

GNG2101 Group 2.1 Progress



Hanna Curry, Jacob Miller, Paige Petroskie, Eli Pratt, and Laura Karlin

Meet the Team!



Hanna Curry



Eli Pratt



Laura Karlin



Jacob Miller



Paige Petroskie

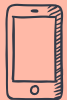


Our Client

The uOttawa Free Store

The uOttawa Free Store is nonprofit store, that runs off of donations and volunteers.

Located on 100 Thomas More Private #102 Ottawa, Ontario



Instagram- uofreegratuit

The Project

Our job is to create a new and collapsible clothing rack for the uOttawa Free store.



Initial Project Plan

GNG2101 Group2.1 • Hanna C.

Initiation

PD A.1: Team contract • Hanna C. +4

Execution

PD A.2: Client meeting preparation • Justin Elijah P. +4

Client meet 1

PD A submission • Jacob M.

PD B: Needs

PD C: Concepts

PD D: Detailed design

Client meet 2

PD E: Project progress presentation

PD F: Prototype 2

Client meet 3

PD H: Design day

Months ▾ - +

Monitoring and Control

PD A quality check • Hanna C.

PD B quality check • Hanna C.

PD C quality check • Hanna C.

PD D project plan update • Hanna C.

PD G project plan update • Hanna C.

PD D quality check • Hanna C.

PD E project plan update • Hanna C.

PD E quality check • Hanna C.

PD F project plan update • Hanna C.

PD F quality check • Hanna C.

PD G quality check • Hanna C.

PD H quality check • Hanna C.

PD J project plan update • Hanna C.

PD J quality check • Hanna C.

PD I quality check • Hanna C.

Months ▾ - +

Planning

PD A.3: Project skeleton • Hanna C.

PD C.2: Project plan • Hanna C.

PD D.1.8: BOM

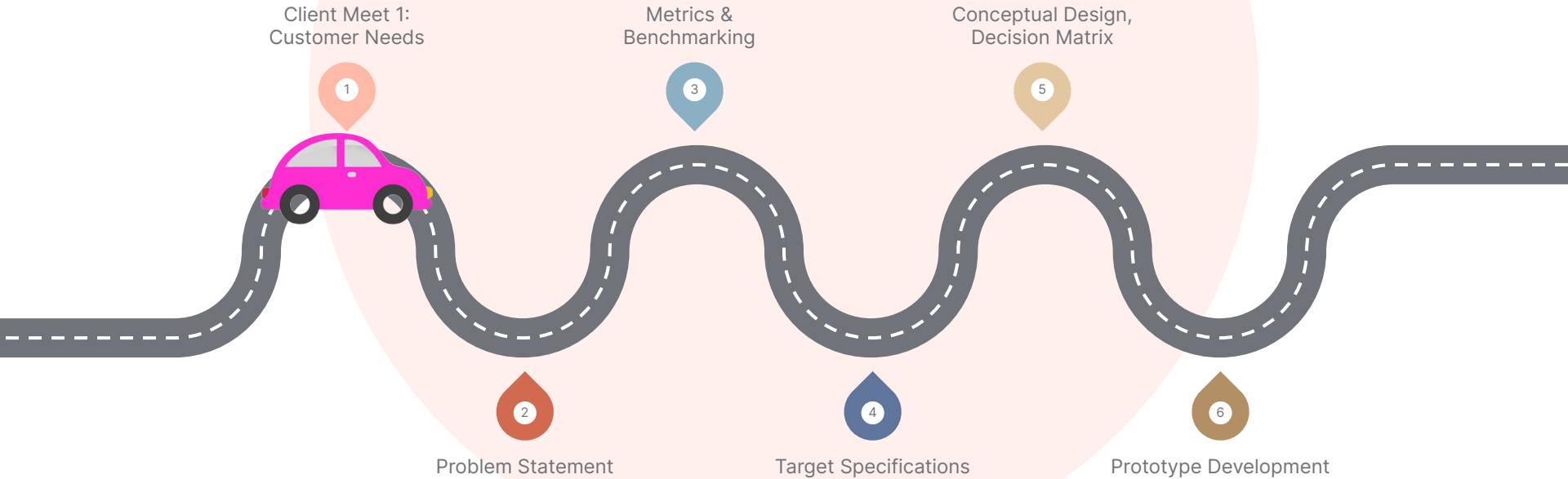
PD G: Business model and economics report

