

# CS 352 Project 7: Evaluation

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**Abstract**—This document will review the results of our 2-part evaluation of our prototype to overcome communications barriers between foreign language speakers and /or people who are deaf or hard of hearing.

## I. EMPIRICAL EVALUATION

### A. What we are trying to find out

We are trying to find problems with how our interface is designed, with specific interest in any problems that might be related to the learnability of the system.

### B. The Exact Task We Intend To Evaluate

Like the Cognitive Walkthrough, the task we are going to evaluate is that of a person setting up an immediate meeting to converse with either a hard of hearing person or a foreign language speaker.

Of particular interest is the potential cumbersomeness of having to set up a meeting just to talk to someone immediately. We have an inkling that in order for the app to “not get in the way” we may need to introduce an automatic discovery of other devices and automatically creating a “conversation” by simply selecting the target device/user.

Additionally, in the forums we got feedback that the “+” symbol might not be understood. Our pre-disposition was that this is consistent with iOS user interfaces. We will test this by asking Logan and Alex to think aloud to see if they stumble on this part of the interface.

Specifically, will look for the following feedback;

1. Do they understand that he must create a new meeting?
2. Do they understand that a meeting can include just one person?
3. Where do they expect to get contacts from? Contacts as provided by iOS or do they creates these within the app?
4. Do they understand the meaning of the icons representing the type of communications they can have?
5. Do they understand the multi-select metaphor? Even if it is just one person?
6. Is the meeting type page redundant? Would it have been better to merge this with the previous icons?
7. Does it seem awkward to set a meeting for an immediate conversation?
8. Does the Schedule page need to include who is invited?
9. Should the “Start Meeting” text be part of the meetings list or should the user have to “open” a meeting to start it?

10. If we need an auto discover mode, what would this look like? How does a user say they are willing to be discovered?

### C. The Particular User Being Evaluated

We've chosen “Logan” to perform the study on. We felt Logan is a good candidate first because he is hard of hearing and thus daily deals with the communications challenges we hope to address. Second, Logan works with the deaf and hard of hearing and residents with English as a Second Language (ESL) for the entire state of New Mexico, he has broad experience with both visual, verbal, and written languages. Third, he is an experienced user of technology ,specifically the iPhone and iPads. In our interviews with him, his office was littered with technology “carcasses” that either were too complex or too intrusive to use. Lastly, he is outspoken and passionate about this project and thus will be very forthcoming in his think aloud. We added an additional evaluation to our original plan. We've added Alex from our original interviews to represent the foreign-language speaker. Our original goal was to satisfy both deaf and spoken language, we didn't want to end up serving one audience well at the expense of the other. The evaluation was done with Alex as another data point to ensure we didn't skew in one direction to far.

We've chosen this method of evaluation because one of our main goals is to facilitate conversations between language-challenged” individuals. Learnability and utility make or break us!, the usability study should provide us with some insights on how well our interface achieves that goal.

### D. How the evaluation was performed

We used the “Wizard of Oz” paper prototype method for this as in one case both parties in the evaluation were deaf. In Alex's case we used the same method so we could triangulate the results for consistency. For Logan, we anticipated that given his deafness, he will want to write notes, comments and markup on the paper prototype . We were surprised that Alex also chose to do the same. We have attached a copy of the notes to this paper.

We started by reading the Usability Test Script we had created for this evaluation (included with this report) this was followed by a series of warm questions. We asked the participant to sign the participation form. This was all according to our original plan and followed by handing the participant a copy of our task definition and asking them to read it out loud and to verbally (or in writing) tell us what task we were asking them to do. We chose this method because in a practice run, we learned that the task might not be well understood or “glossed over” in the anticipating of seeing the prototype. This change was a well advised one as one of our

participants commented that they didn't fully understand this until after starting the prototype evaluation.

Just prior to starting with the paper prototype, we asked the participant to think aloud and describe what this meant. This was well received and understood and the participants did a good job at this.

The evaluation continued by placing the "meeting page" in front of the participant and asking them what they believed the page would do and asking them to tap elements on the page. As they did, we changed the page to the appropriate "next" page just as if the app were live.

#### E. Data To Be Collected

We expected that this evaluation would produce a list of fairly major problems with the interface and it did!. We have compared these with the analytical study and formed additional insights!

#### F. Changes to Original Plan

We mostly followed our original plan. The changes we made to the original plan are as follows;

- We added an additional empirical evaluation to facilitate triangulation of the responses.
- We created a derivative task from the original to accommodate the foreign language evaluation
- In Logan's case we let Logan comment unstructured as his mental model was so different than ours
- In Logan's case we slightly reordered the slides to accommodate his mental model.
- Logan interview was intended to have both parties physically present, we had to do the interview via Skype instead.

### EMPIRICAL EVALUATION ONE: ALEX

Alex is 6 feet tall, about 45 years old, slightly gray hair, Olive complexion and has a full beard. Alex lives with his parents (who came over with him). He is a brilliant software engineer and was educated in Soviet Russia. He has an easy going personality, smiles a lot and is somewhat outgoing. One cultural aspect is that when Alex talks with you, he gets very close. He seems to not have the same notion of personal space that we do.

#### A. Observations

We are in my office at work, we are sitting at either side of a desk extension that affords us close proximity. Alex is sitting in a rolling business chair next to the door of my office, I am sitting in my desk chair. The table is clear of any content other than the paper prototype (laying in front of me) and I ask him to place his cell phone in front of him on the table, I do the same with mine. I explain that this is so we can better imagine running the app on our cell phones to facilitate our communications. The time is 4:00 in the evening, the light outside is bright and sunny, the room is well lit and the fluorescent lights are on. My office door is closed and the room is quiet.

I read the following to him. Hi, Alex I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using an application that we're working on so we can see whether it works as intended. The session should take about 30 minutes.

The first thing I want to make clear right away is that we're testing the *application*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the application, I'm going to ask you as much as possible to try to think out loud: to write what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve the application, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone sitting next to them to help. But if you still have any questions when we're done I'll try to answer them then. And if you need to take a break at any point, just let me know.

You may have noticed the blank paper. With your permission, we're going to write notes and collect your written comments, notes and questions on what happens with our "paper" application and our conversation. The content will only be used to help us figure out how to improve the application, and it won't be seen by anyone except the people working on this project.

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to collect this information you, and that the content will only be seen by the people working on the project.

At this point Alex signs the form. I place the first page of the paper prototype in front of him and say, "First, I'm going to ask you to look at this page and tell me what you make of it: what strikes you about it, what you can do here, and what it's for. Just look around and do a little narrative. You will navigate from the page by touching elements on the page but for now please don't touch anything yet."

Alex tells me that he is looking at a meeting scheduling page and that he can look at past meetings. He points out the this looks like an iOS application and says, "so if I tap one of the meetings, I am going to get details about the meeting". He stops here and tells me that he hopes that not only will he get details about the meeting but that he would also like to get the actual threads of the conversation. This is a confirmation that our plan to do so is consistent with what he expected. He then

goes on, “if I click the plus at the top of the page, I will create a new meeting”.

### B. The Task: Create a Meeting

I thank Alex for his feedback and tell him, “Now I’m going to ask you to try doing some specific tasks. I’m going to read each one out loud and give you a printed copy. And again, as much as possible, it will help us if you can try to think out loud as you go along.”

I then handed Alex the following task; You and I are about to have a conversation in my office, You speak Armenian, which I don’t understand and I speak English, which you don’t understand. We both have iPhones and only you have the UniVoice application. Your task is to start a conversation with me via the UniVoice application.

### C. Evaluation

“OK to create a meeting, the first thing I am going to do is show you that you need to download the app and start it.” He then shows me how to download the app. This is actually not part of the task but due to the way I described the task, he was required to do so.

