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TRAVEL-SATHI: A Behaviour-Aware Adaptive Trip Guidance System

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Abstract - Travel planning requires travellers to coordinate destination discovery, accommodation, transport, food, navigation, budgets, and activities within a limited schedule. These decisions are often spread across separate digital services, increasing the effort required to compare options and assemble a coherent trip. TRAVELSATHI is a web-based travel guidance system designed to bring these activities into a unified and accessible planning environment. The system presents destination information and travel-service categories, provides map-based location exploration, supports traveller input through a structured planning interface, and generates a day-wise itinerary for selected destinations and trip durations. The application also includes an interactive booking-request interface and organised navigation between its major sections. The implementation combines a responsive web interface with client-side modules for destination discovery, map presentation, booking-form interaction, and itinerary generation. Its catalogue contains 12 destination entries and four entries in each of the hotel, flight, and restaurant categories. The itinerary data covers seven destination choices, with ten predefined daily activity entries for each destination; the planner can display trips of 3, 5, 7, 10, or 14 days. This paper presents the system design, functional modules, user workflow, implementation approach, and source-based verification of the delivered application. It also discusses how structured travel data, live service integration, and adaptive recommendation models can extend the platform in subsequent releases.

Index Terms - TRAVEL-SATHI, travel guidance, itinerary generation, destination discovery, location-based services, web application, travel recommendation.

I. INTRODUCTION

Travel has become increasingly information-intensive. Before beginning a journey, users commonly compare destinations, accommodation, transportation, restaurants, attractions, travel duration, and estimated expenses. Although digital services provide information for each of these tasks, the planning process frequently requires switching between multiple websites and applications. A traveller may discover a destination in one service, check its location in a mapping application, compare accommodation elsewhere, and then manually arrange the activities into a practical daily schedule. This fragmented process can increase planning time and make it difficult to maintain a consistent view of the complete trip. TRAVEL-SATHI is designed as an integrated travel guidance environment that brings the principal stages of trip preparation into one web application. It organises destination discovery, travel-service exploration, map-based location viewing, itinerary preparation, and booking-request interaction through a consistent user interface. Rather than treating travel planning as a single search operation, the system presents it as a sequence of related tasks: understand the traveller's requirements, explore suitable places and services, review locations, and arrange selected activities into a day-wise plan. The system is intended for travellers who want a clear starting point for planning trips, particularly journeys involving multiple attractions and supporting services. The planning interface accepts information such as origin, destination, travel dates, trip duration, traveller category, budget, interests, and additional requirements. The itinerary module uses the selected destination and requested duration to present an organised schedule. Destination and

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service information is grouped into dedicated sections so that users can browse the available options without navigating unrelated applications.

A. Problem Definition

Existing travel services are commonly specialised around individual tasks. Mapping platforms emphasise navigation and nearby-place discovery; review platforms emphasise ratings and user opinions; booking platforms focus on reservations and transactions. Travellers must combine these outputs themselves. A unified guidance system should reduce this coordination effort by presenting related information in a structured workflow and providing a practical itinerary view.

B. Objectives and Contributions

The main objectives of TRAVEL-SATHI are to provide a unified destination and service catalogue, make location exploration accessible through an embedded map, collect trip requirements through a structured interface, generate a readable day-wise itinerary, and provide a consistent interaction flow for booking-related requests. The contribution of this work is the design and implementation of an integrated travel-guidance application that connects these functions through a single browser-based experience.

II. RELATED WORK

A. Tourism Recommender Systems

Borràs, Moreno, and Valls surveyed intelligent tourism recommender systems and discussed the role of recommendation techniques, interface design, and artificial-intelligence methods in travel applications [1]. Their work establishes that travel recommendation involves more than displaying a collection of popular destinations. A useful system must relate available options to the requirements and context of the traveller. Hamid et al. reviewed smart-tourism recommendation systems and highlighted the importance of data management for collecting, representing, and updating information used by recommendation services [2]. Collaborative filtering uses patterns from users with similar preferences, while content-based approaches compare item attributes with a traveller's stated interests. Hybrid systems combine complementary signals to reduce the weaknesses of relying on a single method. These principles inform the design direction of TRAVEL-SATHI: destination attributes, user-supplied requirements, location information, and service details form the relevant information categories for a more personalised travel experience.