Closing

PD J: Final presentation

PD I: User manual

Roadmap to Success

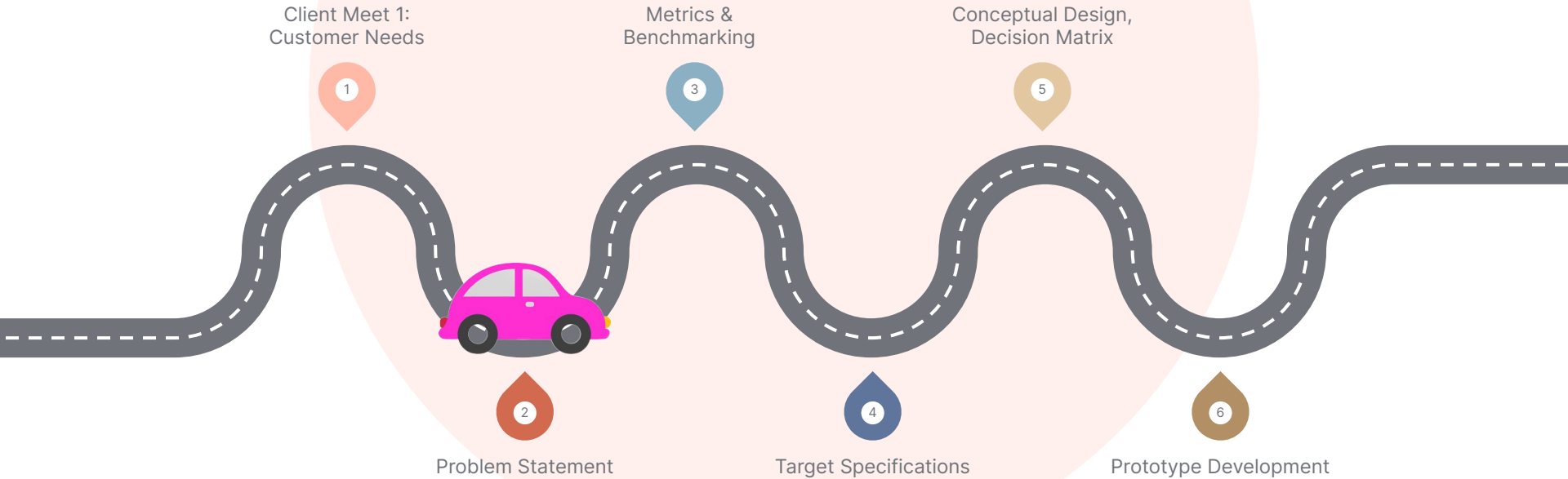


Client Meet 1: Customer Needs

1. The rack is adjustable in height
2. The rack is collapsible and moveable
3. The rack is durable and strong
4. The rack is easily transportable by 1-2 people
5. Rack is easy and fast to assemble
6. The rack is inexpensive
7. The rack is light enough to be handled
8. The rack is aesthetically pleasing



