



University of Ottawa

GNG 1103[B]: Group 19

# Deliverable C – Design Criteria and Target Specifications

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## 1 Introduction

This deliverable will be discussing the needs found in deliverable B of the client and how products currently on the market can be compared to each other. After these are categorized, we can order the aspects in levels of importance, and grade each of the products with which is superior. With these in mind we can take an existing product on the market as a reference and using those aspects, create a product with superior aspects.

## 2 Needs and Design Criteria

Table 1: Design Categorization

Importance 1<5	Need	Design Criteria	Functional or Non-Functional
5	Difficult to ignore	Obvious and unique alarm system	Functional
5	Contacting at anytime	Can always alert user	Functional
5	Attract Attention easily	Alerts surrounding persons	Functional
5	Avoid situation where system has no power supply	Auxiliary power source	Functional
5	Adjust actions depending on weather	Weather sensitive response	Functional
5	Alerts when baby is alone	Does not alert while guardian is present	Functional
5	The system will alert when issues arise early	Situational dependant decisions process	Functional
5	Available to most families	Cost is low Multi language instructions	Non-Functional
4	Useful in every location	Is legal in all locations	Non-Functional
3	Check the car situation at anytime	Has accurate data that can be always monitored	Functional
3	Timely and informative notifications	Reliable contact system	Functional
3	Calms the children	Helps children remain calm	Functional
1	Has a low-profile design	Aesthetics	Non-Functional

### 3 Benchmarking

Table 2: Benchmark specifics

#	Metric	Elepho® eClip	Cybox Eternis S	STEELMATE Baby Car Reminder
1	Obvious and Unique alarm system	Yes (Alerts through app)	Yes (App)	Yes
2	Can always alert user	Yes (proximity)	Yes	Yes (No phone element)
3	Alerts surrounding persons	Yes (relatives)	Yes (Alerts emergency contacts if no action taken)	No (Alarm system only audible in car)
4	Auxiliary power source	Yes (Small quantity of power that needs changing)	Yes	Yes
5	Weather sensitive response	Yes (Only Temperature)	Yes	No
6	Does not alert while guardian is present	Yes (distance sensitive)	No (alerts when child unclips belt)	No (alerts driver before they exit car)
7	Situational dependant decisions process	No	Yes	No
8	Cost	\$59.99	\$300.00 (only sold with car seat)	\$37.99
9	Multi language instructions	Yes	Yes (French)	Yes
10	Is legal in all locations	Yes	Yes	Yes
11	Has accurate data that can be always monitored	Yes (App)	No	No
12	Reliable contact system	Yes (3G wireless phone connection)	Yes (3G and Bluetooth)	Yes (wireless)
13	Helps children remain calm	No	No	No
14	Aesthetics/size	13.11 x 10.11 x 5.41 cm	Dependant on which seat to install in.	3 small incognito objects

Table 3: Categorization of Benchmarks

#	Design Criteria	Importance (5>1)	Elepho® eClip	Cybox Eternis S	STEELMATE Baby Car Reminder
1	Obvious and unique alarm system	5	15	15	10
2	Can always alert user	5	15	15	10
3	Alerts surrounding persons	5	15	15	10
4	Auxiliary power source	5	10	15	5
5	Weather sensitive response	5	15	15	10
6	Does not alert when guardian is present	5	15	5	10
7	Situational dependant decision process	5	10	15	10
8	Cost	5	10	5	15
9	Multi language instructions	5	15	15	15
10	Is legal in all locations	4	12	12	12
11	Has accurate data that can always be monitored	3	9	6	6
12	Reliable contact system	3	6	9	3
13	Keeps the child calm	3	3	3	3
14	Aesthetics/Size	1	6	3	9
Total			156	148	128

## 4 Target Specifications

Table 3: **Non-Functional**

#	Design Criteria	Relation	Value	Units	Importance	Verification Method
2	Multi language instructions	>=	2 languages	N/A	5	Consultation
3	Aesthetics	=	Small and discreet	N/A	1	Focus grouping and Testing

Table 4: **Functional**

#	Design Criteria	Relation	Value	Units	Importance	Verification method
1	Obvious and unique alarm system	<	100DB (outside)	Decibels	5	Testing
2	Can always alert user	=	GPS connection	N/A	5	Testing
3	Alerts surrounding persons	=	Yes	N/A	5	Testing
4	Auxiliary power source	>=	30000	Milliamps	5	Testing and Calculations
5	Weather sensitive response	=	Temperature	Celsius	5	Testing
6	Does not alert while guardian present	=	Front seat persons	TBD	5	Testing
7	Situational dependant response system	=	O2 levels, Temperature, Child status	Concentration, Celsius, Movement and Sound	5	Testing
8	Continuous Data flow	=	Status of product	Various	3	Testing
9	Reliable Contact system	=	Yes	N/A	3	Testing
10	Calms child	=	Yes	N/A	3	Testing

Table 5: **Constraints**

#	Design Criteria	Relation	Value	Units	Importance	Verification Method
1	Cost	=	38-55	\$	5	Consultation and Computation
2	Time	<=	Dec 1st	N/A	5	N/A
3	OS	=	IOS & Android	N/A	5	Testing
4	Legality	=	Yes	N/A	4	Research and Consultation

## 5 Reflection

Having a deep understanding of the true needs of your client is extremely important for anyone designing a product. The client meeting was a great opportunity for us to understand the problem which needs to be solved and what is expected from the final product. We were also given the opportunity to ask questions where we were able to determine any restrictions that we may need to comply with when designing our product. It was brought to our attention during the meeting that we could not interrupt the car's built-in alarm or electronic systems. This did not prompt us to make any changes to the project as we were not planning on tinkering with the car itself. The meeting also allowed us to determine what is most and least important to the client, which will help us a lot when determining where to allot our team's resources. We are now more confident in our ability to design a product that will satisfy the client.

## 6 Conclusion

In conclusion, to solve the problem, we design the car system with several necessary aspects. And we can divide them into two categories, the functional, such as contacting at any time and attracting attention easily, and the non-functional such as being available to most families and having a low-profile design. For the benchmarking part, we compared the advantages and the disadvantages between two companies, and we marked the importance for each design criteria. Moreover, we separate functional and non-functional design criteria into two charts and detailed state the relation, value, units, importance, and verification method for each of the design criteria. In the end, we state some constraints that we should notice.

## 7 References

- buybuyBaby. (2021, 10 07). *buybuyBaby*. Retrieved from Bed Bath & Beyond:  
[https://www.buybuybaby.com/store/product/elepho-reg-eclip-baby-reminder-car-seat-alarm-in-silver/5425541?gclid=CjwKCAjwrcH3BRApEiwAxjdPTX9su\\_\\_g5GtMI5IcvYmZb9MYGv\\_6OeGhjO-b4wXRPvcbHtzEaj0ObxoCLoYQAvD\\_BwE&gclsrc=aw.ds&AID=11411861&PID=100041231&SID=132532X1](https://www.buybuybaby.com/store/product/elepho-reg-eclip-baby-reminder-car-seat-alarm-in-silver/5425541?gclid=CjwKCAjwrcH3BRApEiwAxjdPTX9su__g5GtMI5IcvYmZb9MYGv_6OeGhjO-b4wXRPvcbHtzEaj0ObxoCLoYQAvD_BwE&gclsrc=aw.ds&AID=11411861&PID=100041231&SID=132532X1)
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## 8 Wrike URL

<https://www.wrike.com/open.htm?id=758826352>