

**GNG 2101- Introduction to Product Development And Management For
Engineers**

**Deliverable B - Needs, Problem Statement,
Metrics, Benchmarking and Target Specifications**

Submitted by

Section A, Team 7

Aaron MacNeil, 300199522

Andro Hanna, 300211677

Jacob Charron, 300175263

Jake Ratkovic, 300190849

Praise Ebirim, 300081723

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University of Ottawa

Introduction

Before this project deliverable, the team was assessed to create interview questions for the client in order to better understand the project at hand. During the interview, the team asked questions that touched every aspect of the project, from dimensions, weight and other metrics, to personal use and experience with previous versions of change tables. Also, the team asked about situations where a change table was not of access to truly empathize with the client towards the need of a change table and their preferences. While some team members were interacting with the client for the majority of the interview, other team members wrote down the client's statements and their observations for other physical clues (facial expressions, body discomfort). From there, the team is tasked to establish customer and client needs, a problem statement, metrics, benchmarking and target specifications for this project deliverable.

List of Client Statements/Observations obtained from Client Interviews.

During the client meeting Aaron was elected as the member of the team to ask questions while other team members took notes. Here are the client statements and observations obtained from the client interview:

- Power wheelchair
- 16 year old boy
- Complete support, no ability to move on his own other than hands
- No leg movement
- When he goes out and has an accident needs clothes changed
- Public baby change tables too small need a bigger one
- Currently using wheelchair takes 2-3 people (1 person holding while other(s) change him)
- Pop out table
- Folds flat
- Sticks to back of power chair
- Needs caretaker for sure
- Laying down space for sure (more space)
- Laying down helps stretch back to relieve cramps
- Used in public bathrooms not necessarily an accessible washroom could be an accessible stall
- Latex allergy
- Needs to support, 100-120 pound weight, 4' 8" feet tall (use bigger ends of scale for longer term use)
- Height of change table should be in line with chair seat
- Camping cot has sinking material makes it hard to lift
- Not hard plastic but firm so it does not sink

- No storage under, but maybe can be hooked onto the back of the chair
- Can maybe hook onto manual handles at the back
- Slightly larger than back of computer chair (a little bit wider)
- Waterproof material very helpful
- Safety belt around mid table
- No to foldable chair
- Storing at back of chair
- Not necessarily hooks onto to chair is light enough
- Could be folded up like camping chair and hooked onto a backpack (convenience)
- 5 minutes maximum folding time
- Handles would be a nice feature but not too big and don't interfere
- One piece items is preferable
- 4 inches wider than the width of the back of the chair

List of Translated and Prioritized Customer Needs

Below, we summarized our client needs. We have ranked the needs in terms of their importance on a range from 1 - 5, 5 being the most important and one being the least.

	Safety	Necessity	Comfort
#	Need		Importance
1	Need to support 60 kg		5
2	Safety belt around mid table		5
3	Wider than the user		3
4	A reasonable length to be able to use it for several years		3
5	Firm material to reduce the user from sinking in the table		2
6	No latex (allergy)		5
7	Fold flat		2
8	Can be hung on the chair or carried like a backpack		1
9	Low setting up time (folding and unfolding time)		4
10	Waterproof material		2
11	The height of the change table should be in-line with the wheelchair seat		5
12	No hard plastic material		4
13	Handles on each side of the bed		2

Problem Statement

The client is in need of a change table for a teenager with cerebral palsy. The change table has to be portable, quick to assemble, compact, and lightweight to accommodate the user and client's needs.

List of Metrics with Associated Units

METRICS	UNIT	MARGIN
Total Weight	Kilograms	22.68
Assembly Time	Minutes	Less than 5
Load Capacity	Kilograms	58.97
Width	cm	55.88
Length	cm	167.64
Height (height of wheelchair seat)	cm	48.26

Benchmarking of Similar Products

Need #	Metric	Importance	Coleman Trailhead Cot	Jay-Be Saver Folding Cot Bed:	Teton Sports Outfitter XXL Camping Cot
1	Yes/No	5	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
2	Yes/No	5	<u>No</u>	<u>No</u>	<u>No</u>
6	Yes/No	5	<u>Not latex</u>	<u>Not latex</u>	<u>Not Latex</u>
8	Yes/No	1	<u>Yes</u>	<u>No</u>	<u>Yes</u>
9	Yes/No	4	<u>Yes</u>	<u>Yes</u>	<u>Yes</u>
12	Yes/No	4	<u>Yes</u>	<u>No</u>	<u>Yes</u>

Coleman Trailhead Cot:



Jay-Be Saver Folding Cot Bed:



Teton Sports Outfitter XXL Camping Cot:



Set of target specifications

Target specification	Acceptable value(s)	Ideal value(s)
Length	152.4 cm	168 cm
Width	51 cm	56 cm
Height	48 cm	58 cm
Weight	60 kg	70 kg
Assembly time	Less than 5 minutes	Under 3 minutes

Reflection

The client meeting allowed us to empathize with our clients needs. We gained information on the challenges that our client faces when out in a social setting, and some details on the product application process. Also, we were informed on rough dimensions of the product, gained feedback for feasibility screening, and criteria for unnecessary requirements. From the client meeting, the team was able to form precise metrics and target specifications for the product. The next steps for deliverable C are to create conceptual designs based on target specifications and clients needs.

References

https://www.amazon.com/Coleman-765353-Trailhead-Military-Camping/dp/B003696236/ref=sr_1_5?dchild=1&keywords=folding+cot&qid=1632233946&sr=8-5

https://www.amazon.com/Jay-Be-Folding-Airflow-Mattress-Regular/dp/B019GQEBSA/ref=sr_1_6?dchild=1&keywords=folding+cot&qid=1632233946&sr=8-6

https://www.amazon.com/TETON-Sports-Outfitter-Patented-Included/dp/B01GLGRVU8/ref=sr_1_25?dchild=1&keywords=folding+cot&qid=1632233946&sr=8-25