

GNG2101 Final Report

“Still Alert”

Submitted by:

Team B1A

Ali Khanafer - 300010614

Majd Khodr - 300010619

Alexi Sharara - 300015012

Taylor Leblanc - 7719819

December 20th 2018

University of Ottawa

Abstract

When it comes to concentration disorders, most of us understand them by the misconceptions explained to us. What the majority fails to understand is that cases such as ADHD, ADD, OCD, etc. are more than just people who are “hyperactive” or “struggle to concentrate”. As a team dealing with someone who suffers from such a case, we came to surpass this stereotypical way of thinking. Having lived with Obsessive Compulsive Disorder (OCD) and episodic depression his whole life, our user always struggled with being productive at work because he often went through idle moments where he would stop working. For this exact reason, we were approached by PPRC to find a solution. Having spent long hours trying to understand our users situation, discussing solutions with him, prototyping and testing, we came up with what we believe is the best solution. In order to help him stay productive at work, we developed an application which would track our users movement. If ever the application would recognize that our user is no longer moving (is idle) it would notify him via vibration.

Table of Contents

Introduction	7
Engineering Design Process	8
Need Identification and Product Specification Process	9
Client needs	9
Problem Statement	10
Benchmarking	10
Metrics	11
Target Specifications	11
Conceptual Designs	12
Project Planning and Feasibility Study	14
Project Plan	14
Project Model	14
Milestones	15
Gantt Chart	15
Bill Of Materials	16
Feasibility Study	17
Analysis	18
Prototyping, Testing and Customer Validation	19
Final Solution	21
Business model	24
Economic Analysis	27
List of Costs	27
Income Statement	28
NPV Analysis	29
Conclusions and Recommendations for Future Work	30
Bibliography	31
APPENDICES	32
APPENDIX I: User Manual	32
APPENDIX II: Design Files	37

List of Figures

1	Iterative Engineering Design Process	8
2	First Conceptual Design	12
3	Second Conceptual Design	12
4	Third Conceptual Design	12
5	Fourth Conceptual Design	12
6	Gantt Chart	15
7	First Prototype	19
8	Second Prototype	20
9	Final Solution	21
10	Business Model Canvas	24
11	Validation Board	25
12	Installation Procedure	31
13	Installation Device	32
14	Default screen when launching app	33
15	Application once the Start Button has been pressed	33
16	Settings Screen, accessed through clicking the Settings Button	33

List of Tables

1	List of Metrics	11
2	Target Specifications	11
3	Project Model	13
4	Milestones	14
5	Table representing all our costs	15

List of Acronyms

Acronym	Definition
PPRC	Performance Plus Rehabilitative Care
OCD	Obsessive Compulsive Disorder

1 Introduction

Over the past couple of months, we worked alongside PPRC in order to develop an android application that is tailored to people with concentration disorders who are currently employed but suffer from momentary lapses of concentration. Due to this, they occasionally stand idle for a given period of time, which can vary from user to user. Our goal for the application was to be able to detect these moments and send a notification to remind the user to continue their work. Although we initially started building this application to a single end-user, we quickly realized that it is possible to reach a much wider audience by publishing the application on the Google Play store. This would allow us to help many people who suffer from the same problem and own an android device. In fact, in Canada alone, 1% - 2% of the population suffer of obsessive compulsive disorder [1]. Due to the lack of applications that solve this issue, Still Alert would be the first of its kind that would be able to aid thousands of people by providing a product that is tailored to this problem.

2 Engineering Design Process

Design projects need a clear and concise design process to follow. It sets clear expectations and allows you to establish realistic project deliverables and deadlines. The client will know exactly what to expect and when to expect it, eliminating needless miscommunication. Having a clear design process also decreases the risk of failure. All aspects of a product's design need consideration and a good design process accounts for everything. If there is no thought behind usability and no research, the risk that the product will fail increases.

There is no consensus on the best design model as it depends on a project to project basis. The design model chosen should be one that best follows a structured approach, which is suited to our design problem to improve our chances of efficiently and consistently producing better designs, while still allowing improvements/changes to be made to the approach, as required. As a group, we decided to use the iterative engineering design process seen in class.

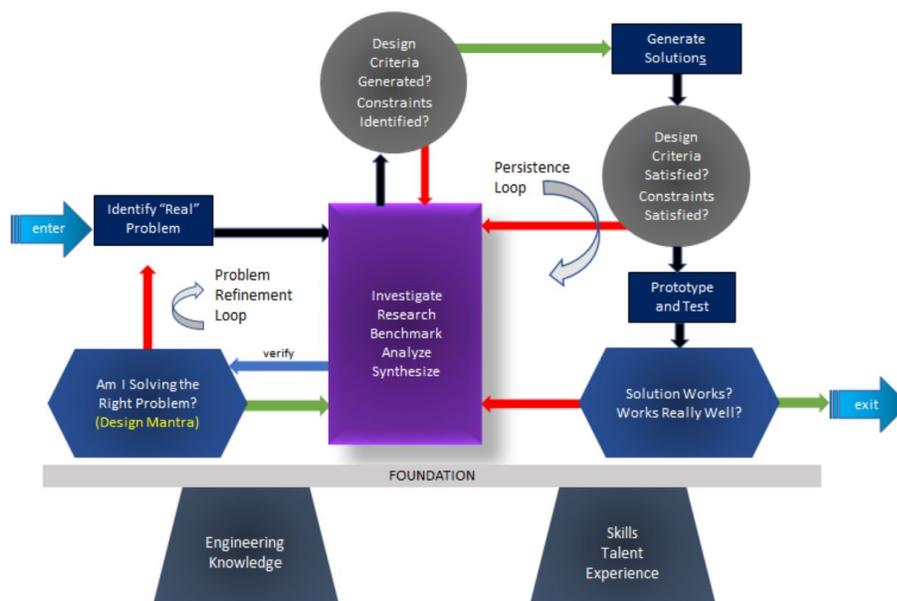


Figure 1: Iterative Engineering Design Process

3 Need Identification and Product Specification Process

3.1 Client needs

We met with our client on three separate occasions. The first time we had a chance to empathize with them and truly understand their problems. Our client was looking for a solution that was not currently readily available on the market. They wanted a solution that can not only be used by their users but also anyone with a mobile device. The list of initial needs our client provided are as follows:

- The application tracks when the user is idle for too long.
- The application will tailor to each users need depending on their challenges making it accessible to a wide audience.
- The product will have a section for the employee and the employer. The employee section will insure that the user does not stay idle too long and the employer section will analyze and present the data for a set period.
- The “reverse-pedometer” will initially be built for Android and with the intentions of later building it for iOS.
- The application will have both an audio cue and a vibration option as the type of notifier.
- The mobile app will be published to the Google Play Store on completion.