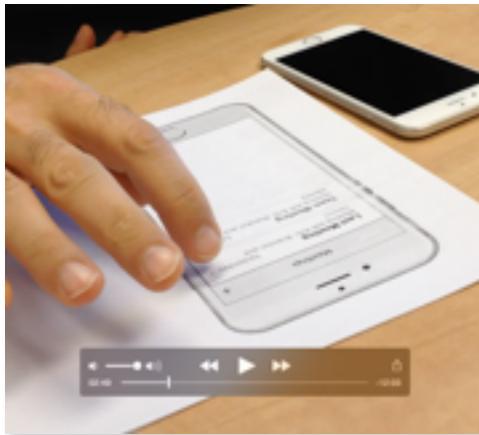
“Now I am going to click the plus button”, he tells me while he touches the plus button. I then lay screen two, “Add Contacts” in front of him. He scans the page pauses and says, “this is the page were I secret contacts for my meeting” He then proceeded to accurately describe the page.

The most stunning part of the evaluation came when Alex go to the scheduling step. He was very confused and you could tell that his mental model was wrong. He explains this in a one minute long video clip (in a separate file). He expected to start the meeting immediately not to schedule it!

Both due to limitations of the paper prototype and the interface concept itself, the user required some additional instruction in order to complete tasks described above. These additional instructions were fairly minor, though did tend to bring to light issues with the interface concept. Attached to this report is the instructions on how to use each page. The additional instruction required were:

- On the “Meetings” page, we forgot to add a sample showing the detail view.
- Under the missing detail view should have been a way to request the actual threads of the conversation.
- The dates we offered on the prototype should have been a date in the past, and something today. Not having something current resulted in the participant not understanding that they could create a meeting for “now”
- On the “Select Contacts page” we should have added a scroll bar to the list to indicate that the page scrolls.
- On this same page we omitted a button to allow the user to advance to the next page. This resulted in the user being “blocked” or unable to complete the task.
- The user also suggested we add a “start conversation now” feature as a shortcut to immediate conversations.

- The meeting type page should have had icons to allow



the user to map back to the previous page.

- Multi-select was not obvious on this page. This is how iOS style works. We should have had an alternate page to improve on the iOS style. This is a deficiency of iOS!
- On the schedule page the plus sign should be removed it makes no sense. Participants were totally confused by it. They mostly interpreted it to mean “create a new schedule” they were doing this by default.
- The participant did not understand the notion of a schedule template. This is was placed on the Scheduling page as a shortcut so one didn’t have to fill out all the schedule fields all the time. Participants looked at it and had no idea what it was or how to use it. This should be removed.
- After a schedule had been created and the user was taken back to the “Meetings Page” they had to search to find the meeting they just created. Maybe it should go to the top of the list or have some visual indication that it had just been created.
- On this same page the text for the start meeting was to be grayed out to indicate that the time for the meeting had not yet arrived. Our participant didn’t realize this and we had to explain it. This might have been eliminated by using color graphics. Participants wanted tap this but also asked, “What happens if the meeting is schedule for an hour from now” Maybe a push notification of a meeting being due might be a good idea.

### EMPIRICAL EVALUATION TWO: LOGAN

“Logan”, is 32 years old, blonde hair, large stature, and identifies himself as Deaf although he has moderate hearing loss. He can speak and hear well enough, but uses American Sign Language and declares it as his first language. He is the Executive Director for the state agency that deals with the Deaf and Hard of Hearing people in Albuquerque, NM. He often deals with political people and the legislative of NM.

### A. Observations

We are on Skype! Logan sits in a room at home in front of his computer, I can’t see any of his environment. I too sit at a table with my computer in front of me. Given that we are both

deaf, I have sent to Logan a pdf version of the slides which he is looking at electronically. I have a paper copy of the same on my desk. My version of the slides has all the instructions I need to conduct the evaluation (attached to this document). We both talk to each other via typing.

I read the following to him. Hi, Logan I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using an application that we're working on so we can see whether it works as intended. The session should take about 30 minutes.

The first thing I want to make clear right away is that we're testing the *application*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the application, I'm going to ask you as much as possible to try to think out loud: to write what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve the application, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone sitting next to them to help. But if you still have any questions when we're done I'll try to answer them then. And if you need to take a break at any point, just let me know.

I have sent you the prototype. With your permission, I'm going to ask you to write notes and collect your written comments, notes and questions on what happens with our "paper" application and our conversation. The content will only be used to help us figure out how to improve the application, and it won't be seen by anyone except the people working on this project.

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to collect this information you, and that the content will only be seen by the people working on the project.

At this point Logan signs the form. I place the first page of the paper prototype in front of him and say, "First, I'm going to ask you to look at this page and tell me what you make of it: what strikes you about it, what you can do here, and what it's for. Just look around and do a little narrative. You will navigate from the page by touching elements on the page but for now please don't touch anything yet."

Logan starts typing, "I think that having a standalone page probably at the start would be best. The fact that I would most likely have to start the app then go into the saved meetings involves too many steps that may be to convoluted when trying to start a last minute conversation. Having a stand alone page with a button that says, "New Meeting" would be better and more intuitive.

I like this page after the meeting has already happened. Having this page at the end after the meeting seems more like the appropriate progression of things but as the start up for a meeting it seems counter-intuitive and could be easy to miss the add button as a way to start the meeting."

### B. The Task: Create a Meeting

I thank Logan for his feedback and tell him, "Now I'm going to ask you to try doing some specific tasks. I'm going to give you a printed copy. And again, as much as possible, it will help us if you can try to think out loud as you go along."

I then sent to Logan the following task; You and I are about to have a conversation in my office, You speak English, but I am deaf and can't hear you. You do not know how to "sign". We both have iPhones and only you have the UniVoice application. Your task is to start a conversation with me via the UniVoice application.

### C. Evaluation

Logan chose to bypass the discussion on how to download the app, rather he took the position that he was using the app directly and we might possibly be sharing one phone.

#### Step 1: The Meetings Page

"I click the add button to start a new meeting."

In response to clicking the + button, which he called "add" he made some interesting assumptions. He wanted a pull down dialog to define the meeting. He looked at this whole task as something that had to be instantaneous to be useful. Austin placed the meeting details page in front of him and he responded with the following: "I click the add button then a pull down menu appears from the added new meeting. After that I add the details.

This section to me seems like it is missing several features for transition. For me a breakdown option for each component would make more sense. The Meeting Details is missing text cues to show the break in listing the details. for example each section should show up listed as their individual components and not give what appears to be estimated dates, times, and attendees.

Meeting Details should be in Bold and separated in some manner to show that it is a fixed area while the following areas should be simplified and show a pull down menu. For example Name of Meeting with an arrow to pull down from (perhaps a generic list of meeting types with an option to make a new name), the date with an pull down arrow leading to a menu to push from (with an option to add the meeting to the device calendar), time with a pull down arrow to list the time, and last a contact button for attendees. The start button should be grayed until everything is added."

#### Step 2: Select Contacts

It appears that Logan sees this page as optional, to be used when he either wants to add a contact or to detect presence. The following is what he wrote; "Add each contact from your contact list by clicking each contact. I am not clear what the add button is for at the top right corner.

Its not entirely clear why the icons representing text, video, and phone show up on my listing since I can only assume that it is their preference for communication.

I like the color coding to show who is available and who is not available. The communication preferences seem confusing to have in this section though.

After I click the members from the list a check mark is shown verifying my selection. I am not sure what to click after that the add button or not considering there is a back button but no next button. I will assume the add button is pushed after selection.

The add button initially is to add a new meeting and there is a marked back button but no next button. This is counter-intuitive.”

### *Step 3: Meeting Type*

Again Logan treats this page as stand alone and adds “I click which form of communication I want to use for the meeting.

I don't get how this works if the person I am having a meeting with doesn't use the listed options. Jane Doe for example doesn't have video capability listed. If the previous screen is meant for me to know who can or can't use the preferred communication type I am using then it makes more sense for this page to be first and the other individuals to be grayed out.

The page itself is fine but needs to be prioritized differently.

I click the forms of communication I am using for the meeting and then I click next.

This is simple and intuitive.”

### *Step 4: : Scheduling*

“I set the meeting dates and times.” This page seems intuitive to Logan but in a different context. He is looking at it as a task unto itself. This flavors the rest of his written response.

“The add button shows up again but there is also a done button. It is confusing to know which one to push.

I would remove the done button since that signifies the meeting is starting to me. I would replace the add button with a next button.” At this point Austin provides him a new version of the meetings page with his new meeting information. Again Logan sees this as a separate tasks and now sees his meeting with the start button.

