

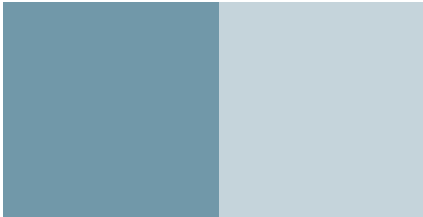
Lightweight Posterior Rollator



Team D5

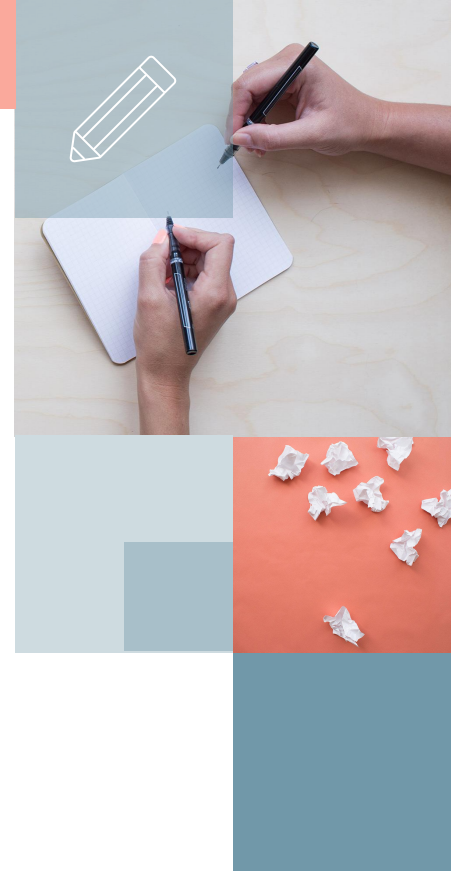
Josiah Bigras | Victoria Hough

Osilama Oyageshio | Magdalena Richardson







Project Goal

Erica needs a lightweight, sturdy posterior walker that can be collapsed with one hand and fit compactly into the back seat of a car.






Benchmarking



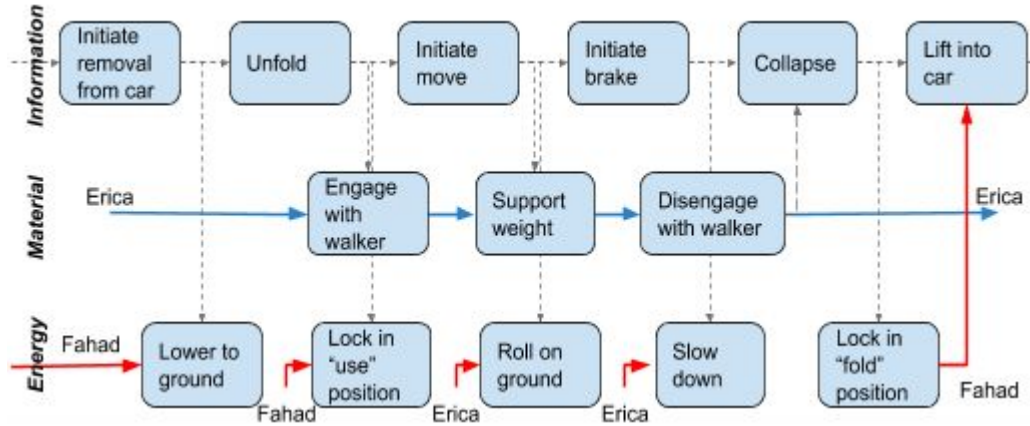
| Feature | Nexus Rollator Walker (current walker) | Deluxe Two Button Folding Walker | Drive Medical Deluxe Two Button Folding Walker | Folding Adjustable Walker Rollator |
|------------------------|---|---|---|---|
| |  |  |  |  |
| Lightweight | ✗ | ✓ | ✓ | ✓ |
| Foldable | ✓ | ✓ | ✓ | ✓ |
| Has a seat | ✓ | ✗ | ✗ | ✓ |
| Cost | ↑ | ↓ | ↓ | ↓ |
| Wheels | ✓ | ✗ | ✓ | ✓ |
| Comfortable | ✓ | ✗ | ✗ | ✓ |
| Aesthetically pleasing | ✓ | ✗ | ✗ | ✗ |
| Adjustable | ✓ | ✓ | ✓ | ✓ |