3.2 Problem Statement

After carefully analyzing the clients needs and prioritizing them we created a problem statement that accurately defines what is the problem, who has the problem and what form can the solution be. Our problem statement is : *“Persons suffering from momentary lapses of concentration require a notifier while at work to prevent diminishing work performances.”*

3.3 Benchmarking

Although we do have competitors, none of them have the same goals as ours. Our goal is specifically directed to people with concentration disorders. Our competitors mostly focus on helping everyone focus on their everyday tasks. An example would be RescueTime. RescueTime focuses on giving you analytics on your daily habits and productivity. This would help our users with things such as making sure they fill their daily quotas, or organizing their work tasks, but it won't assure that they stayed focused and stay concentrated.

There's also Headspace. Headspace is a meditation application that will help you reduce stress, lack of focus and health. They also promise that 10 minutes of using the application will guarantee your brain to change, becoming more focused and happy. Headspace, however, is in no way approved by the FDA, meaning it is no way medically proven to help [2]. Headspace is also not meant for peoples with concentration disorders, so we remain the only ones doing our.

3.4 Metrics

Number	Need	Importance
1	The application tracks when the user is idle for too long.	5
2	The application will analyze and present the data for a set period.	5

Metric Number	Need Number	Metric	Importance	Units
1	1	Timer	5	Seconds
2	2	Graph	5	Time(h)/# of Idles

Table 1: List of Metrics

3.5 Target Specifications

<i>Target Specification</i>	<i>Ideal</i>	<i>Acceptable</i>
User-Interface and Usability	Simple interface that can be operated by people with disabilities and vision impairment.	Simple interface that can be operated by people with disabilities
Operating System	The application will be offered on both Android and iOS devices	The application will be offered on Android devices
Notifier	The application will notify the user with sound and vibration	The application will notify the user with a vibration.
Timer	The timer is customizable	The timer is fixed

Table 2: Target Specifications

4 Conceptual Designs

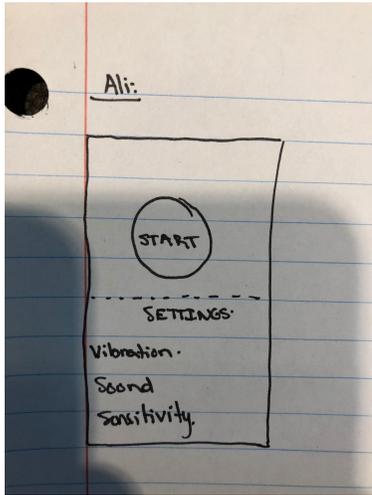


Figure 2

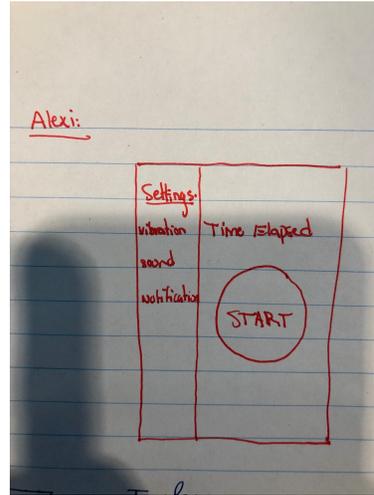


Figure 3

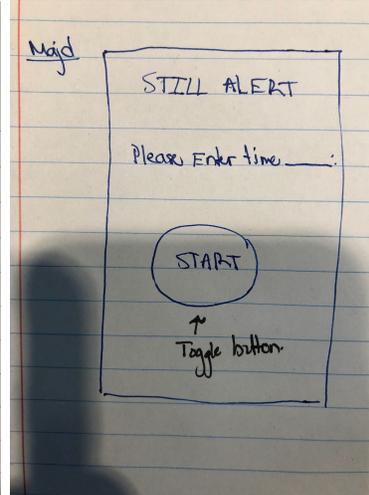


Figure 4

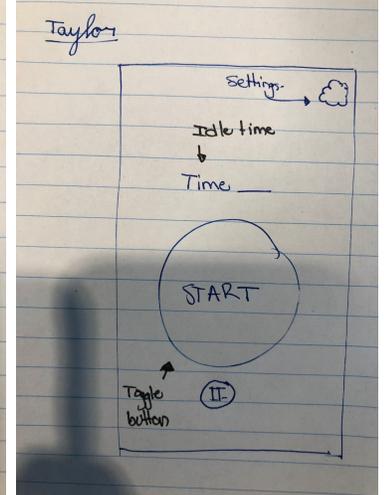


Figure 5

The above images are the concept designs of the applications main screen done by every team member. Along with each image, there is a detailed description of the other components of the application and its different functionalities.

Ali: The product should consist of a main window with one big "Start" button. This start button will get the application running based on the settings configurations the user set up in a settings page. The product will have only one page. The first half of the page will consist of a button to run the application. The second half of the page will have all the settings to be configured by the user.

Alexi: The application will have a dark background to preserve battery life if the phone has an OLED or AMOLED display. When the user launches the app for the first time they will be prompted to configure their desired idle time. This can later be reconfigured in a settings menu. The application will constitute of two pages, the main one that will be displayed when the app is launched and the second one to display the history of idle times. The main page will have a big central button for ease of use. It will also have the option to enable/disable the type of notifications (light and sound) as well as configure the strength of vibration. The secondary page will have a graphical representation of past idle times. How often they have been idle, how long and when.

