

A background map of Chicago, Illinois, showing various neighborhoods, streets, and landmarks. The map is partially obscured by a blue overlay box containing the title. Labels on the map include "WEST TOWN", "NEAR WEST SIDE", "PILSEN", "THE LOOP", "Outer Harbor", "University of Illinois Chicago", "W ROOSEVELT RD", "GUARANTEED RATE FIELD", "S DUSABLE LAKE SHORE DR", "S ASHLAND AVE", "W GARFIELD BLVD", "Washington Park", and "The University of Chicago". Highway shields for 94, 90, and 41 are also visible.

Redesigned Apple Maps Final Report

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Executive Summary

Apple Maps is an online mapping service developed by Apple. After conducting an expert Heuristics Reviews, we identified six main user concerns and decided to address five of them with our redesign including:

1. Apple Maps Icon
2. Edit Search
3. Favorite Button
4. Screen-On-Screen Functionality
5. Offline Services

This report serves as comprehensive summary of the redesign process for Apple Maps, outlining the key steps:

1. Heuristic Analysis
2. Defining User Concerns and Redesign Requirements
3. Wireframe Creation
4. Usability Test
5. Redesign of Wireframe and Recommendations

The prototype was built in Balsamiq and can be viewed in full [HERE](#).

The video presentation was also uploaded to YouTube and can be viewed [HERE](#).

Purpose of the Project and Stakeholders

The purpose of the project is to enhance the user experience of Apple Maps. Through a redesign process, we improve usability, user-friendliness, and efficiency of the app. By conducting usability testing and gathering feedback from participants, the project aims to identify strengths and opportunities for improvement in the redesigned Apple Maps.

Stakeholders of the project are:

1. **Apple Inc.** - Being the developer and provider of Apple Maps app, Apple Inc. is a key stakeholder of the project. They are interested in improving their product to meet user needs and expectations by enhancing the overall user experience.
2. **Apple Maps users** - The users of Apple maps are crucial stakeholders in this project. Their feedback, experiences and preferences shape the direction of the redesign and influence the decision-making process.
3. **Product Managers** - Since they are responsible for aligning the redesign with the overall product strategy, they are one of the key stakeholders.
4. **Apple Maps development team** - The internal development team responsible for the design and development of Apple maps is directly involved in this project as they are the ones that implement the redesign.
5. **Business executives** - The executives at Apple Inc. provide guidance, resources, and support for the product's success. Thus, they play key roles as stakeholders.

Method

1. Heuristic Analysis

Through the analysis, the product is thoroughly reviewed and evaluated against HCI and HSI principles. Apple Map's strengths and usability issues are identified.

2. Defining User Concerns and Redesign Requirements

Once the usability concerns have been identified, we can proceed to determine the opportunities for improvement. To prioritize these opportunities, we consider the severity of the issues, considering both the importance of the functionality and the frequency of its use.

3. Wireframe Creation

The initial step in creating a wireframe involves the creation of a rough draft on paper. This draft serves to convey design ideas and illustrate the user workflow. Its primary purpose is to facilitate internal communication within the team, fostering a shared understanding of the design goals. In the subsequent stage, we develop a medium-fidelity wireframe using Balsamiq. This approach enables us to present the user workflow in an organized manner. The Balsamiq wireframe serves as a valuable communication tool for engaging stakeholders. By avoiding excessive design details, the wireframe prioritizes the modified functionality and user flow, ensuring that the audience's attention remains focused on these essential aspects.

4. Usability Test

To gather user feedback, we conducted a usability test involving three participants with varying levels of experience using Apple Maps. This diverse group of users was selected to establish connections with both current and potential users. The primary objectives of the test were to identify areas for improvement in our existing design and to gain valuable insights directly from users. To ensure a comprehensive understanding of user concerns, we actively engaged participants by asking follow-up questions. This approach allowed us to uncover nuanced insights and capture a holistic perspective on the usability of the design.

5. Redesign of Wireframe and Recommendations

By carefully analyzing the user feedback, we identify common concerns, issues, and strengths within our current design. We embark on the iterative process of redesigning. This iterative approach ensures that we incorporate user feedback and make the necessary adjustments to enhance the overall user experience and address the identified concerns effectively.

