Go Baby Go-D

Sponsor/Client: Dr. Sarah Oman

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Project Overview

Figure 1: GBG [1]

GBG Club Aim & Retrofits:

- Children with limit mobility
- Socialize & added mobility
- Based on electric toy cars
- Modified based on each child's situation
- Cost effective compared to other medical solutions

- **Project goal**: build a new version of GBG retrofit

Client & Helpful Members

Sponsor:

- Dr. Sarah Oman

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- Michael Bair

Mechanical Engineering

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Project Requirements

Customer requirements:

1. Power system: control acceleration
2. Physical: comfortable seat
3. Operating system: easy to operate
4. Financial: Low final cost
5. Safety: seat belt & frame padding

Engineering requirements:

1. Weight $\leq$ 140 lb.
2. Price/Cost $\leq$ \$550
3. Battery life $\geq$ 2 hrs.
4. Multiple speeds (0-6 MPH)
5. Ordered parts $\leq$ 7 days
6. Creative steering option
7. Soft edges
8. OSHA standards

Design Selected

Table 1: Decision Matrix

	Weight	CV 2		CV 4		CV 5	
Criteria		Raw	Weight	Raw	Weight	Raw	Weight
All cost must be under $1500	0.1	80	8	85	8.5	40	4
Development risk	0.2	80	16	90	18	40	8
Technical difficulty	0.25	80	20	80	20	60	15
Schedule risk	0.15	90	13.5	100	15	75	11.25
Does it meet the customer requirements?	0.1	85	8.5	85	8.5	70	7
Does it have jerking motion?	0.05	100	5	100	5	80	4
Is it accurate?	0.1	70	7	75	7.5	30	3
Is it made of standard components?	0.05	85	4.25	85	4.25	100	5
Total	1		82.25		86.75		57.25
Relative Rank			2		1		3

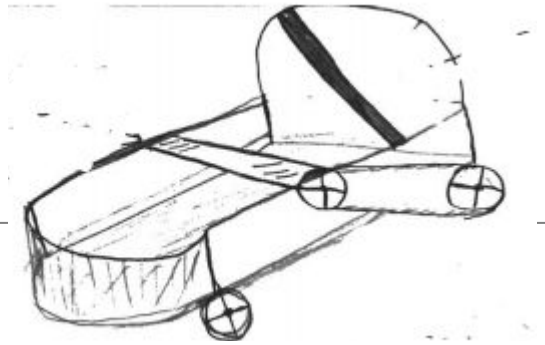


Figure 2: Hover Board Bed (CV2)

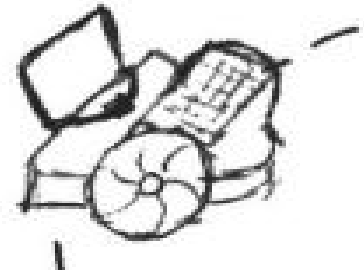


Figure 3: Electric Scooot (CV4)

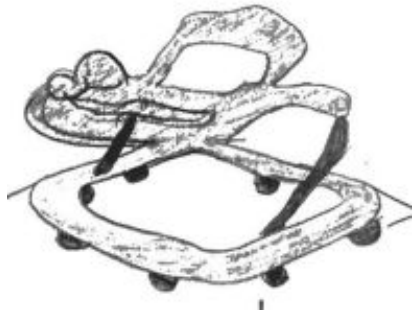


Figure 4: Hydraulic Baby Walker (CV5)

Design Selected

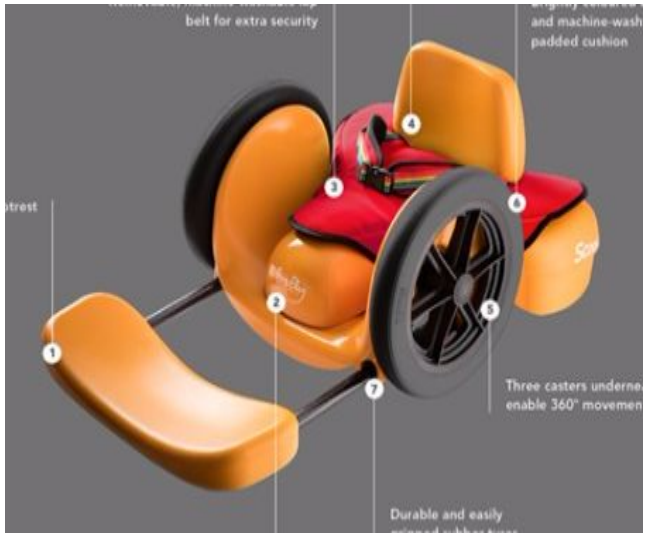


Figure 5: Scooot [4]

Figure 6: Hover board [7]

