Connect and Meet People (CAMP)

Phase III: Prototype
CS 3724: Introduction to Human Computer Interaction
Fall 2021

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Record of Changes

Version	Date	Comment	Name
0.0	11/3	Document created	Harrison
0.1	11/8	Document maintenance & began Target Table	Jordan
0.2	11/10	Updated Creation Process section	Jordan
0.3	11/12	Added benchmark testing, Concept Statement, and design questions	Harrison & Kashan
0.4	11/12	Started Prototype Methods	Jordan
0.5	11/12	Worked on UX table & Scope	Karthik & Kashan
0.6	11/15	Added showcase video	Harrison
0.7	11/15	Updated Benchmark Tasks	Karthik
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0.9	11/16	Added Introduction and updated System Concept Statement	Harrison
1.0	11/17	Finished Scope section	Karthik, Kashan, & Jordan

1.1	11/17	Deleted unused Appendix + updated Showcase & Walkthrough section	Jordan
1.2	11/17	Created prototype add events page and added to UX table	Campbell
1.3	11/17	Created UX evaluation questionnaire	Campbell
1.4	11/17	Proofreading/Adding some things	Karthik
1.5	11/18	Added pilot test, general doc maintenance	Jordan

System Concept Statement

Connect and Meet People (CAMP) aims to get people outside and interacting. CAMP must have a well organized events page. It will include links to all resources and reminders for all upcoming events. Most users should be able to join a guild in under 5 minutes. CAMP must be platform agnostic, as to not limit or restrict membership. The levels of commitment to CAMP must be variable to encourage prospective members to test it out. Finally, CAMP should engage members by providing exclusive customization options to frequent users.

A. Prototype

Introduction

In Phase I, we interpreted the theme of this project as “How can we disrupt the theme of people isolating from what they enjoy due to overusing technology.” Additionally, we identified the main goal for CAMP as connecting people with each other and the outdoors. Therefore, our goal for the CAMP prototype was to implement critical workflows that help users connect with one another and get outside. Together, we agreed that implementing the following workflows would accomplish this CAMP goal: “Add friends”, “Add friends to a guild”, “Attend an event”, and “Add an event”.

To implement the workflows while still giving testers an immersive experience, we decided to create a T-shaped prototype. This is a prototype that offers immersion by representing all features, yet only implementing the determined critical workflows. Although implementing five workflows gives testers a good idea of what CAMP has to offer, this prototype is still only medium fidelity, due to the time and resource constraints we faced. Also, we plan to iterate on our prototype in the future. Keeping the fidelity relatively low enables us to quickly iterate.

Before creating the prototype, we came up with four key design research questions that are the following:

1. Does CAMP encourage users to do events with friends?
2. Are users enjoying CAMP events?
3. Does CAMP cultivate an inclusive environment for existing and new users?
4. Do all features make sense to CAMP users?

These four key design questions are critical to creating our prototype, because feedback on these questions give a good indication on whether or not CAMP is meeting our design goals. If the answers to any of the key design research questions is consistently no, we will need to reevaluate and iterate the CAMP prototype until our goal of connecting people with each other and the outdoors is met.

The following report is broken up into half. Part A contains four sections, and part B contains three. In part A, the first section is Scope. The features we decided to implement and the rationale for implementing them is explained in this section. Next is the Methods section. In this section, we discuss how we made the prototype and why we picked the tools we did to make the prototype. Following Methods, is the Creation Process section. A detailed description of how we made our prototype is given in this section. Finally, we have a video walkthrough of our prototype and a link to our interactive prototype in the Showcase and Walkthrough section. To begin part B of this report, we have another Introduction section. Part B contains three main sections. First, our analytical evaluation method with justification is explained in the Introduction

section. The second section is the “Methods” section, and will describe the physical and mental processes that went into the creation of our prototype evaluation plan. The next section of the report is the “Pilot Test and Timings” section, where we explain the results of our pilot test, how and where it was conducted, how long it took to complete, and what conclusions we were able to draw from the pilot.

Scope

In our prototype, we created at least one screen for each feature that would be implemented in the final design, effectively starting out with a “horizontal” prototype. A horizontal prototype is an effective way of showcasing the product concept, and provides an overview for the design team that they can use as a base for a top-down approach. We decided to do this because we completed a wireframe in Phase 2 and we knew we could build off of it. After our horizontal prototype was done, we referenced our design research questions (Appendix A) from part 5 of activity 11B to decide which features should be further developed based on design requirements and information from previous phases.

