Walking Navigation App

Project Management Plan

VERSION 2.0.0

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TEAM 212
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Introduction and Purpose.

Nowadays, the usage of smartphones is increasing exponentially. People literally can't survive without all the conveniences brought about by the smartphones. One of the conveniences that smartphone can offer is the Navigation App that renders the conventional paper-made map useless. The built-in algorithms can even help the drivers to avoid congested routes and determine the path with shortest time, especially with those unfamiliar routes.

Hence, the Walking Navigation App is developed as a navigation guide in Monash Malaysia Campus. It functions with the use of GPS sensor in smartphones and connects to the web via Internet connection. Utilising the sensor, it can track the user's current location and guide the user from waypoint to waypoint, until he/she reaches the desired location. These waypoints are all stored in series of path. Navigation info such as ETA and remaining distance will also be shown.

Project Information

Background and intended use

WalkAbout is an organisation which specialises in directing vision impaired people around cities. The organization contacted Team 212 to request the development of a prototype navigation app. The prototype needs to be a proof-of-concept for mobile app based navigation, and that later versions of the app can be modified to make the app accessible to blind and vision-impaired customers.

The app developed is known as Walking Navigation App. It uses the GPS sensor and the Google Map API connected through Internet to navigate the user. At the Main page, the user is presented with a path list consisting of different paths in Monash Malaysia Campus. When clicked, the user will be redirected to the Navigation page where the user's location is shown as a blue arrow marker. An accuracy circle is drawn around the marker to indicate the geolocation accuracy. Only when the accuracy circle changes from red to blue will the navigation starts. The user will be guided with text and arrow from waypoint to waypoint until he/she reaches the final destination. Each waypoint will be considered 'reached' only when it falls into the accuracy circle.

As the user travels, total distance travelled and distance remaining will be shown. Based on those two, average speed and ETA can be determined and displayed. This app is not meant to be used only within Monash Campus, but also outside the campus itself. Users can add their own designated route on the map and the app will navigate them to their desired locations. This app is designed not only for vision impaired people, but also for common people in need of navigation aid.

Scope

When creating a mobile application, there are always limitations or stumbling blocks. There is no such thing as a perfect mobile application. Even juggernauts like Facebook and Whatsapp are constantly linked with user privacy and confidentiality issues. Hence, we have a certain scope for our mobile application that we are forced to limit ourselves to.

Firstly, the application requires the GPS functionality to be present in the devices to determine the current location of user. Without the GPS functionality, the application will not function appropriately. The application can also get laggy due to the fact that there is a lot of code being run on a browser of mobile devices.

Besides, our application requires special features in devices that uses the application such as a gyroscope and an accelerometer. Therefore, devices like older laptops or older smartphone models won't have the capability to utilize our application.

Apart from that, another issue that users may experience when using our application is the poor accuracy of the current user location especially when used in a building. This may be due to poor connection of the GPS receiver of the user's device and the satellites orbiting the Earth which could be due to poor WiFi connection or poor cellular data connection and many other reasons.

One other issue is when the user's current location is more than 20 metres away from the specified start locations, the path line to the start location will not be generated. Due to the inaccuracy of geolocation, the app will only update the distance and user location when the user has moved a significantly large distance (e.g. 2-3 m). Hence, the 'Total distance travelled' information will be inaccurate.

Also, the application is unable to reroute and redraw the pathline if the user goes off course. It will show only the direction and some other information to the preset waypoint.

