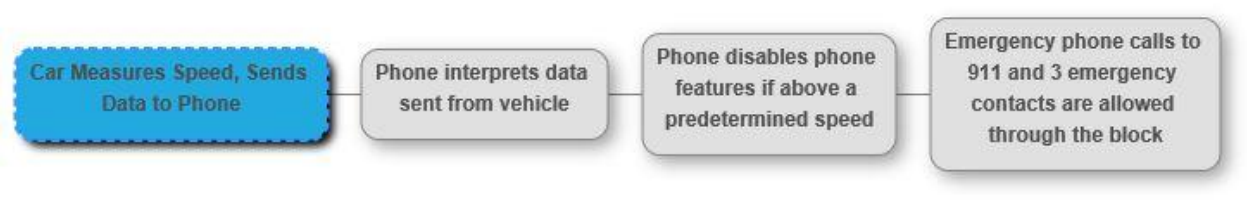




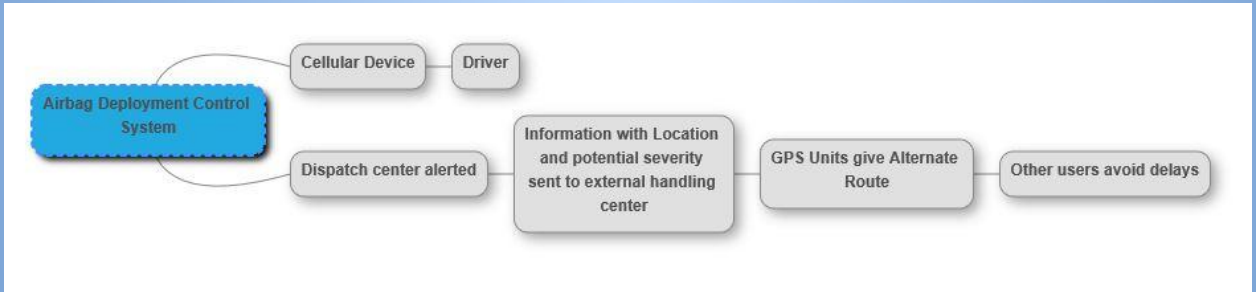
Traffic Light Alert System



Cell phone Disabling System



Automated Cellular Emergency Services Notification System (ACES)



Decision Making Process

After an initial assessment, we narrowed down our ideas to 3 main ones.

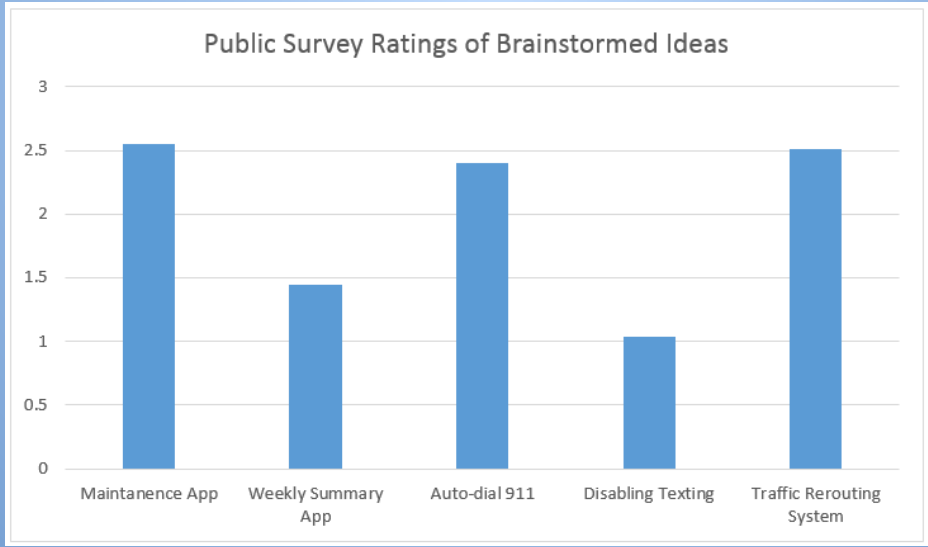
- Accident Rerouting System
- Maintenance App
- Weekly Summary