| | Deflated Balloon Robot Hand | Lynxmotion Smart Servo Robotic Arm | Manual Chain Hoist |
|----------------------|-----------------------------|------------------------------------|--------------------|
| Cost | ↑ | ↑ | ↓ |
| Accessible remotely | ✓ | ✓ | ✗ |
| Lift heavy items | ✓ | ✗ | ✓ |
| Move across 3 planes | ✓ | ✓ | ✗ |
| Complexity | ↓ | ↑ | ↓ |
| Aesthetically | ✓ | ✓ | ✗ |

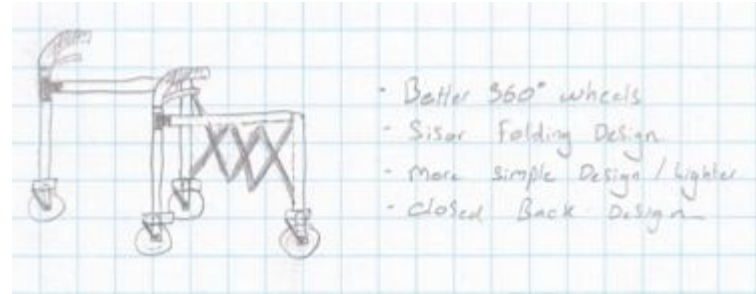
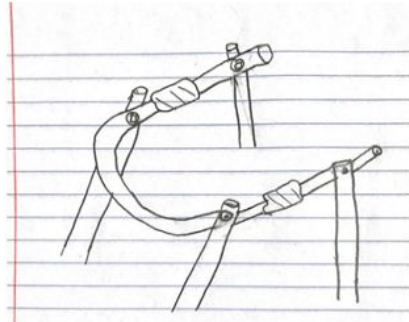
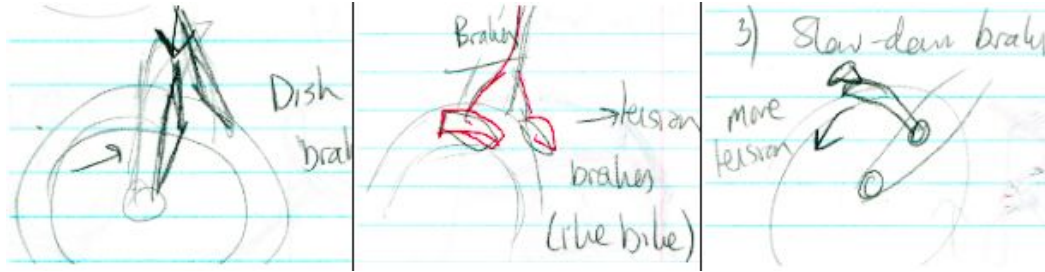
| Deflated Balloon Robot Hand | Lynxmotion Smart Servo Robotic Arm | Manual Chain Hoist |
|---|---|---|
|  |  |  |



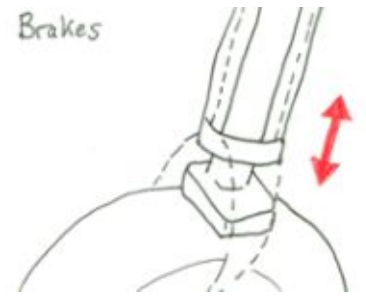
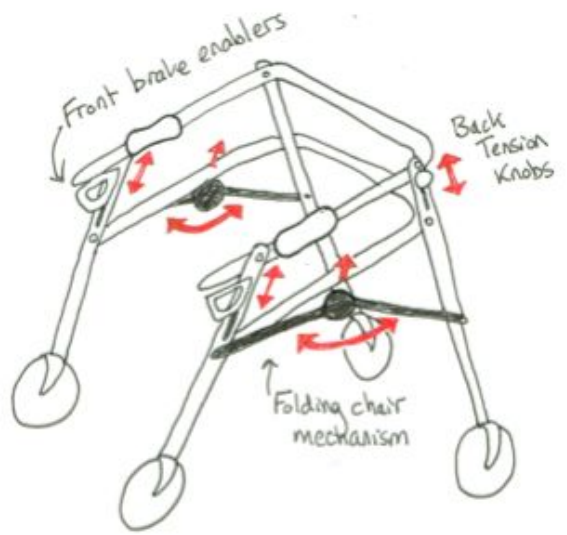
Functional Decomposition



