

Hermes

Interactive Design Requirements Specification

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Revision History:

Yousaf 1/25: Interview #1
Yousaf 1/26: Interview/Observation Notes #1
Kyle 1/29: Interview #2
Kyle 1/30: Interview/Observation Notes #2
Cameron 1/30: Interview #3
Kyle 1/30: Interview/Observation Notes #3
Jacob 1/30: Interview #4
Cameron 1/30: Interview/Observation Notes #4
Yousaf 1/30: Work Roles/User Classes #1
Quentin 1/30: Work Roles/User Classes #1
Quentin 1/30: Work Roles/User Classes #2
Cameron 1/30: Work Roles/User Classes #3
Kyle 1/30: Work Roles/User Classes #3
Quentin 1/30: Interview/Observation Notes
Kyle 1/30: Interview/Observation Notes
Quentin 1/30: Workflow Diagram
Kyle 1/30: Workflow Diagram
Yousaf 1/30: Workflow Diagram
Yousaf 1/30: Workflow Diagram Description
Quentin 1/30: Interview/Observation Notes Analysis
Jacob 1/31: Usability Goals
Kyle 1/31: Usability Goals
Kyle 2/4: WAAD
Quentin 2/4: WAAD
Yousaf 2/4: WAAD
Jacob 2/4: WAAD
Cameron 2/4: WAAD
Quinn 2/6: WAAD
Yousaf 2/6: WAAD
Jacob 2/6: WAAD
Cameron 2/6: WAAD
Yousaf 2/6: Interactive Design Requirements #2, #3, #8
Kyle 2/6: WAAD Synopsis
Quentin 2/6: Interactive Design Requirements #6, #11, #12, #16
Cameron 2/6: Interactive Design Requirements #13, #14
Kyle 2/6: Interactive Design Requirements #15
Cameron 2/6: Usability Goals
Quentin 2/6: Usability Goals
Yousaf 2/7: User Classes
Kyle 2/7: User Classes
Quentin 2/11: User Classes
Yousaf 2/7: Social Model Diagram
Yousaf 2/11: Task Analysis #4
Yousaf 2/11: Usage Scenario #4
Yousaf 2/11: Social Model Diagram
Quentin 2/11: Task Analysis #1
Jacob 2/11: Usage Scenario #1
Kyle 2/12: Task Analysis #2
Quentin 2/13: User Scenario #3
Quentin 2/13: Task Analysis #3
Yousaf 2/11: Task Analysis #4
Yousaf 2/11: Usage Scenario #4
Quentin 2/13: Task Analysis #4
Quentin 2/13: Task Analysis #6
Quentin 2/13: User Scenario #6
Quentin 2/13: Social Model Diagram
Quentin 2/13: User Scenario #3
Kyle 2/25: Sample Persona #1, #2, #3, #4
Quentin 2/25: Sample Persona #1, #2, #3, #4
Cameron 2/25: Sample Persona #1, #2, #3, #4
Kyle 2/26: Sample Persona #1, #2, #3, #4
Cameron 2/26: Sample Persona #1, #2, #3, #4
Kyle 2/26: Sketches and Storyboards
Cameron 2/26: Sketches and Storyboards
Yousaf 2/26: Wireframes Creation
Yousaf 2/27: Wireframes Creation
Yousaf 2/27: Wireframes Description
Quentin 2/27: Mental Models and Metaphors
Cameron 2/27: Mental Models and Metaphors
Kyle 2/27: Mental Models and Metaphor
Yousaf 3/20: Description of User Interface
Kyle 3/20: Description of User Interface
Kyle 3/25: Description of User Interface
Quentin 3/25: Description of User Interface
Yousaf 3/25: Design Rationale
Kyle 3/25: Design Rationale
Quentin 3/25: Design Rationale
Yousaf 3/28: Consolidated Problem List with Severity Ratings
Kyle 3/28: Consolidated Problem List with Severity Ratings
Quentin 3/28: Consolidated Problem List with Severity Ratings
Jacob 3/28: Consolidated Problem List with Severity Ratings
Quentin 3/28: Summary and Plan
Kyle 3/28: Summary and Plan
Kyle 4/1: Test Plan (15.1, 15.2, 15.3)
Yousaf 4/3: Test Plan (15.3)
Kyle 4/3: Test Plan (15.4 and 15.5)
Yousaf 4/3: Test Plan (15.4.3 and 15.5)
Cameron 4/3: Test Plan (15.7 and 15.9)
Quentin 4/3: Test Plan (15.8 and 15.10)
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Yousaf 4/10: Appendix B (15.9)
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Kyle 4/17: Target Table
Kyle 4/17: Overview of Data Analysis (16.1)
Kyle 4/17: Overview of Data Analysis (16.2)
Yousaf 4/17: Overview of Data Analysis (16.3)
Cameron 4/17: Overview of Data Analysis (16.3)
Quinn 4/17: Overview of Data Analysis (16.3)
Kyle 4/17: Overview of Data Analysis (16.4)

1. System Concept

The Hermes navigation assistance system will allow travelers/tourists to organize their road trips to optimize their routes and allow for a more enjoyable experience. This system will notify the user of popular landmarks and similar areas of interest that exist along their route of travel. Additionally, the system will allow users to customize their preferred interests such as restaurants, rest areas, etc. The interface of Hermes will be very similar to Google Maps and Waze, giving you the ability to customize your UI person and the provided voice on the system. Finally, with Hermes, you will be able to compare travel destinations based on your provided friend list and two modes for the system will also be available, a road trip organizer mode that shows places of interest aligned with routes, and a more local mode for dense areas like cities. The Hermes system will solve the current problem of travelers not having enough knowledge and information about popular locations, activities, and attractions near them. Hermes will be able to draw attention to lesser-known attractions, boosting business to these places and their surrounding areas. Furthermore, with Hermes, a symbiotic relationship with local businesses can be formed, allowing these businesses to promote Hermes, while Hermes gives discounts/coupons to users of the system to those said businesses. As mentioned above, the overall design vision of the system will be similar to Google Maps/Waze but will include lots of more advanced customizations/features that are more about the user using the system. The system's primary function is a visual map, displaying the optimal route the user can take to get to their destination. The system will display icons representing areas of interest that are near the route. Depending on the settings the user has customized, these areas of interest can be restaurants, rest stops, shops, tourist attractions, along with many others. The user can also set a maximum distance from their route so that attractions that will add too much time will not be displayed. With this system, the user will be able to turn a boring, mind-numbing trip from point A to point B, into a fun and entertaining journey as they explore the area they travel through. Hermes makes sightseeing fun and easy and will introduce the user to landmarks and places that they may have never known existed.

2. Interview/Observation Notes

The interview process consisted of four semi-structured interviews consisting of a list of 21 questions that we created to help guide the conversation. Follow-up questions were vocally provided during interviews to expand on interesting responses as required. Four participants were selected from the RIT community within the 20 to 65 age range and were chosen based on their meeting the criteria to fit in our key user work roles. All four interviewees are drivers who utilized mapping systems such as Apple Maps, Google Maps, and Waze during their multiple journeys throughout the United States to end at the correct destination.

General Travel:

- Do you travel frequently?
- What do you travel for?
- How do you like to travel?
- Do you prefer shorter routes or more scenic routes?
- How often do you make stops when traveling?
- What prevents you from making more stops during your trip?
- Would you consider yourself an outdoor or an indoor person?

Travel Preferences:

- What kind of locations are important to you on a road trip?
- Would you consider visiting an interesting location if it added time to your trip?
- When you visit a new town, do you eat local or eat at chain restaurants?
- What is your go-to place to look for things to do in a new town?

Mapping Interface Preferences:

- Do you prefer Apple Maps, Google Maps, or Waze?
- Why do you prefer one interface over the others?
- Do you like it when maps talk to you to give you directions?
- What kind of configuration settings do you like to have?
- What do you look for in updates?

Account Management:

- To sign in or verify an account, do you prefer email/phone/password/Google?
- What information would you like to be stored in your user profile?

Friends:

- Would you be comfortable sharing this information with friends that also use Hermes?
- Do you like to be competitive with friends and family?

Safety:

- How important is it for you to make it to your destination in one piece?

Yousaf Interview #1:

- The interview was casual and relaxed making it easy for the interviewee to share.
- She prefers simple and efficient travel like shorter routes and fewer stops.
- She likes Apple products and prefers Apple Maps for its ease of use.
- Time and gas are the main reasons she avoids extra stops.
- She enjoys outdoor activities and scenic places but values practical travel.
- She likes local restaurants but is okay with chains if needed.
- She wants the app updates to be useful and not just flashy.
- She doesn't care much about competing with friends.

Kyle Interview #2:

- The interview took place in a home setting and was a very relaxed experience.
- Many emotions and facial expressions were shown by him when answering questions.
- He travels rarely, only driving to and from home in New Jersey during college breaks.
- He prefers to use Apple Maps mainly because it is integrated into his phone.
- He mainly drives just to get to his destination, making as minimal stops as possible.
- He believes that Apple Maps has a cozier interface compared to the others.
- When it comes to the AI voice feature, he prefers to have it muted.
- He is a more indoor type of person, but prefers to visit and eat at local restaurants when traveling.

- Competing with friends and family never crosses his mind.

Cameron Interview #3:

- Multiple team members were present for this interview, and it took place in a business setting.
- Avoids travel unless necessary, has no preference for methods.
- She likes to fly and take the train overall compared to driving as it can be more scenic.
- Minimal stops are taken on her trip since she wants to get from A to B as fast as possible.
- She is really enthusiastic about Google Maps and its overall interface compared to Apple Maps.
- Prefers to use her phone number as a way of authentication.
- Desires how many miles traveled and where she has traveled as part of her stored information.
- Uses social media or “word of mouth” to find new locations.
- Despite the AI voice feature, she prefers it muted always when traveling.
- Her configuration for Google Maps is set to dark mode.
- She is both an outdoor and indoor person, unsure what is better, but also enjoys eating at local restaurants when traveling and sightseeing.
- She is very competitive when it comes to friends and family.

Jacob Interview #4:

- The interview was taken on a call in video-to-video format.
- Likes scenic routes over quick A to B routes.
- Stops when hungry or needs to use the bathroom, usually goes for trips to visit family.
- Doesn't like to make stops because of time constraints with his job.
- LOVES Waze BY FAR since the police and accident alerts are more accurate on Waze.
- Prefers Google for authentication over anything else.
- Would like past journeys to be stored, an icon with a name, a photo maybe.
- Would be comfortable sharing this information with friends and family only.
- Is a fan of getting to his destination in “One Piece”.

- Prefers restaurants and bathrooms for stops along the road.
- Enthusiastic about attractions along the route he is taking.
- Likes the AI voice, and doesn't want to get distracted by the visuals.
- Firmly would add time for a cool attraction.
- Large text, light and dark modes, bold text, an icon off to the side, and an arrow to indicate the direction of travel.
- Familiar with chain restaurants but may like local spots from time to time.
- Finds cool places nearby through Google; an example includes searching up “things to do in Rochester” if he was visiting RIT.
- Enjoys the Outdoors (stated as firmly and quickly as possible.)
- I want a smooth and easy application to handle.
- Adamantly and confidently is competitive with friends and family.

Results:

- The four interviewed revealed several common themes in travel habits and preferences for navigation apps. Most interviewees preferred minimal stops while driving, prioritizing efficiency and convenience. Our users value scenic routes only when they have the time available. Local restaurants are preferred over chain restaurants when making stops for food. Navigation app preferences were diverse, with Apple Maps being highlighted for its simplicity and ease of use, Google Maps winning in interface design, dark mode settings, and accuracy. Waze stood out as being unique in its abilities to alert to police presence, upcoming traffic, and hazards. AI voice navigation was mainly a feature not utilized by our interviewees, with one user claiming it helps him be less distracted while driving, favoring it.
- App design preferences for authentication methods vary, with users wanting multiple options to sign in; Google, phone number, and email. All respondents expressed interest in storing account data such as miles travelled, and other location-based history. Visually, one respondent made a request for accessibility features for large text, dark mode, and clear visual cues.
- When asked where users currently collect information about what to do in a new town, social media, word of mouth, and google were used to find new places to visit. Two of four users expressed strong interest in being competitive with friends on metrics such as miles driven, places visited, etc.

3. Work Roles/User Classes

Work Role: Traveler	
Context of use	
Goals	The goal of the Traveler is to use the Hermes navigation assistance system to allow them to organize their road trips to optimize their routes and allow for a more enjoyable experience.
Frequency of use	Daily usage, they will use the app when they are traveling.
Work responsibilities	Need to be willing to give reviews and/or suggestions about the app so the system can improve.
Work environment	Anywhere where they have access to the internet and have their phone on them.
Abilities	Know their way around a mobile device.
Personal	Any age, gender, and cultural background.

Work Role: Friend	
Context of use	
Goals	The goal of the Friend is to use the Hermes navigation assistance system to allow them to view the statistics of travelers that they are friends with, invite them or be invited to a caravan, and give and receive crash alerts.
Frequency of use	Daily usage, they will use the app when they are traveling.
Work responsibilities	Need to be willing to give reviews and/or suggestions about the app so the system can improve.
Work environment	Anywhere where they have access to the internet and have their phone on them.
Abilities	Know their way around a mobile device.
Personal	Any age, gender, and cultural background.

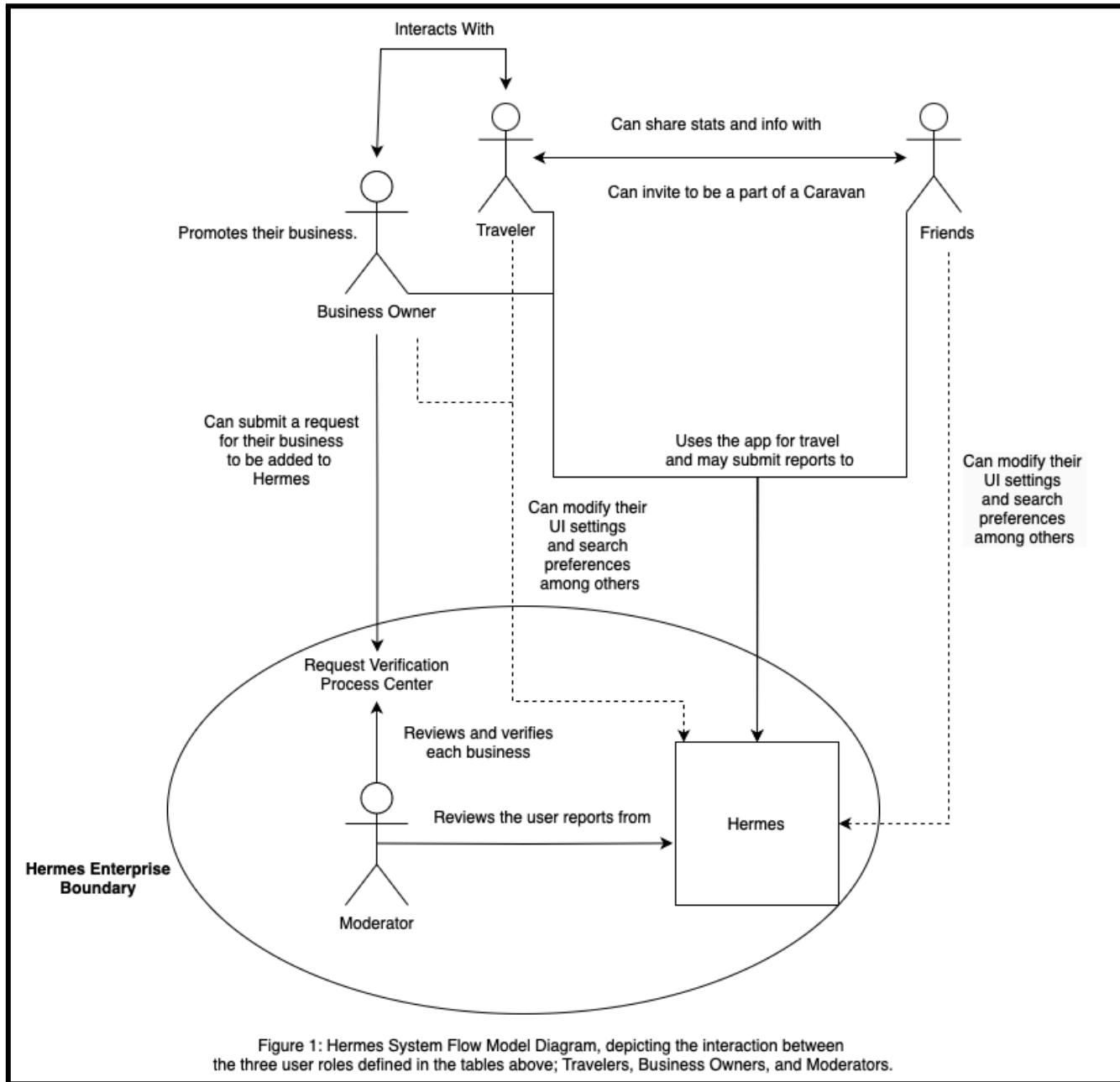
Work Role: Business Owner	
Context of use	
Goals	The goal of the business owner is to promote their business, and for more travelers to choose to visit the promoted businesses while on their journey using Hermes.
Frequency of use	Weekly usage, which will give the business owners opportunities to create new promotions to attract customers.
Work responsibilities	Business owners need to be willing to use the app frequently to review how their business is advertised on the map. Must be willing to view statistics providing the effectiveness of their promotions and how travelers are responding to current posted information.

