The University of Texas at Dallas

Process Specification

Theia - Indoor Navigation App for the Blind

Team Visionaries - <https://theiavisionaries.weebly.com/>

SE 4351.001

Professor Lawrence Chung

Student Name	Student ID	Student Email	Contribution %	Signature
Bakr Alkayali	BXA220023	bxa220023@utdallas.edu	25%	Bakr Alkayal
Ann Rogers	AER190007	aer190007@utdallas.edu	25%	Ann Rogers
Sebastian Deleon	SXD190101	sxd190101@utdallas.edu	25%	Sebastian Deleon
Kaiden Gallardo	KKG200001	kkg200001@utdallas.edu	25%	Kaiden Gallardo

Current (rotated) Team Leader: Ann Rogers

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Meetings

Meetings will occur on an as-needed basis and will be organized over Discord. Meeting records will be kept in the table below and updated as needed.

Date	Location	Agenda	Participants	Summary	Signatures
2/12/2024	Virtual (Discord)	PPP	Bakr Alkayali, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Discussed how the team should approach setting up the PPP.	Bakr Alkayal Ann Rogers Sebastian Deleon Kaiden Gallardo
2/13/2024	Virtual (Discord)	PPP	Bakr Alkayali, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Determine who will write the project description, who will write the schedule, who will write additional content (such as tools and team	Bakr Alkayal Ann Rogers Sebastian Deleon

				organization), and who will set up and format the PPP document.	Kaiden Gallardo
3/21/2024	Virtual (Discord)	Project Phase 1	Bakr Alkayali, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Divided the responsibilities necessary for Project Phase 1.	Bakr Alkayal/ Ann Rogers Sebastian Deleon Kaiden Gallardo
3/24/2024	Virtual (Discord)	Project Phase 1	Bakr Alkayali, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Update on Project Phase 1's documentation progress. Divided responsibilities for remaining Project Phase 1 activities.	Bakr Alkayal/ Ann Rogers Sebastian Deleon Kaiden Gallardo
4/14/2024	Virtual (Discord)	Project Phase 2	Bakr Alkayal, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Divided the responsibilities necessary for Project Phase 2.	Bakr Alkayal/ Ann Rogers Sebastian Deleon Kaiden Gallardo
4/28/2024	Virtual (Discord)	Project Phase 2	Bakr Alkayal, Ann Rogers, Sebastian Deleon, Kaiden Gallardo	Update on Project Phase 2's documentation progress. Divided responsibilities for remaining Project Phase 2 activities.	Bakr Alkayal/ Ann Rogers Sebastian Deleon Kaiden Gallardo

1. Introduction

1.1. Purpose of the document

The purpose of this document is to collect, analyze, and define high-level needs and features of the system Theia. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist. The details of how Theia fulfills these needs are detailed in the use-case and supplementary specifications. The introduction of the Vision document provides an overview of the entire document. It includes the purpose, scope, definitions, acronyms, abbreviations, references, and overview of this Vision document.

1.2. Scope

This Vision document is associated with Team Visionaries' project entitled Theia. Theia is an app designed to assist the visually impaired in navigating environments such as college campuses.

