University of Ottawa

GNG 2101 B03: Intro to Product Development and Management for Engineers

Deliverable G: Business Model and Economics Report

Submitted by

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ABSTRACT

This document will explore potential business models of the navigation system built for the university's library and create an economic report and a business model. The business model and economic report will consist of multiple aspects such as a business model canvas and assumptions the report will consider.

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1.0 INTRODUCTION

In this deliverable, a potential business model and an economics report is produced. The foundation of our model is based on the competitors in this industry such as Insoft and Centrak who were benchmarked for our system in Deliverable B. Taking inspiration from the competition, a detailed business model of our wayfinding was developed and a business model canvas was created. From this business model, an economic report was produced to explore the viability of this service as a business within Ontario, estimating the market share, expenses, and revenue through research and predictions which are justified in each section.

2.0 BUSINESS MODEL

For the navigation system, a hybrid subscription and pay as go model was determined to be an ideal business model. For regular users of the navigation system, they can pay for the hardware at the beginning and pay a subscription for the navigation software and support service, and for short term customers may pay as go, receiving the same product and service though at a worse value than the subscription. This was determined to be ideal because the business will have a source of steady income and it will be able to capture customers who are looking for systems they can use for short, medium or long term. For single events, the customers will pay less than the subscription for the first couple uses, but after that, the cost will exceed the subscription option and will encourage the regular users of the service to use that instead.

The pricing will be a balance of competitor's costs, expenses, estimated customers of this service, and the unique value proposition of our service. Once the system is set up, there is minimal cost on the business as expenses will mainly be on customer support, database hosting services, and salaries for the relatively small technical team maintaining the software, visual customization, and service customization. If the structure of the application is properly created, the visual and service customization will not require many individuals to complete.

2.1 Business Model Canvas

The table below shows the specifics of how the business will function. The table describes all aspects needed to create a product ranging from suppliers and costs, to relationship with customers.

Table 1: Indoor navigation business model canvas

<table>
<tr>
<td rowspan="2">**Key Partners**
● Bluetooth beacon manufacturer
● Database Service Platform</td>
<td>**Key Activities**
● Provide technical and non-technical customer support
● Initialize database services
● Platform development
● Provide consultation on hardware placement
● Customize visuals</td>
<td rowspan="2">**Value Propositions**
● Increase customer satisfaction
● Increase visibility of difficult to find business or services
● Increase efficiency and customer throughput
● Easy and customizable deployment</td>
<td>**Customer Relationships**
● On demand customer support
● Free defective hardware replacement
● Customization request</td>
<td rowspan="2">**Customer Segments**
● Event organizers
● Service providers of medium to large facilities (e.g. Malls, library, train stations, museums, theme parks)</td>
</tr>
<tr>
<td>**Key resources**
● Software development team
● Customer support team
● Bluetooth beacons
● Smartphones</td>
<td>**Channels**
● Play store (Android)
● App store(Apple)
● Website
● Direct sales</td>
</tr>
<tr>
<td colspan="2">Cost Structures
● Product development
● Infrastructure -(Google Cloud Services)
● Marketing
● Product maintenance</td>
<td colspan="3">Revenue Streams
● Subscription
● Additional Customization request -Only if accepted
● Pay per use</td>
</tr>
</table>

2.2 Core Assumptions Of The Business Model

2.1.1 Potential customers

- Ontario's approximately **700** museums, historic sites and related institutions [3]
- There are **265** public library boards across Ontario and **45** First Nations public libraries.[4]

- There are **34** libraries in Ottawa[5]
- There are **7** national museums in Ottawa[6]
- There are **16** shopping malls in Ottawa[7]

For this business model it is being assumed that the service provided will attract event organizers, service providers of medium to large buildings and venues such as libraries, malls and so on. It is also assumed that clients will choose this business as opposed to others because the payment plan is only in effect as the service is being used. In order to deliver the service, the customer will work closely with the business as they will be providing the layout or plan of the layout. Finally, it is assumed that a beacon manufacturer as well as a database service provider is willing to partner with the business as those services will be outsourced.
In the first year it is estimated that 50% (28 clients) of the potential customers in the Ottawa area will use this product. In the second year, it is estimated that the product will be used by 5% (48 clients) of the potential clients in Ontario. In the third year it is estimated that the product will be used by 10% (96 clients) of the potential clients in ontario. It is estimated that 70% will choose the subscription model and 30% will choose the pay to go model.