Work Role: Business Owner	
Work environment	In their usual place of business, anywhere where they can access their Hermes business account.
Abilities	Preferred marketing experience, and knowledge of the business they represent. Must be an employer of the business.
Personal	Of legal business-owning age, or currently working for a business as marketing, etc. Any gender, any culture.

Work Role: Moderator	
Context of use	
Goals	Oversees the verification of businesses.
Frequency of use	Daily usage. Needs to moderate suspicious activity, new business reports, and flagged material.
Work responsibilities	When a shop or destination wants to be added to the app, they must verify the integrity of their establishment. This will be done through a business license, trade name certificate, fictitious name certificate, certificate of trade name, certificate of assumed business name, or registration and license with trade name. Additionally, needs to handle any suspicious account activity or flagged data that arises on the app.
Work environment	In the main office, or working remotely.
Abilities	Educated, prior moderation experience. Calm and collected and morally sound, no criminal past.
Personal	Any age, gender, and cultural background.

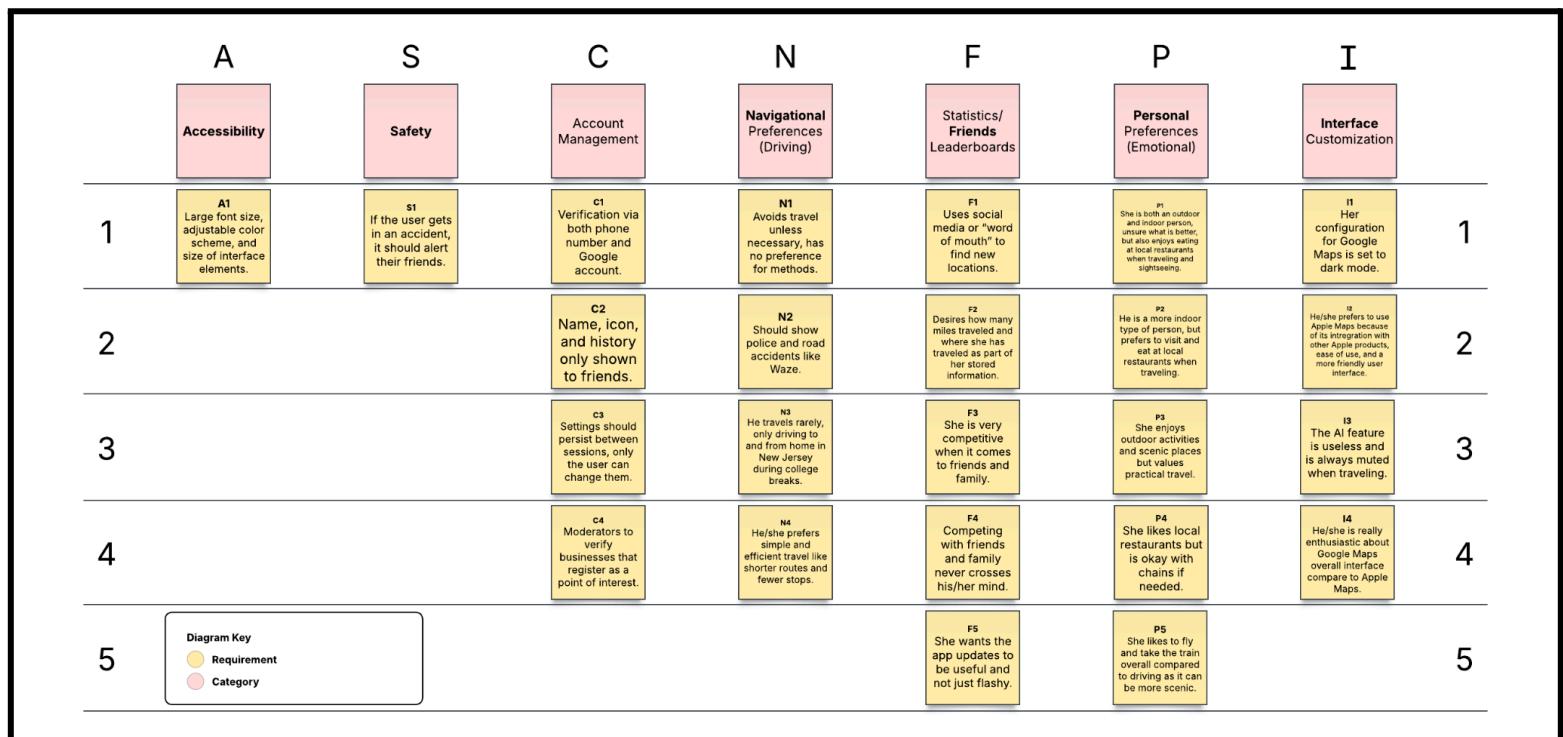
4. Workflow Diagram

The diagram explains the interaction between the Hermes System and its roles: Travelers, Business Owners, and Moderators. Travelers can modify their personal app settings, join Caravans with their friends and family, interact with businesses around them, and submit reports to help improve the Hermes System. Business Owners can request access to the Hermes System to promote their business on the platform. Moderators are responsible for verifying businesses that request access and reviewing user reports to ensure compliance. Additionally, the system may interact with external entities for additional services as needed.



5. WAAD

We began the Work Activity Affinity Diagram by breaking down our raw interview notes into separate activity notes. Each member who conducted an interview broke down their raw notes separately from other members to prevent team bias from interfering with their original ideas. Once completed, we had roughly thirty-three activity notes that covered accessibility, safety, account management, navigational preferences, statistics/friends leaderboards, personal preferences, and interface customization. After these notes were divided into these categories, we set out to combine several of these notes as many of them had the same essence, mainly since each of the interviewees had the same feeling about a certain topic that was asked for them to answer. Hence, some of the WAAD diagram's categories look barren or shallow. In the end, we believe that our WAAD diagram showcases a great overview of the Hermes application and how we as a team understand our own goals when it comes to creating Hermes.



6. Interactive Design Requirements

Requirement #1	
Major feature/category name	Accessibility
Secondary feature/category name	Display Customization
UX requirement statement	Users would like to be able to modify the display of Hermes to make it more visually accessible. Modifications include larger or smaller font sizes, color-blind settings, and larger or smaller interface elements. [A1]
Notes	These options would make Hermes more accessible to users with visual impairments. They would also allow the user to customize the app to fit their personal preferences. There will be a minimum and maximum font/element size.

Requirement #2	
Major feature/category name	Interface Customization
Secondary feature/category name	Apple/Google Maps UI
UX Requirement Statement	The Hermes Navigation Assistance System will have a very similar UI to Apple/Google Maps, making it easier to transition over, and resulting in less user reports. [I2][I4]
Notes	This will allow users to be already used to the new system and will not have any issues. The UI will have options like live satellite mode, 3D view, and many more.

Requirement #3	
Major feature/category name	Account Management
Secondary feature/category name	Verification & Persistence
UX requirement statement	The Hermes Navigation Assistance System will require user verification when signing up, logging in, new businesses, etc., and user settings will be persisted throughout every session. [C1][C3][C4]
Notes	Having a verification system will ensure that all users and businesses are real people, increasing the reliability and integrity of Hermes. Users will be verified through a phone number or google account. Businesses will have a separate, more thorough process where they will have to provide some sort of business identification.

Requirement #4	
Major feature/category name	Safety
Secondary feature/category name	Accident notifications
UX Requirement Statement	The Hermes Navigation Assistance System will alert a user's friends list when they get into an accident. [S1]
Notes	Accidents would be determined from metrics on a phone's accelerometer to attempt and detect sudden collisions

Requirement #5	
Major feature/category name	Account Management
Secondary feature/category name	Information Privacy
UX requirement statement	Users would like their profile information to only be accessible by other users that they have added as friends. [C2]
Notes	Hidden information includes the user's name, icon, and history.

Requirement #6	
Major feature/category name	Friends/Statistics
Secondary feature/category name	Hermes Awareness/Trip Ideas
UX requirement statement	Users prefer social media and "word of mouth" to find new locations. Advertisements will be run and Hermes will be easy to share on social media platforms. [F1]
Rationale	Make it easy for users to share their trips on social media, so more people are aware that Hermes exists. When users share where they are going/what they are doing, more people may become interested and go on more trips with Hermes

Requirement #7	
Major feature/category name	Navigational Preferences
Secondary feature/category name	Traffic Alerts
UX requirement statement	Users would like Hermes to notify them of important traffic events. These events include police activity, motor vehicle accidents, and heavy traffic. Hermes will suggest an alternate route to avoid an event, creating the route based on the users' established preferences. [N2]
Notes	The user can change their route to avoid any unwanted delays. The user will remain on their route until accepting the new route.

Requirement #8	
Major feature/category name	Statistic/Friends Leaderboards
Secondary feature/category name	App Updates
UX requirement statement	The updates that the system will receive overtime will actually be useful to the user and not just gimmicky. The system will be updated daily automatically based on user reports. [F5]
Notes	The more user reports and feedback, the better the system can be updated. User reports and feedback will be received via in-app surveys and ratings.

Requirement #9	
Major feature/category name	Personal Preferences
Secondary feature/category name	Culinary Destination Preferences
UX requirement statement	Users will be able to tell Hermes what kind of restaurants they prefer. [P1][P2][P4]
Notes	Restaurant types include local places, chains, and the type of cuisine

Requirement #10	
Major feature/category name	Interface Customization
Secondary feature/category name	App Theme
UX requirement statement	The app will allow users to choose a variety of default themes and will also allow them to create their own theme as well. [I1]
Notes	The more user customization available, the better overall user experience. Users will also be able to load custom themes from their devices via in-app settings.

Requirement #11	
Major feature/category name	Interface Customization
Secondary feature/category name	Talking Navigational System
UX requirement statement	Users prefer the ability to enable/disable the navigation system reading directions while driving. [I3]
Notes	The more user customization available, the better the overall user experience. Tailoring the experience to the driver is key to driver comfort. Users can also choose between languages and accents to ensure comprehensibility and language preference.

Requirement #12	
Major feature/category name	Navigational Preferences
Secondary feature/category name	Transportation Mode
UX requirement statement	Users sometimes prefer to take the train or plane when traveling. This is expected. Hermes should support finding things to do in a static location and time restriction. [P5]
Notes	People don't always travel by car. When people have excess time during layovers, Hermes can be used to find quick things to do without traveling too far.

Requirement #13	
Major feature/category name	Statistics
Secondary feature/category name	Tracking User Statistics
UX requirement statement	Users would like Hermes to track and display various information. This information includes total miles traveled, total hours traveled, and places traveled. Friends will be able to see each other's stats. [F2][C2]

Requirement #14	
Major feature/category name	Personal Preferences
Secondary feature/category name	Leaderboards
UX requirement statement	Certain user statistics tracked by Hermes will be compared with the stats of friends. This comparison will be displayed in a leaderboard. [F3][F4]
Notes	Being able to compare how many miles a user has traveled to their friends will encourage use of the app.

Requirement #15	
Major feature/category name	Personal Preferences
Secondary feature/category name	Travel Style/Efficiency
UX requirement statement	Users typically prefer to have a say on how they travel when it comes to efficiency and practicality. Users can choose between multiple styles of driving to get to their destination. [N1][N4][P3]
Notes	Most users prefer to have fewer stops and shorter routes. To achieve this, they will find the best method of travel whether it is by car, train, etc.

Requirement #16	
Major feature/category name	Navigational Preferences
Secondary feature/category name	Travel Diversification

Requirement #16	
UX requirement statement	The repetitiveness of routes can be annoying to drivers who travel between two locations often. Hermes should have an option to take a new route other than the ones that have historically been taken. [N3]
Notes	Uses travel history to plan routes different from routes taken in the past.

7. Usability Goals

- Users will be granted access to the application after entering log-in credentials and completing a verification check through phone number or google.
- Users will instantly know the difference between the travel, the history, the business, the caravan, and the settings pages.
- Users have the ability to place a pin on the map that directly correlates to the destination, or addresses of the start and end positions, with the start defaulting to their current device location.
- Users will learn to modify their travel preferences, such as navigation styles and stop settings.
- Users will learn how to generate a route that meets their needs.
- Users will learn how to adjust their application's auto-generated voice settings and in-drive feedback.
- Users will receive a business discount/coupons as incentives to visit businesses on their route. Businesses can customize their business pages from their end.
- Businesses will display as an icon near the user's position when the user travels closer, which the user or fellow caravan passengers can view the details of.
- Business owners will understand the process behind submitting their business as a point of interest based on the fields and buttons shown on the screen.
- Caravan drivers will be able to start a caravan group and invite several of their friends within 120% of their benchmark time.
- Users will be able to navigate to the Settings page immediately after entering the application and will know how to change each of the specified settings, including accessibility settings.
- The design of elements will result in an easily readable application, whether that be navigating the different pages or viewing the route and nearby interests.
- User settings will allow customization of the color scheme and font size of the map interface.
- Users will be able to access a leaderboard that displays and compares the statistics of the user with all their friends. Includes options to find new friends or sync contacts.
- A maximum distance setting will filter out attractions that would add on too much time to the route.
- The interface will not be too overwhelming. Instead, minimalistic design and minimal information displayed while driving.

8. User Classes

Work Role: Traveler	
Context of use	
Goals	The goal of the Traveler is to use the Hermes navigation assistance system to allow them to organize their road trips to optimize their routes and allow for a more enjoyable experience.
Frequency of use	Daily usage, they will use the app when they are traveling.
Work responsibilities	Need to be willing to give reviews and/or suggestions about the app so the system can improve.
Work environment	Anywhere where they have access to the internet and have their phone on them.
Abilities	Know their way around a mobile device.
Personal	Any age, gender, and cultural background.

Work Role: Friend	
Context of use	
Goals	The goal of the Friend is to use the Hermes navigation assistance system to allow them to view the statistics of travelers that they are friends with, invite them or be invited to a caravan, and give and receive crash alerts.
Frequency of use	Daily usage, they will use the app when they are traveling.
Work responsibilities	Need to be willing to give reviews and/or suggestions about the app so the system can improve.
Work environment	Anywhere where they have access to the internet and have their phone on them.
Abilities	Know their way around a mobile device.
Personal	Any age, gender, and cultural background.

