Table of content

Business Case Proposal

1. Introduction

TravelWise, a proposed travel application that aims to address the fragmented and overwhelming experience new and veteran travelers experience, when planning a trip. Currently, travelers must switch between multiple platforms to manage itineraries, find cheap services to book, track expenses, and discover local attractions. This can lead to confusion and missed opportunities. TravelWise seeks to make the travel experience more efficient by centralizing these key travel functions into a single, user-friendly app. By offering itinerary management, expense tracking, and curated destination guides all in one place.

2. Business Objective

The objective of the TravelWise project is to deliver a web-based travel web app that makes the travel experience for passionate travellers smoother. By compiling different travel features in one platform with exceptional UX/UI. It focuses on removing the hassle of shifting between different websites and applications. It will offer features such as itinerary planning, trip expense tracking, booking services, and personalized destination recommendations.

Leveraging public APIs and AI-powered algorithms, TravelWise will provide users with a customised, organized and stress-free travel planning experience.

The main objective of TraveWise is following:

- Enhancing user travel experience through personalized suggestions.

- Assisting travelers with smarter, cost-efficient students.

- Eliminating the risk of missing opportunity and booking errors.

- Offering a solution that works for all devices and browsers.

3. Current Situation and Problem/Opportunity Statement

The current situation is that when people want to travel, they have to navigate through several pages, switch between several applications/websites in order to manage their itineraries, track their expenses, and check for good places at their travel destination. Navigating from one platform to another can lead to the travellers miss opportunities, good deals, and inefficiencies as they might forget to book some stuff.

Our travel guide app aims at centralizing these functions thereby enhancing our user experience and simplifying navigation. It will enable travellers to have an all-in-one app where they can book a travel guide, (have access to a calendar where they can) track their travel expenses from their departure date till the return date, access reviews/recommendations on the best places to visit at their travel destination.

4. Critical Assumptions and Constraints

4.1. Critical Assumptions

- Team has the necessary skills to complete the project
- Publicly available APIs provide results that will have the best deals for the customers
- AI tools available will not provide false information
- All team members will remain throughout the entire project

- Travel remains a viable and popular leisure for people after the project completion
- People desire the convenience of having an all-in-one platform

4.2. Constraints

- Project final demo must be completed within 8 months with 4 months maximum for planning
- Each team member will only have around a maximum of 8-16 hours a week for the project

5. Key Features

TravelWise addresses common travel-related challenges by offering the following key features to ensure stress free experience:

- Travel Itinerary Management: Easily build, organize, and modify travel plans with a daily schedule view.
- Expense Monitoring: Automatically track and categorize expenses from departure to return, ensuring full visibility into trip spending.
- Local Guide Booking: Book verified local guides and tour services directly within the app based on your destination.
- AI-Driven Recommendations: Receive personalized suggestions for accommodations, attractions, restaurants, and activities tailored to your preferences and travel context.

- Review and Rating Aggregation: View consolidated ratings and feedback from multiple sources to make informed decisions.

- Responsive Design: Enjoy a consistent and optimized experience across desktops, tablets, and mobile devices.

- API Integration: Seamlessly integrate third-party services including booking platforms, maps, weather forecasts, and local event listings.

6. Preliminary Project Requirements

1. Secure user authentication, and data storage

2. Integration with publicly available APIs for bookings, reviews, locations, and experiences

3. AI-powered recommendation engine for personalized travel suggestions

4. Responsive and user friendly design across all platforms and screen sizes

5. Web-based travel application with user interfaces

7. Potential Risks

The potential risk for this system includes;

- Hallucinations from artificial intelligence (AI) is dangerous as the users travel plan are dependent on it

- Downtime for databases can be detrimental

- User data protection as AI might use their data to train and this would violate user protection act in Canada.

