The background features several decorative elements: a large solid blue circle in the top-left, a white outline of a circle in the top-center, a solid blue circle in the top-right, a white outline of a circle in the bottom-left, a solid blue circle in the bottom-center, and a white outline of a circle with a small solid blue dot on its upper-left edge in the bottom-right.

# Accessible Xbox Controller

Group 4 - GNG 2101

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# What is the client's problem?

- Client has difficulty controlling the joysticks of the controller and struggles with the ability to 'rapid fire'
- A prototype was done in a previous year however it needs to be more stable and simplified

## **Problem statement**

“Design an accessible controller with adaptive buttons for disabled gamers who have difficulty holding a controller “

# Project Summary

## Where are we at?

- Researched fundamentals given makerepo info
- Two client meets to acquire client specific data/info
- Adjusted and select the final design concept
- Filled BOM given our final concept with benchmarking

## How we're moving forward?

- Utilize knowledge from lathe/Mill lab to make prototype 2
- Purchase materials with our BOM
- Prepare questions and explanation of our project for the client

## Client Feedback

- Prefers the box design
- Needs friction base to avoid slippage
- Wants an interface to change macros
- Wants the controller to be as sturdy as possible

# Customer Needs

No.	Client Needs Statement	Priority
1	The remote is compatible with Xbox and PC	5
2	The remote is comfortable for floor level play	4
3	The remote is adapted to first person shooters and racing games	5
4	The controller is easy to use	4
5	Buttons are easily accessible	4
6	The controller is simple/doesn't have lot of buttons	3
7	Controller is comfortable to utilize	5
8	The controller is adapted to the tremors	3
9	The controller is cheap	4
10	The controller is safe to use	5
11	The controller is sturdy and well built	4
12	The controller's buttons can be remapped	3
13	The controller is ergonomic	4
14	The controller is stationary while being used on the floor	4

Ranking system:

5 - critical

4 - highly desirable

3 - good but not necessary

2 - unimportant

1 - undesirable

# Benchmarking

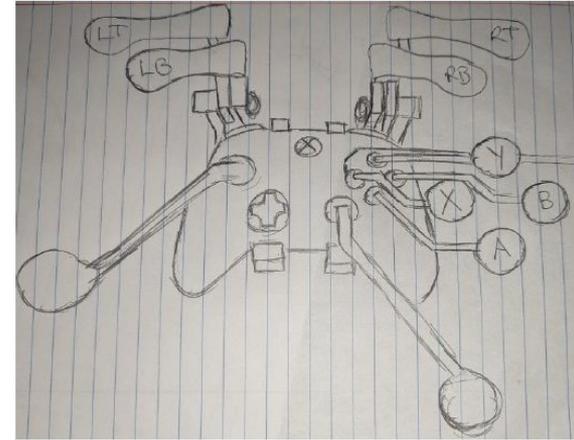
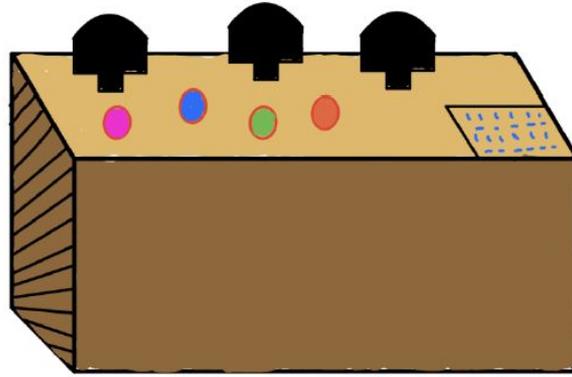
Metric #	Needs #s	Metric	Unit	Project Leonardo for PS5	Onpoint Precision Joystick
1	2, 7,14	Ergonomics	N/A	-	-
2		Size (Dimensions)	mm	Approx. 141 x 191 x 39	No dimensions mentioned
3	9	Cost	CAD	119.99	795.00
4	10	Safety	N/A	-	-
5	2,4,7	Ease of usage	N/A	-	-
6	2,5,7,1 3	Accessibility	N/A	-	-
7	1,3	Compatibility with games played	N/A	-	-
8	6,8,12	Modularity and customization of button implementation	N/A	-	-
9	11,15	Controller weight	Kg	0.322	-
10	5,8	Shape and size of buttons	mm <sup>2</sup>	-	-