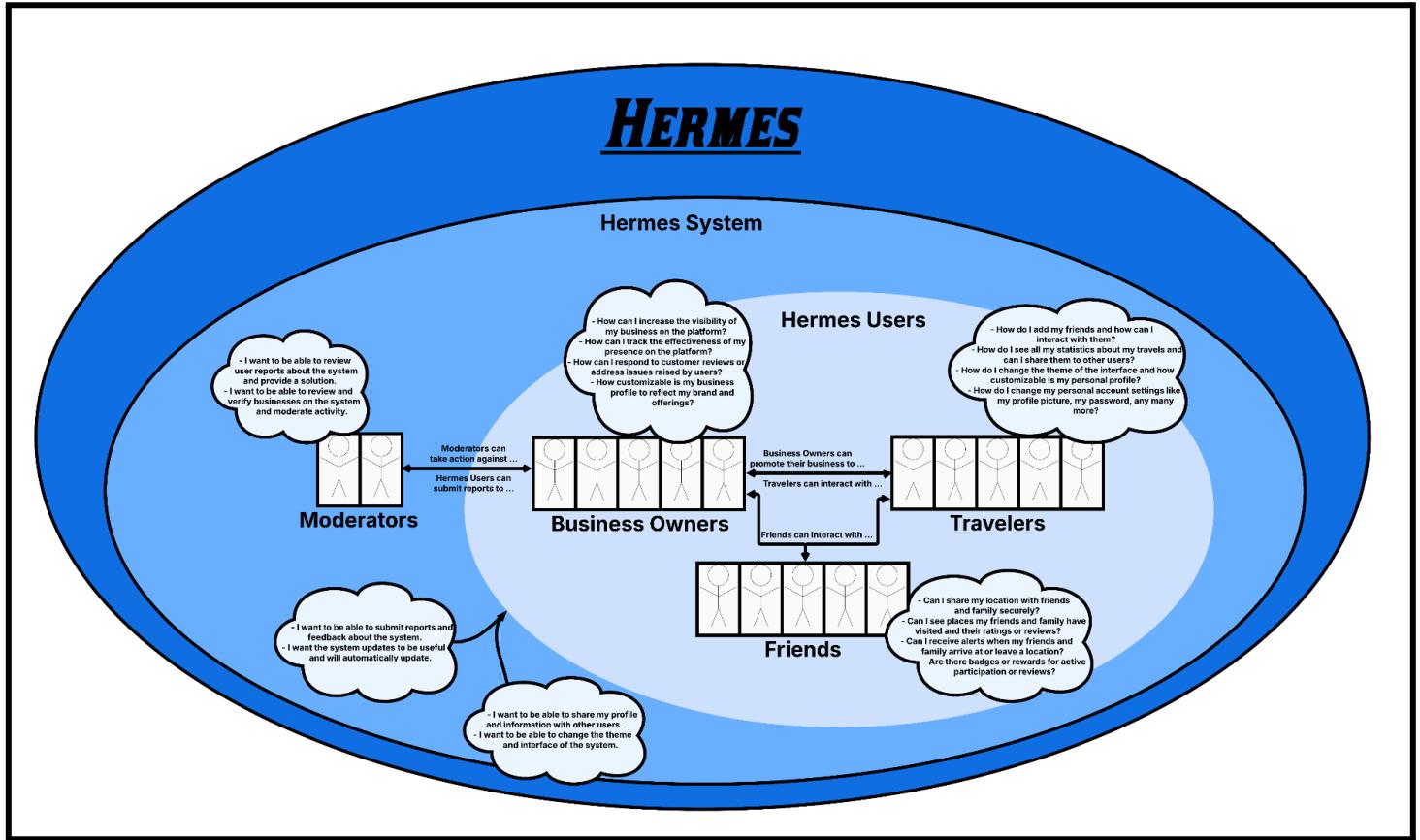
Work Role: Business Owner	
Context of use	
Goals	The goal of the business owner is to promote their business, and for more travelers to choose to visit the promoted businesses while on their journey using Hermes.
Frequency of use	Weekly usage, which will give the business owners opportunities to create new promotions to attract customers.
Work responsibilities	Business owners need to be willing to use the app frequently to review how their business is advertised on the map. Must be willing to view statistics providing the effectiveness of their promotions and how travelers are responding to current posted information.

Work Role: Business Owner	
Work environment	In their usual place of business, anywhere where they can access their Hermes business account.
Abilities	Preferred marketing experience, and knowledge of the business they represent. Must be an employer of the business.
Personal	Of legal business-owning age, or currently working for a business as marketing, etc. Any gender, any culture.

Work Role: Moderator	
Context of use	
Goals	Oversees the verification of businesses.
Frequency of use	Daily usage. Needs to moderate suspicious activity, new business reports, and flagged material.
Work responsibilities	When a shop or destination wants to be added to the app, they must verify the integrity of their establishment. This will be done through a business license, trade name certificate, fictitious name certificate, certificate of trade name, certificate of assumed business name, or registration and license with trade name. Additionally, needs to handle any suspicious account activity or flagged data that arises on the app.
Work environment	In the main office, or working remotely.
Abilities	Educated, prior moderation experience. Calm and collected and morally sound, no criminal past.
Personal	Any age, gender, and cultural background.

9. Social Model Diagram

The diagram illustrates the social model of the Hermes System, showcasing the interactions between various user roles, including Business Owners, Travelers, Friends, and Moderators. It depicts how these users engage within the platform, highlighting their unique goals, needs, and functionalities. Business Owners aim to promote their services, Travelers seek experiences, Friends engage in social interactions, and Moderators oversee user activity and content management. The system is designed to facilitate seamless communication, feedback, and moderation to maintain a secure and vibrant user community.



10. Task Analysis

10.1 Account Creation:

1. A guest user opens the application for the first time.
2. The guest user navigates to the New Account page to create a new account.
3. They enter their desired username, password, and email address.
4. The system notifies the user that their account has been created.
5. The user is brought to an information page that shows how to use the application
6. The user is brought to a preferences page where they can enter what kinds of locations he would be interested in.
7. The user is brought to a profile page where they can change their username and enter a profile photo.
8. The user is redirected to the main application as their login was successful.

10.2 Generating a Route:

1. A verified user navigates to the main Hermes application.
2. The user will be provided with the current map of their location.
3. The user then accesses the search bar above the map on the current page.
4. The user inputs the name of their destination into the search bar and presses “Search”.
5. A possible route is shown to the user on the map based on their searched destination, detailing each of the stops available, and allows the user to click on each location for more details and set preferences along the way for how many stops during the trip they would like to take.
6. The user clicks on the “Confirm” button, and the app begins providing road directions to the next location during their route based on the user’s current position and set preferences.

10.3 Modifying Personal Settings:

1. A verified user navigates to the Settings panel of the application.
2. They change their application voice to “Male”.
3. The auto-generated voice now provides road directions in a voice that resembles a man.
4. The user then navigates to their Profile.

5. They change their display name to their preferred name, which is shown below their icon on the map.
6. They select their portrait and add a picture, which is displayed on their icon on the map as well.
7. The changes are automatically applied and the user does not need to press “Save”.

10.4 Registering a Business:

1. A business owner logs in to their account like any other user.
2. They navigate to the Business section of the application.
3. They provide their personal contact information, such as their phone number and business email, and address.
4. They provide the name of their business in the business name section.
5. They insert a picture that contains the business logo into the Logo section.
6. They add photographs of their business’ physical appearance to the Gallery section.
7. They write a description of what their business offers into the Description section.
8. Upon completion, they submit their business to be verified by a Moderator.
9. Once verified by a Moderator, their business will show as a point of interest on users’ maps whenever they are nearby.

10.5 Sending a Friend Request:

1. A user opens the application.
1. The user presses the “Friends” button at the bottom of the application.
2. The user presses the “Send Friend Request” button
3. The user enters the contact information (phone number, username, or email) of the Hermes user they want to friend.
4. The requested user receives a notification that they have received a friend request
5. The requested user can accept or deny the request
6. The requested user accepts the friend request.
7. The user and the requested user can now view each other’s statistics, they are added to each other’s leaderboards, can invite each other to a Caravan and will receive each other’s crash alerts.

10.6 Setting up a Caravan:

1. A user opens the application.
1. The user starts a trip as they usually would if they were driving solo. (as described in Usage Scenario 10.2).
2. The user starts the trip and can start driving.
3. Once the user has the trip going, they can invite their friends to initiate a Caravan.
4. They select the friends they want to invite to the Caravan.
5. The invited friends receive a notification, and are given the option to join the Caravan.
6. When the invited friend accepts the invitation, the two users are now synced (as described in Usage Scenario 10.2).
7. The Caravan followers receive updates as the route is changed, and can make suggestions to the Caravan Leader for destinations to add to the route.
8. All users in the Caravan can see each other's locations on the map, and proper estimated times of arrival are calculated for each user.
9. Caravan Followers can freely leave the Caravan.
10. Caravan Leaders can administer the Caravan, and remove Caravan Followers
11. When all Caravan Members reach the destination, the Caravan is finished, and disappears.

11. Usage Scenarios

11.1 Usage Scenario 1 - Account Creation

Elijah wants to create a new account so he can have a more enjoyable route on his upcoming road trip. He signs up by pressing the new account button after he opens Hermes for the first time. He is prompted to enter his email address or phone number. He is then prompted to enter a username. He is then brought to an optional information page that describes the various components of the app. He is then brought to the preferences section where he can enter what kinds of locations he would be interested in (Restaurants, rest stops, landmarks, natural attractions, fairgrounds, etc.). He is brought to a profile page where he can change his username and enter a profile photo. His account is then completed and registered.

11.2 Usage Scenario 2 - Generating Route

Presley wants to use the Hermes application to generate a route to his favorite skate store and to make some stops on the way. As he is an already verified user, he opens the application and finds himself on the homepage that displays the map of his surrounding location. Above the map, there is a search bar that prompts him to input his desired location. He inputs the name of his favorite skate shop and presses the search button. He is then directed to a newly updated map that showcases a possible route to the skate shop from his current location, which also allows him to see possible stops along the way based on his set preferences. Presley is then prompted to click on these available stops/locations for more details in case he wants to learn more about them and stop by them while on his way to the skate store. When satisfied, he then clicks on the confirm button, which in turn prompts the application to begin providing road directions to the next location within his route on his way to the skate store.

11.3 Usage Scenario 3 - Modifying Personal Settings

Sarah wants to customize her navigation experience in the app. She opens the application and navigates to the Settings menu. In the Voice Options, she selects “Male” for the application voice. From now on, road directions are provided in a voice that resembles a man. Sarah decides to update her profile. She navigates to the Profile section and changes her display name to “Sarah J.”, which now appears below her icon on the map. She also selects her portrait option and uploads a new picture. The app automatically applies these changes without requiring her to press “Save.” Satisfied with her updates, Sarah exits the settings, and her new display name and portrait are instantly visible on the map.

11.4 Usage Scenario 4 - Registering a Business

Zeus wants to register his business on the Hermes Navigation Assistance System. As a business owner, he logs into his account just like any other user. He navigates to the business section of the application. He provides his personal contact information, such as his phone number, business email, and address. He provides the name of his business in the business name section. He inserts a picture that contains the business logo into the logo section. He adds photographs of his business's physical appearance to the gallery section. He writes a description of what his business offers in the description section. Upon completion, he submits his business to be verified by a moderator. Once verified by a moderator, his business will show as a point of interest on all of the users' maps whenever they are nearby.

11.5 Usage Scenario 5 - Sending a Friend Request

Matt wants to send a friend request to Nick who just registered for Hermes. Matt opens Hermes and he is immediately taken to the home page since he is already logged in. He navigates to and presses the “Friends” button on the home page. His current friends and leaderboards are shown, along with a button that says “Send a Friend Request”. He presses the Send a Friend Request button and is prompted to enter the username, email, or phone number of the person he wants to be friends with. Matt enters Nick’s respective information and sends him a friend request. Hermes then sends Nick a friend request from Matt. Nick is prompted to either accept or reject the friend request. Nick accepts the request and they are added to each other’s friends list.

11.6 Usage Scenario 6 - Setting up a Caravan

Quinn is driving with his friends across the country to Death Valley. The group is taking three cars, so Quinn wants a way to stay coordinated when on the road. Quinn starts the trip by searching for his destination, Death Valley. Before he starts the trip, he selects an option to start a Caravan. He chooses two friends, Cameron and Yousaf, from his list of friends. Cameron and Yousaf both accept the invitations from the notification and are added to the Caravan. Both Cameron and Yousaf can see the route on their own devices and can see the other two drivers on the map. The trip begins.

Cameron is hungry and wants to stop for Pizza. He searches on Hermes for a Pizza place with good reviews and finds one with a coupon through a business-Hermes partnership. He suggests that the pizza place be added to the route. Quinn sees Cameron's request on his device. Realizing he is hungry too, he accepts it and adds it to the route. The route is updated to include the pizza place on all three Caravan member's devices.

Quinn can see how far Cameron and Yousaf are driving behind him and can see their estimated time of arrival. When they all reach the destination, the caravan is completed and all users return to the home screen, ready to start a new trip.

12. Conceptual and Intermediate Design:

12.1 Sample Personas

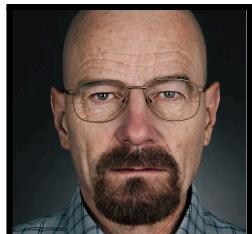


Photo: (Traveler)

Name: Mista Whyte

Age: 52

Quote: “*I am the one who flocks.*”

Occupation: “High School Chemistry Teacher”

Technology Experience: Low (only has experience with burner phones).

Skills: Artist, Chemistry, Electronics, Teaching, Throwing Pizza

Goals: Make money, provide for his family, and travel back to Albuquerque

Description: Mista Whyte is an overqualified high school chemistry teacher with a burning passion for chemistry. He loves his family over anything else and would do anything to provide for them. He often visits New Hampshire for vacation, he loves the mountains and the isolation.

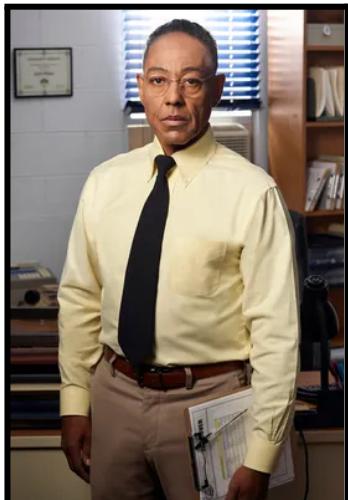


Photo: (Business Owner)

Name: Gus Fing

Age: 51

Quote: “*One must learn to be rich. To be poor, anyone can manage.*”

Occupation: Chicken Restaurant Owner

Technology Experience: Medium (Runs a business and uses technology to promote.)

Skills: Cooking, Selling products, Leadership

Goals: Make money, blow the competition into the air, and work with Mista Whyte

Description: Gus Fing is the proud owner and operator of the *Las Pollas Hermanas* food chain. He regularly travels between his 13 restaurant locations all around New Mexico, Arizona, and Nevada. He also travels to Mexico frequently for business negotiations. Gus can be best described as a very professional businessman who takes pride in his work.



Photo: [Redacted] (**Friend**)

Name: Jesse Winkman

Age: 26

Quote: “Where’s my money?”

Occupation: Botanist, Chef

Technology Experience: Hacker-Level

Skills: Can cook, Drive

Goals: To travel to Alaska

Description: Jesse Winkman is a young man and personal friend of Mista Whyte. He enjoys cooking special meals, and driving around New Mexico and across the border to Mexico to privately cook for his clients. One day he would like to travel across the country and across Canada to see Alaska.



Photo: [Redacted] (**Moderator**)

Name: Slippin’ Jimmy

Age: 50

Quote: “S’all good, man!”

