O by Trability

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Hali M. - (User Testing)
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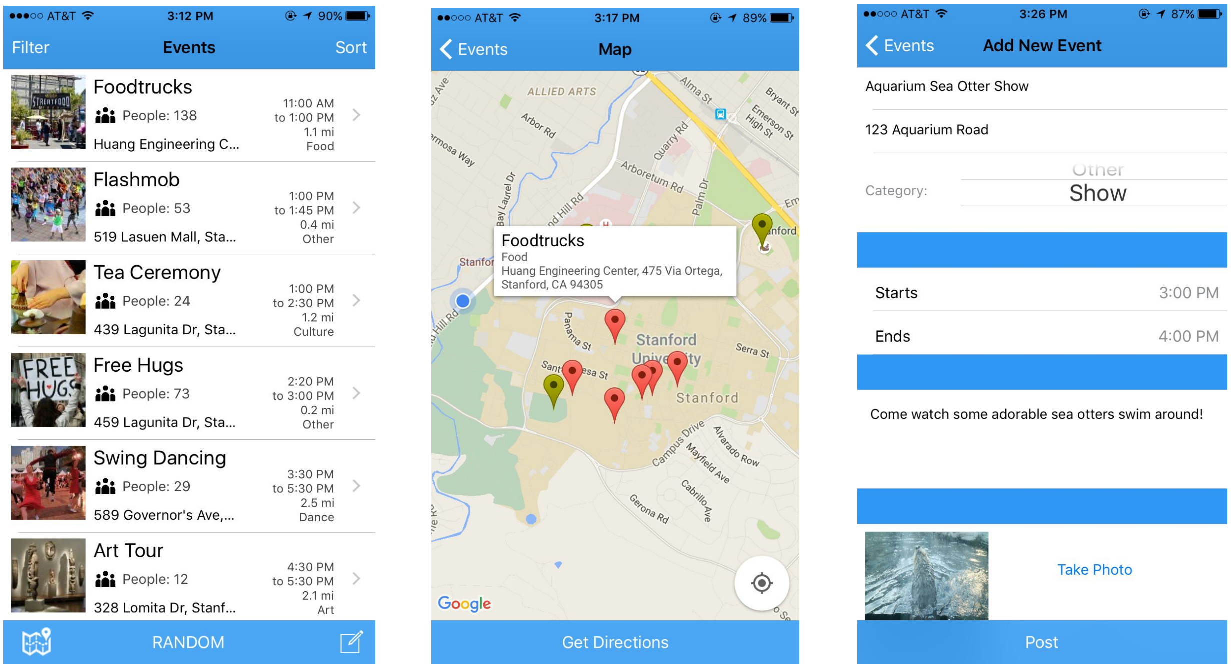
Don’t be a tourist. Be a traveler

Problem and Solution Overview

Tourists plan too much on hitting the big, major attractions and end up with a generic traveling experience. Travelers enjoy the experience of immersing themselves in a local culture. We want to allow tourists to become travelers by leading them to local, user-generated events they may not have experienced otherwise. We hope to make it easier to gain a more authentic experience when traveling. In order to achieve our goal, we have created an iOS application that provides users with a listing of nearby events, helps users navigate to these events, and allows users to share events with others.



Foodtrucks
People: 138
Huang Engineering C...
11:00 AM
to 1:00 PM
1.1 mi
Food

Flashmob
People: 53
519 Lasuen Mall, Sta...
1:00 PM
to 1:45 PM
0.4 mi
Other

Tea Ceremony
People: 24
439 Lagunita Dr, Sta...
1:00 PM
to 2:30 PM
1.2 mi
Culture

Free Hugs
People: 73
459 Lagunita Dr, Sta...
2:20 PM
to 3:00 PM
0.2 mi
Other

Swing Dancing
People: 29
589 Governor's Ave,...
3:30 PM
to 5:30 PM
2.5 mi
Dance

Art Tour
People: 12
328 Lomita Dr, Stanf...
4:30 PM
to 5:30 PM
2.1 mi
Art

Foodtrucks
Food
Huang Engineering Center, 475 Via Ortega,
Stanford, CA 94305

Aquarium Sea Otter Show

123 Aquarium Road

Category: Other / Show

Starts 3:00 PM

Ends 4:00 PM

Come watch some adorable sea otters swim around!

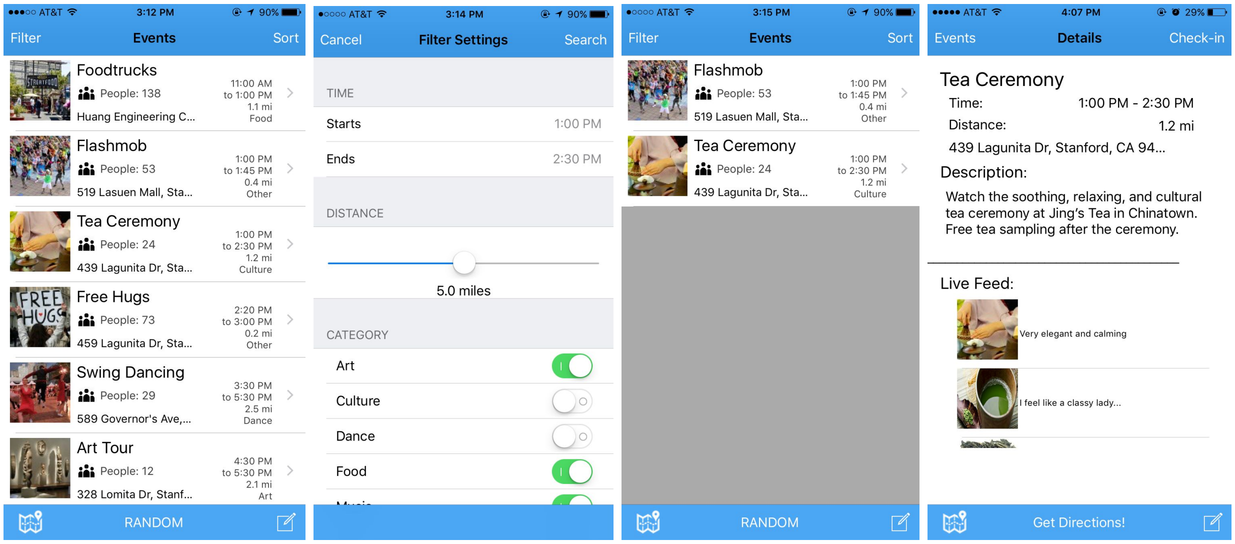
Figure 1: Basic design approach

Task and Final Interface Scenarios

The three tasks we expect users to want to complete are Find an Event, Navigate to an Event, and Share an Event. We chose these tasks based on our initial needfinding results and the feedback from allowing potential users to test our low-fidelity and medium-fidelity prototypes. We found that travelers want to experience more authentic, cultural events instead of just visiting the main tourist attractions. Most of the time, they will be trying to navigate to these events through unfamiliar areas and might get lost or feel concerned for their safety. Sometimes, a traveler might stumble upon a hidden gem of an event and want to share this opportunity with other travelers. Also, locals might be hosting events that they would like to widely publicize to travelers or other locals.

Simple Task: Find an Event

The goal for this task is for the user to find an interesting, local event. The main screen of our app features a list of nearby events in relation to the user. The user can filter these events by setting time, distance, and category constraints. The main screen will then be updated with events that fit the user's criteria. Once the user finds an appealing event, the user is taken to a screen that lists the details of the event and presents a live feed of the event.



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to 5:30 PM
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Dance

Art Tour
People: 12
328 Lomita Dr, Stanf...
4:30 PM
to 5:30 PM
2.1 mi
Art

TIME
Starts 1:00 PM
Ends 2:30 PM

DISTANCE
5.0 miles

CATEGORY
Art ●
Culture ○
Dance ○
Food ●
Music ●

Flashmob
People: 53
519 Lasuen Mall, Sta...
1:00 PM
to 1:45 PM
0.4 mi
Other

Tea Ceremony
People: 24
439 Lagunita Dr, Sta...
1:00 PM
to 2:30 PM
1.2 mi
Culture

