



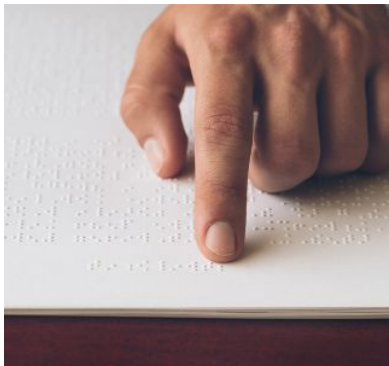
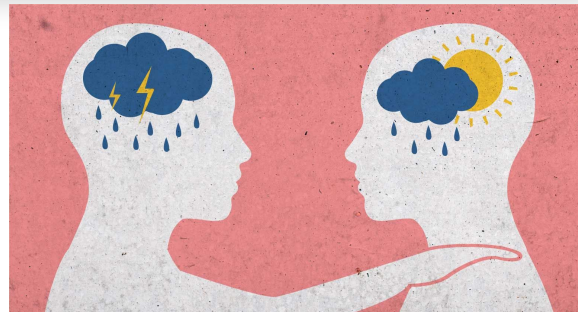
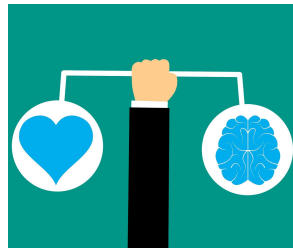
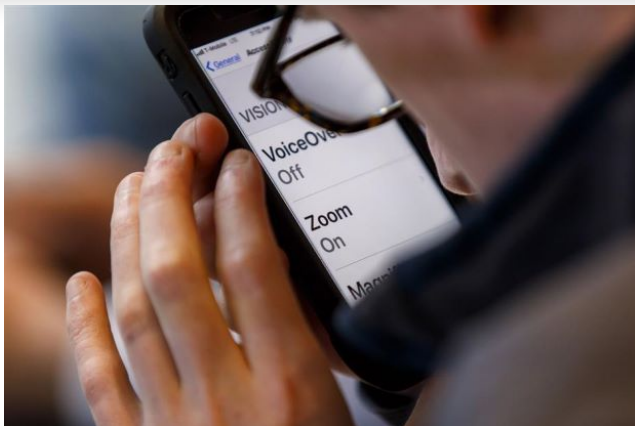
TACTILE MAP

**Muriayika Belzor, Aric Li, Michel Stephan, Biao He,
Luke Marshall**

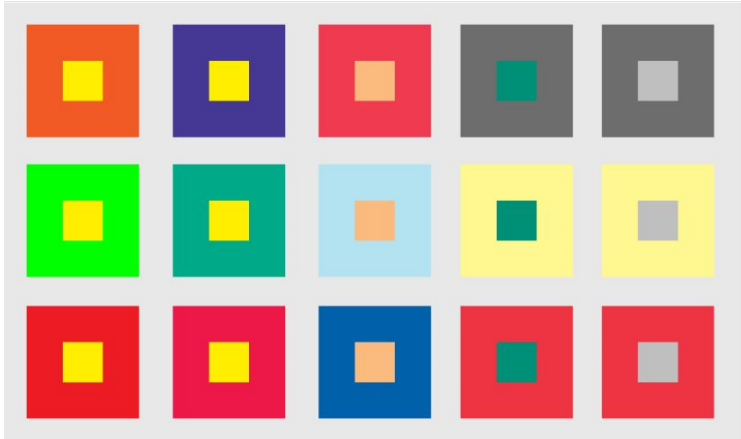
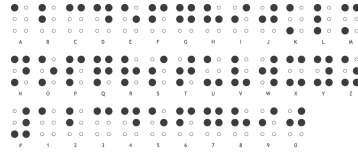
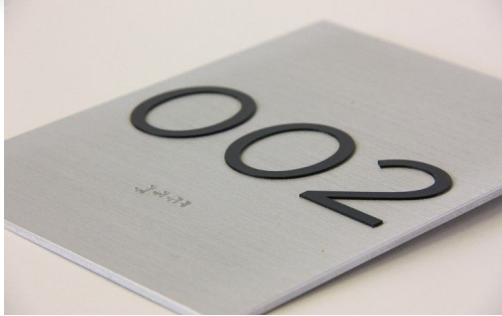


