Exploring the Concepts



A tray attaches to the door handle and storage compartment. A folding wheel system supports the weight of the user when the door is open. As the person closes the door, the tray comes to rest on the existing car seat. On exiting the car, the person can stand up in the gap between the door and the car and walk outside before closing the door.

Concept 2 Sliding seat platform Support Activation Button Folding rail system Car seat

The padded cushion can slide along a track when the car door is open to slide the user out of the car. When not in use the cushion locks into place and the track folds to fit at the side of the car seat.



The tilting seat is designed to aid in tilting a person onto their feet and slowly lowering them into the seat. The auto-locking mechanism secures the seat in place when sat on. Additionally, it locks in position when tilted, only lowers the person when the handle is pulled.

The system shall help an elderly person get into and out of a car

S= Score W.S = Weighted Score



This handle offers a safe grip while helping the user to maintain their balance. The sport tape attached can alleviate muscular tension and other discomfort experienced by the user.

17

bd571, jm3381, er909, jd2589

		Cond	cept 1 Con W.S S		Concept 2		Concept_3		Concept 4		Davida Oradari												
Criteria	Weight	S	W.S	/.S S W.S		S	W.S	S	S W.S														
1. Geometry											a b	с	d e	f	g h	ii	i !	x	m	n o	рq	r s	Total
The system shall fit into Terry's car	10	1	10	2	20	3	30	4	40	α	1	1	1 1	1	1 1	1	1	1 1	1	1 1	1 1	1 0	16
2. Kinematics																							
When the device is operated the movement of the device shall be smooth	6	2	12	3	18	4	24	4	24	b	0	0	01	1	1 0	0	0 () О	1	11	11	10	8
Where the user is a different size to Terry the systems height will be easily	9	0	0	3	27	3	27	1	9	с	0 1		01	1	1 1	1	1 '	I 1	1	11	11	10	14
3.Forces																							
When supporting a 90kg person (Terry), the system shall not break	9	2	18	3	27	4	36	4	36	d	0 1	1	1	1	11	1	1 '	1	1	11	11	10	15
4. Material														_									
The system shall be light	4	1	4	2	8	3	12	4	16	е	0 0	0	0	0	0 0	0	0 () О	1	10	01	10	3
The system shall be made from a comfortable material	6	3	18	3	18	3	18	3	18	f	0 0	0	0 1		1 0	<i>i</i> 0	0 (וכ	1	11	11	10	8
The system shall be made from a non-slip material	4	3	12	3	12	3	12	3	12	g	0 0	0	01	0	0	<i>i</i> 0	0 () О	1	1 0	01	10	4
The system shall be made of non flammmable material	7	4	28	4	28	4	28	4	28	h	0 1	0	01	1	1	0	0 (וכ	1	11	11	10	10
5. Safety																-							
The system wont have sharp edges exposed	8	3	24	2	16	2	16	0	0	i	0 1	0	01	1	1 1		1 (ו כ	1	11	11	10	12
The system will not be fragile	8	1	8	2	16	3	24	4	32	i	0 1	0	01	1	1 1	0		I 1	1	11	11	10	12
The device must not prevent in-built safety features from functioning correctly	10	4	40	4	40	4	40	3	30	k	0 1	0	01	1	1 1	1	0	1	1	11	11	10	12
6. Ergonomics																		_					
The system will be user friendly for an elderly person	6	3	18	4	24	4	24	2	12	Ι	0 1	0	01	0	1 0	<i>i</i> 0	0 (ა 🗾	1	11	11	10	8
7. Production quantity																			-				
The system shall be easy to mass manufacture	1	1	1	1	1	2	2	3	3	m	0 0	0	0 0	0	0 0	<i>i</i> 0	0 () О	1	0 0	0 0	0 0	0
8. Aesthetics																							
The system should be discrete	3	1	3	3	9	3	9	3	9	n	0 0	0	0 0	0	0 0	<i>i</i> 0	0 () О	1	0	0 0	0 0	1
9. Transport																							
The system shall be easy to carry	5	0	0	1	5	2	10	4	20	0	0 0	0	01	0	1 0	<i>i</i> 0	0 () О	1	1	01	0 0	5
10. Recycling																							
The system shall be built to last	5	2	10	1	5	3	15	3	15	р	0 0	0	01	0	1 0	<i>i</i> 0	0 () О	1	11	1	0 0	6
Built from recyclable eco-friendly materials	2	2	4	3	6	3	6	3	6	q	0 0	0	0 0	0	0 0	0	0 (0 נ	1	10	0	0 0	2
11. Costs																							
The system shall be affordable	4	2	8	2	8	3	12	4	16	r	0 0	0	0 0	0	0 0	0	0 (0 נ	1	11	11	0	5
12. General																							

Reflecting on the MCDA analysis, Concepts 3 and 4 received similar scoring. Due to this minimal difference, to ensure the most optimal design was selected going forward, several elderly citizens were interviewed on their opinions of the concepts. The feedback revealed that while Concept 4 was commonly used, it was not particularly effective in aiding car entry and exit. As a result, Concept 3 was chosen as the preferred design.

16

224

4

18.2

3

24

299

3

24.3

3

24

366

1

29.8

32

340

2

27.7

4

8

Weighted Score Total

Rank

% Total

2