Deliverables/due dates

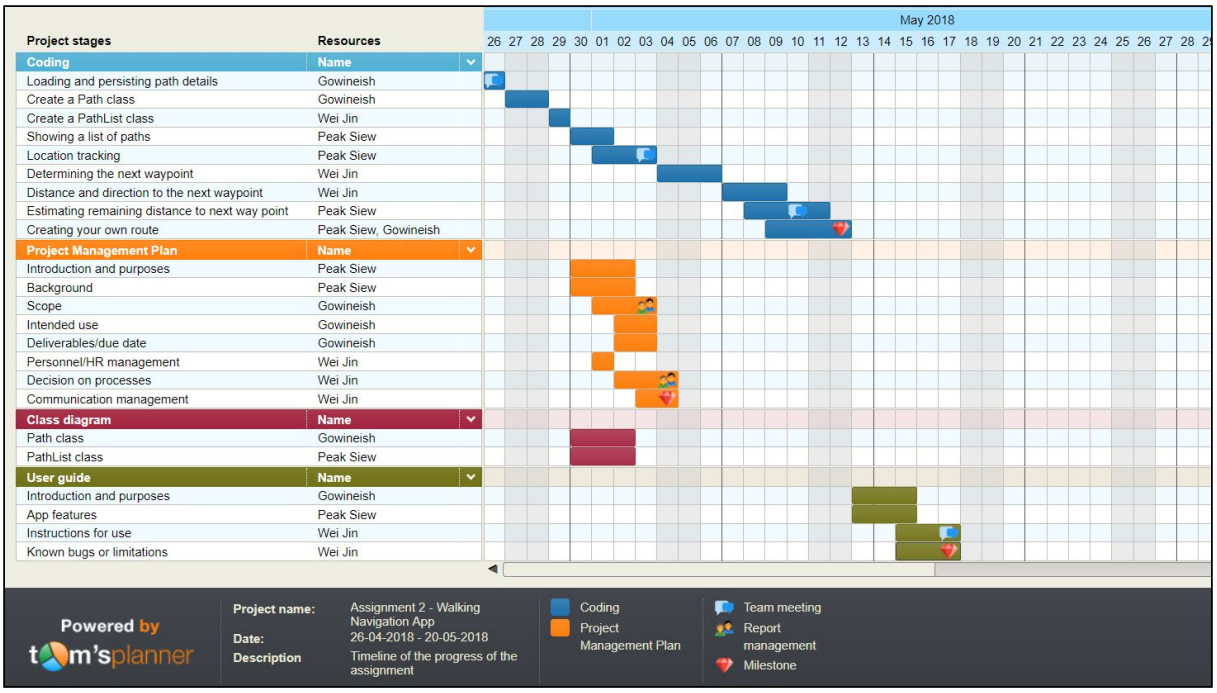

Figure 1 - Gantt Chart

Meeting 1

Date : 26th of April 2018

- *Get a complete overview of the project requirements and details*
- *Draw out wireframes and storyboards*
- *Allocate tasks to each members*
- *Start creating classes*
- *Begin coding*
- *Agree to start project management plan and class diagram once classes have been created*

Meeting 2

Date: 3rd of May 2018

- *Update teammates on progress of coding, project management plan and class diagram*
- *Discuss the codes if any problems are encountered*
- *Ensure that class diagrams have been completed*
- *Start creating logo for main HTML page*
- *Make sure project management plan is close to completion*

Meeting 3

Date : 10th of May 2018

- *Update teammates on progress of coding, project management plan and class diagram*
- *Discuss codes and remaining tasks*
- *Ensure project management plan has been completed*
- *Begin planning for user guide*
- *Start debugging the code*

Meeting 4

Date : 17th of May 2018

- *Ensure coding, project management plan, class diagrams and user guide has been completed*
- *Ensure everything in the marking rubric is accounted for*
- *Continue final stages of code debugging*
- *Perform trial runs of the application*

Personnel/HR Management

Personnel

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Responsibilities

Khor Peak Siew

- *Project Leader, Code supervisor, in charge of Javascript and CSS coding, in charge of code checking and application testing*

Randy Chin Wei Jin

- *User Guide supervisor, in charge of design interface coding (HTML), in charge of presentation slides and minute taking*

Gowineish Kalai Rajan

- *Technical Documentation supervisor, partially in charge of Javascript coding, in charge of report checking and team meeting*