“I click the start meeting button.

This is confusing since the start meeting is inside of the bar instead of its own page.

I would make the new meeting bar into its own page with the start meeting button prominent.”

Both due to limitations of the paper prototype and using Skype combined with written communications Logan takes a very different approach to the application. We did not attempt to correct his mental model, rather we chose to change to an unstructured interview and see where Logan takes us. The additional instruction required were:

On the “Meetings” page, make the whole meeting creation a single step.

Turn Contacts into a task by itself to be used only when Logan wants to. It is not clear from where he calls this page or how to “close it” So in this case we just accepted that you can.

It is not clear what the relationship of the schedule page is to the meeting page but consistent with other empirical and analytical evaluations, we only want to schedule when the event is in the future, immediate conversations need to bypass this page.

### *D. Analysis*

Both participant understood the overall concept of the prototype but had very different reactions to it. We had to make a few changes to our plan to accommodate this variance;

- We had to rewrite the task and instructions slightly due to the two scenarios we presented, deafness and foreign language
- We had a highly structured plan with regards to the prototype. Due to Logan's predispositions and mental model, we had to abandon the structured plan and go unstructured. This yielded an entirely new mental model for the application.
- Logan struggled with the first page of the app, we had to understand his mental model, then help him get past the first page and reordering the pages a slight bit.
- Alex was taken aback by the scheduling page. He too had a different mental model but much more inline with our mental model. We had to provide some guidance to let him know that he had to schedule any meeting whether now or in the future.

### *E. Insights*

From these results, we've come up with the following insights:

- People want to have both scheduled meeting and immediate conversations. We need to offer a “converse now” option
- We completely missed the notion of someone standing at a McDonald's counter trying to order. We need to provide for single device usage where the user might hold up their phone and the “listener” reads or hears the message.
- There are steps in the task that might be tasks in-and-of themselves. We need a point and click operation WITH conversation backup
- The meeting metaphor may be wrong, we may want to use chat as the metaphor. This lends itself better to instant conversations yet allows for scheduled conversations.
- We tried to stay consistent with iOS style, this may be an error as we assumed iOS would not have Human Visual Interface issues. In fact, it does. We have decided to vary from the iOS style in favor of better feedback and visibility.
- The Meeting type page and the Contacts “capabilities” icons need to correlate to each other so that the user doesn't create a meeting type that the participants can't support. We violated the constraints principle here.

- We need to get some form of help or tip to each page so the user better understands what they are supposed to do. Either a help icon or “flick up” help or a Help on/off setting needs to be considered.

## II. ANALYTICAL EVALUATION

### B. The Exact Task We Intend To Evaluate

The specific task we will evaluate is to create a new conversation, invite 3 guests to the conversation with one of them is deaf. They will indicate that the conversation will support both text and video operation. The conversation is to take place immediately. The user will introduce themselves in their native language. The typical use case for this app is either to support a impromptu one-on-one meeting where translation is needed or to schedule a more formal meeting with a group of people. We chose this task because in any use case of this application, one will have to “start a meeting”. All other parts of the application are situation specific and will only exercise part of the application. Our measure of success is if one could start the app and use it sight unseen to hold a conversation with someone who is deaf without being frustrated by the application itself.

### C. The Particular User Being Evaluated

In our case we consider two users as one. Our first and foremost user is someone who is very familiar with iPhone usage and particularly FaceTime and Messages. Their native language is something other than English. They have resided in the United States for less than a year and are struggling with Spoken English. They will have better proficiency with written English or at least have good reading skills (in their native language).

This person will be a suitable user for the meeting setup portion of the task as their experience using FaceTime and Messages should give them immediate familiarity with our application. Their language skills level will allow us to test if the application either gets in the way or truly assists them as they struggle to communicate with another individual.

Our second user is hard of hearing or deaf. They too will have proficiency with iPhone usage and particularly FaceTime and Messages. We want them to be skilled in American Sign Language (ASL) and outgoing enough that they are comfortable being “videoed”. It is preferred that this individual also have the ability to lip read and be able to read English well. Like the first individual, they will validate our “learnability” more importantly, they will exercise two portions of our conceptual model, Translating sign language to written language and non-verbal communications.

## COGNITIVE WALKTHROUGH

### A. How the Analysis was Performed

Our method of analysis for the cognitive walkthrough was to have two of our team members focus on the non-native English speaking user and the other two to focus on the deaf user. We each created our own written results for the following three questions;

- Will the user know what to do?
- Will the user see how to do it?

- Will the user understand from feedback whether their action was correct?

We each walked though the task of creating a meeting. This meeting task is comprised of 4 pages or steps, the first step provides a listing of previous and planned meetings where the user can review past meetings or create a new one, in the second step, the user chooses “contacts” to add participants to the meeting, the third step is to define what type of meeting the user wants e.g. video, text or audible and fourth a scheduling step to schedule the meeting. We each separately conducted a walk though of each page, shared our individual results. In addition to the three question analysis we captured any assumptions about what would cause the problems and why. We also noted any side issues or possible solutions we discovered. We each made comments to each other’s analysis, resolved any discrepancies and combined them into a single list to create our analysis. Once we got to consensus on the analysis, we jointly documented insights we drew from the analysis.

Specifically for each question we will be looking at the following;

Will the user know what to do? - We are testing the Gulf of Execution by asking if our interface adequately describes to the user what the application does (provides real-time inline translations of conversations) and is our metaphor obvious enough that the user knows they will create a meeting and invite participants, then talk with them?

Will the user see how to do it? - We further test the Gulf of Execution by testing if our “main” intuitively leads the user to use the application correctly. e.g., Are the steps they will take clear?, are they confused about next steps?, is the process to complex to accomplish the task?

Will the user understand from feedback whether their action was correct? - Here we test the Gulf of Execution by asking was automatically advancing the meeting page to a add contacts page appropriate feedback that the users actions match what they expected? Are checkmarks enough to know that someone has been invited or do they need confirmation of the invite? In the case of automatic pairing with another participant is a video or text window good feedback that the connection has been made or do we need “connecting...” screens?

### F. Changes to Original Plan

We made no changes to our original plan.

### G. Analysis

In analyzing the four Cognitive walkthroughs it became clear that users could be confused by the plus icons on different pages as they lack internal consistency and add different things depending on the page. We also noticed that we lacked the ability for the user to create a meeting that starts instantly whether via text/video/audio or in person. Moving from selecting contacts to the next step seems to lack a clear button or prompt for action to take. The user would not be sure what to do after adding contacts.

We also noticed that users could be confused on where to tap to select a meeting invitee as there are several icons for each attendee that indicate state. While tapping anywhere on an invitee will have instant feedback with a check mark for that

person, a user might become frustrated thinking that they can select the video/audio/text icon for the person. We also thought that since a user might try to select those state icons for video/audio/text, then we could make those larger and functional and eliminate the page to select the meeting type. The user might have trouble remembering which users have which availability for meeting types causing them to go back and forth between the meeting type page and the add contacts page. This is an inefficient operation for the user to have to go back and forth or try to remember or guess which users are available for which meeting types.

We noticed that we need the availability to add a Name for the meeting and that a user would not need to go through the step of selecting a “To Date” for the meeting. We also saw that the Start Meeting prompt and the right arrow on the “Meetings” page are very close together which could create issues as users may try to tap one, but end up tapping the other by accident.

For the meeting itself, we noticed that the user would be confused by the text icon at the top right and the text icon in the bottom. We also thought that the user would not want to be tapping on different people during the meeting to bring them up in the main part.

#### D. Insights

- We all noticed that it was cumbersome to schedule a new meeting if the user wanted to communicate instantly with someone or with a group. We plan on adding a “Now” functionality for the meeting.

- Adding a “Now” type of functionality on the meeting page would allow the scheduling step to be bypassed as well, attendees would only need to be invited

- In addition to the “Now” functionality for a meeting, we also thought there should be a button to press to communicate in-person instantly for the ordering at McDonald’s type of situation.

- We thought that the plus Icon on the first page was familiar to many people, especially those who are familiar with iOS, however we also considered that this may not be universally understood. A better option might be a calendar with a plus as this would make it more clear.