Concepts



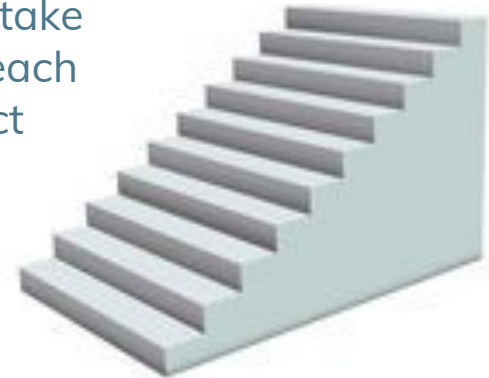
Concepts



Project Plan Strategy



- Meet up once a week in person
 - Planning-oriented
- Chat over Messenger
- Trust in philosophy that if we take each deliverable as it comes each week, will complete the project



Project Cost and Comparison

| | |
|---------------------|---------------|
| Prototyping Costs | ~\$40 |
| Final Product Costs | ~\$90 |
| Total Costs | ~\$130 |

Comparable Products:

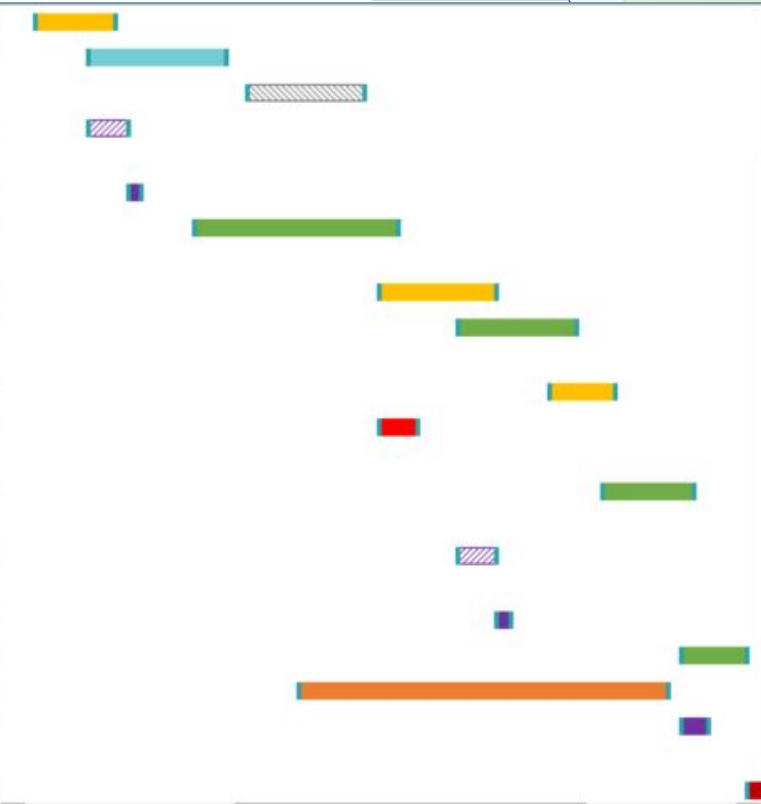
- Lightweight = 7.3 kg (16 lbs)
- Foldable (non-locking)
- Adult size, braking
-

