**Project Management Plan**

**Preliminary Project Plan**

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Revision History

| Name | Date | Reason for Changes | Version |
| --- | --- | --- | --- |
|  |  | initial draft | 1.0 draft 1 |
| Musa Husseini | 9/11 | Wrote rough drafts for all section 2 and section 3.1 | 1.0 draft 2 |
| Dylan Meyer | 9/11 | Rough draft for section 1.1 and section 1.2 | 1.0 draft 3 |
| Abhilash Ambati Dylan Meyer Musa Husseini Nathan Brown Tucker Surdock | 9/18 | Final draft for document | 1.0 draft 4 |

# **1.** **Overview**

## **1.1.** **Project Purpose, Objectives, and Success Criteria**

The purpose of this project is to develop a smartphone app that can be used to assist in navigation through indoor spaces. This app will need to be accessible for use by blind people, but should also be configurable by caretakers as well.

The app would need to map out indoor spaces in order to generate potential routes from the input starting position and the input destination, and correctly select the quickest route available. If possible, map data can be collected through the internet to speed up the process of mapping the route. The app must generate multiple series of directions in order to navigate from the starting location to an input destination, and using AI select the fastest route available. Then directions must be output as audio instructions to walk for a set distance, or to turn. Additionally, this app would need to take advantage of multiple sensors on smartphones that would allow for obstacle detection, and if necessary will need the functionality to adjust the course of direction to ensure safe and timely travel.

In order to ensure maximum accessibility, input destinations must be allowed to be collected both through the app’s interface, but also be obtained vocally. The app must be able to account for various types of languages and vocal patterns to ensure that the input is correct, and verify with the user. Should we include any vital buttons that must be pressed, they must be easily accessible for blind users since they will not be able to navigate the app as traditionally. Audio cues are to be used for any interaction with the app to ensure the user is aware of their actions.

## **1.2.** **Project Deliverables**

| Deliverable | Delivery Date | Delivery Method | Comments | Responsible for Deliverable |
| --- | --- | --- | --- | --- |
| Theia App | N/A | Smartphone App | Theoretical final product. | Tucker  Musa  Abhilash  Dylan  Nathan |
| Theia App Documentation | N/A | Documentation included with the smartphone app. | All the documentation that would need to go alongside the release of the created app. Theoretically included with the app. | Tucker  Musa  Abhilash |
| Preliminary Plan | 9/18/22 | Canvas | The initial plan outlying the project and management plan. | Dylan |
| Project Phase 1: Final Submission: | 10/16/22 | Canvas  Gitlab | All files needed for the final submission in phase 1. | Musa |
| Updated Preliminary Plan | 10/16/22 | Canvas  Gitlab | This file | Dylan  Musa |
| Demo Slides | 10/16/22 | Canvas  Gitlab | Slides for presentation | Dylan  Nathan |
| WRS Evolution Document | 10/16/22 | Canvas  Gitlab | WRS Evolution, contains user manual and interface prototype. | Tucker  Musa  Abhilash |
| TimeKeeping records | 10/16/22 | Canvas  Gitlab | Records of meeting times and their contents | Dylan |
| Project Phase 2: Final Submission | 12/11/22 | Canvas | KAOS | Musa |

## **1.3.** **Assumptions, Dependencies, and Constraints**

During our project’s life cycle, we are going to have to manage a few assumptions about the requirements based on ambiguities in the project’s abstract. Some of the assumptions we will need to work with include;

AS-1: The app must be fully operational without physical input, since buttons may be hard to press when blind.

AS-2:The app must combine map data of the indoor spaces as well as using sensor data from the phone

AS-3: Map data is collected from another location.

DE-1: Assuming the map data used in the app is collected online using the phone’s mobile data, this produces a dependency on the availability of internet connection onto the app.

AS-4: Only our five group members will work on the project, budget is unspecified but assumed to not be infinite. Project is assumed to be finished later in the year, after the prototype which is “finished” in december.

CO-1: No additional resources in terms of time or staff are to be supplied to the project. Once the project's finish date is reached no further work on the project will be conducted.

## **1.4.** **References**

*(WAI), W. C. W. A. I. (n.d.). Mobile accessibility at W3C. Web Accessibility Initiative (WAI). Retrieved September 14, 2022, from*[*https://www.w3.org/WAI/standards-guidelines/mobile/*](https://www.w3.org/WAI/standards-guidelines/mobile/)

*Peter Loshin, Jessica Sirkin, Structured Query Language, TechTarget.   
Retrieved September 17, 2022 from* [*https://www.techtarget.com/searchdatamanagement/definition/SQL#:~:text=Structured%20Query%20Language%20(SQL)%20is,on%20the%20data%20in%20them*](https://www.techtarget.com/searchdatamanagement/definition/SQL#:~:text=Structured%20Query%20Language%20(SQL)%20is,on%20the%20data%20in%20them)*.*

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*W3C. “Mobile Accessibility: Hw WCAG 2.0 and Other W3C/WAI Guidelines Apply to Mobile”, February 2015, Retrieved September 18, 2022 from* [*https://www.w3.org/TR/mobile-accessibility-mapping/*](https://www.w3.org/TR/mobile-accessibility-mapping/)

## **1.5.** **Definitions and Acronyms**

* Agile: A software process model where the project is split into separate portions to be completed.
* Sprint: The period of time where one or few agile model tasks are completed.
* Task: One piece of work that must be completed in the project.
* Caretaker: A person responsible for assisting another person.
* Accessibility: Measures taken to ensure something is usable by as many different people as possible.
* Sensors: devices used to detect surrounding input.
* SQL: Structured Query Language, a programming language most used for managing database management systems.
* AI: Artificial Intelligence, a machine capable of formulating calculations and making decisions.

