KNOCK

Find friends everywhere

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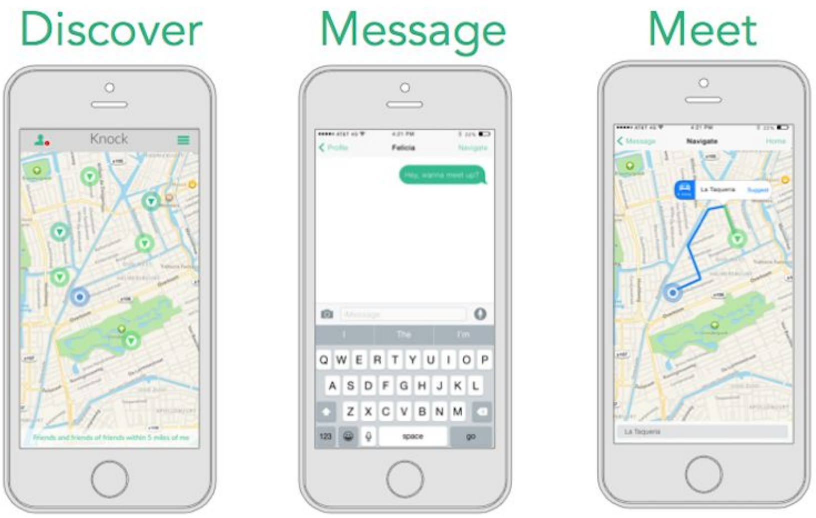
PROBLEM AND SOLUTION OVERVIEW

Travelers face two major pain points while traveling: they do not know people at their travel destination, 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.



See friends, friends of friends, and strangers near you

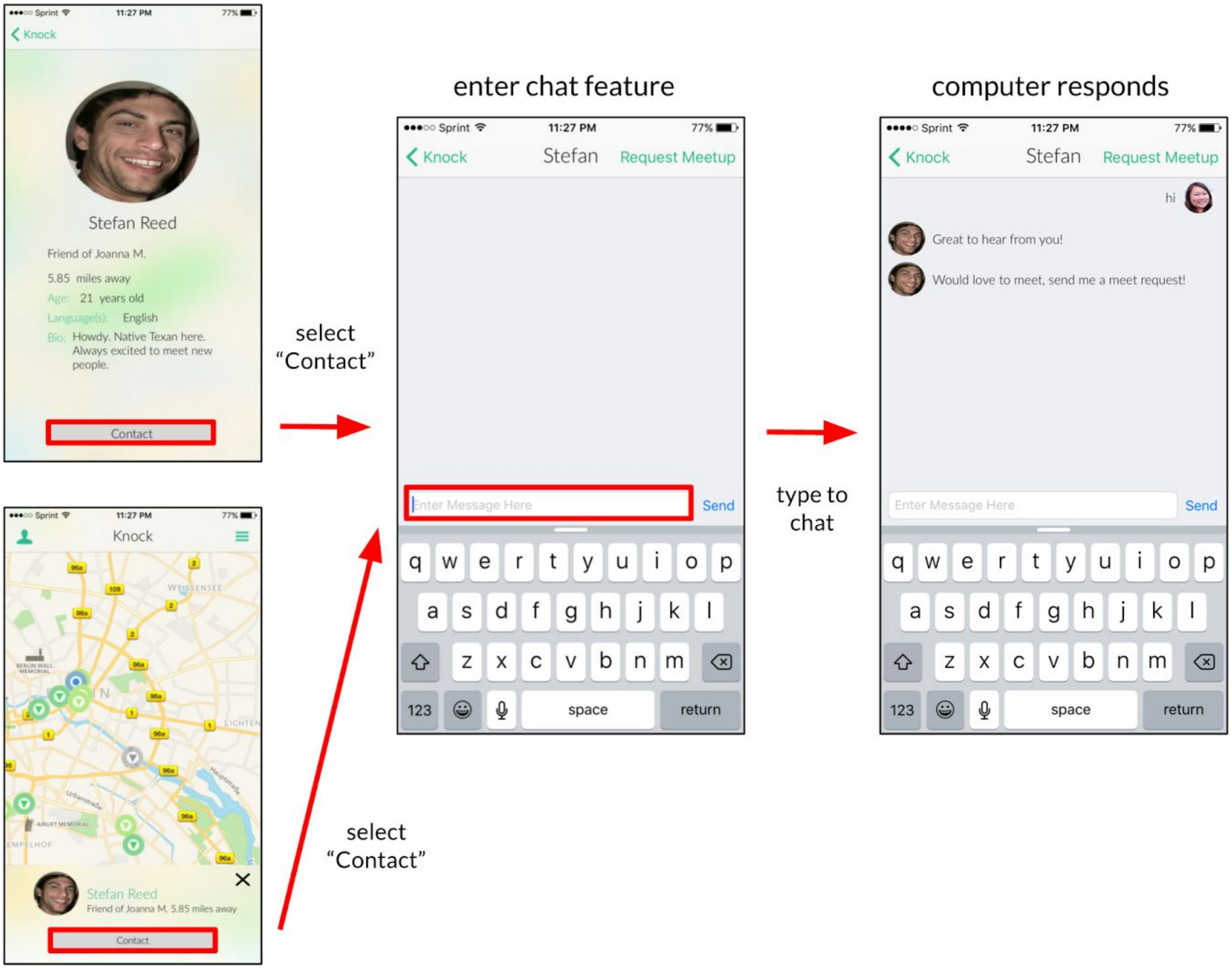
Send a message to someone you'd like to meet

Meet halfway or pick a place of your choice

TASKS

Chat with a Person — Simple

Person A wants to reach out to someone while abroad, either to connect from a distance or to coordinate a meet-up. Person A, once choosing who she wishes to contact, needs a way to say hello. Person A would be a bit hesitant to text a stranger directly, so she would prefer a low-commitment, low-stress way to converse.



