

Lo-Fi Prototyping and Usability Testing



1. Instagator Team Members

Amanda M. (Design Guru)

Dennis E. (Demo Lead)

Rhea D. (Documentation and Coordination)

Tanner G. (Note-taker and Consent Form Manager)

2. Introduction

Group travel is a great opportunity for relationship-building and cultural exploration that gives the traveler an affirmed sense of familiarity. However, group travel can be so cumbersome of a task that many are afraid or reluctant to start the planning process. Needfinding explorations revealed that those who plan group trips struggle to track others down, split payments, and weigh the input of participants when decision making. Email, the conventional means for managing such logistics, simply doesn't do the trick. These findings informed the three tasks represented in our concept video and prototype: managing documents and payments (simple), inviting guests and managing responses (medium), and collecting/incorporating others' input on activities (complex).

Our solution, Instagator, hopes to make group travel planning more accessible by aggregating all related tasks and participant responses into a single, actionable platform. In other words, the app seamlessly engages trip participants in a collaborative rather than passive and reactive planning process - a behavioral change necessary for making the lives of instigators (get it?) among us easier. No more frustrated planners and dissatisfied guests. Instagator is the way of the future!

3. Sketches

We began sketching interface ideas in studio and came up with a total of 19 rough UI sketches for a website, a wearable, and a native tablet or mobile app. An overview image of the sketches is included in image 1.



Image 1. Overview of Sketches

Top Two Sketches Storyboarded

Of the three platforms (tablet/mobile, wearable, and web site), we decided to explore further the tablet and wearable concepts in order to make it possible for the planning process to occur away from a computer or on-the-go. Two elementary storyboards are included below in images 2 and 3.