Majd: The first design will have a simple interface, consisting of a timer, in the middle of the screen, and main toggle button between start and stop (green and red). All of the buttons and the timer will be round in shape, keeping a uniform user-experience. The application will also have a second screen that displays the data to the user, of the amount of times they were idle over a certain period of time. The entire application will equally follow a dark theme in order reduce battery usage.

Taylor: Application only has 3 buttons on the application main page: Start/stop, Settings, and a data button. The Start/Stop button will start and stop the still alert sensor. The settings pane will allow you to edit the time between alerts when not moving, and the strength and type of alert notification to use. The data button will display graphical data from past uses of the application. The app will run when the home button is clicked, and when the phone is put into sleep mode.

5 Project Planning and Feasibility Study

5.1 Project Plan

Having creating a task board and setting milestones helped us to better organize our present and future goals in order to further the development of our mobile application. The tasks were specific in nature and will be associated to a specific member(s). This ensured optimal efficiency and better time management. A bill of materials was also necessary to identify the specific materials and resources needed for the project. Such resources include economical, technical, legal and more.

5.1.1 Project Model

Task	Length	Members
Identify the problem	1 day	All
Brainstorm ideas using Creative Thinking: <ul style="list-style-type: none">• Use SCAMPER• Lateral Thinking	2 days	All
Choose solution and expand on it	3 days	All
Create UML diagram	2 days	All
UI prototype on Figma	1 day	Majd
Create google play account	1 day	Alexi
Implement functioning home screen UI	5 day	Taylor
Implement functioning secondary UI	5 day	Ali
Implement functioning settings screen UI	5 day	Alexi
Implement functioning timer	5 day	Taylor
Implement functioning monitor that detects stillness	5 days	Ali , Majd and Taylor
Implement functioning email delivery of users shift	5 day	Ali
Test application	3 days	Ali and Alexi

Table 3: Project Model

5.1.2 Milestones

	Milestone
1	Problem statement found
2	Main idea agreed upon
3	Prototype GUI created
4	Functioning GUI Created
5	Integrated back-end features (accelerometer and gyroscope)
6	Front-end and back-end connection established
7	Finished QA and testing
8	Deployment

Table 4: Milestones

5.1.3 Gantt Chart

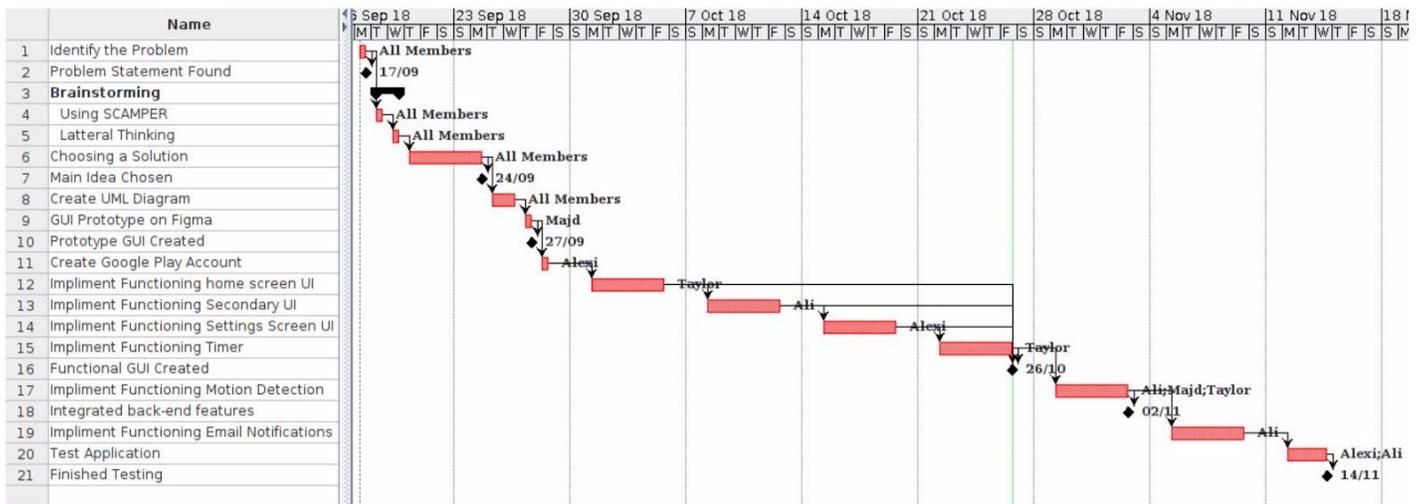


Figure 6: Gantt Chart

5.1.4 Bill Of Materials

As our project consists strictly of a mobile application, it does not require physical materials. For this reason, only the 25\$ google play store license is necessary. It will be needed to post the application and make it publicly accessible, upon request of the client.

Our project did not have many risks or uncertainties but due to the nature of being a multi-person project, timeline is always an uncertainty. Though we were able to predict the time it took to learn and complete the tasks that we had planned out, we could not predict any issues, questions or errors that we may have encounter during the semester.

5.2 Feasibility Study

Technical

The team has enough technical resources, as we have access to proper integrated development environments, in order to write code and code repositories for the group to be able to simultaneously work on the project. However, not every member has extensive experience in mobile application development and thus we will depend on those who do to teach the necessary skills for those who don't.

Economic

The initial fixed cost of our project is only twenty-five dollars, a quarter of our initial budget. This is thanks to our project being fully software based. The application will have a one time fee of ninety-nine cents to purchase it. Following the initial deployment, money can spent on marketing and advertising. This will allow the product to reach a wider audience and generate more profit.

Legal

We have to ensure that the libraries and frameworks used are open source and that we are not using any intellectual property that we do not have access to. As well, we must be able to conform to the Google Play guidelines.

Operational

The main operational constraint would be the difficulty of meeting up. As each individual member has different schedules, determining a time and place to discuss can be challenging at times.

Scheduling

Our main deadline is at the end of the semester where we will have a working product for the client. Our intermediate deadlines consist of the milestones determined above. They include having a prototype finished in order to demonstrates some key functionalities to the client, namely the start and stop button, displaying the correct time and the back-end functionalities integrated into the application (accelerometer and gyroscope).