Occupation: Part-time Hermes Moderator, Full-time lawyer

Technology Experience: High (Uses all sorts of technology)

Skills: Communication, Advisements

Goals: To be loved

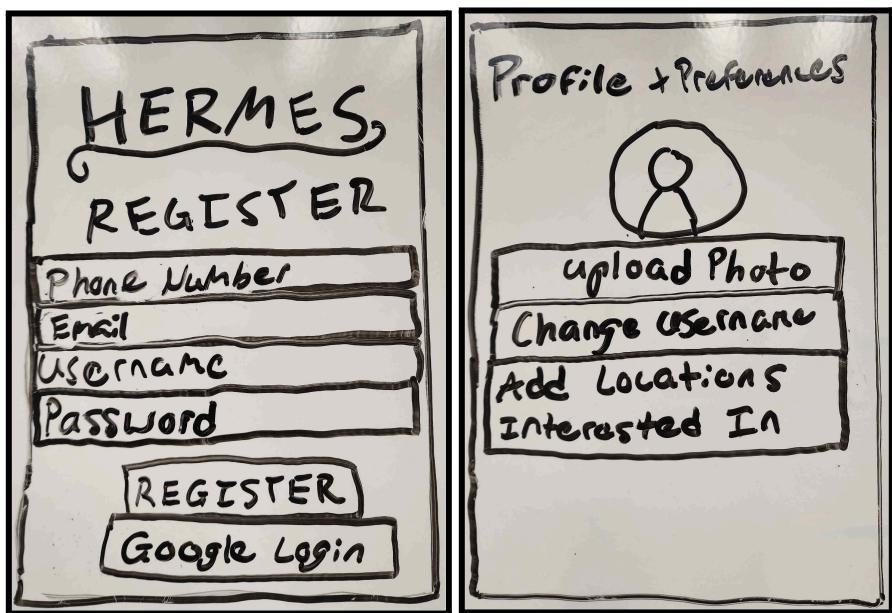
Description: Slippin' Jimmy runs his own law practice outside Albuquerque, New Mexico. He is an incredibly successful lawyer who came up with a class action case against the elder care facility company *Dowitcher Passing*. The case was passed to HHM and later Schwikart and Coakley as it was too much for Jimmy to handle alone. After years of legal battle, Jimmy was awarded 20% of the common fund, earning him \$1.3 million. Now, for his current practice, Slippin' Jimmy travels across many states to acquire information through multiple sources for his cases. Additionally, he has made special trips to Mexico for one of his closest friends, Lolo Salamander.

12.2 Sketches and Storyboards

To design our sketches, we took inspiration from the established analysis of our task structure, social model, and work diagrams to create the desirable interactions that routinely happen on our Hermes application. This is strongly supported by how the sketches and storyboards below convey the main workflows of the application while also combining the main components that lead to user interaction. The main focus when it came to creating these sketches was to ensure that each user of the Hermes application could understand each feature that has been provided easily. This focus has been reflected by how simplistic the homepage of the Hermes application has been designed.

In the subsections below are the final sketches and storyboards that we created as a team during the ideation session that reflect the main workflows and tasks they pertain to.

12.2.1 - Account Creation



12.2.2 - Generating Route

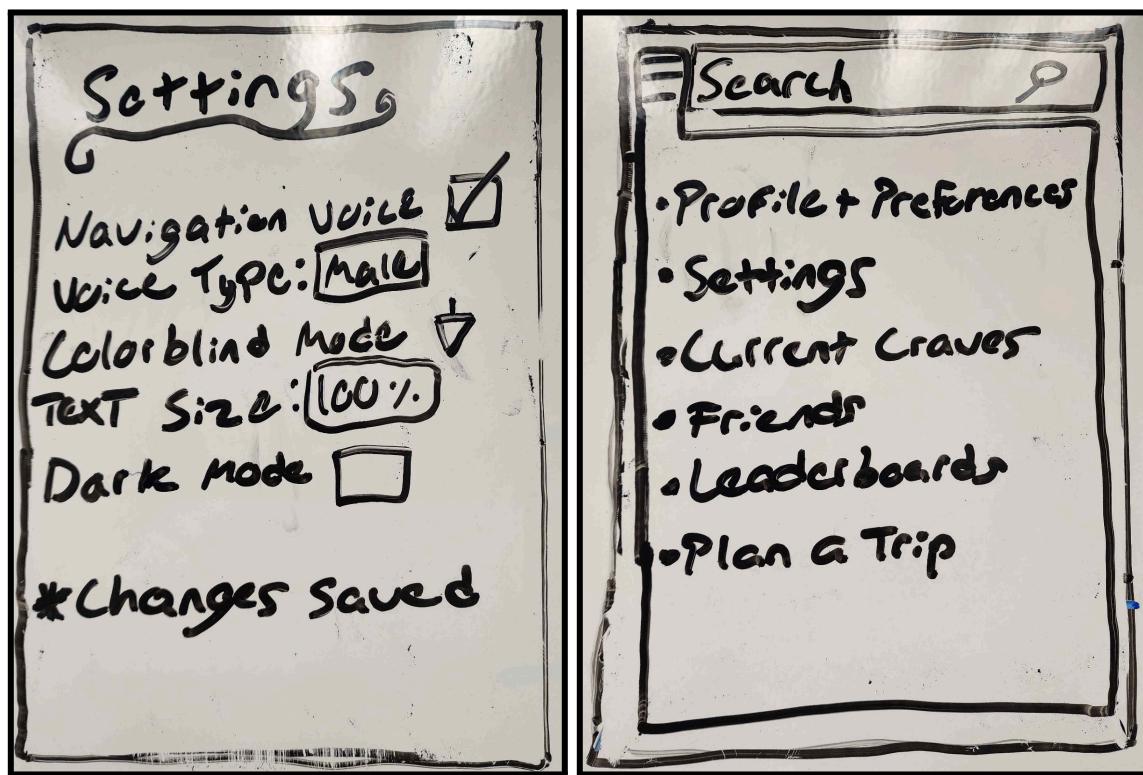


METAPHOR: Checkered Flag is a metaphor for the ending point.

MENTAL MODEL: Red line is metaphor for path traveled.

MENTAL MODEL: Common was to show how to get from a to b. All other GPS apps use this.

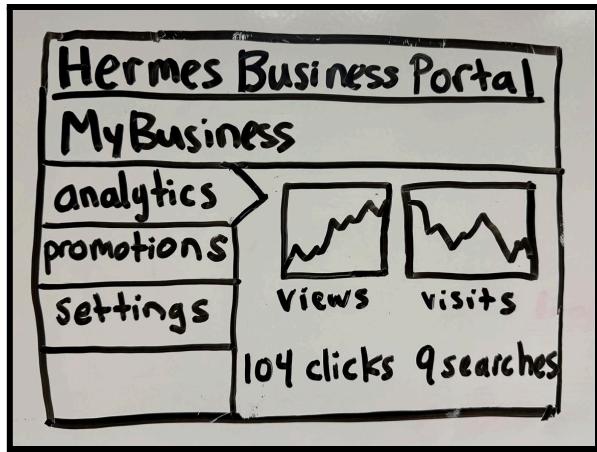
12.2.3 - Modifying Personal Settings



12.2.4 - Business Registration

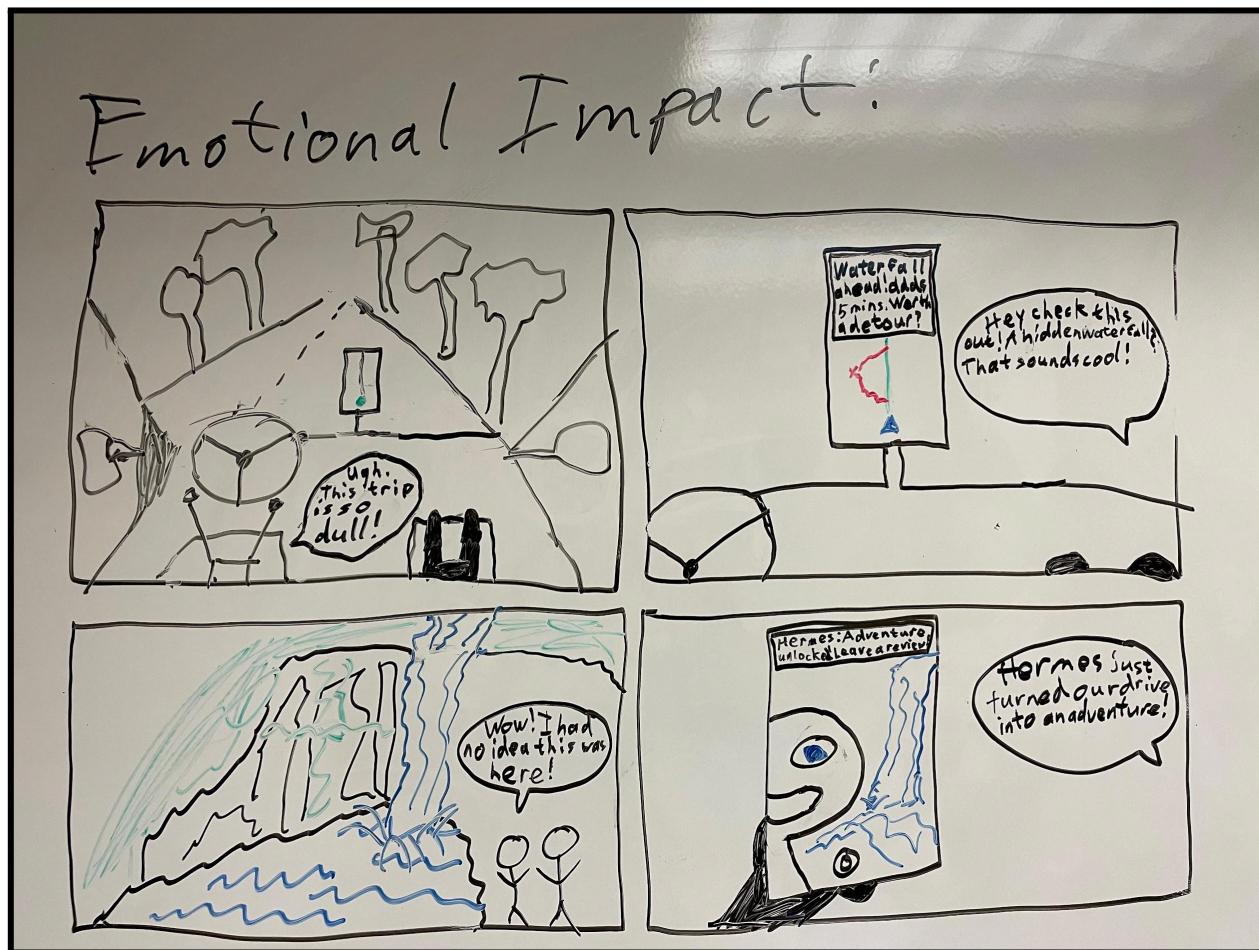
The image contains six hand-drawn wireframes for the Hermes Business Portal, arranged in a 3x2 grid:

- Top Left:** "Hermes Business Portal". It has two main buttons: "login" and "register". Below "login" is the text "Manage your business". Below "register" is the text "promote on Hermes!".
- Top Right:** "Hermes Business Portal Register Business". It shows fields for Name (Waltuh's Rock Candy), Address (308 Negra Arroyo Ln), Phone (505-842-5662), photos [upload file], and description (Waltuh's Rock Candy).
- Middle Left:** "Hermes Business Portal MyBusiness". It displays the message "Your business is being verified." and a "Go Back" button.
- Middle Right:** "Hermes Business Portal Moderate". It lists businesses categorized as "Verified" (Slippin' Jimmy Law) and "Pending" (Waltuh's Rock...). Below these are "Las Pollas Hermanas" and "Tuco's Turtles".
- Bottom Left:** "Hermes Business Portal MyBusiness". It includes a sidebar with "analytics", "promotions" (with arrows pointing to "Current promos: 25% off" and "BOGO D"), and "settings".
- Bottom Right:** "Hermes Business Portal MyBusiness". It shows settings for "name: Las Pollas Hermanas", "photos" (two small icons), "phone: 555-420-6967", and "hours: 9am-9pm".

**Different Screens:**

1. Login/Register Screen
2. Home Page that shows a map of the user's current location, a destination button, and a drop down menu button on the top left.
3. Drop down menu includes a bunch of buttons.
4. Plan a trip page where the user can select a final destination and hermes will suggest stops along the way, the user can choose what stops they want to take and save them all as a trip. The user can load saved trips.
5. A friends page where the user can invite friends, see their friends list, select a friend to see their stats and invite friends to a Caravan as well as see the stats leaderboards.
6. Profile settings where the user can change their destination preferences as well as profile picture and username.
7. Application settings where the user can modify the display of Hermes as well as other options.

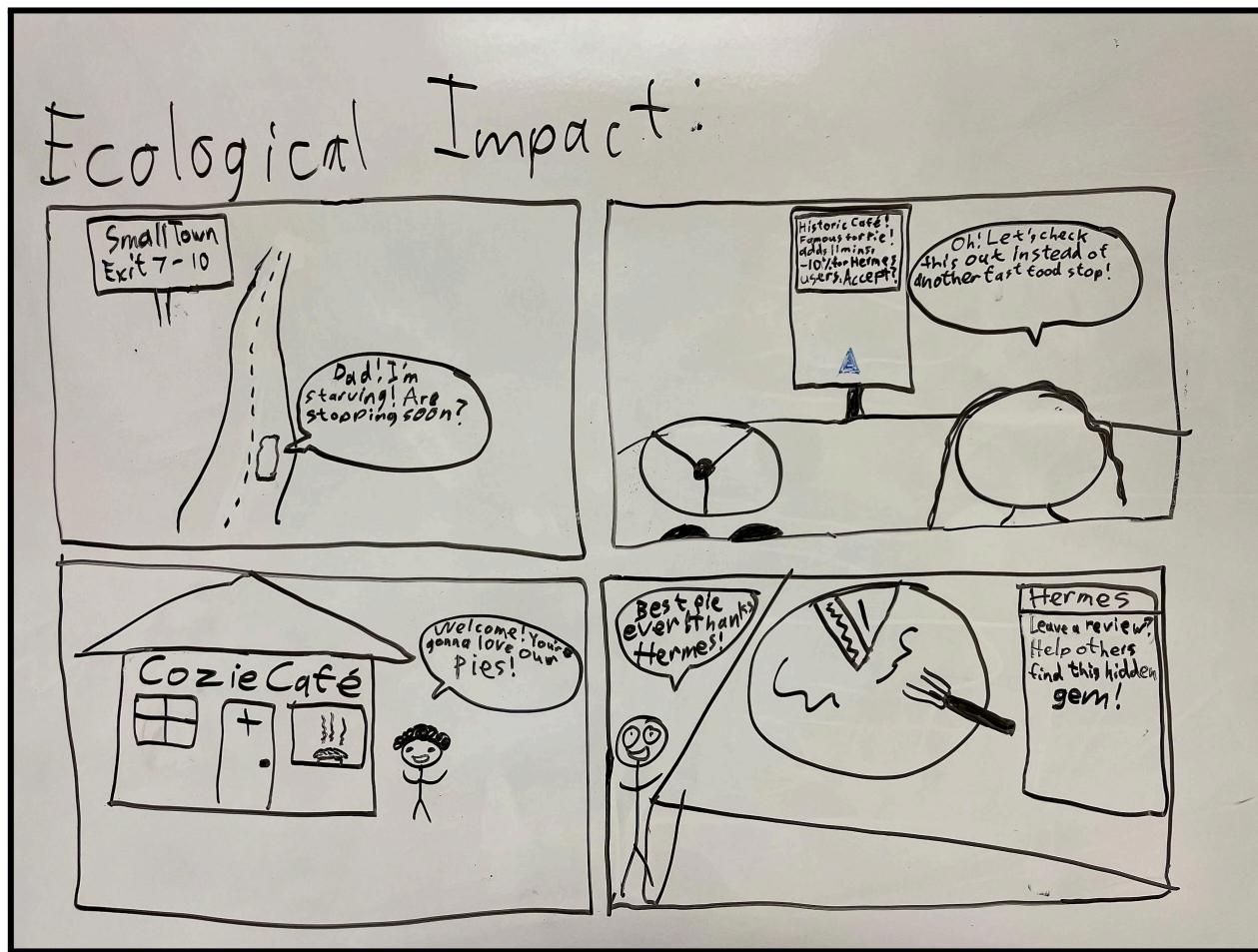
Mental Model: Show a couple in a car, the passenger is holding up a physical map and circling locations that sound cool.

12.2.5 Emotional Impact (Excitement and Discovery Model):

Users will feel excitement when they discover hidden gems and lesser-known attractions along their route. The element of surprise and new experiences adds joy to what would otherwise be a routine journey.

Metaphor: Hermes suggesting hidden gems is a metaphor for a treasure map.