Our final prototype is “T-Shaped” and completely implements those features and workflows that were decided by the team and informed by our design research questions. Specifically, we have a complete implementation for adding a friend, adding a friend to your guild, creating an event, and going to an event. Since our prototype is T-Shaped, it has breadth and depth. Breadth refers to the amount of features represented by the prototype. Depth refers to how deeply a feature is implemented. Since our prototype only covers front-end material, it does not have much depth. It would be out of our scope to also develop a backend for our features.

The workflows of adding a friend and adding a friend to your guild relate to our design research questions, “Does CAMP encourage users to do events with friends?” and “Does CAMP cultivate an inclusive environment for existing and new users?”. Since you can add friends into your guild and there are specific “Guild Events”, this feature encourages users to do activities with their friends and, as a result, creates a more inclusive environment. Also, the fact that the add a friend feature uses NFC encourages users to go out, interact with potential new friends, and go on future activities with them. Next, the workflows of creating events and going to events relate to our design research questions, “Are users enjoying CAMP events?” and “Do all features make sense to CAMP users?”. Since going to an event ecompasses the main functionality of our app, it is a good workflow to use to measure the overall effectiveness of the features and of the app itself. Also, the more people that go to events, the more likely it is that they are enjoying them.

Our prototype is medium-fidelity and uses an online prototyping website (Marvel). We decided to use Marvel because it was recommended by our UTA Coach, Devin. He recommended it because it is collaborative and is an effective tool to use to prototype mobile applications. We liked how more interactive it was than Balsamiq, which was the wireframing program we used. Marvel allowed us to create “hotspots” which are buttons that lead to separate screens. This helped our prototype feel like a legitimate mobile application. Also, it makes it easier for our evaluation phase if users can actually click on buttons in order to complete a task.

Textbook chapter 11 states that a medium-fidelity prototype is used by teams that “want a bit more fidelity in their design representations than you can get with paper and want to step up to

computer representation”. The choice to create a medium-fidelity prototype was also informed by our design research questions.

Design Questions

- How easy is it for users to add events? (Ease of use)
- Are users able to comfortably create and edit guilds? (Ease of use)
- Are users satisfied with the customizability of their character? (Customer satisfaction)
- How straightforward is it to navigate to an event? (Fast learning)
- Does the GPS function always work with native GPS applications? (Error rate)
- Can a user decide not to share their activity information for privacy reasons? If so, how easy is it to access that option? (Customer satisfaction/Ease of Use)

Work role: User Class	**UX Goal**	**UX Measure**	**Measuring Instrument**	**UX Metric**	**Baseline Level**	**Target level**	**Observed results**
Game Player: Introverted User, New user, looking for new activities and friends	Ease of Use (Flexibility and efficiency of use)	First Impression	Specific questions in a user survey	Average score on survey questions about app's ease of use		Agree	
Game Player: Casual User looking for a new app	Fast learning	Learnability	BT5: Create a group for some (or all) of your friends within the app	Average Time		5 minutes	
Event Manager: Experienced user, looking for people to come to their event, leader of an organization	Ease of Use	Learnability	BT3: Create an event	Average Time	5 minutes	3 minutes	2 minutes
All work roles:All User Classes	Low Error rate for successful completion (Help users plan tasks…)	Initial Performance	BT2: Complete your first event	Average number of errors	2 errors	< 2 errors	1 error
All work roles:All User Classes	Customer Satisfaction	Long-term user satisfaction	Specific questions in a user survey	Average score on survey questions about satisfaction		Agree	

All work roles:All User Clases	Low Error Rate (Help users know/learn what actions…)	Initial Performance	BT4: Add a friend using NFC	Average number of errors	2 errors	< 2 errors	0 errors
Game Player:Guild Members	Guild member satisfaction	User satisfaction	Specific questions in a user survey	Average score on survey questions about guild customizability and rewards		Agree	
Leader of Organization:Guild Manager	Fast Learning	Learnability	Time needed to delete an existing guild	Average Time		2 minutes	
Game Players: Users looking to go to an event	Reliability	Initial Performance	Location accuracy of GPS feature	Measured location vs. actual location		<200 ft	
All work roles:All User Classes	Ease of Use	Learnability	BT1: Time needed to add friend to your group	Average Time	2 minutes	1.5 minutes	1 minute

Benchmark Task 1

Task

Add a friend to your group

Rubric

The user is expected to interpret this as adding an existing friend to their current guild.