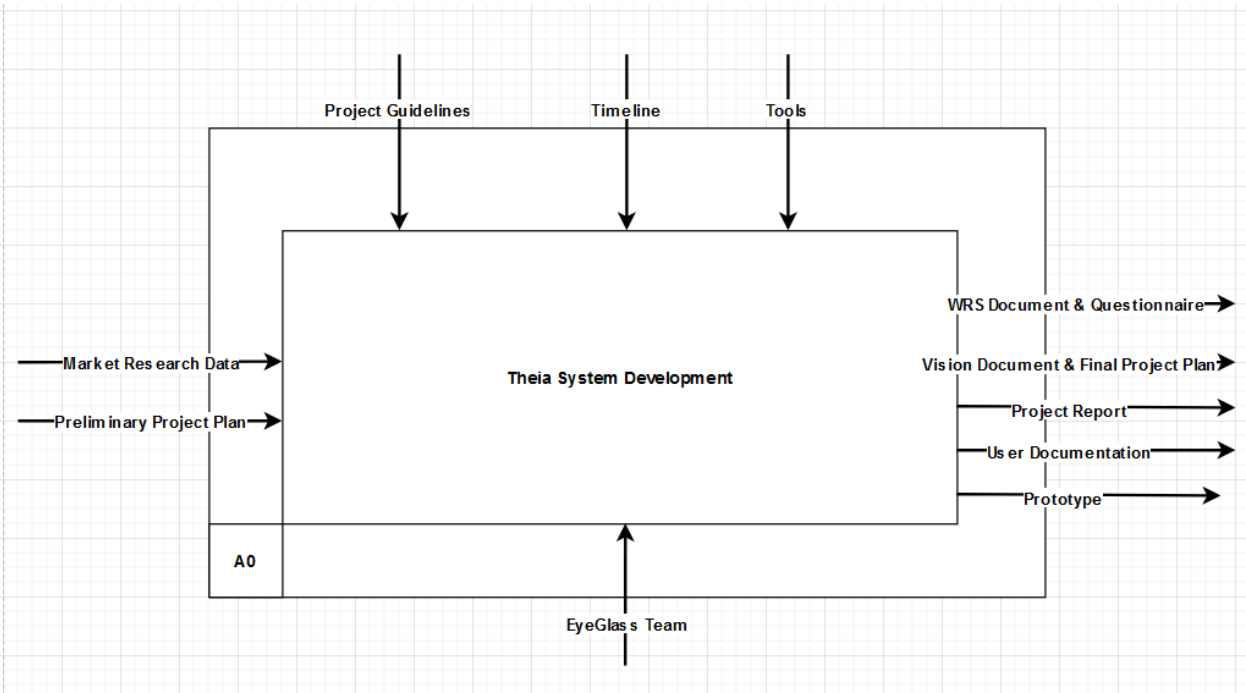
2. Process Overview

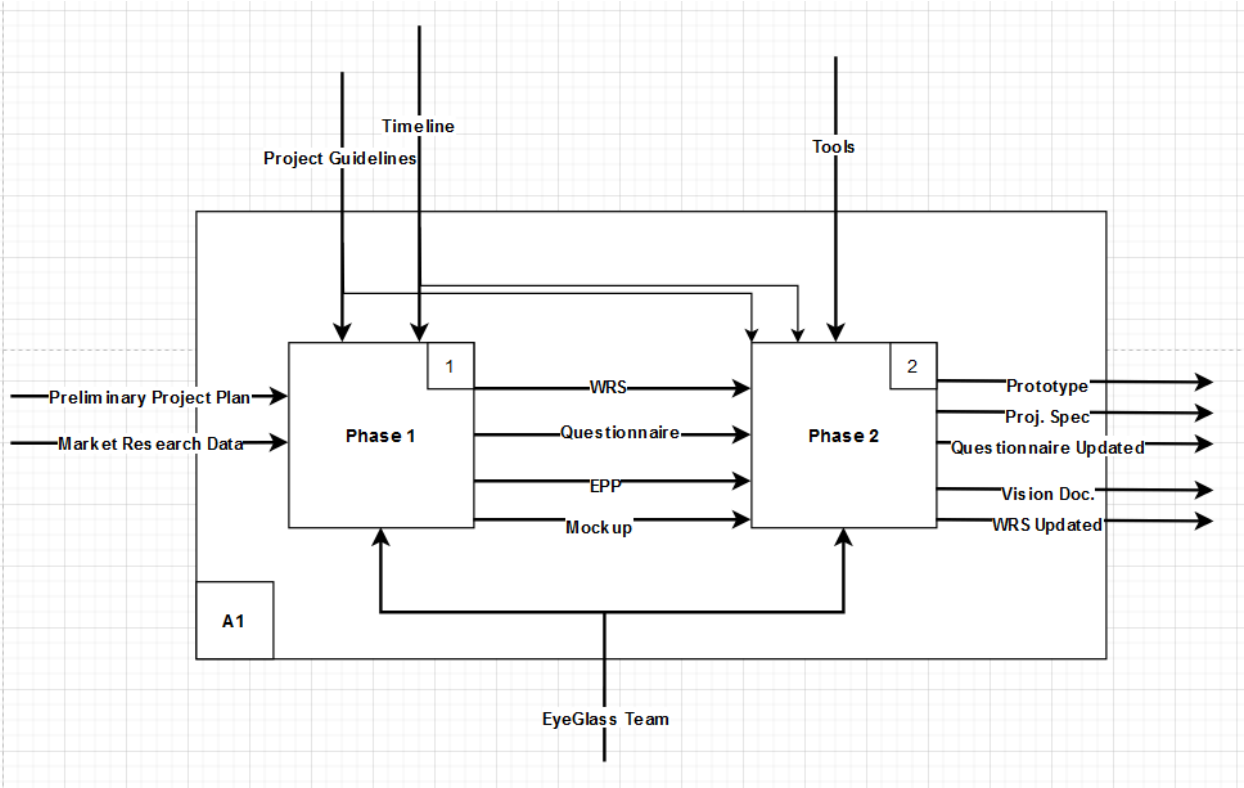
This Vision document seeks to facilitate the elicitation, analysis, specification, and validation of the initial Theia system developed in the first project phase. This includes a series of models designed to provide visualizations of the development process, as well as assurances to potential concerns including but not limited to safety, technical feasibility, and accordance with privacy policies such as data protection and HIPPA.