Decision on Processes

In order for the project to be completed effectively, efficiently, conveniently and in time for the handover, we have used a mixture of GitKraken, Google Drive, Brackets and Asana. These tools (i.e. applications, platforms and websites) have allowed easy delegation, management and tracking, of progress, of tasks. We have decided that Samuel would create the tasks in Asana, which would then be taken up by respective members who are in charge. As Samuel is the appointed leader, he would also upload the skeleton code to GitKraken, which would then be constantly updated. Wei Jin would take command of the Google Drive minutes and meetings, as well as the management of other folders within the Team Drive that they were assigned into. At times, Gowineish would often assist the other two members within the group by helping us delegate the tasks for us. As GitKraken is more of an individual-oriented platform, every member would have to make sure they monitor the progress by themselves of update themselves through our communications (explained further in "Communications Management"). As for other other two platforms, Asana and Google Drive, by having one of three member manage the information of each platform and the third member overseeing, we are able to ensure our files are kept up to date.

Asana

Asana is a web / mobile application constructed to help groups manage and track their work. Tasks and subtasks can be by, to and from any member of the team. Tasks set by the members of the group would also need to add a due date, making Asana seem more like a timeline or a calendar. This method of assigning specific yet summarised tasks in short form keeps every member up to speed effectively. Furthermore, the application consists of a burndown chart that tracks the amount of tasks completed or remaining.

Brackets

Brackets is the most important application in the entire project. The application is used in order to assemble and code .css (CSS), .html (HTML) and .js (JavaScript) files in order to create the application. As this is an offline editing / coding tool, further added by the complexity of some of the codes can be, it is crucial that sharing and constant updating of changes made to these files is necessary for the team to be able to collaborate together in order to complete the project.

GitKraken

GitKraken is an application that holds GitHub, a repository used for sharing updates and changes that are made towards a code. Once a file has been edited through and saved by Brackets, it is then pushed up to GitHub via the GitKraken app in order to share the changes made to the other team members. GitKraken then creates a history of activities made onto the group repository, and updates it as members push more changes into GitHub.

Google Drive

Google Drive is an online file storage and synchronization service. Here, members are allowed to create folders known as Team Drives, shared with other members of the group. Google Drive can create, upload and receive different types of files and documents, which can then be opened online to be edited with other team members, in real time. Every member can then collaborate and see live changes, as if all members are working side-by-side.

Communications Management

There are two ways to communicate; in a formal and informal manner. For informal communications, we decided to use primarily WhatsApp, and sometimes Google Drive chat (when working collaboratively at the same time from different locations). WhatsApp serves as not only a faster, more common method of communication due to the high use of mobile communication platforms nowadays, but also in case of emergencies when important and urgent information needs to go through quickly (without the problem of charges). Furthermore, WhatsApp allows online phone or video calls as a more convenient method of directly communicating a message, rather than having to waste time typing or thinking of a message. However, as a backup we have also decided to use Phone calls as a secondary form of communications, especially at times where data services are scarce or weak.

When it comes to formal communications (i.e. the need to professionally record information), we would use two major platforms - Google Drive and Asana. Google Drive, specifically Team Drives, allow us to not only efficiently update each other, but to also do it together at the same time. This allows us to write up drafts more effectively. However, when it comes to summarised information, such as timelines or summaries, Asana proves a better choice. By allowing us to easily structure our information in short, concise and precise manners, third-party (i.e customers, clients, etc.) groups would be able to easily keep track of our progress. However, the team also decided to hold face-to-face group meetings, which may sometimes include our clients, in order to present our progress and hand over our work.

Communication Methods:

Method Name	***Audience***	***Purpose(s) of using the communication***	***Strategies to effectively use method***
Asana	*- New or existing team members*	*- To track progress of project / code* *- To communicate with new / existing team members*	*- Members should frequently check and update it* *- Members should keep information clear and short* *-Members will be messaged through WhatsApp if no feedback response given for more than two days*
Face to Face	*- Client* *- New or existing team members*	*- To hand over of the project and code*	*- All members should present information coherently* *- Intention and context must be clearly explained; structure / functionality of application, design decisions, etc.*
Google Drive	*- New or existing team members*	*- To communicate with new / existing team members* *- To document information* *- To keep track of changes and updates of information*	*- Members should frequently check and update it* *- Members should keep continually note down any information that comes along* *-Members will be messaged through WhatsApp if no feedback response given for more than one day*
Phone Call	*- New or existing team members*	*- To communicate with new / existing team members* *- To notify team members in case of emergencies*	*- Members should actively and quickly answer to incoming phone calls*
WhatsApp	*- New or existing team members*	*- To communicate with new / existing team members* *- To track progress of project / code*	*- Members should frequently check and update it* *-Members will be called if no reply given for more than 6 hours*