B. Tourist Trip Design and Itinerary Planning

Ruiz-Meza and Montoya-Torres reviewed the tourist trip design problem, including methods for selecting points of interest and arranging visits under constraints such as time, cost, and distance [3]. Halder et al. surveyed personalised itinerary recommendation methods ranging from optimisation techniques to deep learning [4]. Gasmi et al. examined recommendation rules for balancing attraction popularity and traveller interests when planning visits to unfamiliar cities [5]. These studies show that a coherent itinerary must consider both the suitability of individual places and the relationship between activities across a trip.

TRAVEL-SATHI adopts the practical application-level view of this problem by presenting destination-specific daily activity plans through a simple planning interface. The current implementation uses curated itinerary entries, providing a predictable and readable schedule. The literature also provides a foundation for extending the planner with structured point-of-interest data, travel-time constraints, route sequencing, and adaptive ranking.

III. SYSTEM ANALYSIS AND DESIGN

A. Overall System Architecture

TRAVEL-SATHI is organised into cooperating interface and application modules. The user interaction layer collects trip requirements and provides navigation between destinations, services, maps, itinerary output, and booking requests. The information layer presents destination and service records in consistent card-based sections. The map layer embeds location exploration within the application. The itinerary layer interprets the selected destination and requested duration and renders a day-wise plan. The booking interaction layer collects the required contact details and provides validation feedback. The modules are separated by responsibility so that changes to presentation, itinerary content, or booking interaction can be managed without redesigning the entire application. This modular organisation also provides a clear integration path for future data services. External map and font resources are loaded through their respective providers, while the primary navigation and itinerary interactions are handled by the web application.

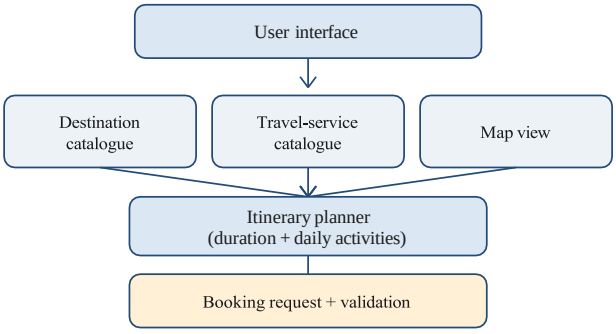


Fig. 1. Functional module architecture.

B. User Input and Planning Parameters

The planning interface is structured around the information normally required before a trip can be organised. The origin and destination identify the journey, while the date and duration define its time window. Traveller category and

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interest selections describe the intended travel experience. Budget and additional requirements provide further planning context. Keeping these values together in one form makes the planning process understandable and reduces the need to repeatedly enter the same information in separate services.

C. *Functional Requirements*

The application provides destination browsing, grouped hotel/flight/restaurant listings, map presentation, trip-input collection, itinerary generation, and booking form validation. Navigation controls direct users to the corresponding application sections. The itinerary output is formatted by day so that users can review the schedule sequentially.

Form validation checks required booking details and the email format before displaying the local confirmation state.

IV. IMPLEMENTATION AND FUNCTIONAL MODULES

A. *Destination Discovery Module*

The destination section presents travel locations as individual cards. Each card groups the available destination information into a compact and scannable format, allowing users to compare the listed places and select a destination for further planning. The supplied catalogue contains 12 destination cards. This organised presentation provides the entry point to the broader planning workflow and keeps destination exploration separate from accommodation and transport information.

B. *Travel-Service Catalogue*

The application groups supporting travel services into hotel, flight, and restaurant sections. Each category contains four displayed entries in the inspected application snapshot. Grouping these services by type gives the traveller a consistent way to review the available information and understand the supporting elements of a trip. The card-based layout maintains a common visual structure across categories and supports quick scanning.

C. *Map and Location Exploration*

The map section embeds Google Maps within the application and presents predefined location information for exploration. This keeps geographic context close to destination discovery and itinerary planning. Users can consult the map without treating location viewing as a completely separate stage of the workflow. The embedded map relies on the external mapping provider and therefore requires network connectivity for the provider content to load.