Task Script

From the home screen, the user should click the guild button. This should lead to their current guild screen, which features a “Add friend to guild” button. The user should press this button and be redirected to their friends list, from which they can select one or multiple friends to add to their current guild. They will do this by pressing a box next to the friend they want to add, which will select them and place a check mark in the box. Once the user is done selecting which friends they want to add, they will press the “Add these friends to your guild” button.

Benchmark Task 2

Task

Go to an event page

Rubric

The user is expected to interpret this as choosing “Go to Event”.

Task Script

From the home screen, swipe to the right to find the events page which lists all upcoming events in the area. From this screen, the user will be able to see the details for all upcoming events and is able to select any one to complete. After this step, the user should see a map page which will lead them to the location of the event.

Benchmark Task 3

Task

Add a new event

Rubric

The user is expected to interpret this as creating a new event.

Task Script

From the home screen, the user will swipe right to access the events list. From the events list, they should click on the “All Events” button in the top left corner. From this screen, the user should click on a “+” button to add a new event, which presents a pop-up form for them to enter information about the event. Once the user is done they will click the “Done” button at the bottom of the form.

Benchmark Task 4

Task

Add a new friend to your friends list

Rubric
The user is expected to interpret this as adding a friend through NFC.

Task Script
From the home screen, the user should click the “+” in the top right corner. This should lead to an NFC graphic that guides the user on how to add a friend through NFC. Once the user and their friend are on the same screen, they can use the NFC feature to add each other into their friends list. Once this is done, the new friend will be visible in the user's friends list.

Benchmark Task 5
Task
Create a group for some (or all) of your friends within the app

Rubric
The user is expected to interpret this as creating a guild consisting of some of their current friends.

Task Script
From the home screen, locate the “Create Guild” button and click on it. From this screen the user should be able to name their guild and pick from a selection of default banners. After this step, the user should see an “Invite friends” screen which leads them to a list of their current friends and a small “+” button to add them into the guild. This page also has a “Done” button at the bottom of the list that the user should select once they’ve added all of the desired friends.

Methods

Creation Process:

We first discussed prototyping tools with our UTA Coach, Devin. After getting some recommendations from him, we explored the options we had available and decided on using Marvel. We came to this conclusion by evaluating the features of each prototyping software (price, design tools, showcasing capabilities, etc.) and determining which would offer the best collaborative experience.

Once we had settled on using Marvel, we began to explore its features more in depth. We began by figuring out how to properly create and order pages. Once we had figured this out, we moved on to adding detail to the pages to accurately reflect the designs we had come up with in our wireframes. Adding on to this, we fleshed out the pages since we had more tools available to us on Marvel. After we were happy with how the pages looked, we gave the buttons functionality so that particular workflows would function in the prototype. Features that were not implemented in the prototype directed to a “feature in development” page that we created.

Showcase/Walkthrough:

In order to showcase our prototype, we came up with the idea to have one team member record themselves completing certain workflows on Marvel. The software has a feature that enables users to interact with a functioning version of the prototype, which is what we used. During the walkthrough recording, tasks that were being completed and various prototype features were verbally explained. Once finished, the audience would be aware of how the prototype worked and how to complete some workflows using it.

Prototype Evaluation:

For the creation of our prototype evaluation plan we held an online meeting through zoom, immediately after one of our TA meetings (In which we asked for clarification about the evaluation plan section). During the meeting we discussed the different types of rapid analytical evaluation methods that we could use for this section, and which would be the most efficient and effective based on our UX target table. We recognized that many of our UX measures and goals could be easily explained using usability heuristics, and that a heuristic evaluation would be the ideal method for addressing our design research questions as well as our UX goals.

Once it was decided that we would conduct a heuristic evaluation, we began gathering the specific heuristics that we would use. We did this by referencing our UX target table, the supplemental reading on Nielsen’s 10 heuristics, and the textbook. After that we created a questionnaire that used these heuristics and wrote our evaluation plan for what the evaluators would do before and immediately after the evaluation.

Pilot Test:

In order to conduct our pilot tests, we came up with a list of tasks to be completed and a script for the evaluator to ensure that the testing goes as planned. The tasks were pulled directly from our UX Target Table so that we could ensure that goals we wanted to meet were achievable. A questionnaire was then created to assess the tester's experience using our prototype. Questions included how clear the use of the app was, if the system status was visible, and if tasks were flexible and efficient. These questions were to be rated on a scale from one to five, one being poor and five being excellent. We decided these types of questions would give us the best insight into how users enjoyed the experience of using the app. Additionally, a section for suggestions on how to improve each process was provided. Once a user was chosen to test the prototype, this questionnaire and the actual evaluation were explained to them. This was necessary to ensure that the tester understood what they were to do and were okay with the practices.

