Itiner-Ease

Explore with ease-your itinerary, your way.

Spring 2025

CS410 - Team Copper

Your Itinerary

Team Biography

Crystal Rivas is a second degree seeking student in Computer Science at ODU with a background in math education. Her expertise in problem solving drives the transition and aims to develop innovative and impactful solutions.

Stephen Usselman is a senior at ODU majoring in computer science. He is looking to pursue a career as a Software Developer after university.

William Mbandi is a senior at ODU majoring in computer science with a minor in cyber security. Wants to work as a Software Developer after he graduates.

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Team Biography

William Poston is a senior at ODU majoring in computer science with a minor in data science. After school, he dreams of being an AI prompt engineer.

Jandra D. Arias Tavarez is a second degree seeking student at ODU working on her bachelor in Computer Science. She aspires to work as a Software Developer after graduating.

Fredrick Terling is a senior at ODU majoring in Computer Science. He is currently hoping to get his foot in the door for most tech job opportunities but dreams of being a Game Developer and ultimately a Game Producer.

Background - Tourism

- When considering how to spend your time off, traveling is often the first idea that comes to mind making tourism an area worth investing in.

- According to the graph 71% of Americans have taken at least 1 private trip in the last 12 months.

- According to the latest World Tourism Barometer from UN Tourism, an estimated 1.4 billion tourists travelled internationally in 2024. [1]

- 2024 Economic Impact Trends Report, has revealed the U.S. as the world's most powerful Travel & Tourism market, contributing a record-breaking $2.36 TN to the nation's economy last year.[2]

How Often Do Americans Travel?

Share of U.S. respondents who have embarked on the following number of private trips in the last 12 months

1	2 to 3	4 to 5	6 to 10	More than 10	None at all
15%	18%	17%	11%	11%	29%
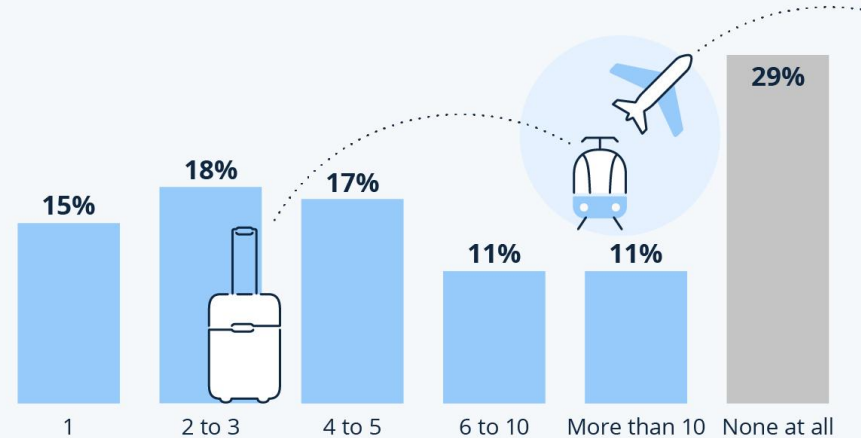
10,138 respondents (18-64 y/o) in the United States; Jan.-Dec. 2024
Source: Statista Consumer Insights

Source: Statista [3]

statista

Why Travel?

- One of the main benefits of travel is collecting new experiences. They can be physical, emotional, or psychological.
- When we stay in our bubble for a long time, we get used to our own ways. We all have our rituals and best practices, a routine we follow on a daily basis.
- Something foreign will become easier to sympathise with. It will no longer be just a tale from another country or continent but a personal story - something you have seen or done. [12]

But Did You Know?

- Besides the enjoyment you get from creating memories, traveling has been found to improve your health.

- A study by the Global Commission on Aging, the Transamerica Center for Retirement Studies and the U.S. Travel Association found that travel helps prevent depression, dementia and Alzheimer's Disease.[4]

Why do People NOT Travel?