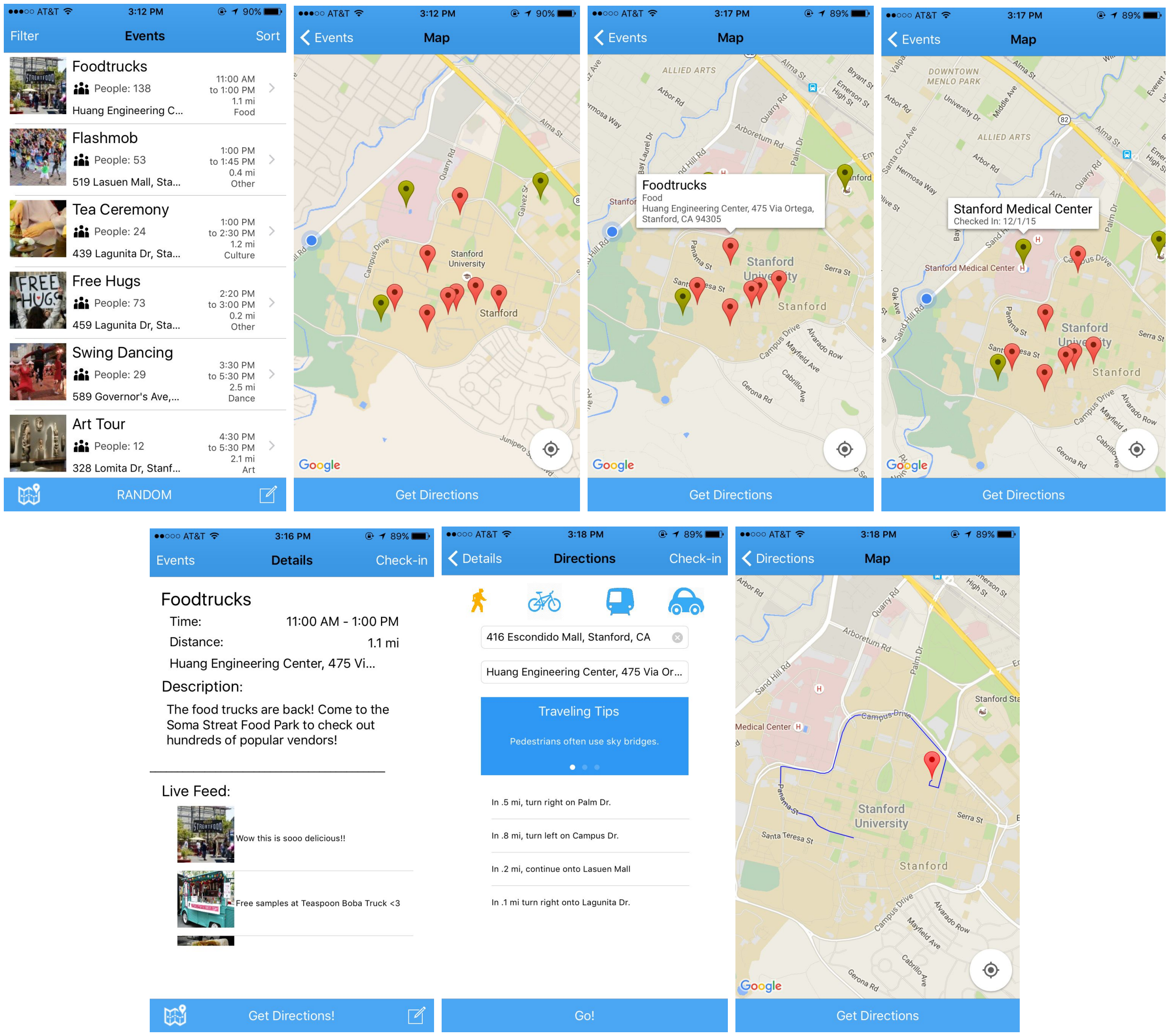
Tea Ceremony
Time: 1:00 PM - 2:30 PM
Distance: 1.2 mi
439 Lagunita Dr, Stanford, CA 94...
Description:
Watch the soothing, relaxing, and cultural tea ceremony at Jing's Tea in Chinatown. Free tea sampling after the ceremony.

Live Feed:
Very elegant and calming
I feel like a classy lady...

Figure 2: Find an event task storyboard

Medium Task: Navigate to an Event

The user's goal in this task is to navigate through an unfamiliar area to an event. Users can view the listing of events as a list or on a map. On the map, red markers indicate nearby events, and yellow markers indicate locations where users have already attended an event. The yellow markers can help users find their way to an event by traveling in relation to familiar locations. Once the user has chosen an event to travel to, the user can get directions. The directions screen allows the user to choose a mode of transportation, offers step-by-step directions, and gives the user helpful tips about traveling in this area. The user can also view a map with a marked route to help visualize navigation.



Foodtrucks
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1.1 mi
Food

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2.5 mi
Dance

Art Tour
People: 12
328 Lomita Dr, Stanf...
4:30 PM to 5:30 PM
2.1 mi
Art

Foodtrucks
Time: 11:00 AM - 1:00 PM
Distance: 1.1 mi
Huang Engineering Center, 475 Vi...
Description:
The food trucks are back! Come to the Soma Streat Food Park to check out hundreds of popular vendors!

Live Feed:
Wow this is sooo delicious!!
Free samples at Teaspoon Boba Truck <3

416 Escondido Mall, Stanford, CA
Huang Engineering Center, 475 Via Or...

Traveling Tips
Pedestrians often use sky bridges.

In .5 mi, turn right on Palm Dr.
In .8 mi, turn left on Campus Dr.
In .2 mi, continue onto Lasuen Mall
In .1 mi turn right onto Lagunita Dr.

Figure 3: Navigate task storyboard

Complex Task: Share an Event

In this task, the user's goal is to post a new event he/she is hosting or to share an event that he/she has discovered that is not yet on the event list. The user can choose to post a new event from the main screen with current, nearby events or from an event's detail screen. To post a new event, the user can input a title and address, choose a category, set the duration, include a short description, and take a new photo or use one from the user's camera roll. Once the new event is posted, the main screen will be updated accordingly.