Once the pilot test was to begin, the tester was given links to the Marvel testing feature and the questionnaire. A list of the tasks they were to complete was also provided. Our decision to do things this way was largely influenced by Marvel's built-in testing feature, which made the testing process more straightforward. The tester then began completing the tasks, with the evaluator taking notes on how well or how quickly they completed the tasks. After the test was completed, the tester filled out the questionnaire to provide feedback on the experience. This data, collected on Google Forms for easy collection and indexing, will be used to identify pain points of our users and improve the app.

Creation Process

Our prototype started out on paper, where we drew out each individual page that contained an important feature of our app. These early prototypes were ultralow fidelity, having little detail, no functionality, and no workflows mapped out. Some screens that had a consistent background were created as cutouts that could be overlaid on their common background so we did not have to redraw it for every unique screen.

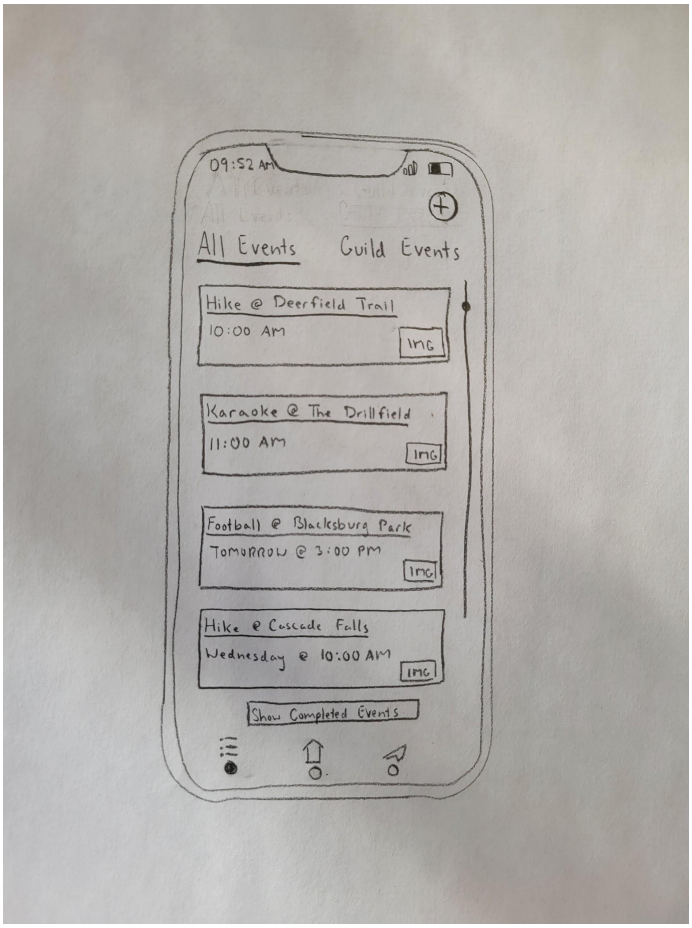

Figure 2.1 - An initial paper prototype page

The software that we decided to use to enhance our prototype was Marvel. It is a software that is designed for collaborative rapid prototyping and testing, which was perfect for our goals. This software was recommended to us by our UTA coach, Devin. We began the prototyping process by recreating our existing wireframe pages, then added additional pages that were necessary for proper navigation. None of the pages were super fleshed out at this stage, they were just the initial mockups of our wireframe recreation.