A 2023 survey conducted by Nerd Wallet asked users what their biggest barriers were when it came to traveling:

- Lack of money: 27%.
- Lack of time off from work or school: 26%
- Family and other commitments: 13% [13]

According to a NerdWallet analysis of data from the consumer price index issued by the Bureau of Labor Statistics, airfares in January 2023 are up 25.6% versus the same month in 2021, and up 3.7% versus the same month in 2019. January 2023 hotel prices are up 16.3% versus January 2020.[13]

Challenges of Self-Booking Travel

Planning trips on your own can pose many challenges:

TIME

Travelers spend an average of 303 minutes, or more than 5 hours per day on travel content during the 45 days before booking.The research showed that in the 45-day period before booking an online trip, travelers are consuming a significant amount of content to help them make a decision. In the seven countries that were surveyed, travelers spent an average of 45 days before booking a trip online.[5]

CHOICE OVERLOAD

On average, the travelers said they spend over four hours comparing and looking for the best deal, the report found. In 2013, people browsed through 38 webpages before booking their trip while now, it's up to 277 webpages – from third-party booking platforms to the official airline or hotel website. [5]
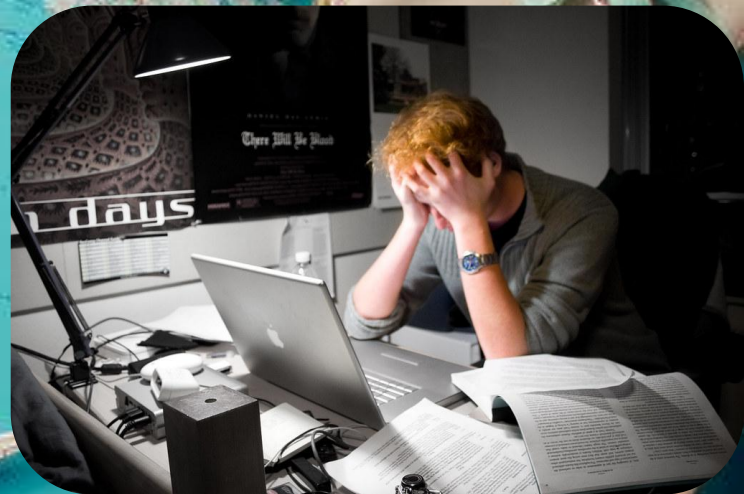
Group Planning Chaos

- You're no longer only planning for yourself , but planning for a group of people with different likes, dislikes, and availability.

- Group travel can bring together people with different personalities and temperaments. It is not uncommon for conflicts to arise due to differences in opinion, communication styles, and personal habits.

- Group members may have different interests and priorities, and conflicting schedules can make it challenging to plan activities. This can lead to frustration and tension within the group.[15]

Issues Continue to Arise

BEYOND GENERIC ITINERARIES

Today's travelers crave personalized journeys that resonate with their unique interests and immerse them in local cultures.

- 57% of travelers believe brands should customize information based on personal preferences or past behaviors.[6]
- 62% feel a trip is wasted if it doesn't include authentic local cultural experiences.[7,8]

PLANS SHIFT

- Even though we try to plan as best as we can, unforeseen circumstances can make us change our plans.
- Among 80% of travelers, 60% of them experienced some type of travel disruption.[10]

Personalized Travel And Experiences Global Market Report 2025

$317.4 billion

The Business Research Company

CAGR 17.0%

Source: Business Research Company[9]

$169.33 billion

$144.45 billion

2024   2025   2026   2027   2028   2029

Market Size (in USD billion)
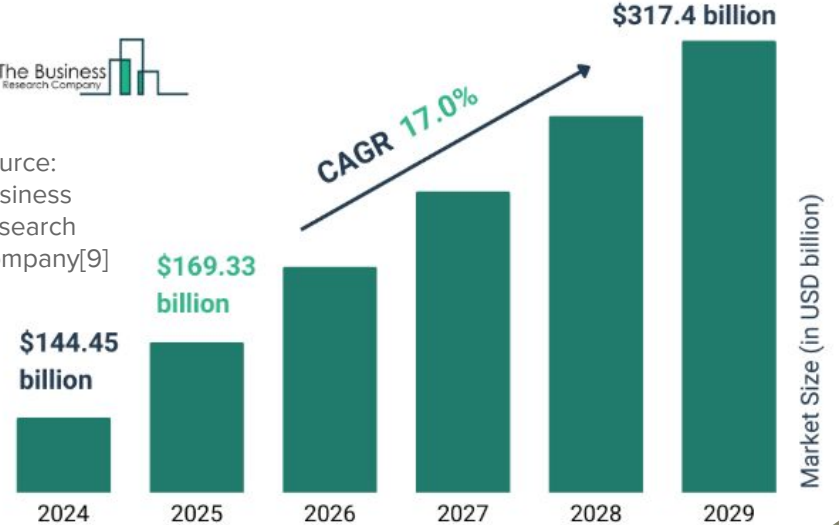
Problem Statement

When travelers plan their own trips, all the time, effort, and stress- compounded further by the constraints of group travel- can sour the experience. 76% of travelers turn to planning applications and websites to make the experience easier, but they only provide generic itineraries that lack personalization and flexibility.[11] These leave out the hidden gems that make a trip memorable and also adapt poorly to unforeseen complications.

