

Knock

Low-fi Prototyping & Pilot Usability Testing

Kerry W. Anna W. and Tatiana G.

Mission Statement/Value Proposition

Find Friends Everywhere

Problem/Solution Overview

Travelers face two major pain points while traveling: they do not know people in the area, and they struggle to readjust back to normal life upon return. Our application helps people locate friends and potential new friends at their travel destination. This newly formed travel community will serve as points of contact upon returning home, allowing travelers to connect to the trip they just concluded.

Sketches

Concept Sketches

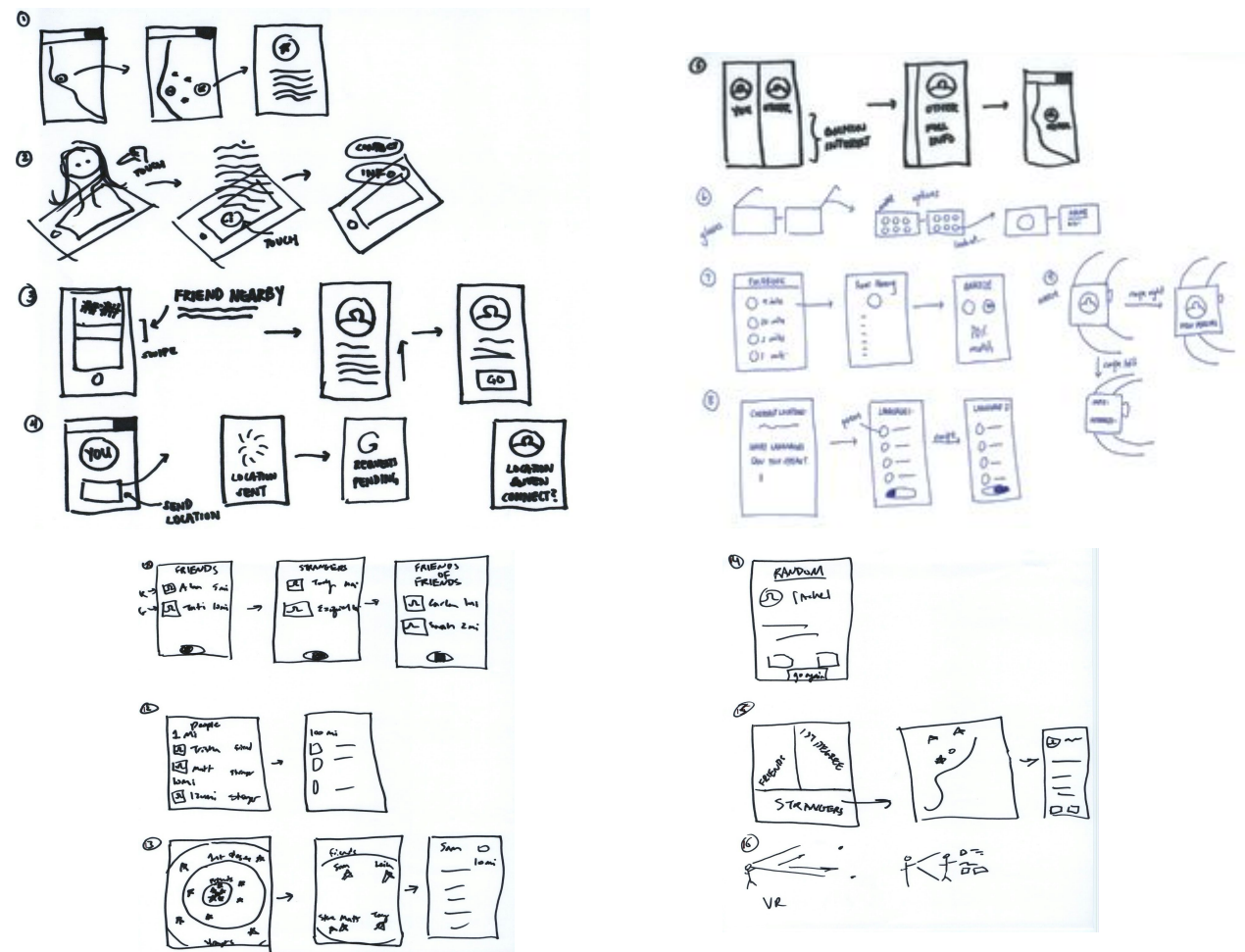


Figure 1. Concept Sketches for Finding People

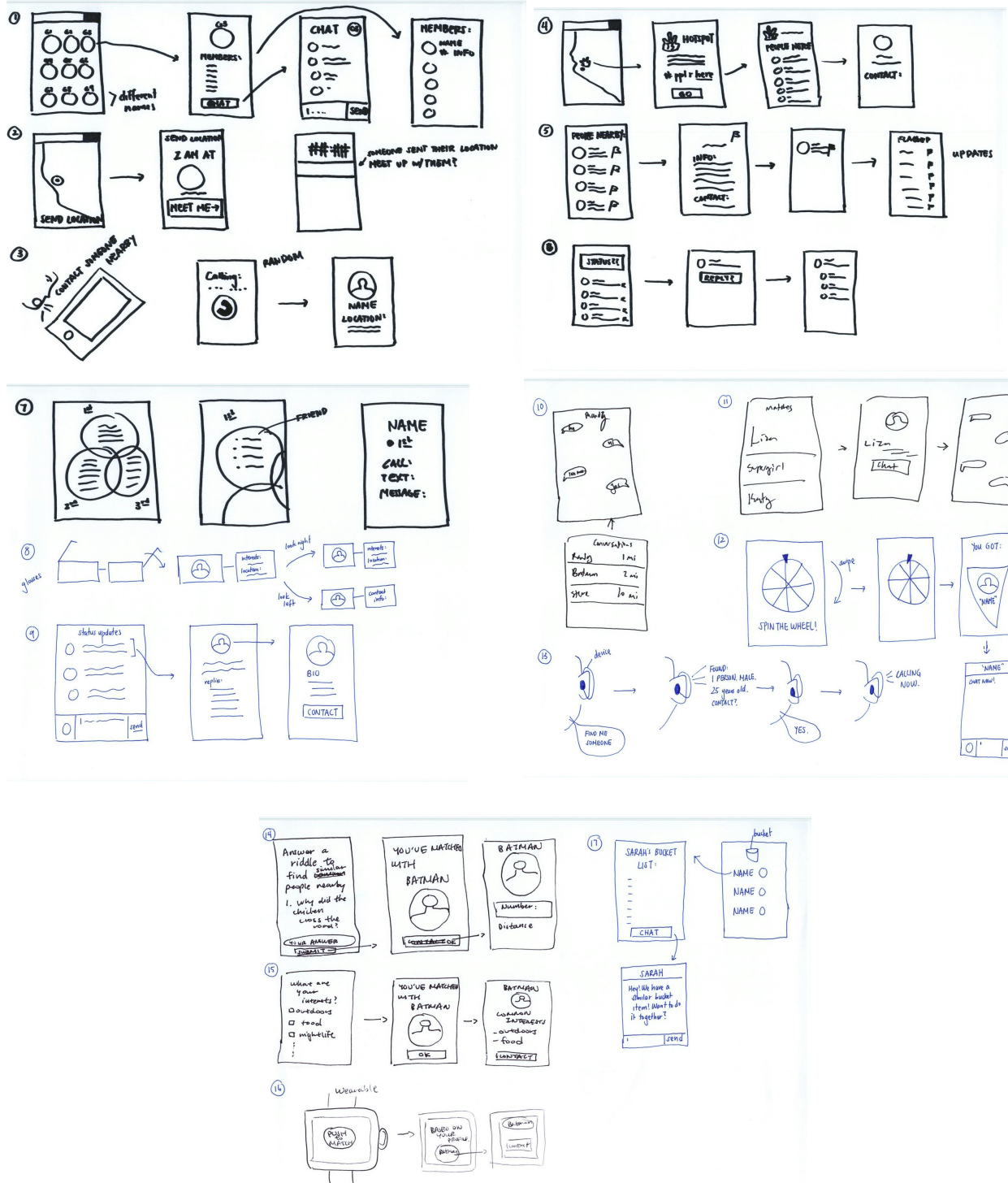


Figure 2. Concept Sketches for Contacting People

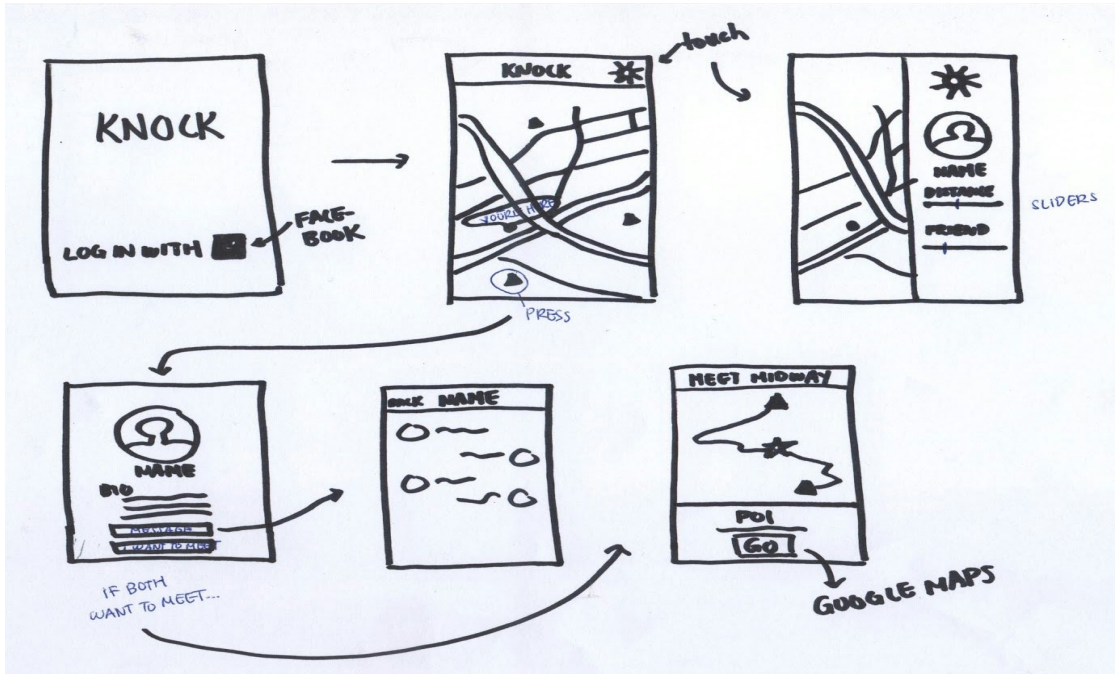


Figure 4. Map Interface

Our second interface design (see Figure 5) takes information from an interest survey and curates a list of profiles for users to find existing or new friends. If two users agree to connect, they are able to access each other's phone numbers for contact purposes. In addition, we provide them with a convenient meetup point generated from mutual interests.