Results and Recommendations for Final Design

I. Apple Maps Icon

a. Heuristic Analysis

The full-bleed multi-color background of Apple Maps logo violates the Nielsen Heuristic to employ Recognition rather than Recall because rather than quickly scanning for the app, the user must recall its position in the grid.

b. Defining User Concerns and Redesign Requirements

Users mention that the Apple Maps logo appears muddy, especially at smaller sizes. The color palette is pale, and the busy background makes the logo look flat overall, which makes it hard to find the Apple Maps on the user's home screen.

Our logo redesign follows Apple's best practices for designing app logos, allowing the user to recognize the app while quickly scanning for it instead of recalling the location of Apple Maps on their home screen. In addition, the color palette is adjusted to be differentiable to color-blind users, according to Venngage.



c. Wireframe Creation

The initial step was to draw out the existing Apple Maps logo to better understand it. Then using Apple's best practices for designing app logos and keeping in mind to make it accessible, we recreated a new version of the Apple Maps logo.

d. Usability Test

The redesigned logo provides better findability and accessibility.

The logo was simplified by reducing excessive color blocks and elements while retaining the major "Intersection" and "Arrow" elements. Additionally, we enhanced the contrast through retaining more white space along the edges. Color-blindness was also taken into consideration for better user accessibility when adjusting the color palette. Of the three participants, one participant spent much less time locating the redesigned logo and reported that the logo made the process easier due to simpler colors and simpler shape. Meanwhile, the other participants didn't report significant preferences on two designs.



e. Redesign of Wireframe and Recommendations

While the usability test provided validation that the time to find the new app logo was shorter than the time taken to scan the home screen for the old app logo, potential flaws in the test indicate that a higher fidelity test that includes a randomized placement of the apps within a field of other apps could provide better validation for the designs improved findability.

II. Edit Search & Favorites Button

a. Heuristic Analysis

The 'Edit Search' feature and 'Add to Favorites' button violates Nielsen's heuristics principle of Flexibility and Efficiency of Use as the user needs to go through additional steps to perform the above two features which consumes extra time and effort.

b. Defining User Concerns and Redesign Requirement

Users must navigate to the previous screen whenever they want to edit their searches or make a new query. Users must scroll down to the bottom of the detail view to favorite a place. This is not intuitive and adds extra work to the user.

c. Wireframe Creation



The 'Add to Favorites' button was replaced from the bottom of the page to be placed right beside the name of the location, which is convenient for the users to quickly click and favorite the location and more importantly it is visible and easy to access. The 'Edit Search' feature was permanently added to the screen helping the user to not traverse through multiple screens just to edit text. This makes it easy to search or edit locations without having to click on so many other buttons.

Unified search bar position and retained search bar on location detail tab improves consistency and efficiency.

The search bar was consistently positioned at the top of both the entry view and the location detail tabs, providing users a more consistent and intuitive entry point, and eliminating the extra steps of closing a tab to launch a new search.

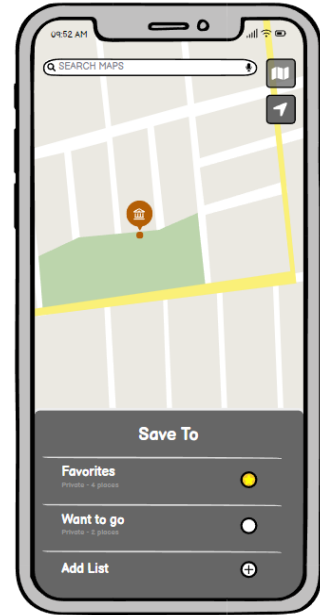
d. Usability Test

All three participants shortened the time to conduct search and to relaunch search by at least 30%.

e. Redesign of Wireframe and Recommendations

Add subcategories to “Favorite” option:

Upon clicking the favorite button, present a popup menu that includes subfolder selection. Without a study on the subfolder taxonomy that users would prefer, our recommendation is to allow users to title their own subfolders. For reference on implementation see the industry standard interface for adding bookmarks in the browser through selecting a category from a dropdown menu in a popup window or creating a new subfolder.



