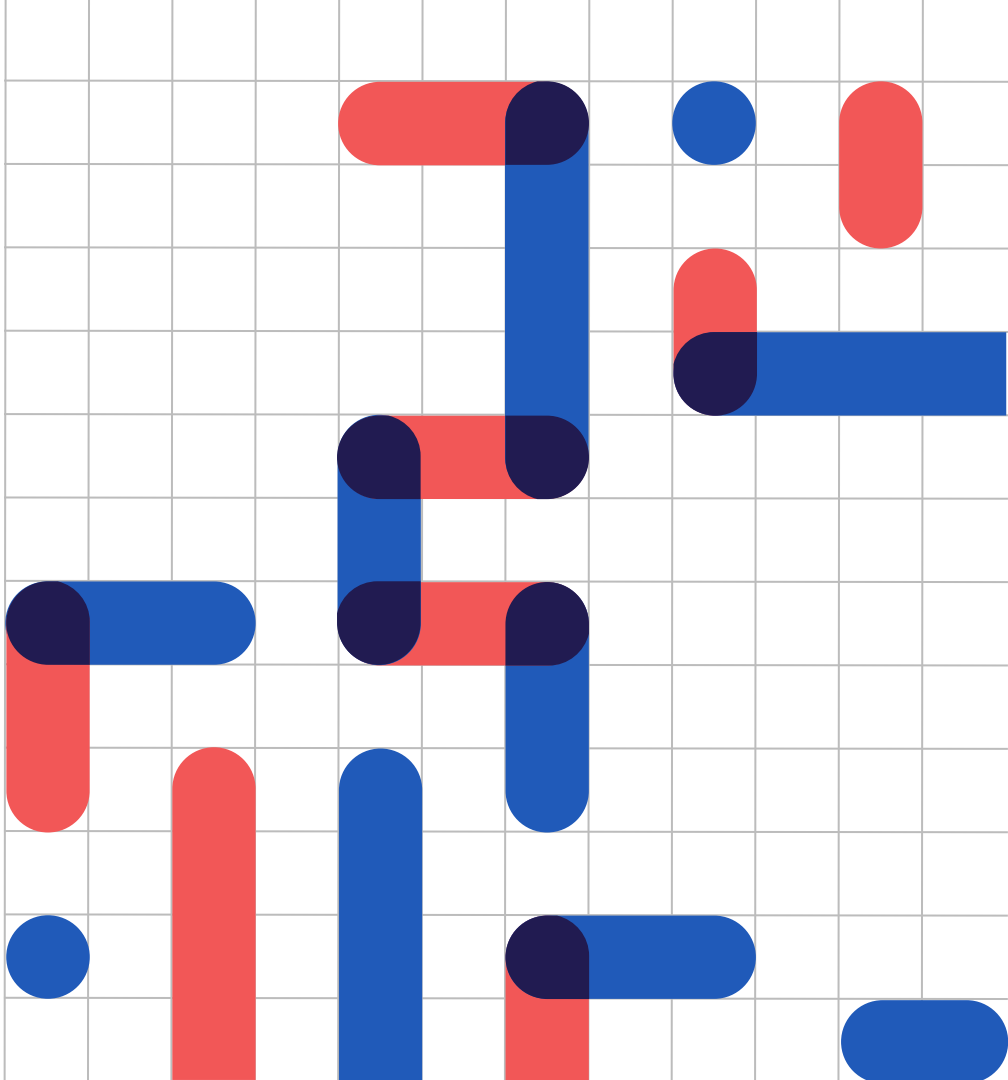
MingleMap

Feasibility Presentation
Team Iron
CS410 — Spring 2025

"Explore, Chat, Connect - A New Way To Socialize"



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Meet The Team

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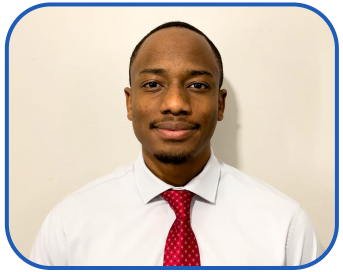

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Background

- Everyone naturally desires meaningful connection.
- In 2023, the U.S Surgeon General issued an article on America's loneliness epidemic stating that people's social networks are getting smaller. (U.S Surgeon 13)
- In the U.S., time spent alone is far greater than time spent with others.

