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Hangout! A Comprehensive Outdoor Activity Planner & Information Sharing Platform

Yani Qu
yq8849@rit.edu

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Hangout!
A Comprehensive Outdoor Activity Planner & Information Sharing Platform

By Yani Qu
A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Fine Arts in Visual Communication Design

School of Design
College of Imaging Arts and Sciences
Rochester Institute of Technology
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Thesis Committee Approval

Hangout!
A Comprehensive Outdoor Activity Planner & Information Sharing Platform

Submitted by Yani Qu
Date May 2018

Chief Thesis Adviser: Daniel DeLuna, School of Design

Signature of Chief Thesis Adviser ________________________________ Date ____________

Associate Thesis Adviser: Chris Jackson, School of Design

Signature of Associate Thesis Adviser ________________________________ Date ____________

Associate Thesis Adviser: Nancy Ciolek, School of Design

Signature of Associate Thesis Adviser ________________________________ Date ____________
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1. Introduction
1.1 Abstract

General Introduction

Hangout! is a mobile social-activity app, encouraging users to connect with friends and family. Users can specify their preferred leisure activity, whether that may be camping or caving, kayaking or surfing, running or rock climbing—whatever type of fun they are looking for. Combining a GPS location and a user’s history of outside recreational experiences, the app provides news about the area in real time, along with any emergency notifications for issuing caution.

As the name implies, Hangout! is an application celebrating the recreational places you frequent and the people you socialize with. High-quality imagery and video helps bolster a high aesthetic.

New Media

Hangout! is a platform for outdoor enthusiasts. Nowadays, every aspect of life can be made easier by the advancement of smart-device technology, upgrading the quality of life for everybody. The app will use new-media technology, utilizing such platforms as iOS and Android, with the ideal of increasing the percentage of outside activities that people participate in.
1.2. Situation Analysis

Broad Customer Base

There are many benefits to using Hangout!

For the person who often spends time outdoors, the app will be a hub of information that will provide easier access to information about any particular activity or location, and additionally, it improves safety and awareness.

On a larger scale, social media is integrated into the app to better connect users who have the same interests. Additional user testing will help find more effective ways to interact.

Hangout! even attracts those who do not go outside often due to the fact that it is an informational platform, meaning that going out to play and explore is made easier for the person who finds planning to be too much trouble.

A Useful Application

There are multiple of applications out there that make living just a little bit easier. When you are hungry, the Yelp app could help narrow down restaurant choices. If you are lost, Google Maps could guide you to your destination. If you move to a new city, real estate apps such as Zillow and Trulia could help to find a good deal on an apartment or a house. If you are considering a trip somewhere, Expedia could help you with travel arrangements. And these days, if you are looking for a meaningful relationship—or something less than that—handy apps are just waiting to be downloaded.
What about when you want to plan a hiking adventure or a camping trip?

Hangout! aims to resolve the lack of options of current outdoor apps. It is similar to the aforementioned apps above in that planning is made easy and posting pictures is essentially user generated. One can find both familiar places and browse for new adventures.

This app’s motto is, “Look in, hang out.” Users can query places, organize activities and exchange information, all to make hanging out— that much easier.
1.3 Problem Statement

The app could potentially improve one’s physical and mental status. It studies the user’s psychology by way of their interests and posted content. By learning this information, it will help to look for strategies to improve user groups in research.

Physical Activity Solution for Children

It is the best exercise for people of all ages, especially for today’s children who are too obsessed with electronics. Going outside encourages movement and play—which in turn improves growth and increases awareness about the planet, all of which cultivates excellent character.

At the same time, parents can accompany their children in person, which is more conducive to family relations and children’s growth as well as their safety. For adults, outdoor activities can help strengthen their physical fitness.

The habit of forming outdoor activities is a lifelong one, and this hobby can enhance the users’ physique, and it relieves stress in difficult situations.

Outdoor Activity Reduces Psychological Problems

When one steps out to nature, something uplifting happens. Looking at the vast sky or at an endless forest, listening to birds sing or water trickling in a brook, feeling the rush of the wind in your face—reduces all the pressures of everyday life to a tiny care.
Hangout! aims to guide users to a happy heart. For if things go bad, before any serious consequences occur, a person could go outside under the influence of the environment—and consequently, get out of their heads.
2. Literature Review
2.1 Outdoor Activity/Physical

**Advances in Human Factors in Sports and Outdoor Recreation**

By Paul Salmon and Anne-Claire Macquet

This book describes cutting-edge applications of human factors for sport and outdoor recreation disciplines and provides practical guidance on a range of methods for describing, representing, and evaluating human, team, and system performance in sports domains. Contributions in this book show how various human factors methods, applied historically in the complex safety critical domains, are suited to describing and understanding sports performance and sports injury prevention.

**The Hiking Companion: Getting the Most from the Trail Experience Throughout the Seasons: Where to Go, What to Bring, Basic Navigation, and Backpacking**

By Michael W. Robbins

Strap on your boots and get out on the trail! Drawing from personal experience, Michael W. Robbins describes what to expect when hiking in various terrains -- from forests to fields and lake edges to mountains. Informative and fun, The Hiking Companion combines tips for trip planning, equipment, navigation, and safety with exciting stories of once-in-a-lifetime adventures. Whether you’re an expert hiker or setting out on your first overnighter, this inspiring guide is full of practical advice to make your next outing a success.
Interactive Design: An Introduction to the Theory and Application of User-centered Design

by Andy Pratt (Author), Jason Nunes (Author) Paperback – November 1, 2012

This book is well set out with clear and simple to follow knowledge about interactive design. It’s well illustrated with examples that really help the reader to understand practical approaches as well as concepts. From user research to user testing, this paper summarizes the user-centered design process, and through various examples illustrate the user-centered design how to successfully integrated into the world within the scope of the design process of various kinds of design studio.

Web Cartography: Map Design for Interactive and Mobile Devices

By Ian Muehlenhaus

This book explains how to create effective interaction, animation, and layout for the map of the network platform. The emphasis is on the mapping principles of web sites and mobile maps, rather than specific software technologies. It focuses on key design concepts and provides best practices for map communication based on spatial data visualization and graphic design theory. It is more important to master theoretical principles than to master technology.
Camping in Comfort: A Guide to Roughing It with Ease and Style


Camping in Comfort is an outdoor experience and equipment guide book. It’s not just guidance for tents, mountaineering equipment, clothes and shoes. It also provides detailed information about national parks, private campsites, luxury camping resorts, backpacks and bike camping, canoe camping, RV camping, etc. Through this book, we will learn about all kinds of outdoor activities, provide the information needed by the activists, and learn the classification of outdoor information.

The principles & processes of interactive design


This innovative, comprehensive book explores the user-centric design process from the perspective of a designer. Through rich images, interaction design, the introduction of various UX participants from the user’s research to the user test, summarizes the user-centered design process, and through various examples illustrate the user-centered design how to successfully integrated into the world within the scope of the design process of various kinds of design.
**Abstracting Geographic Information in a Data Rich World**

*Methodologies and Applications of Map Generalisation*

by Dirk Burghardt, Cécile Duchêne, William Mackaness: Abstracting Geographic Information in a Data Rich World Methodologies and Applications of Map Generalisation. (Lecture Notes in Geoinformation and Cartography 2014)

The book has a coherent structure. Each chapter has a high-level review, combined with case studies, and illustrates the application of the relevant promotion methods. This book deals with the problem of data collection to multiple output addresses. As a result, there are chapters dedicated to defining user requirements in the processing specification, as well as the application and evaluation of the mapping generalization algorithm. It discusses the application of generalization methods and the growing popularity of data and user-generated content.

**Google Maps vs Waze vs Apple Maps - Who wins?**


A lecture about user testing of Google map, Waze and Apple map. Base on real driving test, Google Maps was the most accurate predictor based on our driving, closely followed by Waze.
How to Create a Customer Journey Map


The customer travel map is a visual or graphical interpretation of the whole story from the perspective of the relationship of individuals to the organization, service, product or brand, and time and channel. Is an important way to learn and build design and users.

Signaling Techniques


This article gives a detailed introduction to wilderness survival knowledge. Through several methods, such as smoke bomb, cigarette smoke, flashlight and other visual signals send out distress message. There are also audio and code signals. These methods of distress can be used as an operational reference in the design process.
3. Research
3.1 The Outdoors Industry

**Historical Background**

“From the smallest towns to the most populous cities, outdoor recreation makes America stronger”¹ (Outdoor Industry Association 2017). In the long run, outdoor exercise will not only improve the economy but will also lift the American spirit. Investing in water and public lands is a powerful foundation for outdoor economic forces. Investing in and protecting America’s outdoor resources are both an investment in the future of the United States and an investment in today’s happiness. From an individual’s point of view, outdoor activities enhance the individual’s spiritual pleasure, which cannot be replaced by other means of entertainment.

Outdoor activities are deeply rooted in American culture. People often go to the park on the weekends with friends or family, and it has become a habit. Through my observations and interviews with my friends, almost every family will choose one day of the weekend to be close to nature, and some students or singles would like to go on an outdoor trip with friends.