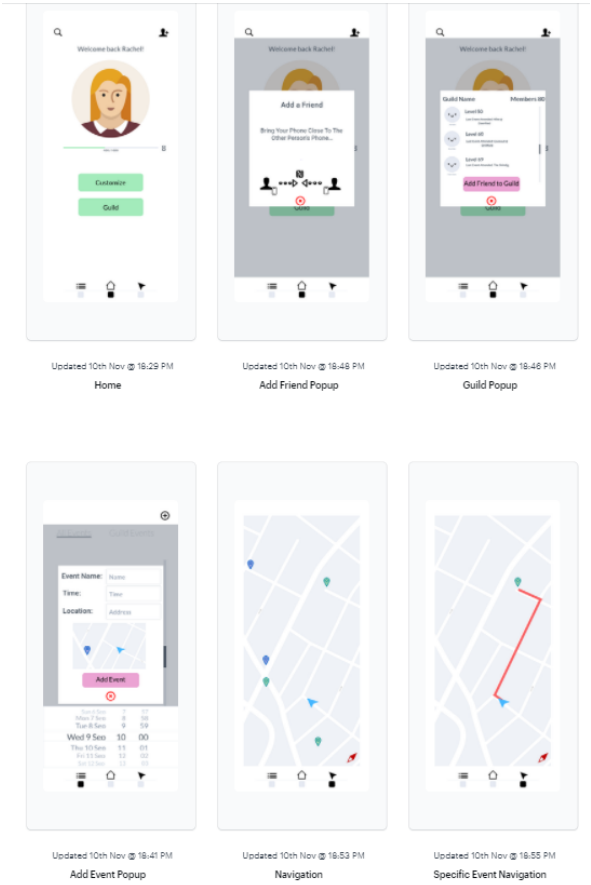

Figure 2.2 - Some initial Marvel prototype pages

The pages we added that were not included in our paper prototypes were often popups, which were created by blurring the page it was appearing over then creating a new box on the top layer to put the new content in. The information in these popups was then front and center, making it clear that it was what the user is meant to look at. A red “x” button was added to give the user the option to go back to the page behind the popup.

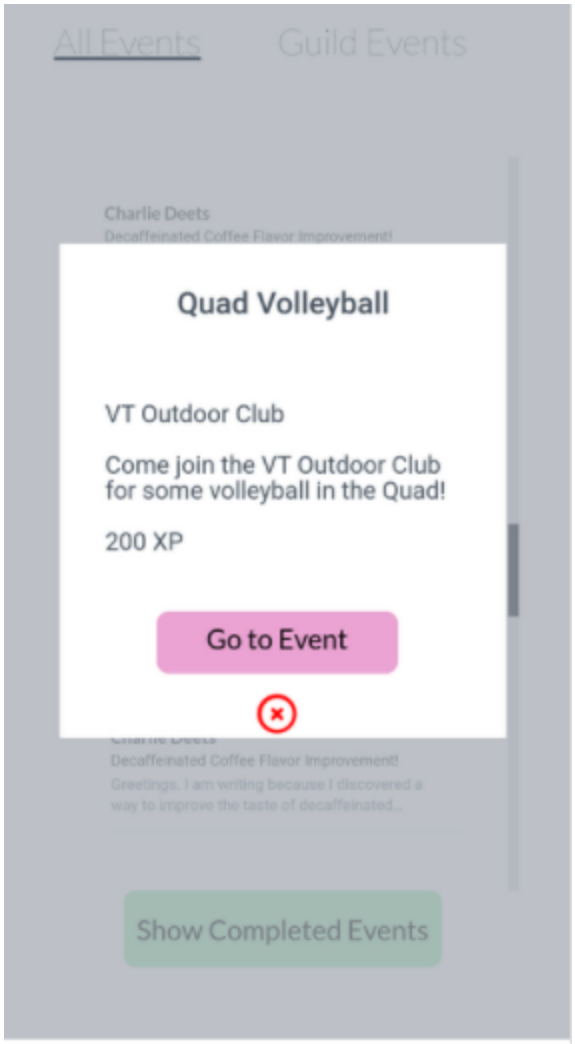

Figure 2.3 - An example popup page

Of course, the buttons had to be made functional. This was achieved by using Marvel's "hotspot" feature, which allows users to navigate to certain pages by clicking on a specified area of the screen. These hotspots (colored boxes seen below) were created on top of buttons that we wanted to use to navigate to a new page, effectively making them work as proper buttons.