Problem Characteristics

Choice Overload

- Consumers are given simply way too many options with no easy way to narrow them down.
- Even after you choose one option you find yourself having to make many more choices over the duration of your trip.

Generic Itinerary

- Whether planning it themselves or otherwise, individuals are lead to the most popular locations and attractions, not necessarily the ones the consumer would most prefer.
- Finding that great local spot or hole in the wall location can be a major highlight of any trip.

Rigid Plans

- An unexpected circumstance can throw all your carefully laid plans into disarray and leave you scrambling if you do not already have a backup.

Group Frustrations

- Groups need a way to coordinate and share their plans to prevent conflicts and make suggestions.

Who is Affected?

Users

- Solo Travelers
- Friend Groups & Families
- Frequent travelers
- Adventure Seekers

These target groups face planning overload, decision fatigue, group conflicts, and lack of personalized/localized recommendations.

Customers

- Users
- Parks & Attractions
- Restaurants
- Local Tour Providers

These groups need better ways to reach travelers without solely relying on mainstream booking platforms.
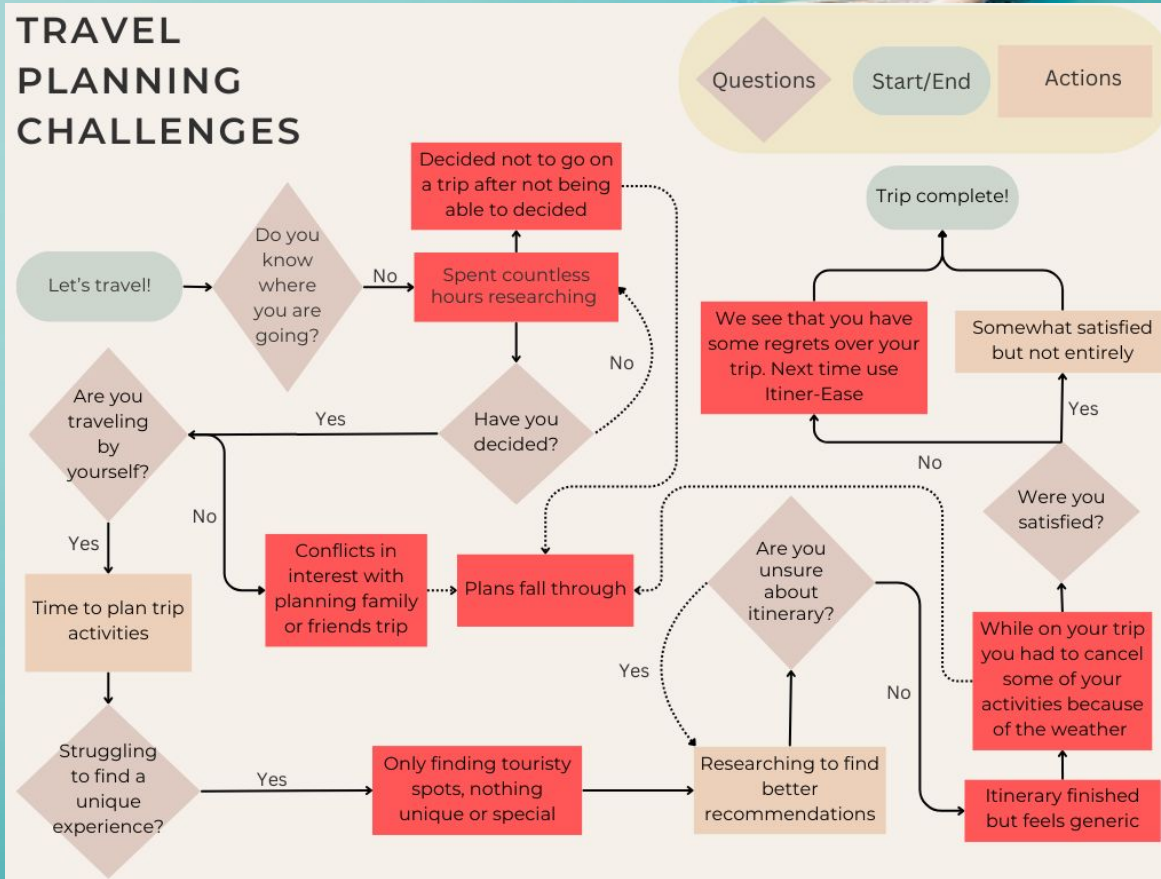
Stakeholders

- Travel & Tourism Industry
- Event Organizers
- Local Businesses

These entities face challenges in attracting travelers who are overwhelmed by mainstream options.