3.0 ECONOMICS REPORT

The table below shows a list of variables associated with the business. These variables include prices that are fixed and prices that are subject to change.

Table 2: List of variables

Variable costs	Direct costs	Indirect costs	Fixed costs
Packaging - $103.32 / Year **Shipping** - $436.80 / Year **Labour** - $10 000 / Year **Servers** - $1200 / year	**Hardware -** $16 402.40 / Year **Software** - $0 / Year	**Insurance** - $1000 / Year **Depreciation** - $8201.20 / Year	**Salaries** - $117 000 / year **Marketing** - $2400 / Year **App Store / Google Play** - $99 / Year & $25 one time payment **Website** - $72 / Year

3.1 Income Statement

For the pay to go model the price will be 200$ for a period of one month, this amount will include the hardware installation and the software usage.
For the subscription model the price will be 1500$ annually, including the hardware and the app.

The table below shows an income statement of the business. The income statement includes revenue, sales cost, expenses and income.

Table 3: Income statement

Sales Revenue 2000*3*0.7*96+200*36*0.3*96=**610 560$**
Costs of units sold 16402*3=**49 206$**
Gross Profit **561 354$**
Operating Expenses 103.32*3 + 436.80*3 + 1200*3 +1000*3 + 117 000*3+ 2400*3 +10000*3+ 99*3+ 72*3= **396 933.36$**
Operating Income **164 420.64$**

3.2 NPV Analysis

NPV = $\frac{Cash\ flow\ year1}{1+r} + \frac{Cash\ flow\ year2}{1+r} \ldots$ - (initial cash flow)

Break even point = money from subscriptions ≥ operating expenses
Operating expenses = \$396,933.36
Subscriptions = \$1500/year

In order for the business to be profitable, the business must sell 265 subscriptions

The figures below show the cash flow diagrams of the business.