Stefan Reed
Friend of Joanna M.
5.85 miles away
Age: 21 years old
Language(s): English
Bio: Howdy. Native Texan here. Always excited to meet new people.

Stefan Reed
Friend of Joanna M. 5.85 miles away

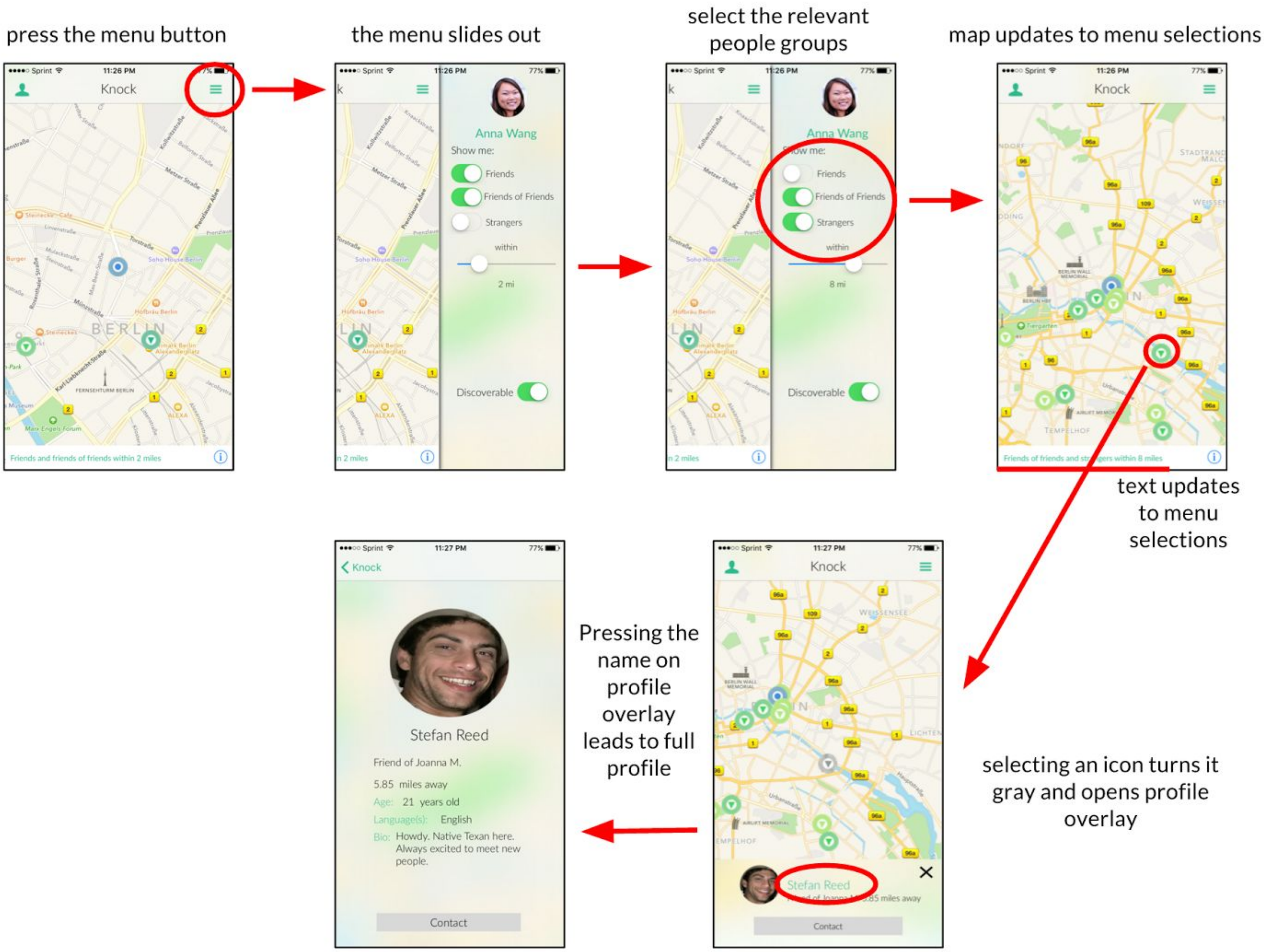
hi

Great to hear from you!

Would love to meet, send me a meet request!

Find a Person You Do Not Know
Moderate

Person A is in a foreign place and want to see if she can make a new friend nearby. The first task she would need to do is identify a person that is a promising future friend. She would want to see who the nearby people are, as well as know any relevant information about them, such as age and language spoken. Clear, easily navigable profiles would be preferable for her to identify who she thinks she would like to connect with.



press the menu button

the menu slides out

select the relevant people groups

map updates to menu selections

text updates to menu selections

selecting an icon turns it gray and opens profile overlay

Pressing the name on profile overlay leads to full profile

Stefan Reed

Friend of Joanna M.