8. Project Schedule

Phase	Duration
1. Planning	3 weeks
1.1. Business Proposal	1 week
1.2. Scope Definition	1 week
1.3. Software Requirements Specification (SRS)	1 week
2. Design & Modeling	10 weeks
2.1. UI Design, Wireframes of Prototypes	4 weeks
2.2. User stories, use cases, Data Flow Diagrams (DFDs)	4 weeks
2.3. Database Modeling	2 weeks
3. Finalize Design and Models	2 weeks
3.1. Present SRS and Prototype to Stakeholders	1 week
3.2. Revise designs from feedback	1 week
4. Development	13 weeks
4.1. Backend setup	2 weeks
4.2. Database integration	2 weeks

4.3. Core features	4 weeks
4.4. Security	1 week
4.5. AI integration	4 weeks
5. Testing & QA	1 week
6. Final Demo	2 weeks
5.1. Present final demo to stakeholders	1 week
5.2. Apply feedback	1 week
7. Launch & Marketing	4 weeks

9. Estimated Cost For Development

Software and Cloud Services (Monthly Estimate)

Description	Details	Estimated Cost (CAD)
AI Token Usage (OpenAI/GPT)	Pay-as-you-go, assuming 1000 queries/month × $0.002/1K tokens × 2K tokens	$4/month (scalable)
Flight, Hotel, Translator APIs	Free tier APIs or minimal-cost tiers (e.g.Skyscanner, RapidAPI)	$20–$50/month
Crime Data API	Numbeo or city crime stats (may require subscription or scraping effort)	$10–$30/month
Database (MongoDB Atlas/PostgreSQL)	Free tier or $9/month managed tier	$0–$9/month
Web Hosting (Vercel, Netlify, or Heroku)	Free tier for prototypes, scale up to $25+ if needed	$0–$25/month
Backend Hosting (Render/Heroku/EC2)	For API handling, estimated light usage	$10–$20/month

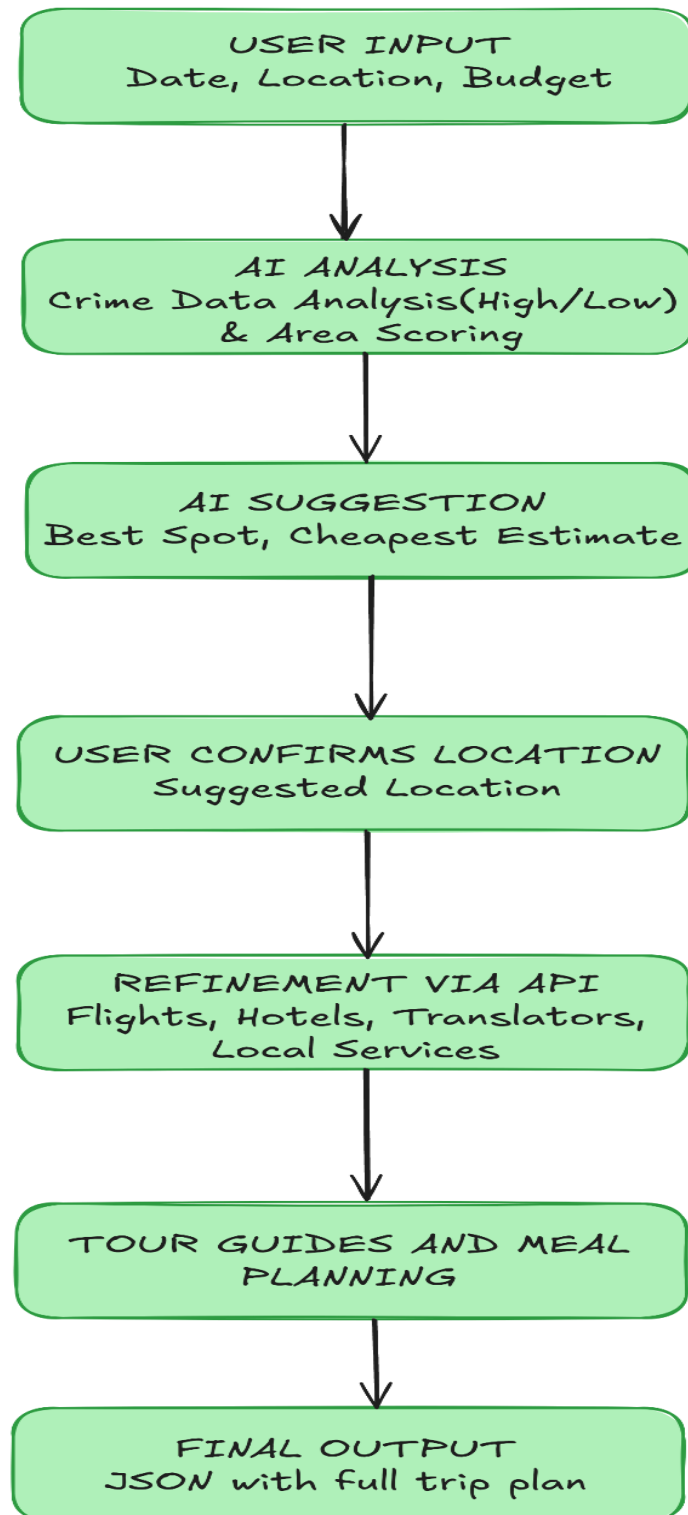**Hardware and Tools (One-time)**

Developers laptops - 5 laptop at $1200 each making $6,000

Employee Compensation and Benefits (Monthly Estimate)

