

**Lab 2 – WiseTraveler Product Specification**

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## **1 Introduction**

### **1.1 Purpose**

This Software Requirements Specification (SRS) document provides a structured and detailed technical reference for developing and implementing the WiseTraveler platform. It specifies the functional and non-functional requirements for system development, ensuring consistency and clarity in design, implementation, and maintenance.

WiseTraveler is intended to be an AI-powered travel assistant that consolidates essential travel information into a single, user-friendly platform. It aims to enhance travel planning efficiency, improve safety awareness, and promote cultural understanding by providing real-time health and safety alerts, legal guidelines, AI-driven personalized recommendations, and interactive maps. This document serves as a blueprint for software developers, project managers, and system architects, guiding them through the system's architecture, external dependencies, performance expectations, and constraints.

Additionally, the SRS ensures the system's development adheres to industry standards, streamlining integration with third-party services, enforcing security policies, and maintaining scalability. It helps mitigate potential challenges by providing a well-defined framework for software engineers to follow, ensuring that WiseTraveler remains a robust, secure, and user-friendly application for travelers worldwide.

## 1.2 Scope

WiseTraveler is an AI-powered travel assistant that centralizes essential travel information, providing real-time safety alerts, cultural insights, legal guidelines, and AI-driven recommendations. The system generates personalized travel suggestions, alerts users about health and safety risks, and offers legal and cultural guidance tailored to their destinations. It features an interactive map for discovering attractions, itinerary planning with optimized routes, and user-generated travel reviews.

While WiseTraveler enhances trip planning, it does not facilitate direct bookings for flights or accommodations, track currency exchange rates, or offer emergency response services such as direct SOS functionality. The platform is designed as an informational and planning tool rather than a transactional or emergency service.

### 1.3 Definitions, Acronyms, and Abbreviations

**AI:** artificial intelligence

**API:** Application Programming Interface, a set of functions that allows applications to interact with external software components.

**Backend:** The server-side logic and database management of an application that handles requests, processes data, and communicates with the frontend.

**Database:** A structured collection of data that the system retrieves, updates, and manages for storing user information, travel data, and recommendations.

**Frontend:** The user interface (UI) and client-side functionality of an application that users interact with.

**IDE:** Integrated Development Environment, a software suite (e.g., VSCode) that provides tools for writing, testing, and debugging code.

**Jest:** A JavaScript testing framework used to ensure code correctness and reliability.

**JSDoc:** A documentation tool for JavaScript code that generates structured API documentation.

**MFCD:** Major Functional Component Diagram.

**Node.js:** A runtime environment that allows JavaScript to be executed on the server-side.

**PII:** Personally Identifiable Information, any information that can identify a user (e.g., name, email, passport details).

**Prettier:** A code formatter that ensures consistent styling across a codebase.

**React:** A JavaScript library for building user interfaces, commonly used for frontend development.

**REST API:** Representational State Transfer Application Programming Interface, a set of web services allowing communication between systems using standard HTTP methods.

**Supabase:** A cloud-based backend-as-a-service (BaaS) platform built on PostgreSQL, used for WiseTraveler's database.

**WHO:** World Health Organization, a global authority that provides health and safety updates.

**ESLint:** A tool that analyzes JavaScript code for potential errors and enforces coding standards.

**GitHub Actions & Workflows:** A CI/CD automation tool that enables continuous integration and deployment in a software development lifecycle.

**HTML:** Hypertext Markup Language, used for structuring web pages.

**CSS:** Cascading Style Sheets, used for styling web pages.

**JavaScript:** A programming language used for adding interactivity to web applications.

**Express.js:** A web framework for Node.js that simplifies API and server development.

**Version Control:** A system (e.g., GitHub) for tracking and managing changes to source code.

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## **1.5 Overview**

The remainder of this document is organized into multiple sections. Section 2 provides a high-level system overview, including key functionalities, user characteristics, constraints, and dependencies. Section 3 details specific system functionalities, external interfaces, and performance constraints.