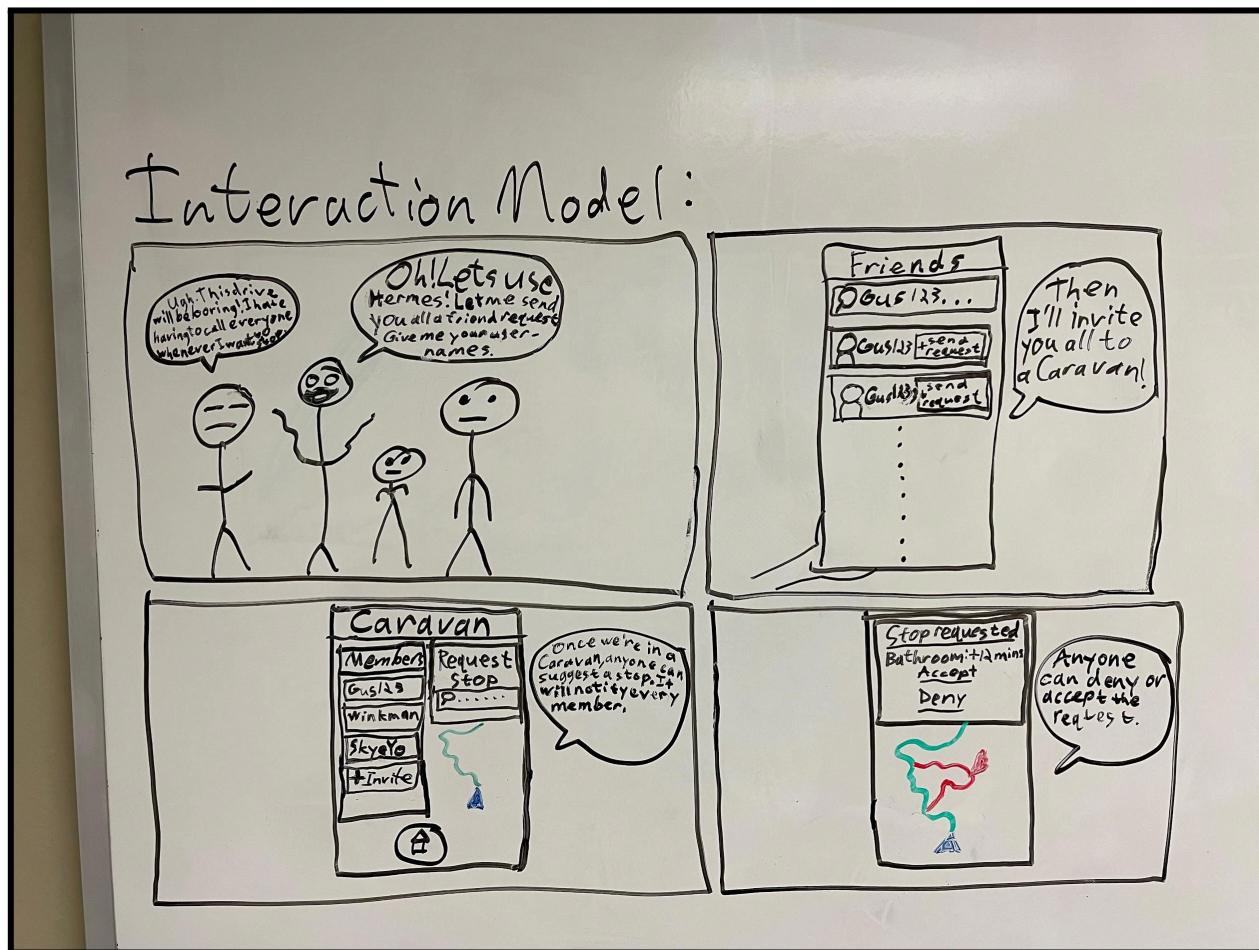
12.2.6 Ecological Impact (Local Tourism Boost Model):



Highlighting lesser-known attractions prevents over-tourism in already crowded areas while spreading tourism-related revenue more evenly. Supporting eco-friendly destinations (e.g., nature reserves, green-certified hotels) can promote sustainable tourism.

Metaphor: The discount that Hermes provides to users is a metaphor for coupons that people would use in grocery stores.

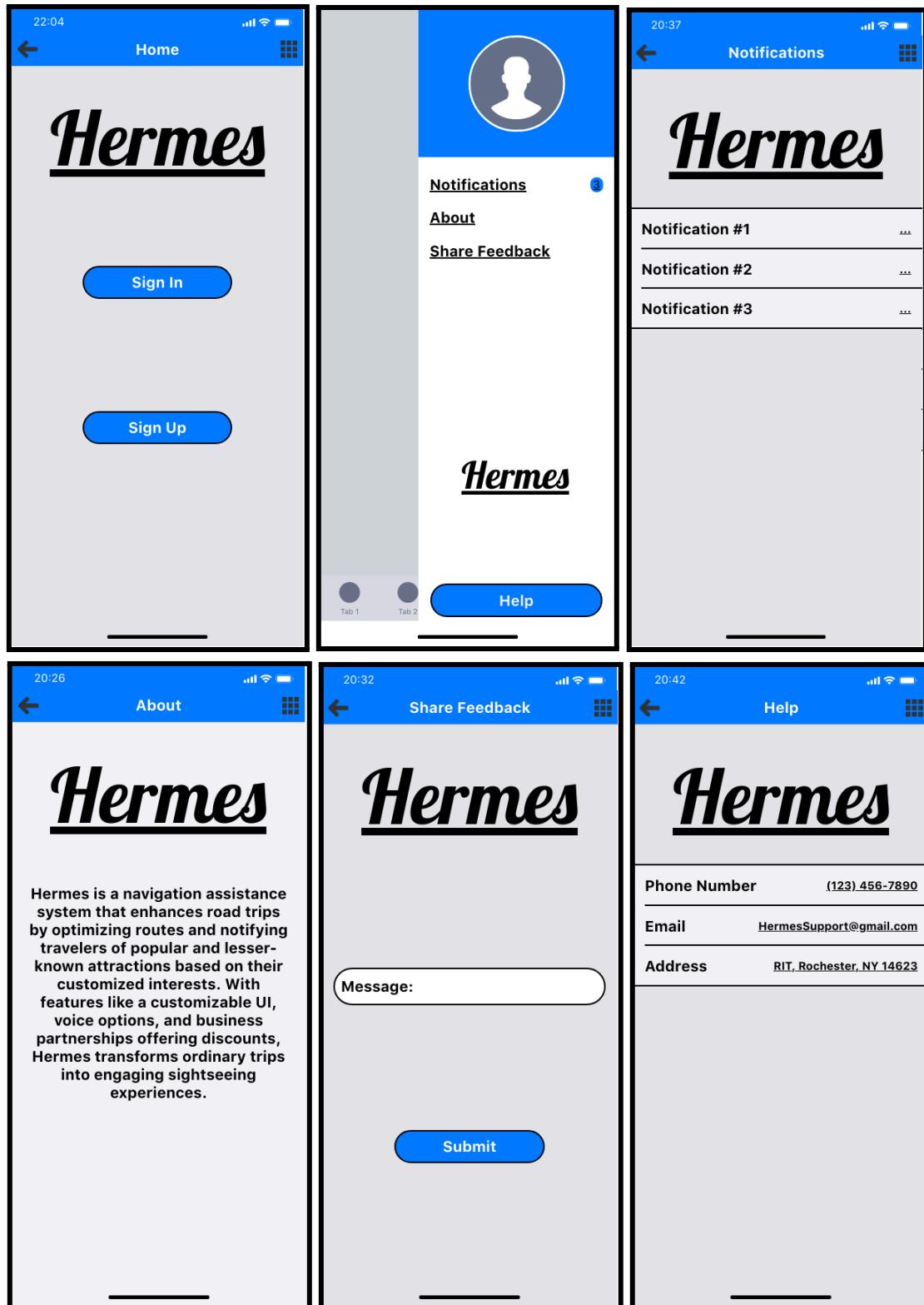
12.2.7 Interaction Model:

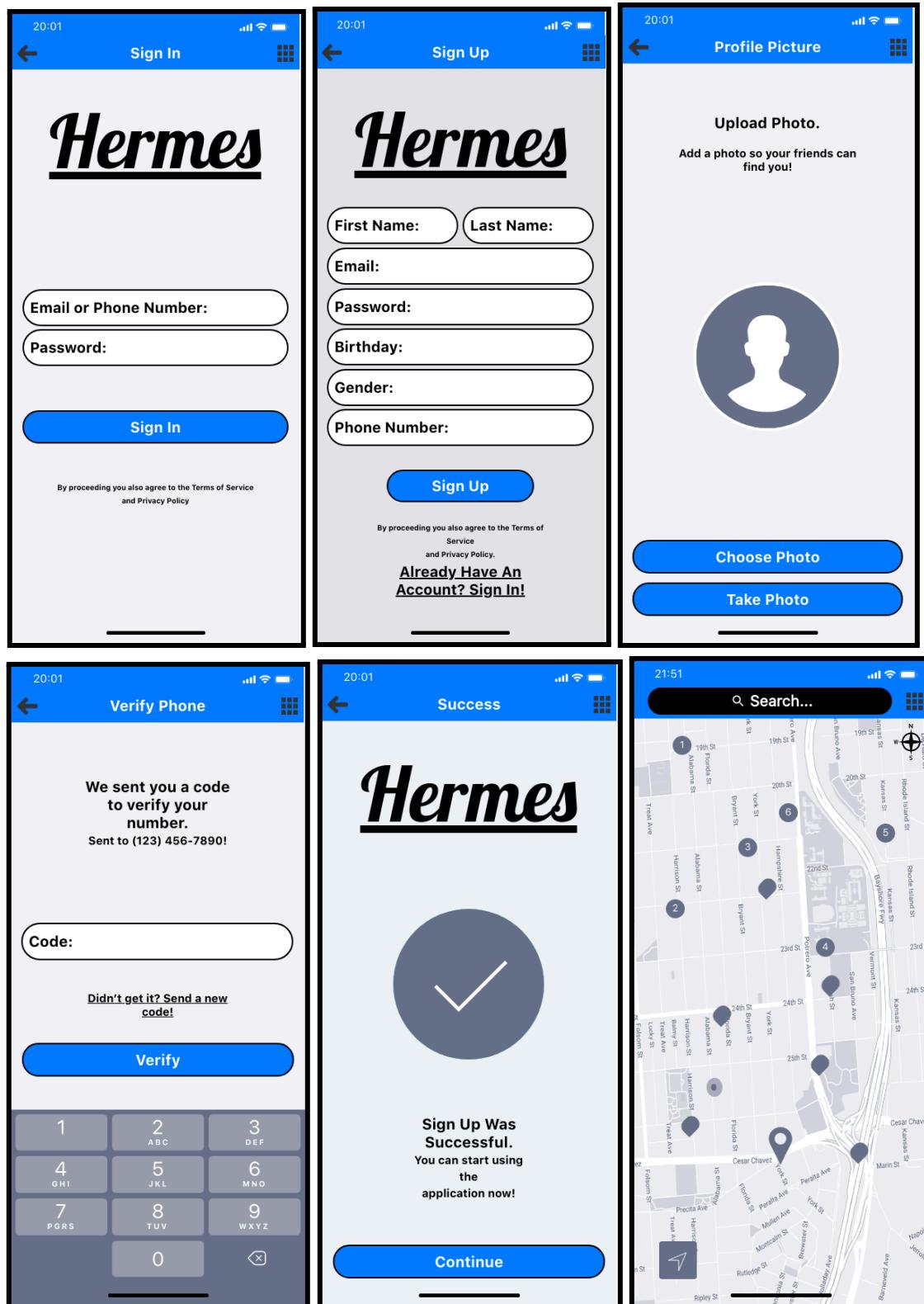


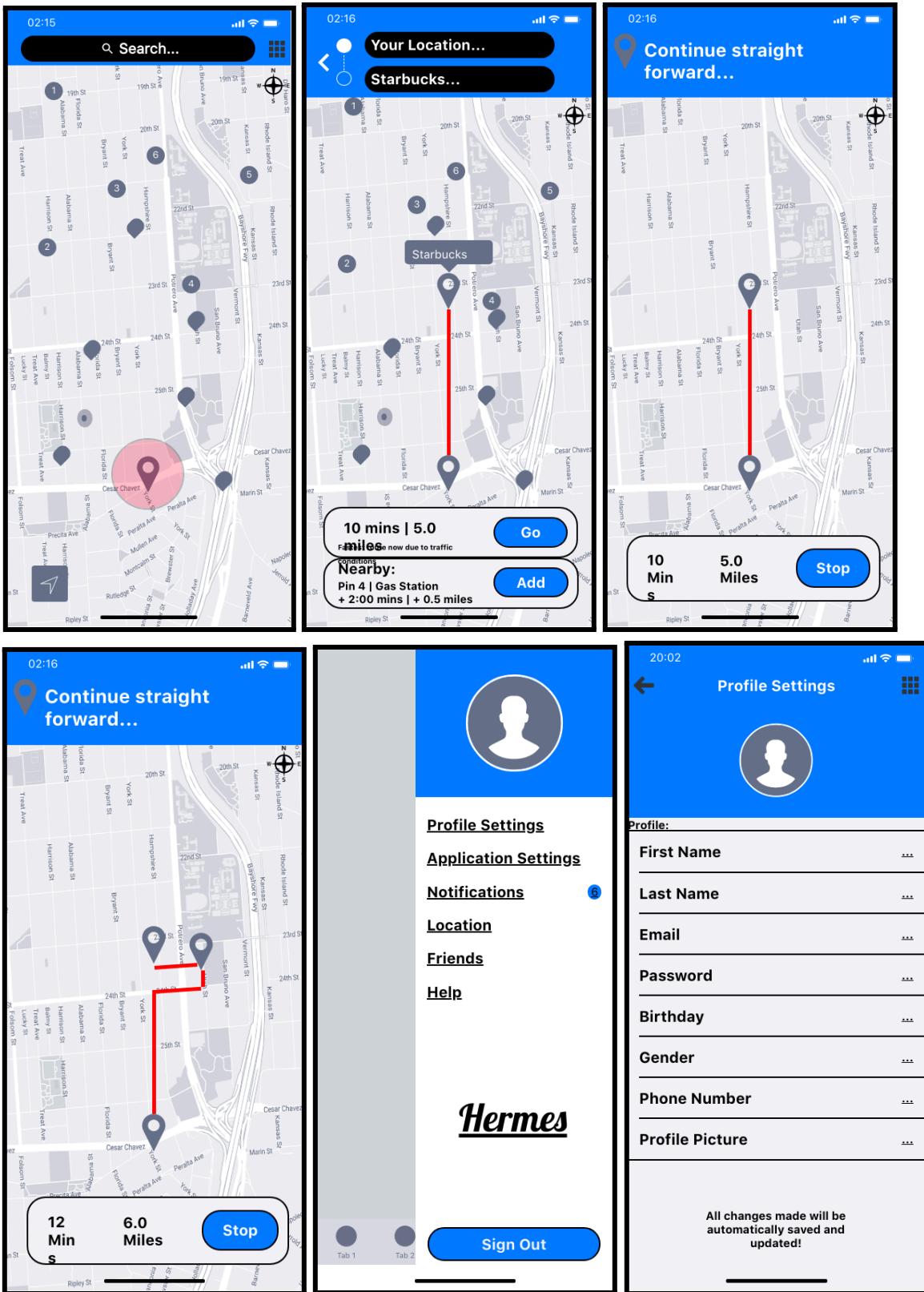
Metaphor: Requesting a stop is a metaphor for calling a friend that is following you to let them know you need to stop somewhere.