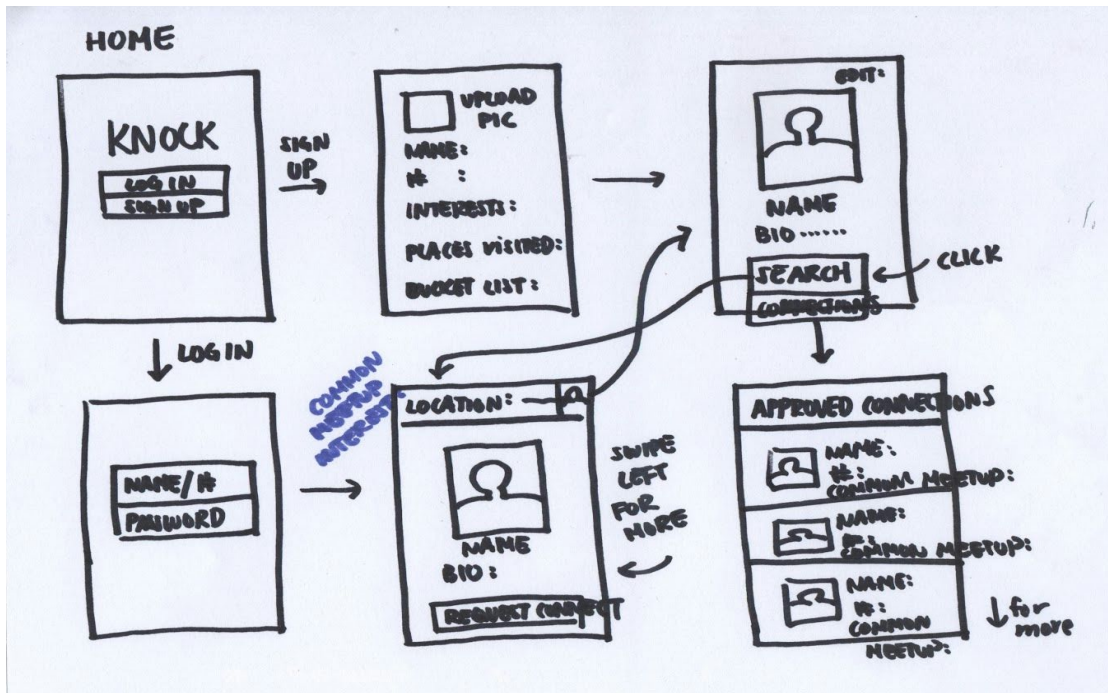


Figure 5. Profile Interface

Selected Interface Design
Task Storyboards

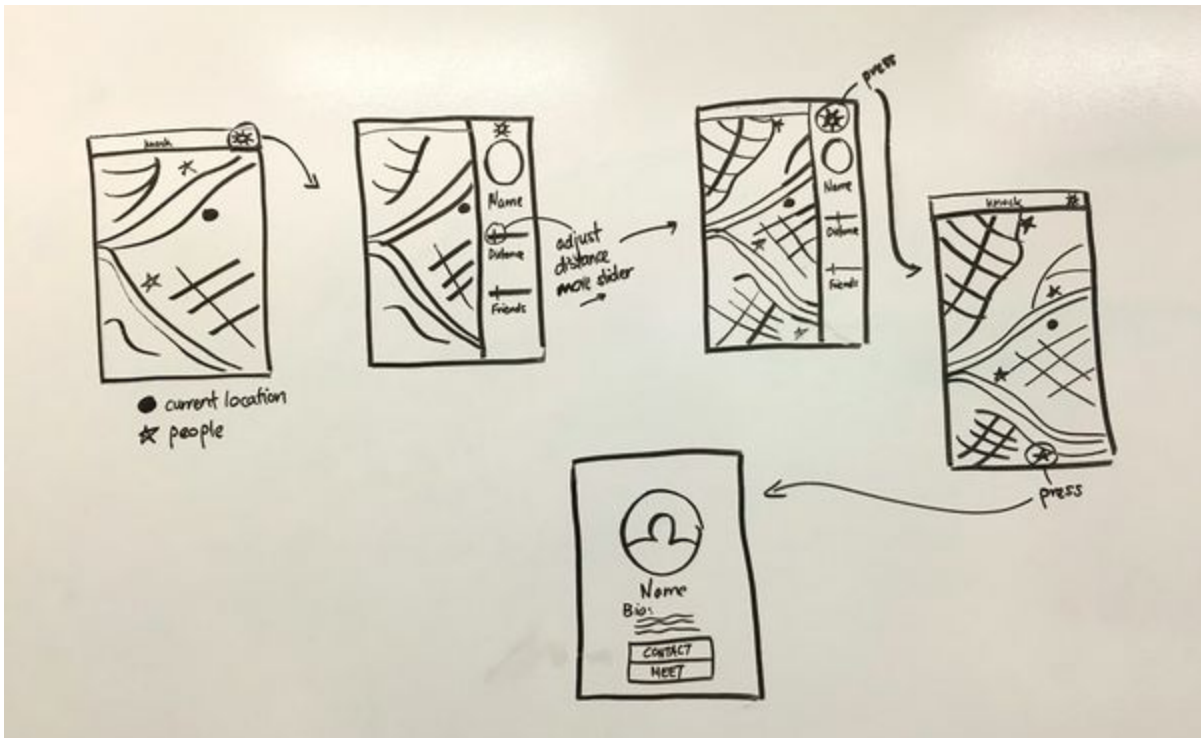


Figure 6. Storyboard for Task 1: Find a person that is within a 20 mile radius

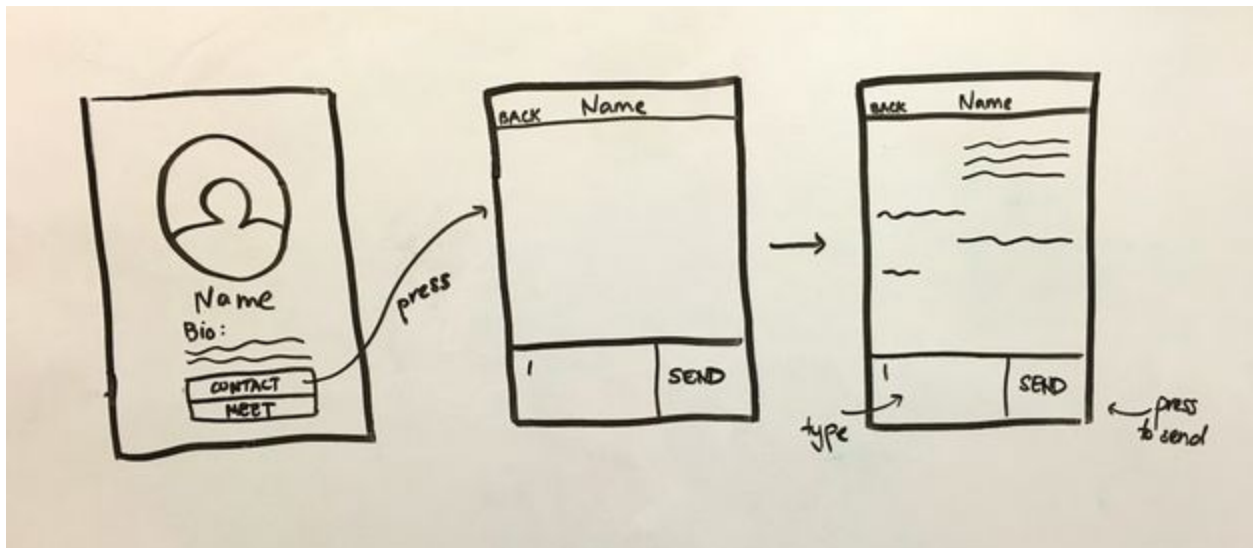


Figure 7. Storyboard for Task 2: Chat with a person

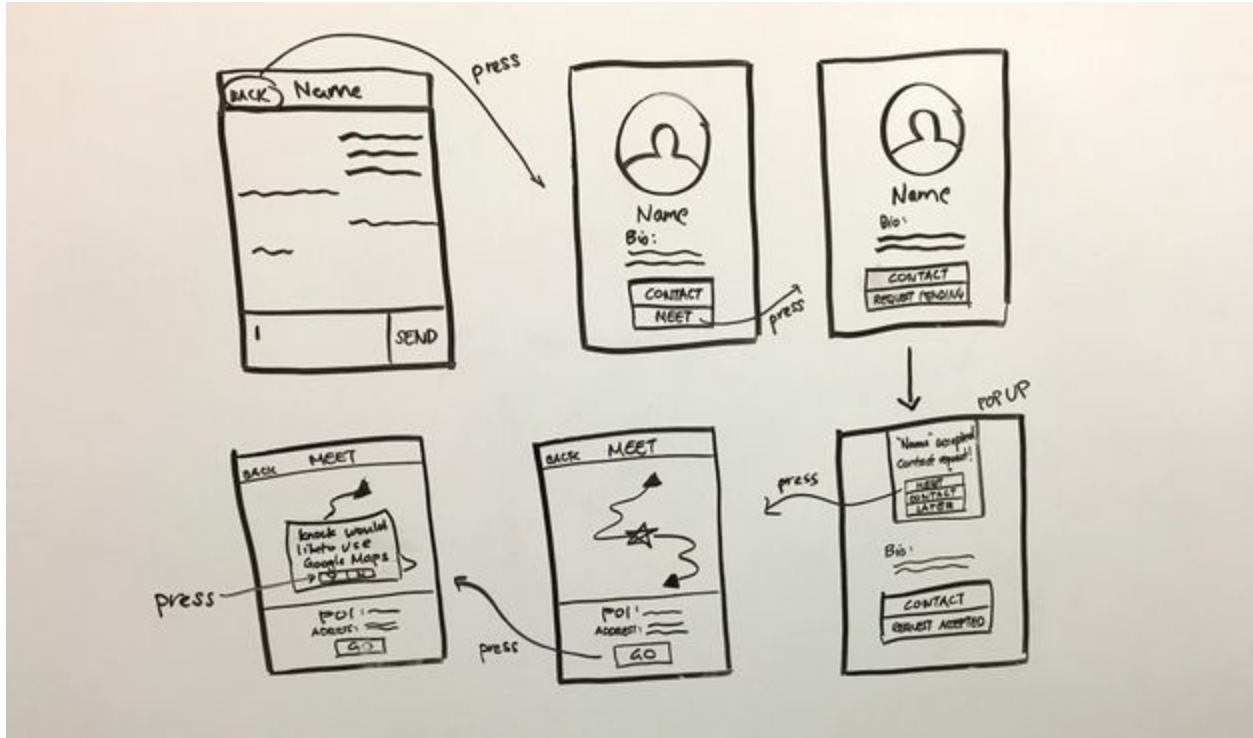


Figure 8. Storyboard for Task 3: Meet up with a person

Reasoning for the Selection

Ultimately, we chose our design with the map interface (see Figure 4) for the following reasons:

- Our past interviews revealed that users are visually oriented, and a map is superior to a list when representing distance.
- Seeing people icons nearby could incentivize users to reach out to others.
- The sliders give the users more control over who they meet and presents a simple and intuitive interface. Previous feedback showed that first and second degree connections are too binary; the sliders are more flexible.
- Leveraging pre-existing connections on Facebook for login and finding friends creates trust and also provides a more streamlined sign-up process.
- We preferred handling the messaging in-app because previous prototypes caused anxiety and stress for users who felt awkward calling or texting people out of the blue.
- Choosing the middle point of interest (POI) for users provides spontaneous opportunity to explore someplace new and help tourists who aren't familiar with the area.

Prototype description

Our prototype was made with white cardstock, post-its, sticky arrows, sharpie, and glue. We created a background piece that mimics the shape of an iPhone on which to center our prototype screens.