Detail	Cost
Project Manager	$2,800
Front-End Developer	$2,500
Back-End Developer	$2,500
Artificial Intelligence (AI) Engineer	$2,800
Quality Assurance Tester	$2,200
Total	$12,800 Monthly CAD

10. Data Flow Chart

```
┌─────────────────────────────────────┐
│          USER INPUT                  │
│     Date, Location, Budget           │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│          AI ANALYSIS                 │
│  Crime Data Analysis(High/Low)       │
│        & Area Scoring                │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│        AI SUGGESTION                 │
│  Best Spot, Cheapest Estimate        │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│   USER CONFIRMS LOCATION             │
│     Suggested Location               │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│     REFINEMENT VIA API               │
│  Flights, Hotels, Translators,       │
│        Local Services                │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│   TOUR GUIDES AND MEAL               │
│        PLANNING                      │
└─────────────────────────────────────┘
                  │
                  ▼
┌─────────────────────────────────────┐
│        FINAL OUTPUT                  │
│   JSON with full trip plan           │
└─────────────────────────────────────┘
```

11. Project Justification

This stands as a substantial project for 2 semesters because it collates multiple individual subsystems into one that will provide the user with convenience and better budget planning as compared to individual systems created. More complex UI designs will also be integrated for a better user experience. Moreover, AI will also be implemented to give tailored recommendations to users based on their previous actions and decisions when using the app. We are also looking to connect business and users effectively.

12. Market Analysis

- **Industry Growth:** The online travel industry was valued at 640 billion United states dollars as of 2024 and this is before the introduction of artificial intelligence, now with travelwise bringing the travel industry and the artificial intelligence industry which is the fastest growing industry, Travelwise is projected to be a trillion dollar investment.
- **Target Market:** The target market for travelwise is between 21 to 45 years old travellers, this is taking into consideration that in some countries, the legal age is 21. We also considered the population of people above 45 that make use of online devices for booking trips and so we strive to engage people within the age of 21 - 45 years old.
- **Competitors:** Google trips, TripIt, Roadtrippers. Travelwise stands out from its competitors as it integrates AI features as well as other services such as providing translators etc.

13. Monetization Strategy

The approach listed below are the primary source of revenue for Travelwise

- .**Freemium Model**: The main features of the project are free while a pay as you use plan will be added for extra services such as AI usage as the tokens for that comes from the model and it is paid for per use.

- **Affiliate Commission and Promotional Deals**: Partner companies will give a percentage towards every booking or agreed upon structure to ensure both parties are profiting and successful.

- **Google Ads Campaign, Website Traffic, and Sponsored Listings:** The website is expected to generate high traffic because of the Search Engine Optimization (SEO) techniques, as well as retain users with sponsored listing that enables the website itself to be profitable.

14. Key Performance Indicator (KPI) and Success Metrics

Travelwise will strive to achieve the following result in order to meet success criteria

- 10,000 planned trips in the first six (6) months

- 35% monthly active users (MAU)

- User retention rate above 75 %

- Above 4.0 rating by users

- Successful completion within 8 months

15. Contingencies for Potential Risk

- **Hallucinations**: Introduce disclaimers to users to reduce liability and also implement manual override systems.

- **API Downtime**: Ensure there is an alternative data source/api to fall back on in the case of a downtime till the API get back on uptime.

- **Team Shortage:** Recruit temporary freelancers to stay on schedule.

16. Technology Stack

UI/UX Design: Figma, Photoshop, Adobe

Front-End: NextJS, Tailwind CSS

Back-End: NodeJS, Express

Databases: MongoDB / PostgreSQL

AI: OpenAI API, Gemini API, Claude Sonnet

Hosting: Vercel / Render, Azure