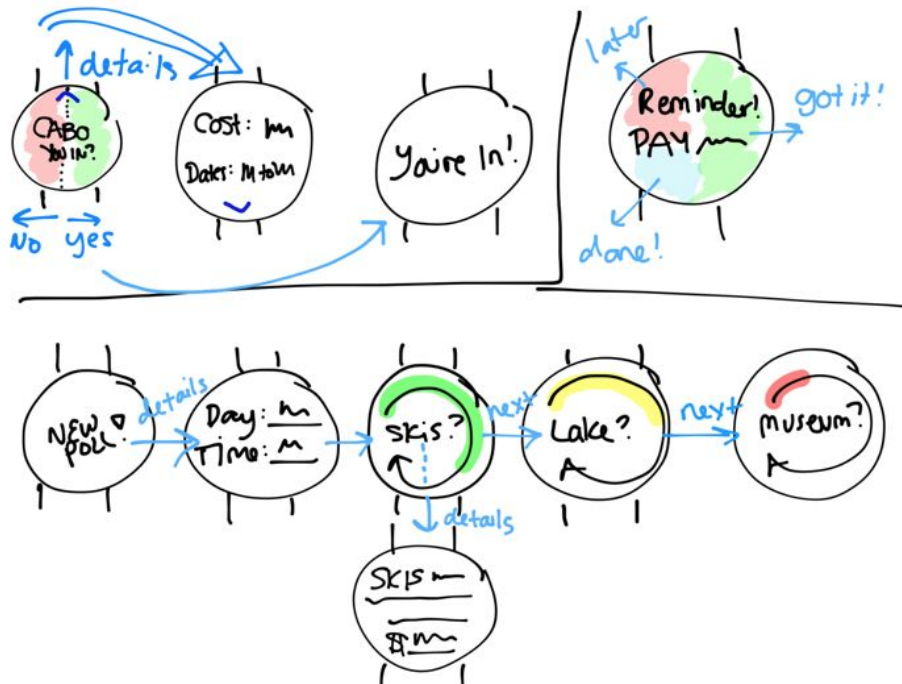


Image 2. Planning Via Apple Watch

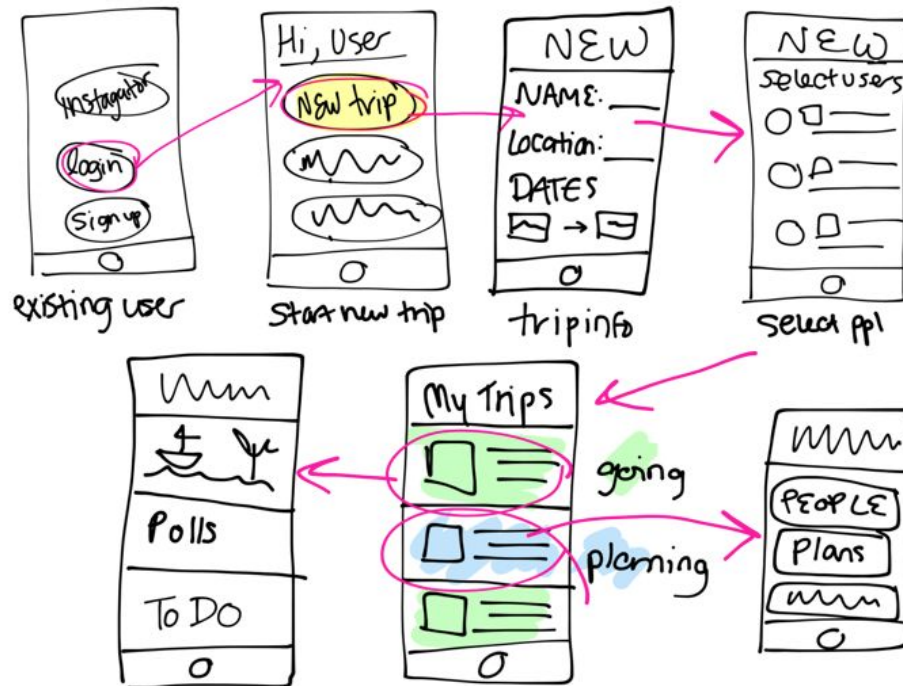


Image 3. Planning Via Tablet

4. Selected Interface Design

Selection Process

Our selection process required us to choose between prototyping a wearable and a native mobile application. Additionally, we needed to choose between focusing on a trip planner's interface and a trip participant's interface.

Our first impression was that wearables would be a successful platform for the participant's interface as it provides users a new and interesting way to interact with the application by focusing on short, succinct interactions. The limitation to this was that the functionality of our application would be limited by screen space. As a result, we would likely only have a subset of features available on a wearable, such as rating activities or viewing basic trip information. Additionally, a wearable would necessarily need to be accompanied by a web or mobile application because planning a trip through a wearable would be impossible.

Because we realized that we would probably need a mobile platform regardless, we elected to prototype a native mobile app, rather than a wearable app. A mobile app still enables on-the-go use for the users, while leaving much more flexibility for functionality. Moreover, we chose to use a tablet as our platform instead of a smartphone because of the increased screen real estate. Furthermore, though both the planner and participant would be able to use a mobile application, we decided to prototype a trip planner's interface because the core, more complex functionality of our application will be available to the planner, rather than to the participants.