D. *Itinerary Generation Module*

The itinerary planner accepts the selected destination and requested trip duration and renders a sequence of daily activity entries. The supplied itinerary dataset contains seven destination-specific plans, each with ten predefined daily entries. The planner supports durations of 3, 5, 7, 10, and 14 days. The generated result is presented as a day-wise schedule, making the trip easier to review than an unstructured list of attractions. The origin, traveller category, and selected interests are included in the plan's contextual text.

E. *Booking Request Interaction*

The booking interface is presented through a modal form that collects traveller contact information. Before completing the interaction, the form checks that the required name and email fields have been entered and validates the email structure. When the input passes validation, the modal closes and the interface displays a confirmation notification. This provides a complete front-end interaction flow for the booking request interface. A provider-side reservation or payment is a separate transaction and is not represented by the local confirmation state.

F. *Navigation and User Experience*

The application uses section-based navigation and notifications to guide users through its principal functions. Search and navigation controls direct the user to the relevant content area, while cards and forms provide consistent interaction patterns. The interface is designed to keep the major planning tasks visible and understandable, with the itinerary output acting as the final consolidated view of the selected trip.

V. ITINERARY WORKFLOW AND SYSTEM OUTPUT

A. *Planning Sequence*

The user begins by exploring the destination catalogue and reviewing the available service categories. After choosing a destination, the user opens the planner and supplies the trip details. The itinerary routine selects the corresponding destination-specific activity list, reads the requested duration, and prepares the required number of day entries. The generated schedule is then displayed in sequence for review. This flow connects destination discovery with a concrete planning output inside the same application.

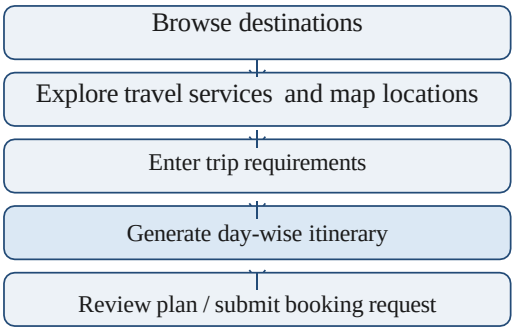


Fig. 2. Planning workflow of the application.

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B. Duration Handling

The planner offers five duration choices: 3, 5, 7, 10, and 14 days. Each destination currently provides ten predefined daily entries. For durations up to ten days, the generated schedule uses the corresponding number of entries from the selected destination list. For a 14-day request, the generator fills all requested day slots by reusing earlier entries after the tenth day. This behaviour ensures that the interface can render the requested schedule length while retaining the available destination-specific content.

C. Input-to-Output Behaviour

The destination selection determines which daily activity collection is used, and the duration determines the number of displayed day slots. Origin, traveller category, and interest selections contribute contextual text in the generated result. Date, budget, and special-requirement values are collected by the form but do not currently alter the underlying sequence of predefined activities. This explicit separation between schedule selection and contextual display makes the current planner behaviour predictable and provides a clear basis for connecting additional constraints in a later iteration.

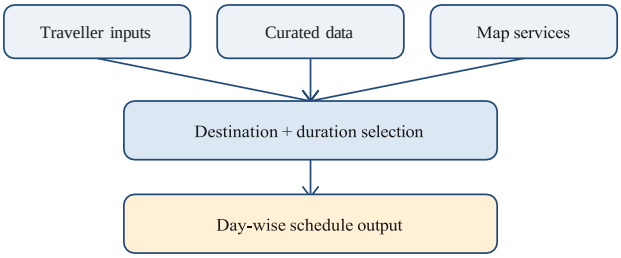


Fig. 3. Inputs and itinerary output relationship.

D. Functional Coverage

The implemented application brings together the principal user-facing stages of a travel-planning task: destination discovery, service browsing, map viewing, itinerary presentation, and booking-form interaction. The workflow is usable as a self-contained front-end planning experience. Its curated catalogue and itinerary content provide a consistent demonstration dataset, while the modular organisation supports future connection to live travel information and transaction services.

VI. RESULTS AND DISCUSSION

A. Catalogue Summary

A review of the supplied application page identifies 24 visible catalogue cards: 12 destinations, four hotels, four flights, and four restaurants.