**Abundant Natural Resources and Abundant Outdoor Enthusiasts**

The largest national park is Wrangell-St. Elias in Alaska, over “20,625 square miles or 13.2 million acres” (National Park Service 2016). “Today, a total of 84.9 million acres has been designated national park land,
approximately 3.6% of all land in the United States. Of the 84.9 million acres in the National Park Service, 55 million acres are located in Alaska” (River of No Return 2012). For world travelers the US is a favorite place because of America’s vast territory and colorful, natural landscapes. “The great Smoky Mountains of North Carolina and Tennessee alone had more than 11.3 million visitors in 2016, the Grand Canyon in Arizona had 4.6 million visitors, Yosemite had 3.8 million and Yellowstone had 3.2 million” (National Park Service 2017). With such abundant natural resources, people living in the United States have naturally developed the habit of engaging in outdoor activities.

As can be seen from the chart below, over the past decade, half of all Americans have participated in outdoor activities, participating in a collective 11.7 billion outdoor outings. However, as the chart also shows, the number of people participating in outdoor activities is increasing due to the increase of the total population. Participation rates have shown a slight decline in recent years, which is also due to the impact of the Internet, which has caused more and more people to reduce their participation.

![Outdoor Participation Report](Image)

*Figure 1.* Outdoor Participation Report. (Source: 2016 Outdoor Recreation Participation Topline Report. Report. Outdoor Foundation®. )
Overview, the participation rate is stable around 49% every year. However, the total population is increasing, so the number of participants is increasing. The increasing target users is a good consideration for marketing goals.
3.2 Activity Preferences Research

Activity Preferences in Different Ages

<table>
<thead>
<tr>
<th>Interest Level</th>
<th>Age 6-12</th>
<th>Age 13-17</th>
<th>Age 18-24</th>
<th>Age 25-34</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Camping</td>
<td>Camping</td>
<td>Camping</td>
<td>Swimming for fitness</td>
</tr>
<tr>
<td>2</td>
<td>Basketball</td>
<td>Swimming for fitness</td>
<td>Bicycling</td>
<td>Camping</td>
</tr>
<tr>
<td>3</td>
<td>Fishing</td>
<td>Running/Jogging</td>
<td>Backpacking</td>
<td>Bicycling</td>
</tr>
<tr>
<td>4</td>
<td>Soccer</td>
<td>Fishing</td>
<td>Martial Arts</td>
<td>Running/Jogging</td>
</tr>
<tr>
<td>5</td>
<td>Swimming for fitness</td>
<td>Bicycling</td>
<td>Climbing</td>
<td>Hiking</td>
</tr>
<tr>
<td>6</td>
<td>Bicycling</td>
<td>Working out using machines</td>
<td>Working out with weights</td>
<td>Backpacking</td>
</tr>
<tr>
<td>7</td>
<td>Running/Jogging</td>
<td>Hiking</td>
<td>Hiking</td>
<td>Canoeing</td>
</tr>
<tr>
<td>8</td>
<td>Football</td>
<td>Basketball</td>
<td>Swimming for fitness</td>
<td>Fishing</td>
</tr>
<tr>
<td>9</td>
<td>Swimming on a Team</td>
<td>Football</td>
<td>Working out using machines</td>
<td>Working out using machines</td>
</tr>
<tr>
<td>10</td>
<td>Martial Arts</td>
<td>Martial Arts</td>
<td>Kayaking</td>
<td>Working out with weights</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interest Level</th>
<th>Age 35-44</th>
<th>Age 45-54</th>
<th>Age 55-64</th>
<th>Age 65+</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Camping</td>
<td>Camping</td>
<td>Camping</td>
<td>Birdwatch/Wildlife Viewing</td>
</tr>
<tr>
<td>2</td>
<td>Bicycling</td>
<td>Bicycling</td>
<td>Bicycling</td>
<td>Fishing</td>
</tr>
<tr>
<td>3</td>
<td>Swimming for fitness</td>
<td>Fishing</td>
<td>Birdwatch/Wildlife Viewing</td>
<td>Swimming for fitness</td>
</tr>
<tr>
<td>4</td>
<td>Hiking</td>
<td>Hiking</td>
<td>Fishing</td>
<td>Working out using machines</td>
</tr>
<tr>
<td>5</td>
<td>Working out with weights</td>
<td>Swimming for fitness</td>
<td>Swimming for fitness</td>
<td>Bicycling</td>
</tr>
<tr>
<td>6</td>
<td>Fishing</td>
<td>Birdwatch/Wildlife Viewing</td>
<td>Hiking</td>
<td>Hiking</td>
</tr>
<tr>
<td>7</td>
<td>Running/Jogging</td>
<td>Canoeing</td>
<td>Working out using machines</td>
<td>Camping</td>
</tr>
<tr>
<td>8</td>
<td>Working out using machines</td>
<td>Working out using machines</td>
<td>Canoeing</td>
<td>Working out with weights</td>
</tr>
<tr>
<td>9</td>
<td>Canoeing</td>
<td>Working out with weights</td>
<td>Working out with weights</td>
<td>Fitness classes</td>
</tr>
<tr>
<td>10</td>
<td>Backpacking</td>
<td>Backpacking</td>
<td>Backpacking</td>
<td>Golf</td>
</tr>
</tbody>
</table>

Figure 2.

The interest data is helping application to choose the activities which are most popular in target audience. Then, those popular activities will provide the research direction, which means Hangout will concentrate on popular activity, such like camping, hiking or fishing. For example. Camping need more information about camping area, hour and facilities. Biking need information about map, route and road condition.
Also, Hangout! conducted a preliminary survey: the target audience was comprised of families, students, office workers, young people, and old people. Sixty-five percent of them chose outdoor activities in the summer climate as conditions allowed. Forty percent of people chose camping, twenty percent of people chose biking, twenty percent of people chose hiking, ten percent would have a driving tour—for example, having a picnic BBQ with friends in a field—ten percent of people would play with their kids in their own yards. At the same time, I also conducted a survey on whether or not to go on camping trips or other activities together with strangers, or for example, an experienced leader in outdoor activities might host a camping or hiking adventure. This survey, in Rochester, NY, got a positive response from students—many students agreed and were willing to take part in outdoor activities with strangers. They argued that if one user is using the app for an outdoor activity, it might be easier to find someone to go with to that outdoor activity by using this app. Based on these investigations, I decided to study this project further.

These investigations are fully revealed. In the United States, outdoor activities have a wide audience, and nearly half of them participate in outdoor activities. However, the use of applications for outdoor activities is extremely rare and scattered. An app doesn’t need to describe all kinds of outdoor activities in detail. What we need to do is to determine the user base, and then make the application according to the user’s requirements.
3.3 Social network research

User and User Connection

In the early days of Internet development and mobile phone applications, users and application terminals were bidirectional interactions. The person makes choices in the app and the terminal gives feedback—or, the application renders content, the user gives feedback. When the Internet developed so far as to create multiple “networks” for users and applications, users created countless Internet connections. It seemed like overnight that the “social network” became the most heavily involved project in the world.

In today’s society, more than one billion people have different kinds of social tools. Today’s young people have at least five social networks in which they use to interact with other people. Many applications include social networks. Shopping applications, for example, must include user reviews. The evaluations can also include pictures, words, video, etc. Google Maps and Apple Maps that everybody uses. These include user evaluations, traffic information, etc. These are the networks built by users. In addition to providing content (maps, navigation), they also serve as a platform for users to communicate with other users. In summary, refer to the examples between these applications and users, and establish a connection between users, create a platform for users to share content, and become an important consideration for interaction design.
Simplifying Social Network

Under this huge network, negative effects have already emerged. For the majority of users, they are both addicted and resistant to social networks. They are addicted to having to establish a vast social network, such as Facebook sets. Emerging social networks are inconsistent—to build a new social network is a time-consuming effort. So now, many apps have landing pages where people log in by connecting to Facebook or Google accounts. It saves the tedious process of registration and eliminates time in the long process of setting up a social network.

Get User’s Connection

At the beginning of the design, the thesis project considered whether to include a social network or not. Avoiding the negative effects of social networking is a key consideration for this thesis project. In this design, the thesis did not want to have too much social influence on users’ privacy. But social networking is also a necessary part of the app because “Hangout!” means hanging out with friends. Therefore, the social network that is established in Hangout! is called the Outdoor Activity Connection. The purpose of Hangout! is to provide users with more convenience for outdoor activities than, say, a dating platform. Users can connect to new friends with the same interests. However, if you want to keep your privacy and not participate in social activities as a guest, it will never affect the users’ feelings of using Hangout!.
Image Sharing

Refer to Instagram’s operation method, which can attract users to participate in the application by recommending the pictures shared by strangers. Images are becoming more and more important in social networks because of the constant development of mobile phone cameras. The use of beautifying images encourages people to take pictures and share them at any time. This social style has become a social habit for contemporary users. So, similarly, Hangout! attracts users through pictures, and then helps them to promote outdoor activities through the content. In the app, users can view their friends’ share in their own social accounts, and they can also know which friends are using the same apps. At the same time, the app will also be able to post other users’ share according to the user’s location. The operating mode can refer to Instagram. Users can set privacy levels when sharing outdoor travel experiences. For example, setting it to be visible only to yourself, becomes a record of the application of outdoor sports. Setting it to share to public and it can attract more users’ attention. All sharing will follow the user’s privacy requirements.
User Sharing Information

The components of this app are based on the sharing of user experience and the use of outdoor information provided by the app itself. If the application only relied on itself to collect information then there would not be enough information to meet the user’s needs. Therefore, sharing from users becomes the main function to promote outdoor activities. The application selects the experiences of nearby users to recommend to other users as well. This can include activity details, photography, routes, etc. Users can also leave messages, give thumbs up and add bookmarks. All these functions are designed to enrich the content of the application and provide more information about outdoor activities for users to choose from.