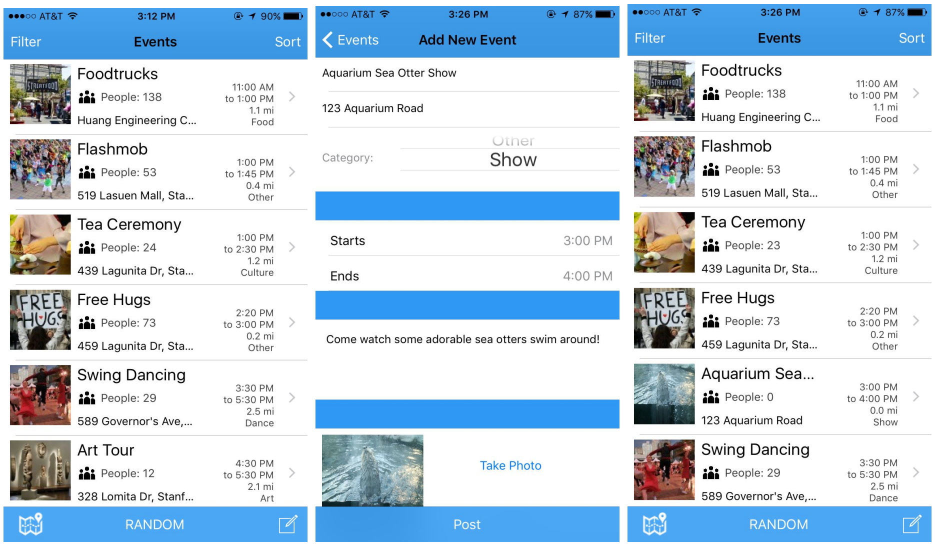


Figure 4: Share an event task storyboard

Design evolution

Spontaneous Pop-Ups → Better Filtering and Sorting Options

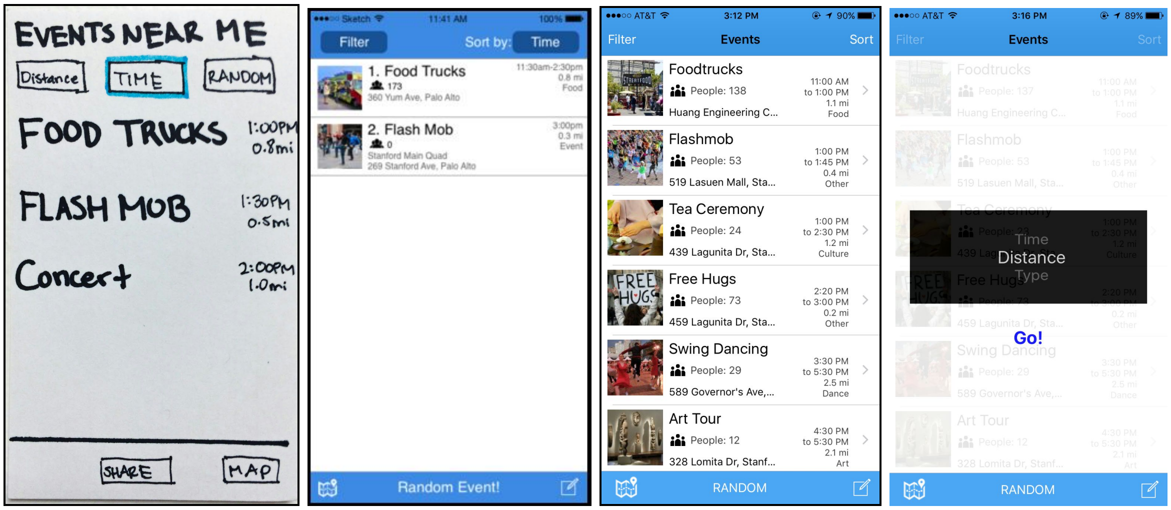


Figure 5: Homescreen sort evolution from low to high fidelity prototype

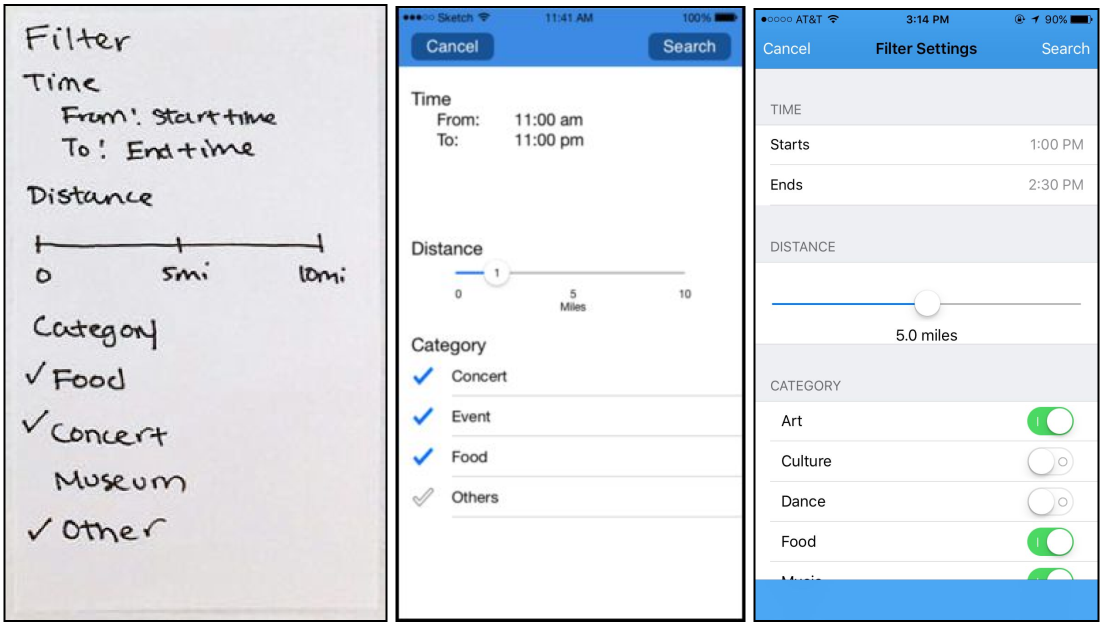


Figure 6: Filtering screen evolution from low to high fidelity prototype

Our homescreen was originally designed to emphasize the “spontaneity” of events. The focus of our homescreen was the “New Event” pop up that would allow users to be spontaneously notified of events in their area. Through our initial user experience and low fidelity prototype testing, we found that users did not appreciate the spontaneous reorganization of their homescreen. Rather, they found it annoying and distracting, and we realized that users would want to plan events around their schedule instead of being notified about them on the go. Thus, we focused our efforts on designing better filtering (Figure 6) and sorting (Figure 5) options. This shift in focus allowed users to find unique events while also respecting their traveling schedule and preferences.

Clarifying Custom “Traveler-Oriented” Navigation Design

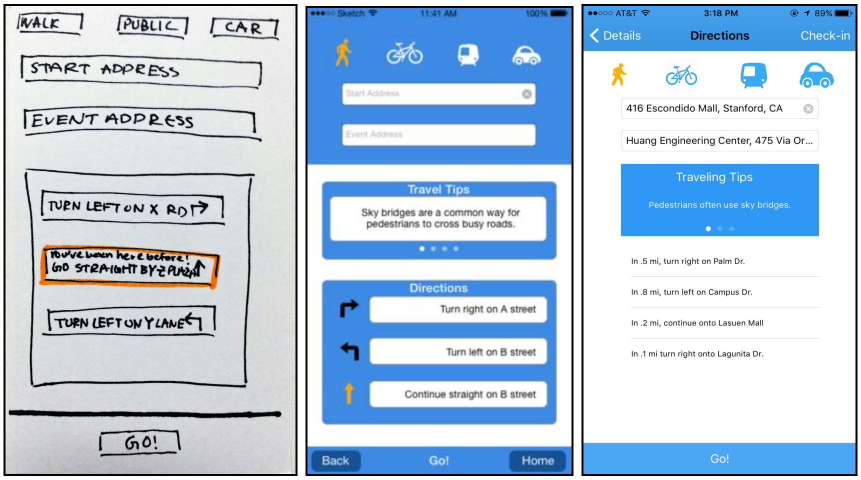

WALK
PUBLIC
CAR
START ADDRESS
EVENT ADDRESS
TURN LEFT ON X RD
You've been here before! GO STRAIGHT BY Z PLAZA
TURN LEFT ON Y LANE
GO!
Sketch
11:41 AM
100%
Start Address
Event Address
Travel Tips
Sky bridges are a common way for pedestrians to cross busy roads.
Directions
Turn right on A street
Turn left on B street
Continue straight on B street
Back
Go!
Home
AT&T
3:18 PM
89%
Details
Directions
Check-in
416 Escondido Mall, Stanford, CA
Huang Engineering Center, 475 Via Or...
Traveling Tips
Pedestrians often use sky bridges.
In .5 mi, turn right on Palm Dr.
In .8 mi, turn left on Campus Dr.
In .2 mi, continue onto Lasuen Mall
In .1 mi turn right onto Lagunita Dr.
Go!

Figure 7: Directions screen evolution from low to high fidelity prototype

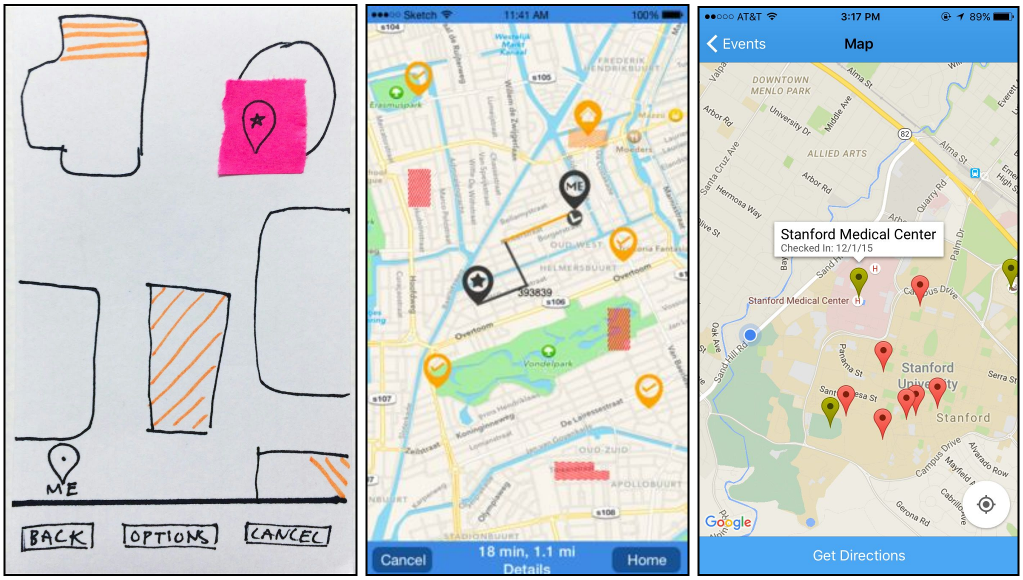


Figure 8: Map screen evolution from low to high fidelity prototype

Rather than outsourcing our second navigate task to Google Maps, we wanted to create a navigation that would be customized for travelling in an unfamiliar area. Areas that users had already been to would be marked, so that users would be able to navigate in relation to these spaces.

On the directions page (Figure 7), roads already traveled would be marked a different color. In both low and medium fidelity testing, users though the different color was a mistake rather than a helpful tool, so we ultimately removed this feature. Instead, we included a series of travelling tips that would provide location-specific information. Thus, travelers would still be able to navigate through an unfamiliar area.

On the map screen (Figure 8), unfamiliar areas were marked a different colors. Feedback from our low fidelity testing indicated that the concept was “interesting,” though users were initially misunderstood the colored areas. When this confusion and misunderstanding persisted in our medium fidelity prototype, we decided to change the colored areas to colored markers. These markers also indicate that these are “check-in” locations users have already visited, removing confusion about their purpose and providing useful markers for navigation.

Major Usability Problems Addressed

Here are the Heuristic Evaluation violations that we addressed between the medium fi prototype and the high fi prototype. Note that all changes (or non-changes) were approved by TA Leigh Hagstead.

Filter: Cancel vs Search

[H2 -4 Consistency and Standards] [Severity 3] [Found by: B]

Original comment	Original comment Hitting “cancel” on the filters screen does the same thing as hitting the “search” button, regardless of what filters were when screen was brought up. Hitting cancel should undo filter changes and bring us back to the previous screen.
Our solution	Not changed. The buttons actually did function the way the evaluator wanted. We think they missed it.

Add New Event on Detail Page

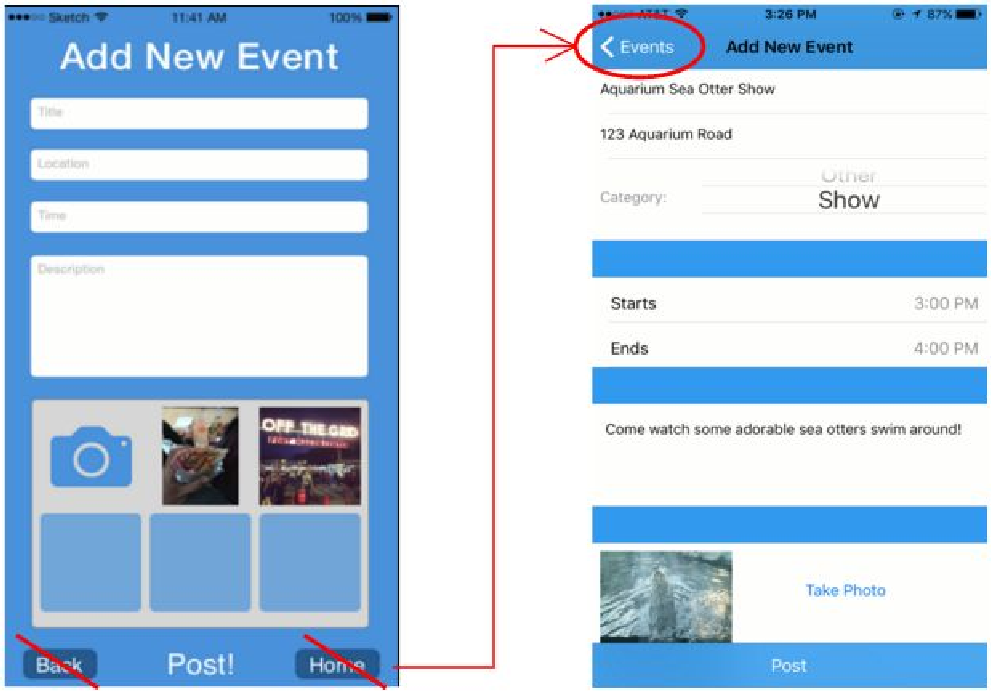
[H2-8 Aesthetic and minimalist design] [Severity 3] [Found by: B, A]

Original comment	It doesn’t make sense to add a new event when viewing another event. Users may never use this functionality. It’s more logical to be able to comment when viewing an event, so add this function instead.
Our solution	Not changed. We felt it would conflict with how the bottom bar looks. However, for our final prototype it sometimes has issues that need to be addressed in the future.