5.85 miles away

Age: 21 years old

Language(s): English

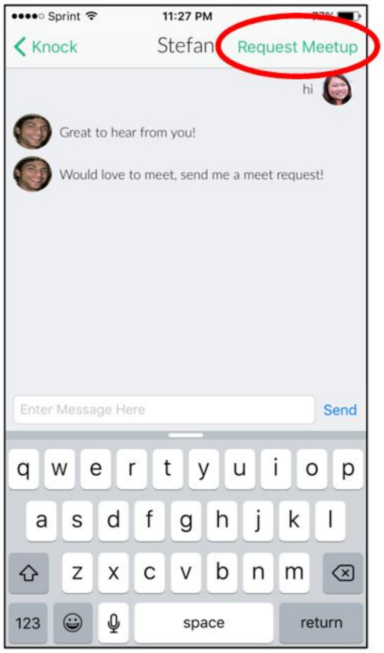
Bio: Howdy. Native Texan here. Always excited to meet new people.

Arrange a Meetup with a Person

Complex

Person A wants a companion either briefly or for a larger part of her trip in a foreign place. Person A would want arrange to meet up with a friend or potential friend who is in the area, in order to create this desired companionship. Navigating a foreign place can be very stressful, so she would want location suggestions and basic directions in order to meet up with the other person.

send meet request
through chat screen

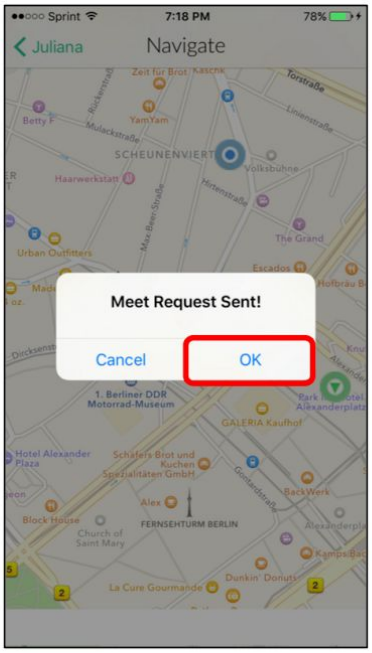


hi

Great to hear from you!

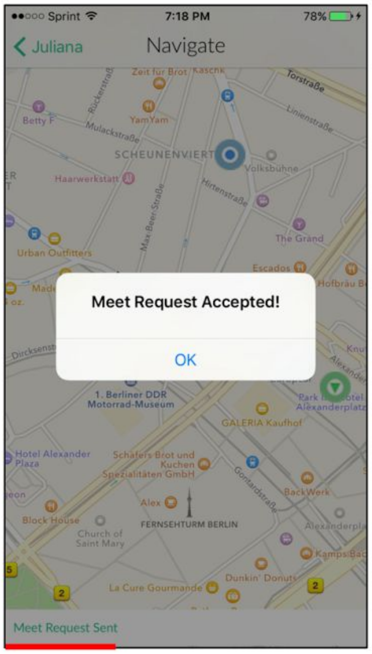
Would love to meet, send me a meet request!

meet up request
confirmation pops up



Meet Request Sent!

new pop up once meet
request is accepted

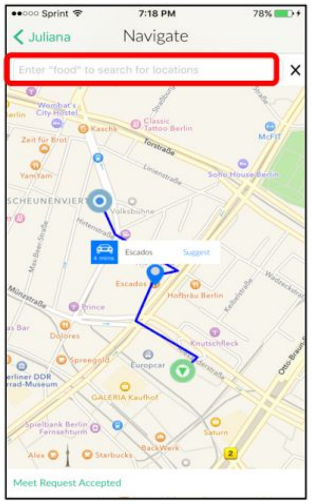


Meet Request Accepted!

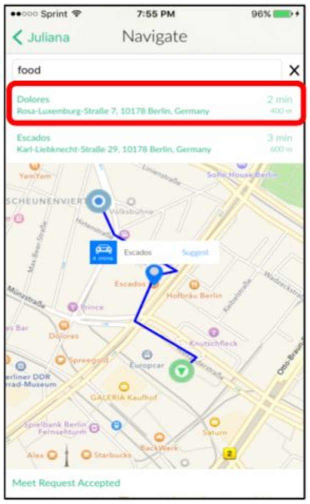
bottom text updates with
status of meet process

storyboard
continued below...

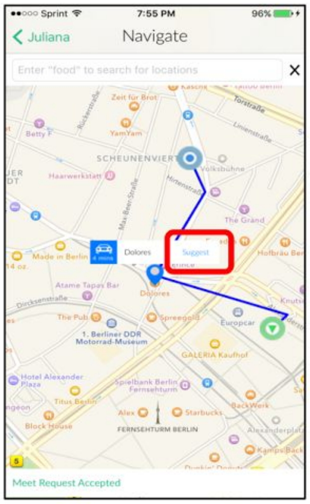
this screen loads after meet request acceptance



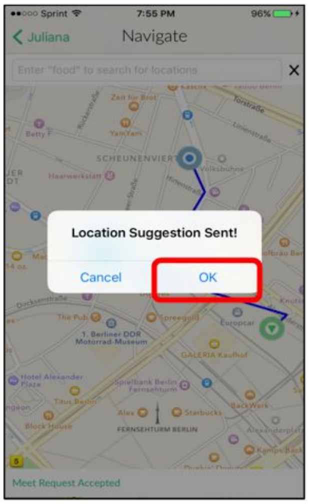
search for location


Juliana
Navigate
food
Dolores
Rosa-Luxemburg-Straße 7, 10178 Berlin, Germany
2 min
Escados
Karl-Liebknecht-Straße 29, 10178 Berlin, Germany
3 min
Meet Request Accepted

select desired location from search results and map updates



press "Suggest" to send location suggestion



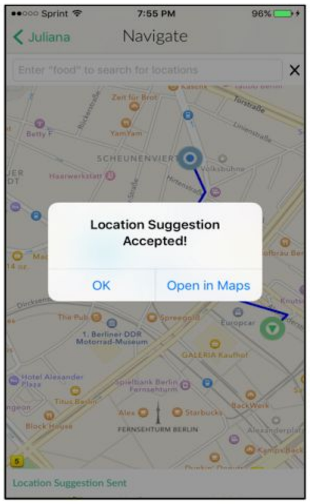
Location Suggestion Sent!

