Detailed Software Requirements Specification for Travel Agent Management System

EEY4189-Travel Agent Management System-DSRS-
Version -0.1/0.2

Table of Contents

Document Revisions

Date	Version	Description	Author
13 – 09 - 2025	0.1/0.2	Product Owner	W.A.D.C. Amashi
13 – 09 - 2025	0.1/0.2	Scrum Master	G.R.N. Gamage
13 – 09 - 2025	0.1/0.2	Developer Team	T.M.T.N. Kumari
13 – 09 - 2025	0.1/0.2	Developer Team	M.N.L.Perera
13 – 09 - 2025	0.1/0.2	Developer Team	S.N.Chathurya

Document Approval

Quality Software Corporation and **Spiro NZ (Pvt) Ltd** have reviewed this document and hereby agree that the contents herein are accurate. Any changes to this document must be communicated in writing and signed off by both parties.

Signature	Signature
Date: 2025 – 08 - 27	Date: 2025 – 08 - 27
Name: Namalie Witharana Pathirana	Name: Group IR_17
Customer: **Spiro NZ (Pvt) Ltd**	Open University Sri Lanka

Introduction

Purpose

The purpose of this document is to define the detailed software requirements for the proposed **Tourism Application** being developed by Group IR_1 as part of the EEY4189 Software Design in Group module at The Open University of Sri Lanka.

The application aims to address the challenges faced by tourists in planning and managing trips due to the absence of a centralized, user-friendly tourism platform. By providing an all-in-one solution that integrates destination discovery, personalized itinerary generation, accommodation and transport booking, and real-time updates, this system will improve the travel experience for both local and international tourists.

This document will serve as a formal agreement between the development team and stakeholders, ensuring clarity on system functionality, constraints, and performance requirements before moving into the design and implementation phases. It will also act as a reference for developers, testers, and project managers throughout the software lifecycle.

Summary

Tourism plays a vital role in economic growth and cultural exchange in Sri Lanka However, the current digital ecosystem for travel planning is fragmented and inefficient. Tourists must rely on multiple disconnected platforms for hotel booking, transport, navigation, and information about attractions. This leads to confusion, inconvenience, and missed opportunities to explore lesser-known destinations and connect with local businesses.

The proposed **Tourism Application** provides an integrated, user-friendly platform to overcome these challenges. It will allow users to:

- Explore categorized tourist attractions such as historical sites, beaches, wildlife, and cultural landmarks.
- Generate personalized itineraries based on user preferences such as budget, travel style, and trip duration.
- Access real-time updates including weather, traffic, and emergency alerts.
- Book transport and accommodation directly through the platform.
- Connect with local services such as guides, restaurants, and cultural events.

By consolidating these features into a single application, the system aims to enhance travel experience, promote local businesses, and strengthen Sri Lanka’s tourism industry in the digital age.

Project Overview

The proposed system is a **comprehensive tourism application** designed to serve as an all-in-one travel companion for both local and international tourists visiting Sri Lanka. Unlike existing fragmented solutions, this platform integrates all essential aspects of travel planning into a single, user-friendly interface.

The application will allow users to explore categorized tourist attractions such as historical sites, beaches, wildlife parks, and cultural landmarks. It will also generate personalized itineraries based on user preferences (budget, duration, travel style), provide real-time updates (weather, traffic, alerts), and support direct bookings for accommodation and transportation.

In addition to supporting travelers, the system will promote local businesses by integrating restaurants, guides, cultural activities, and service providers into the platform. This creates a more connected tourism ecosystem, benefiting both users and local stakeholders.

Key Features include

- Personalized trip planning with optimized itineraries.
- Interactive map navigation with nearby attraction suggestions.
- Real-time updates on weather, traffic, and emergencies.
- Integrated booking for hotels and transport.
- Access to local services such as guides, restaurants, and cultural events.
- Trip sharing and social media integration.
- Built-in translation support for foreign tourists.

The project is designed to run as a responsive web application using modern technologies including **Node.js, Express.js, Firebase/MySQL, Google Maps API, and external travel APIs**. The system will follow a modular architecture to ensure scalability, maintainability, and future enhancements such as augmented reality–based navigation and AI-driven recommendations.

Scope

This document defines the software requirements for the proposed **Tourism Application**, which aims to centralize and streamline the trip-planning experience for tourists visiting Sri Lanka.

The system will provide an integrated platform where users can:

- Discover and explore categorized tourist attractions.
- Generate and manage personalized itineraries.

- Access real-time updates such as weather, traffic, and alerts.
- Book accommodation and transport directly.
- Connect with local services such as restaurants, guides, and cultural events.
- Share trips and experiences via integrated social media features.

The scope of this document is to establish the functional and non-functional requirements that will guide the design, development, and testing of the system. It will serve as a baseline agreement between the project team and stakeholders.

Inclusions

- Requirement specifications for trip planning, booking, and local service integration.
- User roles and privileges (tourists, administrators).
- Interfaces with external systems such as Google Maps, hotel booking platforms, and translation services.
- Quality and performance requirements for scalability and usability.

Exclusions

- Offline access with full functionality (the system requires an internet connection).
- Advanced augmented reality (AR) navigation features, which are considered future enhancements.
- Integration with every global travel API at initial launch (only selected APIs will be supported).

By clearly defining these boundaries, the project ensures that development efforts remain focused on delivering a reliable and scalable solution within the allocated timeline.

Assumptions

During the requirements gathering and specification phase, the following assumptions have been made regarding the development and use of the proposed **Tourism Application**:

1. **Internet Connectivity** – The application will be used with stable internet access. Full offline functionality is not within the project scope.
2. **Device Compatibility** – Users will primarily access the system through modern web browsers on desktops, laptops, and mobile devices.
3. **External APIs** – Third-party APIs such as Google Maps, travel booking services, and translation services will remain available, reliable, and provide the necessary data for integration.

4. **User Base** – The initial target audience includes both local and international tourists, with a moderate number of concurrent users
5. **Data Accuracy** – Information regarding attractions, accommodations, and local services will be sourced from verified providers and maintained by administrators.
6. **Security** – Authentication and authorization will be handled through secure methods. Users are expected to follow secure practices such as protecting login credentials.
7. **Project Resources** – The development team will have access to required tools (Figma, VS Code, GitHub), technologies (Node.js, Firebase/MySQL), and environments throughout the development lifecycle.
8. **Timeline** – The project will be completed within the proposed 4-month schedule, assuming no major delays or changes in requirements.

Definitions, Acronyms and Terminology

To ensure clarity and consistency, the following definitions and acronyms are used throughout this document:

- **API (Application Programming Interface):** A set of rules and protocols that allows different software systems to communicate with each other. The proposed application will use APIs for maps, travel bookings, and translation.
- **Firebase:** A cloud-based platform by Google providing backend services such as authentication, real-time database, and hosting.
- **Node.js:** A JavaScript runtime environment used for building server-side applications.
- **Express.js:** A lightweight web framework for Node.js, used to build the backend of the application.
- **SLTDA (Sri Lanka Tourism Development Authority):** The government body responsible for tourism development and data in Sri Lanka.
- **Itinerary:** A planned route or schedule of a tourist's journey, generated by the system based on user preferences.
- **Frontend:** The user interface and experience (UI/UX) components of the system, built using HTML, CSS, and JavaScript.
- **Backend:** The server, database, and application logic that process data and connect to external services.
- **Real-Time Updates:** Information delivered instantly to users, such as weather conditions, traffic updates, or alerts.
- **User Roles:** Types of users interacting with the system (e.g., Tourist, Administrator).

Data Collection Techniques

Tourism Agency Requirements Questionnaire:

Travel Agency Website Requirement Questionnaire

1. Company Information

- What is your agency's full name, tagline, and contact details?
- Can you provide a short description of your agency (history, services, unique selling points)?
- Who is your target audience? (Local tourists, international travelers, luxury, budget, adventure, family, etc.)

2. Website Goals & Purpose

- What are the main goals of your website? (e.g., promote packages, online booking, brand awareness, lead generation)
- What problems should the website solve for your customers?
- Do you want the website mainly as an information site or also for online bookings & payments?

