ACCESSIBLE LAPTOP MOUNT

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INTRODUCTION

Our Client: JM

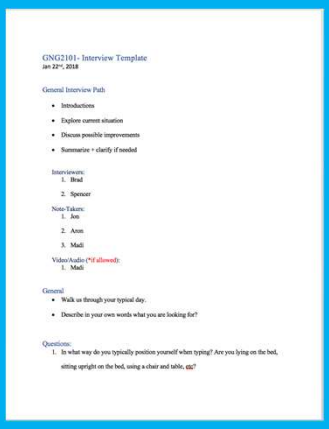
- Quadriplegic
- Long computer hours
- Repetitive motion injury

Empathy

- Observed
- Immersed

Interview

- Physical feedback
- Similar to current system
- High adjustability



GNG2101- Interview Template
Jan 22nd, 2018

General Interview Path

- Introductions
- Explore current situation
- Discuss possible improvements
- Summarize + clarify if needed

Interviewers:
1. Brad
2. Spencer

Note-Takers:
1. Jon
2. Aron
3. Madi

Video/Audio (*if allowed):
1. Madi

General
- Walk us through your typical day.
- Describe in your own words what you are looking for?

Questions:
1. In what way do you typically position yourself when typing? Are you lying on the bed, sitting upright on the bed, using a chair and table, etc?

2. What is your range of motion?
3. Is the current system portable or is it used in one place?
4. What solutions have you tried in the past? Why have they not worked?
5. How long are you using your computer at a time?
6. What kinds of feedback were you looking for? (Elaborate on different kinds, i.e. Haptic, vocal, luminescent, etc.)
7. What limitations does the current system propose?
8. Where do you feel the neck pain? How often? How severe?
9. What do you prefer about using the mouth-method over a virtual keyboard or another digital analogue?
10. Do you move around often? Do you jitter, twitch or fidget?
11. How do you move around?
12. How long are you willing to learn a new system?
13. What are your necessary specifications? What are your ideal specifications?
14. What about on-screen don't you like?

PROBLEM IDENTIFICATION

Customer Needs → Problem Statement

- Decrease neck strain
- Adjustable
- Compatible
- Sustainable
- Durable

There is a need for an adjustable laptop stand to reduce neck pain caused by repetitive motion in quadriplegic patient.

Target Specifications

Number	Target Spec	Metric
1	Flexibility	Move along multiple axes
2	Sustainability	Must stay in set position
3	Compatibility	C-clamps must be compatible with the hospital desks
4	Cost	<$100

Benchmarking

Too big

Too weak

Too tall

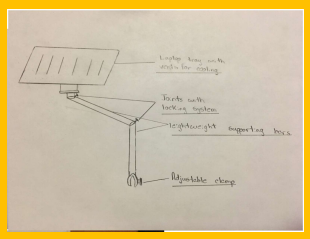
Metrics

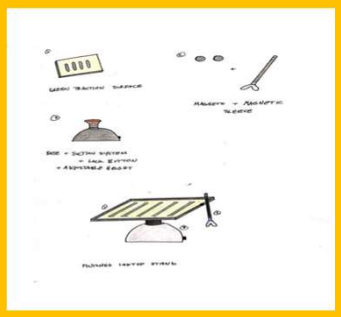
- Dimensions (metric system)
- Force (Newtons)
- Weight (kg)

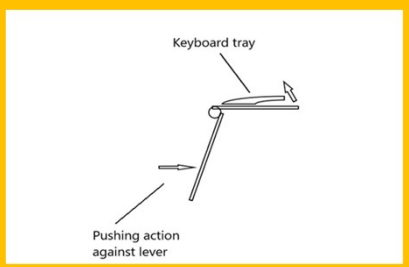
IDEATION

Design Criteria

- Ease of use
  - Nurses/him
  - Cleaning
  - Storage
- Comfort
- Adjustability
- Stability
- Small footprint