Create Event: Back vs Home

[H2 -8 Aesthetic and minimalist design] [Severity 4] [Found by: A, B, C]

Original comment	On the “create event” page, there are two buttons which return the user to the list page: “back” and “home”. The difference between these 2 buttons is the home button removes all filters and the back button does not, but this is incredibly unclear to the user, and having two buttons that do nearly the same thing is pointless. Remove the “home” button
Our solution	We deleted the “Home” button and moved/renamed the “Back” button so that only a “< Event” button at the top to go back to the previous page.



Aquarium Sea Otter Show

123 Aquarium Road

Come watch some adorable sea otters swim around!

The red lines show that the bottom buttons have been removed, and the "back" functionality is now at the top, represented by "<Events"

Map: Cannot Start Directions

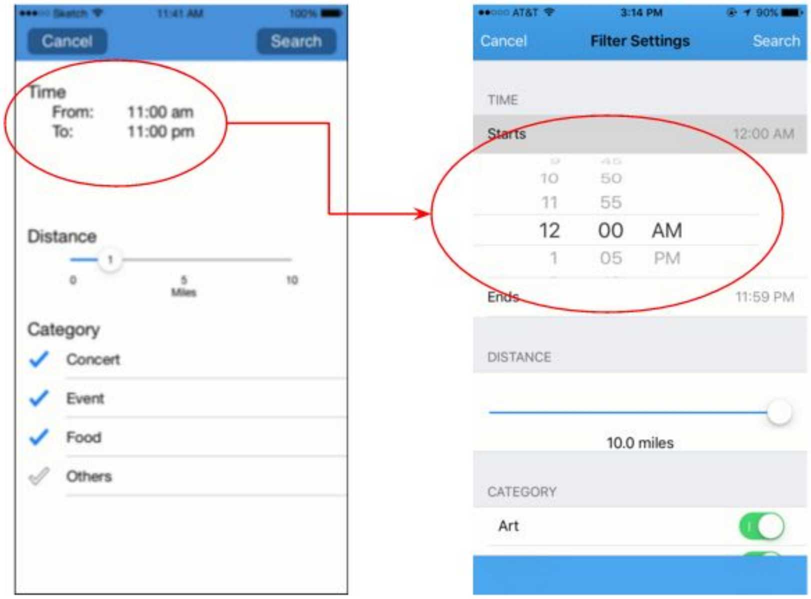
[H2 -7 Flexibility and efficiency of use] [Severity 4] [Found by: B]

Original comment	No way to begin directions from map page. Clicking on the address of an event requires you to click on the event to go back to the event page and click on the "directions" button. Implement way to start route from map page.
Our solution	There was a way to begin directions, so we did not make any changes other than put a "!" after "Directions" to make it more obvious

Affordance: Time

[H2-6 Recognition rather than recall][Severity 4] [Found by: A]

Original comment	There are no affordances in the time section, so one doesn't think it's possible to change the time range of the filter. Make the text a different color or provide a mechanism that changes the time range.
Our solution	We changed our time picker to use the iOS's time picker (the wheel)



Time
From: 11:00 am
To: 11:00 pm

Concert ✓
Event ✓
Food ✓
Others

Starts 12:00 AM
12 00 AM
Ends 11:59 PM

10.0 miles

Art ●

The time selector is now a wheel

Filter: Search vs Home

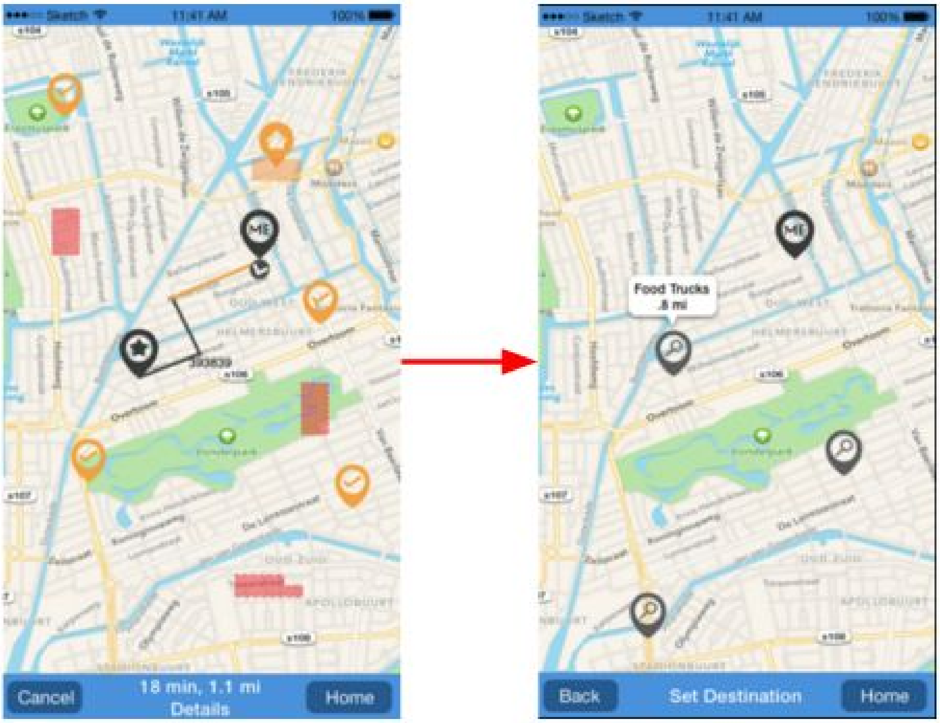
[H2-4 Consistency and standards][Severity 3] [Found by: A]

Original comment	"Search" is not congruent with what the home screen stands for, nor congruent with the buttons that take the user back home in other interfaces. Re-name the "search" button in the filter pane to "home"
Our solution	Not changed. "Search" is suppose to apply the filter results to search events accordingly. This was also Yelp's solution to their filtering page, so we thought it would be a familiar choice of word to some users.

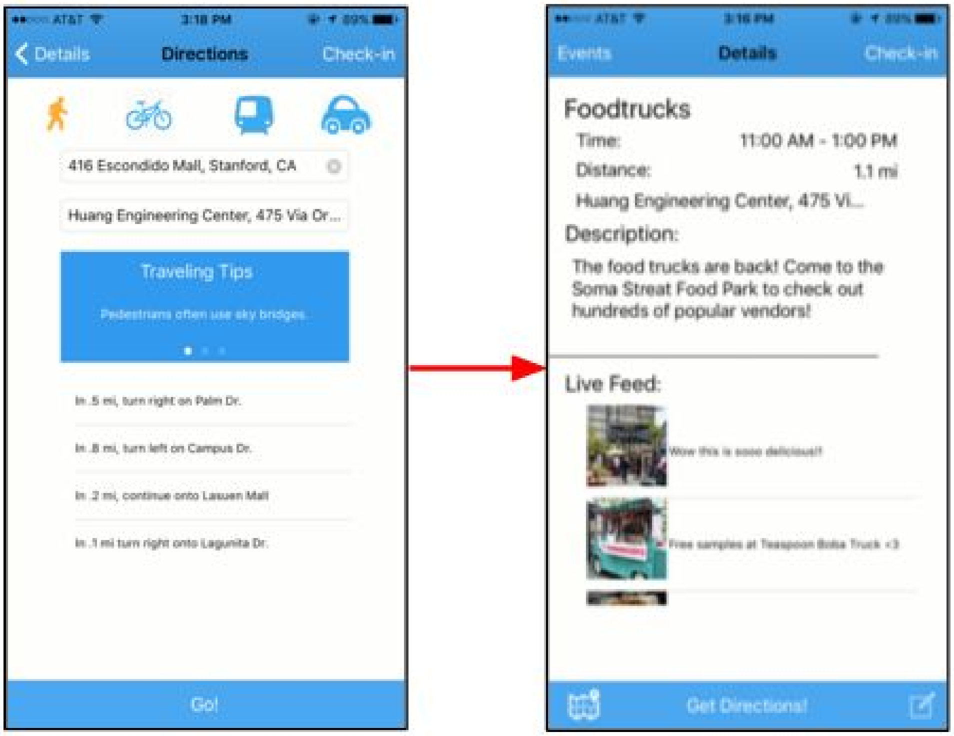
Map: Canceling Directions

[H2-3 User control and freedom] [Severity 3] [Found by: A]

Original comment	When accessing the directions interface from the event screen the cancel button cancels the directions on the map but does not take the user back to the event screen, as expected. Fix it so that it does so.
Our solution	We fixed this and we now go back to the event list after canceling from the directions page



Previous “back” transition from directions screen



416 Escondido Mall, Stanford, CA

Huang Engineering Center, 475 Via Or...