Risk Management

Although we have a wide variety of management and communication tools to keep all the members up to date, informed and on track, there are also various factors that could influence the smooth progress of the project itself. These factors can be divided into two main groups - internal and external factors. For internal influences that can affect the progress of the project, there could be due to a team member's lack of expertise when it comes to a certain part of the tasks. Their inability to carry out the tasks efficiently due to lack of knowledge could end up slowing down the group's overall progress, as some other tasks may require the current task to be completed and proven functional first.

However, there would also be external factors that could damage the smooth running of the progression of the tasks. In order for the individuals carry out their tasks effectively, knowledge on such areas would be required. External factors that could potentially slow down progress would typically be due to lack of research information. It is also essential that even if there are large amount of information available, the information should have clarity in order for the individuals to understand. Lack of clarity in information could also result in the team members being unable to understand, thus carry out their tasks.

Even with the proper amount and depth of understanding required, there are times where the individuals would have to manage between multiple tasks. Another external factor would be due to time clashes due to different schedules for all team members to meet up or the need to balance between multiple different tasks or meetings with other groups. As every member would not be able to meet up all the time, the schedule would have to be pushed back, and thus progress is slowed.

Risk	***Likeliness***	***How to avoid***
Lack of Expertise	*Very Likely*	*- Work collaboratively with other team members* *- Ask team members for guidance*
Lack of Information	*Not Likely*	*- Ask team members for guidance before researching alone* *- Prepare information beforehand in case required*
Schedule Clashing	*Quite Likely*	*- Plan (beforehand) a period between intervals to prioritise meeting up* *- Balance and prioritise multiple tasks*