INTRODUCTION

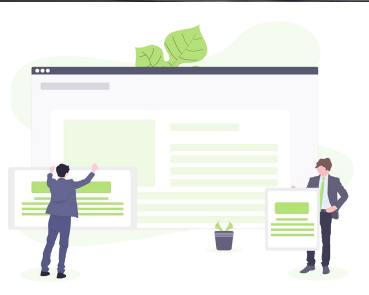
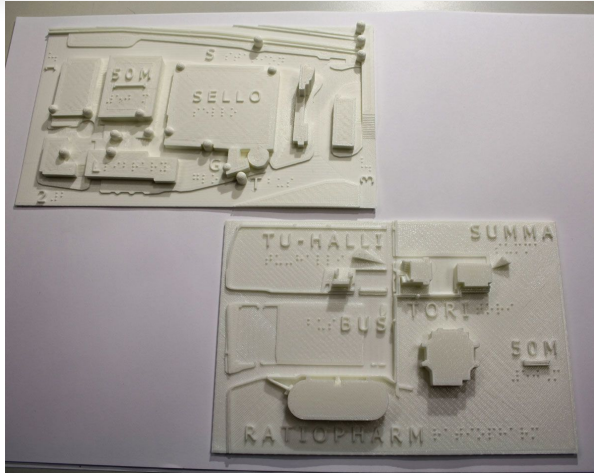
EMPATHISING and PROBLEM STATEMENT



CUSTOMER NEEDS



BENCHMARKING



TARGET SPECIFICATIONS

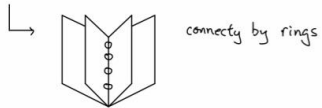
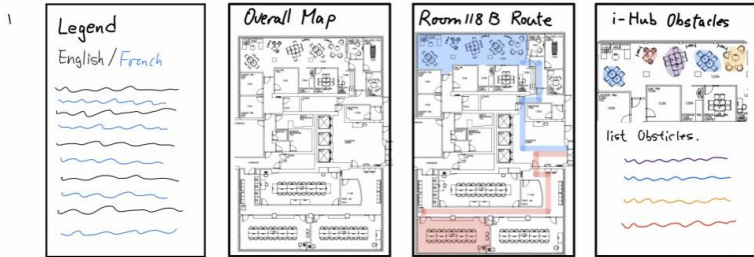


	Design Specifications	Relation (=, < or >)	Value	Units
No.	Functional Requirements			
1.	Weight	=<	5	kg
2.	Dimension	=<	50 x 60	cm
3.	Thickness	=<	3	cm
5.	Writing size	=<	15	mm
6.	Map scale accuracy (margin of error)	=<	2	mm

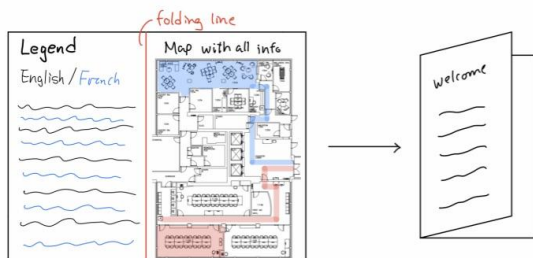
GENERATED CONCEPTS



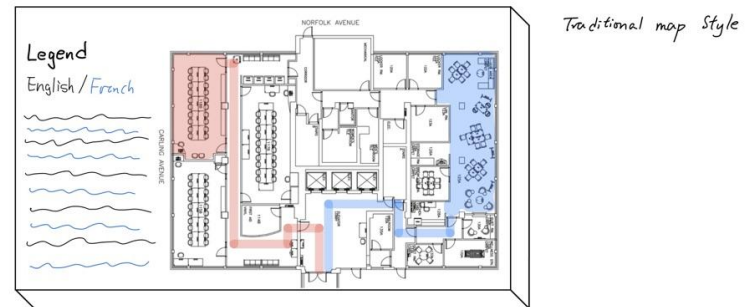
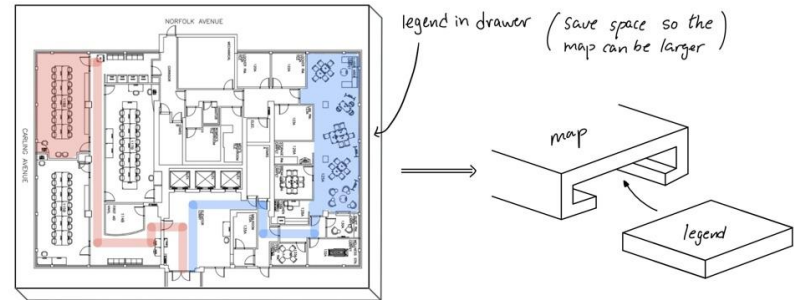
Portable



2) Pressed Paper using a mold.



