

Location-Sharing: Building a Better Mobile Application for Socialization and Safety

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ABSTRACT

Location sharing services allow users to share their real-time geographical location with others, however current applications are too simplistic and lack functionality. I propose a design for a new location-sharing application that includes additional use cases over other applications. The design has three primary objectives to improve on other applications: a scalable design approach for various group sizes, additional tools for event planning, and a focus on features to promote safety. The application will be built for iOS using Swift and utilize AWS's Elastic Compute Cloud server for data processing. I anticipate that this location-sharing application will have an enhanced user experience for coordinating events in addition to increased user safety and peace of mind. Afterwards, the application will be expanded to include Android devices and continue to evolve through stakeholder feedback following Agile methodology.

1. INTRODUCTION

Today, nearly everyone carries a smartphone that can interact with the satellite-based Global Positioning System (GPS). This allows people to pinpoint their exact location and receive directions, assisting in navigation and locating landmarks or points of interest (POI). One increasingly popular use for GPS technology is location-sharing. In 2022, the New York Times reported that sixty-nine percent of Gen Z and 77% of millennials activated location-sharing

services (Baker, 2022). Location-sharing services, accessed through mobile applications, allow users to share their real-time geographical location with other selected users.

Location-sharing apps can serve a crucial role in promoting connectivity and safety among friends and family. By allowing users to share their real-time location, people can find each other easily in crowded areas such as urban centers or large-scale events. Furthermore, location-sharing greatly improves personal safety, as trusted friends and family are more easily able to keep tabs on users. In the event of an emergency or a dangerous situation, location-sharing provides an easy means for users to know each other's whereabouts.

Location data can make organizing social interactions easier, allowing friends to meet up easily or find each other in crowded places. Additionally, many people view location-sharing as an expression of friendship (Baker, 2023). Sharing location data can also enhance the safety of users, especially if a user becomes lost or find themselves in a dangerous situation (Jennings, 2023). As a result of the benefits of location-sharing services, multiple apps and services have surfaced for users to use.

2. RELATED WORKS

One of the most prominent location-sharing apps is called Life360, which focuses on safety,

advertising itself as a family safety service. Users form “circles” with other people to share location. Life360 also has an automated arrival notification feature that lets other people know when a user reaches their destination (Life360 Inc., 2025). Furthermore, Life360 reports metrics such as Top Speed which shows how fast someone drives and provides built-in crash detection. If the application detects that the user has been in an accident, it notifies emergency services for help. The application is entirely focused on safety and provides no other benefits. Through its extensive features focused on improving user personal safety, Life360 fulfills its purpose as a family safety service but lacks features that facilitate social uses.

Other common location-sharing services people use are Find My Friends and Google Maps. Find My Friends comes preinstalled on Apple phones and Google Maps comes preinstalled on Android phones. These two apps behave almost identically. For Find My Friends and Google Maps, users can opt to share their real-time location with someone from their contacts list. Much like Life360, both of these apps allow users to mark a location and provide a notification when a contact arrives. However, these apps also integrate with their respective parent companies’ navigation apps. Users can see and route to nearby locations such as restaurants, POIs, or even people directly in the application (Apple Inc., 2025). This makes it easier to find nearby locations for social purposes as well as find people in locations. While Find My Friends and Google Maps both provide ease and convenience for social events, there are still several shortcomings. The interface for both apps becomes cluttered once multiple people are in the same area because people’s icons fight for space. Both apps also lack any function for creating shared POI or organizing locations.

3. PROPOSAL DESIGN

The primary objective of this technical project is to improve upon the design of existing location sharing. The application will build from the existing design of a map display with location markers for all involved people. Individual users reserve the right to toggle if their location is shared. The proposed application is designed with scalable group management that is compatible with small and large groups as well as additional features relating to potential points of interest.

3.1 User Organization

Users will form groups similar to Life360’s “circles.” Groups may be persistent for long-term social circles. Unlike Life360, groups may also be ephemeral, which may be useful for singular events. Additionally, these groups will have additional subgroups for organization. The structure of these subgroups will be based on one designated representative or chaperone. The application view may be filtered to only show chaperones to reduce clutter on the map interface which is problem with larger groups in Life360. This subgrouping methodology also allows for easier logistical administration. In a larger scale event, there may already be a natural organization such as carpool groups, families or cliques. This chaperone and subgrouping feature allows for closer accountability within subgroups to keep track of users.

Often in real-world applications, social events may often carry an impromptu nature with plans changing in the moment. One of the key design principles guided by this consideration is the dynamic and freeform nature of the subgroups. Users can fluidly move between subgroups, and subgroups may temporarily join up. This is used to reflect how, especially in travel scenarios, users may split off or reorganize into different subgroups. This design combines the accountability and safety of traditional location sharing applications with

the practical dynamics of social events. However, in the case that the organizers of the group are concerned about, this can be restricted to chaperones.\

3.2 Integrated Location Features

The proposed application will also implement more integrations with POI specific tools designed to provide more structure for event organization. Current location-sharing applications allow users to navigate to each other. This application will also allow users to propose navigation to a designated meeting location and time. This will function similarly to appointments in calendar applications and will also allow users to include relevant details such as an itinerary as needed. The application will also assist users by providing reminders based on travel times on predicted routes.

3.3 Implementation

The initial design for the application will be developed for iOS devices with the potential to port the application to the Android platform in the future. The application can be broken up into three main parts: the front-end user interface; the back-end data management; and the data storage. The user interface will be developed using SwiftUI which is a framework built for Swift to allow for more control on the user interface and user experience. The main back-end system of the application will be written in Swift and will interface between the user interface and the data storage. The application will utilize Amazon Web Services' Elastic Compute cloud servers to store the data.

The application will first be developed as a minimum viable prototype and then go through repeated iteration, following agile software development methodology. During the iteration, some individuals will be recruited to test and provide feedback on the application. After the development of the main application is completed, more individuals will be recruited to evaluate the completed product.

4. ANTICIPATED RESULTS

The proposed design is intended to significantly improve the efficiency and functionality of location-sharing applications with an approach focused on large social gatherings. By implementing dynamic subgroup formation, the application is expected to reduce clutter while providing a level of organization to larger events. Users are anticipated to experience improved coordination leading to a smoother tool for maintaining safety and organization in a social environment.

Furthermore, the inclusion of event location designations is expected to streamline meet ups by simplifying navigation and finding other users. Overall, the proposed application is anticipated to be better suited for event management for medium to large-sized groups than currently available applications.

5. CONCLUSION

This project addresses a gap in the current approach of location-sharing applications by providing users a more flexible and schedule-based approach. Existing services are often too narrowly focused or simplistic, failing to use location data to provide a more meaningful and practical experience. With chaperone subgrouping and point-of-interest coordinating tools, the proposed application is able to fulfil a more prominent role in social events where organization and safety is important.

This application also promotes greater interconnection and social bonds between friend groups that use the app for recurring gatherings. The knowledge gained from this design places heavy emphasis on flexible user-driven approaches to organization for social connections.

6. FUTURE WORK

Future development of the application will continue to evolve the user interface based on iterative feedback cycles. The application will also be ported to Android to reach a wider audience as well as web applications for use on a computer. There is potential room for growth by incorporating API integrations with existing calendar scheduling applications or apps related to transportation. There is also potential for AI driven POI suggestions to facilitate event planning and help users make informed impromptu decisions.

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