Current Process Flow

TRAVEL PLANNING CHALLENGES

Questions | Start/End | Actions

Let's travel! → Do you know where you are going? →No→ Spent countless hours researching

Decided not to go on a trip after not being able to decided

Have you decided? →Yes→ Are you traveling by yourself?

No

Conflicts in interest with planning family or friends trip →→ Plans fall through

Are you traveling by yourself? →Yes→ Time to plan trip activities

Struggling to find a unique experience? →Yes→ Only finding touristy spots, nothing unique or special →→ Researching to find better recommendations

Are you unsure about itinerary? →Yes→ (Researching to find better recommendations); →No→ Itinerary finished but feels generic

Trip complete!

We see that you have some regrets over your trip. Next time use Itiner-Ease | Somewhat satisfied but not entirely

Were you satisfied? →Yes→ Somewhat satisfied but not entirely; →No→ While on your trip you had to cancel some of your activities because of the weather

Solution

Itiner-Ease is a mobile application designed to simplify and personalize itinerary planning for travelers, new residents, and spontaneous adventurers. Itiner-Ease allows users to generate custom itineraries based on their location and preferences. Users can filter activities, discover overlooked local treasures, and adjust plans in real time. Unlike existing solutions, Itiner-Ease emphasizes user-generated content to give recommendations tailored to your specific interests.

Personalized Itineraries

Personalization Profiles

- **Preferred Activities:** Whether you are a picky eater, looking for a more niche activity, or want to experience the local's favorites we take all these preferences into account when building your itinerary.
- **Customization Options:** Perhaps you want to eat a different kind of food each day or you have specific budgetary restraints you are trying to work under. We have options to modify the recommendations to account for these concerns.

AI-Driven Recommendations

- **Similarity Clustering:** Before our system can get a proper gauge on what exactly takes a place from simply good to one of your new favorites, we rely on users with similar reported interests to base Itiner-Ease's recommendations.
- **Learned Tastes:** As Itiner-Ease gets on your tastes, it gets even better at prioritising the options that you would enjoy the most.

Collaboration and Adaptability

Group Profiles

- **Joint Itineraries:** Going on a family trip or even just a trip with friends? Itiner-Ease can use multiple user profiles to generate an itinerary, taking all your preferences and constraints to develop a plan that works for all parties.
- **Plan Sharing:** Itiner-Ease can share all or only part of your itinerary to coordinate activities with others in the app or outside it.