6 Analysis

The application was developed using mostly simple components in the source code apart from the algorithm developed in order to track the movement of the user. This one required multiple components. The first was retrieved after clicking the “CALIBRATE” button on the settings page. The actual functionality behind that button was to retrieve the initial speed of the phone in the X, Y and Z axis. In other words, these values acted as the ‘zero’ or the phone’s starting point in terms of its movement. Moreover, the algorithm subtracted this value from the speed retrieved at any given moment in order to verify if the result was greater than the threshold. If it was, the application would send the notification. Altogether, the algorithm used the following formula:

```
If ( (speed in this moment - speed retrieved during calibration) > threshold )  
Then Send Notification
```

7 Prototyping, Testing and Customer Validation

In order to better understand some of our clients vague requirements we put together a low fidelity prototype. This prototype consisted of just the user interface and had little to no functionalities. The purpose was to give our client a feel as to where we're going with the application and for him to give us feedback on what to keep and what we should let go of. Below you can find pictures of this prototype:

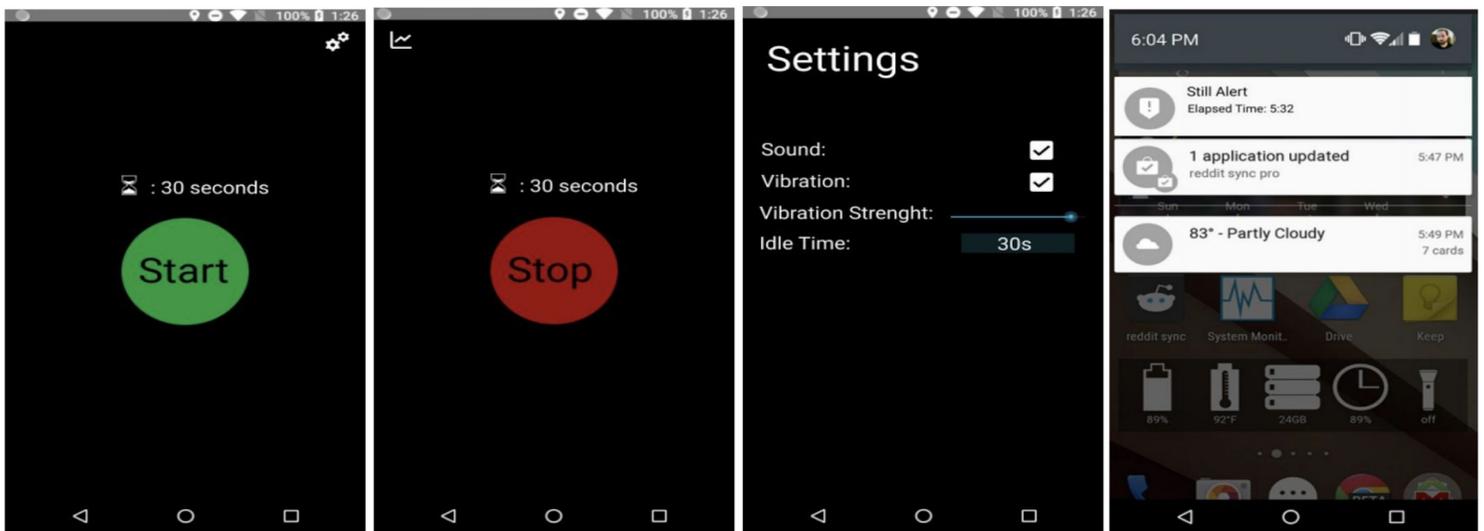


Figure 7: First Prototype

These were made using an online resource and absolutely no code was written. As aforementioned, the soul purpose of the images were to give an idea to our clients of what exactly we're going to be doing. When we showed them these images, they liked our idea of keeping it simple and having just one big button at the center of it all. Although they had mentioned in our first meeting that they wanted the statistics shown in the application itself, our second meeting caused us to completely remove the icon on the top left corner of the second image. This icon was meant to lead to the statistics page, but since we decided that the statistics would be better off emailed to a job coach, there was no use for it anymore.

Keeping all of this in mind, we moved on to creating our second prototype. This was still of a lower fidelity, since it still included no functionalities or features and consisted of just the user interface. This time, our application looked something like the following:

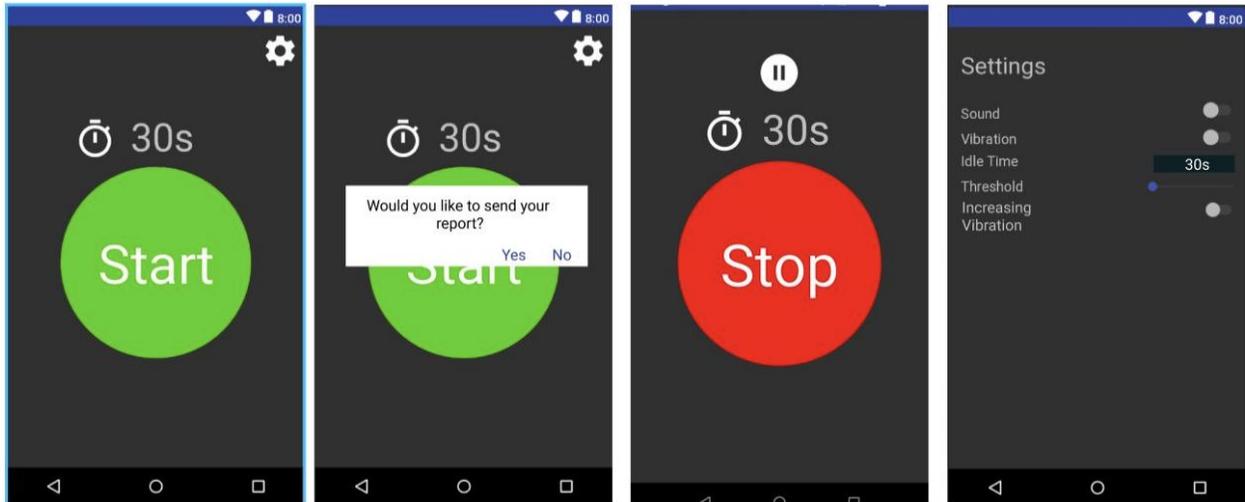


Figure 8: Second Prototype

As you can see, we got rid of the statistics icon, made the buttons bigger, changed the theme of the application and added a pause button that would allow the user to pause the application from tracking his movement. This was demanded by the client so that the application wouldn't bother the user when he is idle for the right reasons (Ex. goes on lunch break). With this, we went to our clients again to show them what the application's final look was. They liked the whole of it and gave us the green light to start developing the application.

