Lab 2 – Sections 1 & 2 v2

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1 Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) is to provide a comprehensive and technical description of the Itiner-Ease software system for use by developers, system architects, and testers. This document defines the functional and non-functional requirements necessary for implementation and serves as the authoritative reference throughout the development lifecycle. It clarifies system behavior, interfaces, data structures, and assumptions to ensure consistent and accurate development across the project team.

1.2 Scope

Itiner-Ease is a travel-planning application designed to replace rigid, manually created itineraries with adaptive and personalized travel experiences. The system generates dynamic itineraries using user preferences, group profiles, AI-powered recommendations, and data from local experts. It automates itinerary creation, updates activities when conditions change, and provides personalized suggestions for events, dining, and attractions.

This SRS outlines the capabilities that the system will provide, including itinerary generation, dynamic updates, user account management, reviews, reward tracking, and location-based discovery. It also identifies features outside the system's scope, such as airline booking, hotel reservations, or travel insurance services. The focus is on the technical functions implemented in the prototype and those planned for the Real-World Product (RWP).

1.3 Definitions Acronyms, Abbreviations

AI Preferences Learned Behaviors – The ability of the app's AI to learn from a user's past behavior to provide more accurate recommendations in future interactions.

AI Recommendations – Suggestions generated by artificial intelligence to personalize itineraries based on user preferences and behaviors.

Curated Itineraries – Personalized travel plans that are specifically tailored to a user's preferences and interests.

Dynamic Itinerary Support – Real-time adjustments or updates to travel plans based on changing conditions like weather or local events.

Explorer Rewards – Incentives, such as discounts or coupons, for users based on their activity within the app (e.g., completing tasks, rating attractions).

Foot Traffic – The number of people visiting a location or business, often used to measure the success of promotions or events.

Group Profiles – A feature that allows multiple users to create and share a single itinerary for a group trip, capturing the collective preferences and needs of the group.

"Hot Spot" Advocating – Recommending popular or noteworthy locations (such as restaurants, parks, or attractions) to users, helping them explore the best local experiences.

Itinerary Creation – The process of planning and organizing travel plans, including activities, accommodations, and transportation.

Joint Itineraries – Collaborative itineraries created by multiple users to coordinate their travel plans.

Offline Access – The ability for users to access and view their travel plans without requiring an internet connection.

Targeted Promotions – Marketing efforts aimed at specific groups, such as nearby travelers, to promote local businesses or attractions.

Tourism Industry – The sector of the economy focused on services related to traveling, including accommodations, transportation, and guided tours.

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1.5 Overview

Section 2 provides the product specifications and configurations.

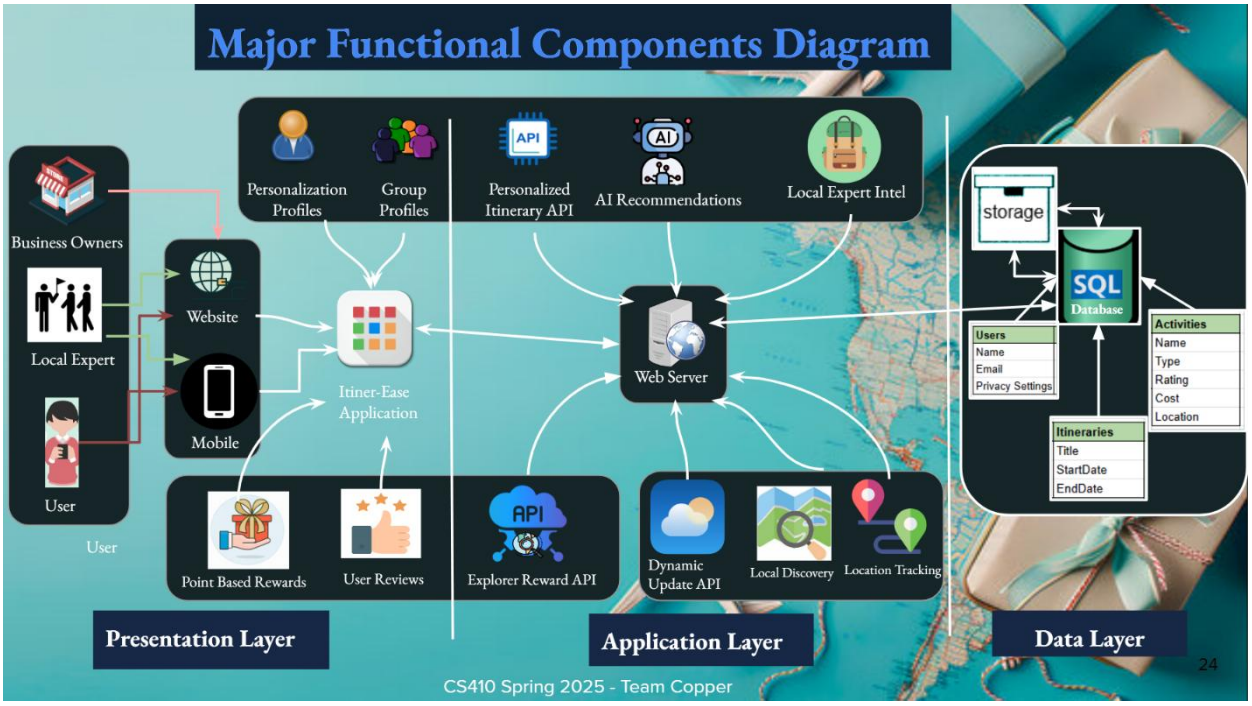
2. Overall Product Description

2.1 Product Perspective

Itiner-Ease is a multi-layered software solution consisting of a presentation layer, application layer, and data layer. The system integrates a mobile and web front-end with server-side itinerary processing, AI recommendation services, profile management, dynamic updates, and a SQL-based data storage backend.

