

University of Texas at Dallas  
SE 4351 - Requirements Engineering (Fall 2025)

# Software Project Management Plan (SPMP)

**Project Title:** *SpiritPath*

**Team Website:** <http://www.spiritpath.site/>

Name	NetID	Email
Deeptanshu Patel	djp200001	<a href="mailto:djp200001@utdallas.edu">djp200001@utdallas.edu</a>
Diego Ibarra	dxi200004	<a href="mailto:dxi200004@utdallas.edu">dxi200004@utdallas.edu</a>
Heather Stephens	hss220002	<a href="mailto:hss220002@utdallas.edu">hss220002@utdallas.edu</a>
AJ Kimbrough	ank210005	<a href="mailto:ank210005@utdallas.edu">ank210005@utdallas.edu</a>
Roger Belman	db210004	<a href="mailto:rdb210004@utdallas.edu">rdb210004@utdallas.edu</a>
Ethan Urhoghide	euu210000	<a href="mailto:euu210000@utdallas.edu">euu210000@utdallas.edu</a>
Ayaan Khan	ark220001	<a href="mailto:ark220001@utdallas.edu">ark220001@utdallas.edu</a>
Hemanta Regmi	hxr210013	<a href="mailto:hxr210013@utdallas.edu">hxr210013@utdallas.edu</a>
Oluwabukunmi Adegbonmire	oaa210013	<a href="mailto:oaa210013@utdallas.edu">oaa210013@utdallas.edu</a>
Cameron Gai	chg200002	<a href="mailto:chg200002@utdallas.edu">chg200002@utdallas.edu</a>
Jorge Quintero	jjq200000	<a href="mailto:jjq200000@utdallas.edu">jjq200000@utdallas.edu</a>

**Version:** 0.1 (Preliminary Draft)

**Date:** September 2025

## Deliverables

Deliverable	Due Date	Team Lead	Notes
Preliminary Project Plan	Sep 4	AJ Kimbrough	Brief explanation of the project, names of team members, due dates, website url, and team leads
Interim Project I	Sep 30/ Oct 2	Deeptanshu Patel	Project description, ppt submission and presentation, WRS document, evolving project plan, and Questionnaire 1
Final Project I submission	Oct 9	Diego Ibarra	Need WRS document, Questionnaire, completed ppt, finished project plan
Interim Project II	Nov. 13	AJ Kimbrough	Need Brief description on Product, WRS document, Project Plan, process specs, and Questionnaire II
Final Project II	Dec 2	Heather Stephens	Need presentation, demo, and hardcopy

Short Summary: SpiritPath is an app that is designed to help those who are visually impaired navigate indoors easily.

# Purpose

The purpose of this Preliminary Project Management Plan is to define goals, scope and management for the development of a mobile navigation application designed to assist visually impaired users in traveling safely and independently. This PPP serves as a layout for both the project team and the stakeholders. This ensures clear communication, task delegation and alignment on deliverables, responsibilities, processes and risks. This PPP is a living document, to be updated throughout the lifecycle of the project. We will update as new risks are identified, tasks are completed and requirements are refined. The ultimate purpose of this document is to ensure the app meets all requirements and is successfully delivered on time.

# Audience

The audience for this PPP includes:

- **Project Management Team** – responsible for overseeing progress, risk mitigation, and deliverables.
- **Development Team** – mobile developers, perception engineers, and QA testers implementing features and ensuring accessibility.
- **Primary Stakeholders** – blind and low-vision users using the app to navigate.
- **Course Instructor & Teaching Assistant** – reviewing progress, adherence to requirements, and final deliverables.
- **Secondary Stakeholders** – caretakers, accessibility staff, and emergency responders who may interact with the app during edge cases.

## 1. Introduction

### 1.1 Project overview

This project is an app that aims to design and implement a mobile application that assists visually impaired users in navigating indoor and outdoor environments safely and independently. This app will provide audio and haptic turn-by-turn guidance, obstacle warning using the phones camera and sensors and on-demand text recognition (OCR) for signs or menus. The system will be deployed as an Android and iOS mobile app, tested through simulators and real-world pilot programs.