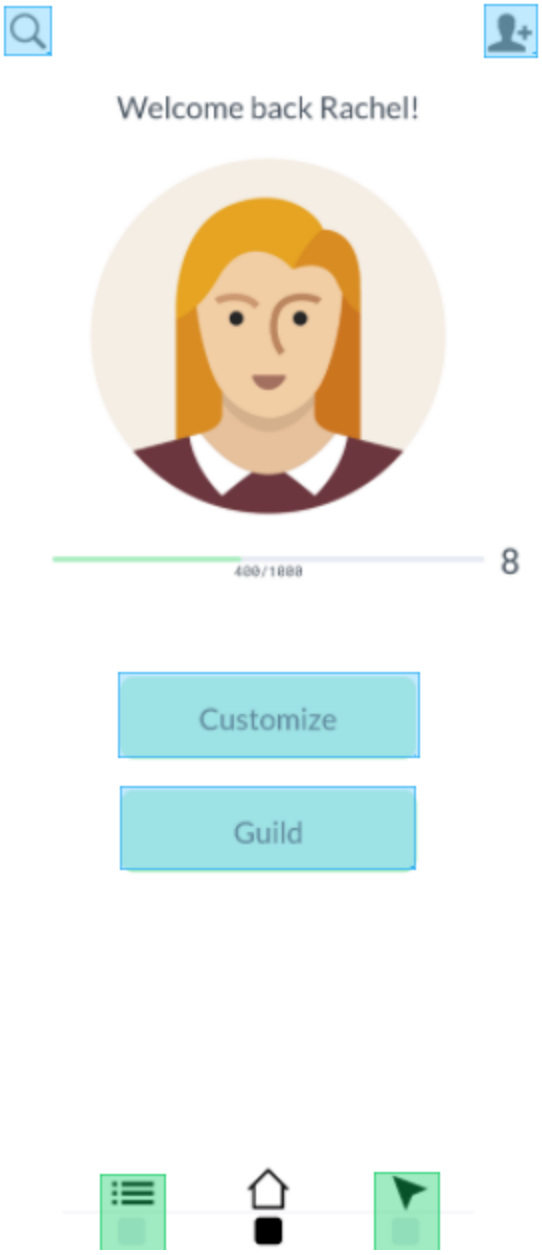

Figure 2.4 - An example of hotspotting

A “feature in development” page was created to link features that visually existed but were not implemented yet. After hotspotting and editing was done, we did a runthrough of the pages to check for proper functionality and design consistency.

Figure 2.5 - Under development page

Showcase and Walkthrough

Our showcase and walkthrough are available below at the following links. The showcase is a recording of a user completing potential workflows within the app. The prototype used in the video is also available below for complete use. Buttons that are usable will be highlighted when you click on the screen (as seen below), and features that are not implemented will direct you to a “feature not yet implemented” page, from which you can return to the home page and begin using the app again.

Provided here is a link to our showcase video: Showcase Video
Provided here is a link to the interactive prototype: Marvel Prototype

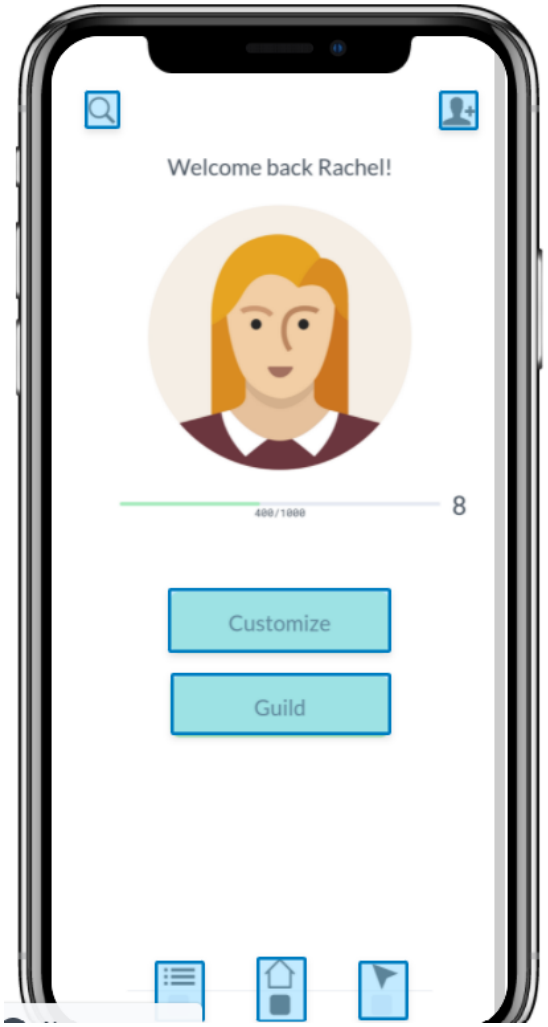

Figure 3.1- Usable buttons example

B. Prototype Evaluation Plan

Introduction

For our evaluation plan we decided to conduct a heuristic evaluation, using the benchmark tasks within our UX target table, along with an accompanying questionnaire. We referenced the reading from week 11 (Nielsen's 10 heuristics) as well as textbook chapter 13 in order to create our questionnaire, while also being sure to pick heuristics that matched our UX Measures from our target table.

A heuristic evaluation is a type of "UX Inspection", which is in turn a type or "Rapid Evaluation Method", which is a type of analytical evaluation. A heuristic evaluation is usually done by "novice evaluator(s)" (Ch. 13, page 472), and therefore does not involve real users, but rather a group of "typically three to five" (page 474) evaluators, who themselves are "trained practitioner(s), just with less experience than an expert" (page 472). We chose this evaluation method because we do not have time, nor access to participants to conduct an empirical evaluation. However, we do have access to other subject area experts in our fellow classmates.