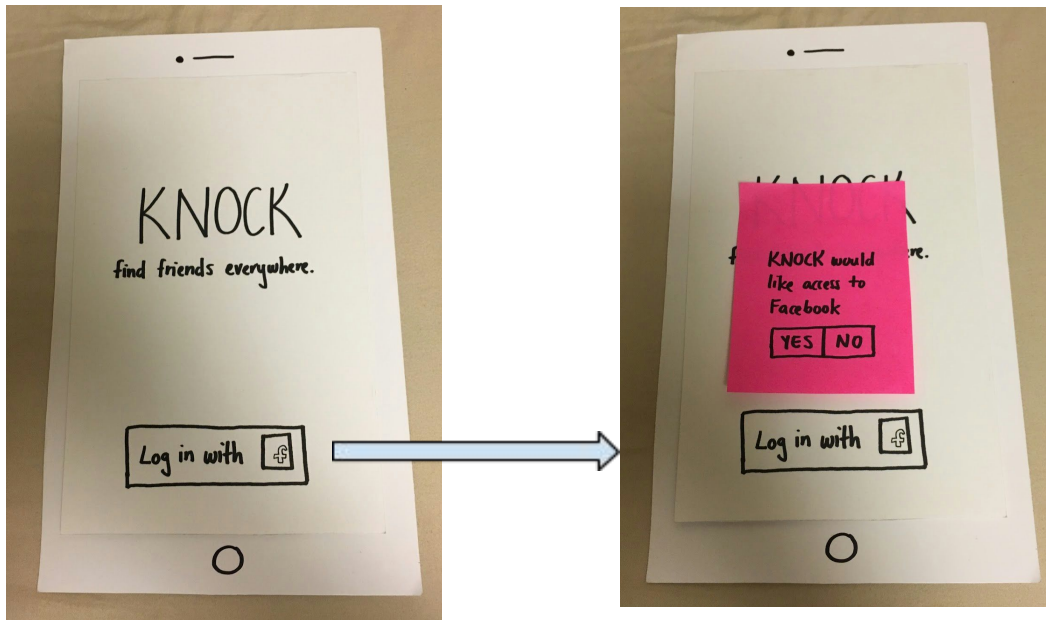


Figure 9. Sign-In Screen (Prototype)

The sign-in page is simple and offers a one-click sign-in with Facebook so that we can leverage their existing connections and streamline the application's page flow (see Figure 9).

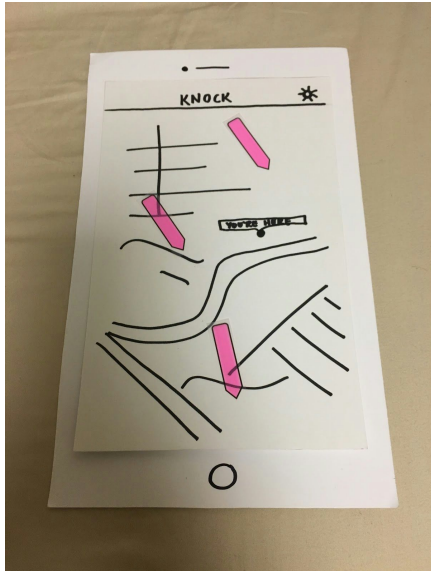


Figure 10. Map Interface (Prototype)

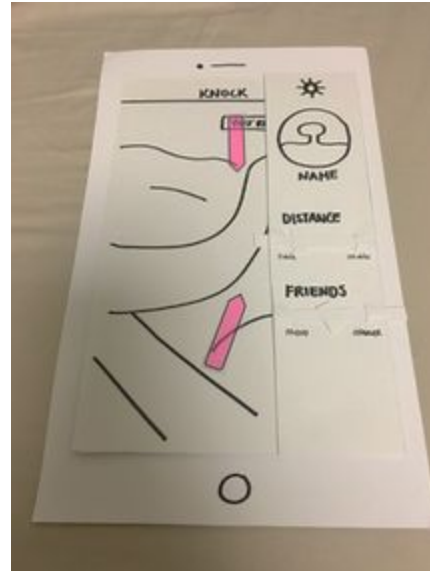


Figure 11. Slide-Out Menu (Prototype)

The map view displays the user's location and icons that represent people nearby (see Figure 10). Clicking the settings button on the top right causes the slide-out menu to slide into view (see Figure 11). The menu gives the user access to their profile page by clicking their icon image, and also allows the user to filter the people they see on the map by distance and level of friendship.



Figure 12. User's Profile Page (Prototype)

The user's profile page shows their personal bio and their pending request to nearby users (see Figure 12).



Figure 13. Nearby Person's Profile Page (Prototype)

Clicking on a person's icon (represented by the arrow stickies) on the map view (see Figure 10) brings the user to the a person's profile page. The user can then choose to message the user or declare their intention to meet up (see Figure 13).



Figure 14. “Waiting for Confirmation” Icon (Prototype)

Clicking on “I want to meet” changes the button to an icon that informs the user that the other user must accept the invitation to meet up. This ensures that we only create mutually consensual and safe interactions (see Figure 14).



Figure 15. Meetup Confirmation Popup (Prototype)

Once the other user accepts the request to meet up, we present a pop-up notification that gives the user the option to meet, contact, or save for later (see Figure 15).

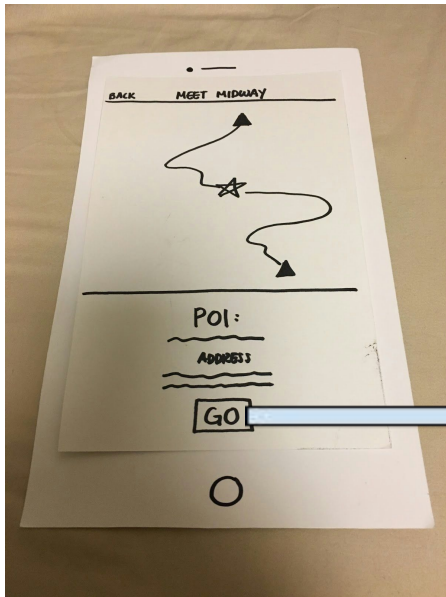


Figure 16. Point of Interest Screen (Prototype)

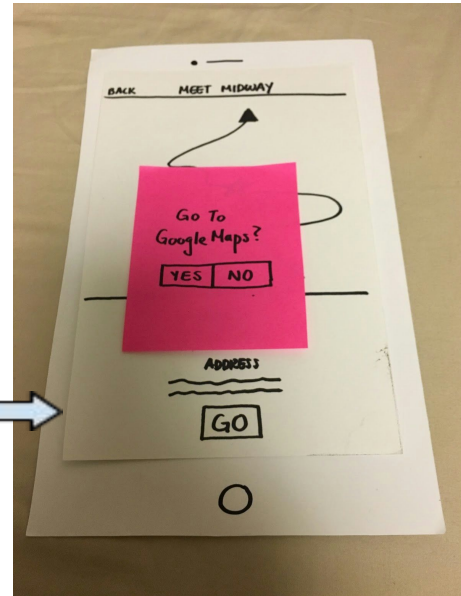


Figure 17. Google Maps Request (Prototype)

If the user chooses to accept the request to meet up, a new page appears that displays a POI that is between both people's locations (see Figure 16). Once the user presses "Go," he/she is redirected to Google Maps for directions (see Figure 17).