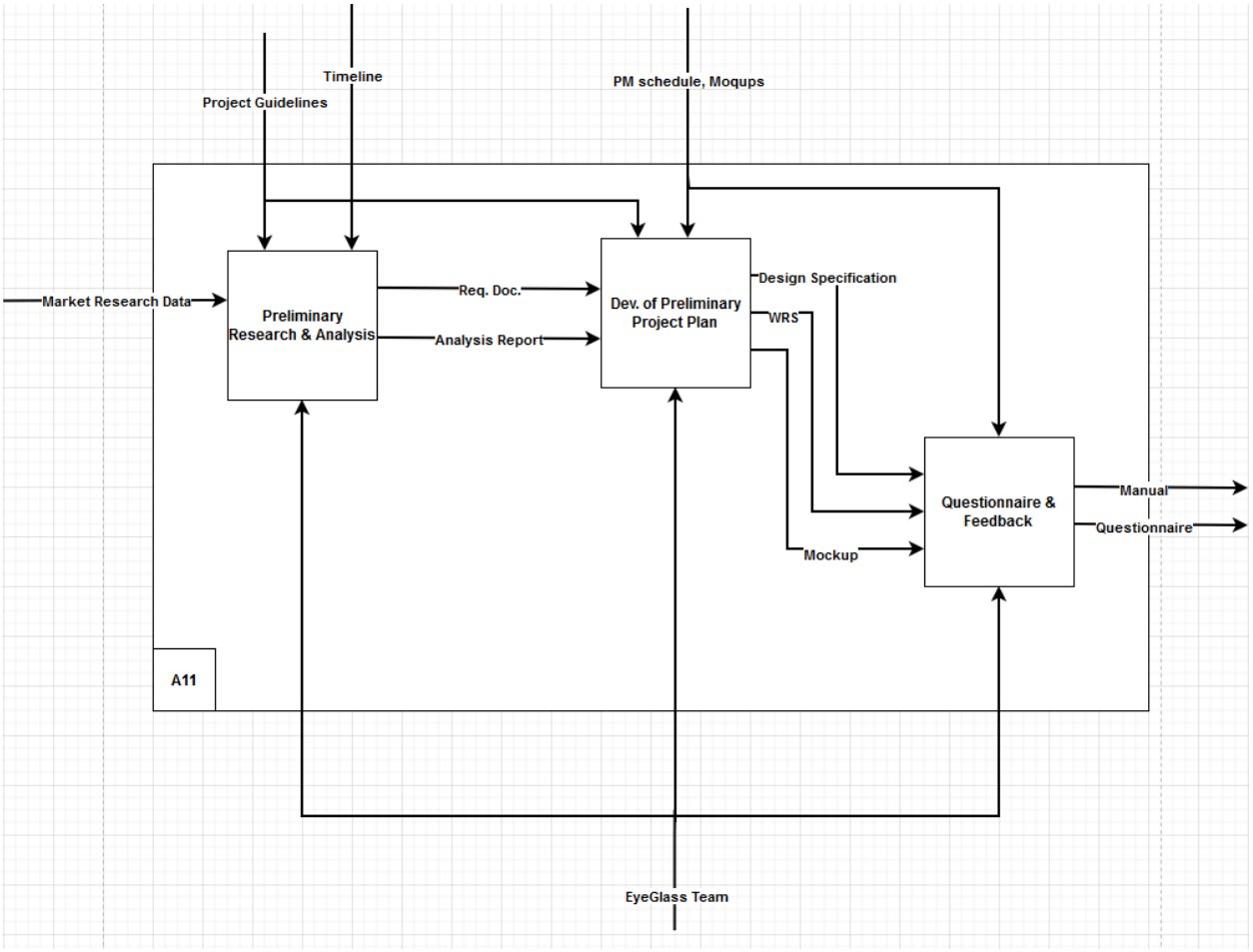
There are three main diagram types completed throughout the product specification process. The first is Integrated Definition for Function Modeling (IDEF0) to depict the functions, activities, and relationships within a system or process. The second are Unified Modeling Language (UML) Sequence and Class diagrams to illustrate the interactions and message exchanges between objects or components within the system and depict the static structure of the system. The third are System and Process Interactions Graphs (SIG and PIG) to represent interactions between different processes or components within a system.