Traveling Tips

Pedestrians often use sky bridges.

In .5 mi, turn right on Palm Dr.

In .8 mi, turn left on Campus Dr.

In .2 mi, continue onto Lasuen Mall

In .1 mi turn right onto Lagunita Dr.

Foodtrucks

Time: 11:00 AM - 1:00 PM

Distance: 1.1 mi

Huang Engineering Center, 475 Vi...

Description:

The food trucks are back! Come to the Soma Streat Food Park to check out hundreds of popular vendors!

Live Feed:

Wow this is sooo delicious!!

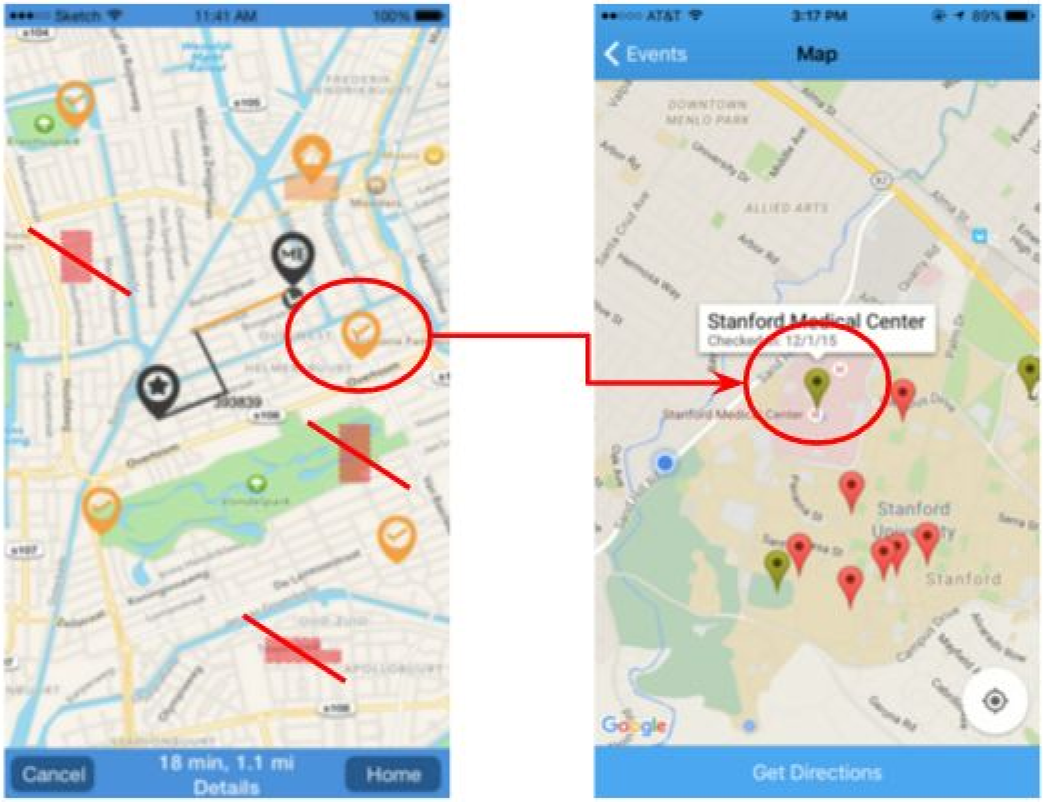
Free samples at Teaspoon Boba Truck <3

New “back” transition from directions screen

Map: Red Boxes

[H2-1 Visibility of system status] [Severity 4] [Found by: A]

Original comment	When the user sets a destination on the map, they will have no idea what the red boxes are, or what the check marks represent, and it is unclear why they show up only after the destination is set. Make the design more clear so that users can more easily understand what is going on.
Our solution	We weren't sure how to make this more clear except putting a legend there. But ultimately it doesn't matter because this wasn't implemented due to implementation issues. However, we do have green markers to indicate places that users have checked into, instead of orange check marks that are less visually less clear.

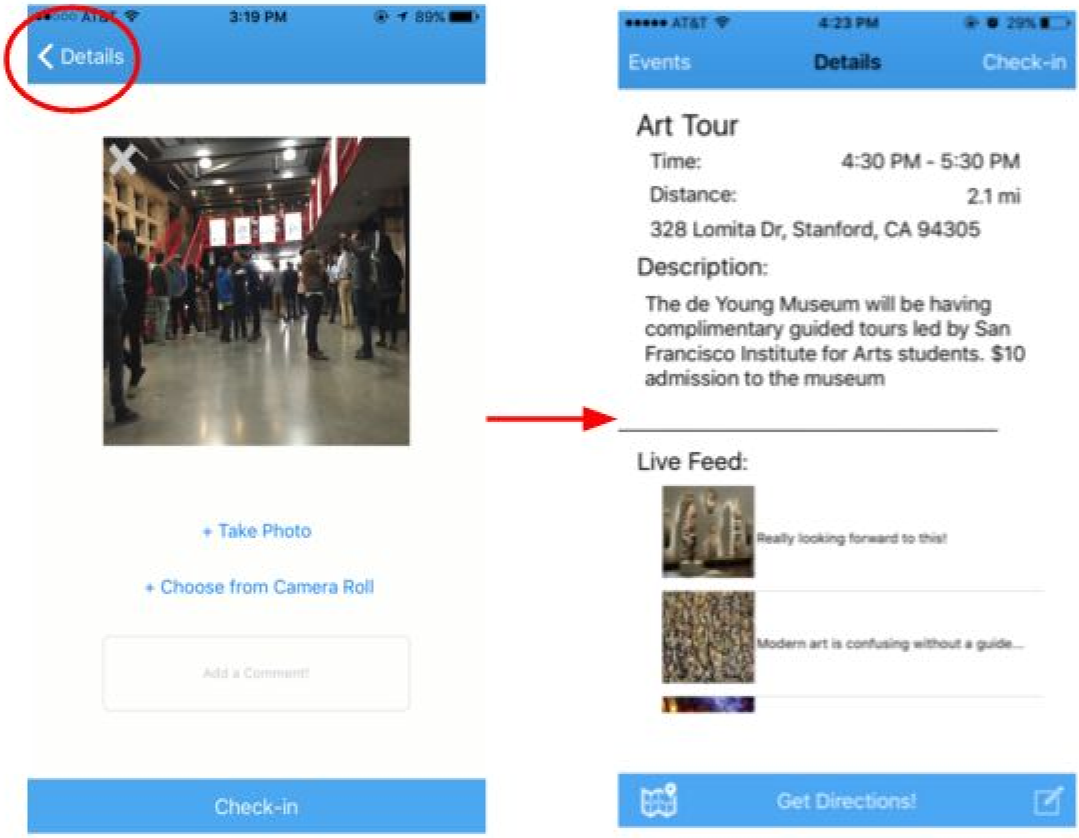


Red areas are now gone, and marked areas are now green pins on the map

Check-In: Back Button

[H2-7 Flexibility and efficiency of use][Severity 3] [Found by: A]

Original comment	The back button after adding a photo is expected to go back to main check-in screen, but instead goes back to the event page. Users would want to go back to the check-in main page from posting a picture if they change their minds about it in order to cancel the entire post or just post a comment with only text. Change it so that it does so.
Our solution	We took out the cancel button, and put in a “back” button to go back. We also added a delete button (an X) to delete a photo the user has chosen.



Art Tour

Time: 4:30 PM - 5:30 PM

Distance: 2.1 mi

328 Lomita Dr, Stanford, CA 94305

Description:

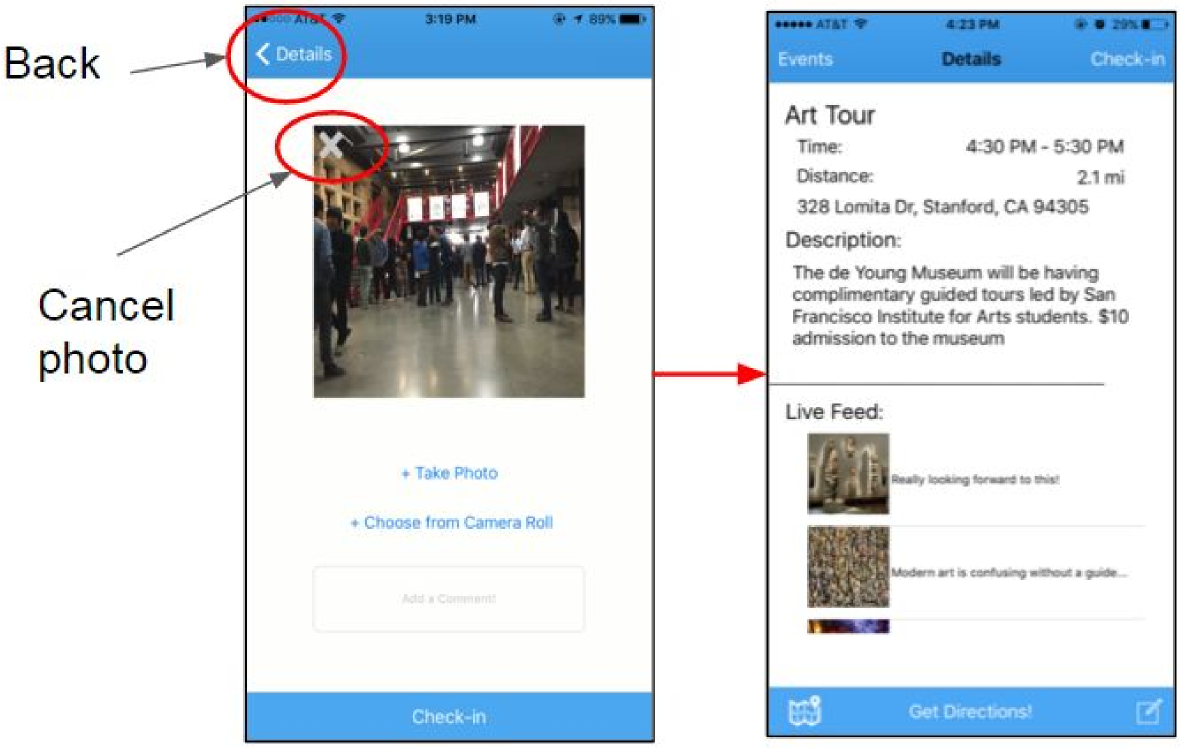
The de Young Museum will be having complimentary guided tours led by San Francisco Institute for Arts students. $10 admission to the museum