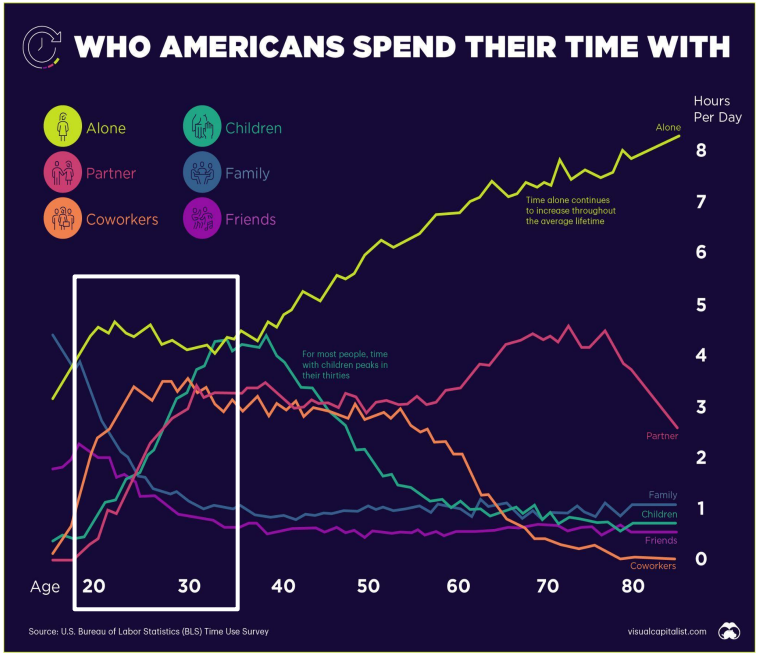


Figure 1. Time alone vs Not alone ages 20 - 80 (KOOP 1)

Resulting Problems

- Decline in mental health : Lonely individuals are more likely to experience social anxiety and depression. They are also more prone to suicidal ideation.
- Decline in physical health: Loneliness has been linked to premature death. It can cause cardiovascular issues and on the extreme side of loneliness, it can be the equivalent of smoking as much as 15 cigarettes per day. (U.S Surgeon 25)
- Lower productivity and weak social connections: People who reportedly feel lonely, struggle to be productive at work and at home and have a difficult time forming social connections.

The Major Contributing Factor

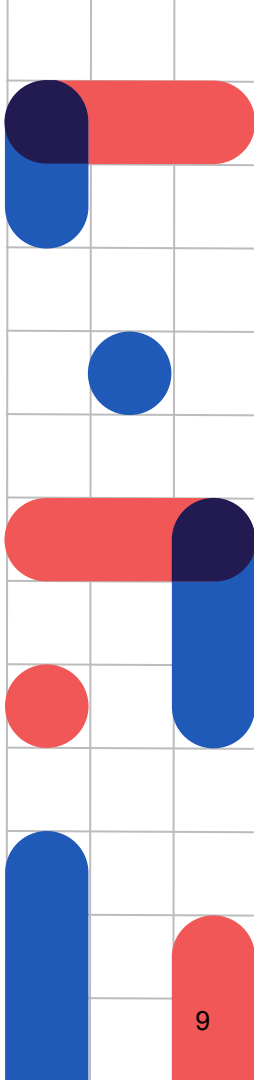
- Around 96-99% of all teens and adults under the age of 65 use the internet. Of that amount one-in-three adults reported that they are online almost constantly. (U.S Surgeon 19-20)
- Social media is used excessively and displaces most of our in person engagement with others.

Other Contributing Factors

- Remote work: People who work remotely have less opportunity interact with others in-person and are often isolated at home.
- Changing social norms: 74% of Gen Z workers prefer online communication over in-person small talk. (SWNS)
- Fewer community gathering places: Places like coffeeshops and libraries where people would typically run into strangers and friends are becoming more infrequent.(Adam)

The Ideal Solution

Technology is an inevitable part of our lives, and our reliance on mobile devices isn't going anywhere. There's a real need for an app that connects the digital world of social media with genuine, in-person interactions. The ideal solution would embrace the current trend of heavy social media use while also encouraging real-world connections.



Problem Statement: Declining Socialization

- Making new friends has become increasingly difficult for young adults in the digital age.
- Many individuals, especially introverts, struggle to start conversations with strangers in social settings.
- While social media enables remote communications, it lacks the authenticity of in-person connections.

As a result, people in public places like parks, gyms, or coffee shops often miss chances to meet new people due to uncertainty about others' willingness to socialize.

