Project Management Plan

for

Visually Impaired Mobility App

Version 2.0

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Revision History

Name	Date	Reason for Changes	Version
Team 1	9/14/25	Initial draft for prelim submission	1.0 Draft 1
Team 1	9/15/25	Improving upon initial design	1.1 Improved Draft
Team 1	9/18/25	Project Phase 1 submission preperation	1.2 Phase 1 Draft
Team 1	10/1/25	Project Phase 1 updates	1.3 Phase 1 Draft
Team 1	10/10/25	Project Phase 1 final submission	1.3 Phase 1 Submission
Team 1	12/2/25	Project Phase 2 draft preperation	2.0 Phase 2 Draft
Team 1	12/6/25	Project Phase 2 final submission	2.0 Phase 2 Submission

1. Overview

1.1. Project Purpose, Objectives, and Success Criteria

Our goal for this project is to develop a mobile application that assists blind and visually impaired individuals with indoor navigation. The app will help users travel between locations within a building or access connected buildings, such as classrooms, offices, restrooms, or labs. Its features include voice-based destination input, real-time route guidance, obstacle detection, and emergency assistance in case of falls or disorientation.

The system will use smartphone sensors such as the accelerometer, gyroscope, and camera to provide accurate navigation support. An accessibility staff member can also configure the app and receive alerts during emergencies.

The project's success will be measured by user safety, navigation efficiency, and usability for blind individuals.

1.2. Project Deliverables

Deliverable	Delivery Date	Delivery Method	Comments
Project Phase I: Preliminary Plan	9/14	Canvas	
Project Phase I: Final Submission	10/12	Canvas	Includes a presentation
Project Phase II: Final Code Submission	12/5/25	Github/Zoom	Includes a presentation
Project Phase II: Final Plan	12/7/25	Canvas	
Project Phase II: Process Specification	12/7/25	Canvas	
Project Phase II: Vision and Scope Doc	12/7/25	Canvas	
Project Phase II: WRS	12/7/25	Canvas	

1.3. Assumptions, Dependencies, and Constraints

We are not making any assumptions at this point in the project, however, this section will update as our project progresses.

- DE-1: Users are expected to have phones with as many sensors as possible
- CO-1: The domain is to remain indoors

1.4. References

1.5. Definitions and Acronyms

Agile Development: A software process in which a project is broken up into small portions and tasks are grouped to be completed in relatively short time periods.
IDE: Integrated Development Environment

2. Project Organization

2.1. Process Model

The team will use the Agile development model. This will allow us to be flexible in our development, and maintain work that meets client requirements. To meet the needs of impaired individuals, continuous communication with clients/instructors will be important. The development process will be divided up into sprints, consisting of dividing up tasks between team members and regular meetings to share progress and adapt our goals.

Our primary interface outside of the project is with the instructor and client to receive guidance and feedback for current and future development. This communication will be handled primarily by the team manager and liaison, but extends to all members. Secondary interfaces may involve the users which include the blind and visually impaired, caretakers, emergency responders, etc.

2.2. Organizational Structure

The project team is organized in a flat structure for collaborations and easy communication with members. Since the team is relatively small, we defined each member's task as well as a requirement to undertake cross-functional work (as stated by the requirements).

- Project lead: Oversees project guidance, milestone completion and stakeholder coordination.
- Product Manager: The position responsible for gathering requirements, ensuring design decisions align with accessibility needs, and ensuring deliverables work with end user expectations.
- Developers (front and back): are also tasked with software implementation, blending smartphone data, and improving performance.

All members of the team plan to communicate via discord and meet when deemed necessary. Group decisions will be made via general consensus. This framework makes accountability transparent.

2.3. Roles and Responsibilities

- Project Lead/Manager: Shawn

The project lead has a responsibility to direct project development. This would include leading meetings, delegating tasks, and fostering collaboration within the team. The goal of the lead is to maintain progress towards milestones, manage KAOS/NFR modeling, and support areas that may need help.

- Project Manager & Liaison: Riley

The project manager's responsibilities include managing resources, communicating with the client, rewriting FR/NFR scenarios and goals for phase ll, and distribution of information to team members. Shawn and Riley take up the lead and manager, and are expected to support each other. They may assume each other's responsibilities when necessary.

- Front-End Developer: Jace

The front-end developer handles implementation behind the interface and user interaction. This would include the GUI, audio output, user-friendly navigation, caretaker settings, web display, UI updates, and other components that meet the needs of impaired users.

- Back-End Developer: Eli, Ivan, Anthony, Shawn

The back-end developers work together to build the system logic, design structure, and complexities that are responsible for overall product functionality. This would include algorithms for navigation, integrating sensors, data storage, and reliability. They will also write both fall detection logic and navigational simulation using a virtual map.

Though each member has a specific role, these are more ambiguous roles as different team members can aid and take up extra responsibility when needed to progress development. Each member is expected to develop some product functionality, communicate constantly with other members, and provide regular updates to the team lead.