- We noticed that the feedback of going to the contacts as the next step is intuitive, but that we could provide better feedback by saying Invite Contacts instead of Select Contacts

- On the select contacts page we also thought that the plus icon could be confusing as it is not internally consistent in terms of functionality. Instead it would be more intuitive to have the word next or a right directional button.

- For adding a contact that is not currently in the contact list we thought it would be more intuitive to have the words: “Add New Contact” or an icon with a person and a plus.

- On the select contacts page, we also thought that a user might have issues knowing where to tap to select a meeting invitee. There might be some initial confusion for the user on where to tap. Tapping anywhere on the invitee will add a checkbox, which provides good feedback showing they have been selected.

- We could make the Invite Contacts better by making the voice/text/audio state buttons larger and functional, this would allow a user to add each person for the type of communication on this page, instead of having an additional step.

- To indicate state for the voice/audio/text icons we can have them show, but with a red ‘x’ if those are not available. We can have the ones available have a green check appear on them when those are selected.

- Selecting the meeting type is straightforward and provides good insight as the user can easily select which type of meeting and then tap next. This part is very clear

- The issue with selecting the meeting type separately from the invitees is that the user will have to remember the availability that each invitee has. We can address this by combining the meeting type selection with inviting attendees.

- The scheduling page is intuitive and allows the user to see the calendar metaphor to pick the date and time.

- On the scheduling page, we plan on eliminating the plus icon at the top as this is redundant with the Done button.

- On the scheduling page, the To Date is also redundant and is covered by the Duration selection.

- On the scheduling page, we also need the functionality to create a meeting name.

- After tapping Done on the Schedule page, the feedback of going back to the meetings page and having the New Meeting show up shows the user that they have successfully scheduled the meeting.

- On the Meetings page, the right arrow and Start Meeting are very close to each other, which could lead to mis-taps. We will either put start meeting in a different place for each meeting or have a start button that the user taps and then taps the meeting they want to start.

- For the Meeting conversation, we also plan on eliminating the text button in the top right and either the back button or the Blue icon that indicates back as these are redundant.

- For the Meeting conversation, we think that instead of the user having to tap on each person to bring them up, the person speaking/texting/signing should be brought up automatically as they are communicating.

#### COGNITIVE WALKTHROUGH DATA - ERIC

The focus of my analysis for the cognitive walkthrough is on the non-native English speaking user. This analysis is based on the task of creating a meeting which represents the key task needed to have a conversation. The task is comprised of 4 steps the first step is to review or create a new meeting, the second step is to select contacts from an existing list of contact or to create a new contact, the third step is to select the type of meeting desired, and the fourth step is to schedule the meeting.

##### A. Step One: Create a Meeting

*Will the user know what to do?*

If the user is familiar with iOS applications then this page will look very consistent to iChat or Apple's mail application. The user will understand that selecting the right arrow will provide detail about the selected meeting. The page also offers a “+” icon in the upper right corner. Based on interview data, I am bias to think that this may not be obvious to the user what they should do. It may be better to either provide the text “add” or “new meeting” so that it is very clear to the user that selecting this item will result in a new meeting being created. What's knowing at me is the issue of efficiency. What is the user simply wants to have a live conversation at that moment. It is a meeting by definition but it will be cumbersome to schedule a meeting just to have a live on the spot conversation. Can there be an option to “meet now” and by pass much of this task?

In our original slides for the task, we committed what the user sees if they select a meeting to review. When I select a meeting to review it is not clear what level of detail I will see or how do I review the conversation that took place? We did address the issue of what detail will be provided but we neglected to offer the user the opportunity to review the conversation in its detail.

In conclusion it is reasonably clear to the user to know what to do but it can be improved by clarifying how to create a new meeting, adding a meet now feature and offering to see conversation history.

#### *Will the user see how to do it?*

The user will see how to drill into details of a meeting and how to add a new meeting based on the consistency this application has to other Apple developed applications. There are only two options on this page so the cost of doing and action and the risk of doing something wrong will be very low.

#### *Will the user understand from feedback whether their action was correct?*

If the user selects a meeting to review the feedback is immediate and show meeting detail but not the actual meeting content, this is probably the goal the user set out with. Again an offer to see the actual meeting dialog is missing and should be added. If the user clicks the “+” button, they are immediately take to a select contacts page. We neglected to add a page to define the meeting or to tell the user they were creating a new meeting. While there is feedback, it is not clear why we took the user to the contacts page. This needs to be corrected!

### **B. Step Two: Select Contacts**

#### *Will the user know what to do?*

In step two the user is taken to a Select contacts page. The user may not understand what to do at this page. They are to click on an existing contact to indicate inclusion in a future meeting or to select the “+” to add a new contact (not currently in the list of contact options) or they can tap the “back” button to cancel the new meeting request. It may be better to change the “+” to “add new contact” so it is clear what the user can do. It may also improve the UI to change the back button to a “cancel” or cancel meeting button.

#### *Will the user see how to do it?*

It might not be obvious that the user can scroll on this page or that it is a multi-select list. We could add a thumb wheel to the page to indicate the prior and maybe some text to describe the latter will help.

The icons on the page are to indicate what kind to conversation abilities the participant can support, these are only visual indicators the user might not understand this and will attempt to click them hoping for some action.

With the exception of the scrolling and multi-select the user will see how to do it. As mentioned earlier adding a scroll bar may help but this would be contrary to iOS style where the user knows to “flick” up and down and feedback in the form of a check mark from a tap is the iOS way of indicating a selection (a blue inverted background is another form of feedback).

#### *Will the user understand from feedback whether their action was correct?*

The user will know that their selections are correct from the feedback if they are familiar with iOS operations. Where we may have an issue is with the icon to represent the capabilities of the participant. These would appear to be clickable but the user will quickly learn that they do nothing. This will be a good test item for the Empirical study to determine how users react to this.

### **C. Step Three: Meeting Type**

#### *Will the user know what to do?*

Step three asks the user to select the meeting type they want. They can choose Video, text or audio or some combination of these. This may be the most confusing step of the program. The user will understand what to do in that they can only click the item and get immediate feedback that it is checked. The buttons “Back” and “Next” are clear in what they do.

#### *Will the user see how to do it?*

The issue with this page is the “will they see how to do it” question. While this page is consistent with iOS style, it does force the user to try it and see what happens. We are thinking that a simple “select all those that apply” message might be appropriate. We also think that these help message should be turned off by the user after they have learned and memorized the application’s use. This presents an interesting dilemma, do you follow the iOS style to a fault? We believe this to be a visual model violation on Apple’s part.

#### *Will the user understand from feedback whether their action was correct?*

The feedback in all three click case is both immediate and in the case of the multi-select informative. No change are required in this area.

### **D. Step Four: Scheduling**

#### *Will the user know what to do?*

Our concluding step in the task is to schedule the meeting. The metaphor we used in designing this page is WebEx and Google calendar and iCal. We believe the user will know what to do with this page as it is so similar to other tools they use in their daily lives. There is one anomaly though, we introduced the idea of a schedule template to make schedule creation easier. In doing so we think that we may have confused the

user. We will test to see if this is the case and will most likely remove it.

Additionally, we placed a “+” on the page to create a new schedule. This is redundant and should not be here. We will remove this.

#### *Will the user see how to do it?*

Given the similarity to other scheduling metaphors, we believe the user will quickly understand how to do it. A key concern we have is, “what if I want a meeting right now?” It is not obvious to the user to schedule a meeting for right now. We are looking at options to improve this experience.

#### *Will the user understand from feedback whether their action was correct?*

Feedback is provided by popup pickers and when done is clicked taking the user back to the schedule page so they can see the result of this task. We believe this is consistent to other Apple applications and allows for user recognition rather than recall.

### COGNITIVE WALKTHROUGH DATA - AUSTIN

The focus of my analysis for the cognitive walkthrough is on the deaf or hard of hearing user. This analysis is based on the task of creating a meeting which represents the key task needed to have a conversation. The task is comprised of 4 steps the first step is to review or create a new meeting, the second step is to select contacts from an existing list of contact or to create a new contact, the third step is to select the type of meeting desired, and the fourth step is to schedule the meeting.