8 Final Solution

When deciding which solution would best fit our client's needs, there were a few factors we needed to take into consideration. Such factors included: a simple and minimalistic design that wouldn't distract our user as well as an application that is easy to use.

After several prototypes, discussing all our solutions at our second client meeting, and a lot of hard work, we went with a solution that would best fit our user's needs and satisfy our clients. Below, you can find pictures of what our final solution looks like:

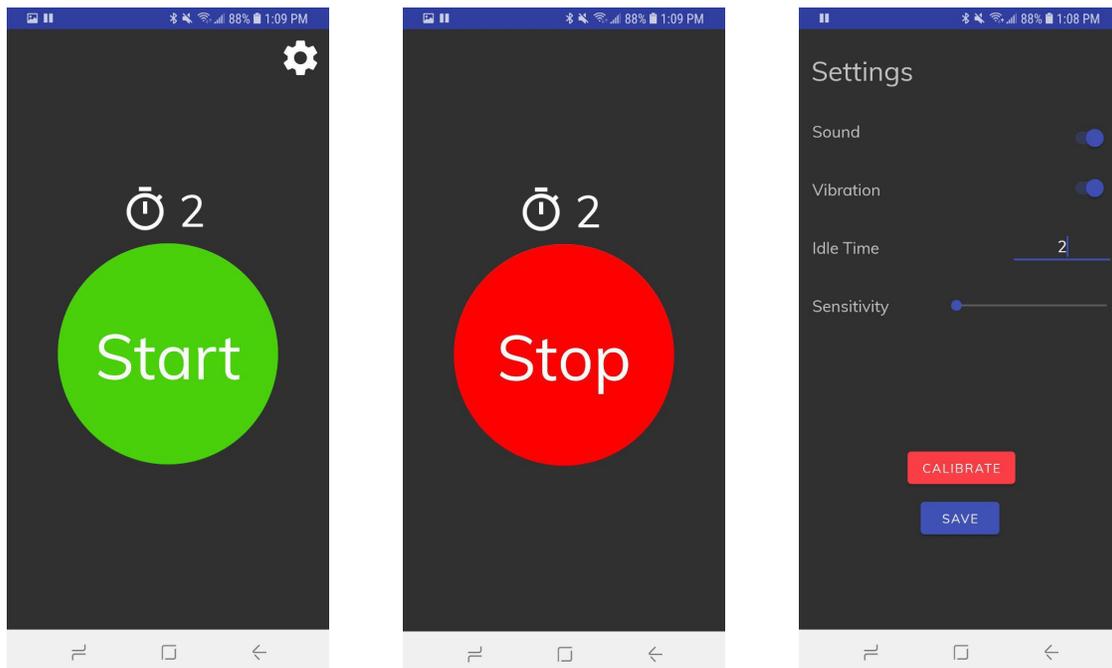


Figure 9: Final Solution

The first and second picture is the main page. Here, the user can choose to start the application, meaning it would start tracking the user's movement. Once that button is pressed, the UI changes to what is shown in the second picture. Clicking on the big red stop button stops the phone from tracking movement. Finally, the last picture is what is shown when the user clicks on the settings icon on the top right section of the first image. On this page, you can set the type of notification you

want, namely sound, vibration or both, the amount of time you can be idle for before the phone notifies you to get back to work, and the sensitivity of your movement. At the bottom of the page there is also a calibrate button. Calibrating will calibrate the accelerometer of the phone.

As you can see, we tried making the user interface as simple as possible. We also made it so that there are zero ads. We believed that the ads would cause our user to deconcentrate, which was the opposite of what our goal was.

When evaluating the final product, our team found it difficult to define objective metrics in which to measure the success of the product. However, we understood that it is important to assess and analyze as much about our product as possible. First, we ran some practical tests with the application. This included us emulating our end user's tasks during his work hours (stocking shelves). We moved books around the room and tried to copy the actions that someone stocking shelves would be doing, with the application running. From this, we decided that the application's core functionality met our standards for a functioning and useful product. Though we were not able to have another meeting with our primary end-user, on design day, we were also able to get the opinion of not only people that we have worked with (PPRC), but also others in the accessibility industry. They not only liked the product, but provided us with very useful feedback for future development of the application.

The only physical, non-subjective metric that we could measure (without field tests), was battery life. This was a key concern of end user that he expressed multiple times during our meetings with them and PPRC. We used the Android's (operating system of clients phone) built in battery life estimator, to predict the battery life of a phone that was running Still Alert, compared to if it was not. We did these estimations on the Samsung S6, the same phone that our end user would

be running the application on. We also took the precaution to use a phone that had been used for a couple of years to account for phones with deteriorated battery life. From this test, we found that the application had a less than 3% effect on the phone's battery life. This means that for every hour that the phone is running the Still Alert application, the user would only lose 1.8 minutes of battery life. We considered this test to be a large success and believe to have met the needs of our end user and clients.

9 Business model

In order to give our client a system that would notify a user every time they go idle for too long while at work, a business model is needed. This will help represent core aspects of a business, including purpose, business process, target customers, offerings, strategies and infrastructure. This deliverable will allow us to do so by identifying a business model that would be well suited to commercialize our team's product and verify our model's riskiest assumption. We will do so using certain techniques taught in class, such as the business model canvas and a validation board.

When choosing a business model, we have to choose one of three types of models we think are the most applicable in our situation: ads, a subscription-based model or a one time payment for the application. Since our user base consists of people who deal with concentration disorders, choosing ads as our source of income would not be suitable. We believe these ads would further distract our users and effect our goal of getting them to concentrate more while at work. Although possible, a monthly subscription based model would have its fair share of negative aspects. Since our users are often people with lower income, paying monthly for an application would not be feasible for them and hence, could deter customers. We are thus left with one final option: having them pay once to initially download the application. This would be our best option because we'll be able to set a cheap price that will be affordable by all our users, while making decent income.