There are also applications outside the outdoor field, such as Polyvore: a site for women’s fashion sharing. The theme of the entire site is formed by the content of the users, and the website owner has the role of sorting and organizing. Users see posts by other users and, then, follow those people who they interested in. There are countless shares that attract them to follow. For this kind of “good thing sharing” application, it can be provided to a specific user group for great convenience. Hangout! borrows this kind of application, and searches for its unique function, which can surpass other apps and have unique value. Therefore, based on the investigation Hangout! creates user-sharing content based on the customer’s needs.
3.4 Mobil Application Development

Phone’s Activity Tracker

Smartphones are ubiquitous and are becoming more and more complex from the initial inclusion of phone calls and Internet access.\(^1\) The latest generation of iPhone X already includes face recognition, face payment, multi-function camera, multiple sensors, etc. Networks, sensors, and computing have changed the way individuals live their daily lives and have provided carriers for many interesting data-mining applications, such as activity identification. The sensor can identify and collect data during various human activities, which can provide accurate data references for users.

Current smartphones and smartwatches can record details of the human body, moving trajectory, and analyze movement data. This feature can help users understand the intensity of the exercise and plan their time. There are already countless activity tracker apps on the market, and when the user is in motion, the phone will detail the activity information. Hangout! will utilize this development of smart physical devices, record activity data, and route it to help users understand the body’s movement and share it with other users. An additional, valuable, feature is “route tracking,” which can be related to security alerts. Once the user is in danger, the rescuers can obtain the desired location information through Hangout!. The movement data will also be ranked in the user’s connection, and the user can see the movement data of other users (if the user has set up the sharing movement data). The ranking will encourage users to participate in outdoor activities.

Routes Sharing

Most users who are interested in hiking or biking want to know about the route of a certain trip. For example, when users look up Google Maps, the map only sets the route based on the user’s starting point and destination. Maps do not provide routes and trails for users of outdoor activities. Therefore, it is necessary for the person to make the circuit to obtain the most suitable route. Because of this requirement, the route becomes the most important part of the site content. Hangout! encourages users to refer to the routes that other users have already traversed, and according to the investigation, users are willing to follow the routes of others to plan their trip. This will not only reduce the preparation of an unfamiliar place, but will also improve the safety of outdoor activities. If the user encounters a dangerous situation in the process, they can also share their experience or comment below the outdoor location. This will allow them to alert others to avoid activities in dangerous areas. This part of the app has been developed by the preferences of users through multiple user surveys and wireframe testing. Hangout! gives users the best possible information about the value of outdoor activities and removes unimportant content.
3.5 Reality Interaction Map

Make Map Visualization

An interactive map swaps information between maps and map-readers. The exchange of information should lead to a response. The interaction of the map changes the communication between cognitive maps and map-readers.

When the Internet appeared, people focused on the need to use a variety of media to use maps. Instead of the traditional paper map with its one-way operation, there is an Internet map, which can be used to query the location by entering text, and also, the user can zoom in and out. Today’s maps provide a realistic experience. Google Maps, for example, has a very early 360-degree street view and 3D effect of GPS navigation. These applications make 3D visualization from reality. Hangout! won’t use “street view” in this thesis project, because Google has developed street view, and it is a huge investment of work. Google has no street view in many outdoor locations. Also because of the actual operation and actual value, the actual scene does not need to exist in the outdoor activity application. What I want to do for this project is to relate maps and picture information. That is, you can see pictures of sites corresponding to locations on the map. When users share their routes, they can automatically associate the location’s corresponding photos. In the existing technical conditions, the map can be visualized as succinctly as possible. It is as if the user will take a picture of a scenic spot in an outdoor activity–users don’t need to see the full picture of the whole route, just the location of the beautiful scenery. This application will screen images of important locations and connect the locations to create a route. This is my solution to the study of interactive maps.
Visualization Map Assist Route Plan

The Internet will continue to grow in providing services and transmission speeds. In the future user experience, the combination of virtual reality and the Internet will make the user experience more valuable and more real. In the future, users will feel real in the scene when they use the app. For example, when accessing Niagara Falls via virtual technology it is not only possible to see the impact of waterfalls in many ways, but also to hear the sound of water. It is as if a waterfall really splashes on you. In the virtual technologies that are not yet implemented but are in the process of being implemented, you can also experience the weather, smell the air, and so on. The user experience includes five senses, vision, hearing, touch, smell and taste. The current study of user’s experience designs from these five aspects to expand users’ feelings.

According to the user’s psychological performance, the virtual reality facility that everyone can carry had been invented a few years ago. Although this thesis project is based on the current mobile application technology, the virtual reality part cannot be done as of yet. However, the application will bring the real experience into the mobile phone interaction as much as possible. There’s a survey from a user who had her own experience, when she was attracted to a picture on Google Maps, she wanted to go to the location shown in the image, but the map rarely shows the exactly location where it was attached to the image. It was a pity that she drove to that park, and she didn’t find the scenic spot in the picture.

Perhaps a photo taken at random of an outdoor activity will attract other users, and users might as well share this information. Linking location and scenery, helps users to have an immersive understanding of the scenic spot in advance and create a basic plan for the route.
3.6 Defining Target Audience

Target Audience Group

The target audience for Hangout! is not specifically restricted because Hangout! is encouraging everyone to participate in outdoor activities. Although there is no defined user base, the main user group for outdoor activities is mainly the millennials; whereas, ages twenty-five to forty-four accounted for more than half of the outdoor users, followed by the forty-four plus elderly at almost forty percent, and less than ten percent of those aged under 24.

Figure 3.
Participation, 2006-2015
The majority of active young adults who pursue adventure and healthy activities do so in their spare time. Another part of the millennials group is households with families. According to the demand of the main user group, more consideration should be given to the design process of outdoor activities for users of the most popular activities and family users. For example, design more function to assist with hiking, running, and bicycling activities, along with group camping for family members and organizing events to bring together families with children. In these, select areas with small risk factors in which to hold activities.
Another group is the baby boom echo generation. According to “Outdoor Recreation Participation: Topline Report 2016” survey data. The proportion of children aged 6-12 increased in the 6-24 group. It is the majority of the youth population, because children of this age do outdoor activities under the care of guardians. So, we can infer that the number of outdoor activities in the family unit is increasing. To the contrary, the proportion of the relatively independent youths in the 18-24 age group is declining. Since this group is relatively independent, they have a greater amount of their own time. Fewer and fewer young people will have outdoor activities. Because there is an increase in sedentary activities that are more attractive to them, such as online browsing, smartphones and pressure of academic achievement. The proportion of 13-17 year-old teens who participated in outdoor activities is largely unchanged because they are both dependent and independent. Therefore, when outdoor activities lose some of their youth users, it is because users have activities
that are more interesting. According to their preferences, apps can add a function that appeals to young people; for example, sharing an outdoor experience in the social networks, or to involve children, or organize activities for users of similar needs according to family needs. This group will grow up to be the main target audience of the future. Increasing their interests of outdoor activities is also a main target of the Hangout! strategy.

Some of these users are retired and have plenty of free time. At the same time, their cultural background has formed their tradition of love of outdoor sports. For the needs of this group, the application design will select small risk, small activities, and natural scenic spots as recommendations. This kind of activity is mostly hiking, so according to this requirement, provide the user with an outdoor activity route map.
Dangerous Attention

However, users need to be considered safe for outdoor activities, and children must be supervised by adults. For security reasons, the app does not encourage users to explore unknown and unmanaged outdoor places. If needed, a professional outdoor explorer can be utilized to explore new areas and share them. The application will also have prompts. The outdoor activities are classified as easy, medium, and hard. For primary users, the application will prompt the risk of activities and define the division of responsibilities.
3.7 User Personas

Persona I

Steve Daines
Technology company employee
Age: 29
Education: Master Degree
Locate: San Francisco, CA

About: Steve is an engineer at a design company. He is single. Ever since he was a little boy, his parents often took him outdoors to climb mountains, bike, fish and ski. So, outdoor activities in his life are an indispensable part of his lifestyle. He also met with friends who asked him about outdoor activities. Sometimes he puts his own photos on social networks. Although he would share his outdoor activities, he could not share his experiences with more people. Kevin also wants to develop his hobby into a career. As more and more people write personal blogs, share experiences and get attention, Kevin can share his most familiar interests with more people. At the same time, there are fewer outdoor activities in his social circle. He hopes he will have more chances to use the app to participate in the outdoor activities he is interested in.
**Think:**
- Can I find the activities I’m interested in and the group I would like to join?
- Does the function help me in outdoor activities? If not, any solution?