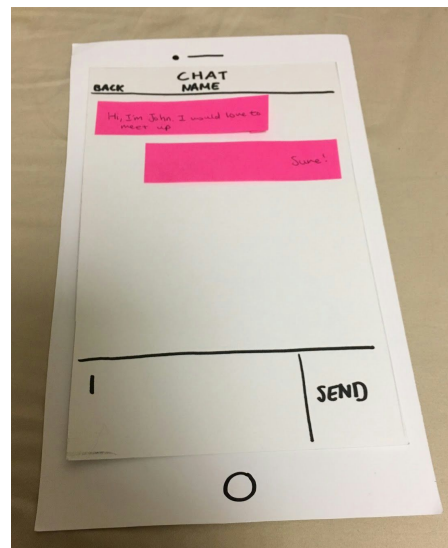


Figure 18. Chat Screen (Prototype)

Whenever one user chooses to message another user, the in-app messaging screen appears (see Figure 18). The users can then chat through the app and coordinate their own meet-up if they wish.

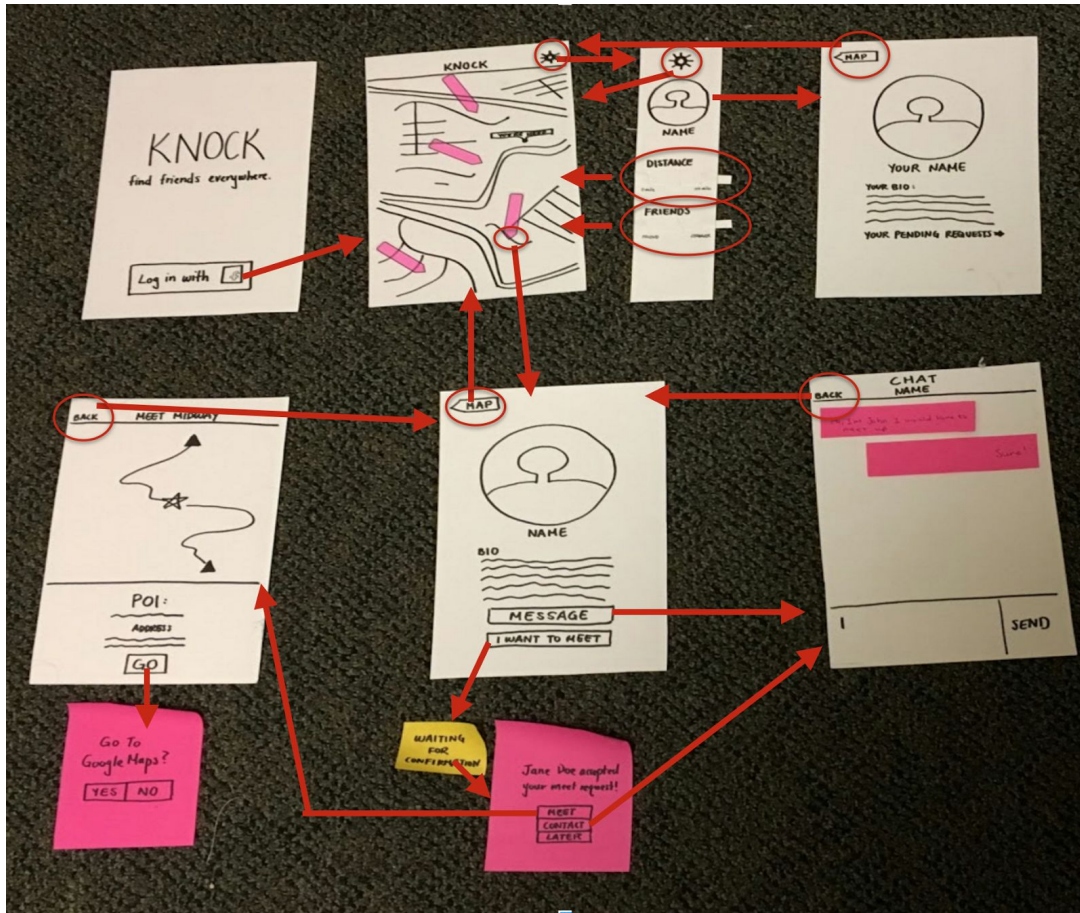


Figure 19. Entire Prototype System

Method

Environment

Our participants were recruited and interviewed at Cafe Venetia at the Palo Alto Caltrain Station the afternoon of October 20, 2015. We believed recruiting participants at a travel hub would allow us to talk to our user population. We interviewed at a table in a back corner of the cafe, which provided privacy and shield us a little from the live piano player performing that afternoon.

Participants

Kerry went around the cafe looking for participants who (1) had time to talk (2) had traveled abroad before (3) were racially diverse and (4) were gender diverse. Participants were not offered compensation for their time, as we believed our interview could be a welcome distraction for individuals as they waited for trains. We succeeded in attaining a diverse group of interviewees. Participant 1 is a woman in her twenties who is from Spain and is currently on a 3 month vacation abroad. It was especially insightful to see how she interacted with the prototype, as a significant proportion of our user base would be international users. Participant 2 is an African American man in his forties. His job as a VTA bus driver puts him in constant travel. Participant 3 is an Indian man in his thirties who is an international student in the Palo Alto area.

