

Deliverable F

Business Constraints

Prepared by Group Z11

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Table of contents

1. Introduction	3
2. Business Model Canvas	3
a. Triple bottom line	3
b. Core assumptions	4
3. Sustainability report	4
4. Economics report	5
5. Intellectual property (IP) report	10
6. Conclusion	10
B.1 References	10
B.2 Project Plan Update	11

1. Introduction







Identifying a business model is important when commercializing a product and defining as well as verifying risky assumptions. This plan needs to address the key things we believe regarding our product to make sure it can actually make money for our company. These ideas will guide us as we develop our business model and create the product. In addition, the business model canvas will allow us to capture the value of our product.

2. Business Model Canvas

A business model is a series of actions implemented by a company to create, deliver, and capture values (economic, social, cultural, etc.) for their product. To commercialize our product we have decided to go with the B2B2C business model. We are developing a solution which will be provided to consumers that require our product. The B2B2C model is defined as an ecommerce business model and stands for **Business to Business to Consumer**^[1]. This business model involves a company collaborating with another organization to sell their product or service directly to the end customer. It differs from white labeling, where a company rebrands a product as its own. In this case, the end customer is aware that they are purchasing a product or service from the original company. It also involves *Dropshipping* and *Wholesaling*, which are basically selling products as an intermediary or a third party supplier to buyers. A company we could potentially collaborate with is **AbleGamers**^[2] whose mission is to create opportunities for people with disabilities to be more involved in the gaming community.

a. Triple bottom line

What's your business: Xbox adapted controller

<p><i>Key Partners</i> </p> <p>Makerspace Brunfield center AbleGamers JLPCB Texas instruments</p>	<p><i>Key Activities</i> </p> <p>Product development Implementation of the Arduino code User network</p> <p><i>Key Resources</i> </p> <p>Xinput library SN74HC166N PISO shift registers</p>	<p><i>Value Proposition</i> </p> <p>We are making adapter remotes for people diagnosed with tremor disfunction</p> <p>Our design will be reliable and easy to use</p>	<p><i>Customer Relationships</i> </p> <p>Customer service Manual user Term and conditions Controller assistance</p> <p><i>Channels</i> </p> <p>Third party websites Mobile apps</p>	<p><i>Customer Segments</i> </p> <p>Gaming community Gamers with limited mobility Non profit organisations</p>
<p><i>Cost Structure</i> </p> <p>Materials Product development Marketing and sales</p>		<p><i>Revenue Streams</i> </p> <p>Supplying to third party websites and other companies to sell our products</p> <p>To be able to get profit, and by analyze market prices we are planning to sell our product at \$249.99</p>		

b. Core assumptions

Here are the core assumptions we considered when developing our business model :

- Partnership with organizations focused on accessibility will allow us to have easier access to potential customers.
- Potential businesses would want to collaborate with us since there are very few similar and affordable products in the market.
- Consumers would prefer a controller with the same abilities as the Axis 1 Pro controller but for a more reasonable price.
- Our final product ease of use and gaming efficiency will be on par with existing solutions.

3. Sustainability report

	Economic income statement	Social income statement	Environmental income statement
Income / Positive outcomes	The price of the remote will be at \$249.99 per unit	We will help people with tremor dysfunction by using adapted remotes so they could enjoy the full pleasure of their favorite video games We will only work with local suppliers	Customers will have the possibility to recycle or trade their remote when it get old or when it stops working
Negative impacts	The estimated amount spent on manufacturing is \$150	N/A	Air pollution caused by transport
Profit / Benefit	Our estimate profit is around \$100.99 per unit sold	The satisfaction of our customers when playing videos games will increase	Another way to help protect the environment is to recycle the components of our products to produce new ones

4. Economics report

Costs

Cost Name	Cost Type
Wood	Material, Variable, Direct
Electronics	Material, Variable, Direct
Miscellaneous Materials	Material, Semi-Variable, Direct
Manufacturing Service	Labour, Semi-Variable, Direct
Development	Overhead, Fixed, Indirect
Website domain	Overhead, Fixed, Indirect
Research	Overhead, Fixed, Indirect
Salaries	Labour, Semi-Variable, Direct, Indirect
Partnership	Overhead, Semi-Variable, Indirect
Transportation	Overhead, Variable, Direct
Storage	Overhead, Variable, Direct
Marketing	Overhead, Fixed, Indirect