#### A. Step One: Create a Meeting

##### *Will the user know what to do?*

Looking at the first page, I can see that there is a + sign which is a familiar thing on many apps, which could either mean to start a new meeting, or start something.

##### *Will the user see how to do it?*

I notice now there isn't really any indication to start a meeting or anything, but the + might indicate that I could do something, or click on some of the previous meetings with the > arrow.

#### *Will the user understand from feedback whether their action was correct?*

I believe that if I click the “+” it should change the window to seeing contacts, which then will show me that I did something correctly.

#### B. Step Two: Select Contacts

##### *Will the user know what to do?*

In front of each contact person, I can see that I can webcam, or text, or phone (call) them, so that makes perfect sense, but I don't see any indication whether I should click on the contact rectangle area or on the video/text/phone area to select them. That could be changed to where the icon colors could change from blue to green when I select one of them, or the background of the contact changes if I click on the rectangle area only.

I absolutely have no idea what to do next since the contacts now have arrows, but there isn't any indication of next or anything, so I might try to click on the + button again, or go to

the “back” button which might take me back to the meeting page. This part is confusing.

##### *Will the user see how to do it?*

I have to admit I might feel a little bit lost here if I didn't know anything about this app. I wouldn't be sure where to click, either on the faces, or on the icons, or just the rectangle each contact person is in. Also there is no indication of “next” after we click on the contacts, so that might need to be changed.

I don't believe I will be able to know what to do from there since I don't really see where to go after I see the checkmarks on each contact person.

#### *Will the user understand from feedback whether their action was correct?*

If the action is correct, it will show a check mark next to the contact which I think would indicate I did the correct thing, but there isn't any indication what to do next after seeing the check marks so that needs to be fixed.

The prototype doesn't make sense here, but I don't see how we go from contacts to meeting type and there is next button above now, but the previous slide didn't show next.

#### C. Step Three: Meeting Type

##### *Will the user know what to do?*

I can see that I would click on the meeting type, clicking on video to use video, text to use text, audio to use audio, then it should show the checkmarks

##### *Will the user see how to do it?*

I do believe that I would guess by clicking on each area for text, video, audio and see the checkmark so that is clear. I would then understand that the next step is to click on next.

#### *Will the user understand from feedback whether their action was correct?*

Yes the check marks will indicate that the video/text/audio was selected.

#### D. Step Four: Scheduling

##### *Will the user know what to do?*

Absolutely yes, it is very clear, I can set the date, the times and the day to run this session, but I am also wondering why isn't there an option to do it THIS VERY MOMENT and skip all of the above steps if I'm at McDonalds and want to do it right away, and not have to deal with the contacts, type, and schedule, and just want to use it right away, I sign to it, it voices out my message to the cashier what I want from McDonalds?

##### *Will the user see how to do it?*

Yes this step is very clear, with the schedule, and I can understand putting in date, time, and clicking done and it should send me back to the meetings section.

#### *Will the user understand from feedback whether their action was correct?*

Once I click on done, it should show me the new meeting in the Meetings, but it doesn't give me any option to write the name of the meeting anywhere in slide 6 (that should be added).

I have to admit, once I did the analysis step by step, I realized that this app is pretty confusing to use at some points, if I had absolutely no idea what I was doing, I think we really need to add few more things to it to help make it a little easier to understand what we are supposed to do. I wish I had caught those in the previous week but this is a good thing that we all are doing it, because I can tell that few things are missing to help guide from the current slide to the next slide.

#### COGNITIVE WALKTHROUGH DATA - BRANDON

The focus of my analysis for the cognitive walkthrough is on the non-native English speaking user. This analysis is based on the task of creating a meeting which represents the key task needed to have a conversation. The task is comprised of 4 steps the first step is to review or create a new meeting, the second step is to select contacts from an existing list of contact or to create a new contact, the third step is to select the type of meeting desired, and the fourth step is to schedule the meeting.

##### A. Step One: Create a Meeting

###### *Will the user know what to do?*

If the user has any experience with general iphone messaging then they may know that the plus sign will start a new conversation, however, the '+' sign is not always universal in starting a new conversation.

Selecting a current conversation would be easy enough for most languages as long as there was support for different languages in the headings and tags. i.e. "Last Meeting" would be translated to another language.

###### *Will the user see how to do it?*

Once again I do not believe '+' sign would be adequate to show users how to begin a new conversation or to start using the app. The past conversations, however, are very clear.

###### *Will the user understand from feedback whether their action was correct?*

By clicking on the buttons available the user would be take to the next screen which will either contain their previous conversation or would have further prompts for a new one. I believe this feedback would be adequate enough for them to understand that they have taken the correct action.

##### B. Step Two: Select Contacts

###### *Will the user know what to do?*

I feel like this screen does help the user know what to do. The screen seems to list contacts and available ways of communicating with them.

This page also appears to allow the user to select multiple contacts but I wouldn't have known that until I saw the check boxes. Perhaps some check boxes that are empty when they are not selected.

###### *Will the user see how to do it?*

The '+' is universal for addition and is adequate for showing how to add a new contact in any language. The symbols for video chat and phone chat are also pretty universal across cultures. I feel a user would easily be able to determine what these do despite language barriers. The piece of paper is a little bit more confusing though when communicating text messaging.

I feel like the check mark is pretty universal to show if something is selected or not, however, I don't see an apparent way to progress to a call including all the members selected.

###### *Will the user understand from feedback whether their action was correct?*

I assume so. The '+' sign would take the user to the add contact screen and the other buttons would each open the applicable communication method.

I assume when you click the name of the person it will uncheck them but beyond that I would say no.

##### C. Step Three: Meeting Type

###### *Will the user know what to do?*

At this point I believe the user will start realizing if they tap the type of conversation to have it will check it. Here they will see that they are selecting the type of conversation they would like to have.

###### *Will the user see how to do it?*

I don't think they will see how to select each type at first but after playing around with it I think it become a lot clearer. The next button makes it very obvious how to advance to the next screen of the app.

###### *Will the user understand from feedback whether their action was correct?*

These slides really shine here. The check boxes are clear feedback that they have chosen an action and the next button clearly demonstrates a way to test that action.

##### D. Step Four: Scheduling

###### *Will the user know what to do?*

This slide is a bit more confusing. The intent is clear though, that you are setting up a date and time for your meeting.

###### *Will the user see how to do it?*

This will be more of a struggle. First some cultures have a different calendar system so there should be a way to incorporate that between users. Also the multiple images of calendars become confusing. The bottom one especially as I'm not sure how to use it. The side arrow is pretty universal to show additional details about the date and time but the '+' again brings some confusion. I'm not if it creates multiple scheduled conversations with the same group or if it will start me over again.

###### *Will the user understand from feedback whether their action was correct?*

I believe so. I seems like each option as an appropriate graphical response to it. This visually displays the results of each choice.

#### COGNITIVE WALKTHROUGH DATA - WESLEY

The focus of my analysis for the cognitive walkthrough is on the deaf or hard of hearing user. This analysis is based on the task of creating a meeting which represents the key task needed to have a conversation. The task is comprised of 4 steps the first step is to review or create a new meeting, the second step is to select contacts from an existing list of contact or to create a new contact, the third step is to select the type of meeting desired, and the fourth step is to schedule the meeting.

#### A. Step One: Create a Meeting

*Will the user know what to do?*

I can see on the first slide that there is a list of the last meeting and a team meeting. As well as a small plus icon. The plus icon could mean add something. It seems I have two choices here to either tap on the plus or tap on the team meeting.

*Will the user see how to do it?*

As a user, it seems there are only two options to tap on. The user would either have to tap the plus icon or tap one of the meetings. I believe that faced with these two choices they would tap the plus icon. The plus icon is visible so it is a clear option. I believe it could be made more clear by having a calendar icon with a plus on it.

*Will the user understand from feedback whether their action was correct?*

If the user taps the meeting he will see the details of the scheduled or current meeting. If the user taps the plus he will see contacts to invite. The contacts page just says contacts, it could say Invite Attendees or Invite Contacts to make this more clear.

#### B. Step Two: Select Contacts

*Will the user know what to do?*

At the top it says select contacts, so it should be assumed that I am selecting contacts to add them to something from the previous step. Would it be clear that it was a meeting?