3. Design Preferences

- Do you have an existing logo, color scheme, or brand guidelines?
- Are there websites you like (competitors or international sites) that can inspire the design?
- Do you prefer a modern, minimal, traditional, or luxury style design?

4. Features & Functionality

- What services do you want to highlight? (Tour packages, hotels, transport, guides, special offers)
- Do you need features like booking, payments, trip planner, chat, blog, gallery, or reviews on your website?
- Should the website support multiple languages (Sinhala, Tamil, English)?

5. Content & Media

- Will you provide content (texts, package details, images, videos), or should we create them?
- How often will you update travel packages and promotions?

6. Technical Requirements

- Do you already own a domain name and hosting? If yes, please share details.
- Should the website be optimized for mobile and tablets?
- Do you require SEO (Search Engine Optimization) to attract more visitors?

7. Security & Privacy

- Do you need SSL (HTTPS) for secure browsing and payments?
- Should the website store customer data (e.g., traveler details, booking history)?
- What privacy policy and terms do you want displayed?

8. Maintenance & Updates

- Who will manage the website content after launch (your team or us)?
- Do you require a Content Management System for easy updates?
- Do you need ongoing support and maintenance from us?

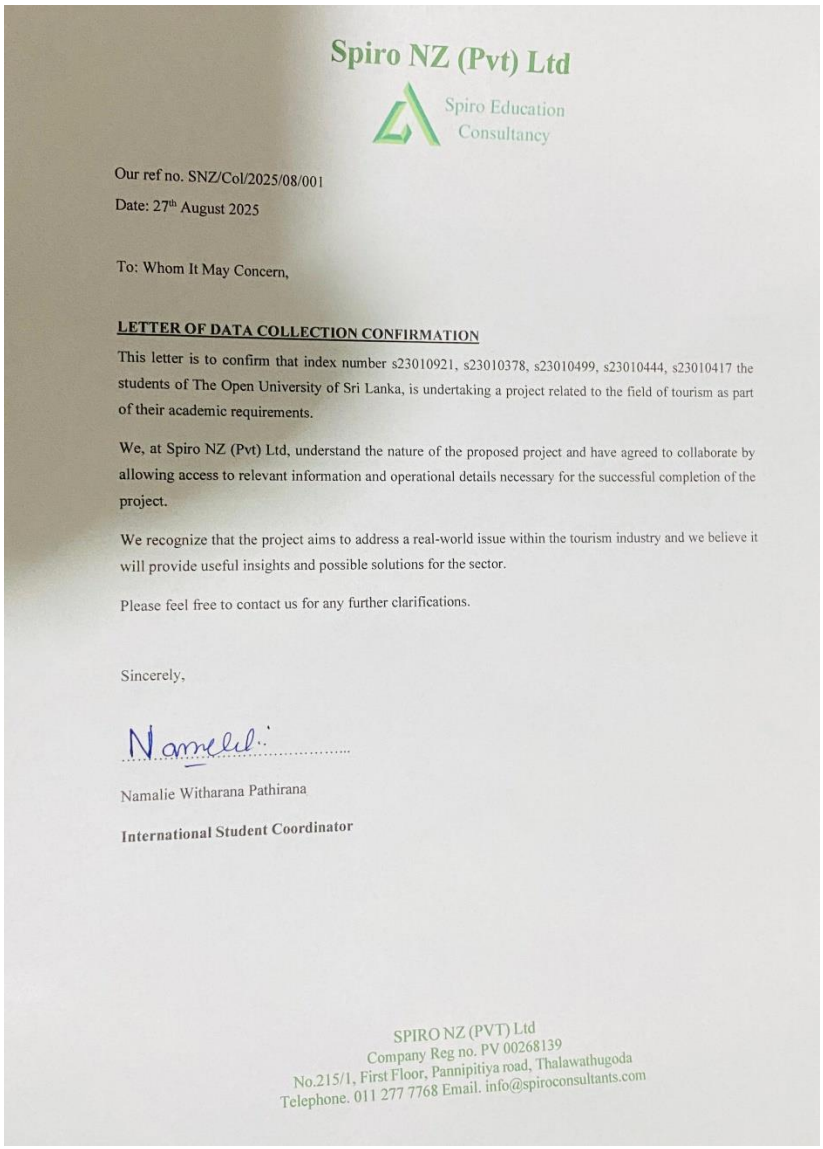
9. Budget & Timeline

- What is your expected budget range for the website?
- Do you have a target launch date (e.g., before peak travel season)?

10. Communication & Decision Making

- Who will be the main point of contact from your side?
- How do you prefer communication (email, WhatsApp, weekly calls)?
- How quickly can we expect feedback during the project?

Requirements Confirmation Form



Spiro NZ (Pvt) Ltd

Spiro Education Consultancy

Our ref no. SNZ/Col/2025/08/001

Date: 27th August 2025

To: Whom It May Concern,

LETTER OF DATA COLLECTION CONFIRMATION

This letter is to confirm that index number s23010921, s23010378, s23010499, s23010444, s23010417 the students of The Open University of Sri Lanka, is undertaking a project related to the field of tourism as part of their academic requirements.

We, at Spiro NZ (Pvt) Ltd, understand the nature of the proposed project and have agreed to collaborate by allowing access to relevant information and operational details necessary for the successful completion of the project.

We recognize that the project aims to address a real-world issue within the tourism industry and we believe it will provide useful insights and possible solutions for the sector.

Please feel free to contact us for any further clarifications.

Sincerely,

Namalie Witharana Pathirana

International Student Coordinator

SPIRO NZ (PVT) Ltd
Company Reg no. PV 00268139
No.215/1, First Floor, Pannipitiya road, Thalawathugoda
Telephone. 011 277 7768 Email. info@spiroconsultants.com

Project Scope and Impact

The proposed tourism application is designed to address the inefficiencies in current travel planning systems by providing a centralized, user-friendly digital platform. The system will enhance the travel experience for tourists by integrating trip planning, accommodation and transport booking, real-time updates, and access to local services within a single application.

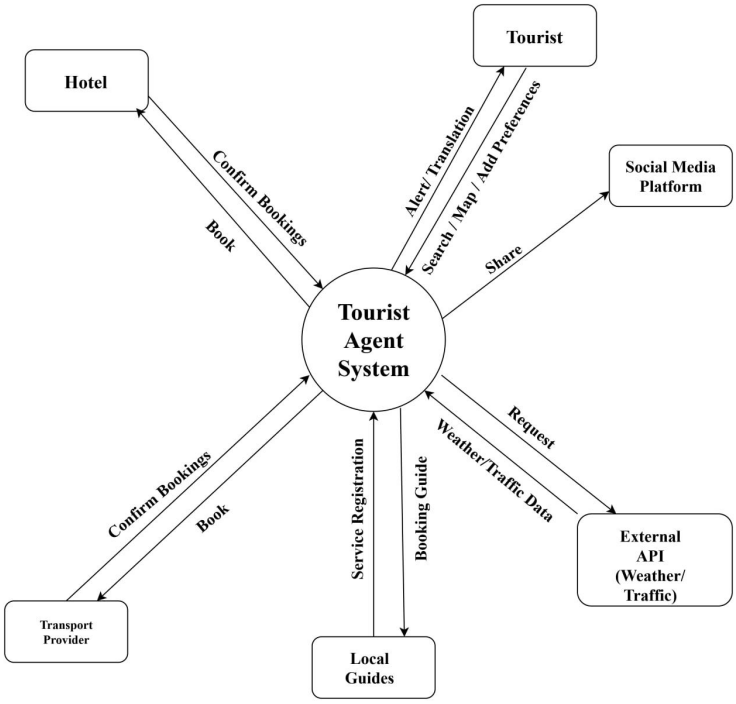
The impact of this project is twofold:

1. **For Tourists:** It simplifies trip planning, improves convenience, and ensures better travel experiences by offering personalized itineraries, navigation, and recommendations.
2. **For the Tourism Ecosystem:** It supports local businesses by providing visibility to restaurants, guides, and cultural services, thereby boosting Sri Lanka's tourism economy.