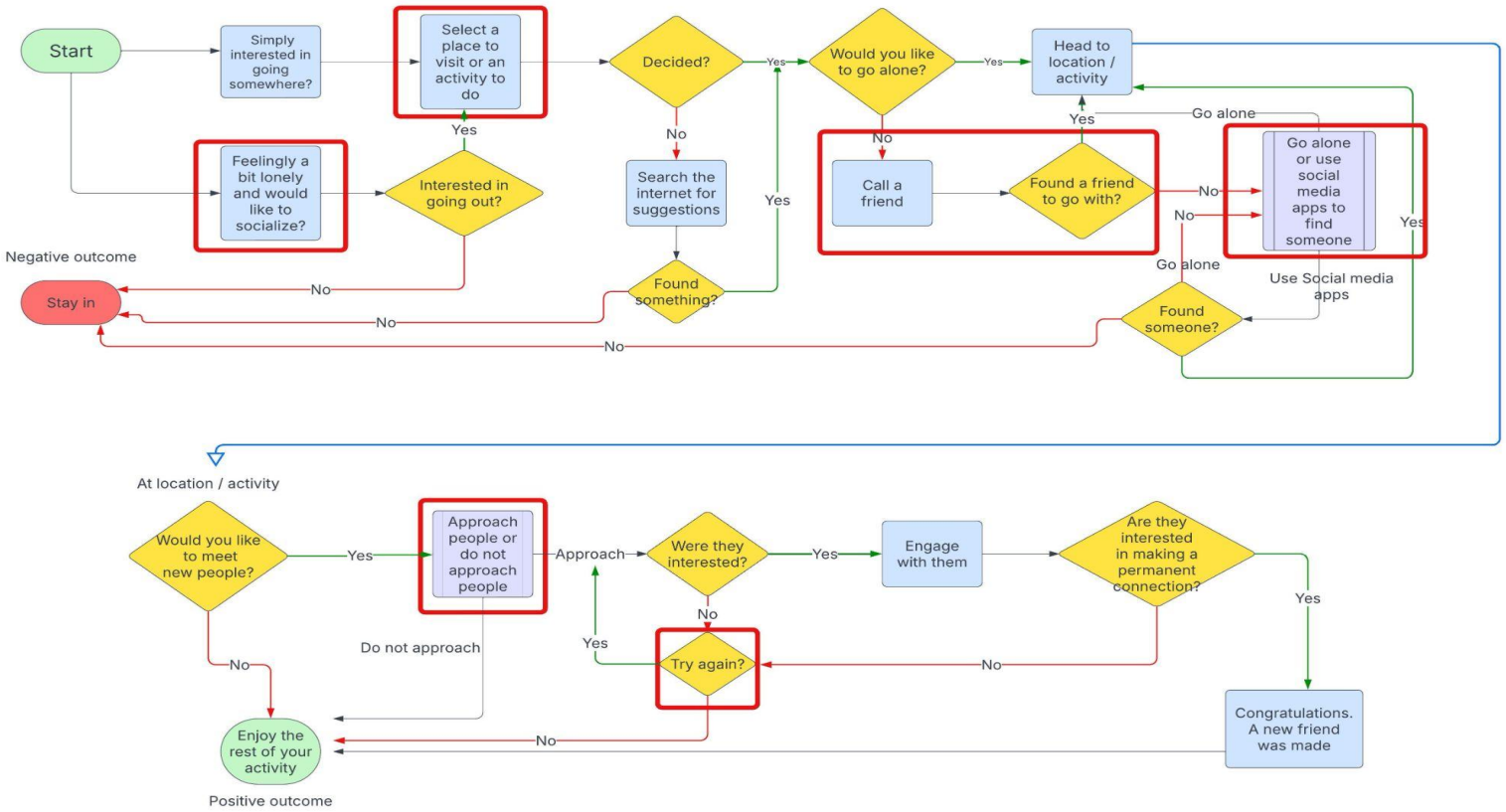
Anxiety and Isolation

- **Fear of rejection or social anxiety:** Fear discourages people from approaching strangers, even when they are open to conversation.
- **Avoidance of one-on-one interactions:** Many people are intimidated by one-on-one interactions, preferring to meet people in groups.
- **Isolation in public spaces:** People remain isolated even in spaces where there is a common interest among strangers (concerts, museums, etc.).

Problems with Social Media

- **Detraction from Human Interactions:** The convenience of social media distracts users from their real-life relationships.
- **Lack of authenticity on traditional social media:** Engagement metrics such as views, likes and followers have made social media a performative act for many young people.
- **Lack of translation to real relationships:** Social media applications are designed to to maximize online activity and user retention, and offer little to no incentive for real socialization.

Current Process Flow



Solution Statement

MingleMap is a smartphone application designed to bridge the gap between individuals who wish to form real-life social connections in public spaces. It will leverage real-time location-based technology and allow users to see others who are open to interaction within a shared environment. Unlike traditional social media apps, MingleMap facilitates immediate, in-person connections by displaying a curated list of nearby individuals engaging in similar activities.