Live Feed:

Really looking forward to this!

Modern art is confusing without a guide...

Before, “back” takes you back to event and you couldn’t cancel the photo



Art Tour

Time: 4:30 PM - 5:30 PM

Distance: 2.1 mi

328 Lomita Dr, Stanford, CA 94305

Description:

The de Young Museum will be having complimentary guided tours led by San Francisco Institute for Arts students. $10 admission to the museum

Live Feed:

Really looking forward to this!

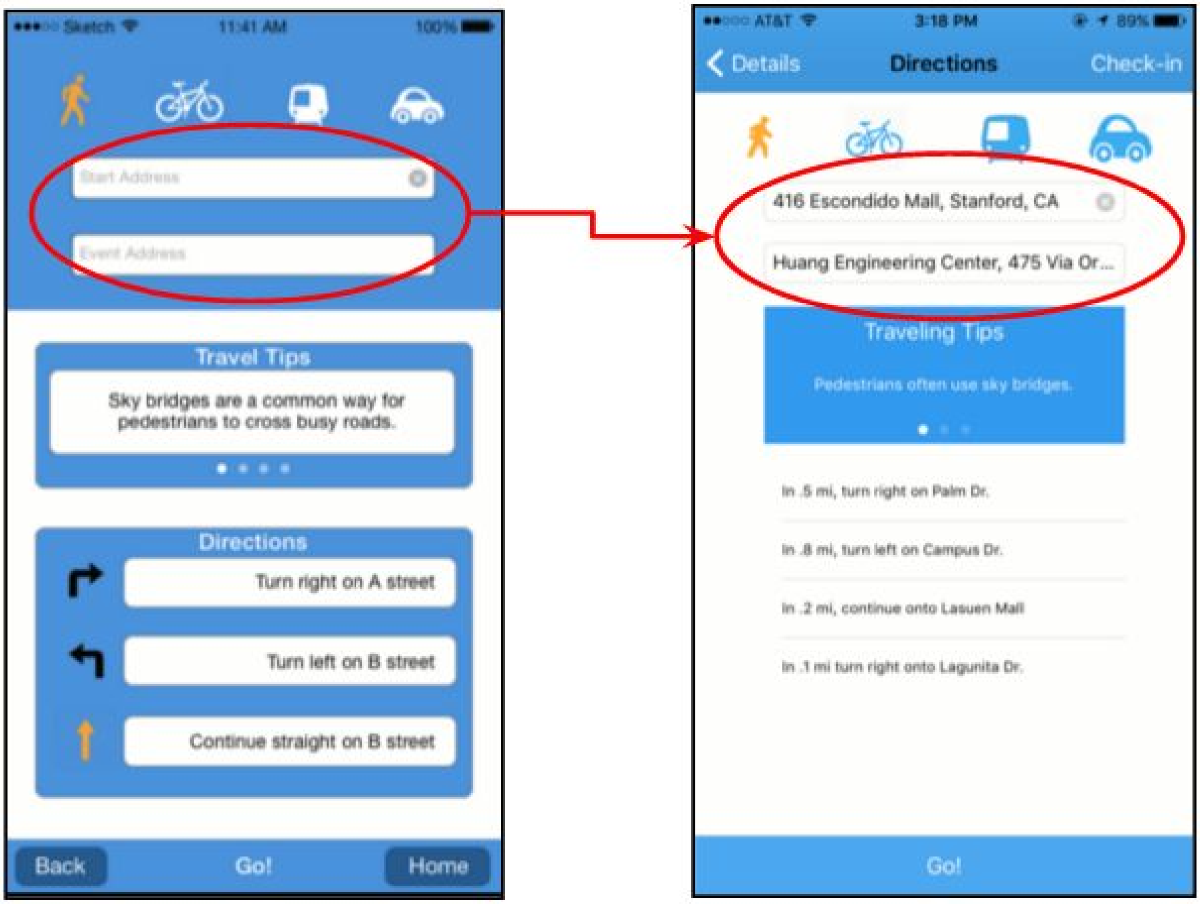
Modern art is confusing without a guide...

Now, “Back” takes you back to the event, but there is an option to cancel the current photo

Navigation: Directions

[H2-8 Aesthetic and minimalist design][Severity 3] [Found by: A]

Original comment	It does not make sense for the details window to have ways to input your destination and your current address considering it is the details window for the destination you already selected. Remove it.
Our solution	We use the destination of the event and that cannot be changed, but we kept the ability to set the starting address in case the user’s GPS is not working or they will be coming from other locations.



Sky bridges are a common way for pedestrians to cross busy roads.

Turn right on A street

Turn left on B street

Continue straight on B street

416 Escondido Mall, Stanford, CA

Huang Engineering Center, 475 Via Or...

Pedestrians often use sky bridges.

In .5 mi, turn right on Palm Dr.

In .8 mi, turn left on Campus Dr.

In .2 mi, continue onto Lasuen Mall

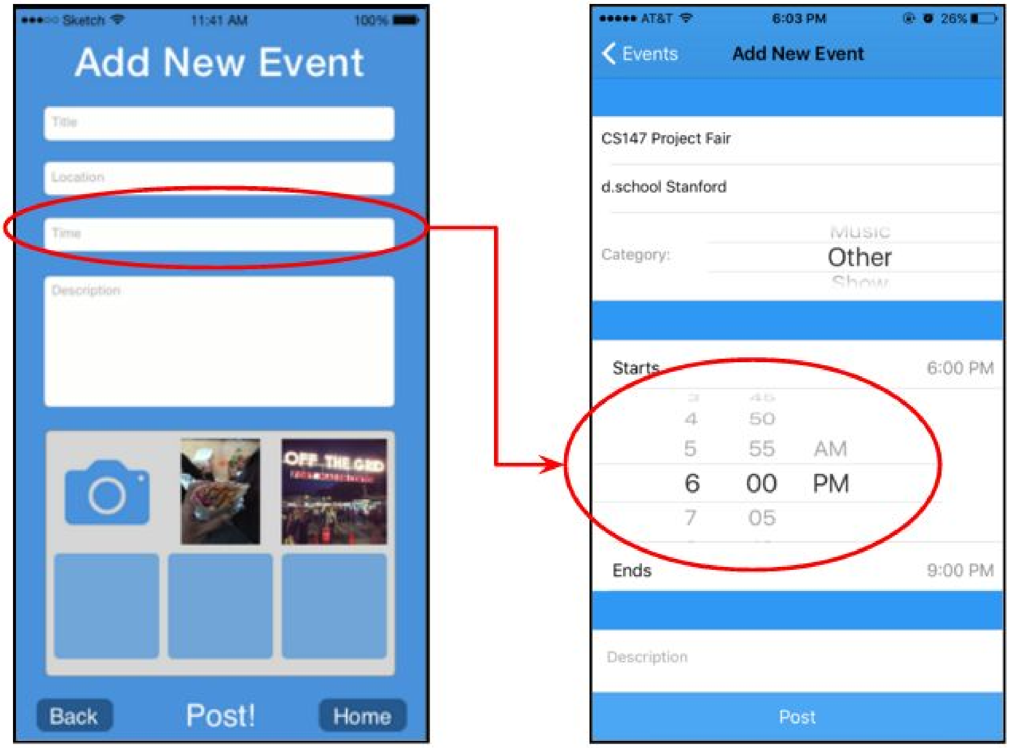
In .1 mi turn right onto Lagunita Dr.