Roadmap to Success

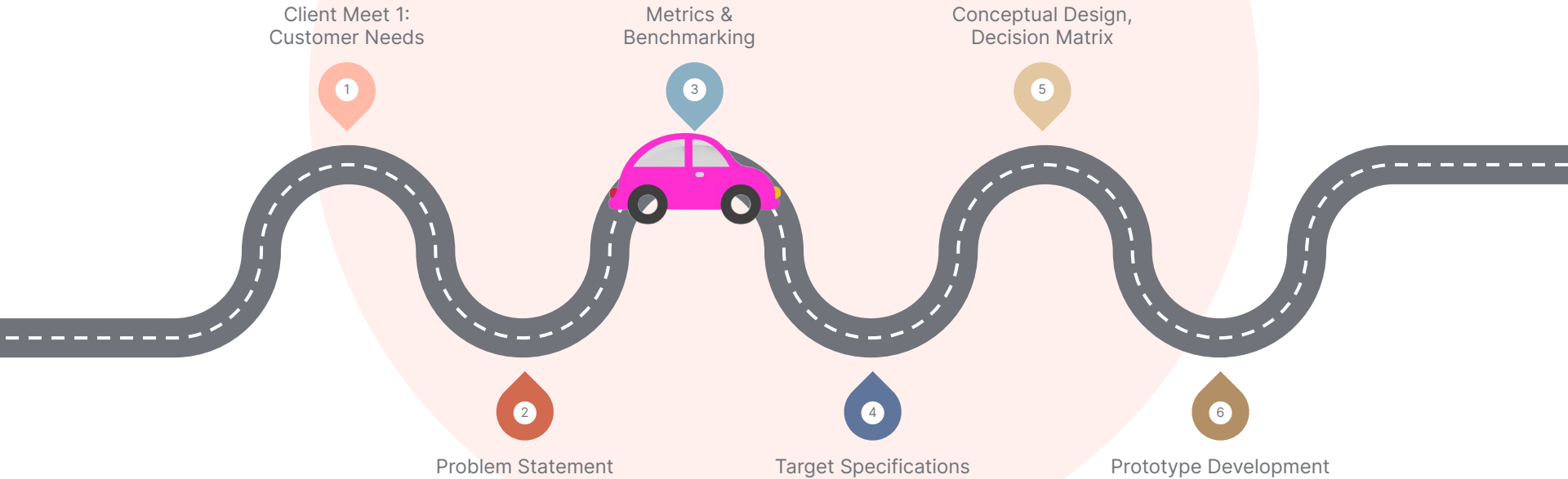


Problem Statement

The uOttawa Free store is looking for a collapsible clothing rack that is both easily mobile and cost effective, with high clothing capacity and moderate weight bearing ability while remaining accessible and easy to set up.



Roadmap to Success



Benchmarking



- Chrome Steel
- 2-tier
- Holds up to 30 garments
- Extends clothes up to 6 ft. off the floor
- Collapses compactly for easy storage
- Dimensions: 28.5 in. D x 28.5 in. W x 69 in. to 73.5 in. H



- Adjustable height
- Two 12" pull-out hangrails
- 4" ball bearing casters
- Wheels for movement



- 250 lbs of capacity
- Folds to 5" high
- Chrome Plated Steel
- Extensions on end of hang-rail
- Wheels for movement
- 55.9 x 121.9 x 165.1 centimeters
- 72" Hanging Space
- 48" long hang-rail
- two 12" Extensions
- Adjustable Height Settings

Benchmarking



- Easy to assemble garment rack, no tools required
- Height adjustable
- Durable yet lightweight
- Folds away for easy storage
- Dimensions: 22.0" x 34.75" x 66.25"
- Weight limit: 6.89 lbs
- Wheels for movement



- Designed for indoor and outdoor use.
- 4 casters makes it easy to move
- 44LBS weight capacity
- Rust-proof and durable
- Weight: 5.32 kg
- Alloy steel
- 45 x 45 x 48 cm
- No movability while in expanded state