Our questionnaire is designed so that each evaluator will have a chance to answer all heuristic-based questions for each task that they are asked to complete. The final question for each task section is always an open ended question to gather opinions and recommendations for the designers. After all evaluators have completed their evaluation for all of the benchmark tasks, they are asked to come together and merge their "problem lists". Using their recommendations, the evaluators then brainstorm solutions.

Proposed Evaluation Methods

(Script in Appendix A)

0:00 - 0:05 } Introduction, explain the evaluation to the evaluators including how to start and how to fill out the questionnaire.

0:05 - 0:30 } The users will have 4 tasks to complete, with approximately 7 minutes each. While the tasks themselves should take far less than 7 minutes to complete, the evaluators are also expected to fill out the corresponding questions on the questionnaire for each task.

0:30 - 0:35 } Introduce the next stage of the evaluation, where evaluators will brainstorm the different problems they encountered or recommended solutions/improvements, and will merge these recommendations together until they have just one recommendation for each problem.

0:35 - 0:55 } The actual brainstorming, where evaluators will merge their problem sets, discuss their proposed recommendations, and come up with one main recommendation for each problem.

0:55 - 1:00 } Debrief, conclusions, last minute comments

Materials
Camp: UX Evaluation -- The document presented to the evaluators which contains links to the Marvel prototype, the questionnaire and the heuristic evaluation report. Make sure that the evaluators have access to these documents by sharing it with them (Giving them permission within the google docs).

Questionnaire -- A Google Forms questionnaire that asks heuristic-based questions and allows for open ended feedback about problems/recommendations. (Evaluators need access to this doc)

Heuristic Evaluation Report -- A report to be completed after all of the evaluators have completed their tasks. This report follows the format displayed within textbook chapter 13. (Evaluators need access to this doc. If you're planning multiple sessions with different groups, be sure to have multiple copies of this document so each session starts with a blank report)

Pilot Test and Timings

The UX goals that we decided to focus on were ones that were able to be completed in our prototype. These were adding a friend to a group, going to an event page, adding a new event, and adding a new friend to the friends list. All of these tasks were critical features of the app that were implemented in our prototype, so learning more about how users interacted with these features is important. The pilot test was given to group member Jordan's roommate, Sam, who falls under our target audience. The test took around 30 minutes to complete between the explanation, evaluation, and questionnaire. The results gathered were mixed compared to our expected target levels. Adding a friend to a group, adding a friend to the friends list, and completing an event were done much quicker than expected, but creating an event took longer than expected. Feedback on these tasks also varied, with the later tasks getting better feedback than the earlier ones. This could be attributed to needing time to learn the system, so future tests should change the order of task completion. The scores given to each aspect of the tasks as well as the recommended feedback will be discussed by the team to see what changes we can make to enhance the user experience and make our app better to use.