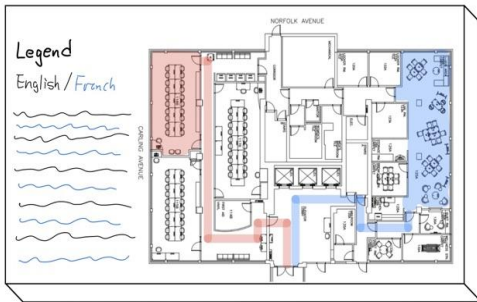
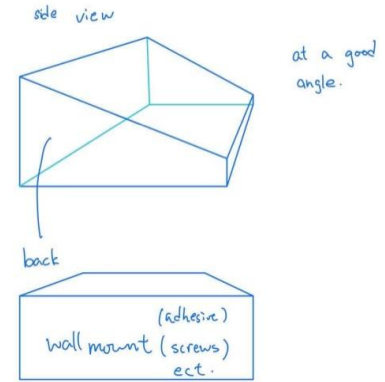
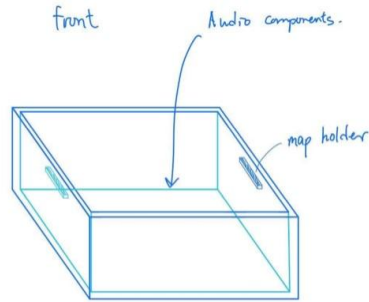
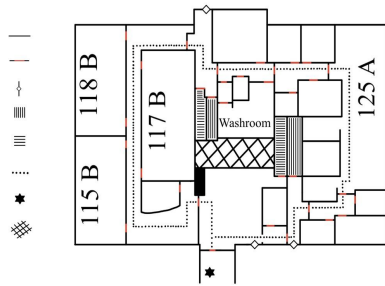
Stationary



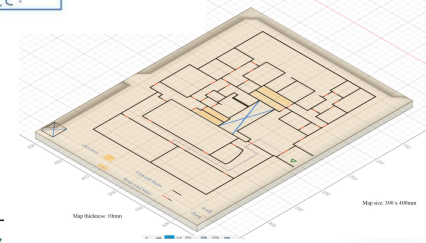
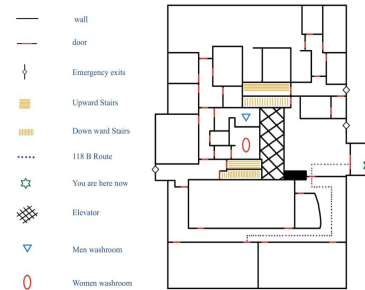
GENERATED CONCEPTS continued



Tactile Map



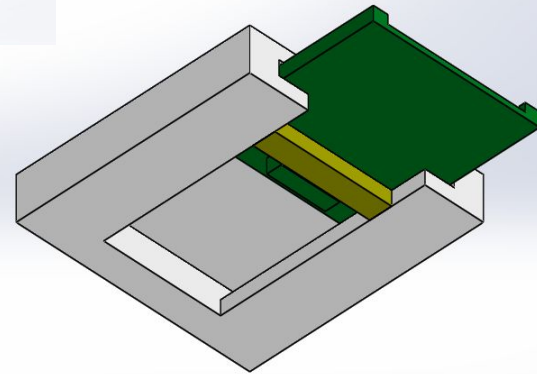
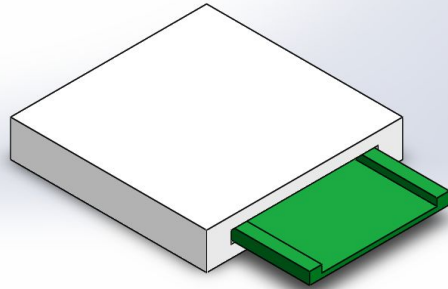
Traditional map Style