Each product has a price of \$249.99, and has a cost of \$150 for materials and manufacturing

3-Year Income Statement

GameAbility LLC

Income Statement

Previous 3 Years ended December 31

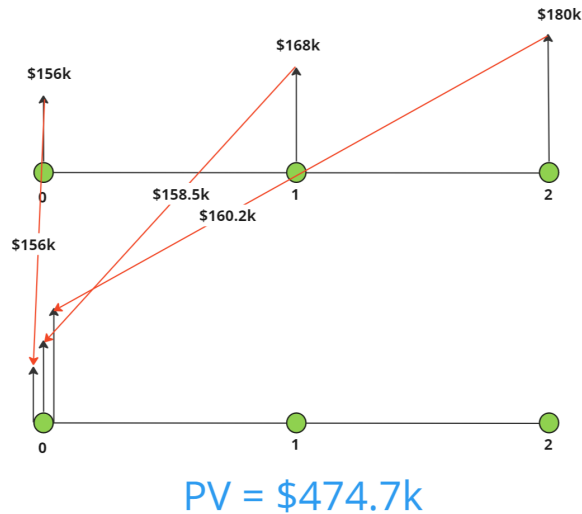
(in Canadian Dollars)

Description	<u>2022</u>	<u>2021</u>	<u>2020</u>
Sales Revenue	\$874,965.00	\$499,980.00	\$249,990.00
Cost of Goods Sold	<u>\$350,000.00</u>	<u>\$200,000.00</u>	<u>\$100,000.00</u>
Gross Profit	\$524,965.00	\$299,980.00	\$149,990.00
Operating Expenses:			
Salaries	\$150,000.00	\$150,000.00	\$150,000.00
Manufacturing Service	\$175,000.00	\$100,000.00	\$50,000.00
Development	\$7,000.00	\$6,000.00	\$5,000.00
Research	\$3,000.00	\$2,000.00	\$1,000.00
Partnership	\$35,000.00	\$20,000.00	\$10,000.00
Website Domain	\$17.00	\$17.00	\$17.00
Marketing	\$20,000.00	\$10,000.00	\$0.00
Storage	<u>\$1,750.00</u>	<u>\$1,000.00</u>	<u>\$500.00</u>
Total Operating Expenses	<u>\$391,767.00</u>	<u>\$289,017.00</u>	<u>\$216,517.00</u>
Operating Income	<u>\$133,198.00</u>	<u>\$10,963.00</u>	<u>-\$66,527.00</u>

NPV Analysis

Net Present Value

Fixed Cost		Net Present Value	
Fixed Cost 2022	\$180,017.00	NPV 2022	\$160,214.49
Fixed Cost 2021	\$168,017.00	NPV 2021	\$158,506.60
Fixed Cost 2020	\$156,017.00	NPV 2020	\$156,017.00
Total Fixed Cost	<u>\$504,051.00</u>	Total NPV	<u>\$474,738.09</u>



Number Of Units To Break Even

Break Even Units	
Total NPV	\$474,738.09
Sales Price Per Unit	\$249.99
# of Units to Break Even	<u>1899.03</u>

Assumptions

Sales Revenue

Description: we set the price of the controller to be \$250, and we assumed we sold 1000 in the first year, 2000 in the second year, and 3500 in the third year.

Justification: We set the controller at this price because the cost of the controller is roughly \$150 and we felt this was a good price to get good profit while still being less than half the price of the competition such as the axis 1 pro, which costs \$500-\$550¹. Since there is a large market for this kind of product we estimated that we would sell 1000 in the first year and double that in the second, and then we would almost double, but not nearly at 2500. There are 46 million gamers that have one or more disabilities² and so we believe we have a large market to tackle with relatively few competitors.

¹ <https://www.bluetipgaming.com/product/axis-1-pro/>

²

<https://www.3playmedia.com/blog/the-rise-of-accessible-gaming/#:~:text=Of%20the%20Americans%20that%20play,must%20be%20accessible%20to%20them.>

Cost Of Goods Sold

Description: This is the cost of the materials that were used in the product. We estimated this at \$100

Justification: We estimated it this way, since that was about how much it took to make the prototype. However, we recognized that it will be cheaper at scale, since a lot of the parts we used are cheaper in bulk. However, given the complexity of the product, having \$100 as the cost of goods sold, is important, since suppliers might be inconsistent, for specialty hardware and software such as this, so it is important to have some wiggle room.