Cancel OK

after other user accepts the suggestion, popup gives 2 choices:

1. "Ok" to meetup later

2. "Open in Maps" to receive navigation directions from user's navigation app immediately



Location Suggestion Accepted!

OK Open in Maps

DESIGN EVOLUTION

The overall design evolution of our app occurred in the following three influential areas.

Map and Menu Interface

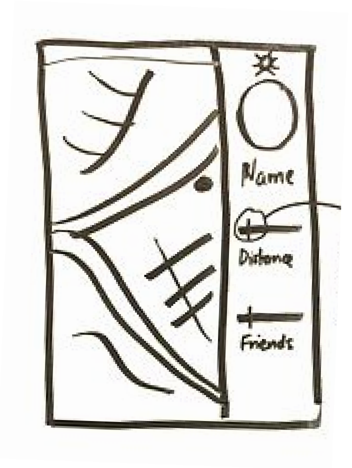
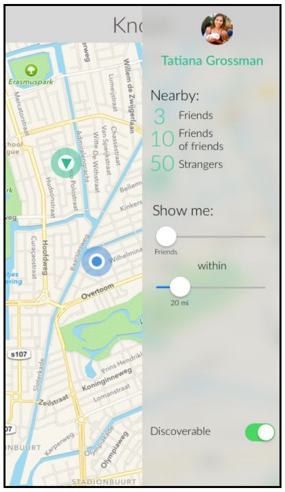
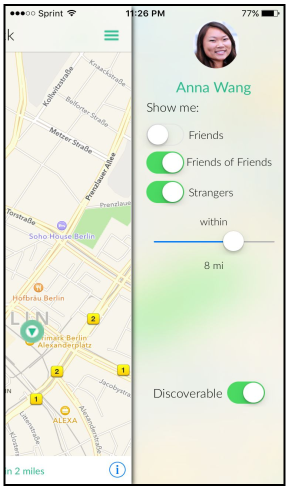
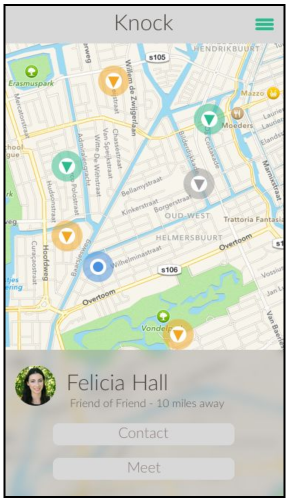
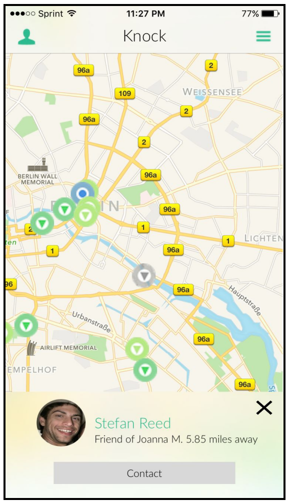
The map and menu design is the crux of our user interface. Initially, we had one standard icon on the map to represent all people: the user, the friends, the friends of friends, and the strangers. The menu was very simple, with only 2 slider bars. After low-fidelity testing, we found that one, undifferentiated icon was confusing to users and counterintuitive to allowing users to distinguish between friends and people they do not know. Icons were switched to different shapes and colors. More options were added to the menu bar. Final touches that allowed flexibility of use in extreme cases were added to the high-fidelity prototype after heuristic evaluations.

Profiles

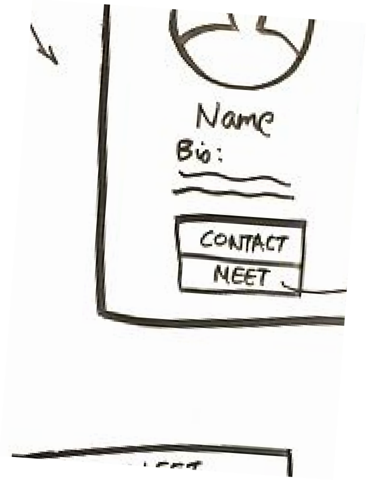
Profiles allow users to browse through people nearby. Users oftentimes looked through many different profiles during our low-fidelity prototype testing. To allow greater ease of use, a condensed profile overlay was designed to lay over the map interface without a screen change in our medium-fidelity prototype. Later on, as our task flow was heavily critiqued in our medium-fi prototype, the profile buttons were modified to streamline the process that takes users from the map to the chat to the meetup.