Procedure

For all experiments, we used our paper prototype that is made out of cardstock and therefore can withstand multiple experiments. The background sheet in the shape of an iPhone was placed in front of the participant so that all interactions were centered. The different prototype screens were stacked on top of each other as the interviewee interacted with the prototype.

Due to scheduling constraints, 2 out of our 3 group members conducted the interviews. Tatiana acted as the introducer and notetaker, while Kerry acted as the computer and demonstrator. Participants were also asked if they could be voice recorded to allow for more in-depth analysis of interviews later. All participants agreed.

Tasks

Three tasks with varying levels of difficulty and depth of interaction were chosen for our prototyping.

1. Identify a person to connect with within a 20 mile radius of the interviewee's current location. Task 1 had moderate complexity but a simple objective. This took advantage of our map interface and slide-out menu and we wished to test their usability.
2. Have a chat session with a person through the app. We wished to see if users could identify how to enter a chat and if an in-app messaging system was a convenient method of communication. Providing a solid communication method is absolutely vital for our app to connect people. This led us to include this task, although it is the most simple.
3. Meet up with a person through the application at a pre-chosen POI that is close as equidistant between them as possible. Task 3 is the most complex task because it is the most non-intuitive. We wished to test whether users would understand and accept that the location was chosen for them and then travel there using map directions given through Google Maps.

Test Measures

When conducting our tests we tried to evaluate how users who have never seen the product or heard about the product concept before interacted with Knock. Our goal is to have a product that is 100% intuitive and requires as little text, explanation, and trial-and-error as possible. To assess the level of completion of this goal, we used the following criteria:

- **Contradictions in behavior** and anything the interviewee did differently than what we thought was the "correct" movement. This helped us see where the user's attention was drawn and replace our intuitions with theirs.
- **Where they got stuck and for how long** was another important indicator. We want the app to be as smooth and frictionless as possible. If the person had to stop, that means they had to think about what to do, which is a sign of an incorrect assumption about the location and flow of the product. The less time a person stopped to think, the better.
- **Points of confusion** where the interviewee looked up from the app to ask one of us for guidance. If our app was perfect, they'd do everything without having to look at us, looking for hints or clues.

Results:

Participant 1:

Participant 1 is from Spain and English is not her native language. For the first task, she hesitated a little before pressing one of the pink arrows on the map screen (see Figure 10). After she saw the subsequent profile page, she automatically chose to contact the individual. She did not see the “Settings” icon on the map interface allowing her to change the distance on the map. The interviewer needed to restate the first task for the interviewee to return to the map interface and complete it. The second task went smoothly, as the interviewee very naturally began chatting with the “computer”. The conversation ended in the resolution for her to send a meet request. However, she struggled to identify how to get back to the profile page to make this request. The language barrier was difficult here. For the third task, when she chose “I want to meet” and the “Waiting for confirmation” flag went up, she did not like the wait. In addition, she did not understand that a POI was chosen for her for the meetup. She instead chose to enter her own address by pressing “Address”, saying “I want to meet at a coffee shop”, and then clicking “Go” (see Figure 16).

Participant 2:

Participant 2 seemed the most comfortable with the prototype. Although there was some confusion over the pink arrows, he easily navigated through the rest of the first task. He was very interested in seeing how the interface changed with the slider bars in the slide-out menu. One problem was that he wanted to tap the map screen while the settings tab was still open. Our UI could not handle that request. He very comfortably talked to the “computer” during Task 2. For the third task, an unforeseen complication occurred when he asked “What if I want to meet somewhere else?” Like Participant 2, he did not understand that the “I want to meet” request automatically generates a POI to meet that is midway between him and his new contact. He was a bit paranoid about being led to a foreign place.

Participant 3:

Participant 3 made sure to assert in the beginning that he had a Windows phone, and was unfamiliar with iOS. During the process of the first task, he was not sure what the pink arrows on the map interface meant, and chose to quickly press on all of them. This confusion frustrated him, but when he saw the profile page, he smiled and looked relieved--he recognized what the profile page meant. During Task 2, he was confused as to whether or not he was talking to his friend or a stranger. He said that he liked that he could meet people other than his friends. Like Participant 1, he struggled to get back to the contact page after the chat. He insisted on clicking the name of his chat buddy at the top of the screen, saying “This is how it is like on a Windows phone”. When he returned to the profile page, he chose “I want to meet” to complete the third task. He patiently waited for the confirmation, and when the other person returned his confirmation, he looked at “Later” and understood it would put off meeting the person, laughingly saying, “If I chose this, our interview would be over.” He chose “Meet” instead, and was able to finish the third task very easily.

Discussion

Overall, we found that our user interface is very logical. Our simple core value of finding people while abroad makes its associated tasks of identifying, contacting, and then meeting someone very

intuitive. Our interviewees understood the map interface, in-app messaging system, and user profiles. Most importantly, they enjoyed the end goal of meeting someone.

We found that travelers abroad experience more stress than individuals at home, and therefore are more likely to be frustrated by unfamiliar and complicated events. Participant 1 in particular provided valuable insights about which little missing details we need to fix. Little annoyances become huge frustrations during travel. All of our interviewees were initially confused about the pink arrows on our map interface. Two of them did not see the “Settings” button at the top of the map screen. Two of them were unable to smoothly return to the profile page after a chat.

The single biggest point of improvement that we will make is how we facilitate meet-ups for users. We had hypothesized that picking a POI for the users would be more convenient and appeal to a traveler’s sense of adventure and spontaneity. However, we realized that we took away too much control from the user. If we can give them back some control, we can enhance trust and a sense of safety. We will be adding the option of choosing the meetup location in our next prototype.

Finally, we learned that because our app is meant to facilitate meetups while abroad, we need to be better prepared to handle language and cultural barriers for users.

Our experiment did not allow us to test the process that users would take to actually meet up with a person through directions provided by Google Maps. In addition, it is unclear whether or not the frustration regarding the friend symbols on the map screen is truly as severe as our interviewees thought they were; on an actual application, a simple tap on a symbol would almost instantaneously reveal what it leads to. Lastly, we were not able to test the usefulness of push notifications in signaling a new message or meetup confirmation.