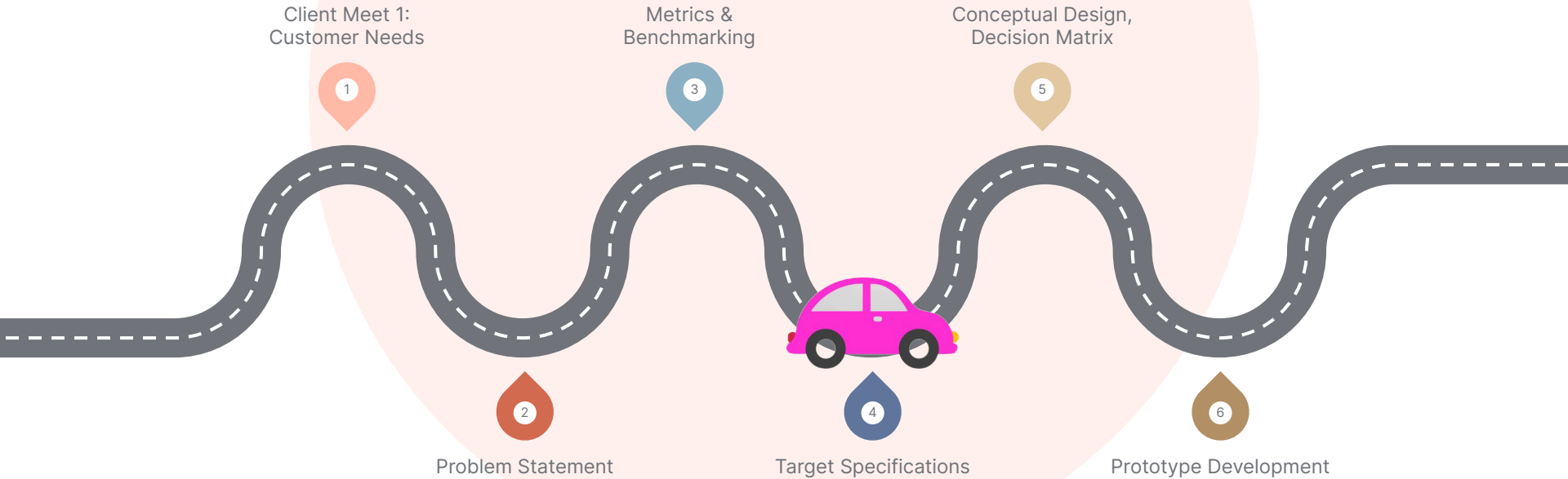
- 6-tier
- 3 smooth-sliding removable drawers
- 10 lbs weight limit
- Dimensions: 13.6 by 12.2 by 6.9 inches
- Freestanding
- Collapsible for better movement

Metrics



Metric	Relationship	Value	Unit	Type
Weight capacity	>=	10	lbs	Functional requirement
Accessibility	=	High	N/A	Constraint
Compactness	=	High	N/A	Constraint
Wheel size	<=	1.5	In. (dia.)	Functional requirement
Cost	<=	100	\$ (CAD)	Constraint
Durable	=	Yes	N/A	Functional requirement
Wheels can lock	=	Yes	N/A	Functional requirement
Setup time	<=	4	minutes	Constraint
Aesthetically pleasing	=	Yes	N/A	Non-functional requirement