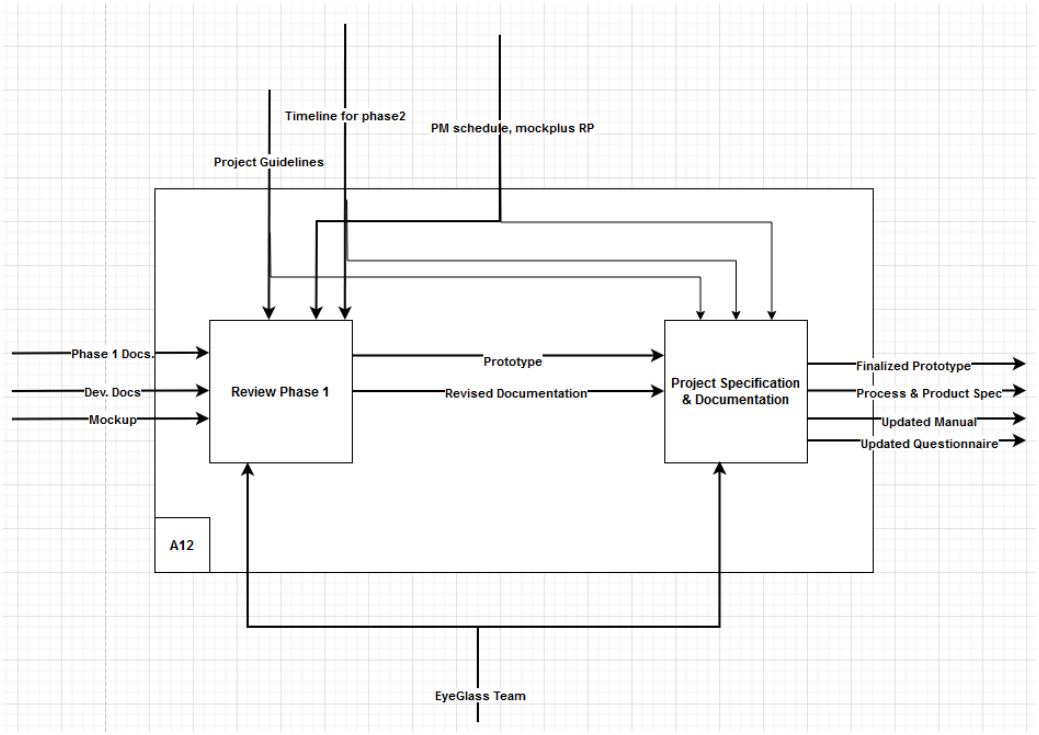
3. Process Modeling

3.1. IDEF0 Diagrams:



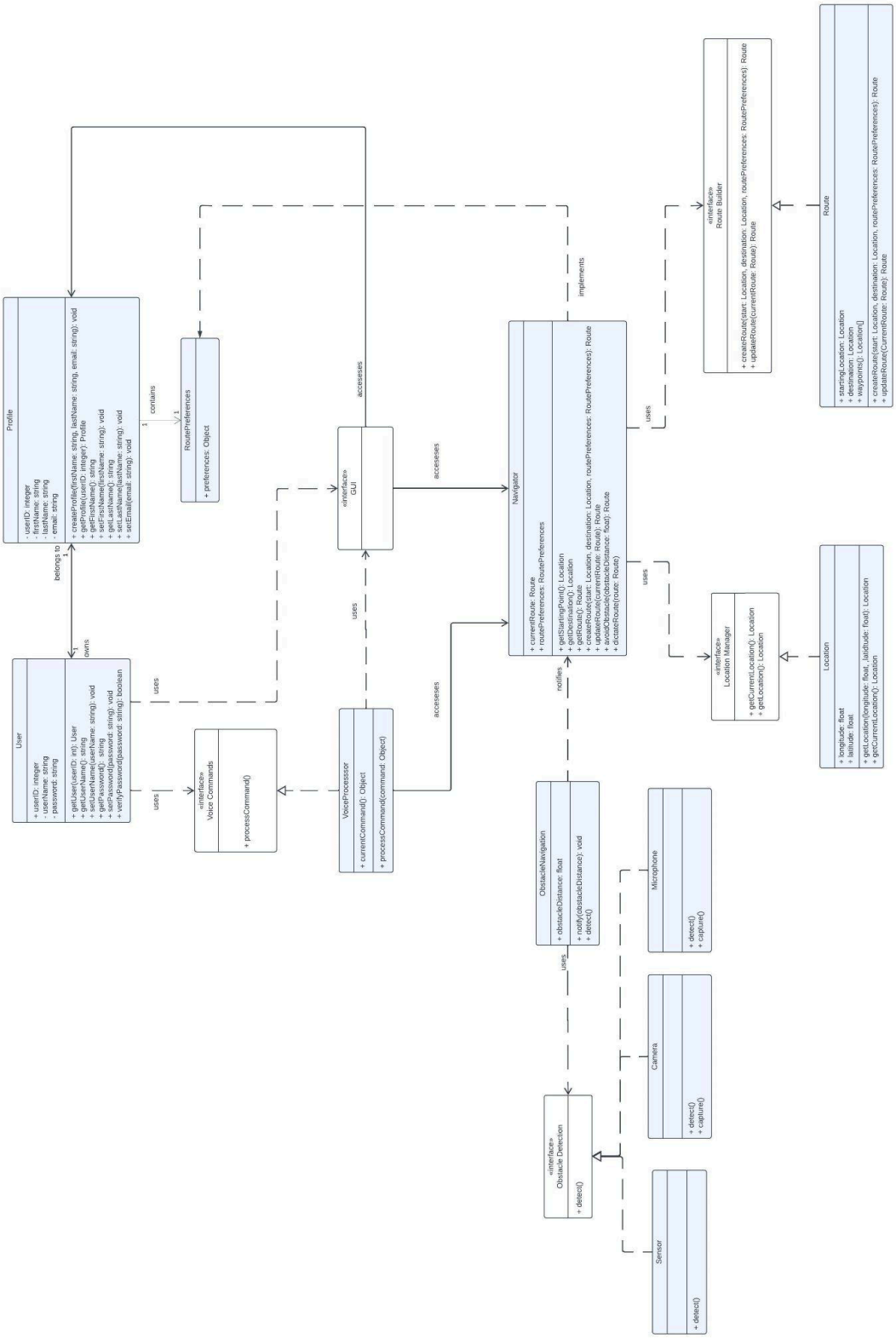



Timeline
Project Guidelines
PM schedule, Moqups
Market Research Data
Preliminary Research & Analysis
Req. Doc.
Analysis Report
Dev. of Preliminary Project Plan
Design Specification
WRS
Mockup
Questionnaire & Feedback
Manual
Questionnaire
A11
EyeGlass Team