Appendices

Appendix A - Wireframe Sketch

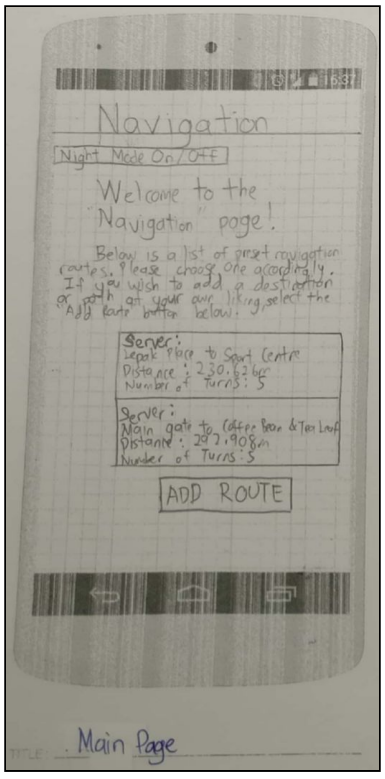

Figure 2 - Main Page wireframe sketch

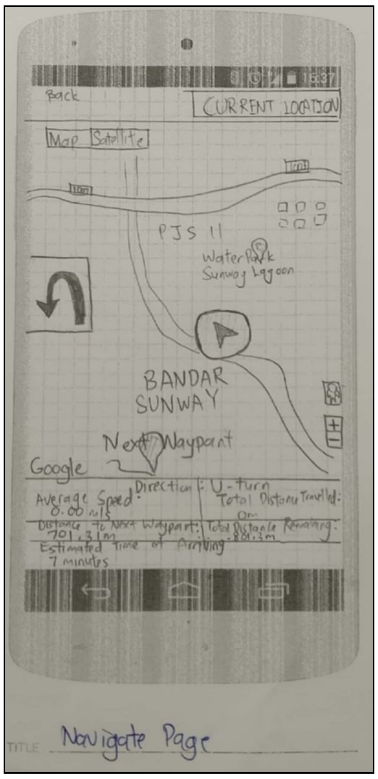

Figure 3 - Navigate Page wireframe sketch

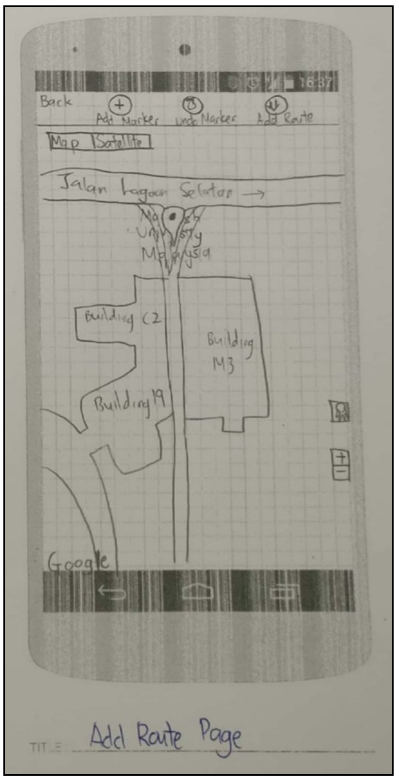

Figure 4 - Add Route Page wireframe sketch

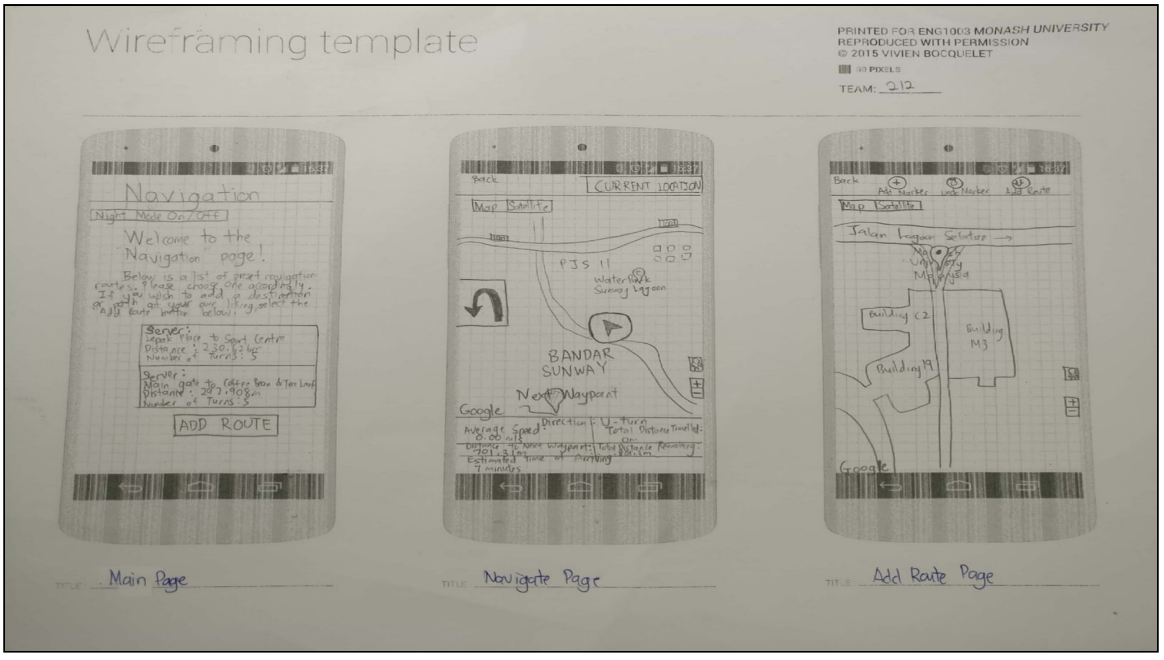

Figure 5 - Complete wireframe sketch template