Scope Inclusions

The system will include the following features and functionalities:

- Destination discovery categorized by type (historical, cultural, nature, adventure, etc.).
- Personalized itinerary generation based on user preferences (budget, duration, activities).
- Real-time updates such as weather, traffic, and emergency alerts.
- Integration with booking systems for hotels, transport, and local services.
- Interactive map navigation with nearby attraction suggestions.
- Trip sharing and social media integration.
- Multilingual support with translation assistance.
- Administrative functions for managing attractions, services, and content.



Scope Exclusions

The following are out of scope for this project:

- Full offline functionality without internet access.
- Advanced augmented reality (AR) navigation at launch (considered for future enhancements).
- Integration with all global booking and travel APIs (only selected services will be implemented initially).
- Detailed financial management or payment gateway systems beyond standard booking integrations.

Impact on other systems

The proposed tourism application will interact with multiple external systems to provide real-time updates, bookings, and translation services. These dependencies and interactions may also have implications for other platforms that receive or process data from this system.

Affected by Other Systems

The application will rely on the following external systems and services:

- **Google Maps API** – For interactive map navigation, route suggestions, and displaying nearby attractions.
- **Travel and Hotel Booking APIs** – For retrieving accommodation and transport availability, pricing, and booking confirmation.
- **Weather APIs** – For providing tourists with real-time weather updates and forecasts.
- **Translation API (e.g., Google Translate)** – For enabling real-time language assistance for foreign users.
- **Social Media Platforms (e.g., Facebook, Instagram)** – For sharing itineraries and trip highlights.

Effects on Other Systems

The application will also have an impact on other systems and stakeholders:

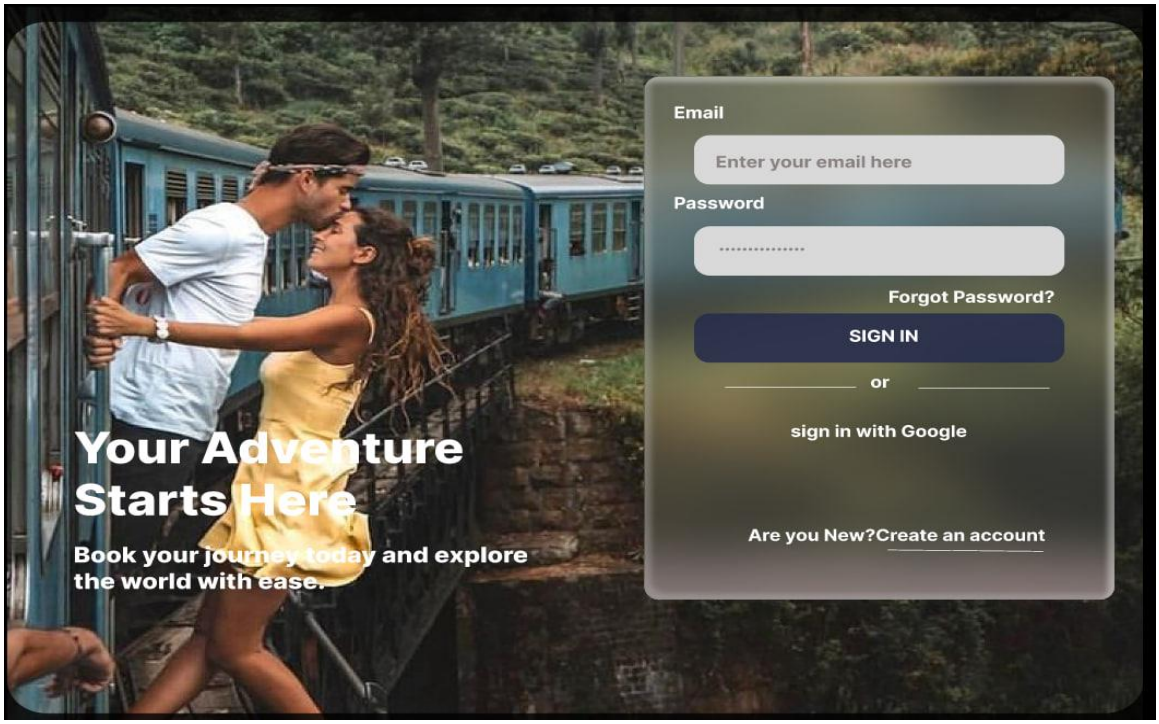
- **Hotel and Transport Providers** – Will receive booking and reservation requests directly from the application, requiring their systems to handle API transactions.
- **Local Service Providers (restaurants, guides, cultural event organizers)** – Will gain increased visibility through the app and may need to maintain updated service information for accuracy.
- **Tourism Ecosystem in Sri Lanka** – The centralized platform will enhance promotion of lesser-known destinations, potentially influencing tourist traffic patterns and local economic activity.

Prototyped Model as Elicitation Technique

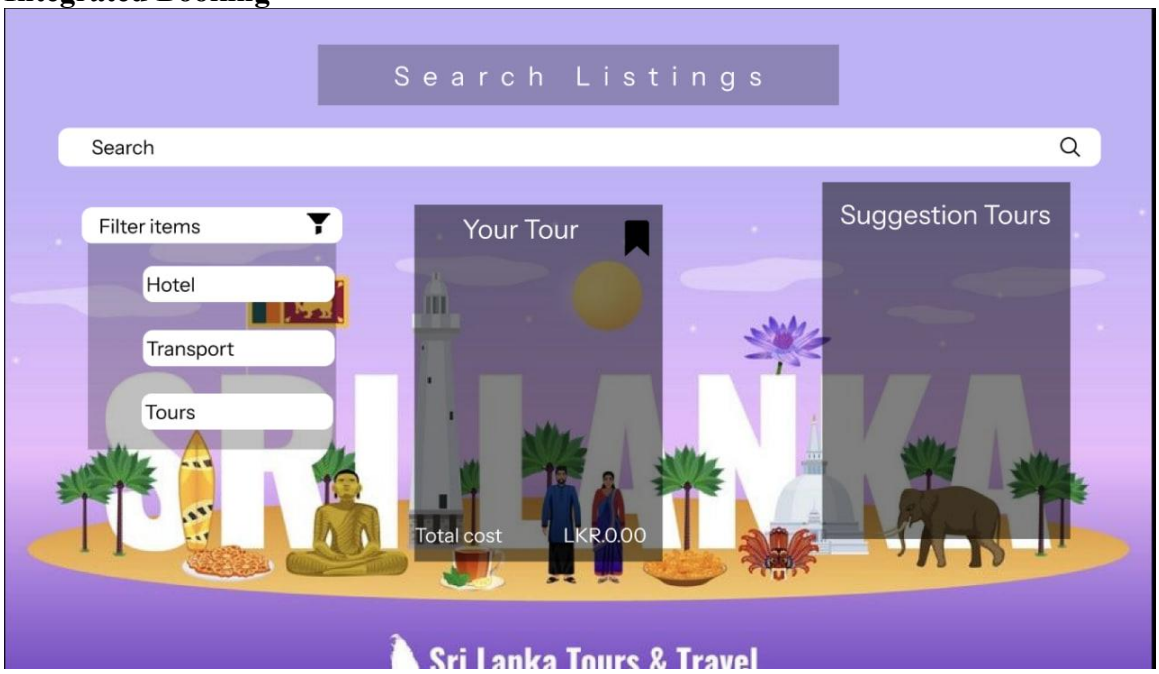
In this project, prototyping was used as an elicitation analysis technique to better understand and capture system requirements. For the planned Tourist Agent System, we developed **low-fidelity wireframes** that represent the basic layout and core functionalities of the system. These simple prototypes helped visualize the system structure, facilitate discussions with stakeholders, and refine requirements before moving into detailed design.