Adaptive Changes

- **Avoid Disruptions**: It is impossible to plan for everything but that does not mean we cannot minimize it where possible. Itiner-Ease takes a proactive approach to monitor local conditions and notify you of any concerns.
- **Hot Spots**: Relying on reviews means you might miss out on the exciting new location that just opened. If users with interests similar to you are rating it highly recently we may recommend an optional switch in your itinerary.
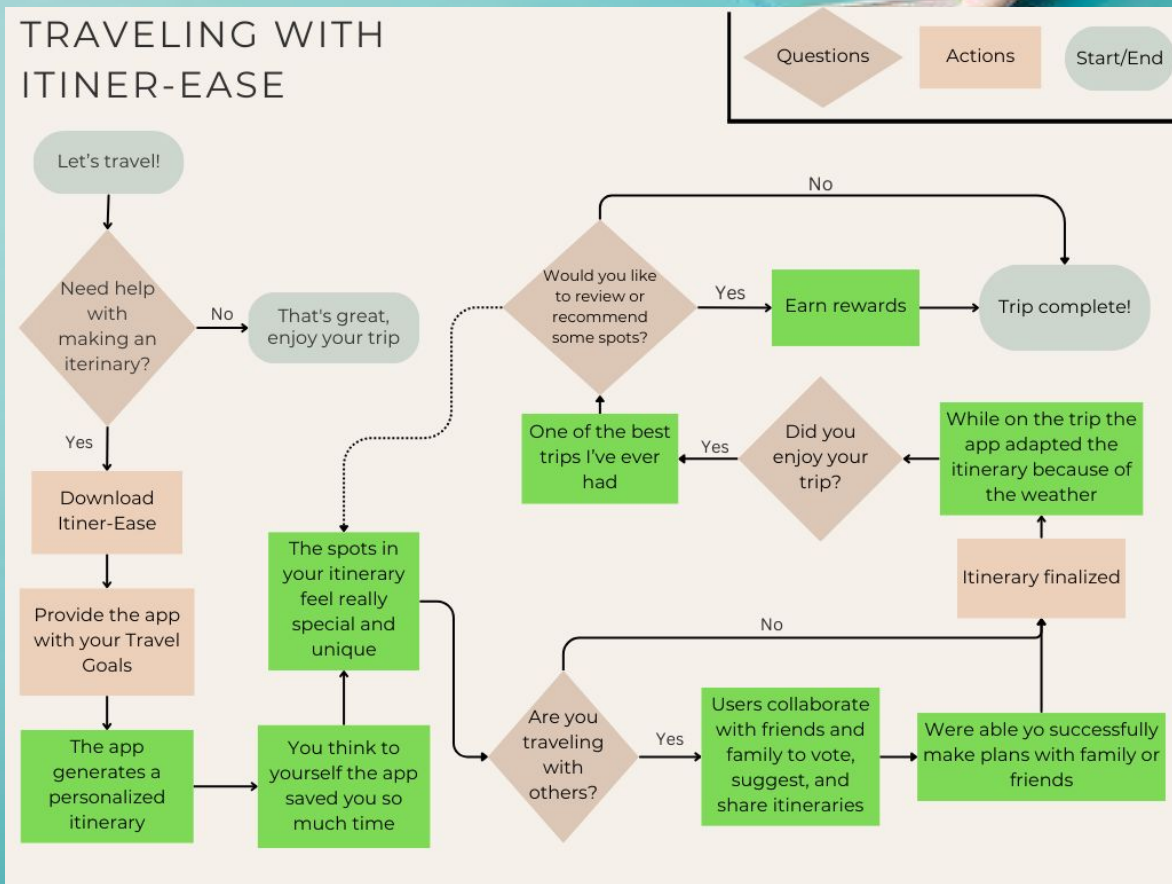
Explorer Rewards

Local Discovery: Users can create positive reviews for their favorite locations. If other travelers also end up enjoying the experience.

Sponsored Businesses: Itiner-Ease will partner with local businesses to increase their visibility in exchange for benefits to our rewards members.

Reward Benefits: Users can use their rewards to gain access to a premium ad-free version of the application or on discounts and coupons with our commercial partners.

Solution Process Flow

TRAVELING WITH ITINER-EASE

Legend: Questions (diamond), Actions (rectangle), Start/End (rounded)

- Let's travel! →
- Need help with making an iterinary?
  - No → That's great, enjoy your trip
  - Yes → Download Itiner-Ease → Provide the app with your Travel Goals → The app generates a personalized itinerary → You think to yourself the app saved you so much time → The spots in your itinerary feel really special and unique → Are you traveling with others?
    - Yes → Users collaborate with friends and family to vote, suggest, and share itineraries → Were able yo successfully make plans with family or friends → Itinerary finalized
    - No → Itinerary finalized
  - Itinerary finalized → While on the trip the app adapted the itinerary because of the weather → Did you enjoy your trip?
    - Yes → One of the best trips I've ever had → Would you like to review or recommend some spots?
      - Yes → Earn rewards → Trip complete!
      - No → Trip complete!

What It Will Do

AI-Driven Recommendations

- Through the use of our AI-trained on data and reviews from users with similar interests, Itiner-Ease will narrow down the options to the ones that most accurately fit your desired experience.

Take You Off the Beaten Path

- By creating a user profile, making use of our recommendations, and the help of our Explorer Rewards to connect you with that perfect location you would never have found on your own.

Adapt Plans On the Go

- Itiner-Ease monitors disruptive factors such as weather or local holidays and uses a flexible structure to easily propose new options to prevent schedule vacancies.

Make Group Planning a Breeze

- Group Profiles will take into account all members' personalization profiles when making suggestions to minimize choice conflict. While also allowing you to input your own preferences for members who either cannot or do not want to make a profile.

What it Will Not Do

- **Itiner-Ease will not provide a way to book flights or hotels:** The user can upload their flight and lodging info to the itinerary.
- **Itiner-Ease will not make reservations or otherwise interact with businesses on the user's behalf:** Entry and reservation requirements will be displayed prominently.
- **Itiner-Ease will not focus on social networking:** Users can invite other users to itineraries but can otherwise not share or publicize their activities in-app.
- **Itiner-Ease will not make generic recommendations:** The recommendations will be primarily based on the user's preferences and not just general popularity.