Moderate Task: Start new trip

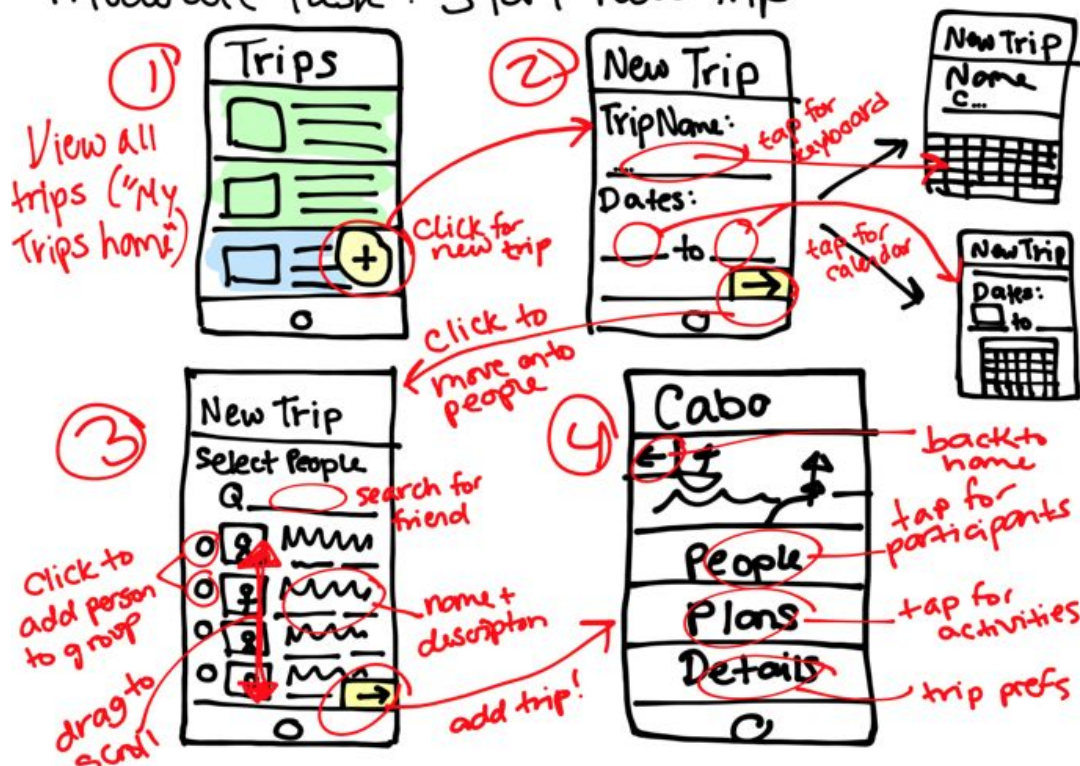


Image 4. Storyboard 1: Start a New Trip

Easy task: Send Reminders

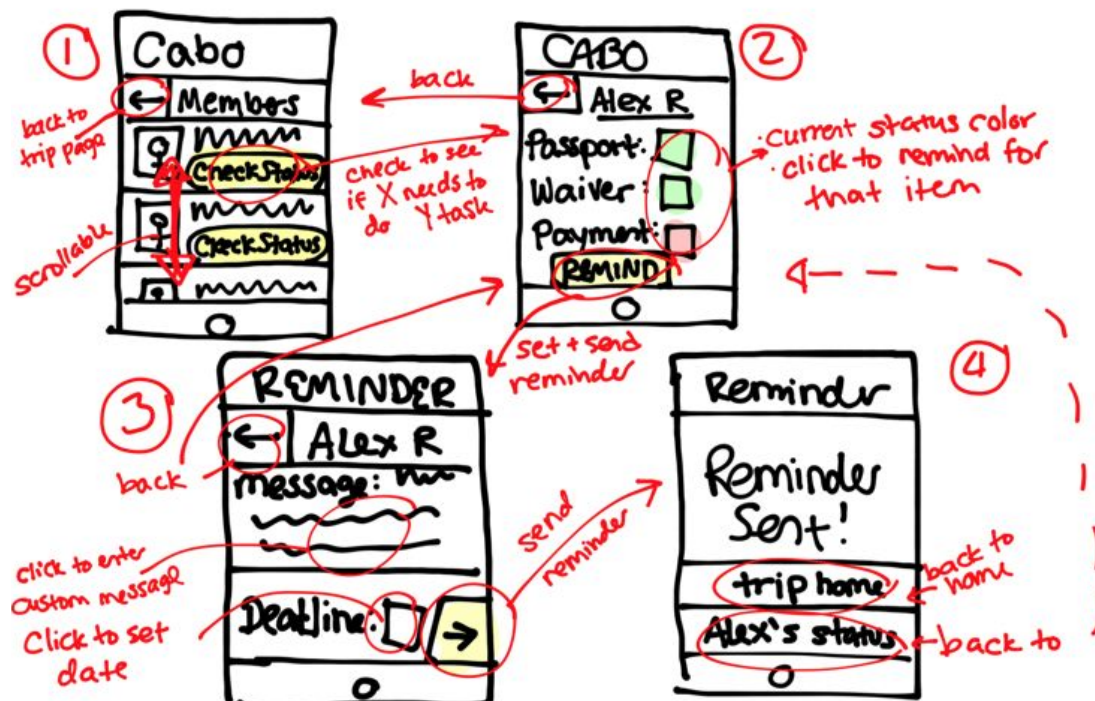


Image 5. Storyboard 2: Send Reminders

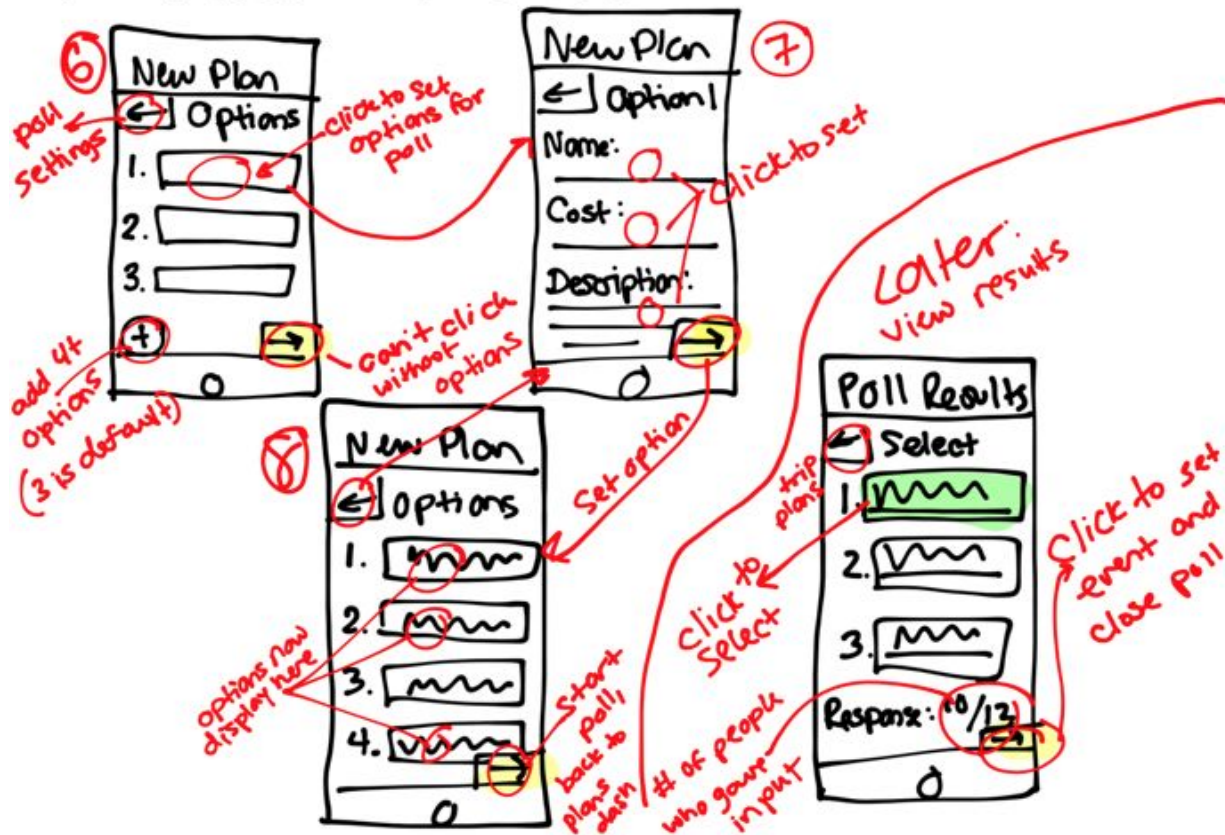


Image 6. Storyboard 3: Plan Events with Member Input

5. Prototype description



Images 7 and 8. Prototype Home Screen and Overview of All Screens

Our prototype consisted of 22 sketches corresponding to 3 different tasks, and each of the interfaces was the size of an iPad screen (see all sketches [here](#)). When the user was presented with an interface, it was placed on top of an actual iPad in order to help recreate the feel of using an application. Each time the user began a task, we presented them with the “Sign In”/“Sign Up” screen told them that they already had an account with us. This allowed us to trace their actions from the very start and see how they behaved along the way. We also used paper cutouts of an iPad keyboard and date-picker calendar to further recreate the experience of using a real application.

We tried to keep the interfaces simple while still having enough content that they seemed realistic (Note: all interface screens can be seen in [Appendix 3](#) - Task Screen Images). An example of this is the main “Plans” page which simply had a list of a user’s active trips and a button to add a trip. We chose to keep the designs minimalistic so that testers could focus more on how clearly labeled certain features were and how easy they were to find on the page, as opposed to tempting our testees to focus on aesthetic concerns. This turned out to be a good decision as we received a fair amount of feedback regarding our naming conventions and use of various signals, which will be of great use to us moving forward.