The ACES Notification System is our best solution for the design problem

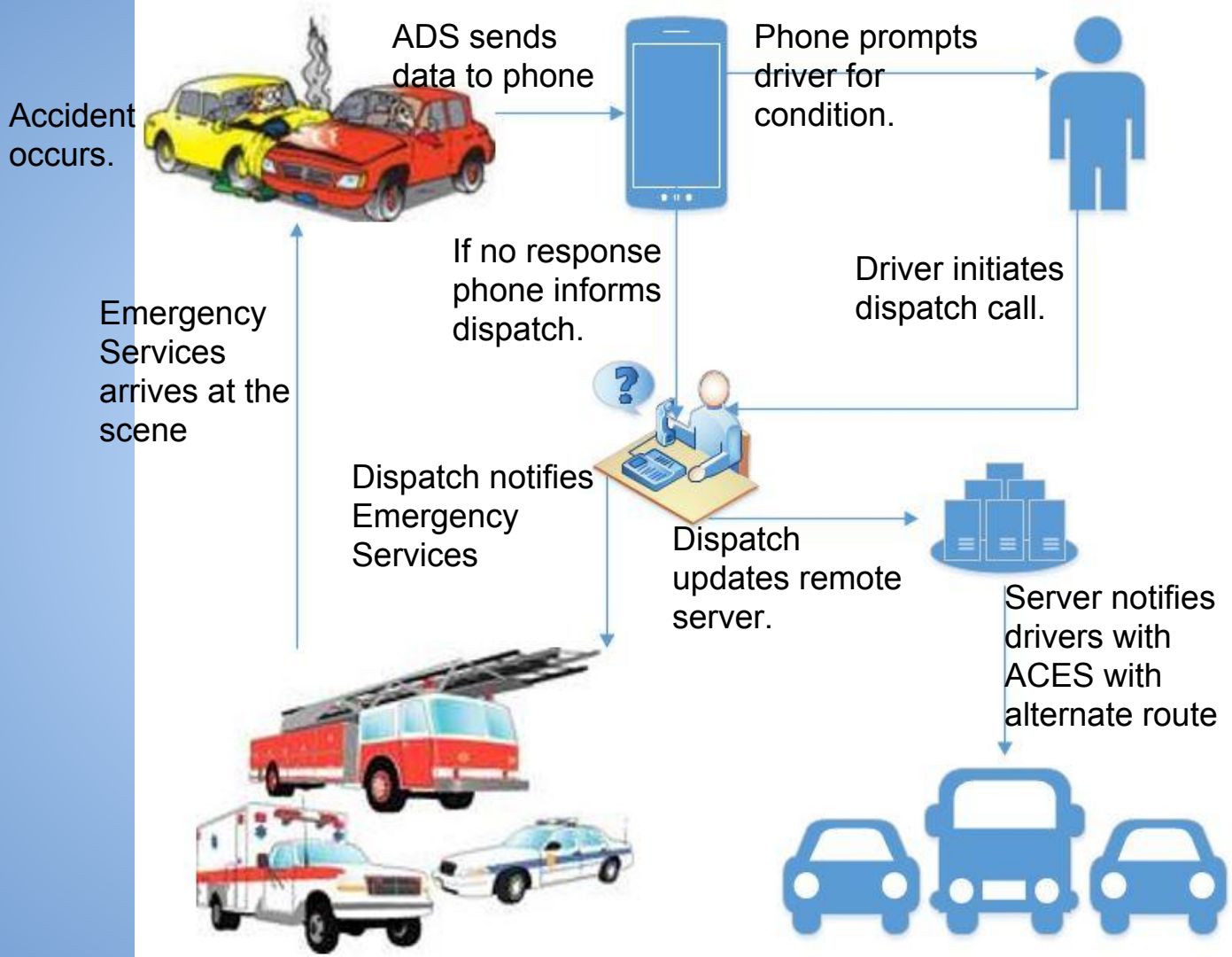
- Increase safety
- Reduce traffic (increase driver convenience)
- People want it
- Easy to maintain

Final Assessment

The rerouting system (ACES) proved to be one of the most desirable solutions.