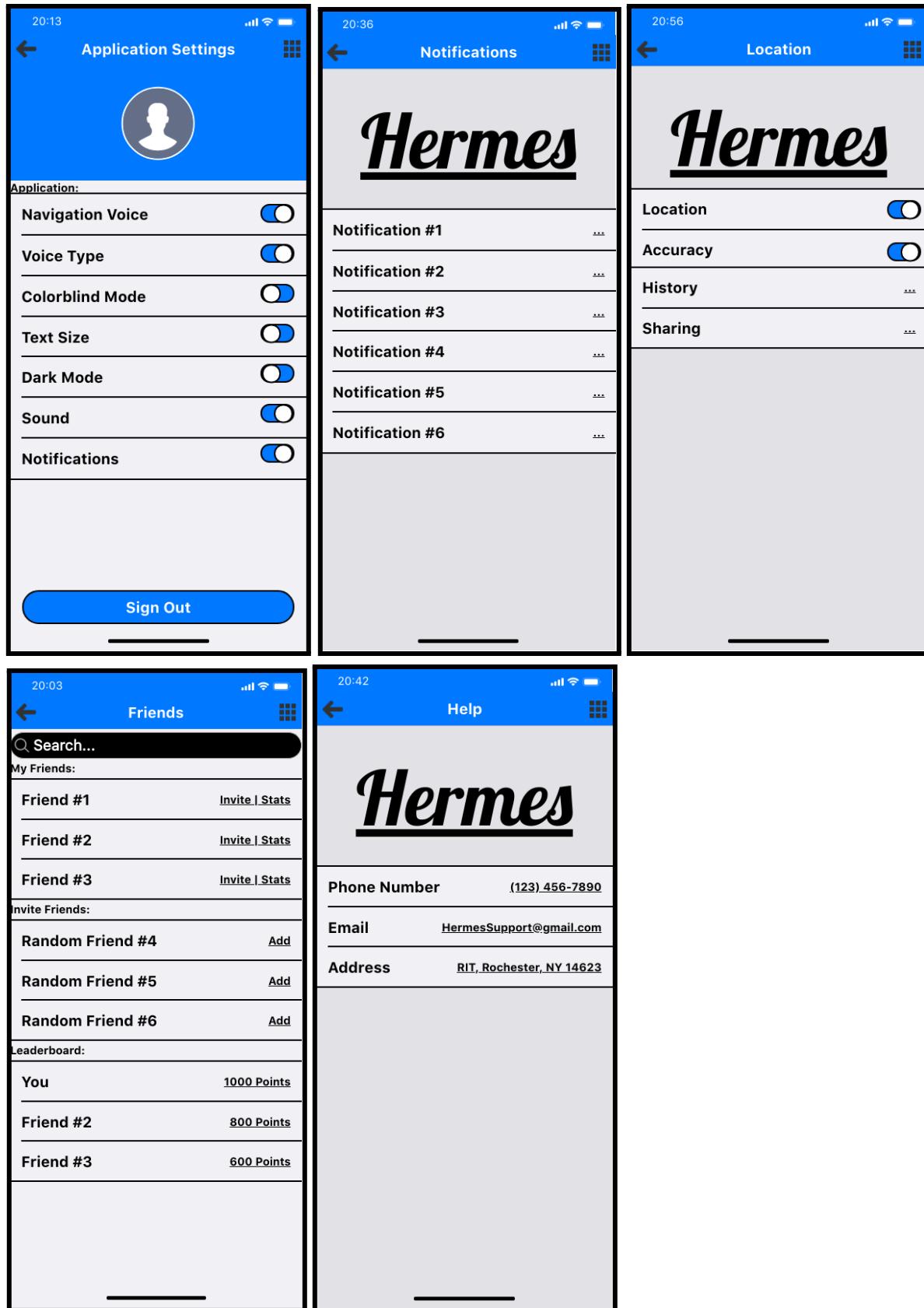
12.3 Wireframes

Summary: The wireframes focus on simplicity, modern design, and a sleek, cohesive look. Everything is consistent, using appropriate colors and fonts, with clear formatting to make the interface both readable and visually appealing. A minimalistic approach is taken by removing unnecessary features while still maintaining a unique design that stands out. The UI is designed to be easy to use, providing users with a smooth experience. Overall, the wireframes are functional and visually attractive.









13. Detailed Design

13.1 Description of the User Interface

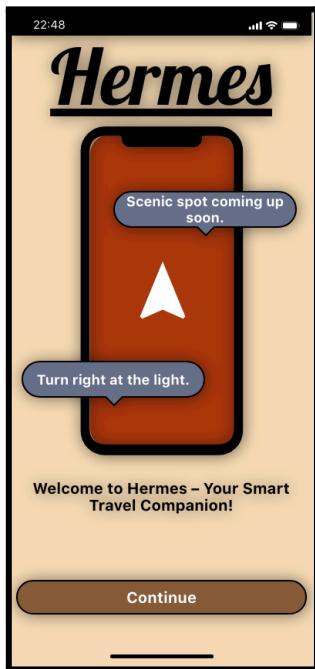


Figure 1: Home Startup Screen

Description: When the user opens up the Hermes App after installing it on their device, they are shown the Home Startup Screen, and when they click “Continue”, it takes them to the next screen.



Figure 2: Home User Screen

Description: After the user clicks continue, it takes them to the Home User Screen. They have the option to either “Sign in” or “Sign up”. They also have the option to go to the previous screen by clicking the arrow at the top left of the screen, and have the option to access a drop down menu by clicking the button at the top right of the screen.



Figure 3: Drop Menu Logged Out Screen

Description: When the user clicks on the drop down menu button, it shows them a menu with two options for either “About” and “Help”, and clicking on either option, takes them to the next screen. The user can also exit the menu by clicking on the left side of the screen.

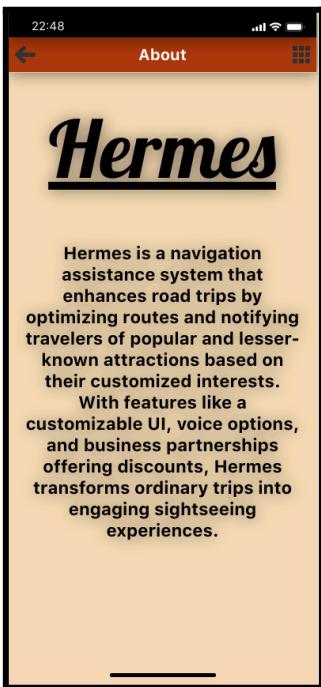


Figure 4: About Screen

Description: When the user clicks on the “About” option from the drop down menu, it takes them to a screen that explains to the user our primary objective and our main goal when it comes to navigation assistance. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.



Figure 5: Help Screen Logged Out

Description: When the user clicks on the “Help” option while logged out from the drop down menu, it takes them to a screen that lists different Hermes support contact information so they may contact the service for assistance. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.



Figure 6: Sign In Screen

Description: If the user already has an Hermes account, when the user clicks the “Sign In” button on the Home Startup Screen, it takes them to the Sign In Screen which prompts the user to enter their email/phone number and password to sign into the application. They also have the option to go to the previous screen and access the drop down menu at the top of the screen. Note the eye symbol, which allows users to show/hide their password in the field.

**Figure 7: Sign Up Screen**

Description: If this is the first time that the user is using the Hermes App, when the user clicks the “Sign Up” button on the Home Startup Screen, it takes them to the Sign Up Screen which prompts them to enter their first name, last name, email, phone number, birthday, and password, to create an account. If the user already has an account, they can click on the “Already have an account” option, and it takes them to the Sign In Screen. When the user enters their information and clicks “Sign Up”, it takes them to the next screen. They also have the option to go to the previous screen and access the drop down menu at the top of the screen. Note the eye symbol, which allows users to show/hide their password in the field.

**Figure 8: Profile Picture Screen**

Description: After the user clicks the “Sign Up” button, they are taken to the Profile Picture Screen where they have the option to either “Choose a Photo” from their device or “Take a Photo” from their device. When they are finished uploading their photo, it takes them to the next screen. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

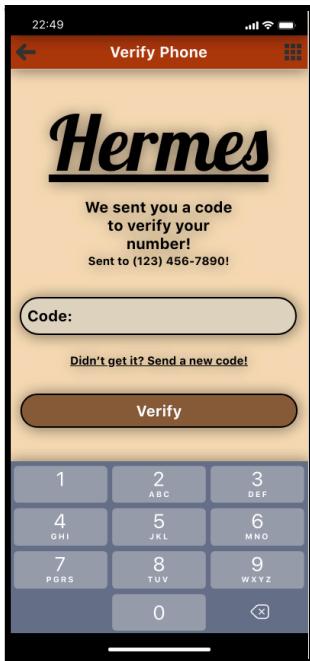


Figure 9: Verify Phone Screen

Description: Once the user uploads their desired photo, they are taken to the Verify Phone screen to ensure the phone number they have given is correct. If the correct phone number was given, the code is sent via phone message allowing the user to input the code, click “Verify”, and continue to the next screen.



Figure 10: Sign Up Success Screen

Description: Once the user successfully verifies their phone number, they are taken to the Sign Up Success Screen which tells the user that their account has been created successfully, and clicking “Continue” takes them to the Home Nav Screen (the main homepage screen of the app). They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

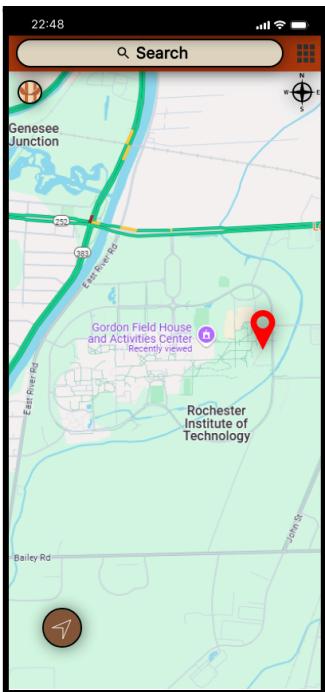


Figure 11: Home Nav Screen

Description: When the user has completed signing up or logging into the Hermes app, they are taken to the Home Nav Screen which showcases the current regional map based on the user's location. The user can now begin using Hermes for navigational assistance. They have the option to access the drop down menu at the top of the screen.

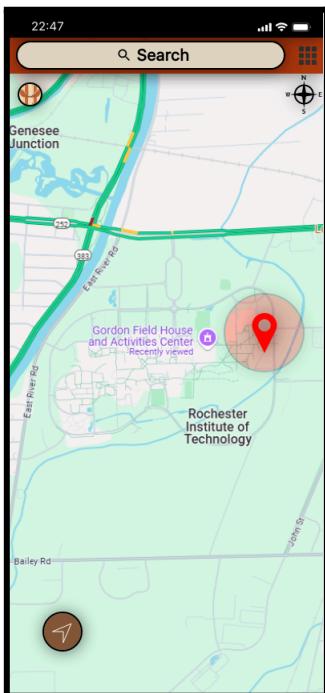


Figure 12: Nav Pinned Screen

Description: When the user clicks on the nav marker button at the bottom left of the screen, it shows them a visualization of where they are and their surroundings. They have the option to access the drop down menu at the top of the screen.

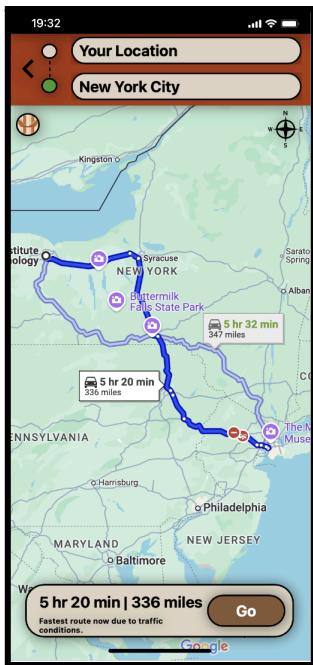


Figure 13: Nav Search Screen

Description: When the user clicks on the search bar at the top of the screen, it takes them to the Nav Search Screen which here is showing an example of a route to Starbucks. The user is given a visualization of the map and the route and surrounding POI's as well. The user has two options, the first option is to go on that set route the Hermes route has come up with or they can also add a stop to their route, if the user wants.



Figure 14: Nav Go Screen

Description: If the user hits the "Go" button, it takes them to this screen, which shows a visualization of the map and the route. The user has the option to end the route by clicking the "Stop" button which takes them back to the "Home Nav Screen".

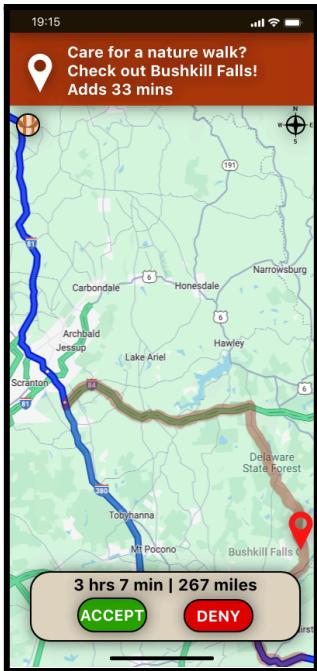


Figure 15: Nav Add Stop Screen

Description: While on the “Nav Go Screen”, a notification may appear and the user will be prompted to add a stop to their route. By pressing “Accept”, the new location will be added to the route. If the user presses “Deny”, the new stop will not be added to the route. Again, once the notification disappears from the screen, the user has the option to end the route by clicking the “Stop” button which takes them back to the “Home Nav Screen”.

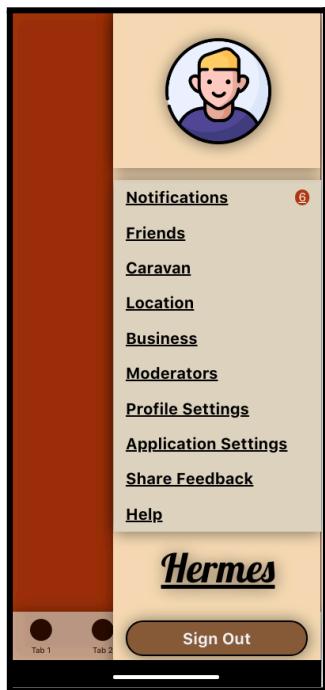


Figure 16: Drop Menu Logged In Screen

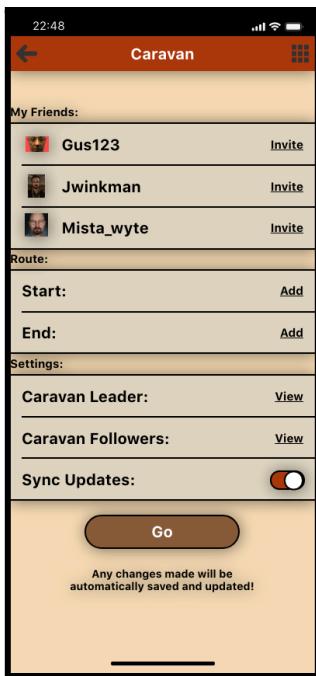
Description: On the “Home Nav Screen”, at the top right is a drop down menu button, and when the user clicks it, it takes them to this menu, which shows all the various options the user can choose. Each option takes the user to different screens, and the “Sign Out” button logs the user out of the App and takes them back to the “Home Startup Screen”. The user can also leave the menu by just clicking on the left side of the screen.

**Figure 17: Notifications Screen**

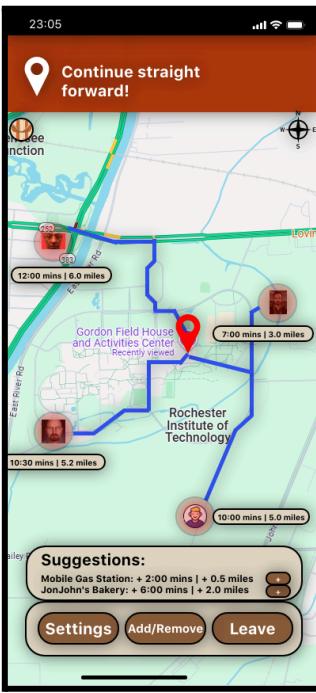
Description: When the user clicks the “Notifications” option from the drop down menu, it takes them to this screen which shows all the notifications the app has sent to the user, and they have the option to view them, and interact with it. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 18: Friends Screen**

Description: When the user clicks the “Friends” option from the drop down menu, it takes to them this screen which shows a list of friends, the option to search and add friends by username by clicking on the “Search” button, and also a leaderboard which showcases a point system based off of various statistics of the users progress on the app. The user can see their friends' stats and such. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 19:** Caravan Setup Screen

Description: When the user clicks the “Caravan” option from the drop down menu, it takes them to this screen, where the user can add their friends to the caravan, and also add a starting and stopping point of the route. The user also has the option to set who is the leader of the group and the followers, and also have the option to sync all the users up, to get real time updates throughout the journey. When the user hits the “Go” button, it takes them to the next screen. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 20:** Caravan Go Screen

Description: The leader of the caravan/group can see all of their friends/followers in the caravan and can keep track of everyone and see their individual stats/progress of the journey. The “Settings” button takes the leader back to the previous page. The caravan users can also have the option to request to add a stop on their route as well by the “+” button. The “Add/Remove” button is just a filler button at the moment. When the user clicks the “Leave” button, it takes them back to the “Home Nav Screen”.