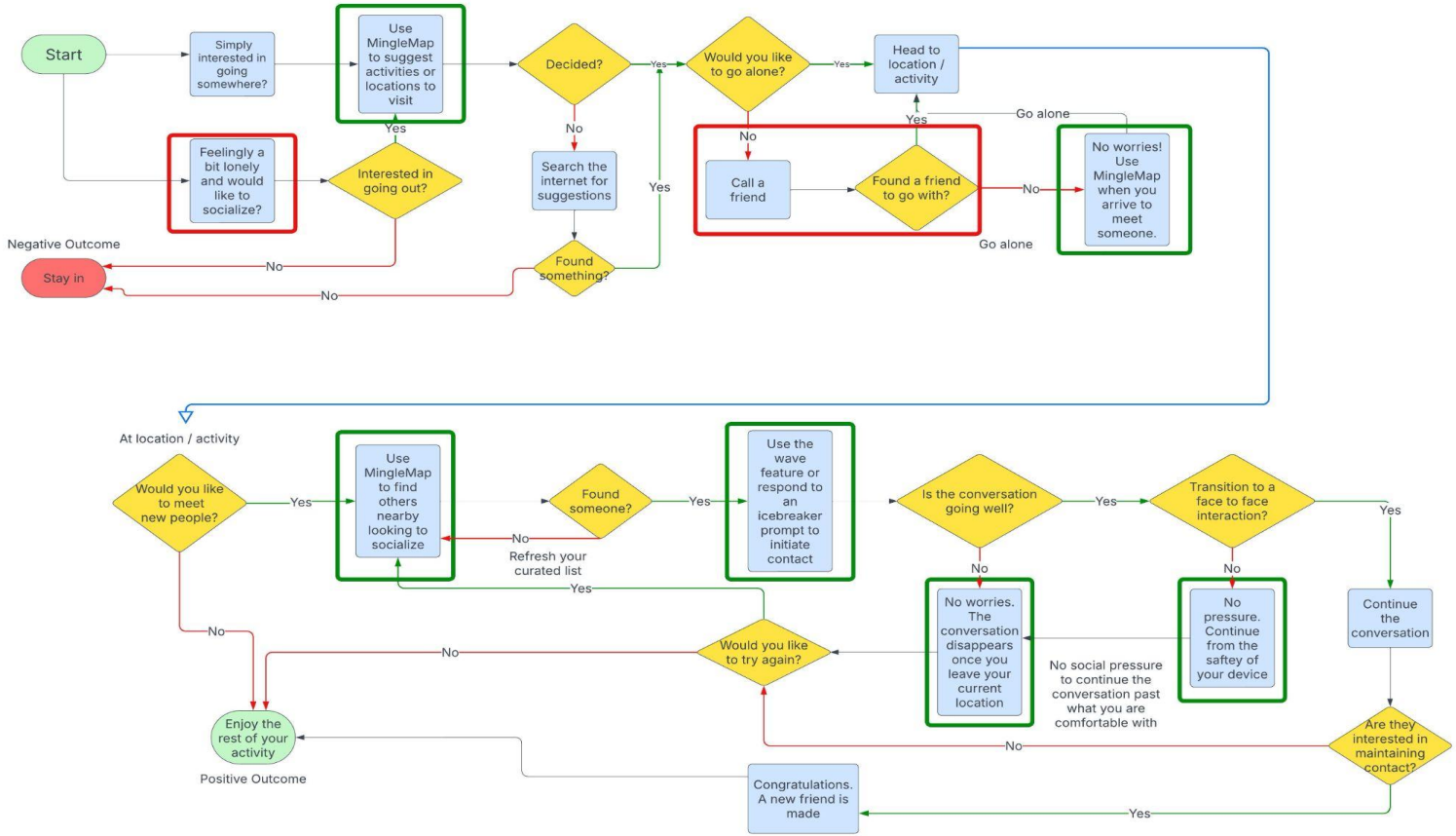
Solution Characteristics

- **Active Location-based Curation:** Users will only be shown others who are present at the same location. This limits in-app browsing and encourages real connections.
- **Profile Status:** This will display information like current engagement with another user or a do not disturb message. This reduces fear of rejection and social anxiety, allowing users to only approach willing individuals.
- **Smart Matchmaking:** Users can provide data such as age, career, and hobbies to enable recommendation of similar users. This eliminates the fear of missing opportunities to find mutual interests. Suggestions can be rated (not the users themselves) in order to train the matchmaking algorithm.