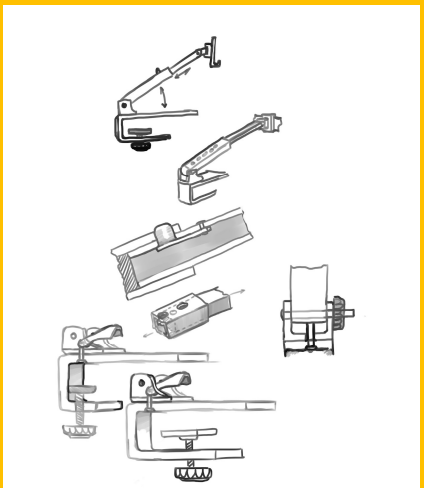


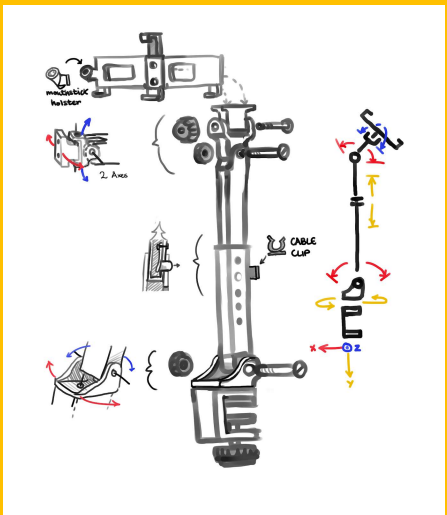




Chosen Design

- C-clamp
- Height adjustment
- Keyboard tray
- 3-axes adjustability





Business Model & Risk Analysis

Business Model Canvas. What's Your Business:_____

Key Partners	Key Activities	Value Proposition	Customer Relationships	Customer Segments
■ Care workers ■ Health services industry	■ Product distribution ■ testing	■ Cost ■ Ease	■ Bulk ■ Long-term relationships	■ Health care network
	Key Resources ■ Raw metals ■ internet		**Channels** ■ Internet ■ Transportation	
Cost Structure ■ IT ■ Manufacturing ■ Shipping		**Revenue Streams** ■ Equipment ■ Up-front costs		

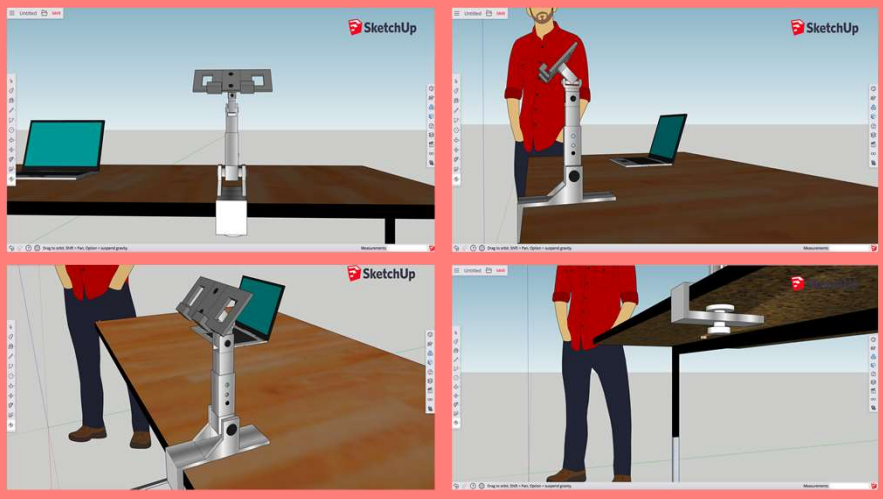
RISKS

- Cost
- Weight
- Set-up

PROTOTYPING + TESTING

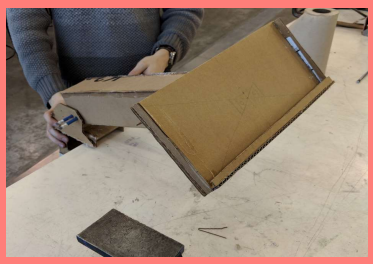
Prototype 1 & Client Meeting 2

- Physical model
- Simple



Prototype 2 & Client Meet 3

- Positive
- Excited
- Work to be done

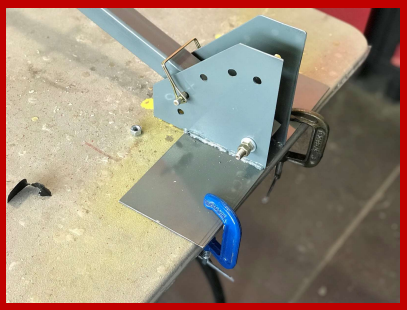


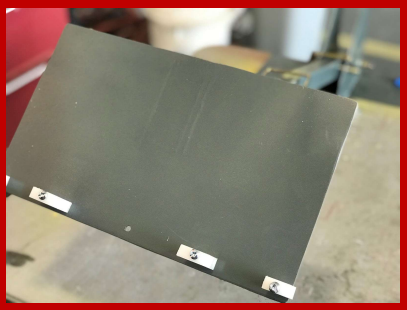
Bill of Materials

Inventory No.	Item Description	Purchase Price	Quantity	Location
Part 001	Mild Sheet Steel – 1010/1018 grade	$10 CAD	1	Sourced/Brunsfeld
Part 002	Square Steel Tube – 3/4"x3/4"x3'	$10 CAD	1	Sourced/Brunsfeld
Part 003	Square Steel Tube – 5/8"x5/8"x3'	$10 CAD	1	Sourced/Brunsfeld
Part 004	Stainless Hitch Pin – ¼"x1 ¾"	$3 CAD	2	Sourced/Purchased
Part 005	Aluminium expanded metal sheet – 1'x2'	$12 CAD	1	Sourced/Purchased
Part 006	Clamp hardware – Steel	$15 CAD	1	Sourced/Purchased
Part 007	Misc. Hardware – Screws & Bolts	$10 CAD	10	Sourced/Purchased

IMPLEMENTATION + NEXT STEPS

Prototype 3





Demo!

Lessons Learned

- Time Management
- Incorporating Design
- Simplification & Usability
- Material Acquisition
- Metalworking
- Adapting to Resources

Next Steps

- Creating the Final Product

  -Quality-of-Life Improvement

  -Delivering to the Client
- Product Development & Optimization
- Product Support

  -Longevity Modification

  -Feedback from St. Vincent's

Check us out online!

Website: https://truenorth-stands.myshopify.com/password

(code: geitea)

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THANK YOU!

Questions?