Business Model Canvas. What's Your Business: Still Alert

<p><i>Key Partners</i> </p> <p>Performance Plus Rehabilitative Care Inc. (PPRC)</p> <p>Provincial Government</p> <p>Centre for Entrepreneurship and Engineering Design (CEED)</p>	<p><i>Key Activities</i> </p> <p>App Requirement specs App Design App Modeling App Programing App Quality Assurance App Deployment App management</p>	<p><i>Value Proposition</i> </p> <p>There are not current, universally accessible product to keep people with attention disorders on task. For users, our application will seek to notify them when they are able. For Employers, they will be able to tell if their employees are being as productive as they need to be. For job coaches, they will be able to see if their client is making progress with their attention disorder.</p>	<p><i>Customer Relationships</i> </p> <p>Through email and discussion on app store community boards</p>	<p><i>Customer Segments</i> </p> <p>People with attention disorders</p> <p>Employers of people with special needs</p> <p>Job coaches of people with attention disorders</p>
<p><i>Cost Structure</i> </p> <p>Fixed cost, value-driven</p>		<p><i>Revenue Streams</i> </p> <p>One-time purchase of application on Google Play or Apple App store</p>		

Figure 10: Business Model Canvas

The business model canvas (above) establishes multiple aspects such as the costs structure, revenue streams, key activities and resources as well as our customer segments. Most importantly, it enabled us to identify our values propositions in order to properly understand why our customers would be drawn to using our application.

Along with any business model comes assumptions with your products. For our project, we've established the following assumptions:

1. The majority of our demographic that requires such a product owns a phone.
2. Users are willing to pay for an app that will encourage them to remain on task/focused.
3. No current solution that is universally accessible.

In order to validate our assumptions we used the above validation board. Assuming that the customers will pay for our application is our riskiest assumption, we went ahead and conducted a survey to see whether or not this is true. The demographic of our survey were people living in retirement homes who suffer from such disorders. To validate our assumption, we needed a minimum of 70% of the survey takers to agree to the fact that they would pay. As 16 of 20 answered affirmatively, our assumption was validated and we did not need to pivot any further.

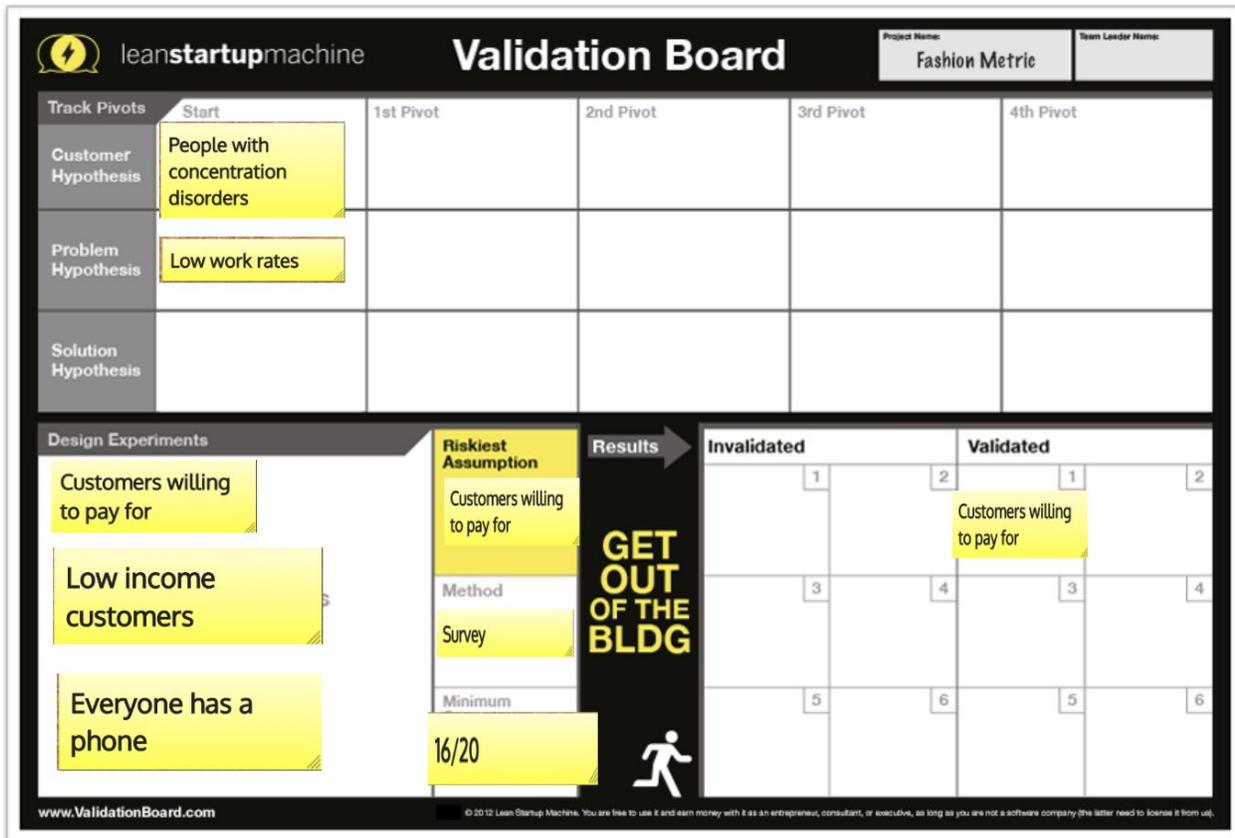


Figure 11: Validation Board

10 Economic Analysis

With this economics report, we will be able to forecast the income made by an application that helps people with concentration disorders increase their work rates. This will be based on the business model developed last report and will help us understand better how our company will perform, money-wise. In order to do so, we will need to study all types of costs we have. These include will go up.