**Figure 21:** Location Screen

Description: When the user clicks the “Location” option from the drop down menu, it takes them to this screen which shows some settings about the user's location. They have the option to turn off their location via a toggle. Location accuracy and sharing with friends and such, all that is able to be turned off and such. Location history stores the places and locations the user has visited in the past, all of which is accessible to the user. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 22:** Business Screen

Description: If the user that is logged into the app is a business owner and wants to promote their business, they can click on the “Business” option from the drop down menu and it will take them to this screen. It asks the business owner to fill in information about their business and once they hit the “Submit” button, the application gets sent over to the Moderators. There is an option if the business owner already has an account and they can just login and access the dashboard by clicking “Already have an account”. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.



Figure 23: Business Success Screen

Description: When the Moderators approve the request by the business owner to join the platform, they are prompted with this screen which shows a success message telling the users that the moderators have received the application and have approved them to join the platform. Clicking on the “Continue” button will take the business owner to the next screen which is the business dashboard. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

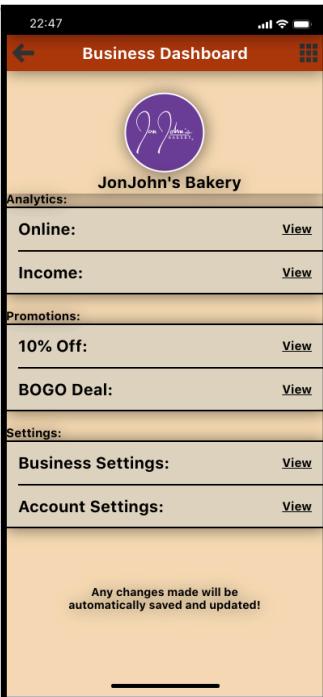


Figure 24: Business Dashboard Screen

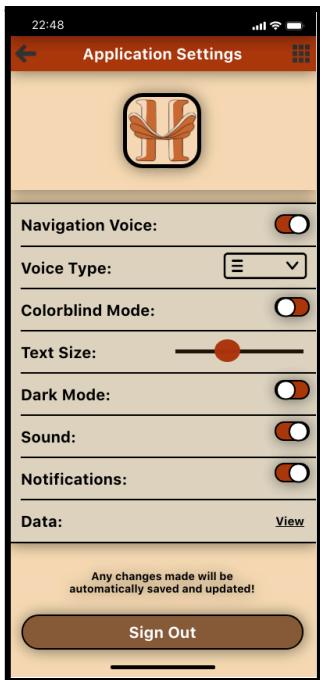
Description: When the business owner logs into their business dashboard, here it shows all the promotions the business is offering to the users on the app, and can also add or delete promotions and such. Also, shows the analytics of the business of how many views, clicks, shares, the business has received and the various income related information. The business owner can also modify their businesses settings and account at any time by clicking on the settings button. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 25:** Moderators Screen

Description: If the user that is logged into the app is a Moderator, they will have an option in the drop down menu that says “Moderators” and by clicking it, it takes them to this page, which shows all the user reports from the app and they can interact with them and provide feedback and resolve any issues. It also shows all the business applications that are pending verification, and is also intractable, and finally it shows messages and reports from the Admin of the app. This section is only for the Moderators, not regular users. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 26:** Profile Settings Screen

Description: When the user clicks on the “Profile Settings” option from the drop down menu, it takes them to a screen that lists various options that the user can change about their personal account. They can individually change their account information by clicking on each option. They can also change their profile picture by clicking the “Change” button which lets the user either search for pictures on their device. They also have the option to go to the previous screen and access the drop down menu at the top of the screen. Note the eye symbol, which allows users to show/hide their password in the field.

**Figure 27: Application Settings Screen**

Description: When the user clicks on the “Application Settings” option from the drop down menu, it takes them to a screen that lists various options that the user can change about the App. Clicking on the toggle switch for different options, changes that specific setting about the App. The user can also select a different voice type by clicking on the drop down option, and can also change the size of the text by adjusting the slider. The “Data” option allows the user to access their personal data that the App has been collecting and has stored. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

**Figure 28: Share Feedback Screen**

Description: When the user clicks on the “Share Feedback” option from the drop down menu, it takes them to a screen that prompts the user to enter a message and they can hit the “Submit” button to send that message to the Hermes support team. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.



Figure 29: Help Screen Logged In

Description: When the user clicks on the “Help” option while logged in from the drop down menu, it takes them to a screen that lists different Hermes support contact information so they may contact the service for assistance. They also have the option to go to the previous screen and access the drop down menu at the top of the screen.

13.2 Design Rationale:

When designing our wireframes and application, we took many design principles into consideration and represented as many affordances as possible.

Cognitive affordances help users understand and use the system easily. To begin, we decided on designing Hermes so the back button and dropdown menu are always in the same place, so users remember where to find them. Furthermore, labels on buttons, menus, and links are always clear and easy to read. There are no error messages yet, but they can be added to show simple warnings when needed. Icons are also clear and help users understand their meaning without confusion.

Physical affordances make it easy for users to interact with the system. When navigating through Hermes to reach the settings page, slider buttons change to show when an option is turned on or off. All buttons are meant to be clicked or tapped, and their size and position are set up well to make them easy to use.

Sensory affordances help users see and read things better. With Hermes, the screens were designed to be colorblind-friendly and the text was given good contrast with the background to ensure readability at any text size. Moreover, all fonts used are easy to read, and users at any time can change settings like the font size, voice type, colorblind mode, dark mode, and sound, to match their needs. In summary, the system adjusts text, colors, and contrast to improve visibility.

Functional affordances make sure actions have a clear purpose. When signing up for Hermes, users can upload a desired profile picture and verify their phone number with a text message code. When searching for a location, the system picks the best route. If a user applies for a business account, their information is sent to a moderator for approval. Every action is designed to make things easier for the user while having a stated purpose.

Emotional affordances help users feel connected and comfortable. We designed Hermes in such a way so that users can find and interact with their friends in the system. Features like “Caravan”, the friend leaderboard, and trip suggestions based on past activity help users feel more engaged and trust the system. Ride statistics are only shared with others chosen by the user, so users don’t need to have privacy concerns.

13.3 Future Improvements:

In the future, we’d like to add more accessible features such as easy ability to use voice commands to navigate and use Hermes. Another feature, as stated above, will be error messages that display when a user does an incorrect action, such as, inputting the wrong information in a given box or leaving a box blank that must be filled out to proceed. In addition to letting the user know that something is incorrect, Hermes will attempt to offer fixes to the issue, such as suggesting ride endpoints, autocompleting addresses, and showing similar results instead of exact matches when a user inputs the name of a location into the startpoint/endpoint box.

14. Heuristic Evaluations

14.1 Heuristic Testing Worksheets:

Project Name: Hermes

Team: Group 5

Date: 3/27/25

Evaluator(s): Anthony Peng and Tristen Kurutz (Group 3)

Observer(s): Jacob Mackinnon, Quentin Auinger (Group 5)

Location in the Task Description	Heuristic Violated	Usability Defect Description	Evaluator's Comments Regarding Defect
Main screen after log in	Help and Documentation AND consistency and standards	No idea how to get more help. I have a non-pannable map, but even clicking the map does nothing for me. I click on the red location indicator, but that doesn't do anything. I click on the brown button, and I see a circle around the red location mark. But what does the brown button do? There is no documentation.	Apparently it's supposed to do what google maps does when you click on their circle with the plus sign around it. But the brown button is not consistent with google map standards.
Account Creation	Flexibility and Efficiency of Use	Have to upload or take a photo for my profile no matter what.	There should probably be a default picture for people who don't want to put an image.
Account Creation	User Control and Freedom	From the profile selection screen, as soon as you set a picture it automatically sends you a verification code, without any prompt or confirmation. What if my phone was a landline and not a mobile phone?	Allow a user to click a button to prompt the verification code to be sent.
Modifying Personal Settings	Consistency and Standards	Whenever I am looking for a settings tab, I usually look for the settings first. Whenever I navigated to your sidebar, I totally missed the Application Settings button because I simply wasn't looking for that phrasing.	Maybe put the "Profile Settings" under the profile picture and change it to "Edit Profile" and make the "Application Settings" a gear or just the word "Settings."

Nav go screen	Consistency and standards	When clicking stop, it does not redirect to the previous screen, but the main screen (with the map and the brown button on it).	
Sending a Friend Request	Consistency and standards	Cannot choose a username upon registration, but need to have a username to be added as a friend.	Add username field to registration. Also needs a “Add Friend” button after the username search box.
Starting a caravan	Recognition rather than recall	Is difficult to understand what a caravan is and how to set one up.	Not sure where it was and had to ask for help
Sending a Friend Request	Consistency and standards	Friend request notifications should also be in the “friends” tab, and you can accept them and decline them from there as well. Just in case you clear the notification from the “Notifications” tab... you would lose it if you cleared it. It would also be more consistent that way.	See previous column.

14.2 Consolidated Problem List with Severity Ratings:

Problem	Description	Severity
Username Required	When a user registers, they cannot choose a username upon registration. However, users need a username to be added as a friend. We need to standardize what users are identified as.	Major
Locator Button	The locator button has some ambiguity when it comes to its actual purpose. Either remove the arrow and add a crosshair or add a crosshair around the arrow so users understand it locates their current location.	Minor
Upload Profile Picture	When a user is signing up for an account, the user is forced to upload a profile picture for their account and there is no option to set a default picture or upload a picture later, etc. The account's default picture is the user's initials, and you can upload/change your profile photo later in the profile settings.	Minor
Caravan Learnability	When a user wants to join or start a ride with other people, they are meant to navigate to the caravan section and set up or join a ride based on their friends list. However there is little documentation in the application to tell the user what a "caravan" actually is or where they can find one. Documentation will be needed to be added to explain to new users where to locate certain features.	Minor
Friend Request Notifications	After a user receives a friend request, a notification should appear in the friends tab as well where you can also "Accept" or "Decline" to make the system more efficient. Add this notifications feature to the friends tab so users do not accidentally delete unread friend request notifications.	Minor
Nav Screen Issues	When a user clicks "Stop" to end their route, it takes them back to the original Nav Home Screen instead of taking them back to the previous screen. This is very simple to fix, just change the screen it takes you when you click "Stop".	Minor
Phone Verification	Users are not notified that their phone will be sent a verification code, so they could put in a phone that wouldn't be able to be verified. Adding a note such as "A code will be texted to this phone number" to clarify they will need to be able to receive texts to verify.	Cosmetic

Settings	When a user clicks on the drop down menu, there are two different types of settings options, “Profile Settings” and “Application Settings”. This is confusing for the user, and by changing “Profile Settings” to “Edit Profile” and “Application Settings” to “Settings”, it will fix the confusion.	Cosmetic
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14.3 Summary and Plan:

We are going to address each of the issues from highest to lowest priority. Starting with profile adjustments, we will need to clarify how users are addressed, moving to a more username-centric form. Profile settings will also have to be updated, especially how users navigate to them, and what can be changed within them, such as profile picture, email, username, etc. When signing up, users should set a username, and be notified that their phone number will be used for verification. Furthermore, when it comes to simple system features, such as the locator button and the stop button to end a route, we should clarify what they mean and integrate their features accordingly. When users receive friend requests, it's unclear where the requests should go. We will need to add a section for friend requests within the friends section, which fits the category of “friends”. It's also unclear what a caravan is, how to access it, and how it functions. Adding a tutorial for how caravans work and how to start them will benefit users, especially because the concept of a caravan gps app is not well established in the gps/map industry. With these critiques in mind, our plan forward is quite simple. We must integrate our solutions that we have discussed above so that we can help the Hermes platform become more user friendly.

15. Test Plan

15.1 Introduction

This document describes the usability evaluation plan for Hermes. This plan includes the following sections:

- Purpose and goals of the usability evaluation
- Target audience
- Design of the usability evaluation
- Data collection methodology
- Deliverables
- Resources
- Schedule

15.2 Purpose of the Usability Evaluation

The purpose of a usability evaluation of the Hermes application is to predict the expected performance of the actual customer using the current product and materials, as well as detect any serious problems prior to the release of the product. The features that will be tested through the usability evaluation process includes: creating/managing account, route navigation, creating a caravan, adding friends, adding stops, sharing feedback, and modifying application/personalization settings.

15.2.1 Usability Evaluation Goals

The goals of usability evaluation include establishing a baseline of user performance for future usability evaluation, establishing and validating user performance measures, and identifying potential design concerns to be addressed in order to improve the efficiency, productivity, and end-user satisfaction. Specific usability goals allow for the creation of evaluation scenarios and tasks that will let us evaluate the extent that you are meeting those goals, and what measures can help us determine if in fact the participants are having trouble completing the tasks. Consider any areas of the design where you may have particular usability concerns.

This evaluation will be based on the following usability goals:

- Users will be granted access to the application after entering log-in credentials and completing a verification check through phone number or google.
- Users will instantly know the difference between the travel, the history, the business, the caravan, and the settings pages.
- Users have the ability to place a pin on the map that directly correlates to the destination, or addresses of the start and end positions, with the start defaulting to their current device location.

- Users will learn to modify their travel preferences, such as navigation styles and stop settings.
- Users will learn how to generate a route that meets their needs.
- Users will learn how to adjust their application's auto-generated voice settings and in-drive feedback.
- Users will be able to navigate to the settings page immediately after entering the application and will know how to change each of the specified settings, including accessibility settings.
- Users will be able to access a leaderboard that displays and compares the statistics of the user with all their friends. Includes options to find new friends or sync contacts.

We will also use a questionnaire to determine pre and post-test subjective information such as emotional reactions. Here are some examples:

- Have you ever planned extra stops when on a road trip?
- Have you ever competed with your friends/family when on a road trip?
- As a user of the app, how do you feel about the overall color choices used for the application?
- As a user of the app, how do you feel about the overall UI of the application?

15.3 Target Audience

Subject Selection Criteria

The selection of participants whose background and abilities are representative of the product's intended end user is a crucial element of a successful usability evaluation. The evaluation will be valid only if the people evaluated are typical end users of the product, or as close to a selected set of characteristics as possible.

The participants' responsibilities will be to attempt to complete a set of representative task scenarios presented to them in as efficient and timely a manner as possible, and to provide feedback regarding the usability and acceptability of the user interface. The participants will be directed to provide honest opinions regarding the usability of the application, and to participate in post-session subjective questionnaires and debriefing.

The following list shows the key characteristics of the end users that are considered as critical differentiators for successful adoption, and use, of the Hermes application. These characteristics are the basis for participant selection for the usability evaluation.

Our team will select eight test participants who frequently travel for both business and leisure, each taking on a specific role based on their responsibilities. Travelers/Friends will provide reviews and suggestions about locations and experiences to enhance the system's functionality. Business Owners will actively use the app to monitor how their business is advertised on the map, assess promotional effectiveness, and analyze traveler engagement with their content. Moderators will be responsible for verifying the legitimacy of businesses requesting to be added to the app by reviewing certificates or licenses, as well as monitoring and addressing flagged content or suspicious account activity.

To ensure usability expertise, all participants must have at least one to two years of experience using navigation apps such as Google Maps, Apple Maps, or Waze, along with proficiency in navigating mobile devices. Business Owners must have prior marketing experience, industry knowledge, and be currently employed in a marketing or related role within their business. Moderators must have prior moderation experience, be well educated, and demonstrate strong ethical judgment. They should also remain calm under pressure and have no criminal record.

There are no restrictions on age, gender, or cultural background, as the application is designed for universal use. This selection process ensures a diverse and qualified group of users who can provide meaningful feedback and contribute to the app's continuous improvement.