# **2.** **Project Organization**

## **2.1.** **Process Model**

We will be using the agile process model for this project. We will be working in short sprints to complete tasks and issues in each phase. Each sprint will not only include coding work but also proper documentation and testing for all the work completed in each sprint.

## **2.2.** **Organizational Structure**

The team in charge of this project will be Abhilash Ambati, Dylan Meyer, Musa Husseini, Nathan Brown, and Tucker Surdock. All members of the team are developers. Each person is also in charge of documenting their work, but the main author in charge of maintaining the documents will be Dylan Meyer. The main communication liaison will be Musa Husseini.

## **2.3.** **Roles and Responsibilities**

All team members will be a part of the lifecycle development of the project. The table below outlines the roles and responsibilities each team member will be in charge of. Although each team member has their own responsibility they will also be expected to help in other aspects of the project.

| **Role** | **Responsibility** | **Owner** |
| --- | --- | --- |
| Software Engineer, Test Engineer | * Testing the developed code * Writing Documentation on app’s features | Abhilash Ambate |
| Software Engineer, Test Engineer | * In charge of putting together and coordinating preliminary plan * Testing the developed code * Coordinating the project’s final submissions (1&2) | Dylan Meyer |
| Project Manager, Software Engineer | * Ensuring each team member has roles assigned for each project phase * Writing scalable code for all project phases | Musa Husseini |
| Requirements Analyst, Software Lead | * Writing scalable code for all project phases | Nathan Brown |
| Requirements Analyst, Tech Lead | * Writing scalable code for all project phases | Tucker Surdock |

# **3.** **Managerial Process Plans**

# **3.1.** **Management objectives and priorities**

The main objective of management is to make sure each member has a role and clear cut task that needs to be achieved. To achieve this objective, constant communication will be key. The team will be using Discord as the primary communication platform and email as a secondary. Each task will be clearly assigned and posted on Discord for team members to see and refer back too. Each team member is expected to hold themselves accountable for completing tasks on time, and regular meetings will be held to check on each member's progress.

The project's priorities will be ever changing. During team meetings, current and future tasks will be discussed and the team will always be re-evaluating the priorities of certain tasks. As the timeline progresses long term deliverables will be established that priorities can be built around.

The communication liaison will be incharge of establishing meeting times with the groups and ensuring each team member understands their roles and tasks at hand.

## **3.2.** **Assumptions, dependencies, and constraints**

AS-1: A budget is to be defined outside of the project’s group.

AS-2: Deadlines for individual sprints are to be defined by the group, while the overarching deadline is to remain static.

AS-3: Only our five group members will work on the project.

AS-4: Project is to be finished at an unspecified time after the prototype date in December.

## **3.3.** **Risk management**

| **No.** | **Risk** | **Type** | **Likelihood** | **Description** |
| --- | --- | --- | --- | --- |
| 1. | Lack of team member’s commitment | Managerial | Likely-High  potential impact | Team member does not perform  the desired work on schedule and  shows irresponsible behavior. |
| 2 | Change of requirements | Technical | Unlikely -High  potential impact | The client may choose to change the requirements midway through the project. |
| 3 | Failure to meet deadlines | Managerial | Unlikely -High  potential impact | The team does not completed the work on time,which may delay the product launch |
| 4 | Lack to communication | Technical | Likely- High  potential impact | Team members/ clients not explaining their needs leading to confusion and chaos. |
| 5 | Conflicting ideas | Managerial | Unlikely - High  potential impact | Team members may have different ideas to complete a task leading to conflicts. |
| 6 | Time constraints | Technical | Unlikely - High  potential impact | Team members/clients unable to attend meetings due to time constraints. |

# **4.** **Technical Process Plans**

## **4.1.** **Methods, tools, and techniques**

We shall be using Linux computers to develop the application. The app shall be compatible with Android and IOS devices when operating. The IDE of choice shall be JetBrains IDE’s. We shall also use JetBrains IDE to do unit tests. GIT shall be used for version control.

The team will be using Agile development methodologies. We will participate in daily stand up meetings to discuss what we have done and what we will get done. We will be using SQL for our back end. We will use ReactJS for our front end UI development.

When coding is being done, we shall be peer coding. We will also follow test driven design.

·**4.2.** **Software documentation**

| Document | Template or Standard | Created By | Reviewed By | Target Date | Distribution |
| --- | --- | --- | --- | --- | --- |
| Back-end Class Diagram | UML | Back end team | Software lead | Oct 2 | Internal |
| User manual | \_ | Front end team | Reqs Analyst | Nov 1 | App store |
| Release notes | \_ | Each team member | Tech Lead | End of each sprint | Internal & app store |
| Data Flow Diagram | Swimlane | Back end team | Software Lead | Sept 25 | Internal |
| Database relational diagram | ERD | Back end team | Software Lead | Oct 5 | Internal |