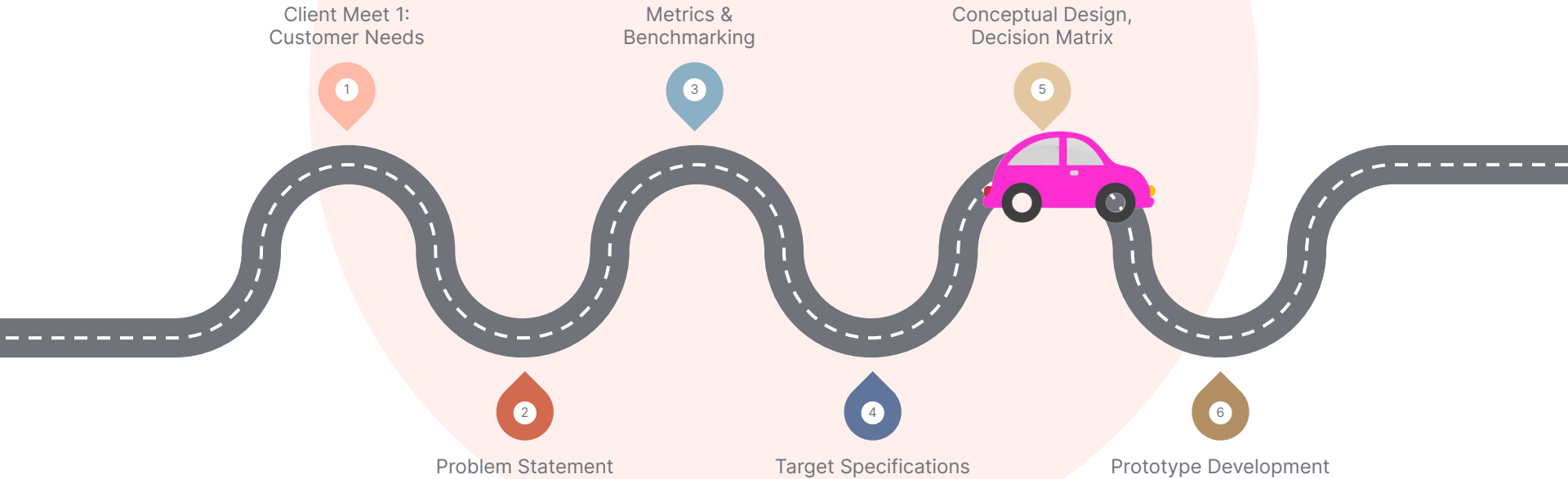
Roadmap to Success



Target Specifications

Specifications	Desired Value
Performance- Travel	Can be moved across campus without wheels jamming
Service Life	Clothes rack will have a continuous service life of minimum 10 years
Aesthetic	The rack will have an aesthetic and clean appearance
Material	The material used will withstand indoor and outdoor conditions
Set-Up	The rack can be set up quickly by one person
Performance- Working Wheels	Wheels will lock easily
Accessibility	The clothes rack can be lowered to various heights for wheelchair accessibility.

Roadmap to Success



Decision Matrix

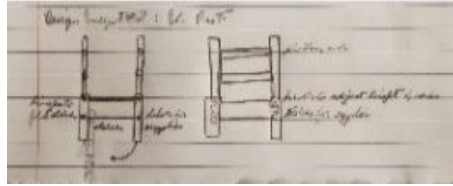
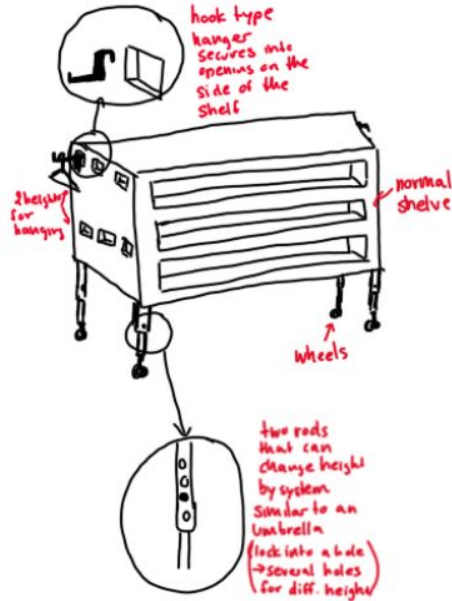
#	Criteria	Weight* (1-5)	Concept**														
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	Moveability/ Able to transport	4	3	3	1	3	1	2	3	3	3	3	3	3	3	1	3
2	Quick set-up time/Collapsibility	4	3	2	1	1	3	3	1	2	2	3	1	1	3	1	2
3	Stability/Durability	5	2	3	3	3	2	2	2	2	3	1	3	2	2	3	3
4	Bulkiness	3	3	2	3	1	3	3	1	3	2	3	1	2	3	3	3
5	Easy/Optimal storage	2	3	2	3	1	2	2	1	3	3	3	2	2	3	1	3
6	Able to withstand outdoor conditions	4	3	3	1	3	3	2	3	2	3	1	2	2	1	1	3
7	Adjustable	5	3	2	2	2	2	1	2	3	2	3	1	2	3	1	3
8	Cost	4	2	3	1	1	2	2	1	3	2	2	1	2	1	1	3
9	Aesthetic appeal	1	3	2	2	1	3	3	3	3	3	2	3	2	3	3	3
10	Accessible	5	3	3	3	1	2	2	2	3	2	3	3	3	3	3	3
Total			102	96	73	68	82	77	70	98	90	88	73	79	90	65	107

