Software Requirements Specification (SRS)

AI-Assisted Multimodal Travel Planner Website

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1. Introduction

1.1 Purpose

This document specifies the functional and non-functional requirements of the **AI-Assisted Multimodal Travel Planner Website**. It is intended for project guides, developers, testers, and evaluators to understand the system's scope, features, and constraints.

1.2 Scope

The system provides an intelligent platform to plan end-to-end travel journeys using multiple transportation modes such as flights, trains, buses, and road transport. It integrates real-time APIs, AI-based recommendations, and local event data to generate optimized, personalized travel itineraries.

1.3 Definitions, Acronyms, and Abbreviations

- **API** – Application Programming Interface
- **AI** – Artificial Intelligence
- **ML** – Machine Learning
- **UI** – User Interface
- **GPS** – Global Positioning System

1.4 Overview

This SRS describes system functionality, user interactions, constraints, assumptions, and quality attributes of the proposed travel planner.

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2. Overall Description

2.1 Product Perspective

The system is a web-based application that acts as a smart travel assistant. It integrates third-party travel, mapping, and event APIs and uses AI algorithms to provide personalized recommendations.

2.2 Product Functions

- User registration and login
- Multimodal route planning
- Cost, distance, and duration estimation
- Personalized travel recommendations
- Event-based itinerary planning
- Interactive map visualization
- Travel history and preference management

2.3 User Classes and Characteristics

User Type	Description
General User	Plans trips, views routes, events, and recommendations
Registered User	Saves preferences, budgets, and travel history

Admin	Manages system data and monitors performance

2.4 Operating Environment

- Frontend: Web browser (Chrome, Firefox, Edge)
- Backend: Web server with AI/ML support
- Database: User profiles, travel history
- APIs: Maps, transport, event data services

2.5 Constraints

- Internet connectivity required
- Dependency on third-party APIs
- Real-time data accuracy depends on API providers

2.6 Assumptions and Dependencies

- Users provide valid travel inputs
- External APIs remain available
- Sufficient dataset exists for ML personalization

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3. Functional Requirements

3.1 User Authentication

- The system shall allow users to register using email and password.
- The system shall authenticate users securely during login.

3.2 Travel Planning

- The system shall accept source, destination, and travel dates.
- The system shall generate routes using multiple transport modes.
- The system shall display distance, duration, and estimated cost.

3.3 Multimodal Integration

- The system shall combine flights, trains, buses, and road transport.
- The system shall recommend optimal mode combinations.

3.4 Personalized Recommendations

- The system shall analyze user preferences and past travel history.
- The system shall suggest preferred routes and transport modes.
- The system shall recommend nearby attractions.

3.5 Event-Based Itinerary Planning

- The system shall display local events at the destination.
- The system shall align travel schedules with festivals and activities.

3.6 Map Visualization

- The system shall provide interactive maps.
- The system shall display routes and nearby points of interest.

3.7 Travel History Management

- The system shall store user travel history.

- The system shall allow users to review past trips.

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4. Non-Functional Requirements

4.1 Performance Requirements

- The system shall generate routes within acceptable response time.
- The system shall support multiple concurrent users.

4.2 Security Requirements

- User data shall be securely stored.
- Authentication shall prevent unauthorized access.

4.3 Usability Requirements

- The interface shall be simple and user-friendly.
- The system shall provide clear travel summaries.

4.4 Reliability Requirements

- The system shall handle API failures gracefully.
- The system shall ensure data consistency.

4.5 Scalability Requirements

- The system shall support increasing users and data volume.
- New transport modes and APIs shall be integrable.

5. System Architecture (High-Level)

- **Presentation Layer:** Web UI
- **Application Layer:** AI logic, recommendation engine
- **Data Layer:** User profiles, travel history
- **Integration Layer:** Maps, transport, and event APIs

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6. Future Enhancements

- Mobile application support
- Voice-based travel planning
- Real-time traffic and weather integration
- Group travel optimization

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7. Conclusion

The AI-Assisted Multimodal Travel Planner Website provides a smart, personalized, and event-aware approach to travel planning. The system enhances decision-making accuracy, user convenience, and overall travel experience through intelligent data integration and AI-driven recommendations.