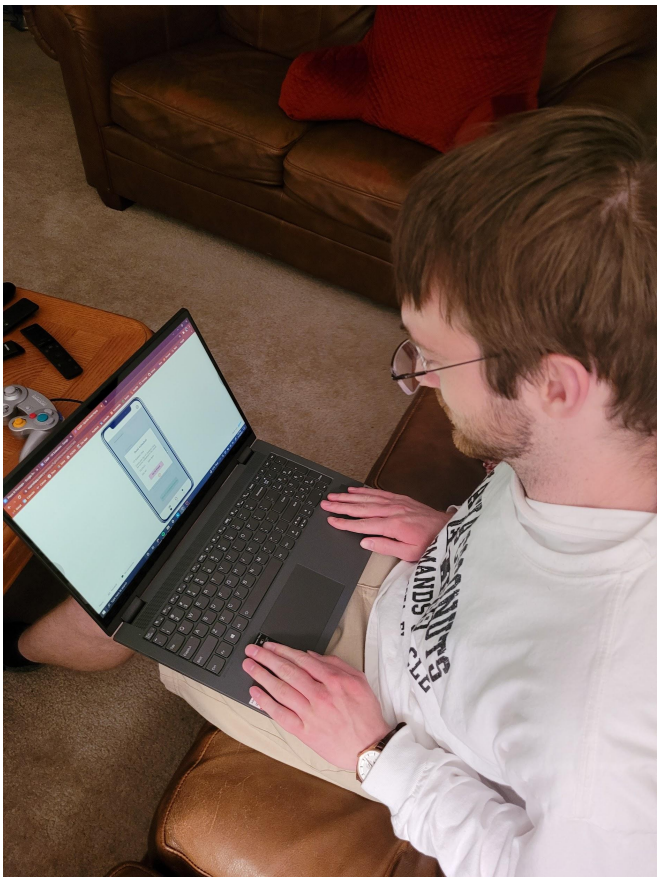

Figure 4.1- Pilot testing

References

Appendix A - Notes

Prototyping Strategy

1. How broad and/or deep will our prototype need to be to address these questions? Why?
   Our prototype would need to be at least medium fidelity in order to explore all of our design questions, and would probably be T-shaped, with more than one feature being explored in detail. This is because some of our questions would require the user to explore multiple steps/pages within a key design element. For example, in order to judge how easy it is for a user to add an event, our prototype would have to explore this entire task, which includes multiple pages within the “events” page.
2. What features/task flows will need to actually be implemented? Why?
   Event creation and attending workflows need to actually be implemented by our prototype because they are the core task flows of CAMP and were identified as design requirements in Phase I.
3. How interactive will our prototype need to be? Why?
   Our prototype will need to be quite interactive. On the surface level, there is not much to the app. Most of the main features we added to the app require a pretty in depth level of interaction from the user and from other users to each other. So, in order to give an accurately represented prototype, it must have these abilities.
4. What method will you use to develop your prototype? Are any of the special methods we covered relevant to your project? Why?
   We would probably start our prototype by doing rapid ultra low fidelity prototypes to explore everyone's current ideas, before coming up with more refined versions. We could then move on to developing low-fidelity prototypes using the “paper prototype” model described in class. Finally, we would create a medium fidelity prototype using an online prototyping tool.
5. What tools will we use to develop and share our prototype? Why?
   We plan on using Marvel and/or Figma. Using these websites, we will be able to create medium-fidelity prototypes to showcase various features in the app.
6. What are some things we will definitely not implement in order to save resources and time?
   In order to save resources and time, we will not implement GPS functionality or any search functionality, but the pages for these features will still exist. We will also not implement the NFC feature used to add players to your guild. These are useful features for a final product but unnecessary to establish the foundation of the app for prototyping.

Our Heuristics

1. Visibility of System Status
2. Match Between System and the real world (Info appears in a logical order, no jargon)
3. User Control and Freedom
4. Consistency and standards
5. Flexibility and Efficiency of Use
6. Aesthetic and Minimalist Design
7. Help users plan tasks by providing a clear model of how users should view the system in terms of tasks
8. Help users know/learn what actions are needed to carry out intentions

Script for Evaluation (To be used in Pilot test and in class)

Introduction (0:00 - 0:05)
“Welcome evaluators, and thank you for taking part in this UX evaluation. In front of you you should see a Google Doc that outlines our plan for the next hour and contains a link for using our prototype. Below the prototype link you should see a separate link for a Google Form, which will serve as a questionnaire. Please click on both of these links and open them in new tabs, returning the page they were originally opened from. Below the questionnaire link you should see 4 benchmark tasks. These tasks are to be completed one by one, in the order you see them. The questions on the questionnaire follow this order. You will be using the prototype to complete these tasks. After each task you will complete the corresponding questions on the survey. If you have any questions, please let us know now.

Evaluators are completing tasks and questionnaire (0:05 - 0:30)
Answer questions if they arise.

Introduce Brainstorming session (0:30 - 0:35)
“Now that everyone has completed the tasks and the supporting questionnaire, we will begin a brainstorming session between evaluators. Please go through each benchmark task as a group, discussing your answers to the questions for each task, and what problems you encountered, along with what recommendations you have. As a group, please merge your different recommendations for each specific problem into one concise recommendation.
You’ll be using the Heuristic Evaluation Report form to do this.

Evaluators are brainstorming (0:35 - 0:55)
Answer questions if they arise.

Conclusion (0:55 - 1:00)
“Thank you all for your participation in this evaluation. If you have any questions about the evaluation, please let us know… yada yada yada”

CAMP: UX Evaluation

Open this link in a new tab on your browser to access the prototype: Marvel Prototype

Open this link in a new tab on your browser to access the questionnaire: CAMP - UX Evaluation - Google Forms

Benchmark Task 1
Add a friend to your group

Benchmark Task 2
Go to an event page

Benchmark Task 3
Add a new event

Benchmark Task 4
Add a new friend to your friends list

As a group, collaborate on the heuristic evaluation report: Heuristic Evaluation Report