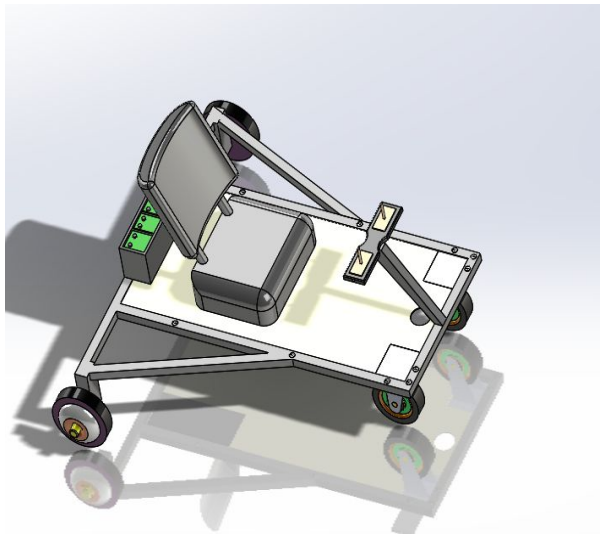


Figure 7: Final design

Final Product

Figure 7: Final product

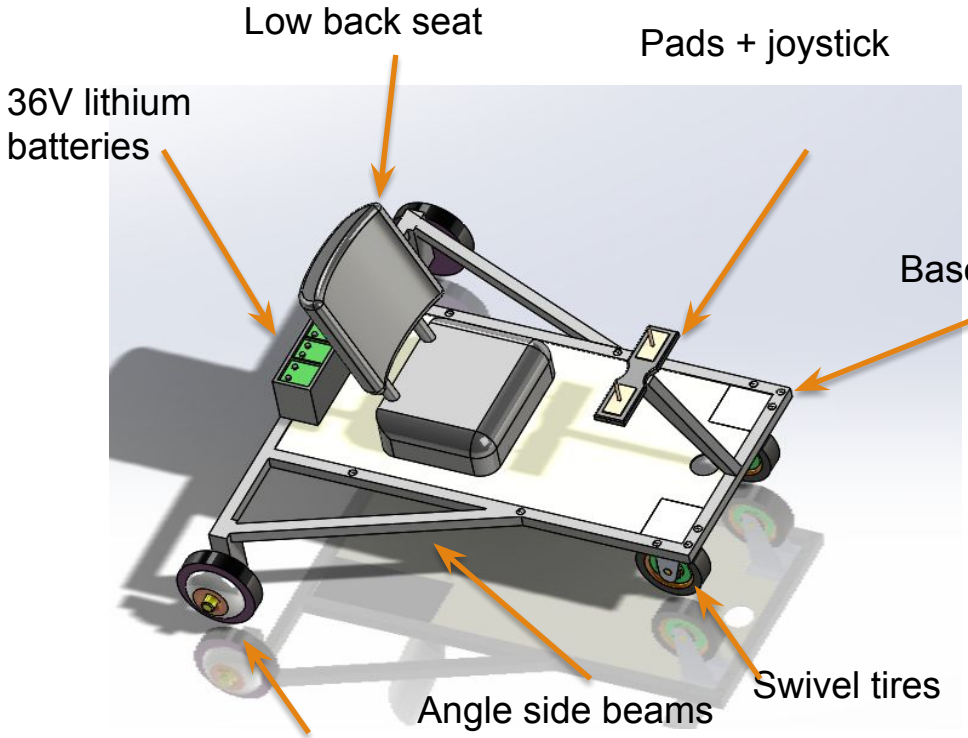


Figure 8: Final design CAD

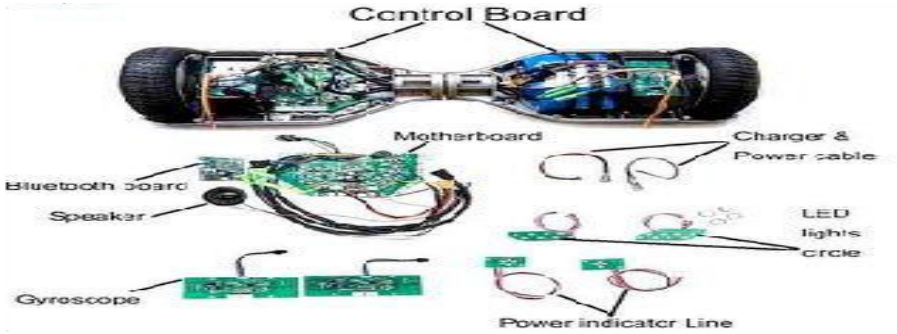
Manufacturing Process

Structural base:

- Plain Steel Frame
- Wooden Board

Subsystem:

- Low Back Seat
- Electric & Swivel Wheels
- Motherboard
- Pressure Pads (connected with joysticks)
- Batteries



Final Product Testing

Table 2: Testing & Results

Testing	Struggles	Results
Weight compatibility	• Max. weight increased	✓ Device Holds up to 260 lbs
Electrical circuits	• Motherboard electric shortage • Batteries over the power required (high current)	✓ Motherboard replaced ✓ Batteries replaced (36V Lithium Batteries)
Pressure pads	• Less responsive pressure pads	✓ Pressure pads replaced ✓ Joy Stick style steering added
Heat generation	• No struggles	✓ No heat generated from the battery except when charging
Balance check	• No struggles	✓ Alignments of the device passed the test and the tires were parallel to each other

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Thank You – Q&A