We also used colors on many of our interfaces to help guide the user to the main functionality or information. An example of this that was well-received was the reminder page, which had the boxes color-coded based on whether the attendee had completed that task or not. This color-coding allowed for the planner to quickly and easily see which tasks the participant had not completed, allowing them to send reminders more efficiently. The color palette used only consisted of a generic red, blue, green, and yellow in order to be effective signals without drawing focus for aesthetic comments.

6. Method

6.1. Participants

We recruited four candidates, three female and one male (see [Appendix 1](#)):

Nisha - is a 27 year old technology strategist and graduate of Northwestern University. She was recruited through Rhea, who is commonly mistaken for her, and was compensated in brownies and chocolate throughout the day.

Camille - is a 20 year old undergraduate at Stanford who was recruited by Amanda. Camille frequently plans group travel for Stanford’s steel drum ensemble, a cohort of roughly two dozen individuals. Camille enjoyed brownies as compensation.

Lindsay - is a 31 year old Googler who leads data collection and user experience design teams for a variety of top-secret hardware products. She was recruited through Dennis, who worked with her at Google, and was compensated in brownies and chocolate.

Adam - is a well-traveled 27 year old Middle Eastern economic policy advisor. He was recruited through Rhea, who attempted to compensate him with brownies and chocolate, but he refused because he is a health nut.

6.2. Environment

Our testing took place in a private workroom at the Stanford GSB. We chose this location due to its availability. The subject sat at the head of the table with the interview facilitator (Dennis, who delivered the script - [Appendix 5](#)) and the human computer (Amanda, who moved sketches in and out of focus) sitting on either side. The note-takers (Rhea/Tanner) sat near the subject in order to both observe their behavior and overall demeanor and hear feedback.