Salaries

Description: We assumed that for the first 3 years of the company we only have us 5 as employees and so we pay ourselves minimum wage of \$15/hr.

Justification: since for the first 3 years, our company does not get as much net profit, we depend only on us founders to develop and manage and so we only hire ourselves and our salaries reflect that.

Manufacturing Service

Description: This is the cost of the service we will require to manufacture the controller. It is \$50.

Justification: We think this is a good idea, as we are a small team and in the first couple years of selling the product, it would make a lot of sense to outsource the manufacturing to another company instead of doing it in house. We estimated this cost based on the average Mexican labour cost per hour, which is 4.45 USD³. If we also assume 6 hours per device, and a 10% overhead service charge, and include \$8 for shipping, we get 49.52 CAD. This cost will go down significantly, when scaling up, especially when it comes to shipping.

Development

Description: This is the cost of developing new products and features. We assume it to be a baseline \$5k per year and then an extra \$1k every following year. This cost includes everything from the engineering design process to prototyping, and design for manufacturing.

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<https://www.statista.com/statistics/744071/manufacturing-labor-costs-per-hour-china-vietnam-mexico/#:~:text=In%202018%2C%20manufacturing%20labor%20costs,2.73%20U.S.%20dollars%20in%20Vietnam.>

Justification: The reason the cost starts off at 5k is due to the cost of supplies for prototyping and services we would need to outsource like the milling of many different PCBs, and we test new ideas. However, this cost will start low and increase over time⁴. This is because at the beginning we need to sell our product and break even, but after a while, we have to start innovating new features and products. However, we also have to continue to support grandfathered-in users who still have older products.

Research

Description: This is the cost of doing research into different fields to guide development of new features and products. This will vary from year to year, but our range for the 3 years was between \$1,000 and \$3,000.

Justification: We didn't spend too much on research as doing new research into other ways to innovate our product, while critical, is lower on the list of priorities when trying to get an already existing product to market and trying to break even as a company. As the years go by, this cost will increase as we need to continue to innovate⁵ to distinguish our product from the pack.

Website Domain

Description: This is the cost of getting a domain. It is \$17 a year.

Justification: We need a domain to host information about our company and our product. The domain research we did, led us to acquire one from Google domains. They sell a similar domain for \$17 a year⁶.

Storage

Description: This is the cost of storing the products for sale

Justification: We need to store the products we manufacture to store, and this has a cost. We estimated around 50 cents per product. This cost was estimated by looking at local storage services⁷ and dividing the cost yearly by the volume taken up per controller (around 4 ft³).

⁴ <https://www.macrotrends.net/stocks/charts/MSFT/microsoft/research-development-expenses>

⁵

<https://www.macrotrends.net/stocks/charts/AAPL/apple/research-development-expenses#:~:text=Apple%20research%20and%20development%20expenses%20for%20the%20twelve%20months%20ending,a%2019.79%25%20increase%20from%202021.>

⁶ <https://cdn.discordapp.com/attachments/1104055441236959242/1125258929623019520/image.png>

⁷ <https://www.primoselfstorage.com/reserve-storage-space-now>

5. Intellectual property (IP) report

For this project, we relied on a very useful open source technology called Xinput^[4]. It allows our device to be recognised as a video game controller and to communicate with applications that will be used to play games. It is an open source program, therefore we partake in the four freedoms associated with open source IPs (running the program, studying it, redistributing copies and distributing modified versions).

On a larger scale, our business will produce more customizable game controllers, which means they will include more macro command buttons. Though our current methods are primitive, there exist patents that have more efficient systems and methods to configure macros in remote controllers, such as US20200356065A1^[5], found on Google Patents. Incorporating this technology could entail being sued by the owners of the patent, if they are unhappy with us using it. However, if our business is successful, we could have the means to create our own macro programming technology, or even use it as prior art and patent the whole controller as an industrial design.