III. Screen-On-Screen Functionality

a. Heuristic Analysis

The ‘Screen-On-Screen’ functionality violates Nielsen's heuristics principle of Flexibility and Efficiency of Use as the user is only shown a small tab-bar at the top of the screen that says when to take a turn to take in the form of text.

b. Defining User Concerns and Redesign Requirements

Currently, the user cannot view the apple maps when they switch to other apps. The user must switch between the apps to see the route on the map.

c. Wireframe Creation

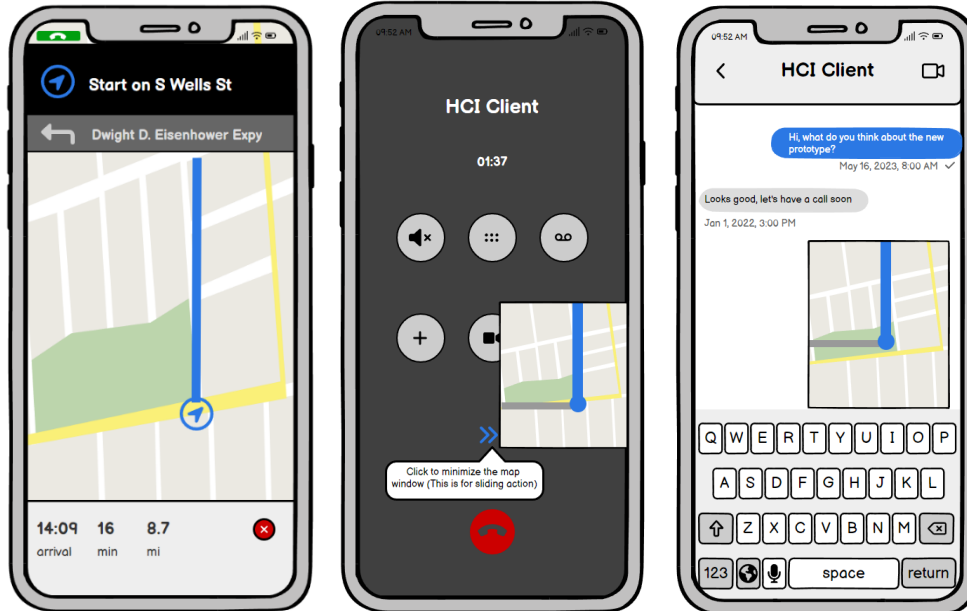
To fulfill the need for multitasking during navigation, a minimized navigation interface was added to ensure users do not miss important traffic route indications while processing other tasks. Meanwhile, users can easily switch between minimized window and full screen view. The redesign adds a minimized view of Apple Maps when the user switches to other apps so that the user can have a view of both the applications simultaneously.

d. Usability Test

One participant reported the functionality as a “genius feature” and two of them found the minimized window to be very helpful in providing route information without interrupting other tasks.

However, we noticed a flaw from our wireframe as one user mentioned that the example used in the test, a phone call screen, is admissible. The current Apple Maps does not take the users away from its application interface when a user receives a phone call. Nonetheless, the user feedback led to a fruitful discussion about how the interface can act differently based on the user’s actions and scenarios.

e. Redesign of Wireframe and Recommendation



Redesign the Screen-On-Screen interface to provide different behaviors for each of the following scenarios: telephone functions (calling), app switching, messaging.

For telephone functions add the telephone button menu as a banner across the top in a similar position to the placement of the buttons for accepting the call. This should leave the map in full screen mode.

For the app switching context, add a button to toggle between map and listed direction view. Due to the minimized window size, the toggle should limit the number of displayed directions to the single next step keeping the font size at the same size as the text display in full screen.

IV. Offline Services

a. Heuristic Analysis

The lack of offline services on Apple Maps violates the Nielsen Heuristic to handle Error Prevention. Currently, Apple Maps does not provide any information if the user is offline.

b. Defining User Concerns and Redesign Requirements

The user cannot access any route information offline, so if they are traveling somewhere that does not have cellular service, they cannot get directions to emergency services or the place they came from.

c. Wireframe Creation

After constant deliberation on how to implement this feature in Balsamiq and due to limited capability of Balsamiq to effectively show such a service. We decided to