Main Page

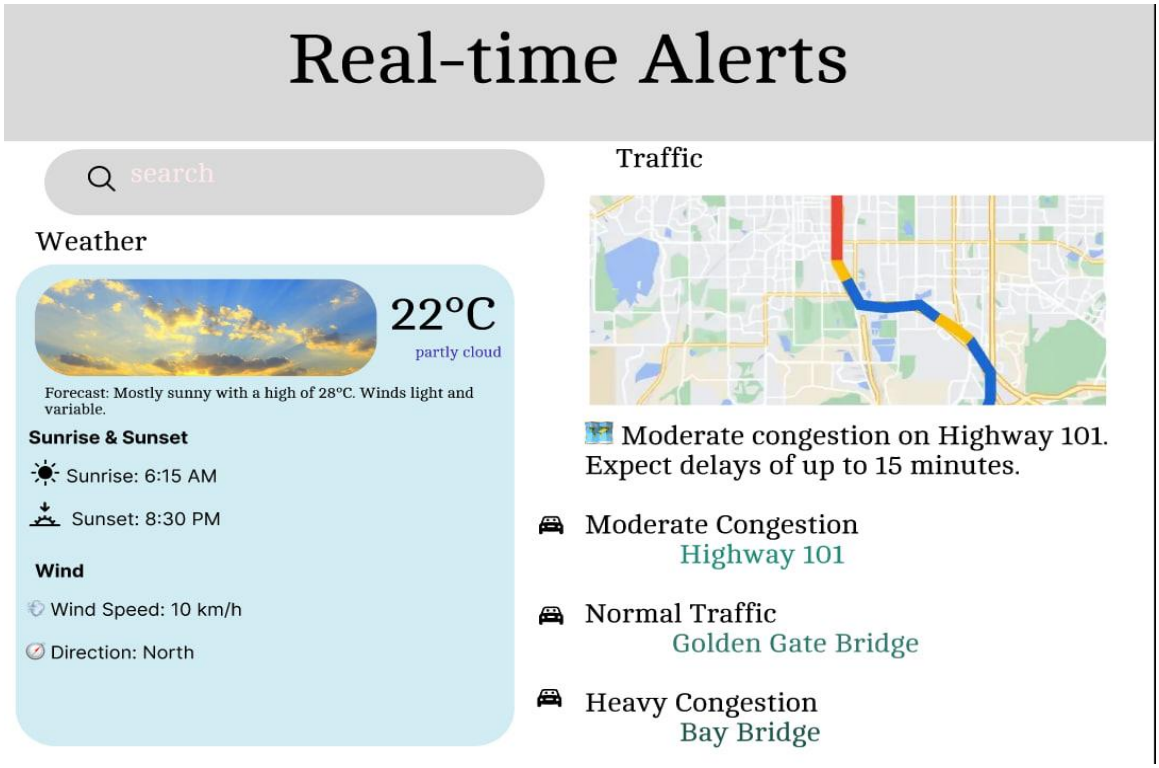
Login Page



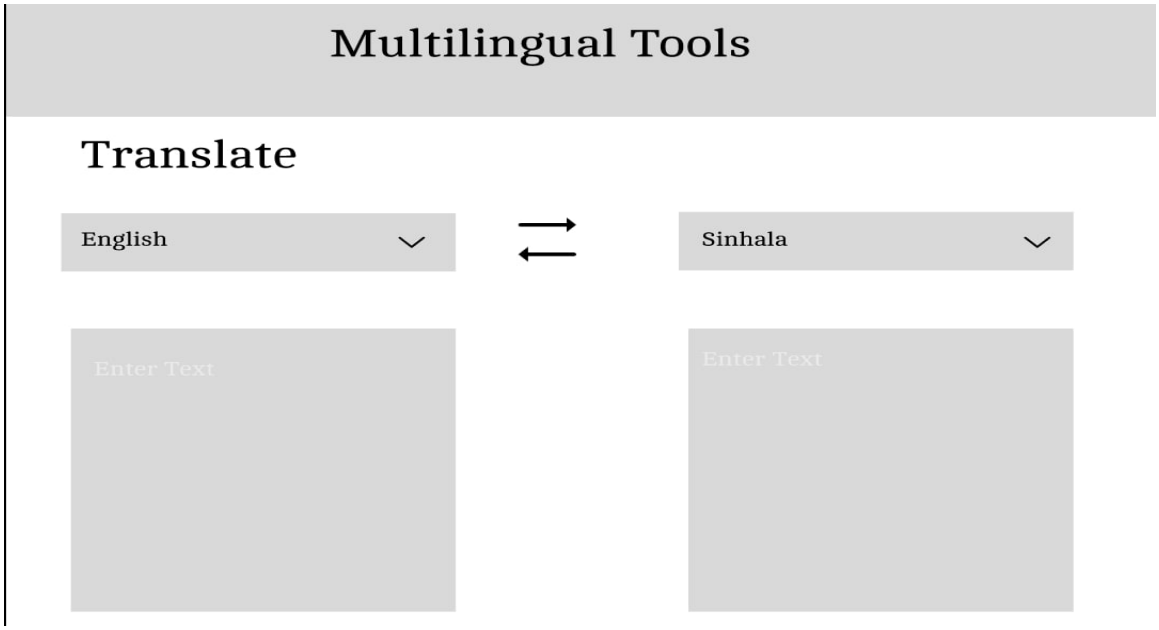
Integrated Booking



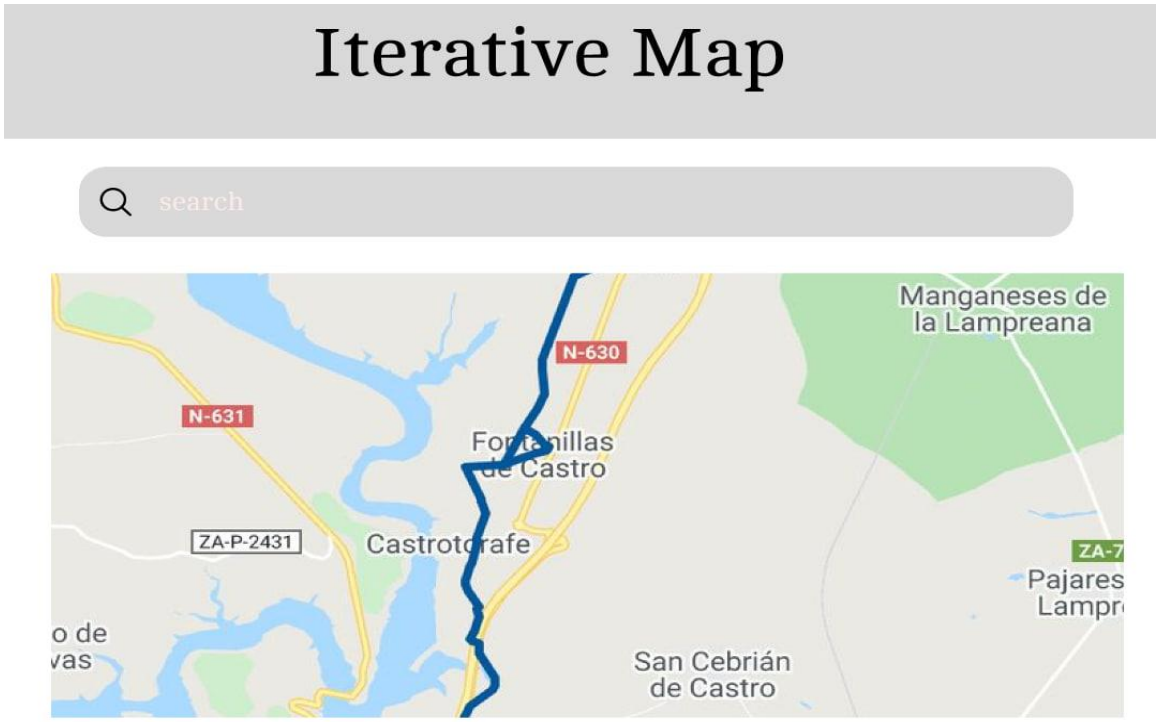
Real-time Alerts



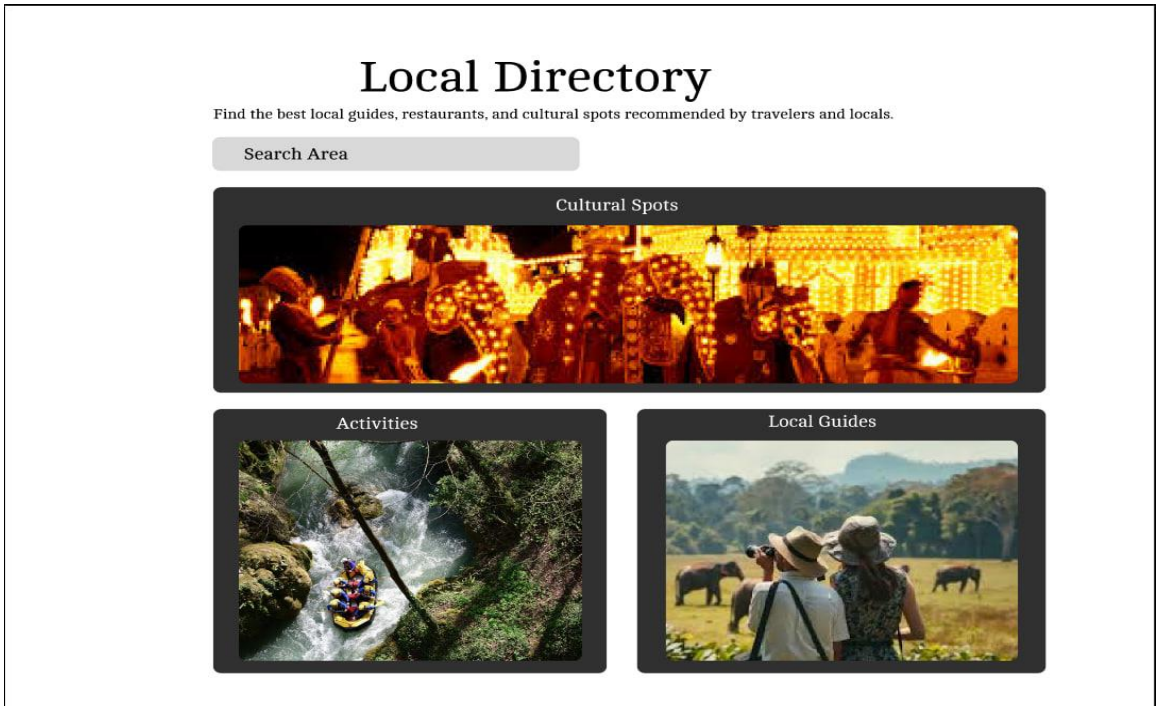
Language Translation



Interactive Map



Local Directory

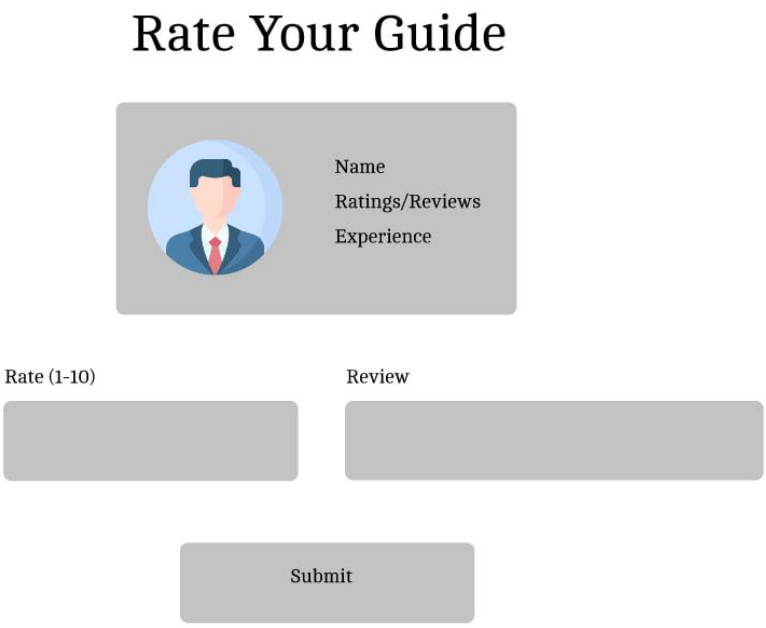


Cultural Spots

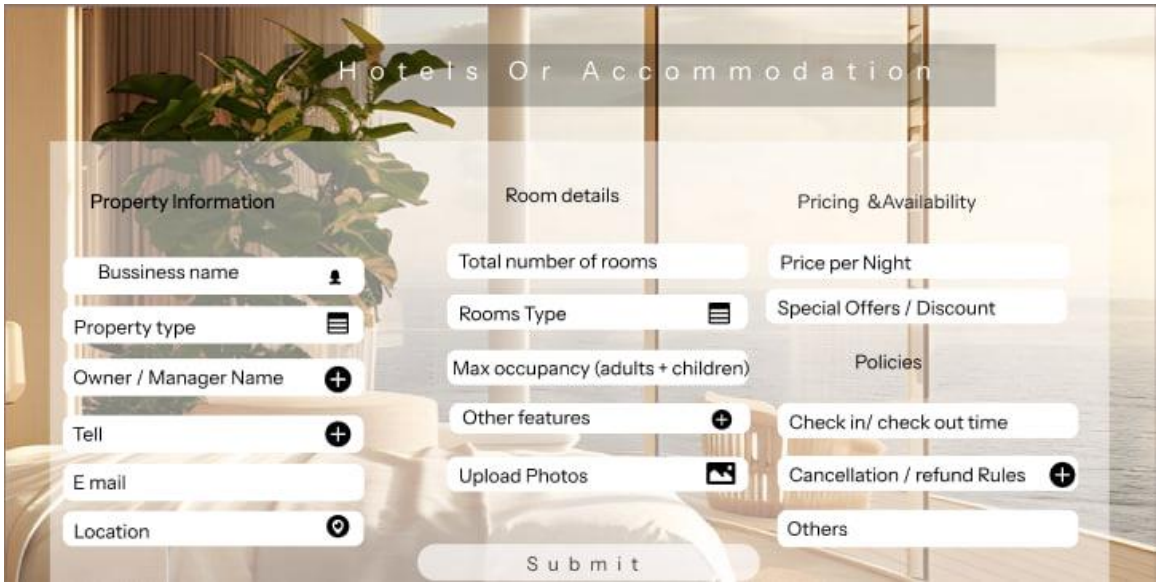
Activities

Local Guides

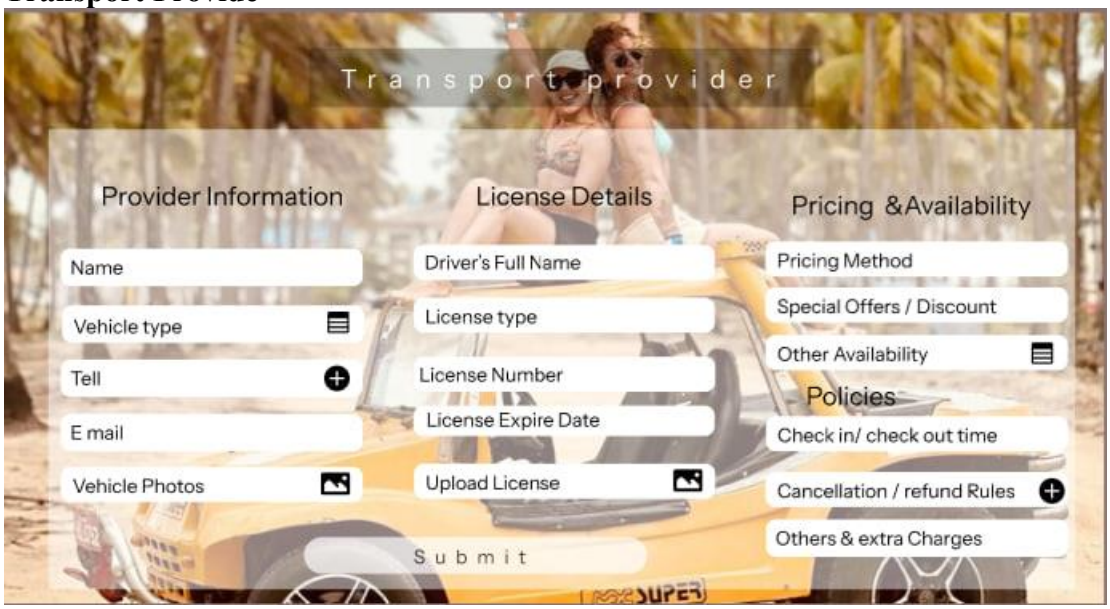
Rate Guide



Hotel Details Registration



Transport Provide

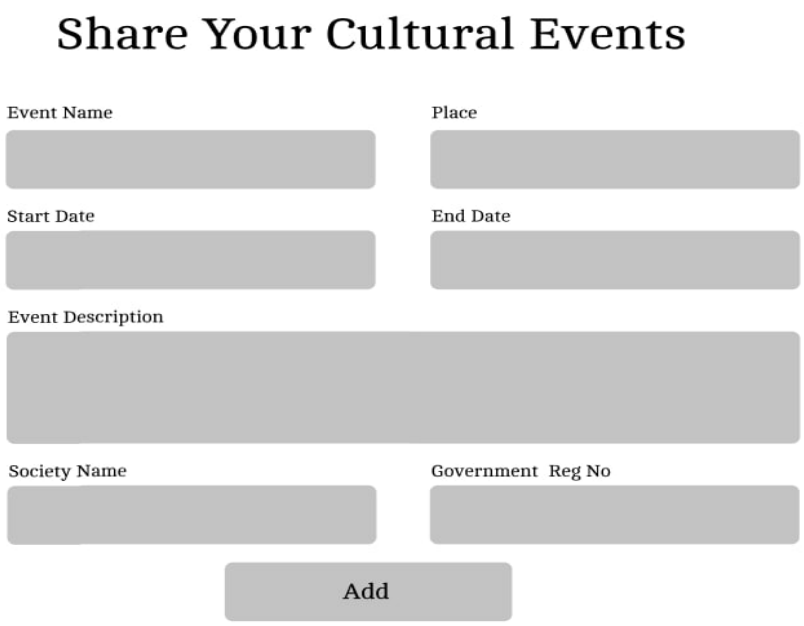


Personalized Trip Planning

Local Guide Registration

Activity Provider Registration

Add Cultural Events



Functional Requirements

This section describes the functional requirements of the proposed tourism application. Each function includes process flow, description of operation, and considerations for error handling, input validation, and abnormal situations.

Function 1- Personalized Trip Planning

Description
Users can create personalized itineraries by selecting destinations, categories (historical, nature, cultural, adventure), duration, and budget. The system generates an optimized day-wise plan including attractions, routes, and timings.

Process Flow

1. User logs into the system.
2. Selects “Plan My Trip” option.
3. Inputs trip details:
    - Destination(s)
    - Travel duration
    - Budget
    - Preferred activity categories
4. System applies recommendation engine.
5. Optimized itinerary is generated and displayed with interactive maps.

6. User can save, edit, or share itinerary.

Error Handling & Validation

- Validate budget input (must be numeric and within range).
- Ensure date inputs are valid (start < end).

If server fails to fetch recommendations, display cached suggestions.

System Administration

Description
Administrative users manage and maintain system data such as attractions, hotels, transport options, cultural events, and user accounts.

Functions

- Add/update/delete records in the database (destinations, services).
- Monitor system performance (logs, API health).
- Backup and restore database.
- Remote management via admin dashboard.

Error Handling

- Access restricted to admin accounts (role-based).
- Invalid data entry prompts error messages.
- Automatic recovery from failed database updates.

Data Archival and Retention

Description
The system will store and manage historical user trips, bookings, and reviews.

Requirements

- Past itineraries archived automatically after completion.
- Data older than 2 years compressed and stored in archive database.
- User can retrieve past trips anytime.
- Compliance with GDPR-style data retention policies (user may request deletion).

User Profiles, Roles, and Privileges

User Types

1. **Tourist (General User)**
    - Register/login.
    - Plan trips, save itineraries, book services.
    - Leave reviews and ratings.
2. **Local Service Provider**
    - Create profile for business (hotel, guide, restaurant).
    - Update availability and pricing.
    - Respond to user inquiries.
3. **Administrator**
    - Manage users and service providers.
    - Moderate reviews and content.
    - Configure system-wide settings.

Privileges

- Role-based access control.
- Tourists cannot delete system data.
- Service providers restricted to their own listings.
- Only administrators have full privileges.

3.1.5 Reporting Requirements.

Reports Generated by System

- **Tourist Reports**
    - Personalized itinerary summary (downloadable PDF).
    - Expense report (budget vs actual booking costs).
- **Admin Reports**
    - User registration statistics.
    - Popular destinations and attractions.
    - Service provider performance (bookings count, ratings).
- **Service Provider Reports**
    - Monthly bookings and revenue insights.
    - User feedback summary.

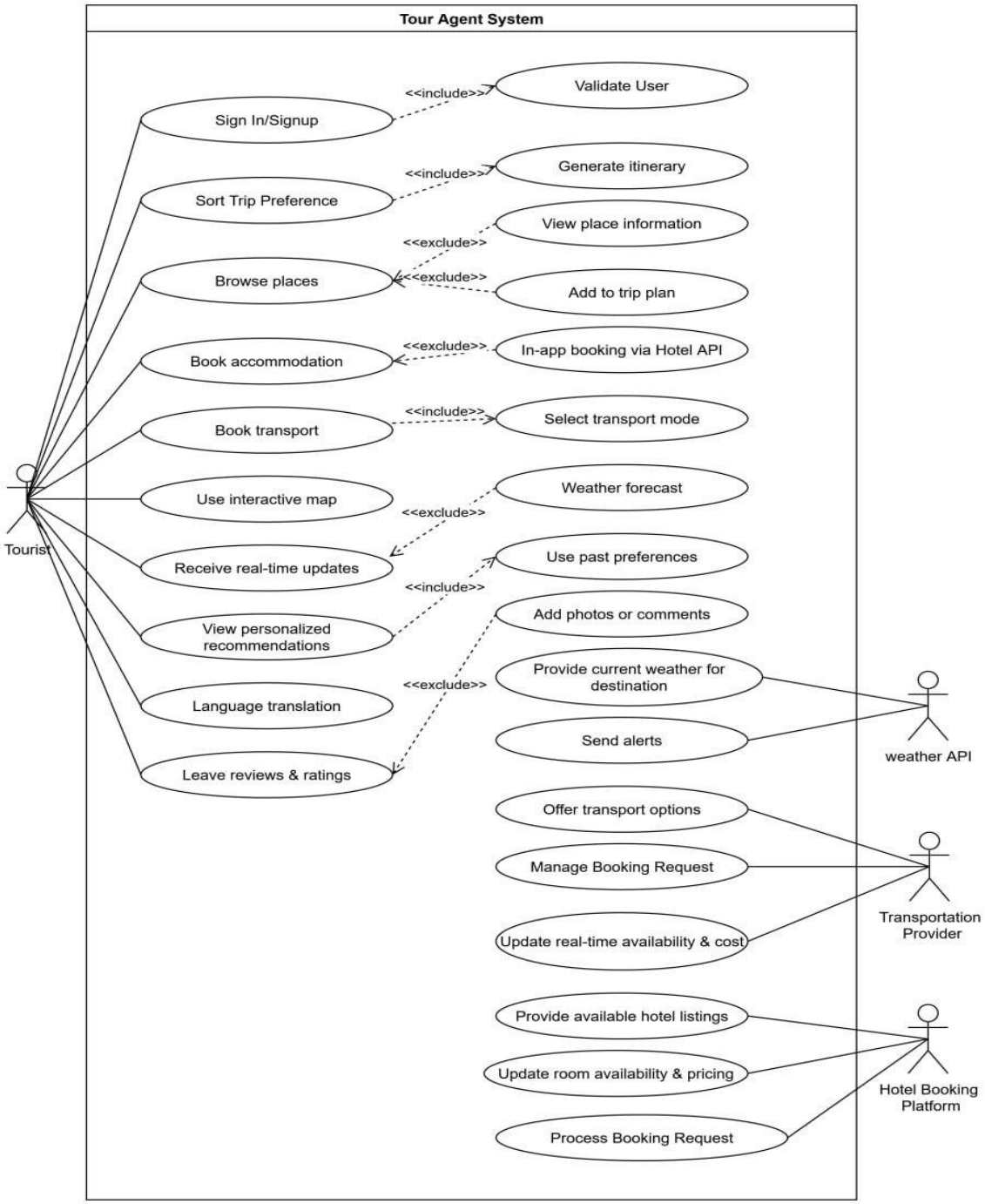
Formats

- On-screen dashboards (real-time).
- Printable/exportable reports (PDF, Excel).