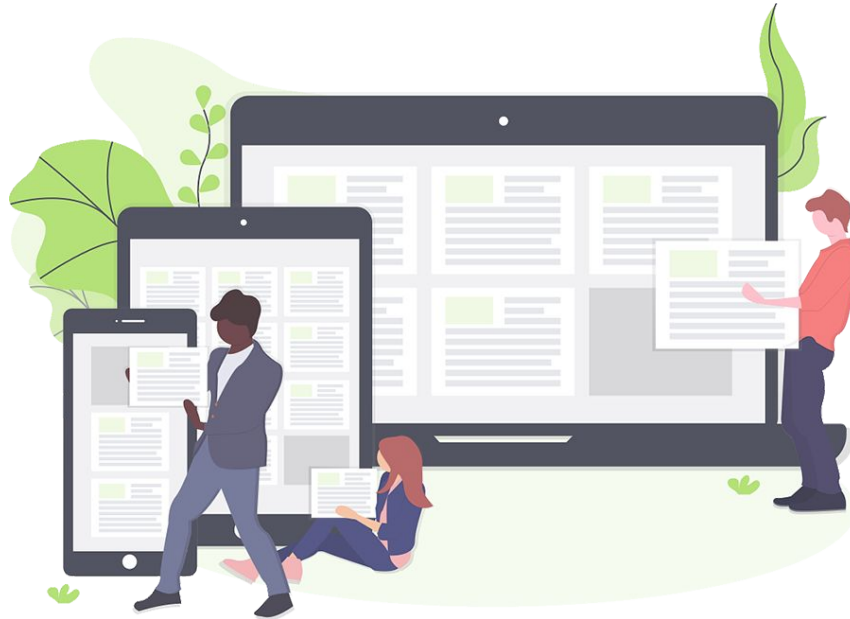
DECISION MATRIX example

	Concept Options		
Selection Criteria	Map with vertical legend (reference)	Map with pullout slab as legend	Map with back as legend
Durability	0	0	+
Clarity	0	+	0
Portability	0	+	0
Weight	0	-	0
Writing Size	0	+	-
Eaze of Fabrication	0	0	+
Number of +	0	3	2
Number of 0	6	2	3
Number of -	0	1	1
Total score	0	2	1

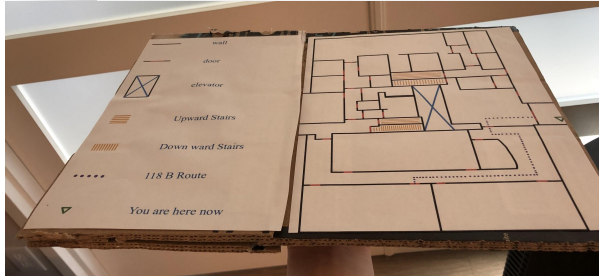
INITIAL CHOSEN CONCEPT



FEASIBILITY STUDY



PROTOTYPES and TESTING

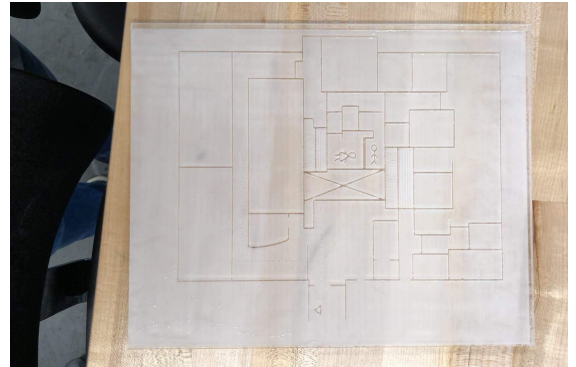
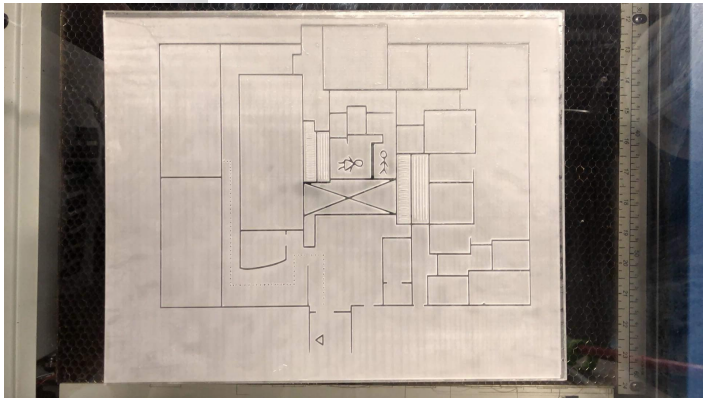
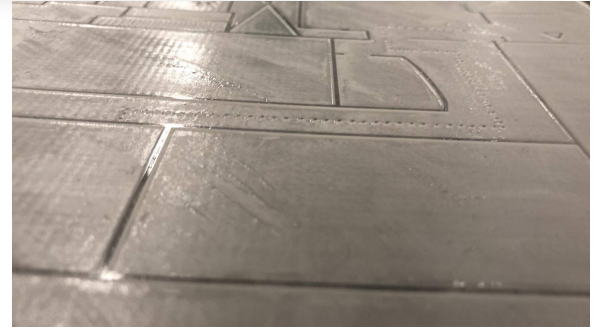
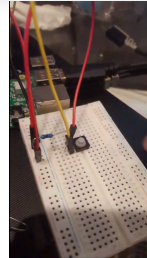


```
python3
import pygame.mixer
from time import sleep
import sys, sys as GPIO
from sys import exit

GPIO.setmode(GPIO.BCM)
GPIO.setup(27, GPIO.IN)

pygame.mixer.init(22050, 16, 2, 4096)
snd = pygame.mixer.Sound("Sound.wav")
soundChannel = pygame.mixer.Channel(1)
print ("Soundboard ready to be used")

while True:
    try:
        if (GPIO.input(27) == True):
            soundChannel.play(snd)
            sleep(1)
    except KeyboardInterrupt:
        print ("Interrupted")
```