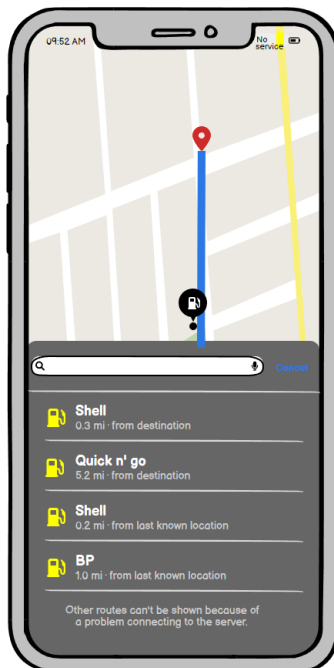
add a pop-up that appears when cellular service becomes unreliable. The popup text will read, "Navigating to a poor service area. Pre-download essential data? (Estimated 3.2 MB)"

d. Usability Test

Additional offline maps feature extends usage scenarios and reliability.

By assessing the network signal at the user's expected destination or current location, users are provided with alerts in advance when entering low signal areas, along with options to cache emergency service locations and data. This new feature ensures uninterrupted map functionality in offline scenarios. All three participants agreed that the offline feature would be very useful and having essential services information stored offline would be great. One participant reported that the additional feature was a lot better since it filled the gap that current Apple Maps can't navigate at all in offline scenarios.

e. Redesign of Wireframe and Recommendation



Add automatic downloads of essential routes.

In maps settings, add toggles with explanations for automatic downloading of the offline cache routes from the destination to origin and from the last registered location. This should include allowing the user to set the size of the cache.

Add option to save offline cache permanently.

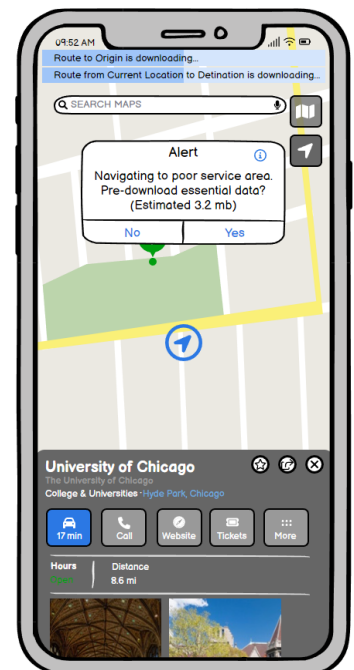
Add an option to save offline cache to favorite destinations so the user does not have to redownload frequently visited routes.

This should only be necessary if the user wants to save more routes than are normally downloaded in the cache or if they can save on the amount of cellular data services they use. The

option will be available in the application settings menu, where the users can also access and manage the saved cache.

Better segmentation of the display of offline directions "from listed destination" and "from last known location"

Change grouping on the search display for offline access to better segment the route options and create a badge to let users know when they are on offline access cache.



Adjust the position of Offline Alert

Change the alert position to be above or below the user 's current location such that it does not interfere in the users' immediate navigational needs. For a static position option consider a top banner position in the same place as the incoming call banner.

Next Steps

The proposed redesigns featured in this report aim to reduce the cognitive load on users, ultimately minimizing the friction between the task of navigating and the task of driving. As one of the most dangerous activities that individuals engage in regularly, it is crucial to enhance the usability of digital navigation tools and seamlessly connect people to the information they need while on the road.

Our redesigns have already demonstrated their effectiveness in reducing the time to task completion within a controlled lab setting. However, we must acknowledge that we must still fully represent the multivariable driving environment in our initial usability tests. To obtain a more comprehensive understanding, the next step is to conduct tests of the redesigned interface features in high-fidelity simulated driving experiences.

We anticipate gaining further insights into the proposed redesign's performance and user experience by iterating on and then subjecting the interface to more realistic driving scenarios. This additional usability testing will provide us with valuable data to make more informed decisions and support a safer navigation experience for our users.

With the forthcoming data from the extended user testing phase, we will be able to confidently propose specific roll-out strategies for the redesigned features. At this point, we would be prepared to present our key findings and recommendations to key stakeholders.

Ideally, we would want to conduct another round of usability tests with a larger sample size to validate our revised wireframe. We would want to iterate over the usability test-redesign process until we addressed all the high-priority user concerns as addressed in the Heuristic Analysis.