**Goals:**
- To be able to share his activity experience with more people, developing his hobby into a career.
- Some activities need group work, like kayaking, diving. He wishes to meet more people, seeking more activities that he’s interested in.
- He is looking for new activities at any time and any place.
**Persona II**

![Persona photo from Unsplash](https://unsplash.com/)

**Melisa Hurley**

Seller  
Age: 37  
Education: Bachelor’s Degree  
Location: Daly city, CA

**About:** Melisa is a housewife with three children. Although she sells cosmetics in her spare time, most of her time is spent with her children. So, she often queries the events that the children can attend. Her children are very fond of nature. She often goes on weekend trips with her kids’ friends. But again, it’s not easy to find friends with the same time available. So, she hopes to learn about outdoor activities through Hangout! that are suitable for children’s travel, look for peers who can play with her kids, let children have more opportunities to be closer to nature and to know more friends. Because she had no experience of camping, she also hopes to find someone with camping experience so that she can learn about the camping process.

**Think:**  
- what kind of outdoor activities are suitable for young kids  
- Avoid potential dangers, such as wild animals, or poor cellphone connection areas
Goals:

• Can I filter the outdoor place, which is suitable for kids.

• Let children have more opportunities to be closer to nature and to know more friends.

• Find someone with camping experience who can help her to learn about the camping process.

• Look for peers who can play with her kids.
3.8 Operation Mode

Hangout! is a graduation thesis project based on previous research and market prospects. If the application can be published, it will be supported by abundant users. So, the operational model is also a question to be considered in this graduation design. A consideration at the beginning of the design was for this app to share outdoor activities through its users and possibly sharing the equipment needed for outdoor activities to get the advertisers’ investment. After experiencing user’s investigation, it is necessary to deny this part. The main five parts of Hangout! are recommendations, sharing, routing, search and account. If the app adds outdoor articles and shopping links, it will become a shopping site that can be completely independent of the application. Therefore, the operational method of recommending outdoor products is denied. Then I tried to design first and then think about the operating mode. The best outcome for this app, then, will be to complete the application design without considering the cost, only considering the design objectives.

For an example, the Color Run is a very charismatic activity, similar to a traditional marathon. The Color Run has no age limits and no costs because of its brand promotion and unique activity design. Spraying colored pigments, tightly binds the theme, and user engagement is extremely high, not only for promoting sports, but also for promoting brands.

In this way, the Hangout! application can serve as an intermediary for branding and activities—organize outdoor activities through brand sponsors, attract users through activities, and then promote the brand through users.
3.9 Simplicity Process

Simplicity does not mean deprivation or poverty, nor does it mean that there is no embellishment, only a stark presentation. Simplicity is the combination of the final presentation and the design itself. Everything that has nothing to do with the design itself should be removed, especially in interactive applications. Simplified programs can have a better user experience. In other words, you can be simple without being minimalist.¹

Both art and design have experienced complex and simple processes. In the early days of a new thing, people would tend to use rich content to attract the viewer’s attention. As in the history of art, human beings, from the time of ancient simple paintings to the Renaissance, liked the photo-realistic quality of oil paintings in their development to the peak of complexity such as in impressionistic Monets, van Goghs, Pissarroes, and so on. The realistic painting developed from the artist’s feeling. The artists’ paint by summarizing their own feelings. Then came the abstract Picasso, where a simple line can depict a person. Later on, to the modernist school, art is more than a painting or a sculpture. A toilet or a behavior can become art. Similarly, clothing is made from scratch and goes from complexity to simplicity. Throughout history, it seems that the history of visual correlation has gone from simplicity to complexity and from complexity to simplicity. The next stage will be simple or complicated, no one knows.

The rapid development of Internet interaction design in a short decade has experienced from nothing to complex, complex to simple processes. Recall the first smartphone we had, when the interaction design was so

straightforward that it opened up an app and almost everything was visible. Now, Apple’s latest app store design, fully shows the simple, clean interaction experience. After long-term user experience research, Apple and Google and such other companies have summarized a set of system user experiences. In general, it is to magnify important content. For example, prominent, secondary content is hidden or in another page. According to the habit of this user, my Hangout! homepage will integrate and enlarge the content. Important content occupies seventy percent of the screen. Minor content is omitted.
3.10 Competitor Study

There are several important competitors for the application of outdoor activities.

- The REI National Park Guide & Maps, which is a professional camping guide.
- The Camp & RV, the name shows the content, which provides camping and RV parking information.
- There’s the application Eventbrite, which works on such as concerts, music events, outdoor activity events, etc.
- The National Park Service is the official website of the U.S. National Parks’ system, which provides all the information related to national parks.
- There are also many outdoor locations not related to the national parks that can be found from the State and Local Government on the Net: State Tourism Sites.

Hangout!’s main function is to incorporate outdoor location information, which includes national parks and other parks in the area, where the user located, integrate information from other competitors, use mobile apps to find information, combine social networks to share information with users. Research on competitors, specifically for similar products, there are no products that are exactly the same as Hangout! in the market. The research of competitors helps me to understand the market demand of users, combine the strengths of competitors, create new functions and avoid problems; thus, highlighting the uniqueness and marketability of the product.
Competitor Analysis I

**Viewranger**

See link at: http://www.viewranger.com/en-us

**Strength:**

- The color selection and brand name are easy for users to understand the app’s purpose.
- Map—viewing on the home screen is very helpful.
- Good interactive transition
- Photography design enriches the content.
- Routes function is a creative idea.
- Creates activity for social network—introducing other users, and sharing experiences.

**Opportunities:**

- It’s hard to recognize map content.
- Design style is too boring and serious.
- On the home screen, the map doesn't show much information, but it has large space.
- The filter function arrangement is not clear, and it's not necessary to show it all on the home screen.
- Map design is using too much color.
Competitor Analysis II

Eventbrite
See link at: https://www.eventbrite.com/

**Strength:**
- Nice color selection. Orange color in
- Psychology is responsible for happiness and cheerfulness.
- Nice font pick. The font weight, color, and size are appropriate—use in different content.
- The content is simple and clear.

**Opportunities:**
- Users can easily buy tickets and share.
- Icons are not consistent.
- Few options of filtering search result.
- No user feedback, which can give more information how popular the event are.
- It’s one way interaction, us
3.11 Possible Challenges

Internet Connectivity

It is well known that there are often no cell-phone signals around outdoor activity areas. No matter how smart your application is, you won’t be able to work without a network. In particular, this app mainly assists users to navigate through the outdoors. So, in this case, the user can choose to download the route ahead of time. When there is no network, users can still view the wiring diagram through the downloaded map. Images of iconic landmarks on the map can help users determine their location.

• Compass assistance

If the user still cannot locate the location on the map, in which they downloaded, the app will come with a compass that helps users navigate the map. At the same time, the mobile’s action-tracking function will record the number of steps of the user. So, the application can analyze the distance of action and combine compass data, which will estimate the user’s location. The action of distance and compass working together can solve the problem of no network in the wilderness area.
3.12 Goals and Objectives

Hangout! means to hang out with friends and lovers. The purpose of this thesis is to build a platform for outdoor enthusiasts through an app. A lot of people want to take part in outdoor activities. But since it is hard to find a partner who has same time and same plan it is difficult, even for a person who has friends and family. Also, it is not easy to find someone else to go outdoors with. So, we build a connection of every user through the Hangout! networks. For example, hiking by oneself is very dangerous. People who like hiking can accompany others who they find from Hangout!, which can provide improved outdoor safety while meeting like-minded friends. At the same time, more people are interested in outdoor activities through Events. Overall the app can be used to call on users to participate in outdoor activities, reduce stress and improve health.

The goal of this thesis is to understand the users’ needs by investigating real users, compare the importance of user surveys in application design through the study of user psychology and their preferences of outdoor sports. Deeply learn the creative process of application design:

- Identify target users, investigate user requirements and preferences.
- Brainstorm: use a variety of methods to test users’ interest in outdoor activities.
- Integrate and classify outdoor activities. Integrate and classify according to the type of outdoor activities.
- Study the effects of outdoor activities on physical and physiological functions.
- Study users’ psychological state of social networking. And find a social network suitable for Hangout!. The purpose of this social network is to connect outdoor sports people with common interests.
and to build an interesting sharing platform for them.