# Target Specifications

Metric	Unit	Marginal values	Ideal Values
Ergonomics	N/A	Comfortable to use	Really comfortable to use
Size (Dimensions: L x W x H)	mm	350-500 x 200-300 x 80 – 100	250-350 x 150-200 x 60 – 80
Cost	CAD	100	>100
Safety	N/A	Safe to use	Safe to use and compliance to safety for gaming controllers
Ease of usage	N/A	Fairly easy to use	Extremely user friendly
Accessibility	N/A	Accessible to the user	Really accessible to the user
Compatibility with games played	N/A	Only works well one game	Works well on all games.
Modularity and customization of button implementation	N/A	Able to customize some button layout	Fully customizable button layout
Controller weight	Kg	3-5	<3
Shape and size of buttons	mm <sup>2</sup>	1250	3000
Compatibility with gaming platform	N/A	Works on Xbox/PC	Works on any gaming platform

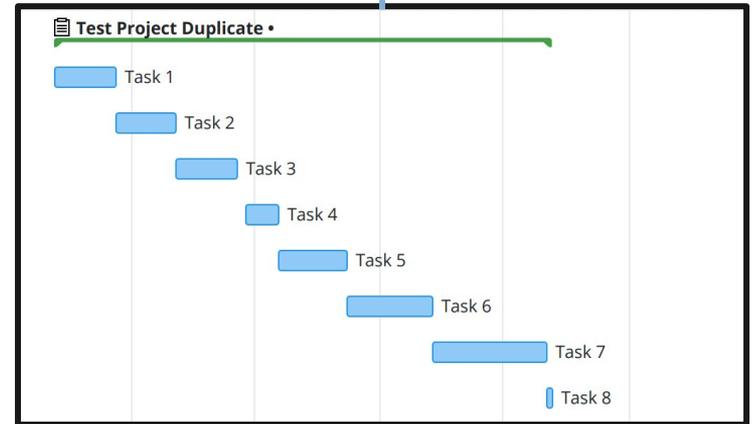
# Concepts



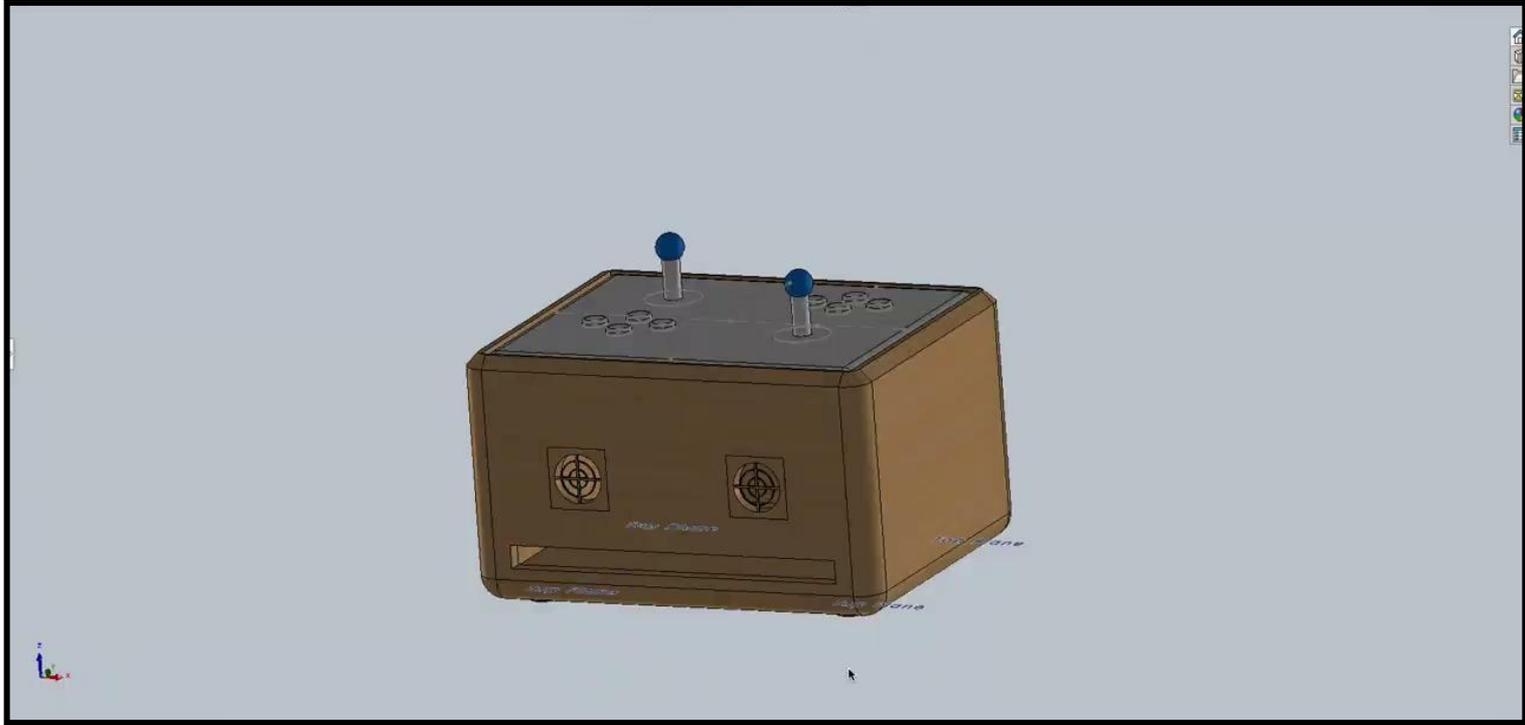
# Project Plan

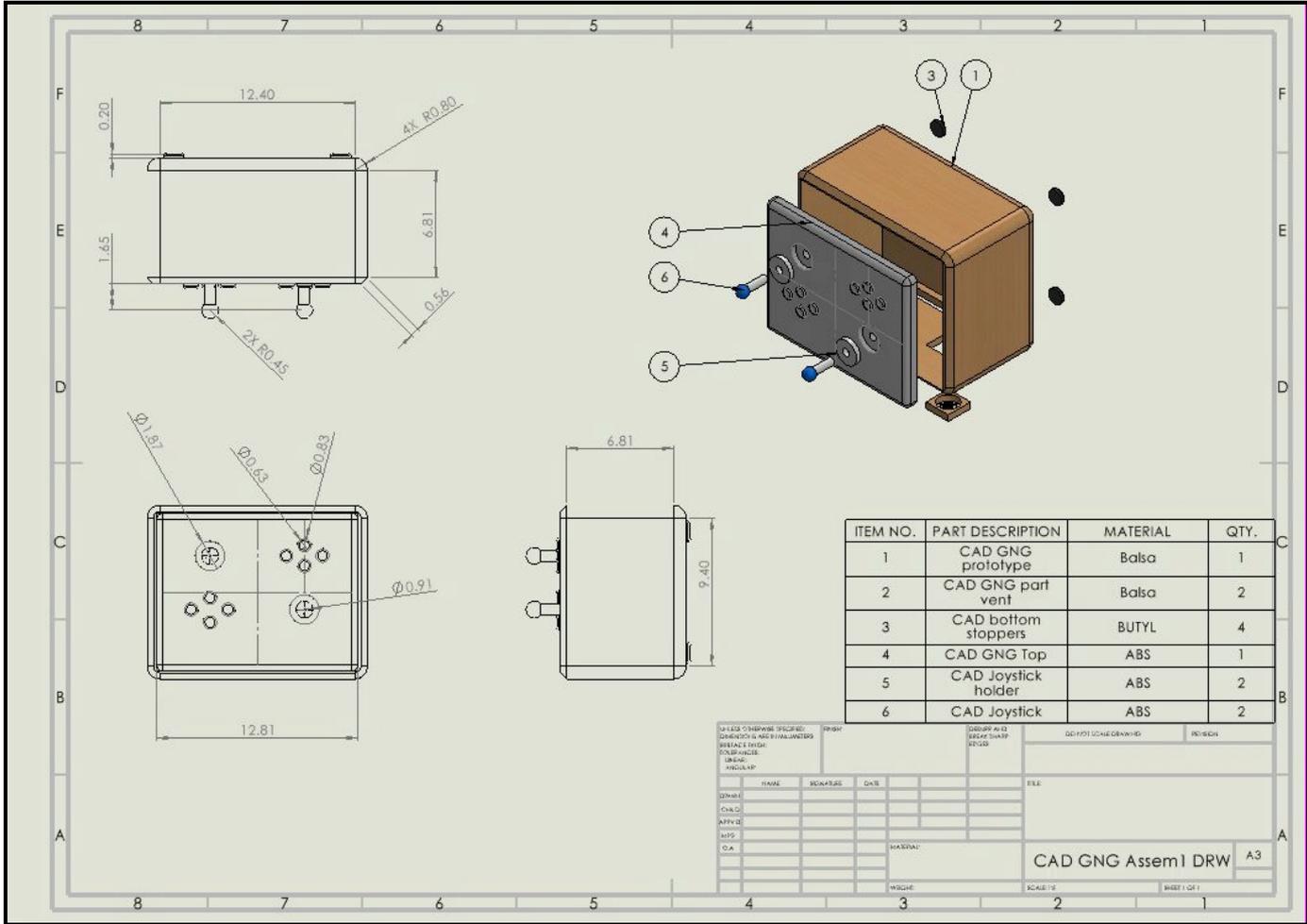
## How do we stay on track?