Destination cards represent 50% of the displayed catalogue, while each service category represents approximately 16.7%. These values describe the content organisation of the application and demonstrate that destination information and supporting services are represented together.

B. Itinerary Coverage

The planner provides seven destination choices and ten predefined daily entries for each destination. The available duration controls allow users to generate schedules containing 3, 5, 7, 10, or 14-day slots. The first four duration options can be populated without repeating entries; a 14-day schedule uses the full ten-entry collection and reuses four earlier entries. This provides a consistent output for every duration offered by the interface.

C. Discussion

The key outcome is the integration of multiple travel-planning functions into one browser-based application. Instead of requiring users to begin with unrelated services, TRAVEL-SATHI provides a common interface for exploring destinations, viewing supporting travel categories, consulting map information, and reviewing a daily plan. The day-wise presentation improves the organisation of travel information and gives the user a clear sequence to consider when preparing a trip. The current implementation emphasises a dependable and understandable user workflow. The use of curated destination and itinerary content makes the generated output consistent, while the separation of modules allows the catalogue, planner, map, and booking interaction to be extended independently. The next level of development is to connect the collected budget and interest preferences directly to structured destination attributes, integrate live data sources, and introduce route-aware sequencing. These extensions would build on the existing application workflow rather than replace it.

VII. FUNCTIONAL VERIFICATION

The implementation was reviewed against the principal user journeys represented in the application. The verification scope includes section navigation, destination and service catalogue rendering, map-section presentation, itinerary generation for the supported duration choices, and booking-form validation. The source-level workflow confirms that the destination selection controls the preset activity collection and that the requested duration controls the number of displayed day entries. Booking validation checks required contact fields and email format before showing the local confirmation state. The catalogue counts and itinerary-entry counts provide reproducible checks of the supplied application content.

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They are implementation observations rather than user-study measurements. Recommendation accuracy, travel-time savings, live inventory correctness, transaction completion, and user satisfaction require a separate evaluation using live data and representative travellers; no numerical claims for those measures are made in this paper.

VIII. FUTURE ENHANCEMENTS

The current application establishes a unified user-facing foundation for travel guidance. Several extensions can strengthen its planning capabilities. First, destination and service records can be maintained in a structured data store with attributes such as geographic coordinates, price range, ratings, opening hours, availability, and estimated visit duration. This would allow the planner to filter options using budget and interest preferences instead of relying only on curated daily entries. Second, live map, weather, traffic, and travel-service APIs can be integrated through a dedicated data service layer. Current conditions could then influence the suitability and order of recommended activities. Third, a hybrid recommendation engine can combine content- based relevance, location proximity, and popularity signals. As interaction history becomes available, collaborative signals can be introduced to improve recommendations for returning users while retaining content-based suggestions for new users. Finally, route-aware itinerary sequencing, persistent user profiles, secure booking integration, and a conversational travel assistant can extend the application into a more adaptive travel companion. These enhancements are designed as incremental additions to the existing modular workflow.

IX. CONCLUSION

TRAVEL-SATHI presents an integrated web-based approach to travel guidance by bringing destination discovery, travel-service catalogues, map-based location exploration, itinerary generation, and booking- form interaction into one application. The supplied implementation includes 12 destination cards and four entries each for hotels, flights, and restaurants. Its itinerary planner supports seven destination choices, ten predefined daily entries per destination, and trip durations of 3, 5, 7, 10, or 14 days. The application provides a clear sequence from exploring travel options to reviewing a day- wise plan, supported by navigation and form validation. The modular structure provides a practical foundation for future integration of live travel data, preference-aware recommendation, and route optimisation. Overall, TRAVEL-SATHI demonstrates how a unified and structured interface can simplify the organisation of travel information and support a more coherent trip- planning experience.

TABLE I. SUMMARY OF IMPLEMENTED APPLICATION MODULES

Module	Primary function
Destination catalogue	Browse 12 destination entries
Service catalogue	Explore hotels, flights, and restaurants
Map view	Embedded map and location exploration
Itinerary planner	Generate day-wise schedules for 7 destinations
Booking interaction	Validate contact details and show confirmation

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