- Develop the operating mode of outdoor activities—make profit by organizing outdoor activities and promoting them to investors.
- Approach users’ questions through users’ testing of prototype, for example, outdoor networking, functional capability of outdoor rescue. Propose solutions through users’ experiences.
- Use social networking to promote outdoor activities. Encourage more people to understand the benefits of outdoor activities and participate in outdoor activities.
- For customers who are not familiar with outdoor activities, provide detailed outdoor experiences and route sharing. For example, users can share with other users and understand a route for a completely unfamiliar place. You can make your own outdoor activity based on the route that someone else has walked.
- In view of the user who loves outdoor activities, they may need a companion to increase the fun of activity, and at the same time, more companions can improve the safety of outdoor activities. You can also find the activity you want to participate in by event and make new friends.
- Bind social user accounts and engage in outdoor activities with existing friends.
- Through pictures, video and other forms of expression attract users’ through their interests, which leads to the interest of many outdoor events or places.
- Through pictures, video and other forms of expression attract users’ interest, which leads to the interest of any outdoor event or place.
4. Design Process
4.1 Branding

Choosing Hangout! as the name of the application is mainly to select its casual, outdoor meaning. It’s not like the name of an outdoor sport in the traditional sense. Hangout! turns outdoor activities into a lighter, younger lifestyle. Outdoor activities are no longer independent of life. It’s a way of getting into life and becoming a leisure time. However, it sounds similar like Google Hang out. In the dictionary, Hangout! has multiple meanings as follows:

- Unofficial dating or getting together, more casual.
- A place where people can have fun.
- From eating, sleeping to playing soccer, you can be hang out
- Walk down the street, eat or walk. Can be hangout.

This brand hopes to express the key words literally—casual, together, fun, walk, and place—at the same time, visually, give people an activity, energy and enthusiasm. Design the letter N G O U into the same two sets of shapes. Highlight moving, together in dynamic expression. The two circles move each other, moving in the “path” of N and G, as if two people were walking along a mountain path. The product concept is highlighted in both product name and visual form.
4.2 Mission

Hangout!—the outdoor activities are organized and sorted into an easy and dynamic mobile phone application. Increase the enjoyment of life through outdoor activities and strengthen. The function of the human body.
4.3 Design Methodology

User Research

The design process is a process of self-invention and self-improvement. The design process was created by an initial idea, based on a survey of the mobile application market, and it was found that the market lacked a topic but had market value. In other words, drama comes from life. Similarly, every mobile phone application comes from the discovery of life. Designers seek solutions to problems through their own feelings. These solutions have evolved to help users solve problems in most aspects of their lives. It is because of the market research that the designer can avoid the mobile phone application problems that have developed. So, in the end, the thesis locates new topics in the field of outdoor activities.

In the design process, user investigation is the most important design method. Every option in the application requires a real investigation from the user. After the designers have done their brainstorming, users will be asked to investigate the options that might appear in the application; for example, users may refer route suggestions for route planning; they may investigate the existence of this part of the application in order to reasonably plan the components of the application; additionally, wireframe design is performed when the decisions for the individual functions of the application are made. This part of the design will determine the users’ experience: test the users’ scenario—if the application can solve the users’ needs, then the next design can be done—in the process of user experience, record users’ questions and find solutions.
Design Method

In the process of visual design, Sketch is used to design in wireframe and visual designs. Prototype the final visual design—use the prototype for the user to test, after repeated testing and modification, use dynamic design using Adobe After Effects, then, fully present the interactive experience.

Figure 9.
Methodology diagram
Design Ideation

Hangout! is an app for outdoor activity queries. Simply, it is an app for users to find outdoor activities and find parks. The idea was originally designed as a camping app. In the beginning, the proposal was set up this as an app for camping. This app included finding a camping site, provided information needed for camping equipment, provided a special field map, with first aid and survival camping information for social network users. Based on the research, flowchart in the pre-design and the evaluated value of the target audience, it showed that if it were just for camping, there were too few users who could really use an app when they go camping. Many users will search for information directly through Google. Fewer users means the app is likely to be replaced by another competitor. So, the idea changed direction, and by looking at user demand, finally, the target audience was decided as outdoor enthusiasts.
5. Visual Design
Hangout! tries to express vitality, dynamic, and vigorous emotions through colors and graphics. The user’s interests in outdoor activities is enhanced through visual communication, which creates a user’s interest in the product. The theme form is mainly a round shape, because the round shape can jump and roll, like a bubble; it can float and fly, representing a dynamic feeling. From beginning to end, consistent the theme in design.
5.1 Style Sheet

The logo uses the Avenue Next font. This type of font is more rounded in shape and conforms to the design theme. The logo Hangout! is the font of Montserrat Bold Italic. A creative design for characters N, G, O, U and Mark !, based on the shape of the text. At the same time, thinking about the dynamic logo, create two same round shapes which move around represent the brand concept - A platform encourage people join outdoor activity together. Finally it’s the ultimate logo. Especially, one circle is different from other letters. This color difference represents the user’s body, as each user is an independent individual, who connects with others for outdoor activities. The individuals are different—highlight the visual effects of the logo by using two colors to represent good moral.

Keyword Brainstorm

First of all, the name of the app should be related to outdoor activities. Outdoor activities include hiking, camping, biking and etc. How to summarize these contents in a readable word? So I spent a lot of time deciding the name, for example, listing the keywords.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Together</th>
<th>Swimming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Happiness</td>
<td>Park</td>
<td>Forest</td>
</tr>
<tr>
<td>Nature</td>
<td>Facility</td>
<td>Safety</td>
</tr>
<tr>
<td>Sport</td>
<td>Park</td>
<td>Fun</td>
</tr>
<tr>
<td>Physical Training</td>
<td>Leader</td>
<td>Friend</td>
</tr>
<tr>
<td>Group</td>
<td>Hiking</td>
<td>Achievement</td>
</tr>
<tr>
<td>Physical Backpack</td>
<td>Biking</td>
<td>Support</td>
</tr>
<tr>
<td>Family</td>
<td>Picnic</td>
<td>Camping</td>
</tr>
</tbody>
</table>
Logo Ideation

Figure 10. Logo design sketch

Figure 11. Logo design

1. Hang out!
2. Hang out!

Font: Sharpshock Heavy
Font: Monodomo Bold/Italic

Hangout!- A comprehensive outdoor activity planner & information sharing platform
Logo Guideline

Figure 12.
Logo design
Color

In order to emphasize the outdoors, vitality, and other characteristics of this application, the blue sky is chosen as the main color. At the same time, the warm rose red is selected to match the blue color, which has a prominent visual effect. Use black and grey for the font color. In the background, for example, the color of the sphere is selected as a gradient color ranging from blue to purple, blue to green gradient, and purple to red gradient, and yellow.

Primary color

Used as button, text, background

<table>
<thead>
<tr>
<th>Color</th>
<th>R</th>
<th>G</th>
<th>B</th>
<th>C</th>
<th>M</th>
<th>Y</th>
<th>K</th>
</tr>
</thead>
<tbody>
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<td>255</td>
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<td>69</td>
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<td>0</td>
</tr>
<tr>
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<td>120</td>
<td>0</td>
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<tr>
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<td>199</td>
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<td>0</td>
</tr>
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<td>199</td>
<td>22</td>
<td>17</td>
<td>17</td>
<td>0</td>
</tr>
</tbody>
</table>
Secondary Color

Used as background assets
Visual Guideline

Figure 14.
Hangout! visual delivery

App Icon

Figure 15.
App icon

Menu

Activities

Functions

Figure 16.
Icon design
HANGOUT includes five functions—Explore, Route, Post, Search and Account. EXPLORE includes events and places that the related information provided to users who are interested in. ROUTE is helping route suggestion and navigation. POST is a social function which can share personal experiences to the public.
5.2. Ideation

Sketches

Figure 18.
Sketch
Figure 20.
Wireframe
5.3. Final Delivery

The Hangout structure consists of five parts. Explore activities, explore places, route navigation, social sharing, and personal account. Design tools include Sketch, Adobe illustrator to create graphic part, InVision and After Effects to work on interactive part.

Welcome Page
Log in Account

Welcome to Hangout!
Join Hangout and be involved in outdoor activities. Let’s start here with your friends!

Sign up  Log in
Not ready to Sign Up? Explore the app.

Hello!
Sign up to get started.

Your email
Create password

or Sign up using
Facebook  Google
Log in
Explore Events & Places

First, the user needs select the location, explore the events and places of the site, and define the search content by filter. The user will know about the activity name, distance, date, and difficulty level while browsing the application. These options can help the users find their interests and activities much easier.