Solution Characteristics

- **Easy Introductions:** Users can “wave” to one another to show interest in a conversation. This reduces fear of rejection and social anxiety.
- **Tailored Icebreakers:** MingleMap provides users with context-aware conversation starters based on common locations and interests. This will further reduce social anxiety.
- **Vanishing Chats:** Conversations with other users disappear when one party leaves the current location. This alleviates the pressure to maintain online conversations.
- **Reporting:** Users can report an unsafe location or other user. This is integral to the safety and accountability of users.

Solution Process Flow



What it Will Do

- Enable users to connect with others who are in the same location and open to socializing.
- Provide a profile status feature that indicates whether someone is actively engaged in conversation, available, or prefers solitude.
- Offer location-based visibility while ensuring user privacy (no long-term chat history).
- Utilize a recommendation system based on user interests and activity patterns.

What it Will Not Do

- The app will not function as a traditional social media platform with permanent profiles or friend lists.
- It will not facilitate remote connections—users must be physically present at the same location.
- MingleMap will not store long-term chat history to encourage real-world engagement.
- The app will not replace personal discretion in forming connections but will serve as a tool to make interactions easier.

Who Will Benefit from MingleMap?

Users:
Young adults looking for human interaction, especially 1-on-1 connections.

Customers:
Businesses can partner to become a “Friendly” location and receive an in-app badge. Users can receive discounts and use designated seating areas at partner locations, encouraging repeat visitors.

Stakeholders:
Physical-location businesses such as restaurants stand to profit, as the app encourages people to visit these locations to meet and connect.

Competition Matrix

	MingleMap	Facebook	Meetup	Nextdoor	Bumble BFF	Hey! VINA
Existing Communities	✗	✓	✓	✓	✗	✓
Profiles	✓	✓	✓	✓	✓	✓
Live Interactive Location Features	✓	✗	✗	✗	✗	✗
Algorithm Matching	✓	✓	✗	✗	✓	✓
Group Chats	✗	✓	✓	✓	✓	✓
Vanishing Chats	✓	✗	✗	✗	✗	✗
Shows People Nearby	✓	✗	✗	✗	✗	✗

Development Tools

- **Flutter** - Cross-platform app development framework
- **Figma** - UI/UX design application
- **Mapbox SDK** - Customizable, real-time geolocation
- **Node.js** - Lightweight backend for handling real-time connections
- **Socket.io** - Allows for instant updates and messaging
- **Firebase** - Cloud hosted NoSQL database
- **Git with GitHub** - Central repository for managing code, pull requests, and branching, along with facilitating collaboration and rollbacks.
- **GitHub Actions & Workflows** - Automates building and testing your app when new code is pushed. Can be extended to deploy to staging or production environments.
- **Appium** - Mobile application tester