BILL OF MATERIALS



Bill of material					
Part number	Part name	Description	Quantity	Unit Cost (CAD)	Extended Cost
1	Acrylic board	12"x24" of black acrylic board	1	\$13.00	\$13.00
2	White paint	White paint for acrylic surface (118mL)	59 mL	\$1.50	\$0.75
3	MDF board	Medium density fiber board of 12"x24"	4	\$3.50	\$14.00
4	Raspberry pi 3B+	Single board computer	1	\$45.00	\$45.00
5	Tactile Push Buttons	6x6 mm buttons for electronic circuits	13	\$0.09	\$1.15
6	Prototype board	Doubled layered electronic board for circuit designing	4	\$0.58	\$2.33
7	Power supply	5V output and 2.5 A output power supply for micro usb	1	\$5.00	\$5.00
8	Auxiliary cable	3' auxiliary cable for use with with speaker	1	\$1.30	\$1.30
9	Machine screws	Screws in order to anchors the boards on the map	30	\$0.07	\$2.10
10	Headers	Headers in order to connect prototype board to raspberry pi	1	\$2.92	\$2.92
11	Wires	20 AWG cable for connecting the multiple circuit components	13'	0.3\$/foot	\$3.90
12	SD Card	16 Gb sd card	1	\$4.50	\$4.50
13	Speaker	Auxiliary input speaker	1	\$1.85	\$1.85
				Total	\$97.80

BUSINESS MODEL and ECONOMICS



Operating Income (#1.1- #2.10)	\$44,000
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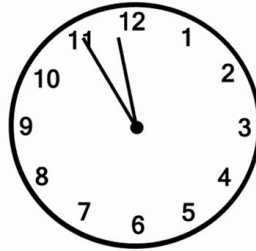
EBT (Earnings Before Taxes)	\$39,000
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Net Income (#5 - #6)	\$29,250
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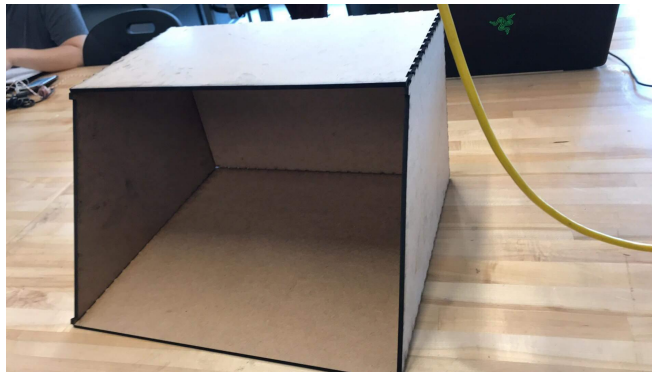
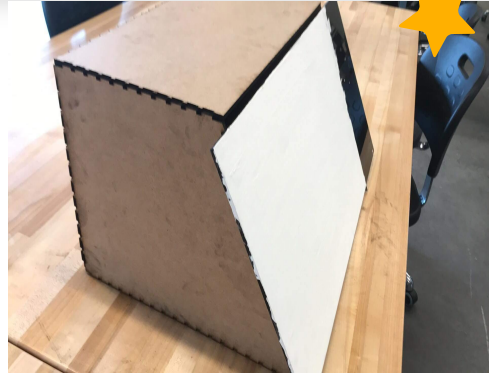
DECISIONS MADE



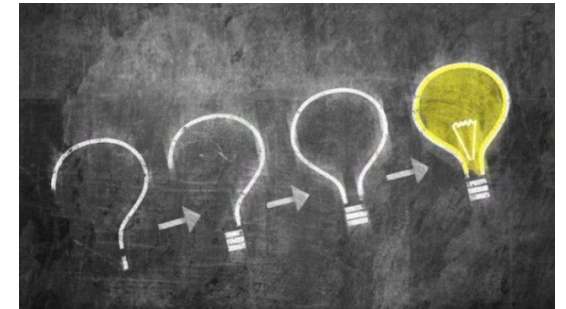
TRIALS AND TRIBULATIONS



FINAL SOLUTION



LESSONS LEARNED



FUTURE WORK



THANK YOU FOR LISTENING!