10.1 List of Costs

Costs	Object	Estimated Price	Explanation
Variable	Employee salaries	\$500 per employee first year	Each employee will be paid 500\$ the first year, with an increase each year
	Application Marketing	\$512 yearly which will decrease based on application popularity	Marketing will initially cost a lot because of our low user-base but will decrease as we become more known
	Customer IT Assets	\$500 for the laptop	Our employees must have laptops they could use to develop. The more employees the higher this cost will go up
Fixed	Team Office Rent	\$9768 yearly	Space for team members to meet and work
	Yearly IDE subscription	\$100 a year	IDE for development
Indirect	Google Play Store License	\$25 for one year	License fee to be able to upload apps onto the playstore

	GitHub Private Repositories	\$60 per year	Monthly payment required by GitHub to be able to have private repositories
Direct	Software Library Subscriptions	\$300 yearly	Estimated cost for certain libraries to be used

Table 5: Table representing all our costs

10.2 Income Statement

	2019	2020	2021
Revenue			
Application sales	\$ 4,923	\$ 8,254	\$ 15,925
Investors	\$ 100	\$ 0	\$ 0
<u>Total Revenue</u>	<u>\$ 5,023</u>	<u>\$ 8,254</u>	<u>\$ 15,925</u>
Expenses			
Marketing	\$ 512	\$ 243	\$ 192
Cost of Goods Sold	\$ 25	\$ 0	\$ 0
Wage Expense	\$ 2,000	\$ 2,000	\$ 2,500
Rent Expense	\$ 9,764	\$ 9,764	\$ 10,164
Equipement	\$ 2,000	\$ 0	\$ 500
Utility Expense	\$ 460	\$ 460	\$ 460
<u>Operation Expense</u>	<u>\$ 14,761</u>	<u>\$ 12,467</u>	<u>\$ 13,516</u>
Gross Profit	\$ 5,023	\$ 8,254	\$ 15,925
Operating Income	-\$ 7,618	-\$ 4,093	\$ 2,709

*Disclaimer: Numbers are hypothetical

10.3 NPV Analysis

A good tool for evaluating the future viability of a company is NPV analysis. Net Present Value, or NPV, analysis predicts the future expected cash flows over a specified time period. Using this analysis, we evaluated the first three years of our business:

$$NPV = \sum_t^n (Rt/(1+i)^t)$$

$$NPV = (-7618/1.1) + (-4093/(1.1^2)) + (2709/(1.1^3))$$

$$NPV \approx -8272.7874$$

We can now see that we will not be positive in expected cash flow for the first three years of operation; which is to be expected, but valuable to know and confirm. From the NPV analysis, we can use the information to determine our break even point. For determining this, we will assume an increase in R_t (net cash inflows-outflows during one time period t) of \$4000 per year, as this is the linear increase we are predicting for the next three years.

$$NPV(t=4) = (-7618/((1.1)^1)) + (-4093/((1.1)^2)) + (2709/((1.1)^3)) + (6709/((1.1)^4))$$

$$NPV(t=4) \approx -3690$$

$$NPV(t=5) = (-7618/((1.1)^1)) + (-4093/((1.1)^2)) + (2709/((1.1)^3)) + (6709/((1.1)^4)) + (10709/((1.1)^5))$$

$$NPV(t=5) = 2959$$

So, using NPV analysis we can see that we will reach the break even point after five years of running the business at the future values that we have predicted in this document.

11 Conclusions and Recommendations for Future Work

All in all, the project was successful. In the hopes of increasing work productivity for those who suffer from concentration disorders, we were able to develop an application that tracks the movement of our user and notifies him when he is idle for too long.

As our application involved both a hardware aspect as well as a software side, we learnt as a team that it is important to depend on others who might have skills that others don't. With that in mind, we allowed those who are more advanced with hardware to take care of tracking the movement, while the others focused on the development of the application. We also learnt that, although the long hours spent on deliverables and development were annoying, it was all worth it at the end when we got a product that functions and will help many people.

As for what happens next, there are a few functionalities we'd like to add to our product that we couldn't get to in the limited four months that was given to us. These functionalities include developing an iOS application, in order to present the application to a broader audience. We'd also like to make it so that the analytics gathered are put on a personalized sheet for every user, and not one sheet for all users, which is how we have it now. Finally, we'd like to integrate functionalities of the android phone's gyroscope, as we are only using the accelerometer as of today. With the help of the gyroscope, the phone will be able to track rotational movement instead of only linear movement in the X,Y and Z plane and give us more precise results.

12 Bibliography

[1] Canadian Psychological Association, “Fact Sheet: Obsessive Compulsive Disorder”, [Online]. Available:https://cpa.ca/docs/File/Publications/FactSheets/PsychologyWorksFactSheet_ObsessiveCompulsiveDisorder.pdf. [Accessed 13 12 2018].

[2] Advisory Board, “Will FDA Approve a prescription meditation app?”, [Online]. Available: <https://www.advisory.com/daily-briefing/2018/07/03/meditation>. [Accessed 13 12 2018].

APPENDICES

APPENDIX I: User Manual

Phone Requirements:

Android (5.0 and above) device with integrated Gyroscope and Accelerometer sensors.

How to Download Still Alert:

Still Alert is available on the Google Play application store that is pre-loaded on most android devices. You can download the application on to your device by searching for “Still Alert by Ali Khanafer” on the Google Play store, or by going to this link:

<https://play.google.com/store/apps/details?id=com.stillalert.gng2101.stillalert>

Once you are on the Still Alert page:

- a. If you are on the device that you would like to install the application on, click on the “*INSTALL*” button, and the application will start downloading to your phone.

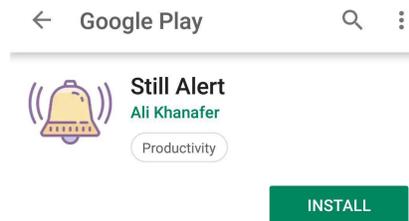


Figure 12: Installation Procedure

- b. If you are on a device that is not the device which you would like the application installed on, click on the install button. A window will open, and you can select the android device (associated with your account) that you wish to install the application on. Once you select a

device, click on the install button, and the application will start to download on the device once an internet connection is established.