*Will the user see how to do it?*

I can see the contacts. They all have pictures, videos, a text page and a phone icon. I also see a plus icon. Would I tap the plus icon to add contacts or add one of these existing contacts. Would tapping the video, text, or phone icon add this person to the conversation, but in that context that was tapped, or would it contact that person immediately? Or would I tap each person to add them to the meeting. What if I want to add someone who isn't in the list. I don't see how to do this. I might try and click the plus icon or search for them. It could be helpful to have a box to prompt the user to tap on that.

*Will the user understand from feedback whether their action was correct?*

If I tap on the person, I can see a check mark appear to the right of them, so I would know that I am adding them to something. Since tapping anywhere on the person or the icons with them will create the check mark, I won't be able to accidentally contact the person when I want to add them to the meeting. Since the icons that indicate state are non-functional, are they necessary or would a user try to tap them to do something?

#### C. Step Three: Meeting Type

*Will the user know what to do?*

I am not sure how to get to this step. The only option seems to be to tap the plus icon. It seems clear that the user can choose what type of conversation they would like to have once they get to this step.

*Will the user see how to do it?*

The user only seem to have one choice, but might try swiping left or right or try another action instead of tapping the plus icon since the plus icon is the same as from step 1 and doesn't have anything except that it symbolizes add to move to the next step. Having tapped the contacts from the previous step, it seems likely the user would tap to select video, text, audio or multiple ones. It could be helpful to have some kind of box to tap.

*Will the user understand from feedback whether their action was correct?*

The user wouldn't know how to proceed to this step, except to guess. To perform actions on the this step it seems intuitive to tap on each conversation type and then to tap next.

*Will the user see how to do it?*

Tapping on each selection and then tapping next seems clear.

*Will the user understand from feedback whether their action was correct?*

The check marks show that each item was selected and tapping next moves to the next screen.

#### D. Step Four: Scheduling

*Will the user know what to do?*

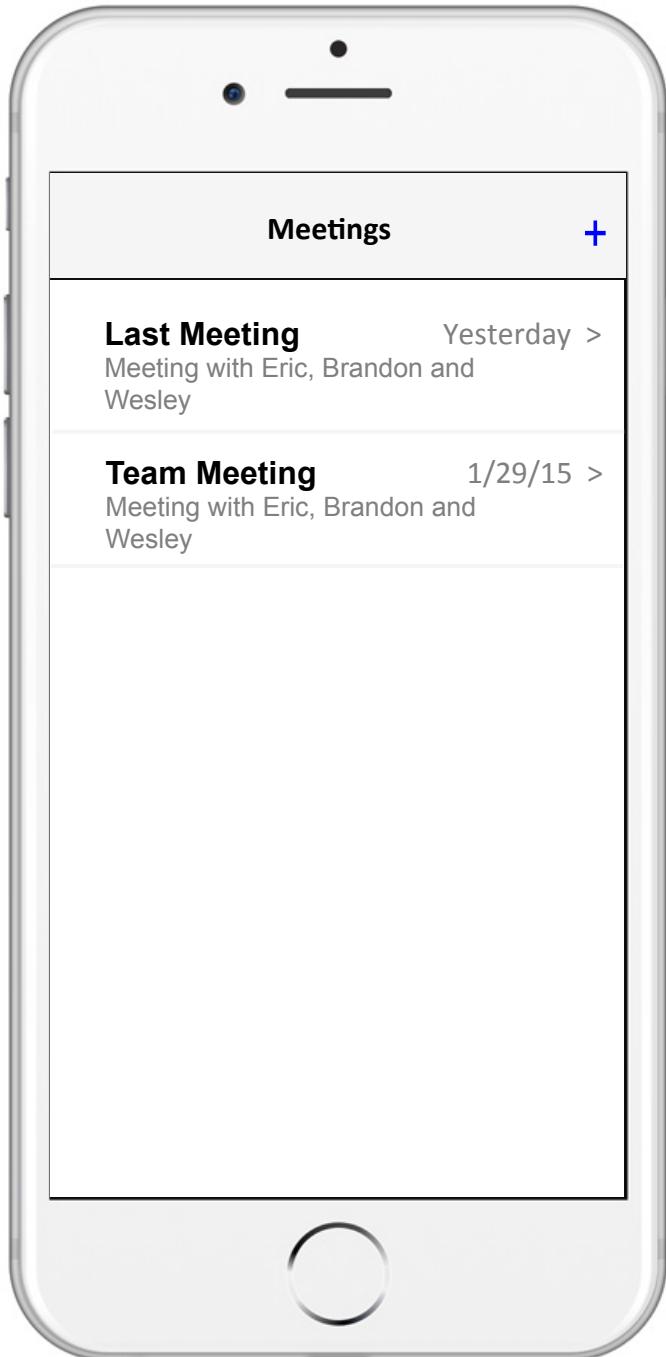
I can select the date and time so it is clear that scheduling is supposed to take place on this screen.

*Will the user see how to do it?*

It is clear that the user can select the date and time for scheduling. It is clear that done should finish creating the meeting. However as I user, I would be unsure if I need to tap the plus icon to add the meeting and then tap done or to just tap plus or just tap done.

*Will the user understand from feedback whether their action was correct?*

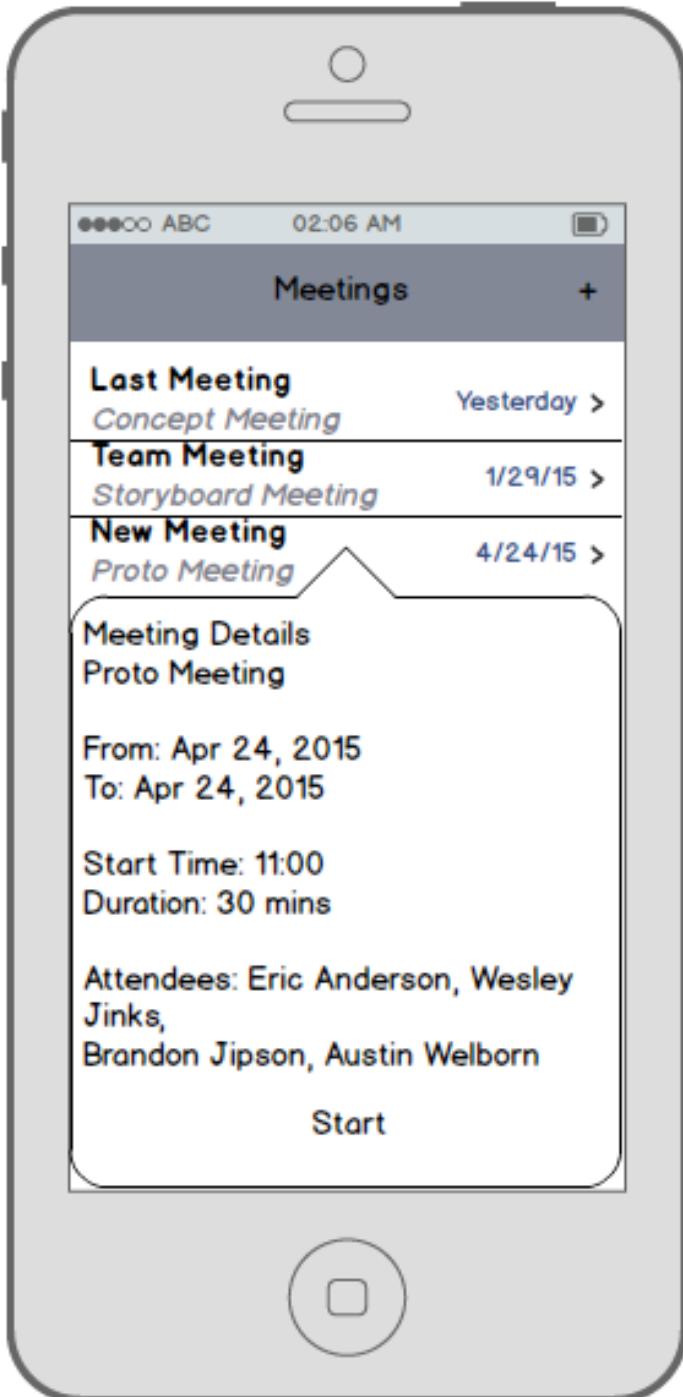
Tapping done will take the user back to the meeting screen so where they will see the meeting, knowing that it is added.