Total: \$430 CAD



Long-Term Plan

| | | | | |
|---------------------------------|-----------|--------------|--------------|--------------------|
| Refinement I | 4 days | Thu 20-01-30 | Tue 20-02-04 | Osilama Oya |
| Detailed Design | 8.5 days | Mon 20-02-01 | Thu 20-02-13 | All Member |
| <Reading Week> | 7 days | Sat 20-02-15 | Sun 20-02-23 | Students of |
| Preparation Client Meet II | 3 days | Mon 20-02-03 | Wed 20-02-05 | Mags Richard Hough |
| Client Meet II | 1 day | Thu 20-02-06 | Thu 20-02-06 | All Member |
| Prototype I & Client Feedback | 11.5 days | Tue 20-02-11 | Wed 20-02-26 | All Member |
| Refinement II | 7 days | Tue 20-02-25 | Wed 20-03-04 | All Member |
| Prototype II & Client Feedback | 7 days | Mon 20-03-02 | Tue 20-03-10 | All Member |
| Refinement III | 5 days | Mon 20-03-05 | Fri 20-03-13 | All Member |
| Project Progress Presentation | 3 days | Tue 20-02-25 | Thu 20-02-27 | All Member |
| Prototype III & Client Feedback | 5 days | Fri 20-03-13 | Thu 20-03-19 | All Member |
| Preparation Client Meet III | 3 days | Mon 20-03-02 | Wed 20-03-04 | Mags Richard Hough |
| Client Meet III | 1 day | Thu 20-03-05 | Thu 20-03-05 | All Member |
| Fusion Review & Production | 3 days | Thu 20-03-15 | Mon 20-03-22 | All Member |
| Testing | 20 days | Wed 20-02-11 | Tue 20-03-17 | Osilama Oya |
| Final Product Presentation | 2 days | Thu 20-03-19 | Fri 20-03-20 | All Member |
| Preparation for | 2 days | Tue 20-03-19 | Wed 20-03-20 | All Member |



The Prototypes



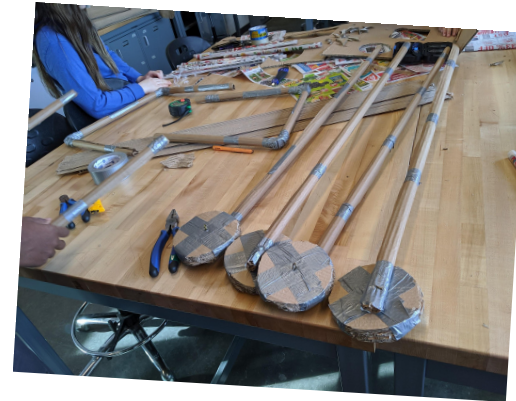
D
R
I
V
E
P
A
S
S
I
O
N
N
D



Prototype 1



- Cardboard, tape, zip ties
- Folding concept
- Purpose of prototype
 - Folding mechanism
 - Communication/ Collaboration
 - User Testing

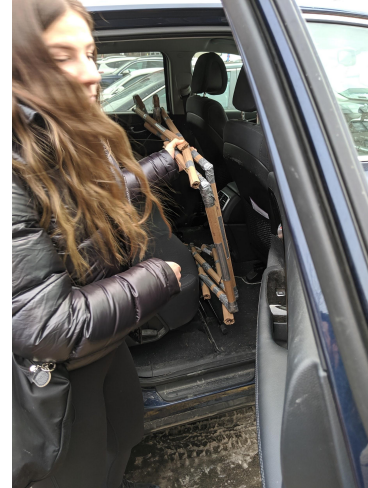


D
R
I
V
E
P
A
S
S
I
O
N
D
E



Prototype Feedback 1

- Client liked concept/design
- Client tried the prototype



D
R
I
V
E
P
A
S
S
I
O
N
F
R
I
E
N
D



Prototype 2



- “Scissor Lift” concept
- Cardboard, newspaper, tape and zip ties
- Purpose of prototype
 - Collapsing mechanism/ smaller design
 - Communication/ Feedback