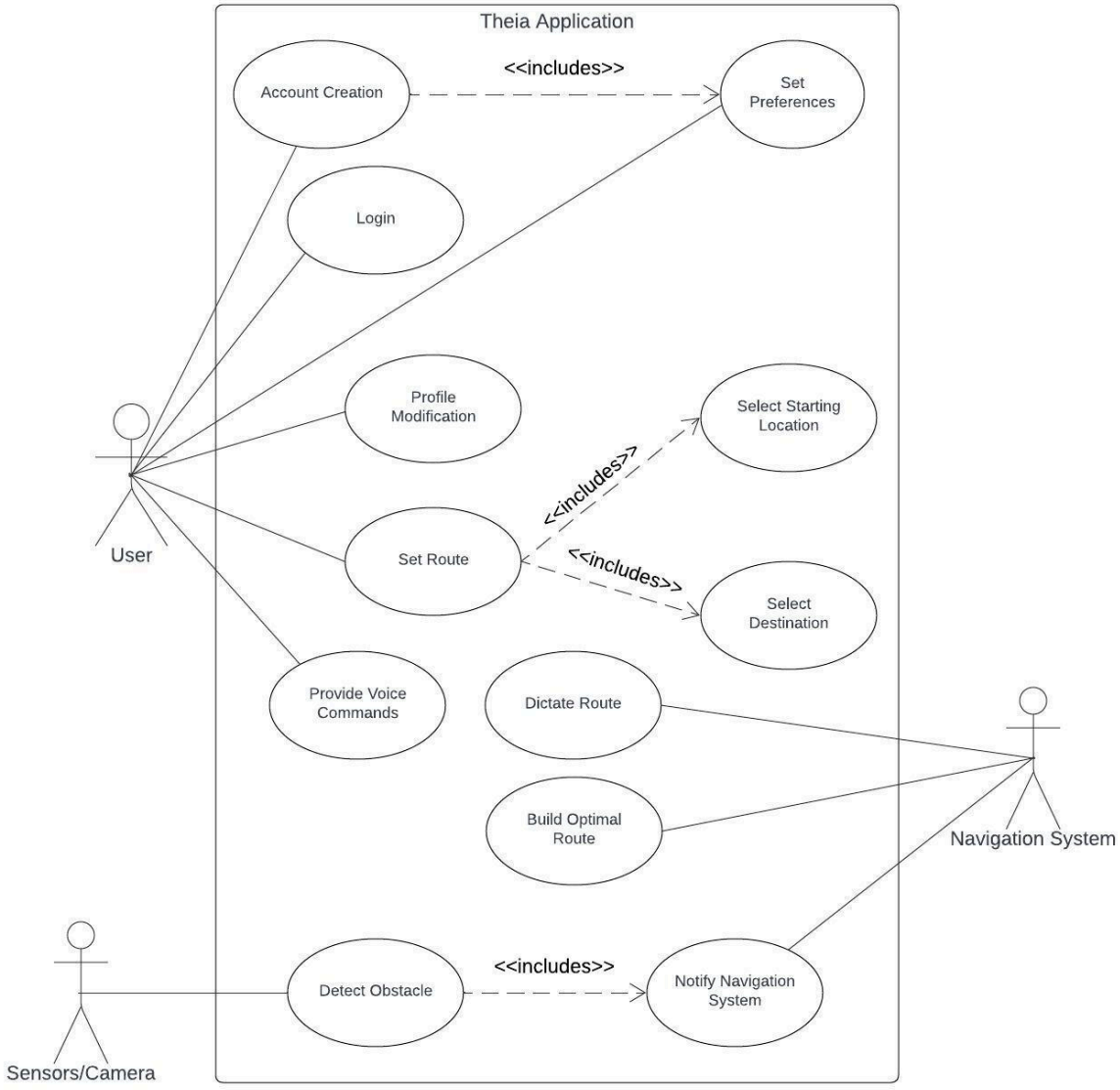

Timeline for phase2
PM schedule, mockplus RP
Project Guidelines
Phase 1 Docs.
Dev. Docs
Mockup
Review Phase 1
Prototype
Revised Documentation
Project Specification & Documentation
Finalized Prototype
Process & Product Spec
Updated Manual
Updated Questionnaire
A12
EyeGlass Team