## Slide 1

Tell Logan that his task is to create a meeting (see last write up)  
Ask him what he can do with this page. What can he click what does he expect to happen.

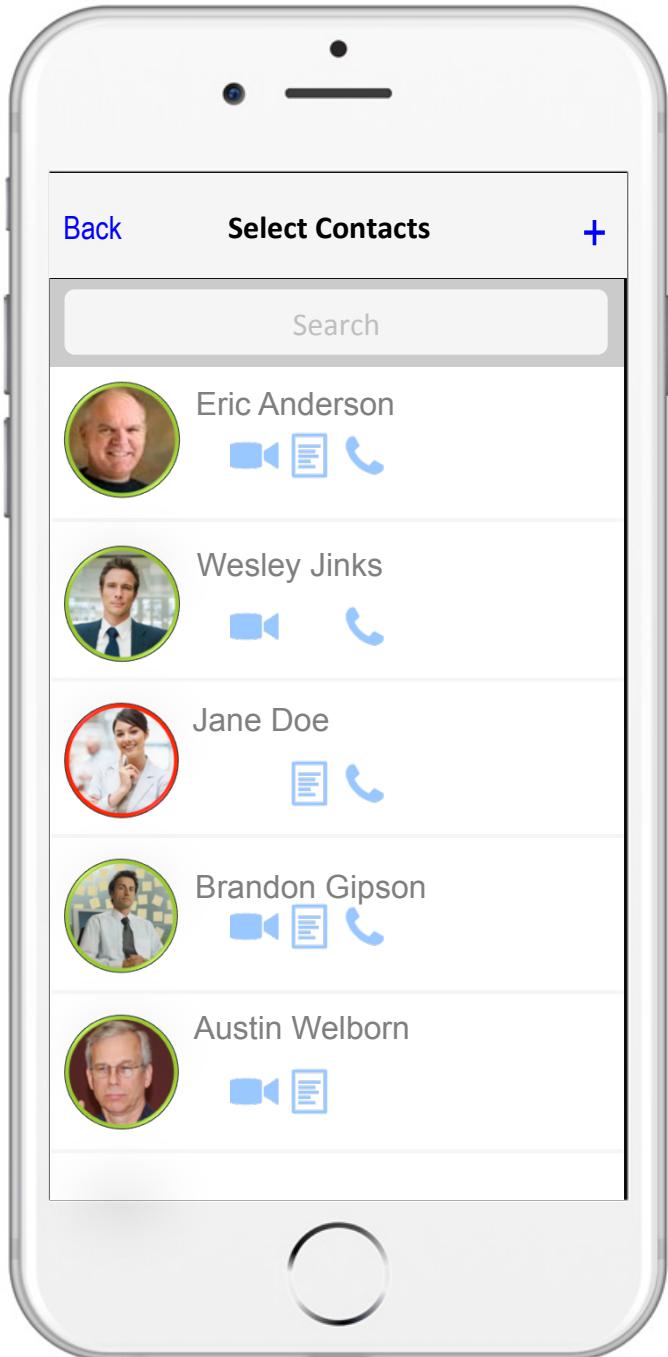
There are two actions he can do with this page. Click the meeting and see details about it (go to slide 2) or click the “+” sign to create a new meeting (go to slide 3).



## Slide 2

If Logan taps the meeting item, show him this page so he can see what the meeting detail looks like.

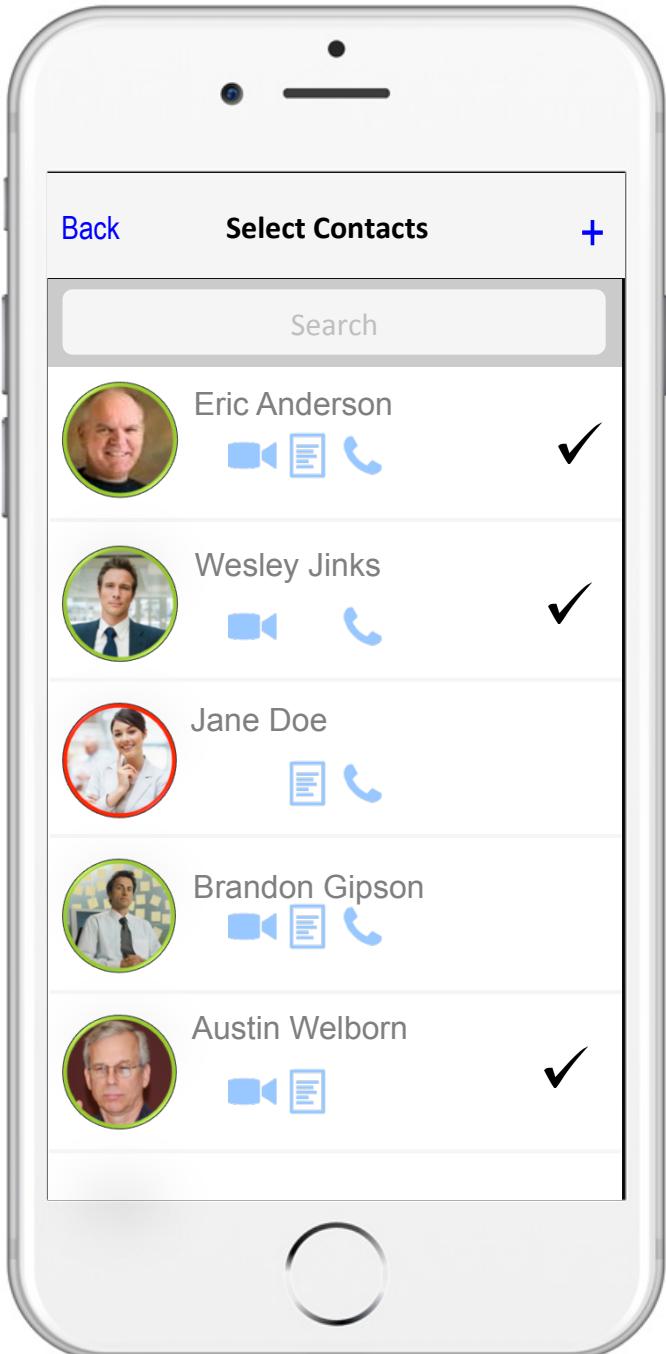
Then go back to slide 1.



## Slide 3

Ask Logan to tell you what he thinks he can do with this page. Ask him what will he click.