6.3. Tasks

The three tasks were ordered by when they would occur during the trip-planning process, as opposed to by difficulty. The first task was of moderate difficulty, where the subject was instructed to create a new trip and invite some friends. Once the user had signed in, the directions to add a new trip were relatively straightforward in the fields that needed to be filled out (name, location, and trip dates). A list of friends helped facilitate the invitation process.

The second task was of easy difficulty; the user simply had to send a reminder to “Mack” to let him know that he needs to pay his part of the trip. This was a simple task because it only required the user to select the trip, select the user, then select the “reminder” option, with the options to write a custom message to the user and set a deadline.

The final task our subjects had to complete was of complex difficulty. Subjects were instructed to “create a new plan for the Paris trip, polling friends for input.” This was a complex task because it required the subject to select the correct trip, view existing plans for that trip, start a new plan, set that new plan as a poll event, and set the options for the activities in the poll. A screen was also available to view the results of the poll and select the winning option.

6.4. Procedure

Before entering the room, the subjects were briefed according to our script on the procedure for the test and were presented the consent form to sign. Upon completion, the subject entered the room and sat at the head of the table. The demo lead (Dennis) then showed the subject an example of how to operate the paper interface and how the experiment would go. We then asked the subject if they had any questions before we began.

After answering any questions, the demo lead explained the first task to the subject according to our script, and the computer (Amanda) placed the first screen on the iPad in front of them. We provided as little guidance as possible to the subject, only speaking when they asked us a question or told us they were stuck. We proceeded through the three tasks in this manner, taking notes on what the subject said and did as well as making relevant sound effects when they took action. Upon completion of the three tasks and answering any questions, we then asked the subjects for their macro-thoughts on the demo as a whole or any suggestions, and their responses were recorded.

6.5. Test Measures

The primary test measure whether the user was able to understand how to complete each of the three tasks. We made sure to pay extra attention when the user was first presented with a new screen, as this is when we could tell how intuitive the interface was. We quantitatively monitored both the amount of time the user spent paused on a particular screen, as well as the number of any physical reactions they had, such as facial expressions or body gestures.

7. Results

Raw notes for the tests can be found in [Appendix 4](#).

Qualitative Feedback

7.1. Subject 1 - Nisha

Nisha questioned the source of the list of potential trip participants, as she wanted people to be able to be involved with the planning process even without downloading the app or being her Facebook friend. Nisha also found that our “People”, “Plans”, and “Papers” naming convention was ambiguous. Nisha wanted to be able to have multiple trip-planners on the same trip so that, for example, multiple individuals could each be responsible for a particular day of the trip.

7.2. Subject 2 - Camille

Camille reiterated the ambiguity of our “People”, “Plans”, and “Papers” naming convention. She also noted it was unclear that the page displaying poll results are in rank-order, and she thought that the page was a poll in itself. A numbering scheme would have helped Camille for this page. Camille also wanted to know her current position or depth within the app because it was easy for her to lose track of where she was.

7.3. Subject 3 - Lindsay

Lindsay noted that the “+” symbol was confusing to her because it is often associated with tagging things outside the context of the screen. She also suggested that we automate certain processes, such as sending reminders, importing activities from elsewhere, and pre-populating certain fields based on past data entered.

7.4. Subject 4 - Adam

One thing that Adam noted throughout the demo was the ambiguity of many of our naming conventions, such as “Set Options” or “Fixed” vs. “Poll” options for creating activities. In addition, Adam also suggested some ideas for making the application more useful for the entirety of the trip, as opposed to just planning it. Some ideas he had were to include a currency converter or an option to save pictures of receipts.

Quantitative Feedback

Across all users, most issues were had during task 3. A summary of the number of pauses made and questions asked by each participant is summarized in Table 1, below.

	Task 1	Task 2	Task 3	Total
Nisha	2	2	5	9
Camille	0	2	2	4
Lindsay	4	3	6	13
Adam	0	1	3	4
Total	6	8	16	30

Table 1. Summary Count of Pauses and Questions Asked

8. Discussion

The biggest obstacle for our subjects was the ambiguity of many of our interfaces. The main stumbling point for a lot of people was the main screen for an individual trip, which showed options for “People”, “Plans”, and “Papers”. This was confusing for people because some options could fall under multiple categories, such as requesting a payment from someone, which could be in any of the three. Another instance was with the activity poll, which had buttons for “set options”, but people hesitate a lot here and didn’t know what this meant until they pressed it.

Another problem the subjects had was the lack of control over certain parts of the trip-planning process. Adam was surprised it took so few steps to start a trip, while Nisha wished she had been able to fill in more information about the trip before it was created. One solution to this problem is to allow the user to set as much information about the trip as they want, and only “send” the trip when they’re ready.