Major Functional Components Diagram

Presentation Layer

Application Layer

Data Layer
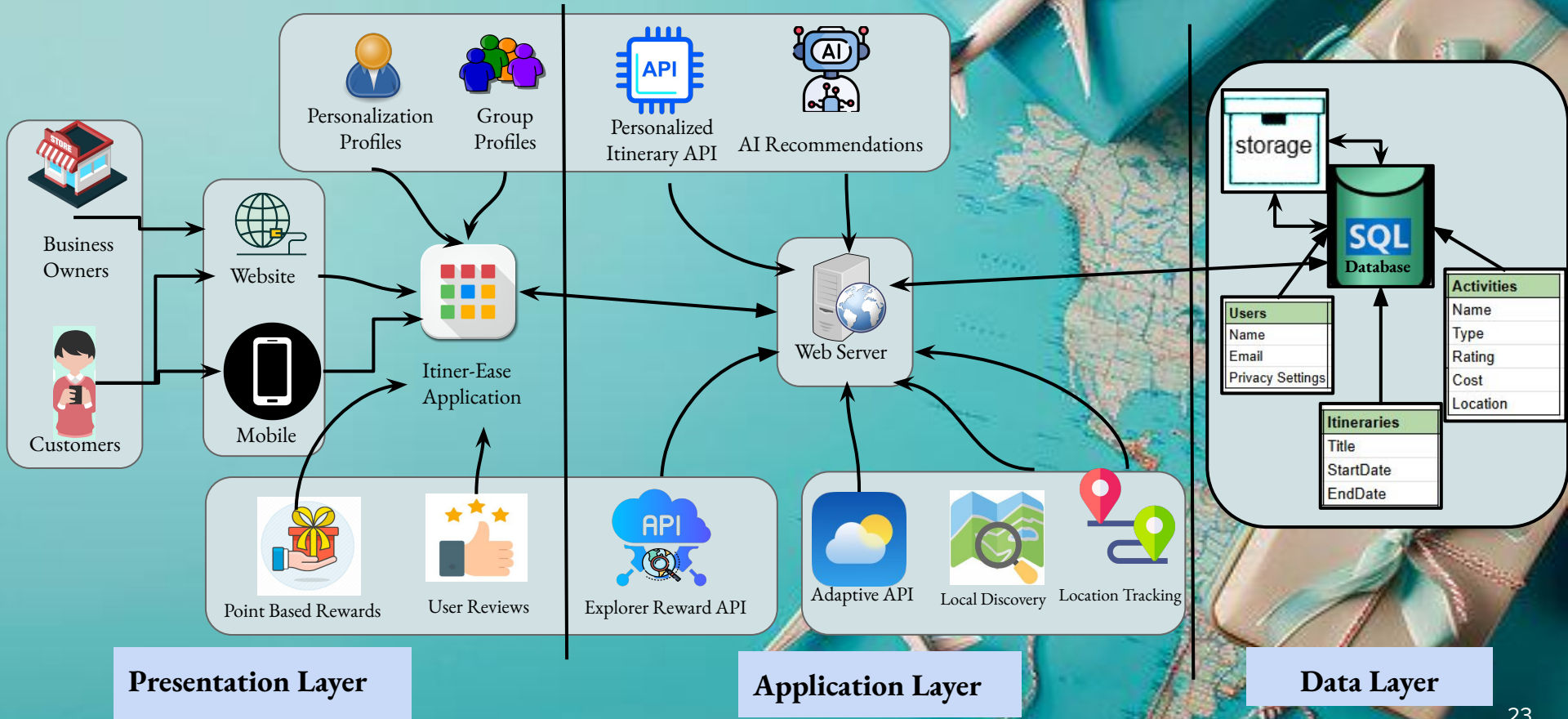
Development Tools

- We have decided to use **Visual Studio Code** as our Integrated Development Environment.

- Our version control will be through open source system **Git** hosted on **GitHub**.