The content of each of the places and events includes a simple introduction, such as the address, telephone number, reviews and similar recommendations. Hangout! Innovation refers to the route navigation that users share. These lines can help users preview activities and plan trips. It can also be downloaded in advance and can be found in pictures or directions without the Internet. This function may help the safety of outdoor activities.
Sunset/Moonrise Walk in Big Basin Redwood Park

Enjoy old-growth forests, ocean views, and the long days of June on this hearty but moderately paced 18+ mile loop in Central Point Reyes. Not for speed demons or gazelles, but definitely NOT a beginner's hike. Hikers with relaxed Read more
Search Filter

Activity: Biking
Sort by: Most reviewed
Level: Medium
Distance from you: 25 mi

See 20 results

Nearby:
- South San Francisco
- San Francisco
- Lake Tahoe
- Oakland
- San Mateo
- Cupertino
- Santa Barbara
Explore Routes

Start at Park Headquarters & Visitor Center
Turn right onto Big Basin Way 0.7 miles 20 min
Go straight onto Joy Trail 1.5 miles 50 min
Keep going on Big Basin Way 0.5 miles 15 min
Turn left on Sky Meadow Rd 0.3 miles 10 min
Turn right to Wastahi Campground
Turn left to Sky Meadow Rd 0.4 miles 14 min
Turn left to Park Headquarters & Visitor Center

Direction

We visited this state park for the first time today and can’t wait to come back here for a full weekend’s camping trip! Read more
Navigation on Map View
Navigation Route
Share Route

Do you want to import your route?

Hearst San Simeon State Park

1h
Duration
1.6mi.
Length

Import

Start at
Park Headquarters & Visitor Center

Turn right onto Big Basin Way
0.7 miles
20 min

Go straight onto Jay Trail
1.5 miles
50 min

Keep going on Big Basin Way
0.5 miles
15 min

Turn left on Sky Meadow Rd
0.3 miles
10 min

Turn right to Wastahi Campground

Turn left to Sky Meadow Rd
0.4 miles
14 min

Turn left to Park Headquarters & Visitor Center

Save
### Share Route

**Start at**

- Park Headquarters & Visitor Center

**Turn right onto Big Basin Way**
- 0.7 miles
- 20 min

**Go straight onto Jay Trail**
- 1.5 miles
- 50 min

**Keep going on Big Basin Way**
- 0.5 miles
- 15 min

**Turn left on Sky Meadow Rd**
- 0.3 miles
- 10 min

**Turn right to Wastahi Campground**

**Turn left to Sky Meadow Rd**
- 0.4 miles
- 14 min

**Turn left to Park Headquarters & Visitor Center**

---

We visited this state park for the first time today and can’t wait to come back here for a full weekend’s camping trip!
Share Route

Activity type
- Camping
- Picnic
- Climbing
- Biking
- Family
- Fishing
- Hiking
- Boating
- Horse riding
- Water ski
Social Sharing

Social Sharing is designed to help users explore more outdoor activities and have more comprehensive plans for their activities. It can also be used for looking for like-minded friends and teams.
Post Content

#Hiking at Oyster Point Park

After visiting my boyfriend during his lunch break, I decided to take a walk around Oyster Point Park. This park is quite serene and clean. It’s a great location to walk your dog, jog, or just walk along the trail. I think it’s wonderful that most of the businesses here have this place to look forward to when they need to de-stress. Cool breeze and clean park.

7.3 mil. from you
3 mil. Length
4 12
# Post Setting

<table>
<thead>
<tr>
<th>Section</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>My Posts</td>
<td></td>
</tr>
<tr>
<td>My Photos</td>
<td></td>
</tr>
<tr>
<td>Drafts</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td></td>
</tr>
<tr>
<td>Posts You've Liked</td>
<td></td>
</tr>
<tr>
<td>Your Bookmarks</td>
<td></td>
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<tr>
<td>Location Access</td>
<td>✓</td>
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<tr>
<td>Connect Contacts</td>
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<tr>
<td>Facebook Friends</td>
<td>✓</td>
</tr>
<tr>
<td>Photo Access</td>
<td>✓</td>
</tr>
</tbody>
</table>
Create A Post

Add location

- Hearst San Simeon State Park
  May 15, 2017
- Coast Dairies State Park
  May 5, 2017
- Junipero Serra Park
  April 27, 2017

Weekend time at Stafford Park
Create A Post

Stafford park is a nice collection of grassy area, evergreen trees, and kids play area. During the summer, it is the site for free weekly concerts featuring local bands. Last week was a zydeco band, but the Redwood City website will show the wide span. It’s a welcoming family space.

Activity type
- Camping
- Picnic
- Hiking
- Biking
- Family
- Fishing
- Climbing
- Boating
- Horse riding
- Water ski
Search

Suggested Searches
- Hiking
- Fishing
- Parks
- Camping

Junipero Serra Park
3.2 mi. from you

Big Basin Redwood Park
4.5 mi. from you

Hearst San Simeon State Park
6 mi. from you

Coast Dairies State Park
9 mi. from you
Account

This part includes bookmarks, past posts and activity records. The personal account details the physical function data of each activity, as well as ranking users who have been active in the same location. This is designed to allow users to learn more about their own activities through the exact data. Of course, these data users can choose to open to public or private—ensures user privacy.
Account

Events
- Sunset/Moonrise Walk in Big Basin Redwood Park
- Mt. Tamalpais Park

Places
- Junipero Serra Park
- Big Basin Redwood Park

Routes
- 13.2mi.
  - From you
  - 1.5h
  - Duration
  - 2.9mi.
  - Length
- 7.5mi.
  - From you
  - 2h
  - Duration

Stafford Park
Stafford park is a nice collection of grassy area, evergreen trees, and kids play area. During the summer, it is the site for free

2.4 mi. from you
Length 1 mi.

May 21, 2017
Activity Record

Hangout! - A comprehensive outdoor activity planner & information sharing platform
6. Evaluation
During the design process, I benefited from the help of the RIT professors. I did the study of design methodology. The process of designing itself is a learning process, and it doesn’t matter whether the final product is perfect or not. The key lies in the process of learning and improvement. Any product has an infinite improvement process. With the help of RIT students, the final evaluation survey was completed. In the survey, Hangout! acquired the recognition from students in the design field. They expressed great recognition for the logo, color and dynamic interaction. At the same time, it is found in the survey that more assistance is needed if the product is actually applied, such as a large number of user groups, user motivation and outdoor safety. There are also some design issues that need to be improved, like content arrangement, font size and the actual operation of route navigation. However, most users will choose to try outdoor activities after browsing the Hangout! content. This comment is an acknowledgment of the Hangout! product. Because Hangout! achieves the goal of the product—it encourages users to participate in outdoor activities.
Evaluation survey

Hangout - A comprehensive platform for enthusiasts

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. It was easy to learn to use the app.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>2. The concept of this app was clear.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>3. The menu items were well organized and functions were easy to find.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>4. All of the functions I expected to find in the menus were present.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>5. I would imagine that most people would learn to use this system quickly.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>6. The information provided with this system was clear.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>7. The organization of information on the screen was clear.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>8. I liked using the interface of this system.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>9. I would use this app in my future for my outdoor activity.</td>
<td>○ ○ ○ ○ X</td>
</tr>
<tr>
<td>10. Overall, I am satisfied with this system.</td>
<td>○ ○ ○ ○ X</td>
</tr>
</tbody>
</table>

Overall Comments

"The interface is clean, I like the overall interactions!"

Figure 21.
Evaluation form
### Evaluation survey

<table>
<thead>
<tr>
<th>Hangout - A comprehensive platform for enthusiasts</th>
<th>Strongly Disagree</th>
<th>Strongly Agree</th>
</tr>
</thead>
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</tr>
</tbody>
</table>

**Overall Comments**

1. Add big color of the "factual" part, and not clear to see.

<table>
<thead>
<tr>
<th>Hangout - A comprehensive platform for enthusiasts</th>
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<th>Strongly Agree</th>
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</tr>
</tbody>
</table>

**Overall Comments**

1. Really neat visual style.
Evaluation survey

Figure 23.
User test

Figure 24.
User test
7. Conclusion
Outdoor activities have a large user base in the United States. Therefore, there are the National Park websites, camping websites and travel websites that can check information about outdoor places. But the information about outdoor activities is diffuse and complex. Some content is not by user demand but occupies a large number of pages. This is a problem for user query information. Especially for outdoor activity with beginners, their needs are direct and basic. This requires a user survey to select important information to be presented to the user, based on user requirements. The project aims to incorporate abundant outdoor activities, categorize these, encourage users to share outdoor experiences and feelings, which will enrich the application’s content. Usability testing throughout every step of design will reveal useful functions. The goal of this is to understand user requirements, to do the best to solve the problems that users encounter in outdoor activity queries. Therefore, when all the problems are solved. This project can play its value.

The ultimate goal of this app is to expand the user base, give the user a good experience, let them be interested in pictures and be attracted to outdoor activities, help users solve positioning and navigation problems when outdoors, and provide user security support. With these positive experiences, we will have more users in love with outdoor activities.

In the final usability test, the app received positive feedback. The user being investigated would choose outdoor activities because of this convenient application. In the future, the app will promote more people to participate in outdoor activities on the basis of having a large user base, promote outdoor activities to help people release stress and improve their body’s health and play an active guiding role in their social lives.
Bibliography


Lane, Nicholas D., Emiliano Miluzzo, Hong Lu, Daniel Peebles, Tanzeem Choudhury, and Andrew T. Campbell. 2010. “A Survey of Mobile Phone Sensing.” Ieee Communications Magazine 48, no. 9: 140-150. Science Citation Index, EBSCOhost.


