Lab 2 – Itiner-Ease

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1 Introduction

1.1 Purpose

The purpose of this Software Requirements Specification (SRS) document is to define the functional and non-functional requirements of Itiner-Ease, a web-based travel planning platform. This document is intended for developers, designers, testers, and stakeholders involved in the design and implementation of the system. It describes the system's features, performance, interfaces, and constraints to ensure all parties share a mutual understanding of the system's functionality.

1.2 1.2 Scope

Itiner-Ease is a web-based travel planning platform designed to streamline and personalize itinerary creation for individual travelers and groups. The platform generates tailored itineraries based on user preferences such as food, activity type, and travel style. For groups, it offers tools to create joint itineraries that reflect the collective interests of all members. Itiner-Ease also integrates insights from local experts to enhance itinerary credibility and authenticity, and connects travelers with local businesses through rewards and promotions.

The system will:

- Allow users to create accounts and set travel preferences.
- Generate personalized and group itineraries using AI.
- Enable collaboration between users for trip planning.
- Incorporate AI recommendations based on user preferences.
- Support local expert and business integration for content and rewards.

The system will not:

- Book travel accommodations or tickets directly.

- Provide real-time travel updates such as weather alerts or transit delays (in prototype version).
- Include payment processing for travel or lodging.

1.3 Definitions, Acronyms, and 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.

SRS: Software Requirements Specification

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

The reminder of this documents is structured as follows:

- Section 2: Overall Description provides an overview of the product, its functions, users, constraints, and dependencies.

2 Overall Description

2.1 Product Perspective

Itiner-Ease is a web-based application designed to simplify personalized itinerary creation for individuals and groups. The system is positioned as a central planning hub that integrates preference-based customization with AI-driven recommendations and insight from local experts. The system shown in Figure 1 is built with a modular architecture consisting of three primary layers:

- Presentation Layer: Developed with HTML, CSS, JavaScript and Laravel Filament, this layer provides users with a responsive interface. It supports core functions such as user registration, login, profile management, and itinerary viewing/editing. Local experts and business users also interact with this layer through their dashboard.
- Application Layer: Developed using the PHP Laravel framework, this layer handles authentication, session management, itinerary generation, and routing logic. It acts as the bridge between the interface and back-end systems, coordinating how user data and preferences translate into itinerary outputs.
- Data Layer: Implemented using MySQL, this layer stores structured information about user accounts, preferences, itineraries, reviews, and business offerings. The current prototype has shifted from SQLite to MySQL with a database pre-populated with sample data to simulate functionality.