D
R
I
V
E
P
A
S
S
I
O
N
N
D



Prototype Feedback 2

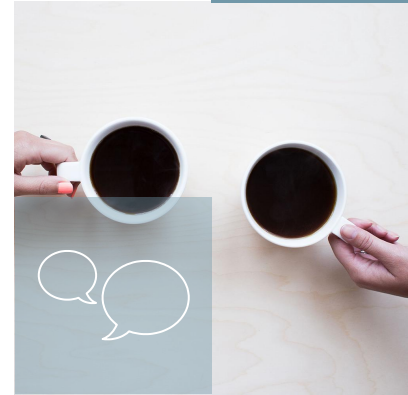
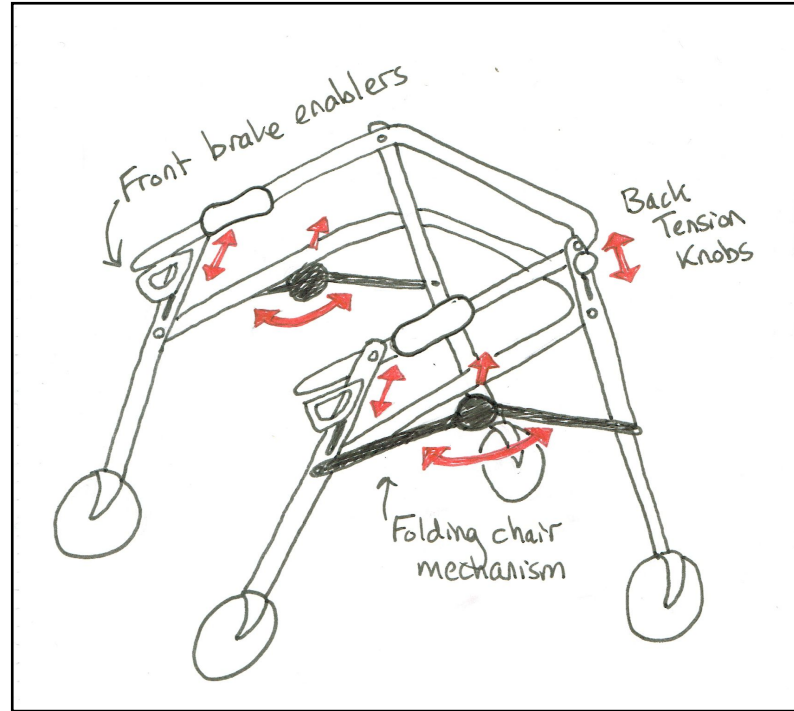
- Did not like “Scissor Lift” mechanism
 - Not reliable, bad past experiences