8. Appendix: Proposal
Thesis Proposal

CampIn
A Comprehensive platform for outdoor enthusiasts

Yani Qu
School of Design
College of Imaging Arts and Sciences
Rochester Institute of Technology
MFA Visual Communication Design
Mar 28, 2017
Thesis Proposal for the Master of Fine Arts Degree

Title: CampIn
A Comprehensive platform for outdoor enthusiasts

Submitted by: Yani Qu
Date: March 28, 2017

Chief Thesis Adviser: Daniel DeLuna, School of Design

Signature of Chief Thesis Adviser

Date

Associate Thesis Adviser: Chris Jackson, School of Design

Signature of Associate Thesis Adviser

Date

Associate Thesis Adviser: Nancy Ciolek, School of Design

Signature of Associate Thesis Adviser

Date
Abstract

The natural sight-view of the US is gorgeous. For a long time, people have been involved in outdoor sports, travel and camping. Camping is the closest way to nature. However, it’s a new experience for many people and a little dangerous. Currently, there’s few Apps to help campers, the very few on the market are not perfect. Camping sites and applications on the market are very few and not perfect. Most map Apps can not show clear roads of camping area. For a short weekend trip, many people would like to go camping as their activity of choice. Many people don’t know where to camp and worry about the safety. For the reasons above, I came out with this innovative App.

In general, this App includes the following parts;

The first priority for any camping App should be to provide users with available camping areas. Depending on the facilities and the risk, I divided camping area into different types. The general information includes camping administration, routes, user reviews, suggestions, outdoor facilities and activities. A strong GPS provides location, tracks and the user route records. The user can see other nearby users’ locations. If a person is in danger, he/she can send a signal to another user around him/her. This App will provide an infrared ray detector which connects with the application to alarm other users when wild animals are in the area. This support facility will prevent the attack of wild animals. When dangerous animals are close to you, it will alert users to take notice.

The purpose of the camping App is to provide comprehensive information about camping, to guid users best route to the camp. Protect users safty when they are camping.
Problem Statement

Camping can be a relaxing way to travel, but it can be challenging. The United States has 59 protected areas known as national parks that are operated by the National Park Service. And numerous state parks across the nation. When searching what danger could happen while camping, the result is far more serious than the imagine. There are several statistics that demonstrate how serious it is; 7,000-8,000 people are bitten by a venomous snake in the U.S. each year. 51 is the average number of lightning fatalities in the U.S. per year from 1984 to 2013. 1 in 3 numbers of tree stand hunters who will fall at some point in their hunting career. 75 Percent tree stand falls that occur while climbing up or down a tree. $5,000,000 is the yearly cost of search-and-rescue operations by the U.S. National Park Service. 16,911 total number of deaths in the U.S. from 1999 to 2011—an average of 1,301 per year—that were associated with exposure to excessive natural cold1. And the news about camping death continued happening.

If people are well prepared before going camping or have professional equipment to help people avoid danger. It can reduce the mortality rate in the wild nature. This thesis project prepares to teach safe camping methods and providing technical support to reduce the danger in outdoors.

Review of Literature

CAMPING

How to Survive Wild Animal Attacks

Research. Rich Johnson did many research of big wild animals behavior. Those animals such like all bears, polar bear, Cougar, Elk/Deer, Bison and Wolf/Coyote. The best way to avoid problems with wildlife is to use common sense. According to the behavior of different animals have different ways to avoid attack. The thesis project will be reference to avoid attack method, use these methods in the application. To show by text and use infrared technology to guide the user how to avoid attacks.

Simple tent camping: the basics of camping from car or canoe
Zora and David Aiken ; with drawings by David Aiken: Simple tent camping : the basics of camping from car or canoe. by Ragged Mountain Press, April 1st 1996.

Book. Aimed at occasional campers, especially those with families in tow, this guide is filled with field-tested advice on how to make tent camping more comfortable and enjoyable. The emphasis is on environment-friendly camping practices, and hiking or cannoning to primitive sites is also covered.
Review of Literature

CAMPING

Camping

Book. Recreational activity in which participants live outdoors, often in the wilderness, usually using tents, trailers, or motor homes, but sometimes only a sleeping bag, for shelter. Modern camping originated near the end of the 19th century in the U.S. as a rough, back-to-nature pastime for hardy lovers of nature. Canoes were the original vehicle; bicycle camping soon followed. Camping was a major part of the programs of the Boy Scouts and Girl Guides (See: scouting). It gained greatly in popularity after World War II. As the number of campgrounds with greater amenities grew, it became the standard holiday for many ordinary families. Recent decades have seen its continued growth, to the point of placing a serious strain on the resources of state and federal outdoor-recreation areas.

Camping in Comfort : A Guide to Roughing It with Ease and Style

Book. Camping in Comfort is the complete guide to help you enjoy the latest advances in outdoor gear without wasting money on expensive, unnecessary paraphernalia. Packed with information on tents, sleeping gear, clothing, footwear, and camp kitchens, it also offers detailed information on state parks, private campgrounds, luxury camping resorts, backpacking and bicycle camping, kayak camping, RV camping, and much more.
Review of Literature

CAMPING

Danger Zone Data: The Ways People Die in the Outdoors


Website. There’s some hard data on the ways people die in the outdoors.
Review of Literature

DESIGN

Design Methodologies
Instructional, Thinking, Agile, System, or X Problem?


Website. There five popular design methodologies (Instructional System Design, Design Thinking, Agile Design, System Thinking, and X Problem). It includes definitions, visual models, primary focus and goals, values, main steps, and further readings.

The principles & processes of interactive design


Book. User experience design is one of the fastest-growing specialties in graphic design. Smart companies realize that the most successful products are designed to meet the needs and goals of real people—the users. This means putting the user at the center of the design process. This innovative, comprehensive book examines the user-centered design process from the perspective of a designer. With rich imagery, Interactive Design introduces the different UX players, outlines the user-centered design process from user research to user testing, and explains through various examples how user-centered design has been successfully integrated into the design process of a variety of design studios worldwide.
Review of Literature

MAPPING

Abstracting Geographic Information in a Data Rich World  Methodologies and Applications of Map Generalisation


Book. Research in the field of automated generalization has faced new challenges in recent years as a result of technological developments in web-based processing, new visualization paradigms and access to very large volumes of multi-source data generated by sensors and humans. In these contexts, map generalization needs to underpin ‘on-demand mapping’, a form of mapping that responds to individual user requirements in the thematic selection and visualization of geographic information. It is this new impetus that drives the research of the ICA Commission on Generalization and Multiple Representation (for example through its annual workshops, biannual tutorials and publications in international journals). This book has a coherent structure, each chapter focusing on core concepts and tasks in the map generalization towards on-demand mapping. Each chapter presents a state-of-the-art review, together with case studies that illustrate the application of pertinent generalization methodologies. The book addresses issues from data gathering to multi scaled outputs. Thus there are chapters devoted to defining user requirements in handling specifications, and in the application and evaluation of map generalization algorithms. It explores the application of generalization methodologies in the context of growing volumes of data and the increasing popularity of user generated content.
Review of Literature

MAPPING

Google Maps vs Waze vs Apple Maps - Who wins?
Eric Chemi (Jun 2016): Google Maps vs Waze vs Apple Maps - Who wins?
Lecture. A lecture about user testing of Google map, Waze and Apple map. Base on real driving test, Google Maps was the most accurate predictor based on our driving, closely followed by Waze.

How to Create a Customer Journey Map
Lecture. A Customer Journey map is a visual or graphic interpretation of the overall story from an individual’s perspective of their relationship with an organization, service, product or brand, over time and across channels. All organizations have business goals but leveraging customer journeys as a supporting component of an experience strategy keeps customers (or members, patients, employees, students, donors etc.)
Review of Literature

FIRST AID

**Wilderness Survival: First Aid & Health**
http://fanyi.youdao.com/WebpageTranslate?keyfrom=fanyi.web.index-
&url=http%3A%2F%2Fwww.cnbc.com%2F2016%2F06%2F30%2Ftesting-google-
maps-vs-waze-vs-apple-maps-for-the-fourth-of-july-weekend.html&type=AUTO&ac-
tion=FY_BY_CLICKBUTTON
Lecture. A lecture about user testing of Google map, Waze and Apple map. Base on
real driving test. Google Maps was the most accurate predictor based on our driving,
closely followed by Waze.

**SAS Survival Handbook, Third Edition: The Ultimate Guide to Surviving Any-
where**


Take your survival advice from a fellow who has lived it. Have known a few of these
SAS operatives and they are as smart and tough as they come. A great narrative on
what it takes to survive when the situation goes bad. A word to the wise is sufficient.
Review of Literature

TECHNOLOGY

Comparative Evaluation of Thermal Infrared Imaging and Spotlighting to Survey Wildlife

Book. Spotlighting (SL) is used widely to estimate animal abundance, but it yields density estimates that are underestimated and biased. The objectives were to compare animal detectability by SL and TI imaging as a function of animal size, species (red deer [Cervus elaphus], fallow deer [Dama dama], wild boar [Sus scrofa], red fox [Vulpes vulpes], European rabbit [Oryctolagus cuniculus], and brown hare [Lepus europaeus]), distance, and season.