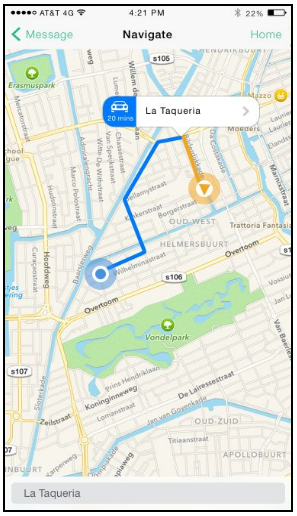
Meetup

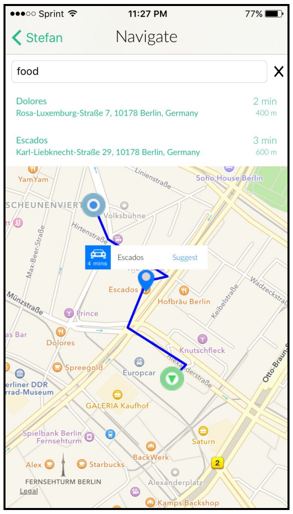
Our initial assumption was that users would prefer an app to choose the place of meetup in a foreign place. However, initial low-fidelity testing proved otherwise, and a location search bar was implemented in the medium-fidelity prototype. Choices were increased again in the high-fidelity prototype, as search queries can now return multiple possible matches.

	Lo-Fi Sketch	**Medium-Fi Prototype**	**Hi-Fi Prototype**
Map and Menu Interface		 Knc Tatiana Grossman Nearby: 3 Friends 10 Friends of friends 50 Strangers Show me: Friends within 20 mi Discoverable	 Sprint 11:26 PM 77% Anna Wang Show me: Friends Friends of Friends Strangers within 8 mi Discoverable
Profiles		 Knock Felicia Hall Friend of Friend - 10 miles away Contact Meet	 Sprint 11:27 PM 77% Knock Stefan Reed Friend of Joanna M. 5.85 miles away Contact

Meetup







food

Dolores 2 min
Rosa-Luxemburg-Straße 7, 10178 Berlin, Germany 400 m

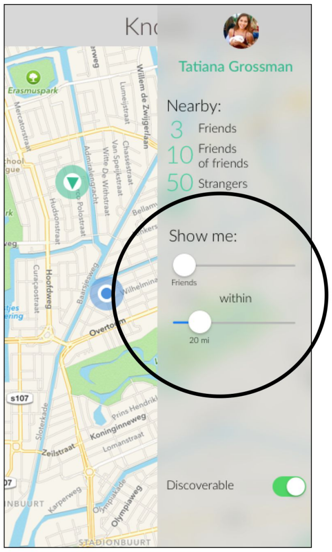
Escados 3 min
Karl-Liebknecht-Straße 29, 10178 Berlin, Germany 600 m

MAJOR USABILITY PROBLEMS ADDRESSED

1. Menu Selectors for People and Distance

[H2-5: Error prevention] [Severity 3]

There should be a way to limit the amount of icons that appear on the screen to prepare for situations where there are too many results.



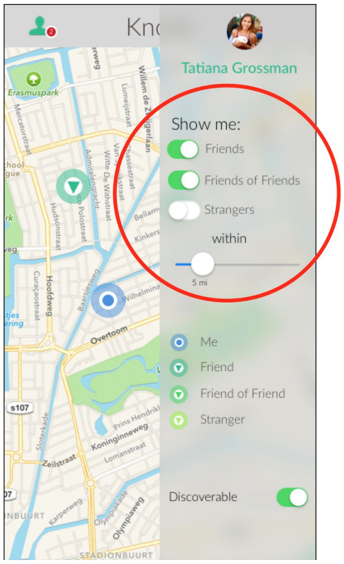
Tatiana Grossman

Nearby:
3 Friends
10 Friends of friends
50 Strangers

Show me:
Friends
within
20 mi

Discoverable

Fig 1. Original Menu



Tatiana Grossman

Show me:
Friends
Friends of Friends
Strangers
within
5 mi

Me
Friend
Friend of Friend
Stranger

Discoverable

Fig 2. Changed Menu

FIX:

The original slider bars in the menu were too limiting on results (see black circle in Fig 1). To show strangers, friends and friends of friends were also shown by default.
With the new toggle bars, users can show the groups of people in any combination (see red circle in Fig 2). The maximum distance also changed from 100 miles to 10 miles to reflect the realistic distance travelers are willing to go to meet someone in a foreign place.

2. Menu “Discoverable” Toggle

[H2-5. Error prevention] [Severity 3]
The user should be able to filter to what degree of connection they are discoverable to in the “Discoverable” toggle on the slide-out menu (see bottom right of Fig 1).

REASON TO NOT FIX:
The purpose of the app is to make a travel community of old and new friends. That requires a user to be discoverable by all other users. If some users only wish friends to see their location, this is not the app for them.

3. Location Search Query

[H2-4: Consistency & Standards] [Severity 4]
On the location search screen in the meetup process (see Fig 3), all results from the search should be shown on the screen.

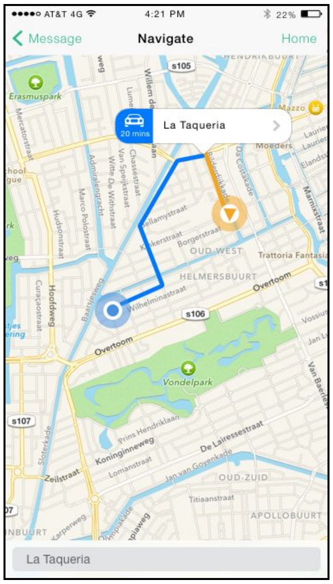


Fig 3. Original Location Search

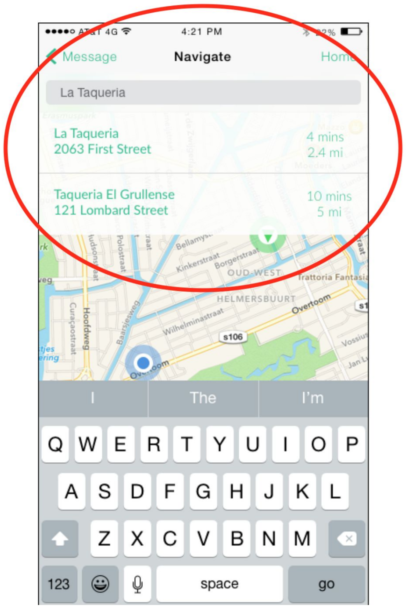


Fig 4. Changed Location Search

FIX:
The original location search automatically chose the most optimal meetup location based on the search query and displayed it on screen (see Fig 3).

