Delphi Automotive Systems: Safe - Green - Connected

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Section 002

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Every year, cellphone usage in responsible for over 1,000 vehicle injuries in the U.S. alone (Distracted Driving). This is a growing problem and it is why we chose to address it with our new product. Our goal is to reduce the distraction of phone when driving while still allowing usage when needed. The solution we came to was an app and car system that automatically responds to incoming text messages informing them that the driver is busy without alerting the driver they have received a message. This will reduce distraction while keeping the message senders informed about what is going on. We believe this is a relatively cheap and effective solution to an expensive and growing problem engulfing our society today.
SECTION 2  INTRODUCTION

2.1 PROJECT OBJECTIVES. Identify technologies and opportunities to make cars and trucks safer, greener, and more connected.

2.2 PROJECT BACKGROUND. Computers play a vital role in vehicle operation and keeping passengers safe and connected. Many of these systems are built by Delphi. These technological factors continue to change and we must adapt to the need for safer, greener, and more interactive systems in vehicles.

2.3 SPONSOR BACKGROUND. Delphi Automotive is a global automotive components design and manufacturing company — it is one of the world’s largest automotive parts manufacturers and provides electrical and electronic, powertrain, safety, and thermal technology solutions to the global automotive and commercial vehicle markets.

2.4 PROJECT CATEGORIES.
Safe: Our ultimate goal is to help make zero fatalities, zero injuries, and zero accidents a reality
Green: We’re passionate about creating a world with zero emissions
Connected: We have the technology to allow seamless connectivity in the vehicle—it’s what consumers want, and we can make it a reality.

2.5 PROBLEM STATEMENT. Our device is designed to reduce phone usage behind the wheel in order to keep drivers focused on the road and task at hand. This device would fall under the Safe category. It was selected because we want to protect drivers and keep them and those around them safe while driving.
3.1 PROPOSED DEVICE. Synchronization between phone and car that automates responses to texts received on the driver’s phone. This car system and phone app combination will inform the sender that the receiver is driving in order to prevent the driver from using their phone. In doing so, we hope that the driver will be less likely to use their phone while they are driving.

3.2 RATIONALE FOR SELECTION. Many people have accidents due to phone usage behind the wheel. This system will keep drivers from texting, among other things, while driving. It also informs others not to continue texting you because you are driving.

3.3 CUSTOMER NEEDS. This system is needed because it will protect people from injury and death. Customers include anyone operating a motor vehicle. This device will satisfy customer needs including:
- Increased safety while driving
- Increased driver focus
- Reduced driver distraction
- Brings awareness to those trying to message the driver
- Inexpensive solution for an expensive problem

3.4 OBJECTIVES AND GOALS. The goal is to keep drivers safe behind the wheel. The main objective for this goal is to ultimately reduce texting and driving as much as possible while still allowing communication, but at an increased awareness for those trying to contact the driver.

3.5 CONCEPT OF OPERATION. Phone and car will be synced together through Bluetooth automatically when the driver starts the car. Whenever the driver receives the message, the app on the phone will respond with the driver’s personalized automated message. Those not driving can go into the app and disable the setting after it’s activated by the car. When the driver finally views the app it provides a summary of all of the messages received. This system will be familiar to many people since they use smartphones often.

3.6 SYSTEM CONTROLS. The system is activated automatically by the vehicle starting. The app prevents the driver from receiving text alerts. The app then will respond to the sender saying “I’m busy”. This system will continue to regulate the app until the vehicle is turned off or the setting is disabled within the app.
3.7 SYSTEM MODEL.

3.8 DAY-IN-THE-LIFE. A scenario with the system in place...
Xin is driving to his grandmother’s house to celebrate her birthday when he receives a text message from his friend Pufan. Xin does not know he has the text because the system has already responded to Pufan letting him know that Xin is driving. Pufan is annoyed that Xin can’t talk, but Pufan knows it is a matter of safety and does not try to keep texting Xin. Eventually Xin reaches his grandmother’s house and he checks his phone to see that Pufan tried to contact him. Xin responds to Pufan safely and did not have to worry about being distracted on the road.

3.9 LIFE CYCLE ASSESSMENT (LCA). There are no significant environmental impacts from the integration of this system. It would be installed and implemented during the production and manufacturing phase of the vehicle. The app itself is completely digital and disposal would be as simple as deleting the app. The system itself is tethered to the vehicle.

3.10 ECONOMIC ASSESSMENT.

<table>
<thead>
<tr>
<th>ESTIMATE CLASS</th>
<th>MATURITY LEVEL OF PROJECT DEFINITION DELIVERABLES</th>
<th>END USAGE</th>
<th>METHODOLOGY</th>
<th>EXPECTED ACCURACY RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class 5</td>
<td>0% to 2%</td>
<td>Concept screening</td>
<td>Judgment</td>
<td>+30%</td>
</tr>
</tbody>
</table>

The estimated cost of development for this device is actually fairly cheap, approximately $7,000. Not much hardware is needed in order for operation as a lot of the technology is already in place. It just needs additional programming and a slight addition in the vehicle’s dash. The device should have no functionality issues for the life span of the vehicle.
3.11 PRODUCT DEVELOPMENT AND MARKETING. The production of this system takes place during the production phase of the vehicle it is going to go into. Additionally, the intended user of the system would have to download the system’s app onto their phone. Small scale testing would be completed through installing the system in a couple of vehicles and running test of the system. From there we would offer these vehicles to the public for some beta testing and receive feedback about their experience. The use of online surveys would be used to learn about public usage of phones while driving and the feasibility of integrating this system into the public. Both the vehicle system and phone app would be free for consumers and come to no cost to them except for added safety. Sales would all be dependent on the in-app ads. This product is intended for any vehicle operator and advertisements for it could be displayed through different manufacturers’ commercials about how their vehicles are safer.
SECTION 4 SUMMARY

The benefit of implementing our concept design is that it will reduce phone related incidents while driving. The biggest weakness of our product is the willingness of the public to use it. Many will not want to limit their cell phone usage while they are driving. However, many there are those who will who understand the added safety it brings. This product could be put in place in other areas of life where the user did not want their attention to be diverted while making the senders aware of what is going on (meetings, studying, or working). The app would not be automatically turned on in these situations as it would in the car, but the consumer could manually activate it. This design would be easy for automakers to adopt as it requires little effort on their part. Most of the work goes into the app.