- To host our website and provide seamless integration, we have opted to use **GitHub's Actions and Workflows** feature.
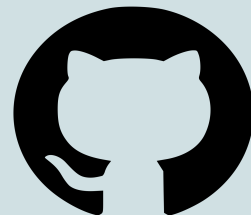
Competition Matrix

Feature	Itiner-Ease	wanderlog	TROUPE	FRIENZY	TripIt from Concur	B. Booking.com
Group Planning	✓	✓	✓	✓	✓	
Hidden Gems	✓		✓	✓		✓
AI-Driven Recommendations	✓	✓	✓	✓	✓	✓
Adaptive Changes	✓					
User Feedback Integration	✓					
Flight & Hotel Reservations		✓			✓	✓

Implementation: full ✓ partial ✓

Benefits to Customer Base

- **Reduced Planning Overload:** Travelers have access to collaborative tools, voting features, and adjustable itineraries. Customers will then have fewer decision making conflicts and are more likely to complete bookings.

- **Personalized Travel:** Travelers gain access to AI-driven recommendations.

- **Improved Data Insights for Travel Market:** Through the rewards based feedback system, customer preferences are collected, providing valuable data to businesses.

User Risk Matrix

Likelihood

Risk Matrix:

	Very Low	Low	Medium	High	Very High
Severe			R4		
High		R3	R1		
Medium				R2	
Low	M1	M2	M4		
Very Low			M3		

Impact (vertical axis)

Legend

Low Risk	Medium Risk	High Risk

Risks

R-1: User finds the app overwhelming or confusing to use

R-2: User receives recommendations that don't match preferences

R-3: User is in an area with poor internet connectivity

R-4: Users abandon the app due to lack of engagement
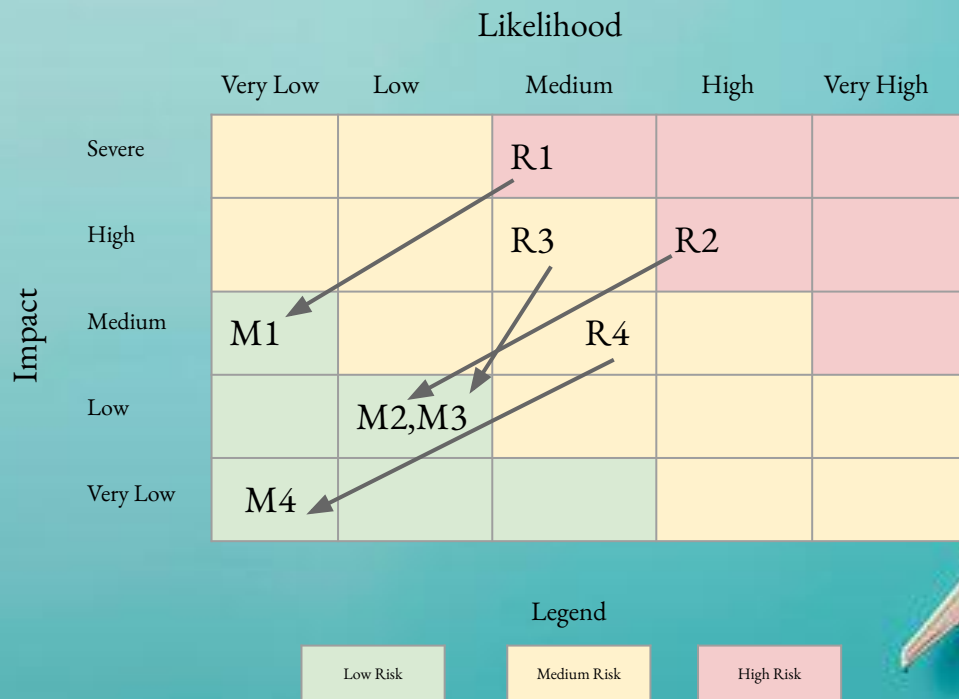
Mitigation

M-1: Ensure an intuitive UI/UX with guided onboarding and simple navigation

M-2: Allow users to personalize preferences and provide feedback to improve recommendations

M-3: Implement offline mode with cached recommendations and maps

M-4: Implement push notifications, gamification, or incentives like discounts to keep users engaged. Integrate these features with our premium services and our commercial partners to reward users and drive revenue.