Through the heuristic evaluation, we found that users prefer flexibility over convenience. In the new location search, all results from the search query are shown to allow the user to self-select one (see red circle in Fig 4).

4. Request a Meetup

[H2-5: Error Prevention] [Severity 3]

The function of the "meet" button on the profile page is unclear to users since no location has been selected (see black circle on Fig 5).

[H2-1. Visibility of system status] [Severity 3]

The user is able to hit "Meet" without first contacting the other user (see black circle on Fig 5). It is unclear whether they other user has agreed to meet as well or what the next course of action should be.

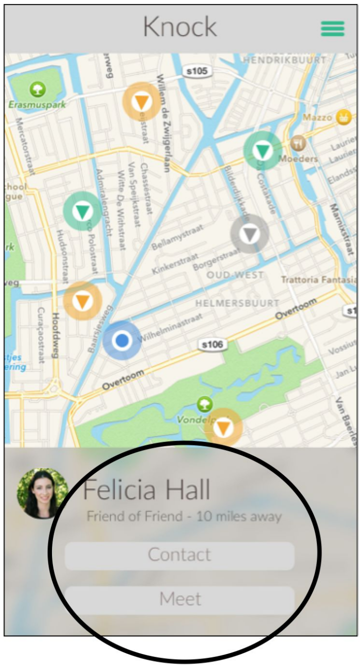


Fig 5. Original Profile Overlay

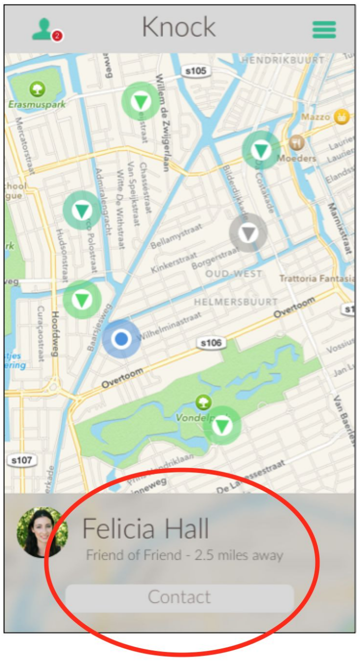


Fig 6. Changed Profile Overlay

FIX:

The original profile overlay has both a "Contact" button and a "Meet" button (see Fig 3). After consideration of both feedback from our heuristic evaluators and safety concerns, we decided it would be best to allow a person to "Meet" only after a chat. We eliminated the "Meet" button from the profile overlay (see Fig 6). This has a secondary effect of streamlining the user flow. Now, the only way to "Meet" is through the chat screen.

5. Managing Multiple Meet Requests

[H2-1: Visibility of System Status] [Severity 4]

It is currently unclear whether users can receive multiple requests which can be responded to asynchronously.

[H2-3: User control & Freedom] [Severity 4]
There does not seem to be a way to cancel a meetup once one has been arranged.

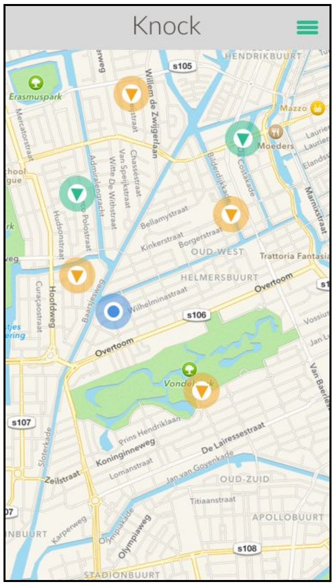


Fig 7. Original Map Screen

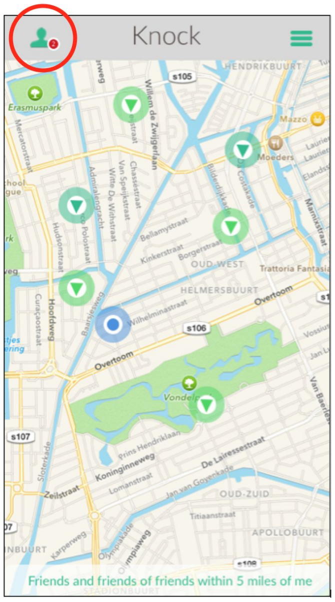
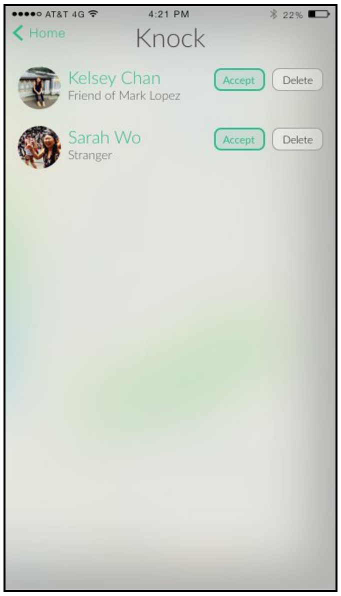