### 1.2 Project deliverables

- Requirements specification (WRS template)
- Visual mockup specification (WRS template)
- Visual mockup prototype (Figma)
- Indoor navigation MVP app (Android/iOS)
- Preliminary user manual
- Project presentations & updated project plans

### 1.3 Evolution of this document

This document will be updated at the beginning of each new development cycle to reflect changes in task assignments, risks and scheduling.

### 1.4 References

- IEEE 1058 Standard for Software Project Management Plan
- Course Project guide (Fall 2025)
- W3C Mobile Accessibility Guidelines
- Android ARCore & ML kit documentation
- iOS ARKit, Vision and Core Haptics documentation

### 1.5 Definitions, acronyms, and abbreviations

- **OCR:** Optical Character Recognition
- **TTS:** Text to Speech
- **NFRs:** Non-Functional Requirements
- **AVD:** Android Virtual Device
- **MVP:** Minimum Viable Product

## 2. Project Organization

### 2.1 Process Model

This project follows an Agile Scrum model with 2 week sprints, regular reviews and incremental delivery of prototypes.

### 2.2 Organizational Structure

- **Team Leader (rotating):** Oversees planning, scheduling and risk management
- **Developer Team Sub team A:** Implements core logic such as navigation, TTS, haptics and other accessibility features
- **Developer Team Sub team B:** Implements OCR and obstacle detection
- **Platform Team:** Handles iOS/Android Integration, APIs
- **Tester:** Runs testing and automation

### 2.3 Organizational boundaries and interfaces

- **Internal:** Cross-team communication - Discord and GitHub
- **External:** Feedback from Professor Chung and TA - Ahmad Alshomar

### 2.4 Project Responsibilities

- **Team Leader:** Monitor risks, schedule, dependencies and progress
- **Developers:** Implement and document features
- **QA Team:** Ensure compliance with requirements, log and test prototypes

## 3. Managerial Process

### 3.1 Management Objectives and Priorities

- Deliver MVP by the end of the semester (13-14 weeks)
- Prioritize safe, accessible navigation and usability for visually impaired users
- Constantly ensure compliance with evolving requirements through testing and prototype/presentation feedback from Instructor and TA.

### 3.2 Assumptions, dependencies and constraints

- Assume users have smartphones with GPS, camera, microphone and vibration motor
- Depends on smartphone sensors and map/indoor positioning APIs
- Constrained by limited testing with users who are not visually impaired

### 3.3. Risk Management

- **Battery:** Mitigated by triggering camera/AR only when needed
- **GPS/indoor inaccuracy:** Mitigated with sensor fusion and fallback strategies
- **Feature Creep:** Managed by strict sprint control

## 4. Technical Process

### 4.1 Methods, tools and techniques (likely to evolve throughout course of project)

- **Languages/Frameworks:** Kotlin (Android), Swift (iOS) Flutter (cross-platform UI)
- **Libraries:** Mapbox SDK, ML Kit/Vision OCR, ARCore/ARKit, Depth APIs
- **Tools:** Figma (prototype), GitHub (VCS)

### 4.2 Software Documentation

- WRS specification document
- UML diagrams
- User Manual

### 4.3 Project Support Functions

- **Configuration Management:** GitHub repo
- **Testing:** Espresso (Android), XCTest (iOS)
- **Deployment:** TestFlight (iOS), Play Internal Track (Android)

## 5. Work Elements, Schedule and Budget

### 5.1 Work Elements

- Requirements elicitation and refinement (evolving)
- Architecture and System Design
- Prototype (Figma)
- Nav Engine
- OCR and obstacle detection
- Testing

- Documentation and presentations

#### 5.2 Preliminary Schedule (13-14 weeks)

- **Weeks 1-2:** Requirements identification, planning, mockups
- **Weeks 3-4:** Core navigation + TTS/haptics
- **Weeks 5-6:** OCR + SOS
- **Weeks 7-8:** Depth-based obstacle detection
- **Weeks 9-10:** Cross-platform integration
- **Weeks 11-12:** Testing
- **Weeks 13-14:** Final demo, presentations (MVP)

#### 5.3 Budget

- Individual Developer Time (up to 10 Developers)
- Free-Tier API (Google ML kit, Google Maps, Apple ARKit)
- Test devices: iPhone and Android
- As this is a course project the goal is to spend little to no money. We will meet weekly to discuss progress (Sprints).. As we are changing roles every subphase, we will be updating each team member's role in this project and their individual responsibilities.