Before, users could enter start and end addresses. Now, users can only enter the starting address and the end address is filled in, based on the selected event. For this example, the user typed in "416 Escondido Mall, Stanford, CA"

Add New Event: Time

22. [H2-7 Flexibility and efficiency of use] [Severity 4] [Found by: A]

Original comment	Allowing users to input time manually will result in different formatting between events and make it almost impossible to sort by time in your home screen. Add a time ticker element to the view.
Our solution	We made the time into iOS's native time picker (the wheel) to fix this

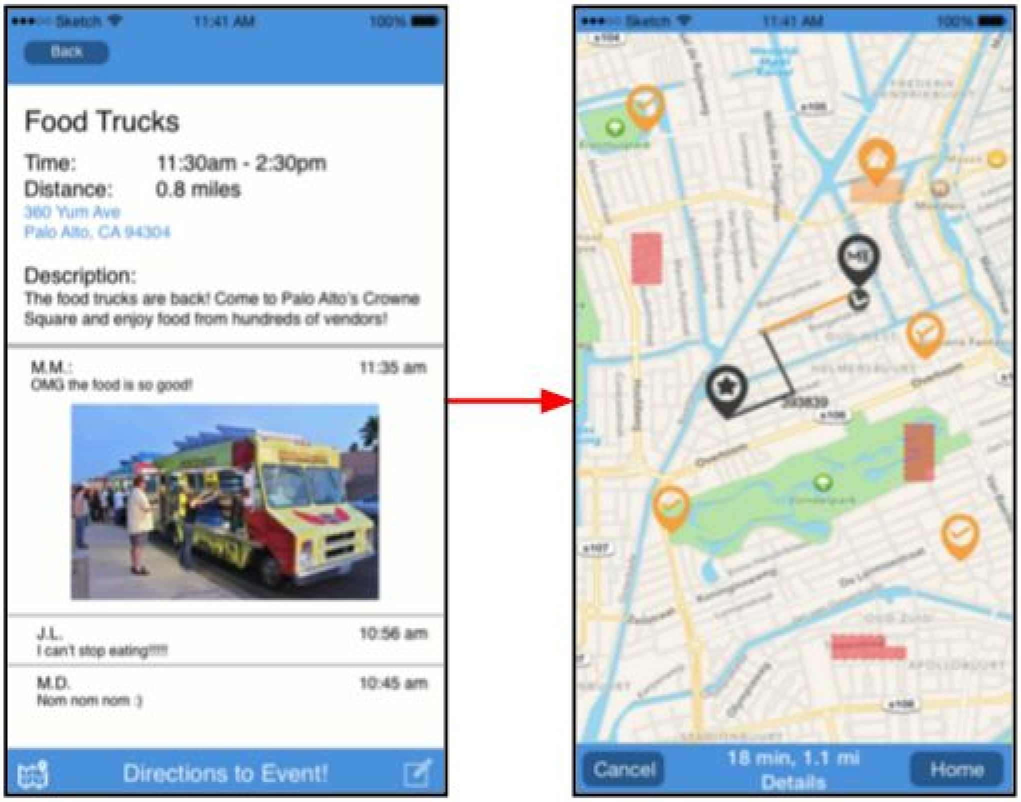


Before, the time is a text field. Now it is a scroll wheel.

Navigation: Means of Travel

[H2-2 Match between System and the Real World] [Severity 3] [Found by: A]

Original comment	The destination path is set before you even select a means of travel. This can be confusing to the user. Make the details/ means of travel aspect come before or during the phase where the user chooses to navigate to their destination.
Our solution	We changed the flow of the task so you'd see the navigation options screen before the map screen with directions



Food Trucks

Time: 11:30am - 2:30pm
Distance: 0.8 miles
360 Yum Ave
Palo Alto, CA 94304

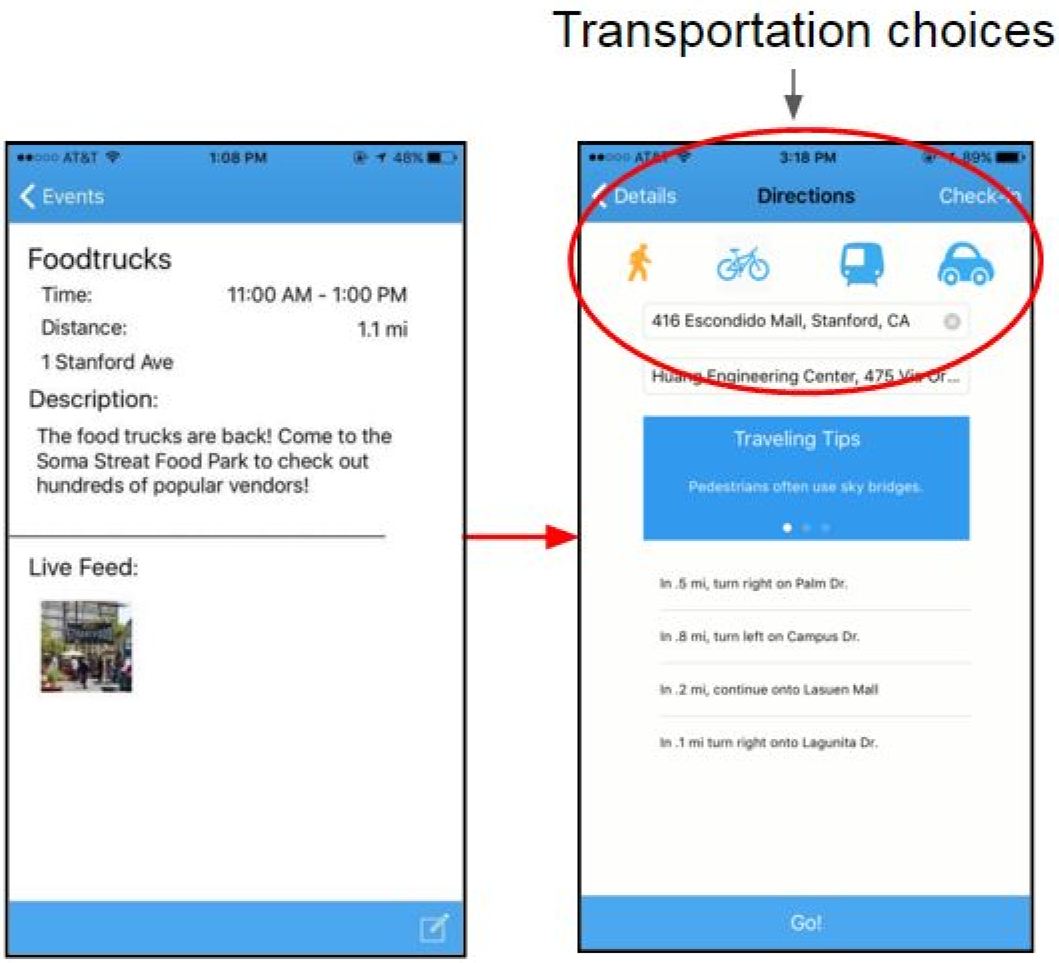
Description:
The food trucks are back! Come to Palo Alto's Crowne Square and enjoy food from hundreds of vendors!

M.M.: 11:35 am
OMG the food is so good!

J.L. 10:56 am
I can't stop eating!!!!!

M.D. 10:45 am
Nom nom nom :)

Old screens showing that getting directions take you straight to a map.



Foodtrucks

Time: 11:00 AM - 1:00 PM

Distance: 1.1 mi

1 Stanford Ave

Description:

The food trucks are back! Come to the Soma Streat Food Park to check out hundreds of popular vendors!

Live Feed:

416 Escondido Mall, Stanford, CA

Huang Engineering Center, 475 Via Or...

Traveling Tips

Pedestrians often use sky bridges.

In .5 mi, turn right on Palm Dr.

In .8 mi, turn left on Campus Dr.

In .2 mi, continue onto Lasuen Mall

In .1 mi turn right onto Lagunita Dr.

New screens show that the new transition takes you to the directions page first, where there are options for means of transportation

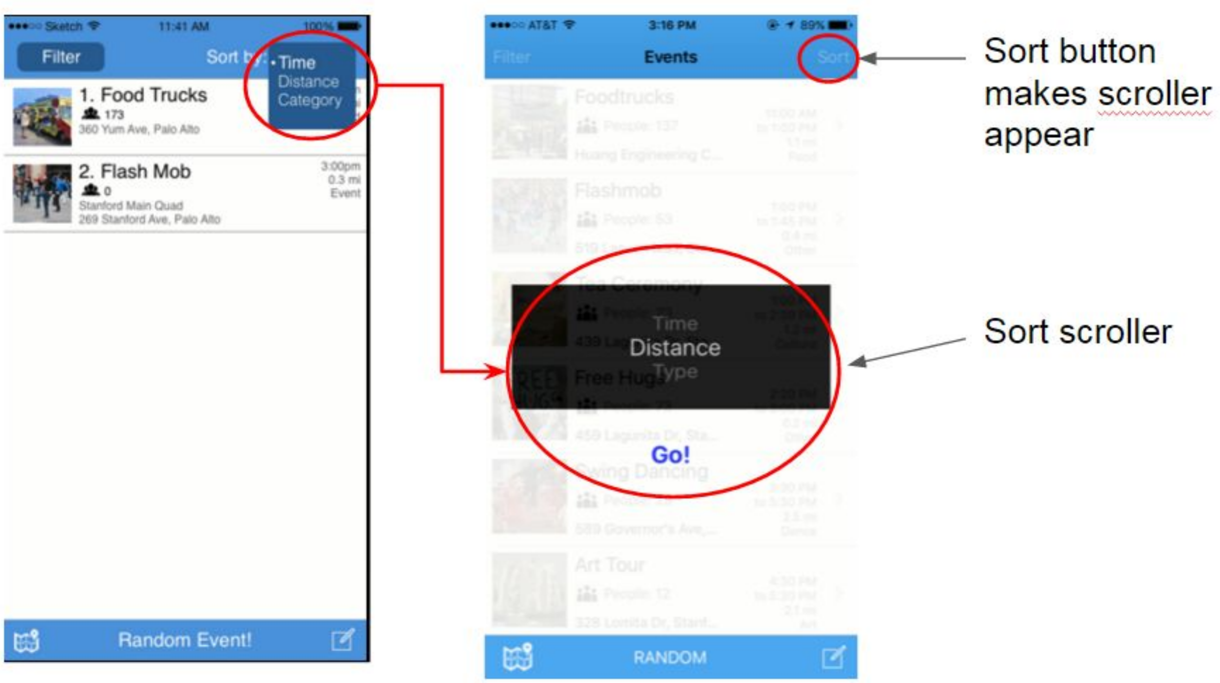
Navigation: Direction from Current Location

[H2-7 Flexibility and efficiency of use][Severity 4] [Found by: A]

Original comment	There is no clear way to get directions from the current location to the destination. If the user just follows the lines, this would be extremely difficult to use. Either outsource to Google maps or implement it yourself.
Our solution	First, there was a way to get directions from the current location, but it was a medium fi issue where it was not represented well. Also, since we use the Google API, we will have all the navigation features that users expect

Additional change:

We made the sorting option from a dropdown list to a wheel scroller because a dropdown list was not only difficult to implement, but it would have been too small for easy access.