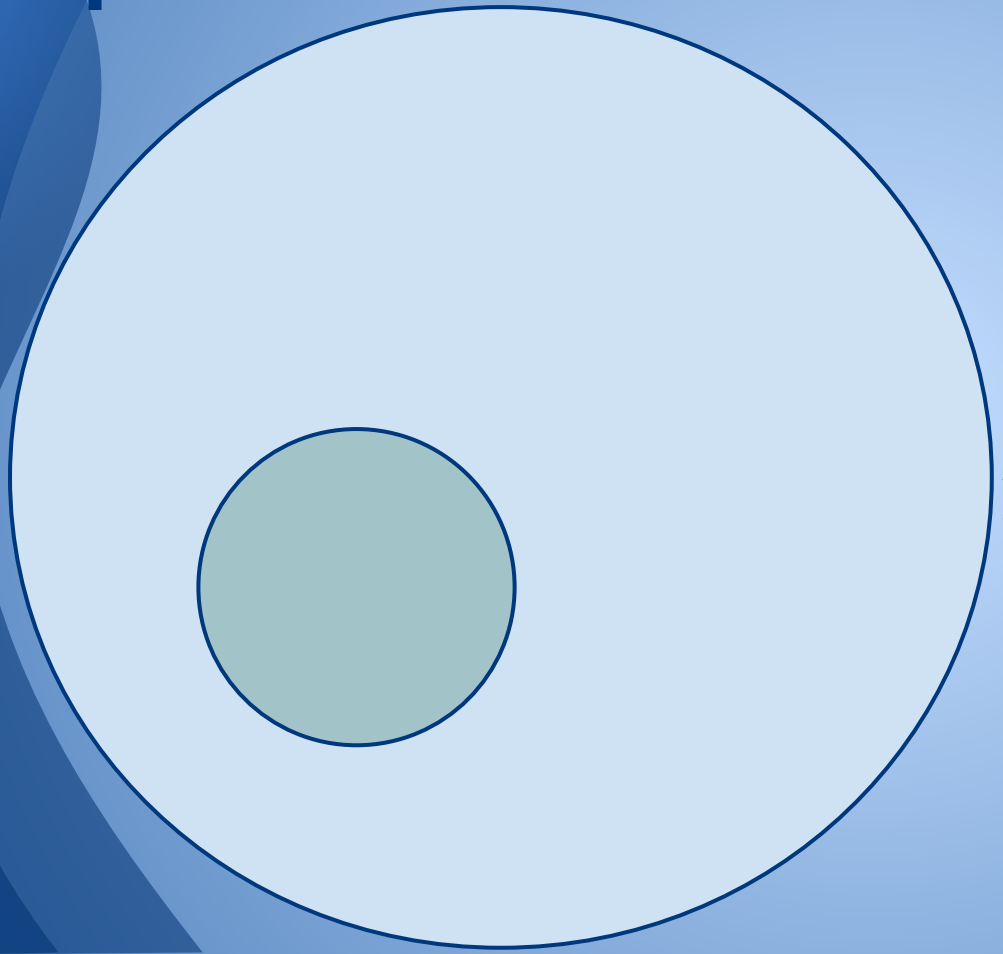
Detailed Solution



Specifics- Accident

- MEMS Accelerometers:
  - 50g-500g sensitivity, adjustable filter bandwidth, single axis capabilities used.
- Phone to car communication:
  - 2.4 MHz, 80 frequency hopping, 10m range

Specifics-Driver Notification



1. The larger circle is all drivers within 15 miles of the incident.
2. The smaller circle is all drivers who are planning to use the route on which the incident occurred.

In Conclusion

ACES Notification System will be:

-Socially acceptable and desired

-Safe and reliable

-Able to improve traffic flow

ACES will help citizens **stay connected and smart** on our roads

Appendices

Appendix A

Concept Variants					
Selection Criteria	Accident Rerouting	Maintenance App	Phone Locking	Weekly Summary	Traffic Light
Ease of Integration	+	+	+	+	-
Ease of Maintenance	+	+	+	+	-
Social Acceptance	+	0	-	0	0
Increase in Driver Convenience	0	0	-	0	0
Increase in Safety	+	-	+	0	+
Cost of Integration	0	+	+	+	-
Pluses	4	3	4	3	1
Sames	2	2	0	3	2
Minuses	0	1	2	0	3
Net	4	2	2	3	-2
Rank	1	3	4	2	5
Continue?	yes	yes	no	yes	no