Major Functional Components

Frontend Layer

Flutter
- Smartphone cross-platform framework

Figma
- UI/UX design

Mapbox SDK
- Location services

Backend Layer

Node.js
- API and real time connections

Socket.io
- instant messaging

GitHub Actions

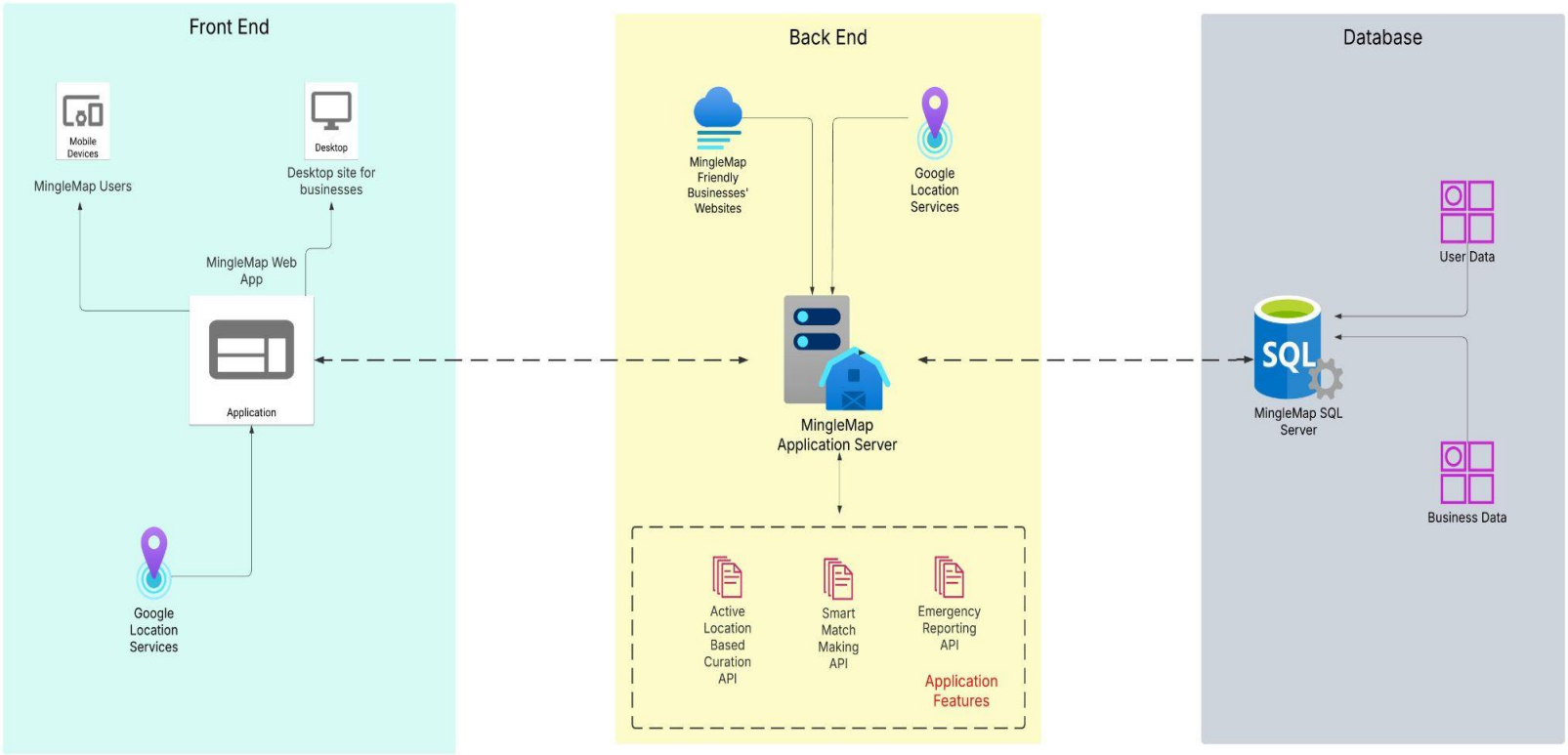
Appium
- automated testing

Database Layer

Firebase
- user profiles and location data

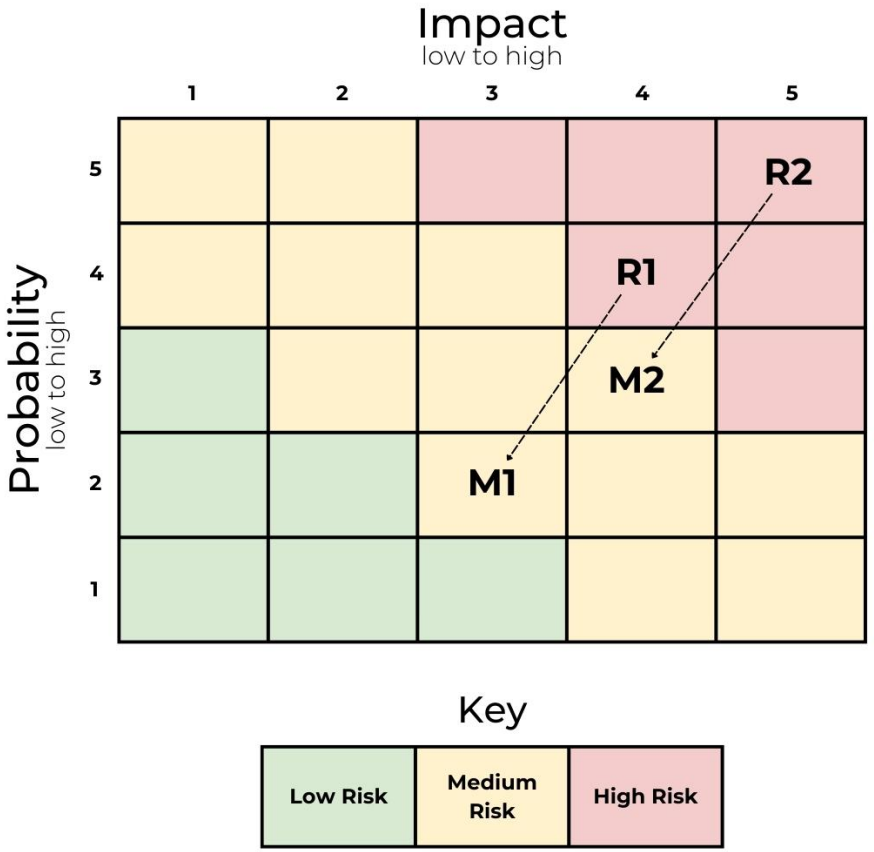
AWS
- cloud storage

Major Functional Components Diagram (MFCD)