3. Managerial Process Plans

3.1. Management objectives and priorities

The management objectives and priorities for our project are the following, meet project deadlines, organize team roles, and keep a clean code base. Project deadlines will be set up across the semester and tracked regularly to ensure steady progress. We will use a kanban board to set up/track stories that count towards a bigger milestone in an agile style way. Team roles have been clearly assigned into four categories: Project Lead, Product Manager, Front-end Developer, and Back-end Developer. Each team role has been clearly assigned and the responsibilities are well defined. To maintain a clean code base, we will implement version control and clean code philosophies to achieve this. This in return will allow easy future scalability, promote component ownership between developers, and help minimize conflicts.

3.2. Assumptions, dependencies, and constraints

In order to plan and execute this project, we will make the following assumptions, dependencies and constraints in regards to our management:

We will assume all members will attempt meetings when available and that deadlines are met by finishing work within an appropriate time frame. The stakeholders will attend frequent feedback sessions, and the development tools will be available throughout the entirety of the project. Dependencies: Project planning will depend on the project deadlines, deliverables depend on coordination between all members of the team. Our constraints will be the requirement to complete the project within the academic semester, the scope is restricted to indoor navigation, and our team coordination depending on each member's availability.

3.3. Risk management

As our project progresses, we will be identifying new risks primarily when new environments are added. Whenever a new outside factor is added to the project, proper risk assessments will be taken to ensure we don’t hit any major snags. Of course, internal risks will also be assessed, however, those will be dealt with person to person. What we mean by this is the sections of the project each person is assigned to work in are also the sections they are expected to do risk management of. Whenever a risk is identified and action needs to be taken, as a team we will discuss how the risk will be dealt with so that no one person gets stuck fixing something (unless the assessed risk is so minor that a single person can deal with it.)

4. Technical Process Plans

4.1. Methods, tools, and techniques

Our team will use a combination of modern development practices and tools to ensure a high-quality, accessible, and maintainable final product.

- **Development Methodology:** As mentioned previously, we will follow the Agile development model. For Phase 1, our primary task is to develop requirements models and a specification for the app, with a prototype. Our work will be organized into stories on a Kanban board to track progress towards milestones.
- **Programming Language and Environment:** This application will be developed using React Native. Our primary IDE will be VS Code. The development will target modern smartphones that use sensors and the camera to provide navigation support.
- **Software and Collaboration Tools:**
    - **Version Control:** We will use Git for source code management, hosted on a GitHub repository.
    - **Communication:** All team communication will be centralized in our Discord server.
    - **Documentation Collaboration:** We will be using Google Drive to collaborate as a team on documentation.
    - **Prototyping:** For the Phase 1 mock-up, we will use a design tool like Figma or Adobe XD to create the concept drawings or GUI demonstration.
- **Quality Assurance:** To ensure the app is reliable and safe, we will implement peer code reviews through pull requests on our repository.

4.2. Software documentation

Document	Template or Standard	Created By	Reviewed By	Target Date	Distribution
Project Plan		All Members	Shawn	09/14/25	Canvas
WRS Document	WRS Template	All Members	Riley	10/12/25	Canvas. Team Repository
User Manual	Custom	Jace, Eli, Ivan, Anthony	Riley	10/12/25	Submitted with WRS
Meeting Records	Standard Minutes	All Members	Shawn	Weekly	Team Repository
Prototype/Mock-up	Design Tool	Jace	All Members	10/12/25	Presented during Final Submission

5. Phase II Activities and Scope

Phase ll builds on Phase l by reworking and improving upon our chosen requirements, scenarios and prototypes to meet the objectives given by the instructor in the provided feedback. The outputs of Phase I (preliminary FR/NFR, initial scenarios, basic prototype) now serve as inputs to the formal modeling (KAOS, NFR Framework, OO models) and expanded specifications required for the final submission.

The purpose of Phase ll is to expand and refine the requirements developed during Phase l. The following activities define the scope of work for Phase II.

5.1. Objectives

Phase II's objectives are:

- Expand the breadth and depth of functional and non-functional requirements based on newly identified issues.
- Improve the completeness and clarity of specifications to support final development.
- Refine scenarios to better reflect real-world workflows involving primary users and caretakers.
- Introduce formal modeling techniques (KAOS, NFR Framework, OO modeling) to strengthen requirement traceability.
- Enhance the functional prototype to support the core scenarios required for demonstration.

5.2. Phase II Required Activities

5.2.1. Requirements Expansion and Clarification:

- Expand Functional Requirements
- Expand Non-Functional Requirements
- Expand Functional Specifications

5.2.2. Scenario Development:

- Rewrite navigation scenario (merge S1 & S2)
- Add caretaker setup scenario
- Add fall detection scenario

5.2.3. Modeling Activities:

- KAOS goal models
- NFR Framework models

- Updated OO models

5.2.4. Prototype Enhancements:

- Navigation simulation
- Caretaker settings UI
- Fall-detection workflow simulation

5.3. Dependencies and Inputs

Phase II activities depend on the artifacts produced during Phase I, including:

- Preliminary FR/NFR sets
- Initial scenarios
- Phase l prototype
- Instructor feedback

These artifacts will serve as inputs for all refinement and modeling work performed in this phase.

5.4. Expected outputs

Upon Completion of Phase ll we will have produced:

- Expanded and clarified FR/NFR sets
- Updated WRS document incorporating KAOS, NFR Framework, and OO models
- Refined scenarios aligned with instructor guidance
- A functional prototype demonstrating key interactions for three major scenarios
- Supporting documentation for final presentation