



University of Ottawa

GNG 1103[B]: Group 19

Deliverable B – Needs Identification

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Abstract

This is a document outlining the needs of Group 19's Client (Mansour Kharoub) for the Fall 2021 project, better known as the Hot Car Emergency. Included in this document is a Table (Figure 1.) outlining the needs of the client and the rating of necessity given to each of these clients. Along with the Table, there is also in-depth analysis of the requests, their applications to the project and why the rating in Figure 1 is what it is.

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1 Introduction

Humanity has made huge strides in the past century, technologically speaking. With these advents of automation there are dire problems arising which can be solved. One of these problems although simple has had life changing effects on families, children left in vehicles without ventilation. In a person’s haste they have left their child in the car, or a child has locked themselves into a vehicle, and when left on a hot summer day, temperatures inside a closed car can be deadly to children. These scenarios are extremely common in day-to-day life. These occurrences might be common, however that does not mean that it is not fatal. In America 2018, 52 children died while locked in a vehicle (Covington, 2021) . The goal of this project is to reduce the fatalities of children trapped in hot vehicles. Our group will be creating a device that not only alerts the user that they have left their loved one in the vehicle, but also creates a safe environment for the trapped child.

Necessity Rating (1-5)	Need Statement	Paraphrasing of Client	Questions
5	Difficult to ignore	Notifications cannot be muted	Phone Connection
3	Check the car situation at anytime	Mobile app with data	
5	Contacting at anytime	Works offline	
3	Timely and informative notifications	Sends location to user	
5	Attract attention easily	Alert bystanders and public around	Ideal System Functions
5	Avoid the situation where the car is broken, and the system is useless	The system runs independent of the vehicle	
5	Will adjust actions depending on weather	Comfortable Environment while help is arriving Climate specific Actions	
5	Alerts when baby left alone	Triggered only when child is alone	
5	The system will alert when issues arise early	Sound and activity dependant trigger	
3	Calm the children’s mood	Entertains/relaxes the child	
4	Useful in every location	No restrictions on location	Miscellaneous
1	Has a low-profile design	Sleek	
5	Available to most family	Cost is low	

2 Problem Statement & Needs Explanation

Create a cost-effective system that efficiently, safely and reliably notifies guardians about emergencies and facilitates saving loved ones locked in vehicles during unsafe conditions.

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Mainly the client is focussed on limiting time in vehicle, limiting risk while in the vehicle, and reliability of the system. Limiting time in the vehicle will ideally be done in two ways, Sending Notifications that cannot be ignored/muted, working offline as-well, and alerting people in the area. With these three ideas there is the perception that it will reduce time where persons are unaware of the problem, and this will in turn reduce time in vehicle. The safety of the occupant while inside the vehicle will need to be managed by changing the internal environment of the vehicle through manipulation of airflow and temperature depending on the outside weather. The child will also be monitored if any problems arise within the time frame before an alert is sent or someone arrives. These mechanisms will lower the risk for the occupant while inside the vehicle. For the system to be effective it must run no matter the situation. The main worry is power supply, meaning that even when the vehicle is completely turned off it must work efficiently. This will create a system free of reliance on the vehicle. All the Primary focuses are on the safety of our users and their loved ones, which overall is the goal of our product.

The second most important client need is accessibility. The product will be able to work in most environments, regardless of location or temperature, keeping it accessible to most people, even in places where there may not be internet. Realistically this is an ideal feature to implement into the product, however, in order to achieve other requirements, it could be difficult to also implement this product. With this in mind, these are still very high on the list of priorities.

Another aspect which is not as important but still ideal include sending the user a notification with location of the vehicle if there is an emergency, calming the child by playing music, and can include a mobile application for easy access to location. These features will make the process of saving the persons locked in the vehicle easier but are not essential in completing the task. Everything here is not as important because they do not directly help to solve the main problem brought to our attention by the client, however they could assist in that process.

Ideally the product will be designed to be as sleek and visually attractive as possible, however that will be the least of our concerns compared to the functionality of the product. The client has dictated that this is of course not nearly as important as the functionality of the product and that functionality comes first.

In conclusion, to build a car system with functions of monitoring and controlling the situation in the car, there are few indispensable functions. For instance, sending messages which cannot be muted, working offline, and warning people around. Meantime, in order to reduce the cost of the system, we must consider giving up some extra effects like playing music in cars to relax and creating mobile an application to get the location.

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Commented [YB1]: Short Paragraph talking about all priority 4 needs

Commented [YB2]: Short Paragraph talking about all priority 3 needs

Commented [YB3]: Short Paragraph talking about all priority 2 needs

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3 References

Covington, T. (2021). Hot Car Death Statistics in 2021. *The Zebra*, 1-14.