Fig 8. Changed Map Screen



Kelsey Chan
Friend of Mark Lopez

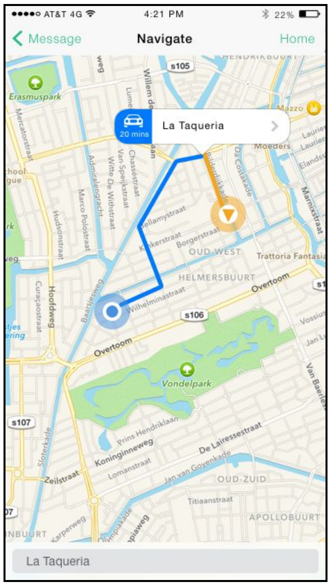
Sarah Wo
Stranger

Fig 9. New Meetup Request Page

FIX:
The original design did not support multiple meetup requests. Meetup requests popped up in real time and users responded by either rejecting or accepting the meetup popup.
We wish to allow users to respond to multiple meetup requests asynchronously. While the original map screen had only the menu and map (see Fig 7), the changed map screen has a Meetup button at the top left (see red circle on Fig 8). After pressing the button, the user is taken to the Meetup Request page (see Fig 9), where they can accept or delete requests separate from the initial reception of the request.

6. Meetup Arrangement Process
[H2-1: Visibility of Status] [Severity 4]
During the entire flow of “choosing a meetup location”, it is unclear how two users come to a consensus as to where to meet up.

1.



2.

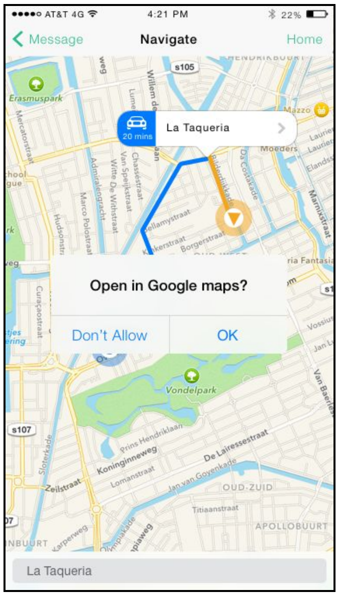
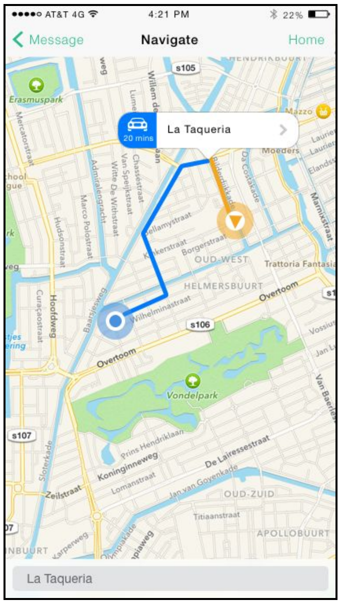
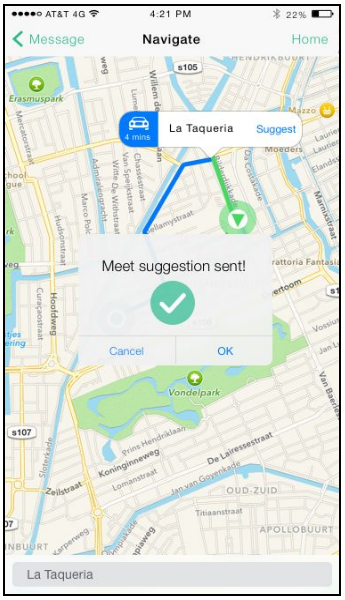

Open in Google maps?

Figure 10. Original Meetup Location Flow

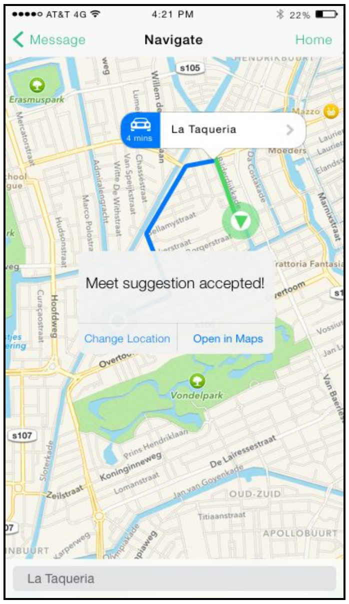
1.



2.


Meet suggestion sent!

3.


Meet suggestion accepted!

4.

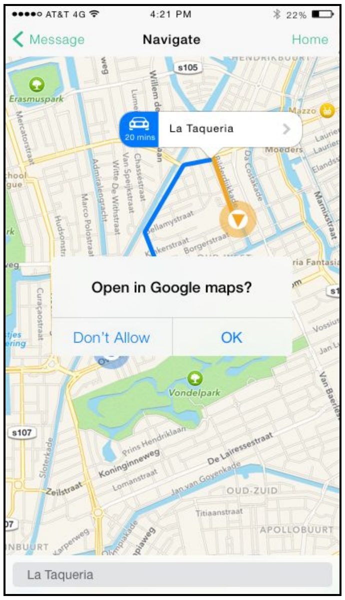

Open in Google maps?

Figure 11. Changed Meetup Location Flow

FIX:
The original flow was flawed, where the user selected a meetup location and was immediately taken to Google Maps for navigation directions without consulting the meetup companion (see Fig 10).
In the new flow, the user, upon seeing a good place, sends a meet suggestion. The user then needs to wait for the meetup companion to accept the meet suggestion before he or she is taken to Google Maps for navigation directions (see Fig 11).