Error Handling

- If report generation fails due to missing data, display partial report with warning.
- Large data sets handled with pagination.

Use Case Diagram



Detailed Use Cases

Use Case ID: UC01
Use Case Name: Personalized Trip Planning
Actors: Tourist (primary), System (secondary)
Preconditions:

- Tourists must be logged in.
- System has access to attractions and service data.

Main Flow (Normal Scenario)

1. Tourist selects **"Plan My Trip."**
2. System asks for trip details (destination, budget, duration, interests).
3. Tourist enters the details.
4. System checks and validates the inputs.
5. System generates a **day-wise itinerary** with map routes and attractions.
6. Tourist views the itinerary and can save, edit, or share it.

Alternate Flows (Exceptions)

- **Invalid input** (wrong date, letters in budget) → System shows error message.
- **No attractions found** → System suggests popular nearby attractions.
- **API fails** (e.g., Google Maps down) → System uses cached/default data.

Postconditions (What happens at the end)

- The final itinerary is saved in the tourist's profile.
- Tourists can view or edit the trip later.

Use Case ID: UC02
Use Case Name: User Profile Management
Actors: Tourist, Service Provider, Administrator

Preconditions

- Users must be registered and logged in.

Main Flow

1. User selects **"My Profile."**
2. Tourist updates personal info or preferences.
3. Service Provider updates business listing (hotel, guide, restaurant).
4. Administrator edits/deletes user accounts if necessary.
5. System saves the updated data.

Alternate Flows

- Wrong login credentials → System shows **"Invalid username/password."**
- Tourists try to access admin features → **Access Denied.**
- Invalid data entered (e.g., bad phone number) → **Validation error.**

Postconditions

- Profile information is updated correctly.
- System ensures each role has the right privilege

Functionality Matrix

Function / Use Case	Tourist	Service Provider	Administrator	System (Automator)
UC01 – Personalized Trip Planning	✓	✖	✖	✓
UC02 – System Administration	✖	✖	✓	✓
UC03 – Data Archival & Retention	✖	✖	✓	✓
UC04 – User Profiles & Privileges	✓	✓	✓	✓
UC05 – Reporting Requirements	✓	✓	✓	✓

Non-Functional Requirements

Performance and Load Requirements

Concurrent Users:	The system must support at least **500 concurrent users** during peak tourist seasons without noticeable degradation in performance.
Scalability:	The architecture must support scaling to handle an annual user growth rate of **20–30%**, ensuring that the application remains responsive as adoption increases.
Response Time:	Page load times must not exceed **3 seconds** on a standard 4G mobile connection. Real-time updates from APIs (e.g., weather, traffic, alerts) should be reflected within **10 seconds** of data availability.
Availability:	The system should maintain **99.5% uptime** excluding scheduled maintenance, ensuring continuous availability for both local and international tourists.
Transaction Throughput:	The system should process a minimum of **50 booking or itinerary transactions per minute** while maintaining data accuracy and consistency.

Compatibility Requirements

Browser Compatibility	The application must support the latest two stable versions of Google Chrome, Mozilla Firefox, Microsoft Edge, and Safari.
Device Compatibility	The system should be fully responsive and accessible on: • Desktop and Laptop browsers (Windows, macOS) • Mobile devices(Android and iOS)
Database Compatibility	The backend must support integration with both Firebase Realtime Database or MySQL, ensuring flexibility in data management.
API Compatibility	The system must integrate seamlessly with external APIs, including:

	• **Google Maps API** (for maps and navigation). • **Travel and Hotel Booking APIs** (for accommodation and transport reservations). • **Google Translate API** (for real-time multilingual support).
Platform Compatibility:	The backend should run on **Node.js with Express.js**

External Interface Requirements

User Interfaces

- The system must provide a responsive and intuitive web interface accessible via desktops, laptops, and mobile devices.
- The design must comply with UI/UX best practices, ensuring ease of navigation for booking, itinerary creation, and map usage.
- Hardware Interfaces
- The application should run on standard consumer devices (PCs, smartphones, tablets) without requiring specialized hardware.

- GPS-enabled mobile devices must be supported to allow location-based services (e.g., nearby attractions, navigation).

Software Interfaces

The application must integrate with external systems including:

- **Google Maps API** – for route planning and nearby attraction suggestions.
- **Hotel and Transport APIs** – for booking accommodations and transport.
- **Weather APIs** – for real-time weather updates.
- **Translation APIs (Google Translate)** – for multilingual support

Communications Interfaces

- The system must support secure communication protocols (HTTPS*)* for all data transfers.
- The backend should be capable of handling API calls with a maximum average response time of 2 seconds.
- All communication between client devices and servers must comply with TCP/IP standards.

Security and Authentication requirements

Data Storage Security

- All sensitive user data (e.g., personal details, booking records, and login credentials) must be securely stored using encryption**.**
- Role-based access control must be implemented to ensure only authorized administrators can modify attraction data, user accounts, or booking details.

Data Communication Security

- All communication between clients, servers, and external APIs must use HTTPS over SSL/TLS to protect data in transit.

- Sensitive operations (e.g., login, booking confirmation, and payments) must use secure POST requests with input validation to prevent injection attacks.

QA Test Scope

The testing process must include **Unit Testing, Integration Testing, System Testing, and User Acceptance Testing (UAT)**.

Special focus will be given to testing:

- **Functional accuracy** (trip planning, bookings, itinerary generation).
- **Performance under load** (≥ 500 concurrent users).
- **Cross-platform compatibility** (desktop and mobile).
- **Security features** (authentication, data protection, encryption).

QA Environment

Testing should be conducted on multiple platforms:

- Web browsers (Chrome, Firefox, Edge, Safari).
- Mobile devices (Android and iOS).

Tools such as **Selenium, Postman, and JMeter** may be used for automated testing, API validation, and load testing.

QA Data

- Test datasets should include sample tourist attractions, hotel/transport booking data, and user profiles.
- Sensitive data must be anonymized during testing to comply with privacy standards.

Development Requirements

Frontend Development

- Languages: HTML5, CSS3, JavaScript
- Tools: Figma (UI/UX design).

Backend Development

- Runtime: **Node.js** with **Express.js** framework.
- Database: **Firebase Realtime Database** or **MySQL**.
- APIs: Integration with Google Maps API, Weather API, Travel APIs, and Google Translate API.

Version Control & Collaboration

- **Git** (via GitHub/GitLab) for code management.

Development IDEs: Visual Studio Code

Development Data

- Initial datasets must include sample tourist attractions, hotels, transport providers, and cultural events.
- Dummy user accounts must be created to test various roles (tourist, admin).

Coding Standards

- Code must be peer-reviewed before merging into the main branch.
- Reuse of functions and modular design principles must be prioritized to ensure maintainability.
- All source code must include inline documentation/comments.

Implementation Packaging Requirements

Application modules must follow a modular architecture (frontend, backend, and API integration layers).

Installation Packaging Requirements

- Installation scripts must include database setup (MySQL schema or Firebase configuration) and environment variable configuration.
- Documentation for deployment (step-by-step guide) must be provided for administrators.

Deployment Requirements

- **Hosting Environment**: The frontend must be deployed as a **responsive web application** accessible on both desktop and mobile devices.
- **Server Architecture**: Load balancing must be supported to handle peak traffic
- **Access Requirements**: End-users (tourists) will access the system via web browsers or mobile devices.

Documentation requirements

The development and deployment of the proposed tourism application will include the following documentation to ensure smooth understanding, maintenance, and usability of the system.

1.Technical Documentation

- **Software Requirements Specification (SRS):** Defines system requirements, functional and non-functional specifications.
- **System Design Document (SDD):** Provides system architecture diagrams, database schema, data flow diagrams, and module interactions.
- **Source Code Documentation:** Inline comments and API reference guides for developers.
- **Installation & Deployment Guide:** Step-by-step instructions for setting up the application, server configuration, database initialization, and API integration.
- **System Administration Manual:** Guidelines for administrators to manage users, services, database backups, logs, and system configurations.