*5 for the most important designs, 1 for the least important designs

**3 meets the criteria the best, 1 meets the criteria the least

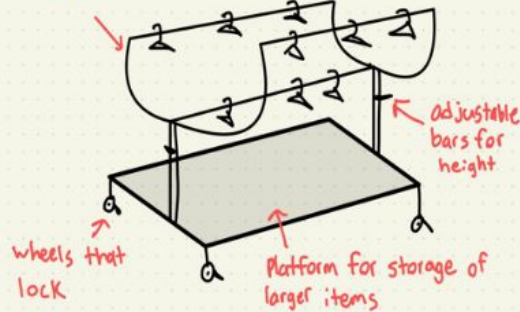
Concept Designs

Design #1: Laura Karlin

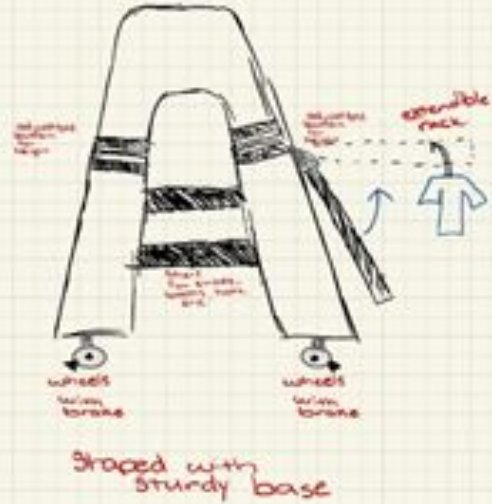


Design Concept #3: Jacob Miller

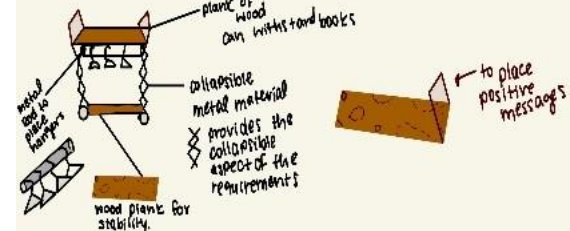
3 hanging racks for optimal clothes display