Our subjects also provided us with many suggestions on additional features we could add to the application. Some of our favorite suggestions include the ability to have multiple admins on a single trip, automating certain processes (e.g. sending out reminders), and selecting specific screen-transitions such that they help to inform the user about where they are within the application. In addition, we will likely want to extend our interface in some way so that people who don’t have smart phones can still be involved in the trip-planning process, possible via some sort of SMS/text message interaction. These suggestions were very helpful, as they address real problems a user would have while trying to plan a trip with this application.

Even though there were some roadblocks for interacting with the demo, the overall response from our subjects was positive. During task 2 (sending a payment reminder), Nisha said she found the process to be “very intuitive”, and our subjects have very little trouble completing this task. In addition, during our debriefing, Camille told us, “I want this app”, and Adam told us, “I really like this idea”.

9. Appendices

Appendix 1 - Participant Pictures

Participant #1



Participant #2



Participant #3



Participant #4



Appendix 2 - Consent Forms

10/19/2015

Appendix A: Consent Form

Consent Form

The [TEAM NAME HERE] 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 [TEAM NAME HERE]. 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 ([TEAM MEMBERS NAMES HERE]) 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 studentresearchers 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 [TEAM NAME HERE] 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 Nisha Japana
Participant Number 1
Date 10/19/2015
Signature [Signature]
Witness name Dennis Ellis
Witness signature [Signature]

<http://hci.stanford.edu/courses/cs147/2015/assignments/consent-form.html>

10/19/2015

Appendix A: Consent Form

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Name Adam Heffez
Participant Number 4
Date 10/19/2015
Signature [Signature]
Witness name Rhea Decker
Witness signature [Signature]

<http://hci.stanford.edu/courses/cs147/2015/assignments/consent-form.html>

10/19/2015

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Name Camille Townshend
Participant Number 2
Date 10/19/15
Signature [Signature]
Witness name Dennis Ellis
Witness signature [Signature]

<http://hci.stanford.edu/courses/cs147/2015/assignments/consent-form.html>

10/19/2015

Appendix A: Consent Form

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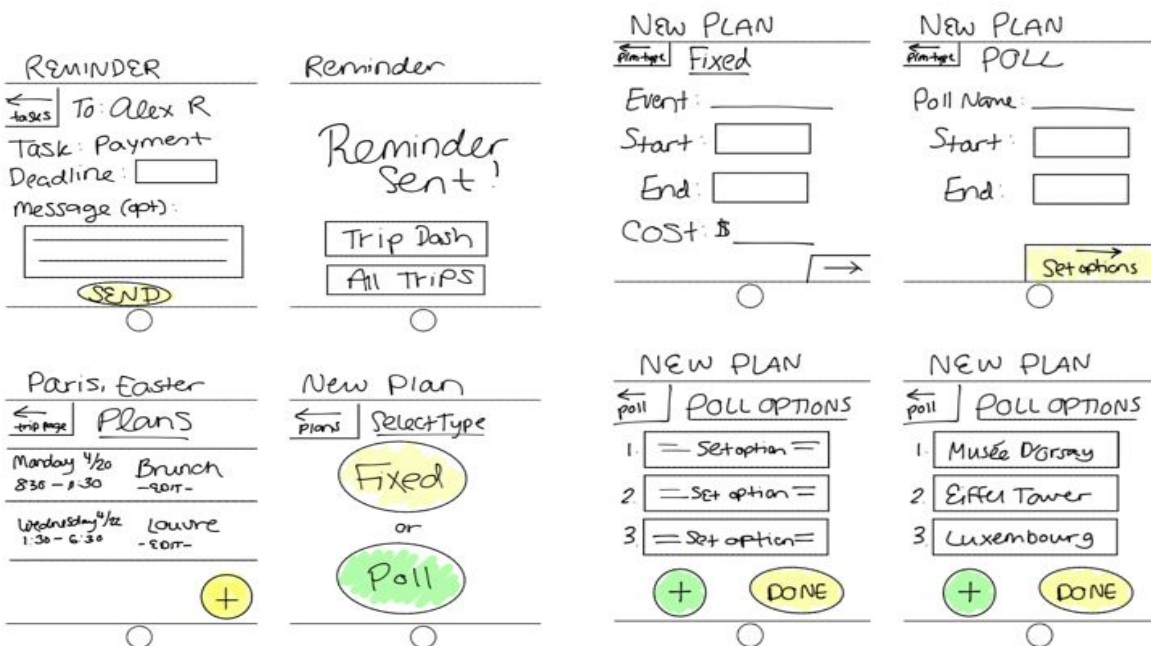
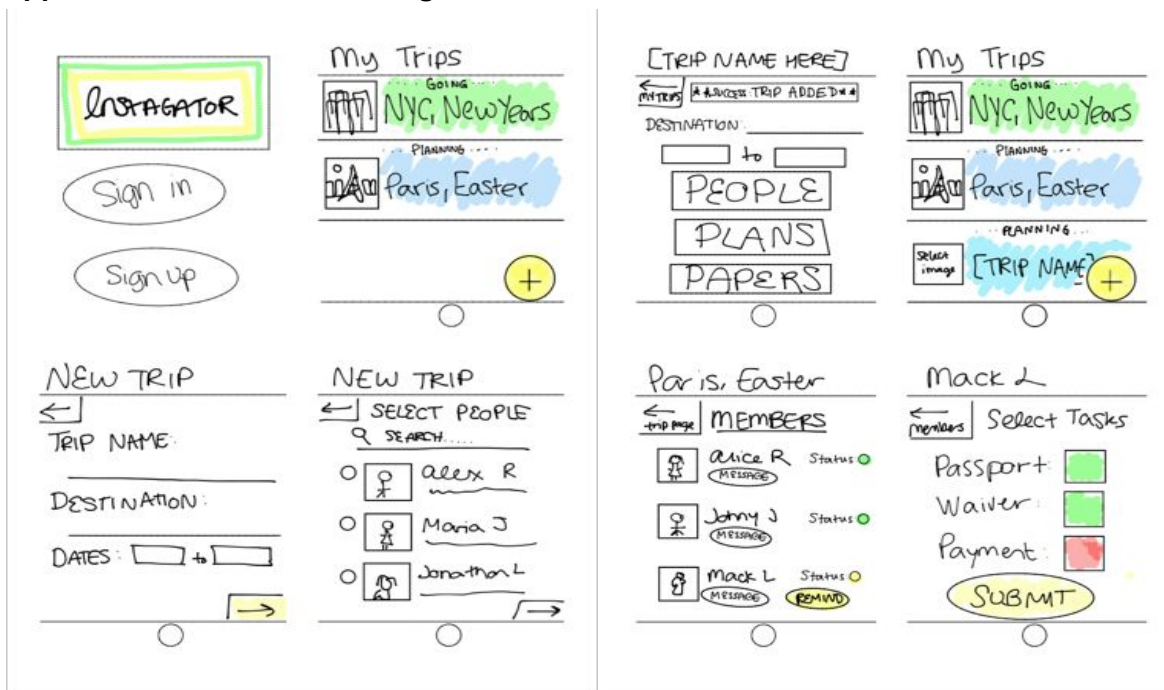
Participant anonymity will be provided by the separate storage of names from data. Data will only be identified by participant number. No identifying information about the participants will be available to anyone except the studentresearchers and their supervisors/teaching staff.