2.End User Documentation

User Manual (Tourist Users):

- Instructions for account registration, login, trip planning, itinerary generation, booking, and report generation.
- FAQs and troubleshooting guide.

Service Provider Guide:

- Instructions for creating and managing service provider accounts.
- Adding/updating accommodation, restaurants, guides, or event listings.
- Viewing and interpreting reports.

Quick Start Guide: A simplified version of the user manual, focusing on essential functions (trip planning, map navigation, and bookings).

3.Customer-Specific / Special Documentation

Training Materials: Short video tutorials or slide decks for new users and service providers.

Help & Support Documentation: Integrated online help system and contextual tooltips within the app.

Multilingual Support Documentation: Documentation and in-app help available in English, Sinhala, and Tamil to cater to both local and foreign tourists.

Special Documentation Requirements

The following special documentation requirements apply to the tourism application to ensure legal, ethical, and professional compliance:

Legal Disclaimers

- The application provides information about tourist attractions, accommodations, restaurants, and services based on available data and third-party integrations.
- The developers are not responsible for any inaccuracies, sudden changes in availability, or user dissatisfaction with third-party services.
- The app does not guarantee safety during travel; tourists are responsible for their own actions and must comply with local laws and regulations.

Warranties

- The software is provided on an **"as-is"** basis for academic and informational purposes.

Copyright Notices

- All original content, source code, and design assets created for this system are copyrighted by the development team.
- Third-party libraries, APIs, and frameworks (Google Maps API, Firebase, Node.js, etc.) are used under their respective licenses and must be cited properly.

Patent Notices

- No patents are claimed in this project. However, the system must respect intellectual property rights of third-party providers and data sources.

Word Mark, Trademark, and Logo Compliance

- Any logos, names, or trademarks of external services (e.g., Google Maps, Facebook, Instagram) used in the application are acknowledged as property of their respective owners.
- The project team must avoid unauthorized modification or misuse of third-party logos and must follow branding guidelines where applicable.
- The proposed project logo and branding will be original to prevent infringement.

On-line User Documentation and Help System Requirements

- The system will include a **Help & Support section** where users can find guides on how to use the app.
- It will have **step-by-step instructions** for key features like trip planning, bookings, and map navigation.
- A **FAQ section** will answer common questions.
- **Tooltips and small help messages** will appear on important pages to guide users.
- Help content will be available in **English, Sinhala, and Tamil**

Usability Requirements

The system should have a **simple and user-friendly interface** that is easy to navigate.

It must be **compatible with all major browsers** (Google Chrome, Firefox, Edge, Safari).

- The website should be **responsive** and work well on both desktop and mobile devices.
- **Consistent design elements** (buttons, menus, icons) will be used throughout the app.
- **Fast loading times** and smooth transitions are required to enhance user experience.
- Accessibility features will follow **basic WCAG guidelines** for users with visual or motor impairments.
- The interface will support **multiple languages (English, Sinhala, Tamil)** for wider usability.
- Usability testing will be conducted with a **sample group of users** to get feedback and make improvements.

Other Requirements

The following requirements ensure that the Travel Agent Management System is legally compliant, environmentally responsible, and aligned with industry's best practices:

Regulatory & Compliance Requirements

- Must comply with the **Sri Lanka Personal Data Protection Act (2022)** for handling user data and privacy.
- Ensure compliance with **General Data Protection Regulation (GDPR)** when handling international tourist data.
- Adhere to **Sri Lanka Tourism Development Authority (SLTDA)** guidelines for listing and promoting local services.

Standards & Guidelines

- Follow **ISO/IEC 27001** standards for information security management.
- Adopt **OWASP security practices** to mitigate risks such as SQL injections, XSS, and CSRF attacks.
- Comply with **W3C Web Standards** and **WCAG 2.1 accessibility guidelines** to ensure usability for differently abled users.

Legal & Ethical Requirements

- Respect third-party intellectual property rights (APIs, maps, logos, and content).
- Display clear disclaimers regarding service availability, accuracy of third-party data, and travel safety responsibilities.
- Obtain necessary licenses or agreements for use of booking APIs and payment gateways.

Environmental & Sustainability Considerations

- Encourage eco-friendly travel options (e.g., public transport, eco-hotels) through system recommendations.
- Minimize server resource wastage by optimizing backend services and supporting scalable cloud infrastructure.

Applicable Standards

The following standards apply to the design, development, and deployment of the proposed tourism application

1. **Legal and Regulatory Standards**

- **General Data Protection Regulation (GDPR)** – for handling user data, privacy, and consent, especially for international tourists.
- **Sri Lanka Personal Data Protection Act (2022)** – for compliance with local data protection and privacy requirements.

- **Copyright and Intellectual Property Laws** – to protect content ownership and respect third-party rights (e.g., maps, APIs, logos).

2.**Communication and Networking Standards**

- **TCP/IP (Transmission Control Protocol/Internet Protocol)** – standard for communication between client browsers and the server.
- **HTTPS (SSL/TLS protocols)** – for secure data transmission, especially during login, bookings, and payment transactions.
- **RESTful API Standards** – for integration with third-party services (Google Maps, translation services, booking APIs).

3.**Platform and Technology Compliance Standards**

- **W3C Web Standards (HTML5, CSS3, JavaScript)** – to ensure cross-browser compatibility and responsive design.
- **ECMAScript Standards** – for JavaScript functionality and compatibility.
- **Node.js/Express.js Compliance** – following framework best practices for backend operations.
- **Database Standards** – for reliability and consistency of stored data.

4.**Quality and Usability Standards**

- **ISO/IEC 25010 (Software Product Quality Model)** – to ensure quality attributes such as usability, reliability, maintainability, and portability.
- **ISO 9241 (Ergonomics of Human-System Interaction)** – for user interface and user experience design.
- **WCAG 2.1 (Web Content Accessibility Guidelines)** – to provide accessibility for differently-abled users.

5.**Security Standards**

- **OWASP Web Security Guidelines** – to prevent common security risks (SQL injection, XSS, CSRF).
- **ISO/IEC 27001 (Information Security Management)** – for data protection and secure information handling

Future Requirements

- **AI-Powered Recommendations and AI Chatbot** – Implement machine learning to provide personalized travel suggestions based on user behavior, preferences, and historical data.
- **Augmented Reality (AR) Navigation** – Introduce AR-based guides for tourists to explore attractions with interactive overlays and real-time directions.
- **Voice Assistant Integration** – Support voice commands and multilingual voice assistants for itinerary management and local navigation.
- **Offline Mode** – Enable partial offline functionality for maps, saved itineraries, and essential travel information when internet connectivity is limited.
- **Blockchain-Based Secure Payments** – Allow decentralized and highly secure transactions, especially for international tourists.
- **Emergency Assistance Features** – Automated SOS alerts with live location sharing to local authorities and emergency contacts.
- **Carbon Footprint Tracker** – Suggest eco-friendly travel options and calculate the environmental impact of planned trips

References

- European Union (2018) *General Data Protection Regulation (GDPR).* Official Journal of the European Union, L119. Available at https://gdpr.eu/
- Parliament of Sri Lanka (2022) *Personal Data Protection Act, No. 9 of 2022.* Colombo: Government of Sri Lanka.
- Sri Lanka Tourism Development Authority (SLTDA) (2023) *Tourism guidelines and regulations.* Colombo: SLTDA. https://www.sltda.gov.lk/
- World Wide Web Consortium (W3C) (2018) *Web Content Accessibility Guidelines (WCAG) 2.1.* Available at: https://www.w3.org/TR/WCAG21/
- ISO/IEC (2011) *ISO/IEC 27001: Information security management systems – Requirements.* Geneva: International Organization for Standardization.
- OWASP Foundation (2023) *OWASP Top Ten Web Application Security Risks- https://owasp.org/*
- Node.js Foundation (2023) *Node.js Documentation.* https://nodejs.org/
- Google Developers (2023) *Google Maps API Documentation - https://developers.google.com/maps*