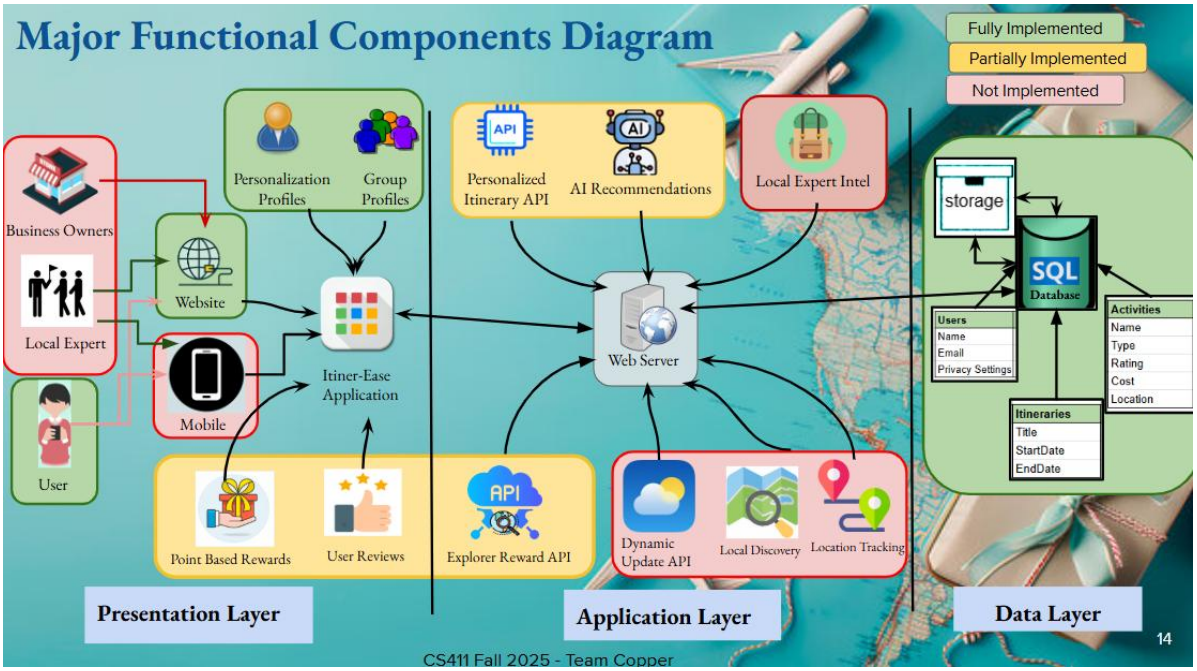

Figure 1: Prototype Major Functional Components Diagram

2.2 Product Functions

Itiner-Ease provides users with a personalized and collaborative travel planning platform that combines AI recommendations, user-define preferences, and insights from local experts. The following functions define the behavior of the final system and indicate current implementation reflected on the prototype. Table 1 provides a feature-by-feature comparison between the real-world product and the prototype implementation.

1. Account and Services
    - Allows users to create, log in to, and manage personal accounts.
    - Enables users to define and update travel preferences such as interests, preferred activities, and budget.
    - Prototype Status: Fully implemented with basic authentication and preference storage. Notifications and payment functionalities were excluded from the

prototype since they require payment integration, which would introduce additional security and compliance requirements not feasible within prototype phase.

2. Itinerary Creation
    - Generates itineraries based on user-input preferences, location input and review data using an AI-driven recommendation model.
    - Provides tools for editing, saving, and re-generating itineraries to match user needs.
    - Displays organized schedules with dining options and local attractions.
    - Prototype Status: Partially implemented; itinerary generation is prompt-based and relies on data gathered through web scraping.
3. Public/Group Profiles
    - Allows multiple users to jointly create and edit shared itineraries for group trips.
    - Includes voting features to support collective decision-making on trip activities.
    - Prototype Status: Partially implemented; users can share itineraries, but the voting feature is not functional.
4. Local Expert
    - Enables verified local experts to contribute insights and recommendations.
    - Provides users with the ability to select local experts whose advice aligns with their travel goals.
    - Displays expert reviews of local business or attractions.

- Prototype Status: Partially implemented; expert profiles are represented through preloaded sample data.

5. Dynamic Itinerary Support
    - Provides real-time updates to itineraries based on changes in weather, location, or event availability.
    - Allows users to adjust schedules dynamically through AI-suggested alternatives.
    - Tracks foot traffic metrics to inform itinerary adjustments and recommendations.
    - Prototype Status: Eliminated for prototype due to lack of third-party API integration and time constraints.
6. Explorer Rewards
    - Connects local business to users through targeted promotions.
    - Allows business to offer discounts or coupons.
    - Prototype Status: Partially implemented; discount features are static and manually configured.
7. Data Analytics and Reports
    - Aggregates system data for internal reporting and trend analysis.
    - Supports administrative dashboards for system monitoring and performance tracking.
    - Prototype Status: Database access is fully implemented; however, reporting and analytic features were eliminated due to limited data collection requirements.

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

Table 1: Real-World-Product vs. Prototype Features Table

2.3 User Characteristics

Itiner-Ease is designed for a diverse set of users, each with different levels of technical expertise, goals, and interactions with the platform. The primary users are travelers. These individuals or groups rely on the platform to generate, customize, and manage their travel itineraries. Travelers are expected to be familiar with general web applications as they interact with the platform primarily through the user interface to set personal preferences, view itineraries, edit plans, and collaborate for group trips.

Local experts are individuals with knowledge of specific locations. These users contribute insights to enhance authenticity and personalization of itineraries. Business partners are users who want to promote their services through targeted recommendations and reward programs. They have access to manage business profiles and publish promotions and discounts.

2.4 Constraints

The development and deployment of Itiner-Ease are subject to the following technical and environmental constraints:

- Technology limitations for AI functionality due to limited team experience with machine learning frameworks.
- Limited API integration for real-time data from third-party services such as Google Maps or local weather APIs not integrated in the prototype.
- Time and resource constraints for certain features such as real-time itinerary updates and business dashboard functionality have been eliminated for the prototype due to limited development time.

2.5 Assumptions and Dependencies

The following assumptions and system dependencies influence the development and expected functionality of Itiner-Ease:

- Assumptions: Users will have access to a stable internet connection when interacting with the platform.
- External Dependencies: The AI recommendation functionality depends on user preference data and review content stored in the system's database. The accuracy and usefulness of itinerary suggestions are limited by the quality and quantity of available input data.