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 [TEAM NAME HERE] 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 Lindsay Ellis
Participant Number 3
Date 10/19/2015
Signature [Signature]
Witness name Amelia McNamara
Witness signature [Signature]

<http://hci.stanford.edu/courses/cs147/2015/assignments/consent-form.html>

Appendix 3 - Task Screen Images



Appendix 4 - Test Notes

Interview 1: Nisha Tiparia Sant

Task #1 Start a new trip

- Expected form fields when she clicked sign in versus SSO
- Trip name - opted to make it Hawaii and then realized the description was the same, so she decided to change the name.
- She assumed the list of contacts are people in her phone - Q: Do they have the app or not? What she would prefer is to have the ability to add people from her contact list, not just those who already have the app.
- Would want to have something more in the trip entity before she invited people. Moving to the people screen after entering the name and dates was jarring. Don't want to share a shell if you will.
- 'Plans', 'People' and 'Papers' naming convention doesn't resonate.

Task #2 Tracking down someone who hasn't paid

- Thinks she should be able to locate the person who did not pay in either plans or people
- Doesn't know what's going to happen if she presses remind, so she would rather 'message' him.
- Reaction indicates that she really likes the mock of the tasks that he hasn't completed, but said she'd like to see the date the task was issued and the date of any reminder that was sent. Really likes that she gets to review the message before she sends the reminder.
- "I like it, it's very intuitive."

Task #3 Start a new plan for Paris that polls members for inputs

- Clicking on 'Plans' was intuitive. Was curious what the existing entries in the plan were called (Activities?)
- She would have assumed the date fields were for the poll, rather than for the event.
- 'Response rate'...'Does everyone else see who voted for what?' - Might be a good idea to include a comments field for poll results.
- 'But what if I want to delegate?'