4. Non-Functional Process Modeling

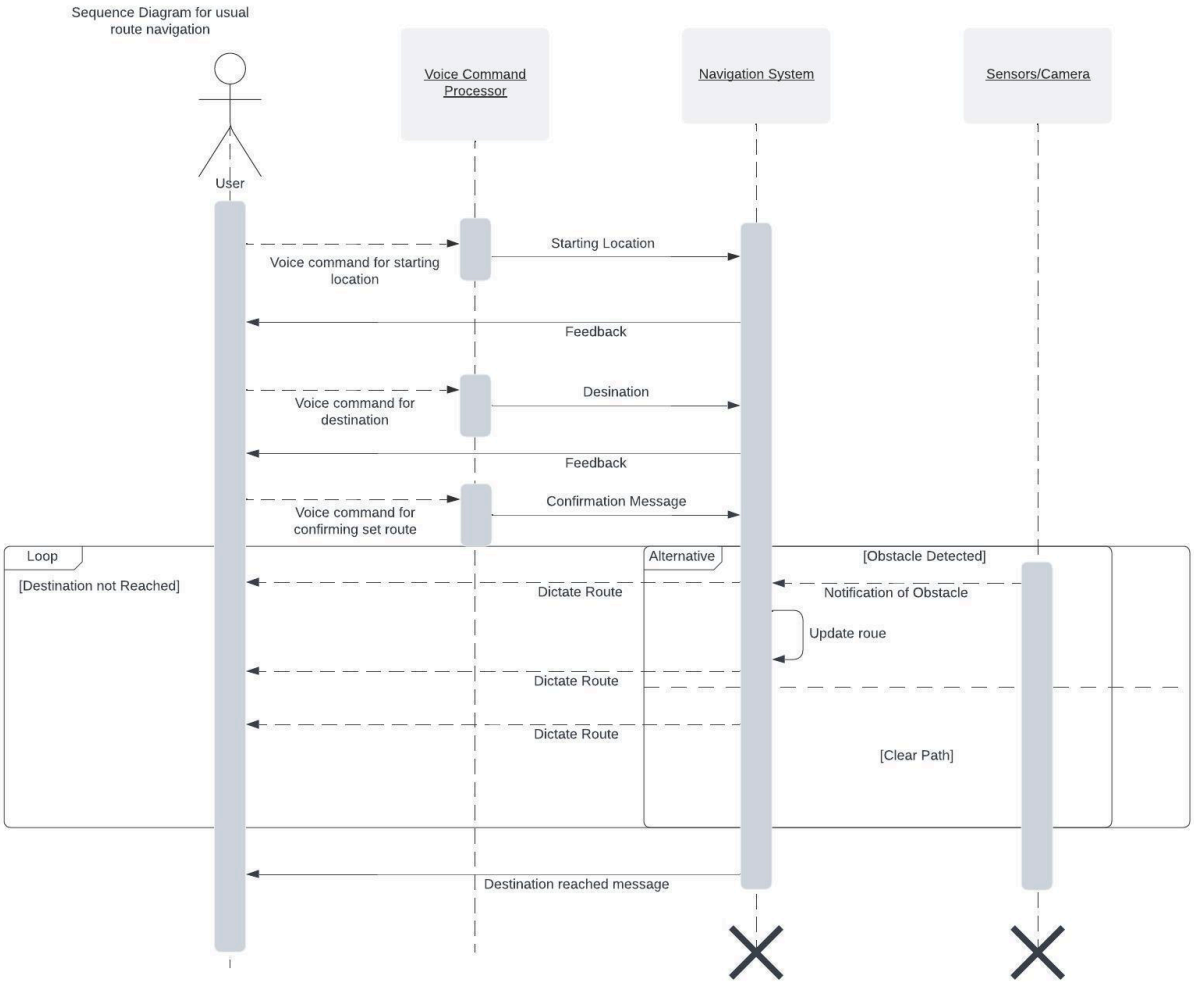
4.1. UML Class Diagram:



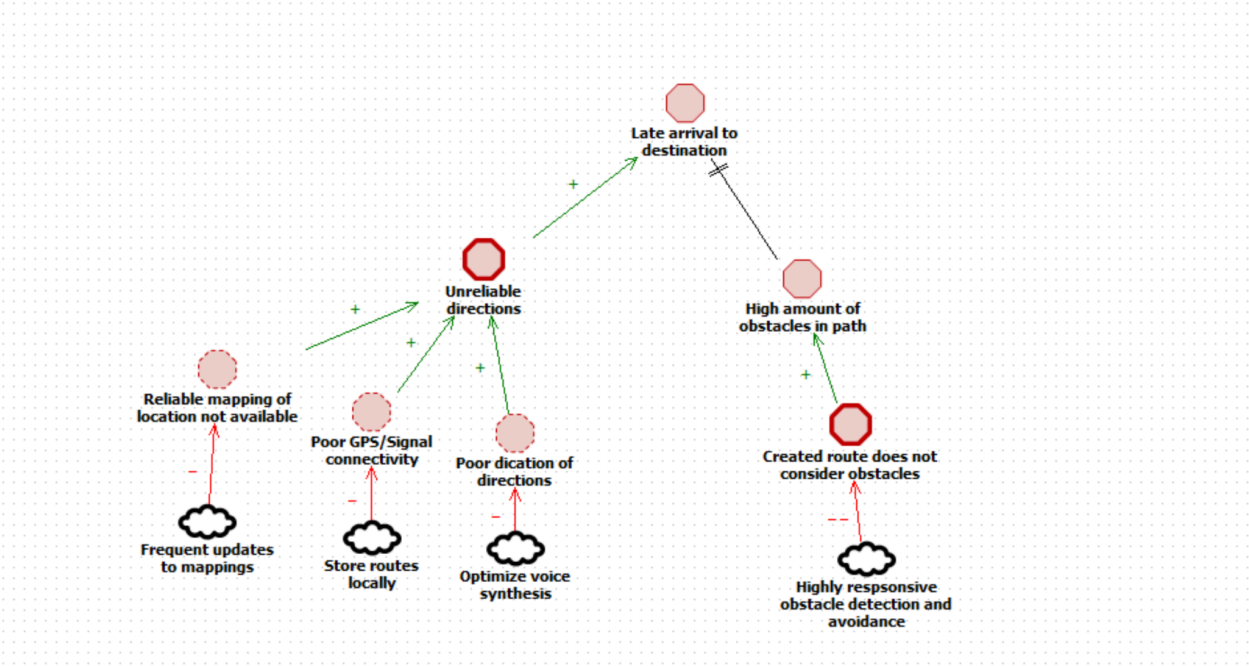
4.2. UML Use Case Diagram:



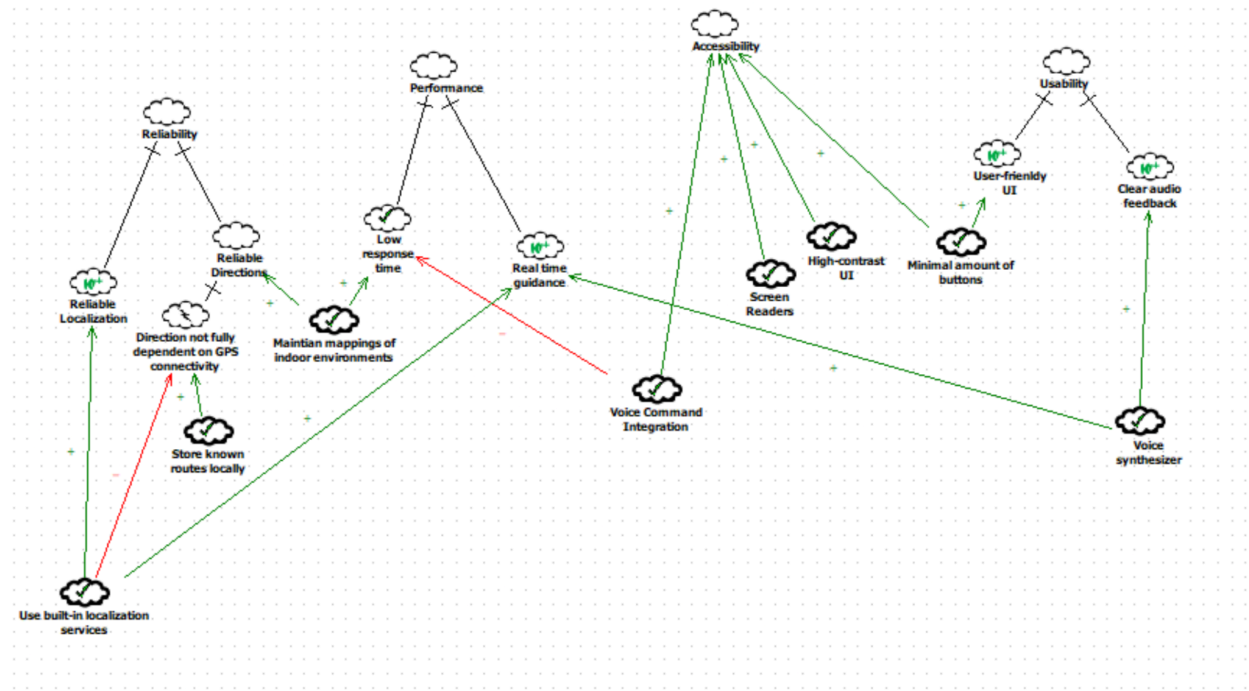
4.3. UML Sequence Diagram:



4.4. PIG:


Late arrival to destination
Unreliable directions
High amount of obstacles in path
Reliable mapping of location not available
Poor GPS/Signal connectivity
Poor dication of directions
Created route does not consider obstacles
Frequent updates to mappings
Store routes locally
Optimize voice synthesis
Highly respsonsive obstacle detection and avoidance

4.5. SIG:


Accessibility
Performance
Usability
Reliability
User-frienldy UI
Clear audio feedback
Reliable Directions
Low response time
Real time guidance
High-contrast UI
Minimal amount of buttons
Reliable Localization
Screen Readers
Direction not fully dependent on GPS connectivity
Maintian mappings of indoor environments
Voice Command Integration
Voice synthesizer
Store known routes locally
Use built-in localization services