- Wrike
- High level of communication
- Keeping to our strengths



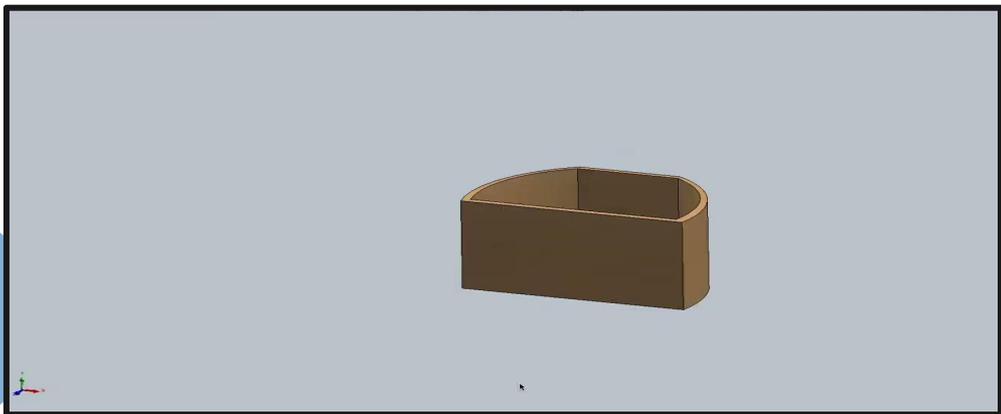
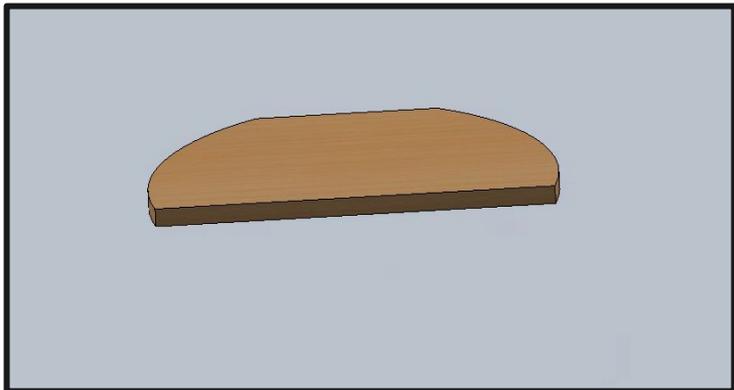
# Prototype 1