Appendix B

Pairwise Comparisons								
	Increase in Safety	Ease of Integration	Cost of Integration	Ease of Maintenance	Social Acceptance	Increase in Driver Convenience	Row Totals	Row total/total
Increase in Safety	1.00	2.00	3.00	5.00	6.00	8.00	25.00	0.43
Ease of Integration	0.50	1.00	1.50	2.50	2.94	3.84	12.28	0.21
Cost of Integration	0.33	0.67	1.00	1.65	1.94	2.54	8.13	0.14
Ease of Maintenance	0.20	0.40	0.61	1.00	1.18	1.54	4.93	0.09
Social Acceptance	0.17	0.34	0.51	0.85	1.00	1.31	4.18	0.07
Increase in Driver Convenience	0.13	0.26	0.39	0.65	0.76	1.00	3.19	0.06
						Total:	57.71	

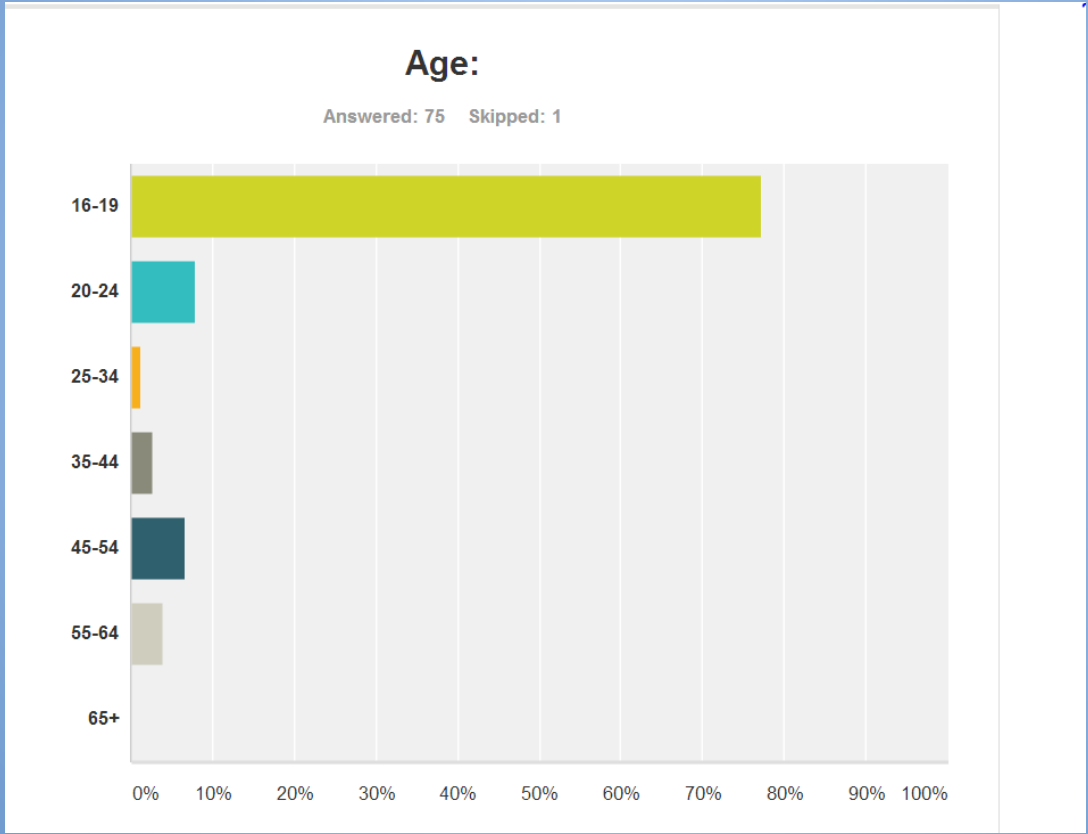
Appendix C

Concept Selection

		Accident Rerouting		Maintenance App		Weekly Summary	
Selection Criteria	Weight	Rating	Weighted Score	Rating	Weighted Score	Rating	Weighted Score
Increase in Safety	0.430	3	1.29	1	0.43	0	0
Ease of Integration	0.210	3	0.63	5	1.05	5	1.05
Cost of Integration	0.140	2	0.28	5	0.7	5	0.7
Ease of Maintenance	0.090	5	0.45	5	0.45	5	0.45
Social Acceptance	0.070	5	0.35	3	0.21	1	0.07
Increase in Driver Convenience	0.060	5	0.3	2	0.12	3	0.18
	Total Score		3.3		2.96		2.45
	Rank		1		2		3
	Continue?		yes		no		no

Appendix D

Appendix E


Age:
Answered: 75 Skipped: 1
16-19
20-24
25-34
35-44
45-54
55-64
65+
0%
10%
20%
30%
40%
50%
60%
70%
80%
90%
100%