Sort button makes scroller appear

Sort scroller

Sort is now more obvious as a scroller that shows up

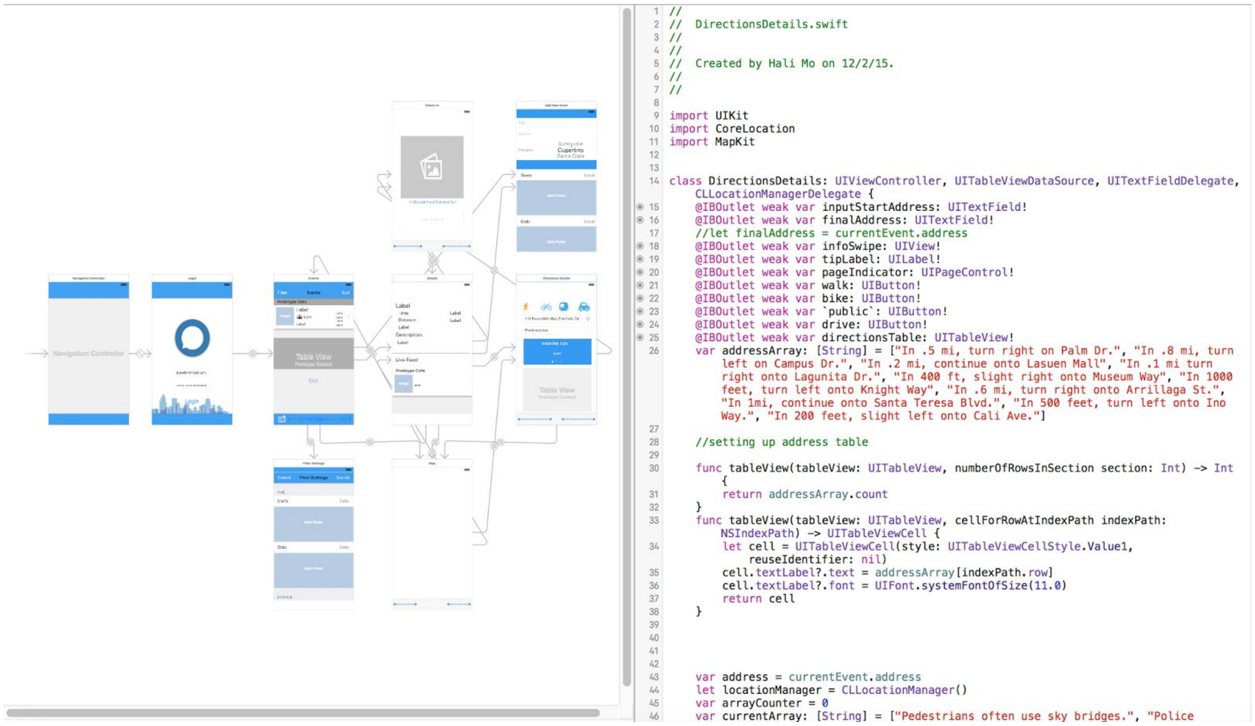
Prototype Implementation

Tools Used

Our final prototype is a native iOS app, made with through Mac’s Xcode IDE, which has an interface builder (called storyboard) and coded with the Swift programming language. We also added version control with Git, and shared a common remote repository on Bitbucket.

Xcode’s storyboard helped us design our screen transitions well, since we were able to visualize our designs. This also means that we didn’t have to code up every visual details for the screens. However, sometimes it was challenging linking the graphics on the storyboard with the actual Swift code.

Swift is a more intuitive and simpler programming language than the traditional iOS language, Objective-C. However, this also meant that there was a learning curve due to the new syntax and restrictions (such as dealing with optional variables).



```
//
//  DirectionsDetails.swift
//
//
//  Created by Hali Mo on 12/2/15.
//
//

import UIKit
import CoreLocation
import MapKit


class DirectionsDetails: UIViewController, UITableViewDataSource, UITextFieldDelegate,
    CLLocationManagerDelegate {
    @IBOutlet weak var inputStartAddress: UITextField!
    @IBOutlet weak var finalAddress: UITextField!
    //let finalAddress = currentEvent.address
    @IBOutlet weak var infoSwipe: UIView!
    @IBOutlet weak var tipLabel: UILabel!
    @IBOutlet weak var pageIndicator: UIPageControl!
    @IBOutlet weak var walk: UIButton!
    @IBOutlet weak var bike: UIButton!
    @IBOutlet weak var `public`: UIButton!
    @IBOutlet weak var drive: UIButton!
    @IBOutlet weak var directionsTable: UITableView!
    var addressArray: [String] = ["In .5 mi, turn right on Palm Dr.", "In .8 mi, turn
        left on Campus Dr.", "In .2 mi, continue onto Lasuen Mall", "In .1 mi turn
        right onto Lagunita Dr.", "In 400 ft, slight right onto Museum Way", "In 1000
        feet, turn left onto Knight Way", "In .6 mi, turn right onto Arrillaga St.",
        "In 1mi, continue onto Santa Teresa Blvd.", "In 500 feet, turn left onto Ino
        Way.", "In 200 feet, slight left onto Cali Ave."]

    //setting up address table

    func tableView(tableView: UITableView, numberOfRowsInSection section: Int) -> Int
        {
        return addressArray.count
    }
    func tableView(tableView: UITableView, cellForRowAtIndexPath indexPath:
        NSIndexPath) -> UITableViewCell {
        let cell = UITableViewCell(style: UITableViewCellStyle.Value1,
            reuseIdentifier: nil)
        cell.textLabel?.text = addressArray[indexPath.row]
        cell.textLabel?.font = UIFont.systemFontOfSize(11.0)
        return cell
    }




    var address = currentEvent.address
    let locationManager = CLLocationManager()
    var arrayCounter = 0
    var currentArray: [String] = ["Pedestrians often use sky bridges.", "Police
```

Storyboard and Swift code side by side inside Xcode.

Git and Bitbucket allowed our team to work simultaneously without conflicts. Having version control meant that, if needed, we can revert our changes at any stage of development. However, we found that if we’ve made significant progress separately, it was difficult to merge everything back together into the same project. Thankfully, Xcode’s native version control options streamlined this process. The only nuisance was that checking out a project from the remote repository would create a new project folder locally.

Wizard of Oz + Hard-code

For our final prototype, a majority of the features were functional, including filtering, map, camera, live feed, etc. However, since we did not link to a server, the user’s interactions with the features are only reflected on the user’s own device. Also, even though the map is functional and any new events the users add would correctly show up on the map (given a correct address), the navigation feature was done as WoZ. The starting point, directions, and destination are always the same, but they are believable because the starting point was set to the Stanford D school - the location of the demo.

Hard-coded data summary: events when the app first opens, the locations the user has already been to, navigation details.

Future Iterations

Clearly the WoZ and hard-coded data would need to be changed to dynamic data in the final iteration of the product. In addition, we would like to have better categories (for events), the option to save events to attend, shading the map for where the user has been to, using user's current location as the starting point for navigation, and the ability to check in with multiple photos.

We would also utilize a back-end server so that the user can interact with other users' generated events and comments/photos.

For our final prototype, we also introduced a feature that was not a part of the three major task flows: the check-in and livefeed. We felt that these were important features for the user experience, so we roughly implemented these to see the users' reactions. For the most part, we received positive feedback. However, since these were beta-testing features (on a prototype, to add), there are some bugs that need to be addressed. As of now, the check-in feature could potentially reset the event list, depending on the order the user interacts with the app. Also, the keyboard on the check-in would not disappear, and the photo that the user sets will become the photo for future check-ins.

Summary

O was created to help transform tourists experiencing generic, over-planned trips into travelers pursuing spontaneous, local events to build an authentic experience. We originally focused on creating spontaneous experiences, but found through our testing that users enjoyed the independence of planning their trips. Rather than forcing spontaneity on the user, we decided to change our design so users would be open to the unexpected while still having the power to arrange their travelling plans as they wished. Along with this major design shift, we also iterated continuously throughout the quarter in order to bring clarity and ease of use to our design so that users may easily leverage the event-finding and unique navigation capabilities of O. Through O, users are able to throw away their tourist guidebooks and experience authentic local events they otherwise would not have been able to discover.