7. Location Travel Time
[H2-4: Consistency & Standards] [Severity 3]
When choosing a location, it would make sense to display the travel time for the person the user is trying to meet up in addition to the user's own travel time.

REASON TO NOT FIX:
Basic details on both individuals' travel are given through the route lines on the location suggestion map. Specific details on the other person's travel time would be excessive and clutter the interface. If the user wishes to have more information than what is provided on the map, he or she can utilize the chat to talk it out.

Other Changes (Errors of Severity 1 and 2)
8. [H2-6: Recognition not recall] [Severity 2]
Users should not have to go to the slide-out menu to find the currently selected view options on the map.

FIX:
A line of text is overlayed over the bottom of the map interface that indicates the selected view options. Ex. "Friends and Friends of Friends within 5 miles"

9. [H2-10: Help & Documentation] [Severity 2]
On the map screen, there should be some kind of legend indicating what each icon color means.

FIX:
At the right side of the text overlay at the bottom of the map interface (for more information on the text overlay, see change 8), there is an info icon. If pressed, a small popup appears at the bottom of the screen that has the icon symbol legend.

10. [H2-2. Match between system and the real world] [Severity 1]
Description of a potential contact with "friend of friend" status does not show who the mutual friend is (see Fig 5). People prioritize this information in real life.

FIX:
For every friend of friend shown through the app, his or her profile indicates who the mutual friend is. Ex. “Felicia Hall, Friend of Mark S.”

PROTOTYPE IMPLEMENTATION

For our prototype tool, we used XCode. XCode was beneficial in the following ways:

1. We can use Storyboard to layout the mobile screens and change the font and text color.
2. It was perfect for native apps (apps that run on mobile) and could easily segue between screens and support any combination of user decisions.
3. It allowed a lot of the data to be hard-coded and the logic was easily integrated with the views.
4. There are a lot of tutorials online about how to use it and add certain UI features.

There were 2 disadvantages to using XCode:

1. The UI elements are restricted by compatibility with Apple. For example, we could not add a photo into the alert for "Meet Request Sent" because Apple's UIAlertController does not support images.
2. It is very finicky and we had issues getting it up and running with the right slide-out menu.

As our app is user-centric and requires a user community, many of our features required Wizard of Oz techniques and hard-coding.

Wizard of Oz Techniques

<u>Chat Messaging</u>
The conversation that takes place when the user uses the chat functionality is fake. The computer acts as the other person who is in the area. It automatically responds with pre-determined lines of text upon a text input from the user.

<u>Meet Requests</u>
The computer mimics a real user in accepting a meet request that the user sends. Once the user selects “Send Request”, a popup indicates that the request was sent. Then, a few seconds later, another popup appears that the meetup request was accepted.

<u>Meet Location Suggestions</u>
In the meet location suggestion process, the user suggests a location to meetup. After pressing the “Suggest” button for a location, a popup appears that says, “Location Suggested.” A few seconds later, another popup appears that says, “Location Request Accepted”. This is the computer mimicking the other person.

Hard-Coded Features

<u>User Profiles</u>

The profile information that populates the app are all hard-coded, as there are currently no user community on the app. Our app currently has 16 hard-coded user profiles, 1 being the user's and the other 15 separated into the categories of Friend, Friend of Friend, and Stranger. Other information in the profiles include name, picture, age, and language spoken.

User Location

As the prototype is currently not being used in a foreign place, the user's location is hard-coded as an area within Berlin, Germany. The locations of the other people shown in the app are also hard-coded using geographic coordinates. Our app calculates the accurate distance in miles between the user and the people nearby; this distance is shown on the profiles.

Meetup Location Suggestions

The prototype asks the user to input a specific search string -- "Food" -- on the location suggestion screen and the two subsequent results are hard-coded.

Meetup Routes

As our prototype is not connected to Google Maps API or Apple Maps API, it is unable to generate real navigation routes from the user's current location to the meetup location. Instead, as the meetup locations are also hard-coded, a specific meetup route is hardcoded for each meetup location.

What We Might Add

Support of Multiple Meet Requests

With the current app flow to complete all three tasks, there is no need to send or receive multiple meet requests. In the future, however, this would be important to implement to expand functionality and increase user flexibility.

Update of Meet Page

Currently, our meet request page that can be accessed from the top-left corner of the map screen does not update with the meet requests. This is because the current app flow has the user immediately respond to the meet request that he or she sends. That makes an update of the meet request page unnecessary. In the future, after supporting multiple meet requests, the meet request page should update to reflect this.

Connection to Google Maps API

Our task to arrange a meetup allows the user to choose where to meet and there is a route overlay on the map. The real navigation directions would be provided through Google Maps. Currently, our prototype flow ends with a popup that says, "Open in Google Maps?" to mimic how the user would be taken to Google Map's navigation app for directions. In the future, the Google Maps API can be integrated within our app to provide seamless navigation.

SUMMARY

We set out to create a mobile app that mitigates the harsh readjustment period after travel with a travel community. We succeeded in creating a high-fidelity mobile prototype of our app, Knock, through XCode. Throughout the course of the quarter, the design of our application increased in complexity as user friendliness developed. Efficiency in completing user tasks increased. Our attention to design was ubiquitous throughout. Through user testing and heuristic evaluations, we tested the robustness of our app. In the end, we were able to produce an app prototype that allows anyone to find friends everywhere.