Detection of medium-sized ground-dwelling mammals using infrared digital cameras: an alternative way forward?

Book. Infrared digital cameras were used to examine temporal detection rates of medium-sized ground-dwelling mammals in a coastal woodland landscape. From three successive deployments at fixed stations, a range of mammals was detected, including three target species: the long-nosed bandicoot, the long-nosed potoroo and the southern brown bandicoot. Reporting rates of target species were largely consistent and in some cases high.
Review of Literature

TECHNOLOGY

Signaling Techniques


Website. One of your first concerns when you find yourself in a survival situation is to communicate with your friends or allies. Generally, communication is the giving and receiving of information. As a survivor, you must get your rescuer’s attention first, and second, send a message your rescuer understands. Some attention-getters are man-made geometric patterns such as straight lines, circles, triangles, or X’s displayed in uninhabited areas; a large fire or flash of light; a large, bright object moving slowly; or contrast, whether from color or shadows. The type of signal used will depend on your environment and the enemy situation.
Design Ideation

This project will be to inquire into the user experience of camper. To do research of camping history and the future technology development trend. At the same time, it will solve the infrared detector technology implementation, using technical which can support smart phone provides more security and support for camping.

This app will provide the support of 6 parts,

1. Geographical analysis --- will available for the location of the camping geographical divides. The user can choose places they want to go to by rating, weather, suitable crowds or location.

2. General information of camping area. The general introduction includes administrative information, danger notification and camping planner. The administrative information contained in the introduction of camping, attention, existing facilities and customer review.

3. Camping planner, the user can choose the plan from App recommendation, and also customize by user self, the planning route, the App will prompt danger area in the map, suggest user to avoid this area.

4. Camping social network. User can search travelor who has the same destination. They can share facilities and help each other on the trip.
Design Ideation

5. GPS can give campers navigation, the navigation only contains camping areas. The difference from other map is that it has a more detailed field region, such as road, bridge, lakes, swamps and forests are introduced in detail. Once the campers were beyond the GPS to c camping areas, the GPS will automatically alarm, remind campers don’t go to the unknown.

6. Infrared detector - an external equipment, mobile phone via Blue tooth connection. It can detect the wildlife within a certain distance. According to the existing science and technology, It has been able to identify biodiversity by the infrared detectors. When there are wild animals close by, for example, the application can alert the user of this creature’s position and walking paths. The user can choose better ways to avoid it. Similarly, in the night, infrared detector can also provide early warning, to ensure the safety of users overnight.

7. User network, if a camper encounter danger in the wild, the rescue can be very difficult, at this moment we can through the application of network users to help stranded campers escape from trouble. Users can see other user’s location around them, if the user encounter dangers, they can send a distress signal to ask for help. It will also send signals to 911. Other nearby users can find the location of the user endangered easily. In order to protect personal privacy, the information shared in the user network is limited to location information.
Design Ideation

MIND MAP
Design Ideation

INFORMATION SEARCHING FLOWCHART

- Search Destination
- Category: Wild Nature, Parks
- Lake, River, Falls, Woods, Desert etc.
- Destination List
- Map View

- Park Introduction
  - Business Info
  - Photo Gallery
  - Camper Reviews
  - Share Photos
  - Share Experience
  - Map (Route, View Photo)
  - Share Experience
  - Preparation List
  - Find other Tour Pal
  - Danger Notice

ROUTE GUIDE FLOWCHART

- Service Area
- Sight View Photos
- Route Overview
- Route Options
- Danger Alert
- Current Location
- Route Destination
Design Ideation

DANGER ALERT FLOWCHART

Experience Sharing → Danger Notice
                      ▼
Safety Protection → Infrared Detector ← Wild Animal Alert ← Infrared Vision
                      ▼
Emergency → Night Mode
                      ▼
Distress Signal → Day Mode
                      ▼
911 → Tourist near you → GPS

- Show wild animal in map view
- Alert when wild animal approach
Deliverable

Research campers user experience, explore suitable camping way for campers. Provide a detailed map of camping include wild area and parks aid on positioning, navigation and service guidance. Establish contact with emergency services. Provide emergency assistance. Design an infrared external equipment, associated with mobile application, provide early warning signal when campers in danger.

UI Design & UX Documentation

- Project research
  Research, define the problem in camping and find out solution.
- Information Integration
  Collect camping information which include camping preparation, wilderness survival knowledge, experience sharing, national and state parks Info. Create information architecture and develope it into organized information system.
- Flowchart.
- Content model Wireframe include multi-levels.
- Visual design and graphics.
- Implementation
  personas, critics, revised visual design and final prototype.
- Usability test
  Sability survey, revise interaction design.
- InVision ( Visual prototype)
- Motion graphics.
Implementation Strategies

APPROACH

- Research current camping website and applications, analyze their strength and weakness.
- Research survive in wild nature. Summarize notice information which can help user deal with emergency when they encounter danger.
- Study infrared detector, and create a conceptual infrared detector which can show the visual animal shape through App. And it can also send real-time alert of wildlife attach to user.
- Analyze national parks, state parks and wild camping areas. User can use different categories to find their destination, and it can search by map, keyword or customer review.
- Design a map of each park, the map contains service facilities and sight view photos. Users can click on the icon on the screen to go to the place where they want. And user can upload photos on certain map location reference for other users.
- When user camping, our App can provide route guidance. User can see clear route guide and go to their destination by review sight view photos.
- User can see other user location in map view. When user encounter danger, they can send distress signal to the user who near you. It could be the fast way to save life. This service can be turn on or turn off for privacy consideration.

TARGET AUDIENCE

The target audience for my thesis will be people who love nature and interest camping or who has short distance travel plan. It can be individuals or group. Especially for families, students and workers. Those people who may have more camping plan during the weekend.
Implementation Strategies

KNOWLEDGE & SKILLS

Wilderness survival knowledge
Color theory
Typography
Usability & User experience
Infrared vision

TECHNOLOGY

Adobe Illustrator CC
Adobe Photoshop CC
Adobe After Effects CC
Adobe InDesign CC
inVision App (Prototyping Software)
Methodology

The methodology that will be applied in this project will combine systematic approach and design thinking. A systematic approach for developing learning platforms. Applying critical and creative thinking to understand, visualize, and describe complex, ill-structured problems and develop approaches to solve them. To combine technical support and user experience work on interaction camping App design.

DESIGN CONTENTS

Methodology

DESIGN OBJECTIVE

- Identify practical part of Application through user-discussions, evaluate camping App by user surveys.
- The advantages and disadvantages analysis of competitors.
- Define target audience and collect real cases of camping.
- Brainstorm all characters may used in App and develop them in flowchart.
- Build information architecture, analyze useful information into App. Create flow-chart.
- Create wireframes and assess usability through target audience.
- Document and present design, collect feedback and develop.
Evaluation Plan

RESEARCH & SURVEY

Do research and investigation of camping, the research includes mapping research, survival in wild world, infrared wild life and first aid. Do the survey to evaluate the percentage of user will use this application as their camping assistance. Research campers psychological demand, according to the demand of the campers to summarized useful information. Analyze risk and response may occurred in the camping. Simulate the actual emergency situation, evaluate the practical of accident treatment.

COMPETITIVE ANALYSIS

Analyze competitors’ advantages and disadvantages. Through the existing mobile application user experience, comparing competitors implementation strategy and interaction design.

USER TEST

I will do user test after wireframe and graphic design has been done. User will test operation of App through InVision prototype and complete survey of this Application. The survey will consider the following aspects;

- Does this app meet the needs of users information search? Can user look for camping destinations what they want? For example, can user find the camping place which besides lake with BBQ grill? Can user find service center by park map?

- Does my design clearly express my project objective which can provide camping assistant to user?
Evaluation Plan

- Does first aid service in my application offer practical assistance when user encounter danger?

- Do people use this App as their long term camping assistance?

- Do people like the interface?

SUCCESS DETERMINANTS

- Encourage more people to use this application to participate in the camp.

- Meet the needs of different users, find the destination what they want.

- Provide camping route and detailed map, design map for camper use.

- Create user support network, provide users to share resources and help each other.

- Simulated infrared wildlife detector can provide practical help for users when they camping.
## Timeline

<table>
<thead>
<tr>
<th>Month</th>
<th>Research &amp; Propose</th>
<th>Visual Development</th>
<th>Evaluate</th>
<th>Document &amp; Present</th>
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<tr>
<td>November</td>
<td>- Abstract</td>
<td>- Flowchart</td>
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<td>- Problem Statement</td>
<td>- Implementation</td>
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<td>- Literature Review</td>
<td>- Design Objective</td>
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<td>- Target Audience</td>
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<td>December</td>
<td>- Evaluate Plan</td>
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<td>- Competitive Analysis</td>
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<td>- Visual UI Design</td>
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<td>- Mood Board</td>
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<td>- Lo-Fi Flowchart</td>
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<td>- UI Prototype</td>
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