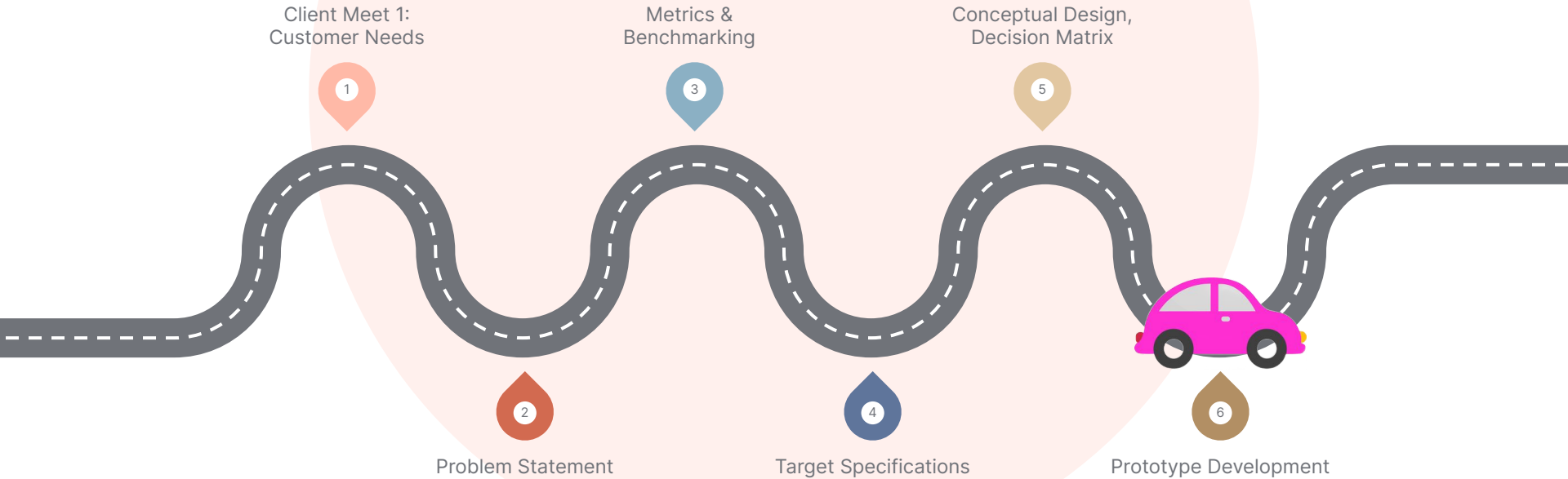
Design Concept #2: Hanna Curry



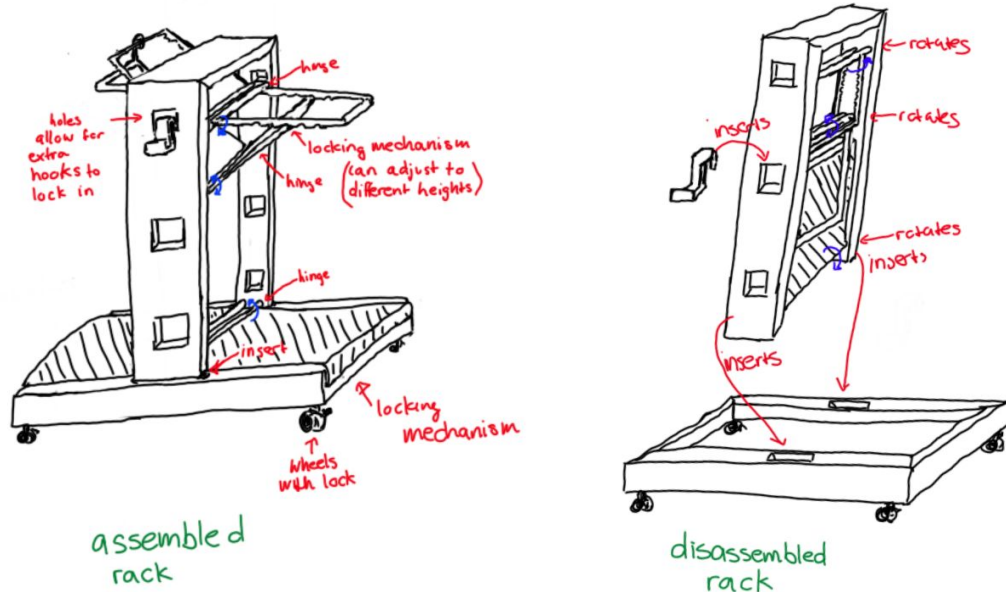
Design Concept #1



Roadmap to Success



Prototype Development - 1st Design Prototype



Prototype Development

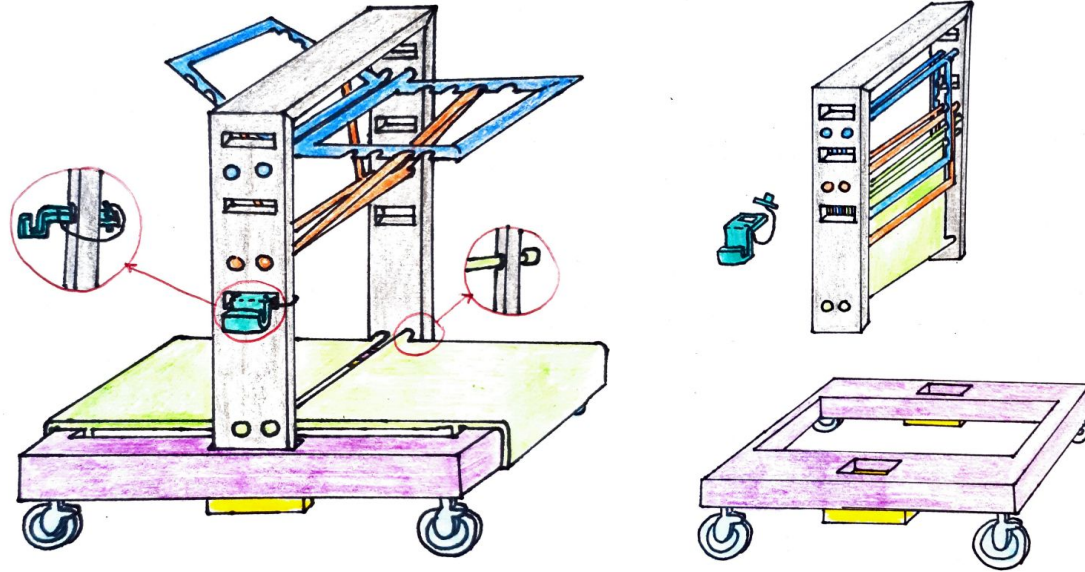
- 1st Design Prototype

Client Feedback

- Enjoyed the design
- Concerns were raised about stability
- Concerns were raised about the accessibility due to the base



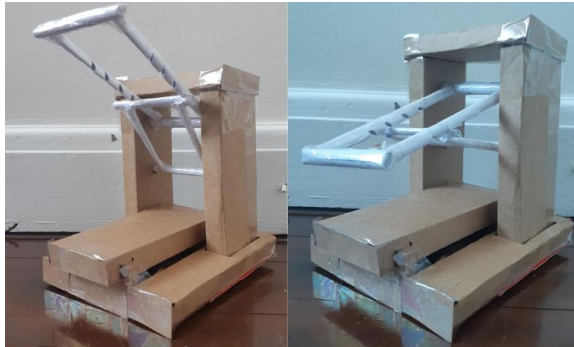
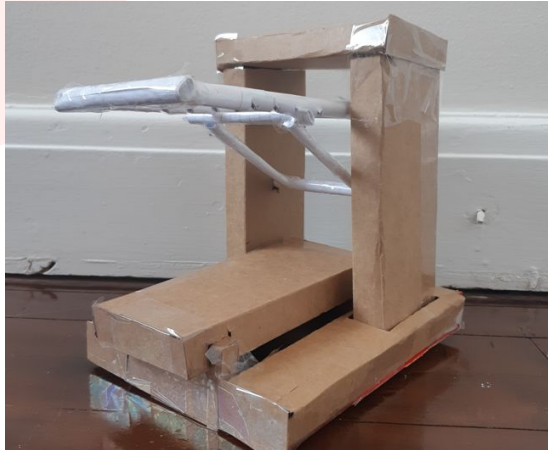
Prototype Development - Current Design Prototype



Prototype Development - Anticipated Final Bill of Materials

Item #	Part name	Description	Link	Quantity	Unit Cost (\$)	Extended Cost (\$)
1	Wheels	4pcs of 1.96" Lockable Hard Rubber Wheel	https://www.amazon.ca/DICASAL-Casters-Castors-Markless-Bearings/dp/B0753F2GJ9	1	22.99	22.99
2	Thread knob	1/4-20 Thread Knob	https://www.leevalley.com/en-ca/shop/hardware/jig-and-fixtures-parts/61652-1-4-20-thread-knobs	12	2.80	33.60
3	Dowels	Hardwood Dowel 5/16 In. x 48 In.	https://www.homedepot.ca/product/alexandria-moulding-hardwood-dowel-5-16-in-x-48-in-yellow/1000115244	18	2.12	38.16
4	Screws	Varying sizes	will bring from home	50	0.00*	0.00
5	Wood	1"x4"x6'	Will bring from home and if necessary buy https://shop.wood-source.com/collections/lumber/products/plylar-project-board?variant=32344400855129	10	0.00*	0.00
Total						94.75

Prototype Development - Physical Prototype 1A



Prototype Development - Physical Prototype 1B



Feasibility Study

- **Budget**
- **Timing**
- **Mechanism**



Future Prototypes

- Prototype 2: wooden planks and hot glue
- Prototype 3: comprehensive prototypes reusing prototype 2



Client Meeting 3

- Within Client Meet Three, our goal is to present the progression made on our prototype to allow the client to visualize the product being created.
- It allows the client to get a feel from a drawing to a physical prototype. At this time, if further modifications need to be done, they can be done.



Thanks!

Any questions?