Customer Risk Matrix

Likelihood

	Very Low	Low	Medium	High	Very High
Severe			R1		
High			R3	R2	
Medium	M1		R4		
Low		M2,M3			
Very Low	M4				

Impact

Legend

Low Risk | Medium Risk | High Risk

Risks

R-1: Investors see the app as too niche or risky to fund

R-2: Businesses/advertisers don't see value in paying for promotion

R-3: Businesses feel underrepresented or struggle to get visibility on the platform

R-4: Advertisers worry about ad placements being ineffective or intrusive

Mitigation

M-1: Present clear market research, growth potential, and revenue streams (ads, partnerships, premium features)

M-2: Offer analytics on user engagement, conversion rates, and ad performance to prove return on investment

M-3: Provide affordable listing options, featured spots, and local partnerships

M-4: Use non-intrusive native ads and give businesses targeting options to reach the right audience

Technical Risk Matrix

Likelihood

	Very Low	Low	Medium	High	Very High
Severe			R1	R4	
High		R3			
Medium	M1			R2	
Low	M4	M2			
Very Low	M3				

Impact

Legend

| Low Risk | Medium Risk | High Risk |

Risks

R-1: Not enough local support to find obscure locations

R-2: Application software issues

R-3: User declines to share location/GPS services

R-4: Security breach or data leak

Mitigation

M-1: Integrate with existing services like Google Maps, employ web scraping, hire/incentivize local experts to gather data on obscure locations. Offer deals with local businesses.

M-2: Prioritize application performance

M-3: Allow users to search by city/zip code

M-4: Practice cybersecurity hygiene

Legal & Security Risk Matrix

Likelihood

	Very Low	Low	Medium	High	Very High
Severe			R2	R1 R3	
High					
Medium		M3			
Low		M2			
Very Low			M1		

Impact

Legend

Low Risk | Medium Risk | High Risk
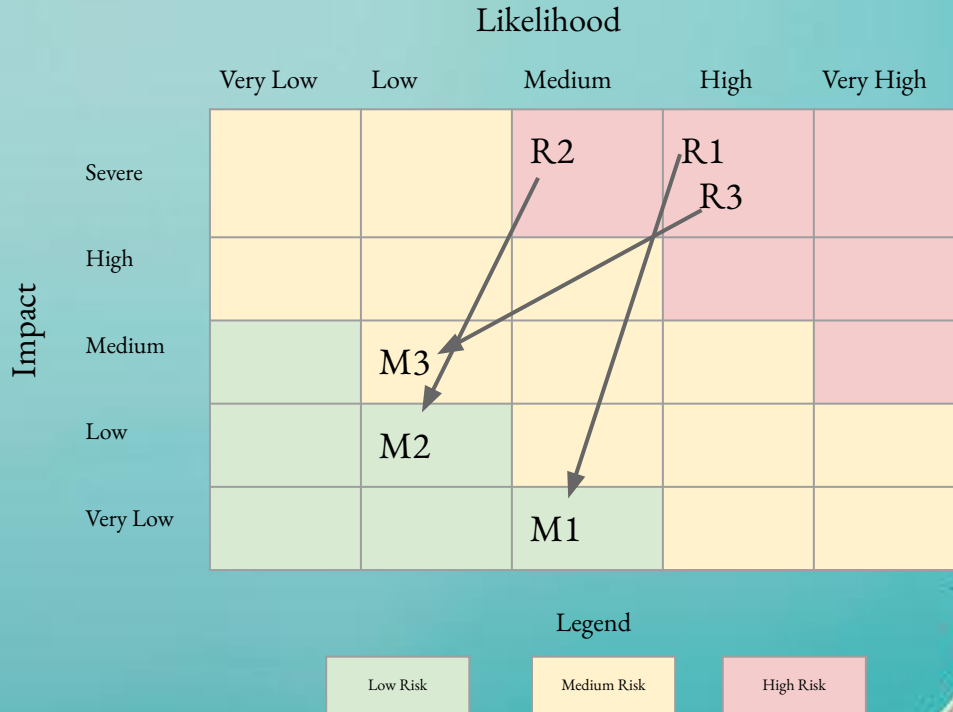
Risks

R-1: Unauthorized sharing of sensitive user data, including age, location, and preferences.

R-2: Potential legal issues arising from differences in religious beliefs, customs, and local laws.

R-3: Health risks related to pre-existing medical conditions, such as allergies or injuries from recommended activities.

Mitigation

M-1: Itiner-Ease will collect only the necessary data with explicit user consent and will discard it after the itinerary is generated.

M-2: Users will be encouraged to research local laws, while the app will provide relevant legal and cultural information.

M-3: Itiner-Ease will not be liable for physical injuries. Restaurants will be required to disclose allergen information to ensure user safety.

Key Points

- User Engagement & Rewards
- Discover Hidden Gems
- AI-Driven Recommendations
- Adaptive Changes
- Group Planning

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