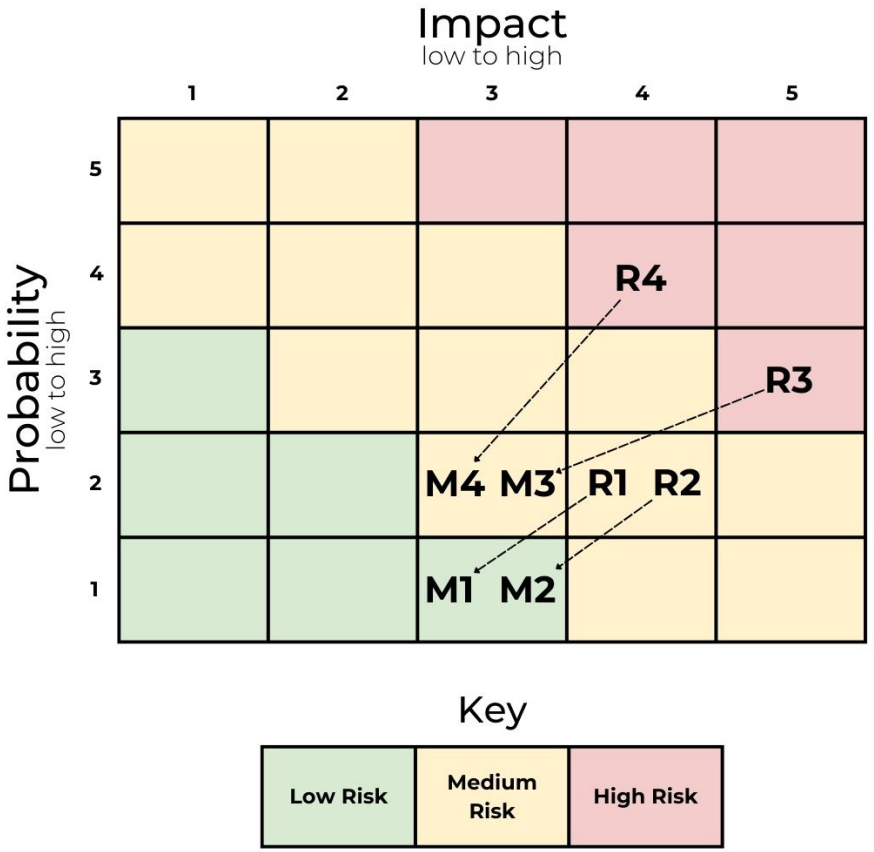
Customer and End User Risks

Risks	Mitigations
R1: Users hesitant to join due to new concept and reluctance to socialize	**M1**: Implement an engaging onboarding tutorial explaining app's purpose, incentivize with badges, streaks, or premium features, along with partnering with local businesses
R2: Users hesitant about sharing real-time location or being visible to srangers	**M2**: Provide a togglable mode for availability, such as "Invisible Mode", control visibility radius with preferred locations for engagement, and clear privacy policies and user education for how their data is handled