D
R
I
V
E
P
A
S
S
I
V
E
N
D

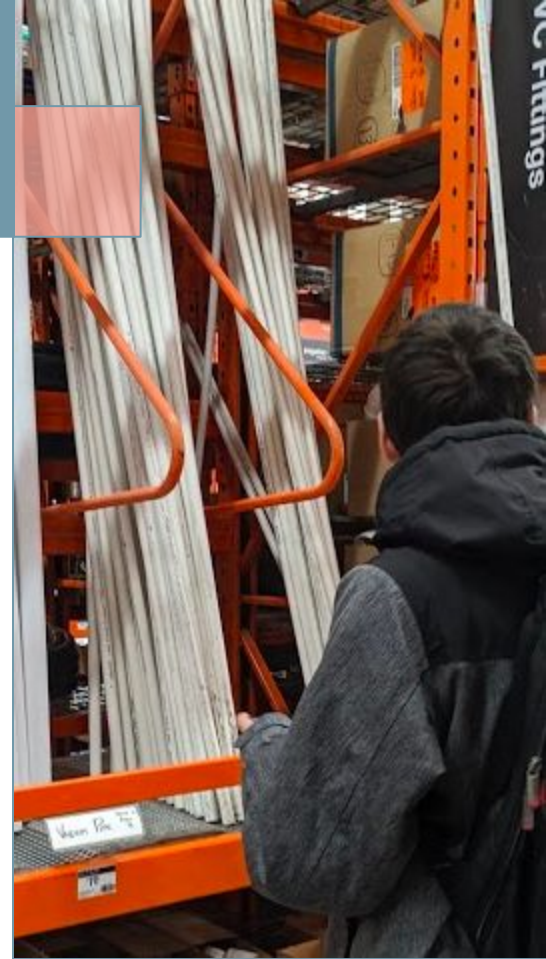


Plan Moving Forward 1



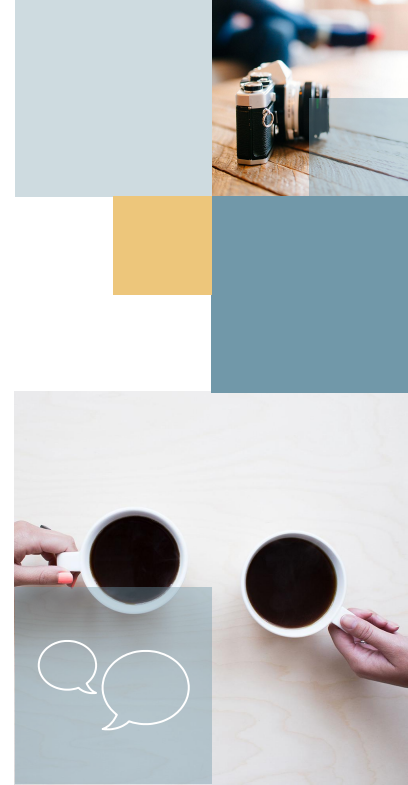
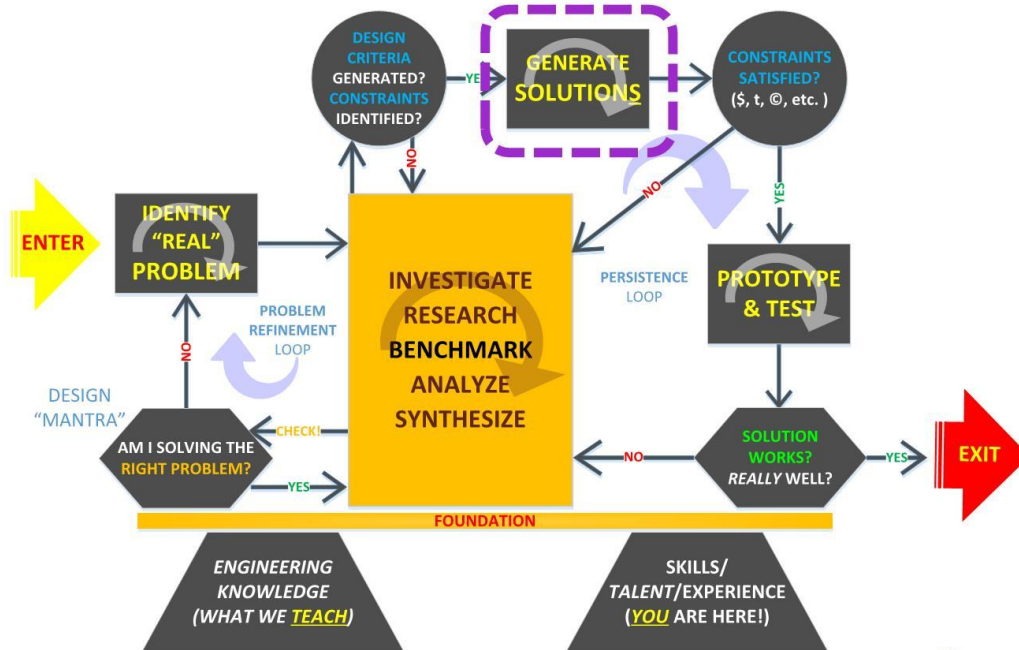
Plan Moving Forward 2

- Moving Forward with prototype 1.
- Adjust the size of walker based on our feedback.
- Build another prototype (with PVC).
- Run several tests with new prototype.
- Keep on following the Design process
- Use Results to build final design.



Plan Moving Forward 3

Iterative Engineering Design Process (IEDP)



Team D5 Summary:

- On schedule
- Projecting over \$100 budget, but within allowable limits
- More research and testing needed
- Confident about finishing on time

Thank you!