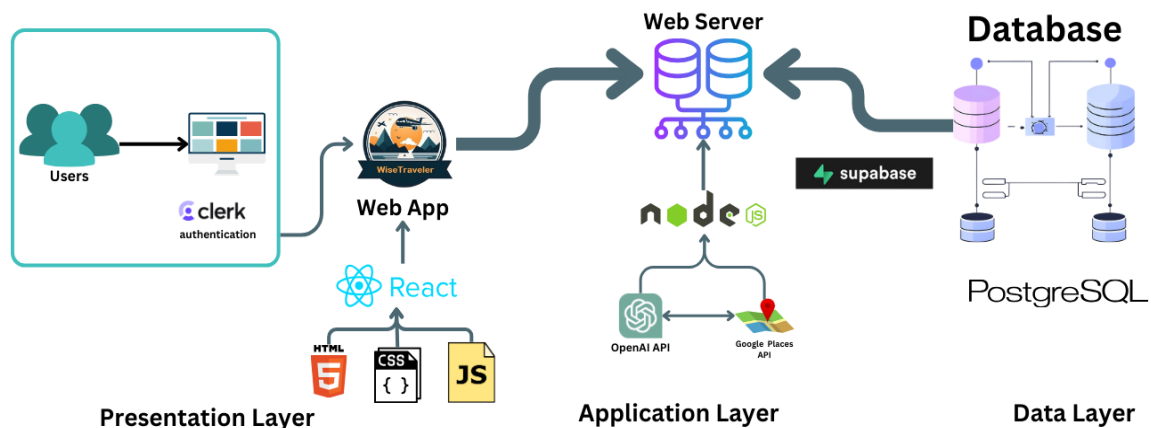
## 2 Overall Description

### 2.1 Product Perspective

WiseTraveler is a cloud-based software solution that integrates multiple APIs and AI driven analytics. The frontend is developed using HTML, CSS, JavaScript, and React to provide an interactive user interface. The backend is built with Node.js and Express.js to handle API interactions and data processing. The database is hosted on PostgreSQL through Supabase, ensuring scalable and secure data management. The system integrates with multiple APIs, including the Google Places API for retrieving location-based points of interest, the OpenAI API for generating AI-driven travel recommendations, the Google Translate API for real-time language translation, and the WHO API for providing health-related alerts. The Major Functional Component Diagram (MFCD) illustrates the interaction between these components.

**Figure 1**

*WiseTraveler Major Functional Component Diagram*



## 2.2 Product Functions

WiseTraveler provides a range of functionalities to improve the travel experience. The AI-powered recommendation system generates personalized suggestions for attractions and accommodations. The system offers real-time safety alerts, notifying users about crime reports, weather conditions, and health risks in their travel destinations. Legal and cultural insights are included to provide essential information about local laws and customs. Navigation assistance is provided through interactive maps that display optimized travel routes. Users can contribute to the platform by submitting travel reviews and sharing their experiences and recommendations. Language translation tools are integrated to facilitate communication in foreign countries.

The current implementation status varies across features. AI recommendations, safety alerts, and interactive maps are fully implemented. User-generated reviews, legal insights, and translation tools are partially implemented. Direct emergency response features are not included in the current version of the system.

**Table 1**

*WiseTraveler Features Table*

	<b>WiseTraveler</b>	<b>Prototype</b>	<b>RWP</b>
<b>User Interface</b>	<b>AI assistance for planning and research</b>	Fully functional	Fully Functional
	<b>Safety Concerns</b> (dangerous animal sightings, criminal activity, etc.)	Partially functional	Fully Functional
	<b>Health Risks</b>	Partially functional	Fully Functional

	<b>Cultural Discovery</b>	Partially functional	Fully Functional
	<b>Local Customs</b>	Partially functional	Fully Functional
	<b>User Reviews</b>	Partially functional	Fully Functional
	<b>Centralized Information</b>	Fully functional	Fully Functional
	<b>Language translation tools</b>	Not functional	Fully Functional
	<b>Personalized Travel Recommendations</b>	Fully Functional	Fully Functional
	<b>Calendar</b>	Partially Functional	Fully Functional
<b>Testing</b>	<b>Unit Testing</b>	Fully Functional	Fully Functional
	<b>System Testing</b>	Fully Functional	Fully Functional
	<b>Integration Testing</b>	Fully Functional	Fully Functional
<b>Account Manager</b>	<b>Web Application</b>	Partially Functional	Fully Functional
	<b>Account Creation</b>	Fully Functional	Fully Functional
	<b>Login</b>	Fully Functional	Fully Functional

### **2.3 User Characteristics**

WiseTraveler is designed for multiple user types. Frequent travelers benefit from real-time updates and AI-driven recommendations to enhance their travel experience. First-time travelers gain access to essential safety and legal insights to navigate unfamiliar destinations. Business travelers receive timely notifications about travel safety and logistical concerns.

WiseTraveler users have different expertise levels. Basic users can access AI-generated recommendations and interactive maps. Intermediate users can customize travel itineraries and use translation tools. Advanced users can engage with AI-customized content and contribute user-generated reviews.

### **2.4 Constraints**

Several constraints exist within WiseTraveler's design. The system requires an internet connection to function correctly, as real-time updates are essential for its features. The system must also maintain compatibility with web browsers and mobile devices. WiseTraveler depends on external APIs for accuracy of travel alerts and recommendations, including Google Places, WHO, and OpenAI, which must remain operational for the system to work. Compliance with data privacy regulations, including the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), must be maintained. Users must create an account for personalized features (e.g., saving itineraries). Rate limiting policies may affect API performance.

## 2.5 Assumptions and Dependencies

WiseTraveler assumes users have a stable internet connection for real-time updates and AI-generated recommendations. It depends on third-party APIs such as Google Places, OpenAI, WHO, and Google Translate, which must remain operational for proper functionality. User-generated content is expected to be moderated for quality and accuracy. The system relies on scalable cloud services, including AWS for backend hosting and Supabase for database management. Regular updates, security patches, and compliance with data protection laws, such as GDPR and CCPA, are necessary to maintain system integrity. Users must create an account to access personalized features, and the platform is optimized for modern web browsers and mobile devices. Information retrieved from external sources, including government advisories, is assumed to be accurate.

The system requires integration with several key technologies. The frontend is built using React, HTML, CSS, and JavaScript, while the backend operates on Node.js and Express.js. GitHub provides version control, with GitHub Actions & Workflows facilitating continuous integration and deployment. Testing and code quality are maintained using Jest, ESLint, and Prettier. Security is ensured through HTTPS encryption and role-based access control. Content moderation is supported by internal tools or third-party filtering mechanisms. WiseTraveler must remain compliant with relevant legal frameworks, ensuring privacy and security. Infrastructure stability and scalability require continuous monitoring and performance optimization.