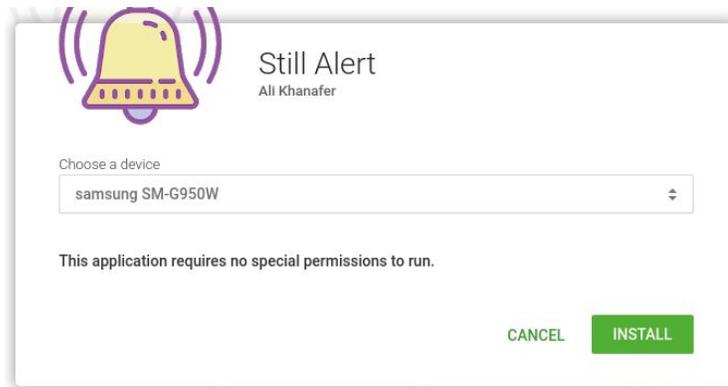


Figure 13: Installation Device

Features of Still Alert:

The primary feature of the Still Alert application is to notify the user when they have not been moving for an amount of time, selected by the user. The data is collected and sent to a database, so that it can be referenced at a later point in time. The storage of the data into a database is especially useful when working with a job coach, so that they can remotely keep track of their clients progress.

Components of Still Alert:

This portion of the manual is a step-by-step process on how to use the features of the Still Alert application.

When you launch the Still Alert application, you will see the main screen of the program. There are three things displayed on the main screen: the Start Button, the Still Timer, and the Settings Button. The Start Button is how you turn on and off the functionality of the application.

Pushing the start button will trigger the application to start tracking the movements of the user. Once the Start Button has been pushed, the button will change to a red Stop Button. When the Stop Button is visible, the application is running its tracking algorithms, but this can be stopped by clicking the Stop Button. The Still Timer can be set through the settings, which can be accessed through the Settings Button.

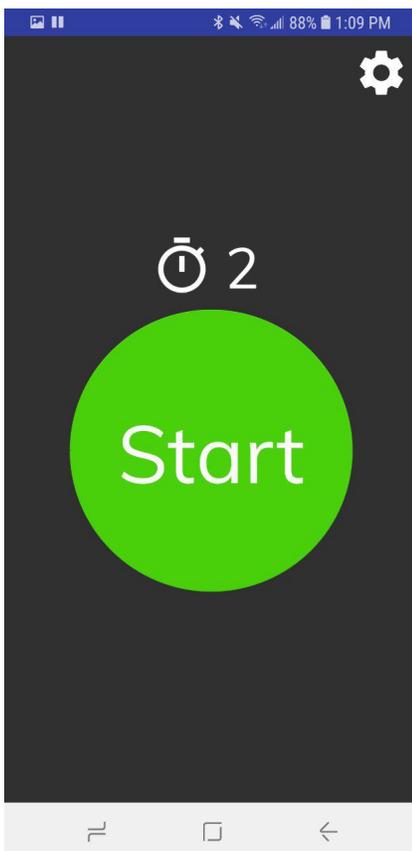


Figure 14: Default screen when launching app



Figure 15: Application once the Start Button has been pressed.

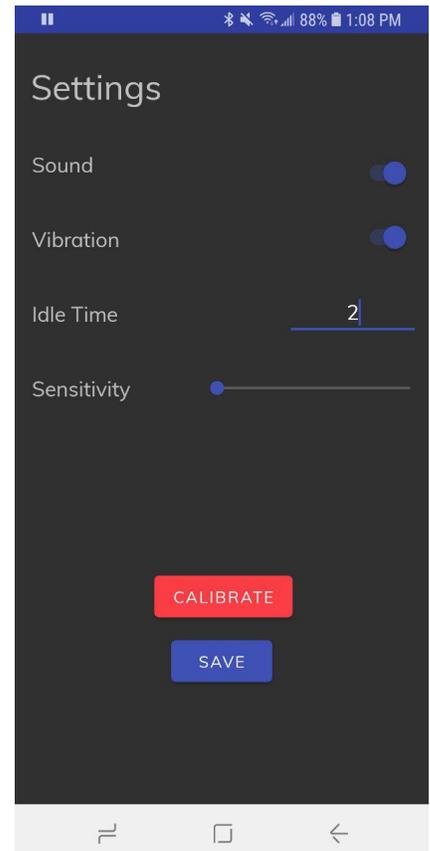


Figure 16: Settings Screen, accessed through clicking the Settings Button.

When the Settings Button has been Clicked, it will launch the Settings Screen. On the settings screen, there are options to change the features of the application to fit the exact needs of the user. Settings page features:

1. Sound Toggle Button: A button to turn the sound on/off for the notification that will tell the user that they have not been moving.
2. Vibration Toggle Button: A button to turn the vibration on/off for the notification that will tell the user that they have not been moving.
3. Idle Time: A field for the user to enter an amount of time (in seconds). The application will use this amount of time as the amount of time that the user will be notified, if they have not moved.
4. Sensitivity Slider: A slider that controls the algorithm's sensitivity towards the users movements. The closer that the slider is to the left, the less sensitive, the closer it is to the right, the higher the sensitivity.
5. Calibration Button: The calibration button is used to tare (zero) the sensors that are used in the applications algorithms. The calibration compensates for gravity and any outside forces that may be affecting the sensors.
6. Save Button: Saves all the settings locally on the phone so that they can be used whenever the application is launched.

Basic Steps to use Still Alert:

1. Launch the Still Alert application.
2. Open the settings page by clicking on the Settings Button.
3. Set phone down on a table and click the calibrate button. A notification will pop up and tell you to wait 3 seconds. When the notification leaves the page, you can pick up the phone again.
4. Set the rest of the settings according to your preferences.
5. Click the save button.
6. Once ready to use, click the start button and put the phone in your pocket.
7. Continue with your tasks until you are finished.
8. Once complete, click the stop button on the application.

Troubleshooting:

If you encounter any issues using the Still Alert application, you can contact us on the GitHub page for Still Alert: <https://github.com/alexi10/StillAlert>

APPENDIX II: Design Files

Please view the following Github link to our repository, which contains all of the code and design files for the application:

Github Link: <https://github.com/alexi10/StillAlert>