APPENDIX
User Testing Heuristics

Problem	Location	Task number	Severity	Possible Fix
Waiting for confirmation from friend is awkward	Contact profile screen	3	3	Notify when confirms, not when waiting
It's not clear that going back can lead to a map	Chat screen	3	4	Link directly to map from chat window
Tapped address and expected to be able to choose where we meet	Point of Interest Meetup screen	3	3	Allow for both location destination travel input and automatic
Arrows not clear	Map screen	1	4	Initially show all people, with different levels of icons for each relation (pictures for friends, picture outline for strangers)
Did not expect slide-out menu to pop out	Map screen	1	0	Surprising but not in a bad way
Tapped friend without closing slide-out menu first	Slide-out menu and map	1	1	When map is tapped, close the slide-out menu
Did not understand how to send a meet request	Chat screen	3	3	Add a meet button directly on the chat screen

Severity Rating

- 0 = I don't agree that this is a usability problem at all
- 1 = Cosmetic problem only: need not be fixed unless extra time is available on project
- 2 = Minor usability problem: fixing this should be given low priority
- 3 = Major usability problem: important to fix, so should be given high priority
- 4 = Usability catastrophe: imperative to fix this before product can be release

Test Script

Introduction

Thank you for taking the time to use our demo. We are asking you to test our product, a phone application called Knock, that aims to connect people while traveling abroad. In this demo, we will ask you to do a series of three tasks. Before we get started, please sign this consent form.

Background Information

We would like to gather a little information about you. What is your occupation? How frequently do you travel? Do you own a mobile phone?

Directions

Our paper prototype is a very early draft of what our mobile application will potentially look like. Please interact with our paper prototype as if you were interacting with an actual application as a traveler. One of us will be acting like a computer as you work through our prototype. As our user, all of your actions are correct and helpful. Please think out loud as you are going through the demo. One of our team members, Kerry, will demonstrate this for you now.

Demo

I will now demonstrate for you how you would interact with our paper prototype.

Take the paper background that mimics an iPhone and set it on the table in front of me. Put the home screen page on top of the background.

This is the home page. Hmm, looks like I have to click the button on the bottom to sign in.

Press the "Log in with Facebook" button at the bottom of the screen. Place the pink post-it that represents the pop-up on top of the screen.

Oh, this application wants to access my Facebook. Okay, that's fine.

Press "Yes." Put the map screen on the background.

Okay, I'm at a map now. I can now find my friends.

Task #1

The main goal of our application is for you to find people abroad. Please show us how you would find people that are within a 20 mile radius of you.

Task #2

After finding a people who are near you, our application allows you to contact them. Please show us how you would contact a person of your choosing.

Task #3

Our last feature allows you to meet up with a person of your choosing while abroad at a location chosen for you. Please show us how you would use this feature to meet up with someone.

Raw Notes

Participant 1:

Interview took place in Caltrain coffee shop

Woman, 20-30

- Owns a smartphone
- Traveling in the Bay Area, originally from Spain
- She very easily completed the first step of logging in, and got to the screen containing the map of friends.

Task 1

- Had to really walk her through the fact that the arrows corresponded to friends
- Could tell she didn't understand everything we were saying

Task 2

- Easily found contact button and pressed it
- Conversing with computer was very intuitive for her
- Exasperated when the "Waiting for confirmation" flag went up--she wanted no wait time

Task 3

- Was startled when she saw she had to wait for confirmation from the friend
- Confused when asked to navigate back to the map
- Confusion about navigating back to the map so strong that one interviewer had to explain it in Spanish
- Didn't occur to her that she could navigate to a destination through the app

Participant 2

Interview took place in Caltrain coffee shop

Man, 40-50

- Drives a VTA bus
- Doesn't travel much, sometimes on weekends
- Has an android

Task 1

- Didn't understand what the arrows represented
- Knew that he was looking at a map
- Very comfortable with this stage
- Tapped settings to see slider
- Didn't expect to see slider pop out and laughed
- Tapped friend without realizing it wouldn't work unless the slider was closed

Task 2

- Found message button easily
- Conversed well

Task 3

- He didn't understand what point of interest meant

- Didn't trust being lead to somewhere new
- Paranoia disappeared when saw that the app used google maps

Participant 3

Interview took place in Caltrain coffee shop

Male, 30-40

- Student, non-native
- Owns a windows phone
- Showed us how windows phone worked and used it to explain his tapping decisions

Task 1

- Didn't understand what the arrows did

Task 2

- Wasn't sure if he was talking to a friend or a friend of a friend
- Comfortable sending messages
- Was completely lost when he had to exit the screen and wasn't even sure why he had to leave the message view

Task 3

- Tapped the friend's name to return back to profile page
- Didn't realize that he could go back to the map
- Knew well that clicking "later" would end the conversation, so clicked the correct button instead

Consent Form

The Knock application is being produced as part of the coursework for Computer Science course CS 147 at Stanford University. Participants in experimental evaluation of the application provide data that is used to evaluate and modify the interface of KnockKnock. Data will be collected by interview, observation and questionnaire.

Participation in this experiment is voluntary. Participants may withdraw themselves and their data at any time without fear of consequences. Concerns about the experiment may be discussed with the researchers Kerry Wang, Tatiana Grossman, and Anna Wang, or with Professor James Landay, the instructor of CS 147:

James A. Landay
CS Department
Stanford University
650-498-8215
landay at cs.stanford.edu

Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the student researchers and their supervisors/teaching staff.

I hereby acknowledge that I have been given an opportunity to ask questions about the nature of the experiment and my participation in it. I give my consent to have data collected on my behavior and opinions in relation to the KnockKnock experiment. I also give permission for images/video of me using the application to be used in presentations or publications as long as I am not personally identifiable in the images/video. I understand I may withdraw my permission at any time

Name _____

Participant Number _____

Date _____

Signature _____

Witness name _____

Witness signature _____