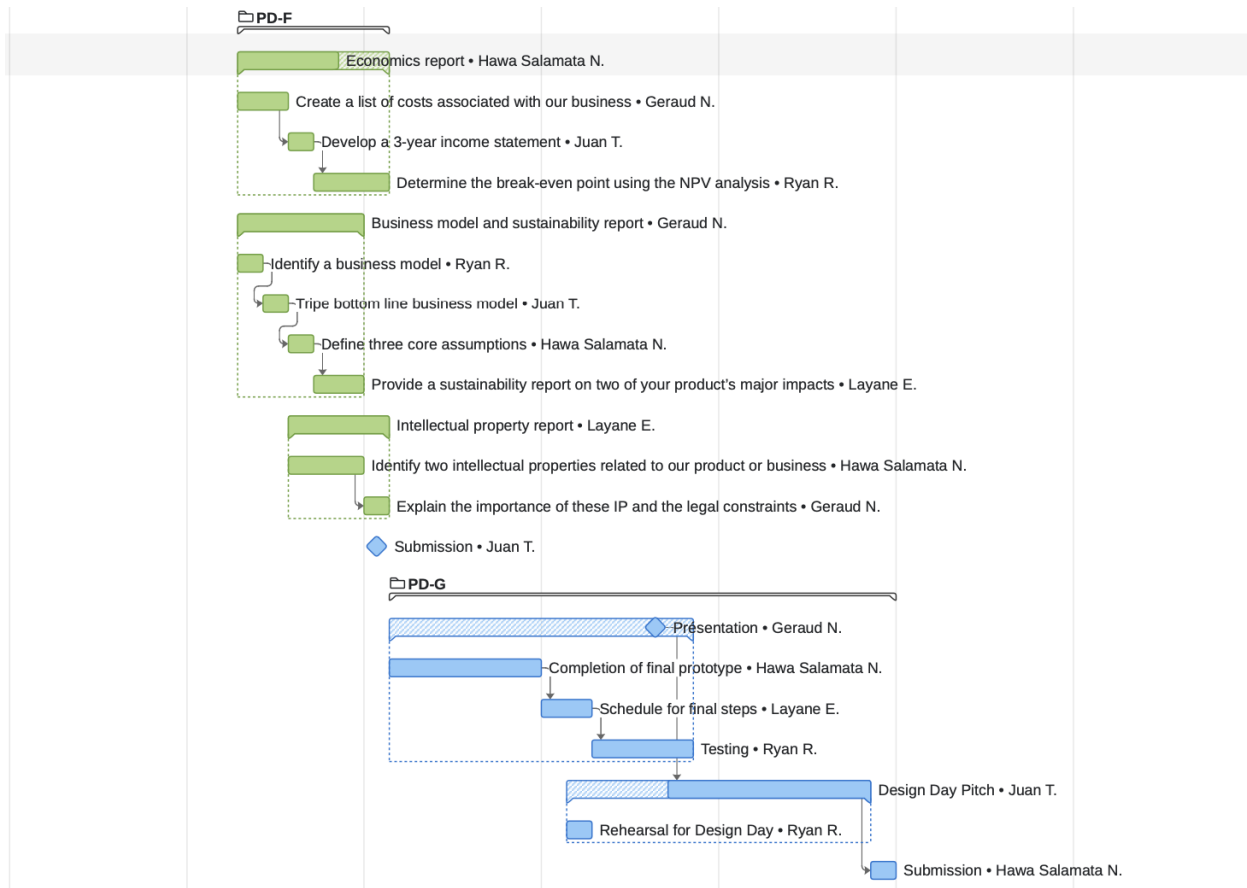
6. Conclusion

Using the information given during client meetings and product testing, we have created a business model that will allow us to assess the commercial validity of our product. The business model canvas we have created allowed us to understand how we are going to deliver and capture the value of our project. To conclude, by using our knowledge we were able to provide an economics report to fully develop our product and along with the business aspect of our course project. By achieving this, we delved into real world experience in economics.

B.1 References

- [1] [Types of business model](#) (visited on 30/06/2023)
- [2] <https://ablegamers.org/> (visited on 01/07/2023)
- [4] [Getting started with x-input](#) (visited on 01/07/2023)
- [5] [Macro commands and dups](#) (visited on 01/07/2023)

B.2 Project Plan Update



Snapshot :

<https://www.wrike.com/frontend/ganttchart/index.html?snapshotId=62j6jpVHaNu51OKQRC5XATTJw2QASDcR%7CIE2DSNZVHA2DELSTGIYA>