General feedback

- A budget overview early on would be helpful.
- Also a way to support the case where destination and people going weren't already confirmed.
- She wanted to see a macro itinerary / calendar as it builds
- User permissions for co-planners / delegation would be great

Interview 2: Camille

Task #1 Start a new trip

- Maybe swap the order of destination and the name fields

- “ooo I can search people.’ She’d scroll through the make sure she’s not forgetting anyone who would be upset they didn’t get invited

Task #2 Track down someone who hasn’t paid

- First screen is super confusing. Would click on people or papers. Thinks of ‘receipts’, ‘tickets’, ‘passport copy’ and keeping track of tabs.
- She clicked ‘Remind’ Liked the red coloring of incomplete task.
- Wanted to click on trip dash afterward

Task #3 Start a new plan for Paris that polls members for inputs

- Clicking on ‘Plans’ was an obvious choice
- Assumed start and end were a day AND time
- ‘What does ‘set option’ mean? ‘Oh, like an activity, not setting!’
- Wants to check results, but it wasn’t clear to her that the results were stack ranked. Bullets are not effective at communicating that here.
- Make sure planner can also vote

General feedback

- “I want this app”
- like to know where you are in the app, so pay attention to the kinds of screen transitions we use.

Interview 3: Lindsay Ellis

Task #1 Start a new trip

- The Plus symbol on the bottom right is becoming more and more associated with tagging things outside the context of the screen you’re on. Might consider changing it.
- Would want to enter a destination first and then a trip name. Then the trip name could default to the destination.
- Arrow button to move to next screen doesn’t convey that the info entered is being saved.
- Assume the contacts shown are all connected to phone contacts. “That’s easy.”

Task #2 Track down someone who hasn’t paid

- Finds this first interface too busy.
- ‘Could you setup reminders before, like maybe when you add folks, so you don’t have to actively remember to remind folks?’
- It would be great if there were something funny you could do to remind them that they are behind on their tasks.
- More automation and support for bulk options on the reminder stuff would be better. Ex. a pre-populated template, auto populated deadlines etc etc.

Task #3 Start a new plan for Paris that polls members for inputs

- ‘Is this the sort of thing where multiple people can be instigators?’

- Would be great to infer on the 'My Trips' screen which trip they are working on and load that page automatically versus having them choose each time.
- "Fixed versus Poll isn't super clear" Could you create a fixed event and then poll people on whether they want to do it or not? Is this really the way you want to start creating an event (ie. asked fixed vs poll first)?
- Is this the name of the poll or the name of the event?
- Highly confused by the 'Set options' screen. What if you pre-populated activity options since you know where they are going?
- People are interested in understanding what kind of messages are sent to guests. It might be worth building an option in to save a poll draft and share it with co-planners.

Interview 4: Adam Heffez

Task #1 Start a new trip

- Wants to see all contacts when he scrolls for new contacts
- Surprised that was the only necessary actions to create a trip

Task #2 Track down someone who hasn't paid

- People are really tripped up by the people, plans, papers screen

Task #3 Start a new plan for Paris that polls members for inputs

- Doesn't want to sign in every time
- "Oh, I like that. I can build consensus on group trips."
- Clicked on Plans without questions.
- Paused on Fixed versus Poll screen seemingly confused
- Wants to know what clicking on 'Set Options' does. Button label may not make sense.
- "I don't know what an option is"
- Nervous that creating the poll emails friends automatically
- Text message poll results would be valuable

General feedback

- Is this interface for the planner of the trip or participants?
- "I like this idea."
- "How much can trip participants engage in the planning?"
- Would be great to allow trip planners to suggest things to do. Doesn't think it'd be too arduous to ask for input and then ask people to rank.
- Currency conversion would be good.
- Option to take pictures of receipt would be great.
- make many steps of process optional

Appendix 5 - Test Script

Hi [name], thanks so much for your time. I'm going to be helping you get acquainted with our study before actually starting. First, could I have you sign this waiver for us? [...] Great, thanks. The app you're going to be working with today is an app named Instagator. Essentially, the premise of the app is to allow for easy group-trip planning. So now we're going to have you try and accomplish a few tasks using this paper interface. Treat the papers as if they are a real interface, and when you "press" buttons on the paper, our computer (Amanda) will swap them out for the next page. We're not going to initially give you any guidance on how to achieve said tasks, just do your best, but if you can't figure out how to do it, let us know and we will provide further guidance. As you work through your tasks, please think out loud; say anything you are thinking or any problems you are having. At the end, we will also have a brief recap where you can talk about your experience at a high-level. Any questions? [wait] Great, let's go ahead and get started

- 1) Your first task is to create a new trip. Assume that you are already signed up with our service, so you don't need to create an account.
- 2) Your next task is to send a reminder to your friend "Mack" to pay his portion of the trip.
- 3) Another feature of the application is the ability to poll other group members about the activities they want to take part in. Your final task is to create a poll for activities that you will send to the people in the trip.

Alright, thank you very much for doing that for us. Before we end, is there any other high-level thoughts you had?