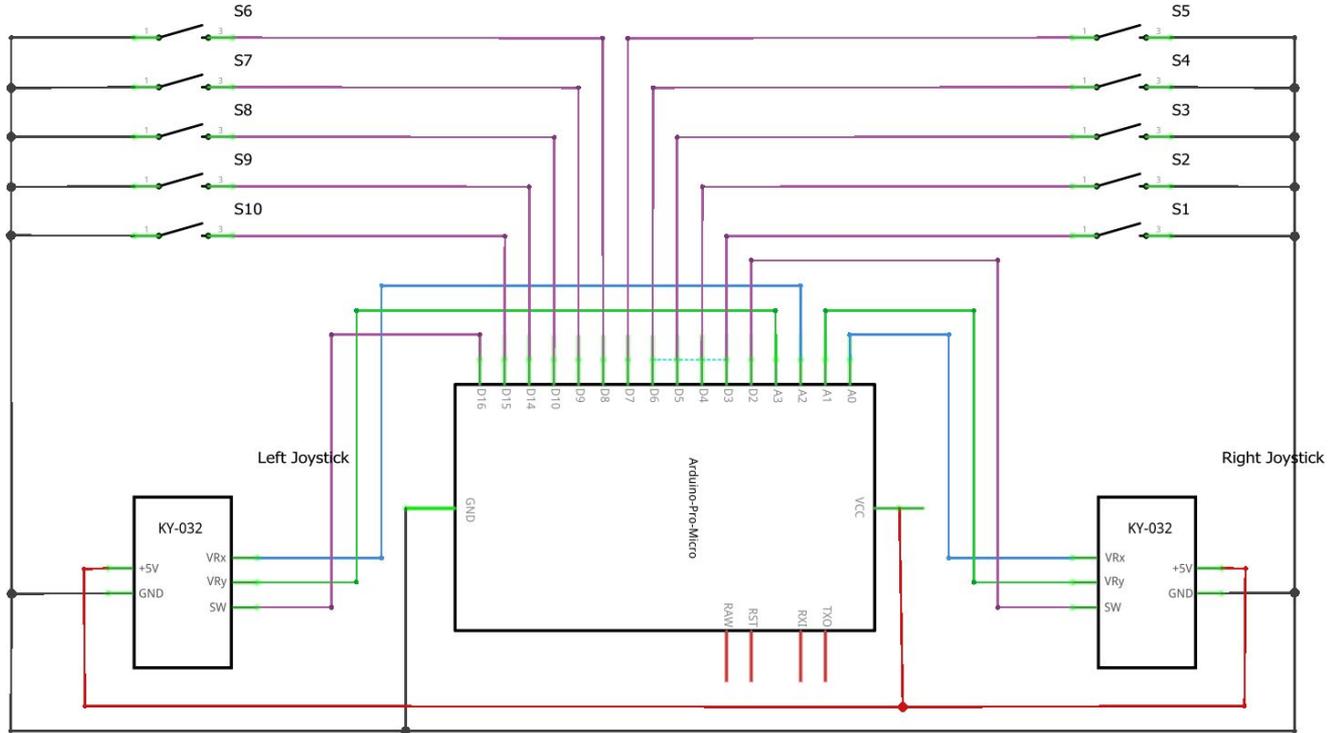


VALERIO SERRAVALLO - PROJECT	DESIGN	DATE	SCALE	REVISION
DESIGNER	DATE	SCALE	REVISION	
CHECKED	DATE	SCALE	REVISION	
APPROVED	DATE	SCALE	REVISION	
DATE	SCALE	REVISION		
CAD GNG Assem1 DRW				A3
SCALE: 1:1				SHEET 1 OF 1

# Prototype 2



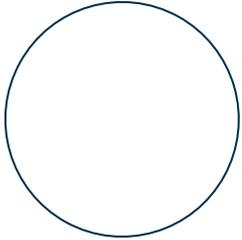
# Circuit Design



# Preliminary Bill

Item Name	Description	Units of measure	Quantity	Unit cost	Extended cost	Link
MDF	MDF Board for the box	Unit	2	3.00 \$	6.00 \$	<a href="https://makerstore.ca/shop/ols/products/mdf/v/M003-1-8-12-NCH">https://makerstore.ca/shop/ols/products/mdf/v/M003-1-8-12-NCH</a>
Arduino Uno	Microcontroller	Unit	1	17.00 \$	17.00 \$	<a href="https://makerstore.ca/shop/ols/products/arduino-uno-r3/v/A001-WT-H-USB">https://makerstore.ca/shop/ols/products/arduino-uno-r3/v/A001-WT-H-USB</a>
Thumb Joystick	Joystick for controller(2 pack)	Unit	1	11.99 \$	11.99 \$	<a href="https://www.amazon.ca/dp/B0BFQTLMST">https://www.amazon.ca/dp/B0BFQTLMST</a>

Push buttons	Pack of 10	Unit	1	10.88 \$	10.88 \$	<a href="https://www.amazon.ca/dp/B07FKB6648">https://www.amazon.ca/dp/B07FKB6648</a>
Silicone Rubber Anti-Skid	Rubber pads for the feet of the box	Unit	1	1.51 \$	\$ 1.51 \$	<a href="https://www.amazon.ca/dp/B0CH6GLTKL/">https://www.amazon.ca/dp/B0CH6GLTKL/</a>
DC Power Supply Adapter	Power adapter for Arduino	Unit	1	14.99 \$	14.99 \$	<a href="https://www.amazon.ca/dp/B09W96X88K/">https://www.amazon.ca/dp/B09W96X88K/</a>
Wood glue	Glue for joining the box	Unit	1	0.00 \$	0.00 \$	
Total product cost (without taxes)					62.37 \$	



# Thanks!

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