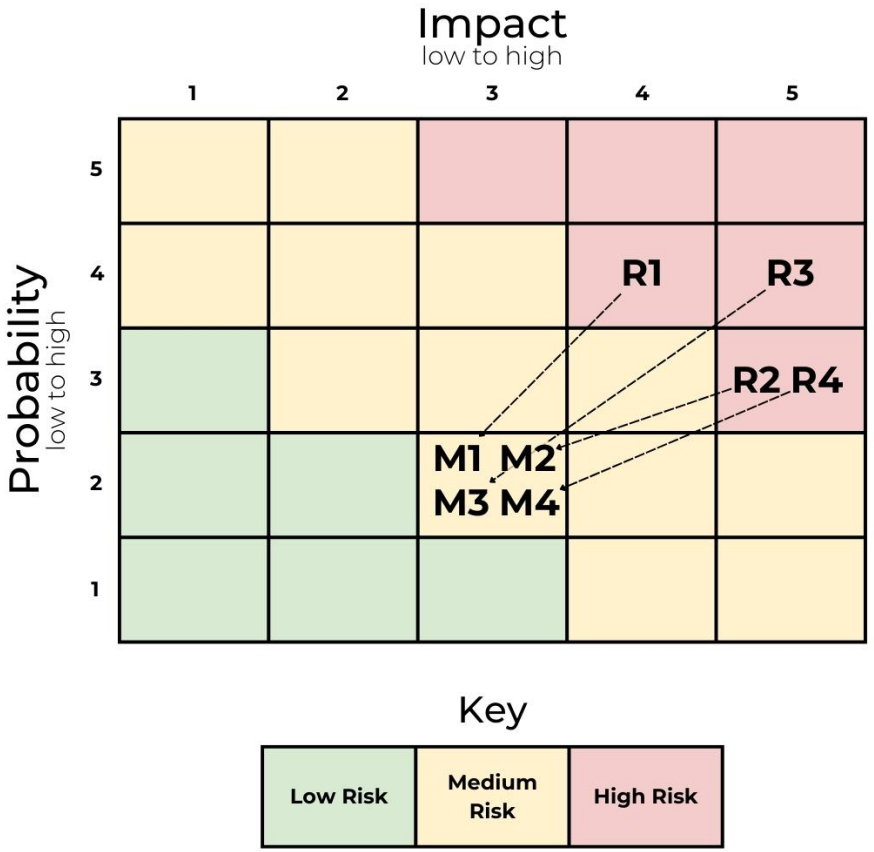
Technical Risks

Risks	Mitigations
R1: Disruptions in connectivity, limiting real-time location-based features	**M1**: Cache previously viewed events and user data so recent information can still be accessed when offline
R2: Server downtime, slow performance, or product failure may impact user adoption	**M2**: Conduct scheduled maintenance, utilize real-time monitoring tools, and optimize server infrastructure
R3: High traffic and unexpected spikes in users may cause server crashes and slow response times	**M3**: Use cloud-based auto-scaling solutions (e.g., AWS, Firebase, or DigitalOcean), while implementing load balancing, caching mechanisms, and stress testing
R4: GPS location may be slow and inaccurate causing difficulty to connect with nearby users	**M4**: Use high-accuracy geolocation services such as Mapbox SDK with fallback options, along with optimizing battery usage with balanced polling rates, and providing user feedback tools to report location discrepencies



Security and Legal Risks

Risks	Mitigations
R1: Creation of fake profiles	**M1**: Require phone number verification and optional social media linking, with community driven reporting system, and AI moderation tools with a trust score based on user interactions
R2: Stores user location data and interactions, becoming targetable by hackers	**M2**: Encrypt sensitive data using AES-256 and enforce secure API authentication, require pen-testing and security audits, along with role-based access control and deletion of conversations
R3: Breaking GDPR laws (Europe) and CCPA laws (California) on collection of location data	**M3**: Obtain explicit consent before collecting location data, offer ability to delete data upon request, and maintain compliance legally by consulting privacy law experts
R4: Harassment, misconduct, or unsafe encounters possible	**M4**: Display safety disclaimers that meetups are at their own risk, provide an SOS feature, and work with local authorities and trusted partners for user safety features



Conclusion: Transforming Social Connections

- Mingle Map is designed to **bridge the gap** between **digital and in-person social interactions**.
- By leveraging **real-time location technology**, our app helps users **connect with like-minded individuals in shared spaces**, promoting **organic and meaningful conversations**.

Who Benefits from Mingle Map?

- **Users** – Meet new people effortlessly, reducing social anxiety and fostering real-world connections.
- **Local Businesses** – Gain increased foot traffic and engagement from users exploring new social opportunities.
- **Researchers & Developers** – Utilize anonymized interaction data to improve location-based social technologies.

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Glossary and Appendices

Catfishing – The act of creating a fake online identity to deceive others, often for fraudulent or malicious purposes.
Geolocation Services – Technology that determines a user's real-world location using GPS, Wi-Fi, or cellular networks (e.g., **Mapbox SDK**).
Auto-Scaling – A cloud computing feature that automatically adjusts the number of active servers based on user demand (e.g., **AWS Auto Scaling**).
Load Balancing – A method of distributing traffic across multiple servers to **prevent overload and downtime**.
Caching – A process where **frequently accessed data is stored** temporarily for **faster access** and improved app performance.
End-to-End Encryption (E2EE) – A security protocol that ensures only the sender and recipient can access the content of messages, **protecting against hackers and data breaches**.
GDPR (General Data Protection Regulation) – A European law that governs **how personal data is collected and stored**, requiring **explicit user consent**.
CCPA (California Consumer Privacy Act) – A California law that grants users the right to **know, delete, and opt out of** data collection.
Offline Mode – A feature that allows users to access **cached data** and certain app functionalities **without an internet connection**.
Trust Score – A system that evaluates users' credibility based on **profile verification, past interactions, and reports from other users**.
SOS Feature – An in-app emergency button that allows users to quickly **report incidents or request help in real-time**.
Role-Based Access Control (RBAC) – A security feature that restricts **which users or employees can access certain data or app functions**.
Scalability – The ability of an app to handle **increased traffic and data load** without performance issues.
Cloud Hosting – A method of storing and running applications on remote servers (e.g., **Firebase, DigitalOcean**) instead of local devices.