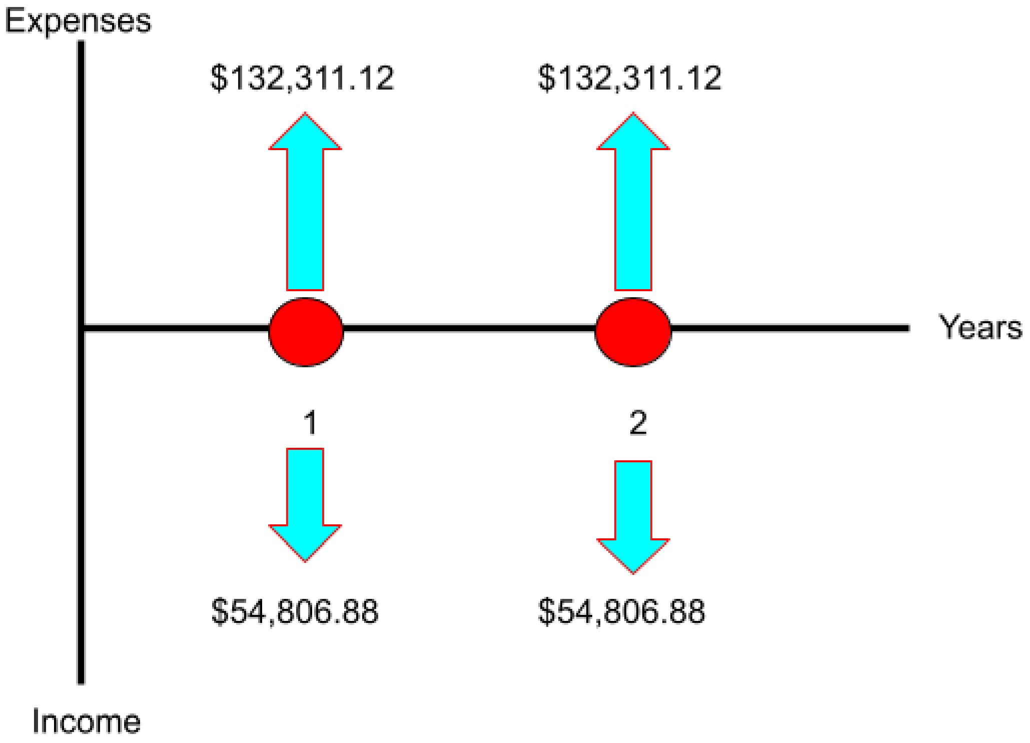


Figure 1. 1st cash flow diagram

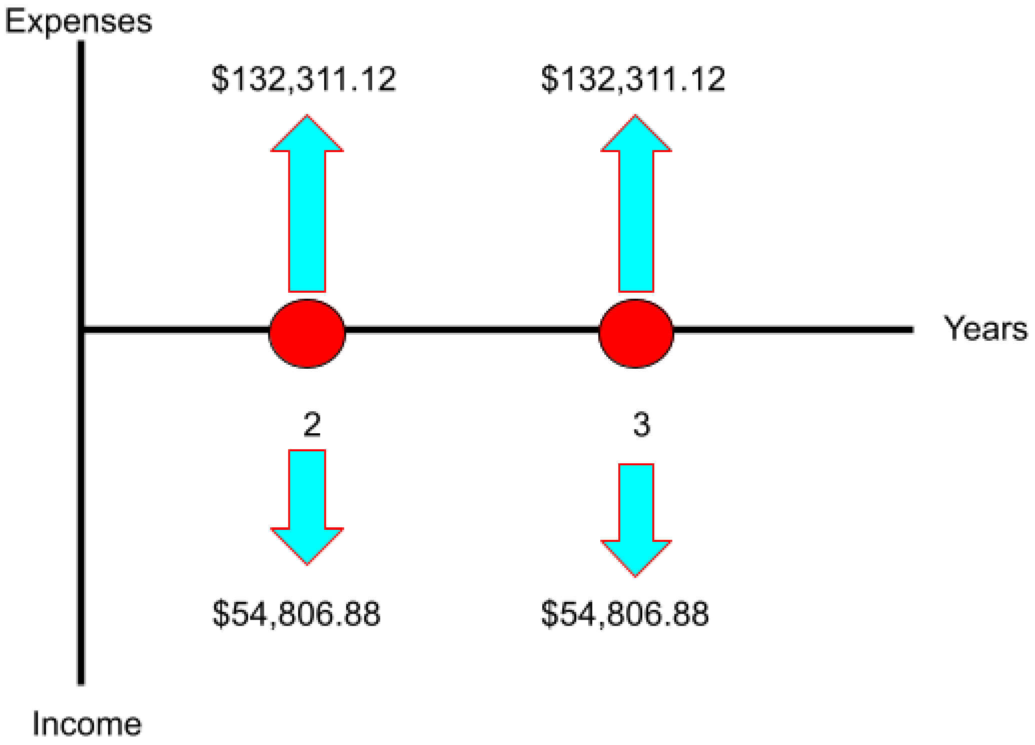


Figure 2. 2nd cash flow diagram

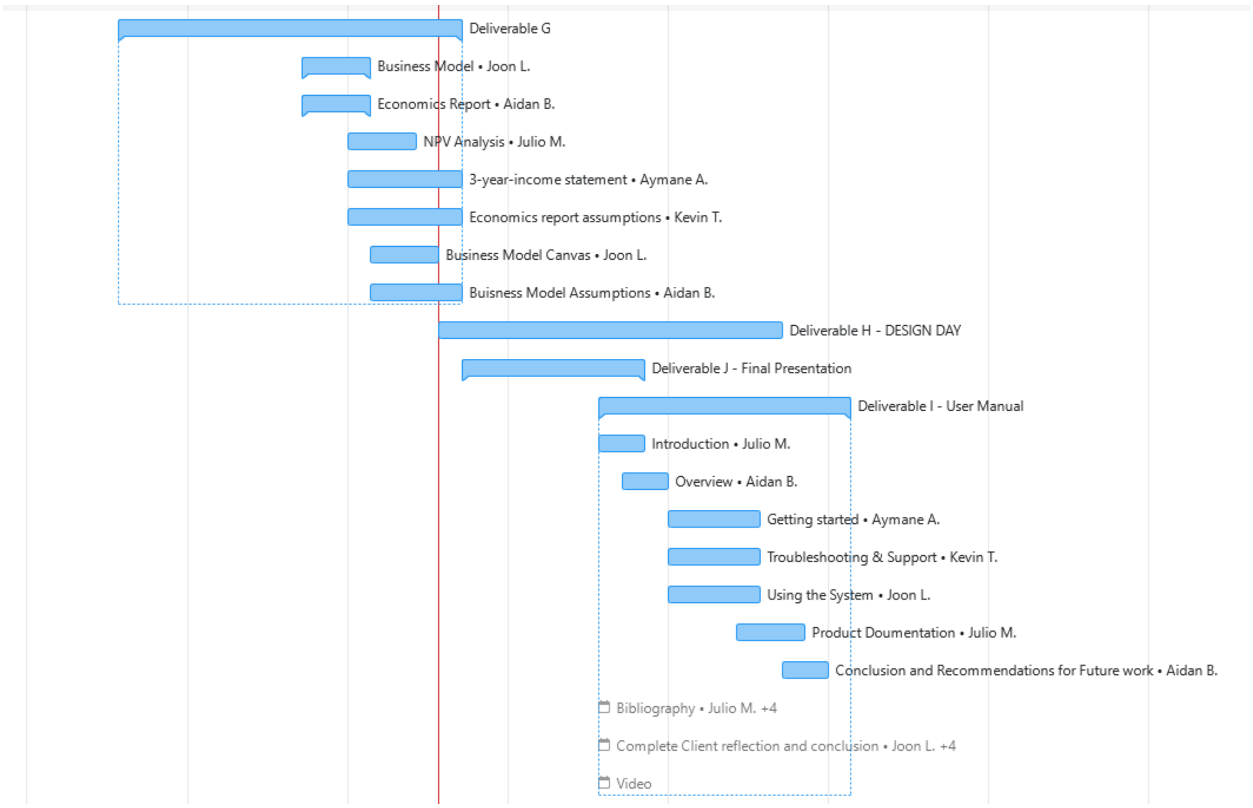
3.3 Assumptions Of The Economic Report

Our current product is a “Library Wayfinder” which falls into the market of Indoor LBS (Location-based Services) which refer to technological solutions used to track the location of an object or individual inside an enclosed space. The current global market for Indoor LBS is valued at US$ 8.09 Billion in 2020. The application of indoor navigation systems include retail, aviation, healthcare, manufacturing and logistics as well in the government and public sector. With that said, we plan on obtaining around 10% of the market in Ontario. Our packaging, shipping and salaries are based on the price of boxes in bulk, average shipping prices in Ontario, and the average salary in Ontario.

4.0 CONCLUSION

The document has described a potential business model and an economics report. The economics report included assumptions which were taken into consideration such as the percentage of the market that the business would have. The different sets of variables were listed and some of these variables were hardware, shipping, salary, website e.t.c. The team will continue to refer back to deliverable B in order to complete a functional final prototype for design day.

Wrike planning



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[3]https://www.museumsontario.ca/about-ontario-museums#:~:text=Ontario's%20approximately%20700%20museums%2C%20historic,essential%20role%20in%20the%20province.

[4]https://www.ontario.ca/document/environmental-scan-culture-sector-ontario-culture-strategy-background-document/sector-profile-public-libraries

[5]https://en.wikipedia.org/wiki/Ottawa_Public_Library

[6]https://ottawatourism.ca/en/ottawa-insider/ottawa-s-seven-national-museums#:~:text=When%20you%20visit%20Canada's%20capital,historical%20enthusiasts%20and%20Canadiana%20buffs.

[7]https://en.wikipedia.org/wiki/Category:Shopping_malls_in_Ottawa