Figure 1 illustrates the Major Functional Component Diagram (MFCD), which defines how users, external data sources, and internal modules interact through the Itiner-Ease application and web server. Subsystems such as personalization, AI recommendations, reward APIs, and location-based services communicate with the central server to support itinerary creation and updates.

Figure 1



The core functions of the Itiner-Ease system include:

- **Account Management** – Users create, authenticate, and maintain personal profiles with preferences and privacy settings.
- **Itinerary Generation** – The system produces personalized itineraries using user data, group profiles, and AI recommendations.
- **Dynamic Itinerary Updates** – Activity schedules adjust automatically based on time constraints, user progress, or real-time events.

- **Local Discovery** – Users receive suggestions for nearby attractions while traveling.
- **User Reviews and Ratings** – Users contribute feedback on activities and venues.
- **Rewards Tracking** – Users earn points from completing activities and exploring recommended venues.
- **Location Services Integration** – Provides navigation support and context-aware itinerary adjustments.

2.2 Product Functions

The core functions of the Itiner-Ease system include:

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Table 1

Feature Groups	Features	Real World Problem	Prototype
Account and Services	Login/Authentication	Fully Implemented	Fully Implemented
	Account Creation/Deletion	Fully Implemented	Fully Implemented
	Account Management	Fully Implemented	Partially Implemented
	Notifications	Fully Implemented	Eliminated
	Payment Information	Fully Implemented	Eliminated
Itinerary Creation	Personalized Profiles	Fully Implemented	Fully Implemented
	AI Recommendations	Fully Implemented	Partially Implemented
	Business/Location Reviews	Fully Implemented	Partially Implemented
	Itinerary Customization	Fully Implemented	Partially Implemented
Public/Group Profiles	Joint Itineraries	Fully Implemented	Fully Implemented
	Plan Sharing	Fully Implemented	Eliminated
	Choice Voting and Selection	Fully Implemented	Eliminated
Local Expert	Local Expert Selection	Fully Implemented	Partially Implemented
	Local Expert/User Correspondence	Fully Implemented	Eliminated
	Expert Reviews	Fully Implemented	Partially Implemented
	Character Reviews	Fully Implemented	Eliminated
Dynamic Itinerary Support	Weather Updates	Fully Implemented	Eliminated
	Congestion Tracking	Fully Implemented	Eliminated
	Dynamic "Hot Spot" Advocation	Fully Implemented	Eliminated
Explorer Rewards	Discounts and Coupons	Fully Implemented	Partially Implemented
	Review Goals	Fully Implemented	Eliminated
	Business Interface	Fully Implemented	Eliminated
Data Analytics and Reports	AI Preference Learned Behavior	Fully Implemented	Eliminated
	Profitability Metrics	Fully Implemented	Eliminated
	Income Summary	Fully Implemented	Eliminated
	Popularity Trend Visualization	Fully Implemented	Eliminated
System and Data	Algorithm Updates	Fully Implemented	Eliminated
	Health and Security Monitoring	Fully Implemented	Eliminated
	Full Database Access	Fully Implemented	Fully Implemented
	Review Moderation Tools	Fully Implemented	Eliminated

2.3 User Characteristics

Itiner-Ease supports three primary user groups:

- **Travelers (General Users):**

  Users seeking automated and personalized itinerary planning. No technical expertise required. Expected to interact with mobile or web interfaces.

- **Local Experts:**

  Users providing curated information about activities, events, and hidden-gem locations. Expected to understand location and category tagging.

- **Business Owners:**

  Users promoting venues or activities. Must manage activity descriptions, business information, and promotional content.

All users require basic computer or smartphone literacy. Developers and administrators may have additional technical capabilities for system configuration.

2.4 Constraints

The main technical constraints comes down to the team's limited experience with some of the more modern technology being Machine Learning(ML) and Artificial Intelligence(AI). Some of the API's like the AI can be potentially costly in the long term and general API integration can be limiting.

The project time scope is to be completed within the semester, while other projects/responsibilities/jobs/etc. may be determining factors on much overall work can be done/completed within the roughly three month time span.

2.5 Assumptions and Dependencies

It will be assumed that users having almost any device that can support internet and a web browser and has a viable internet connection should be able to access and use the website/app accordingly.

The main dependency will rely on how well the AI generation for the itinerary itself is and proper data storage in the data base and the proper data being provided and suggested.