15.4 Design of the Usability Evaluation

Individual evaluation sessions will take place in the following order:

- A performance evaluation in which each participant is asked to perform a series of real-life tasks
- A questionnaire and an interview after each performance evaluation to gather additional insights about Hermes and demographic information from the participants.

15.4.1 Evaluation Team Roles

The roles involved in a usability test are as follows. An individual may play multiple roles and tests may not require all roles.

Trainer

- Provide training overview prior to usability testing

Facilitator

- Provides overview of study to participants
- Defines usability and purpose of usability testing to participants
- Assists in conduct of participant and observer debriefing sessions
- Responds to participant's requests for assistance

Data Logger

- Records participant's actions and comments

Test Observers

- Silent observer
- Assists the data logger in identifying problems, concerns, coding bugs, and procedural errors
- Serve as note takers.

15.4.2 The Evaluation Process

The usability evaluation process is as follows:

1) Participant Greeting

Each participant will be personally greeted by the evaluation facilitator and made to feel comfortable and relaxed. The issue of confidentiality will be explained and the participants will be asked to sign the consent form indicating their agreement to volunteer in the evaluation.

2) Orientation

The participants will receive a short, verbal scripted introduction and orientation to the evaluation. This material will explain the purpose and objective of the evaluation, and additional information about what is expected of them. They will be assured that the product is the center of the evaluation and not themselves, and that they should perform in whatever manner is typical and comfortable for them. The participants will be informed that they are being observed.

3) Performance evaluation

The performance evaluation consists of a series of tasks that are evaluated separately and sequentially. The individual participants complete the tasks while being observed by the usability specialists. The scenario is as follows:

- After the orientation, the participants will be asked to sit down at the computer. The evaluation administrator will give the participants the task scenario packet and instruct them on the use of the task scenarios, where the participant will complete the tasks one at a time in the order provided in the packet.
- After the participants begin working through the evaluation scenario, they will be encouraged to work without guidance except for the provided material and the product itself. The evaluation administrator may ask the participant to verbalize his or her thoughts if the participant becomes stuck or hopelessly confused. These occurrences will be noted by the evaluation administrator, and will help to pinpoint the cause of the problem.

4) Participant debriefing

After all tasks are complete or the time expires, each participant will be debriefed by the evaluation facilitator. The debriefing will include the following:

- Completion of a brief post evaluation questionnaire in which the participants share their opinions on the product's usability, appearance of application screens, and general impressions of the product
- Participant's overall comments about his or her experience
- Participant's responses to probes from the evaluation facilitator about specific errors or problems encountered during the evaluation

The debriefing session serves several functions. It allows the participants to say whatever they like, which is important if tasks are frustrating. It provides important information about each participant's rationale for performing specific actions, and it allows the collection of subjective preference data about the application and its supporting documentation.

After the debriefing session, the participants will be thanked for their efforts, and released.

15.4.3 Logistics

The usability test will be taking place at RIT in a well lit conference room with minimal noise, providing a comfortable and accessible environment for all participants. The location will be easy to reach, with ample space for testing and a designated waiting area.

Testing will be conducted on both Android and Apple phones, with participants using their own devices pre installed with the Hermes app. Supporting equipment includes laptops for evaluators, charging cables, and WiFi access, along with tables and chairs to facilitate the testing process.

Measurement tools will include screen recording software, audio recorders, and a stopwatch, ensuring accurate data collection. Evaluators will follow structured scripts, and checklists to maintain consistency throughout the sessions. Participants will receive consent forms, a pre test questionnaire, task instructions, and a post test questionnaire. The testing environment will be quiet and distraction free to help participants stay focused.

Appendix A will document the scenarios for the five core tasks, including step by step instructions and required data to ensure consistency across all sessions. These scenarios include: 1) Account Creation, 2) Generating a Route, 3) Modifying Personal Settings, 4) Registering a Business, and 5) Sending a Friend Request.

15.5 Data Collection Methodology

Measures to be collected include the following:

1. The amount of time it takes a participant to complete each core task of the Hermes application.
2. The percentage of participants who successfully completed each core task of the Hermes application.
3. The number of errors or mistakes committed by a participant when completing each core task.
4. The different types of errors committed by the participant, including:
 - Observational - Visually noticing when a participant has trouble navigating the application like starting a route, adding a friend, and many more cases.
 - Non-critical - The participant makes a mistake while trying to complete a task like adding a friend, but realizes their mistake in time, and fixes the issue.
 - Critical - The participant makes an irreversible mistake. For example, the participant registers their account under the wrong business, and now has to wait for a response from the moderators.
5. The number of times the participant requested help from someone for a certain task as they did not understand its functionality. For example, the participant does not understand how to add additional stops to their route.
6. The number of indications or expressions of emotions from the participant during when completing each core task. To elaborate, a participant looks confused when trying to send a friend request or looks happy when modifying personal settings.
7. The number of statements or opinions expressed by the participant regarding the way the application functions or the way it looks. To elaborate, a participant's opinion of Hermes' color scheme.

15.6 Deliverables

At the completion of the usability evaluation, a formal analysis will be performed. A final evaluation report will be included in the project presentation. The analysis will detail the significant problems and observations detected during the usability evaluation, and recommendations to address the findings.

15.7 Schedule

The usability evaluation will be conducted between 4/4/25 and 4/10/25. The following is an estimate for the total schedule.

Activity	Person Responsible	Time (Hours)	Date(s) Conducted
Planning for the evaluation, including creation of evaluation materials	Cameron, Jacob, Kyle, Quentin, and Yousaf	2	4/4/25
Arranging logistics	Quinn	1	4/5/25
Piloting the materials and procedure	Kyle	1.5	4/5/25
Running the evaluations	Cameron + Jacob	2	4/7/25
Analyzing data	Yousaf	1	4/7/25
Preparation of final report and peer review	Cameron, Jacob, Kyle, Quentin, and Yousaf	2	4/7/25 - 4/9/25
Preparation of final presentation	Cameron, Jacob, Kyle, Quentin, and Yousaf	2	4/7/25 - 4/9/25
Total Time		11.5	

15.8 Appendix A – Task Scenarios

1) Account Creation

When the user opens the app for the first time, meaning they do not have a Hermes account, they will need to use the sign up button to create a Hermes account. Signing up will require them to input all of their personal information, choose a profile photo, and verify their phone number through two factor authentication. Once verified, the user has successfully created an account.

2) Generating a Route

Once signed in, the user will be shown the home page and be requested to generate a route from their current location to another location. By way of the search bar at the top of the screen, a user can search for the location they would like to generate a route to. From here, Hermes will suggest the fastest route to their destination.

3) Modifying Personal Settings

The user will be requested to modify the colorblind settings, font size, and voice type. From the home screen, users must find the waffle/menu icon in the top right, then scroll to application settings on the sidebar popup. Within the application settings page, users can utilize colorblind mode, text size, voice options, and other personal settings.

4) Registering a Business

The user will be requested to input all of the information into the Business Registry page of Hermes and submit it. From the home screen, users must find the waffle/menu icon in the top right, then scroll to business on the sidebar popup. Within the business page, users can enter the information about their business. When they press submit, their request is sent to moderators for approval.

5) Sending a Friend Request

The user will be requested to put in valid information of another traveler into the friends search bar. From the home screen, users must find the waffle/menu icon in the top right, then scroll to friends on the sidebar popup. Within the friends page, the search field in the add friends section can be used to search for friends by name/username. Within the results list, users can press the add friend button to send a friend request.

15.9 Appendix B – UX Target Table

User Role	UX Goal	UX Measure	Measuring Instrument	UX Metric	Baseline Level	Target Level	Observed Results
Traveler	Account Creation	User's performance level	User's ability to create a account	Time it takes to create a account	10 mins	5 mins	1 min 24 secs (83.63 secs) on average. In consensus, no major errors occurred, and all users were generally happy. Target levels met.
Traveler	Generating a Route	User's learnability level	User's ability to generate a route	Time it takes to generate a route	2 mins	1 min	15.25 secs on average. In general, no major errors occurred, and most users were content. Target levels met.
Traveler	Modifying Personal Settings	User's learnability level	User's ability to modify their personal settings	Time it takes to modify a setting	2 mins	1 min	39.63 secs on average. In total, no major errors occurred, and a range of emotions were portrayed by users. Target levels met.
Business Owner	Registering a Business	User's performance level	User's ability to register their business	Time it takes register a business	15 mins	10 mins	59.13 secs on average. Overall, no major errors occurred, and most users were confused at first. Target levels met.
Friend	Sending a Friend Request	User's performance ability	User's ability to send a friend request	Time it takes to send a friend request	2 mins	1 min	32.50 secs on average. In summary, no major errors occurred, and a range of emotions were portrayed by users. Target levels met.

User Role – user category, work role

UX Goal – high level UX usability design objective

UX Measure – UX usability characteristic to be measured; e.g., learnability

Measuring Instrument – the benchmark task(s) or survey question to generate test data

UX Metric – test measurement values to be collected; e.g., error count

Baseline Level – performance of current system if relevant

Target Level – minimum value for success

Observed Results – measured values

15.10 Appendix C – Questionnaires

Pre-questionnaire for Hermes Traveler

Q1. How often do you travel?

- a. Frequently
- b. Occasionally
- c. Rarely

Q2. How do you usually plan your road trips?

- a. Google Maps
- b. Waze
- c. Paper Maps
- d. Word of Mouth
- e. Travel websites

Q3. What features are most important for you in a navigation/GPS app?

- a. Route optimization
- b. Points of interest
- c. Customization options
- d. Traffic alerts and updates
- e. Local business data and deals

Q4. Have you ever felt like you passed or missed out on interesting locations on past trips due to lack of awareness or knowledge?

- a. Yes
- b. No

Q5. Do you typically try to find places to stop while traveling? (Restaurants, attractions, POIs)

- a. Always
- b. Sometimes
- c. Rarely
- d. Never

Q6. Are you familiar with apps that provide travel recommendations?

- a. Yes, I use them often
- b. Yes, but I do not use them when traveling.
- c. No

Q7. What improvements would you like to see in current navigation systems?

- a. <Open Response>

Post questionnaire for Hermes Traveler

Q1. How would you rate your overall experience with the system on a scale of 1 to 10, 1 being the lowest and 10 the highest?

- a. <1-10 Response>

Q2. How easy was it to use the Hermes app?

- a. Very easy
- b. Somewhat easy
- c. Neutral
- d. Somewhat difficult
- e. Very difficult

Q3. Were you able to customize your preferences? (UI, Voice, Visual Settings, Interests)

- a. Yes
- b. Somewhat
- c. No

Q4. Did Hermes improve your travel experience compared to traditional navigation apps?

- a. Yes, significantly
- b. Yes, somewhat
- c. No difference
- d. No, Hermes was worse

Q5. Were the local business promotions/discounts helpful or enticing?

- a. Yes, they were helpful
- b. Somewhat useful
- c. Neutral
- d. Not helpful
- e. Did not notice promotions/discounts

Q6. Do you feel Hermes introduced locations that would normally not be visited while on a trip?

- a. Yes
- b. No

Q7. Were there any features that you found unnecessary or difficult to use?

- a. <Open Response>

Q8. What improvements would you suggest for Hermes?

- a. <Open Response>

16. Overview of Data Analysis

16.1 Outlier Discussion

In summary, when analyzing the raw data from our eight demonstrations, there were several data points that caught our attention. Initially, when it came to interacting with the Hermes Navigation System, User 3 on average took the most amount of time to complete the five tasks given to all eight users. This was accompanied by User 3 being frustrated or unsure while completing these tasks. However, User 7 on average took the least amount of time to complete the five tasks and found most of them fairly easy.

For clarification, these data outliers could be attributed to other underlying factors such as different typing speeds, the absence/advantage of technological knowledge with a similar system, or accidentally completing a different task first before completing their current task.

On the bright side, one welcomed outcome during our eight demonstrations was that none of our users needed assistance to complete a certain task. Every user eventually figured out the system by themselves.

16.2 Data Correlation

Viewing our data, there is no correlation between how fast a certain user completes a task and how long it takes to complete the rest. For instance, User 6 was the fastest to complete the “modifying personal settings” task, but was the fourth slowest when completing the “sending a friend request” task.

Furthermore, there is no correlation when it comes to the speed a user operates the system and the number of errors they commit. To explain, on average, User 7 completed all five tasks the fastest and committed zero errors, while User 3 also committed zero errors but on average took the slowest to complete all five tasks.

Fortunately, although there is no correlation between how fast a certain user completes a task and how long it takes to complete the four others, there is a positive correlation between completing the “generating a route” task and the “sending a friend request” task. To elaborate, all users completed both tasks relatively quickly and around the same time as each other.

In conclusion, the overall experience for all eight users was recorded on a scale from 1-10. On average, our score was 7.8, which signifies a positive experience while interacting with the system. This score also correlates to how every testing goal was met, as a positive score means a user could use the system as intended.

16.3 Problems Identified

Usability testing revealed several issues with the Hermes app.

Users encountered confusion with navigation, particularly the inconsistent behavior of the back buttons and the absence of a dedicated home button. Interface elements also presented challenges: buttons were too small for easy interaction, and toggle switches in the settings failed to clearly indicate their on/off states.

One participant expressed frustration with the customization features, which contributed to their low overall rating. The visual design received considerable criticism: multiple users described the color scheme and overall theme as bland. Additionally, there were complaints about excessive spacing, unnecessary fields and gaps, and a general lack of feedback for user actions.

The notification system was another weak point, lacking visual indicators to alert users of new notifications.

A few participants commented that they were confused about the purpose of a few features present within the system. To elaborate, they did not know what the “Business” button did and were completely unaware of the discount feature. A few comments were made conveying their confusion about the point of having friends. On the leaderboard, the points system is incredibly vague. Two participants particularly said that the primary function of Hermes was not clear enough. This is primarily due to Proto.io’s limitations, making a simulation of live alerts while traveling difficult.

Despite these concerns, most participants remained positive about the app’s core functionality. They offered suggestions for improvement, including larger buttons for safer use while driving, customizable themes, and clearer navigation supported by icon-labeled menus.

Overall, the issues raised were not considered critical and can be addressed with relatively straightforward adjustments to better align with users' needs and expectations.

Problems Identified:	Severity Ratings:	Usability Solutions:
The buttons are too small to access the settings page while driving.	3/10	We prioritize safety by discouraging altering settings while driving. We will add a settings icon to make it possible, but a warning will be given when pressed that says, “Are you a passenger?”.
Users want more color theme options beyond light and dark mode.	2/10	Give users complete freedom to change the color of the app, but this could cause readability issues.

The color theme is too bland, and the dominant orange color is widely disliked.	5/10	The color theme will be refreshed to use more modern and appealing colors.
Notifications on the sidebar and friends pages would be useful. The current indicator is just a dot or a number, which is not informative enough.	3/10	Add a notification section on the sidebar page that displays the three most recent notifications, and also on the friends page for better visibility and awareness.
The back button/arrow is difficult to locate and behaves inconsistently.	8/10	Standardize the back button placement and behavior across all screens.
Users don't clearly understand the purpose of features like the Friends, Caravan, and Business pages.	8/10	Will provide an informative pop-up when a feature is first accessed. This info will also be accessible via a help icon if it is needed later.
Users have difficulty finding the home page due to the absence of a home button.	2/10	There already is a home button on the sidebar where the Hermes picture is, just click on it, but we can add a text/label below it that says "Home".
The sidebar page lacks visual indicators like icons, making navigation harder.	3/10	Add icons next to each item in the sidebar.
It's difficult to tell whether toggles in the settings page are on or off.	1/10	Change the background colors of the toggle switch to be positive/negative colors (green/red).

16.4 Final Thoughts on What Went Well

For our final thoughts on the raw data gathered during our demonstrations, we believe that while operating the Hermes Navigation System, every user was able to fluidly navigate the app. This was proven true as each target goal was met, no interview lasted longer than 15 minutes, and no users requested help from the team when completing a certain task. Additionally, when it came to the pre-questionnaire and post-questionnaire, every user was able to give solid responses and feedback that helped us analyze our design even more to see where we can still improve, or where we already excelled.