If he clicks the user item then go to slide



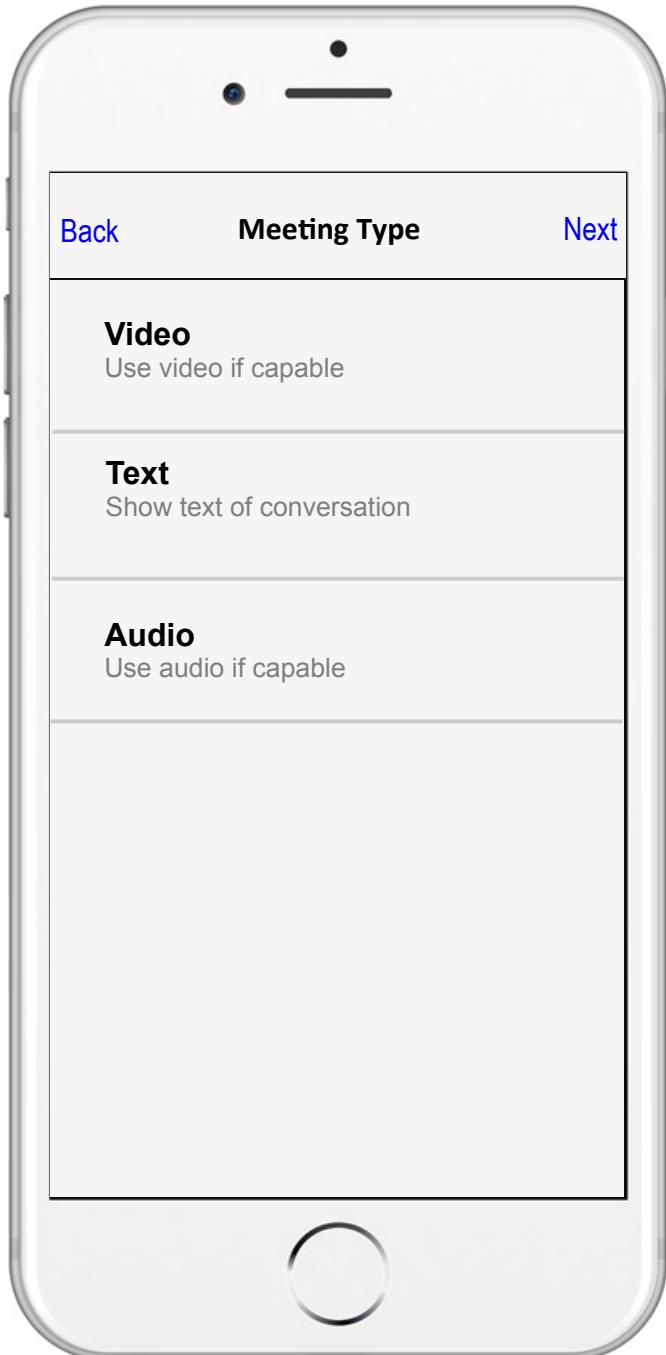
## Slide 4

He will see that clicking on the person results in a check mark by their name. This is because the list in slide 3 is a multi-select box)

Logan may tell you he wants to either click the back button (go to slide 3) or he wants to click the “+” button. If he clicks the + button, this is to add a new contact. We do not have a page for this.

The pictures and icons do nothing, they are for state only. Green around the image means the person is “present” and the icons indicate what communication capabilities the person has (video, text or phone)

We have a break in our prototype here as there is no way to advance to the next page. Acknowledge this and go to slide 5



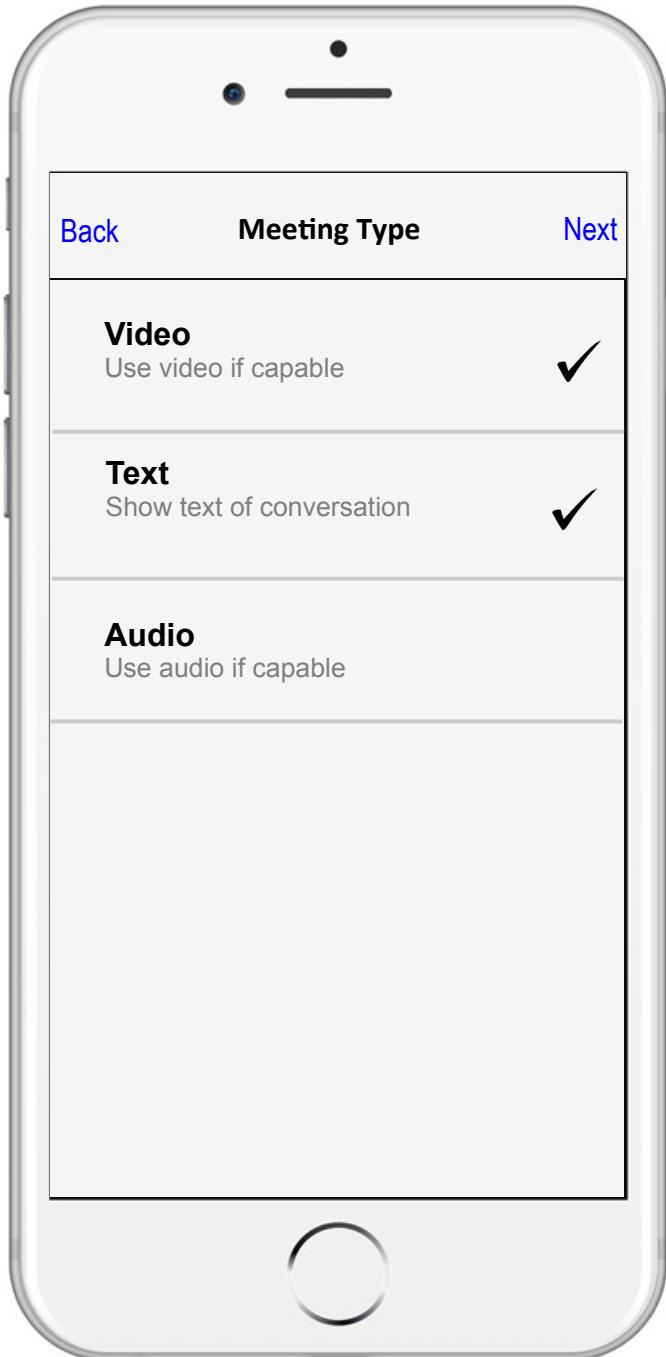
## Slide 5

Ask Logan what he can do with this page. What can he click what does he expect to happen.

The page is intended for him to select what type of meeting he wants to have.

There are three actions he can do with this page. Click the Video, text or audio to select it (go to page 6), click the back to go to page 4, click the next to go to page 7.

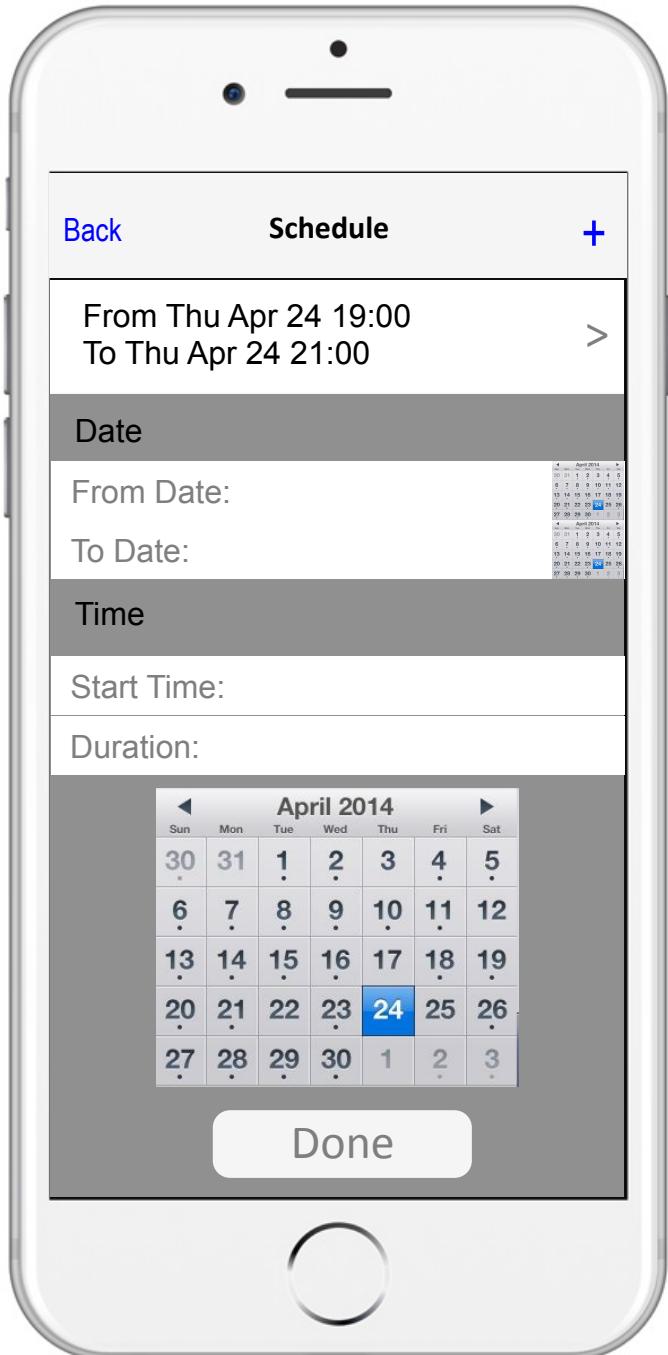
He is supposed to physically touch it, you ask like the app by placing the right pages in front of him.



## Slide 6

This page is to indicate his multiple selection.

There are two actions he can do with this page. Click the back button to go to page 4 or click the Next button to go to page 7.

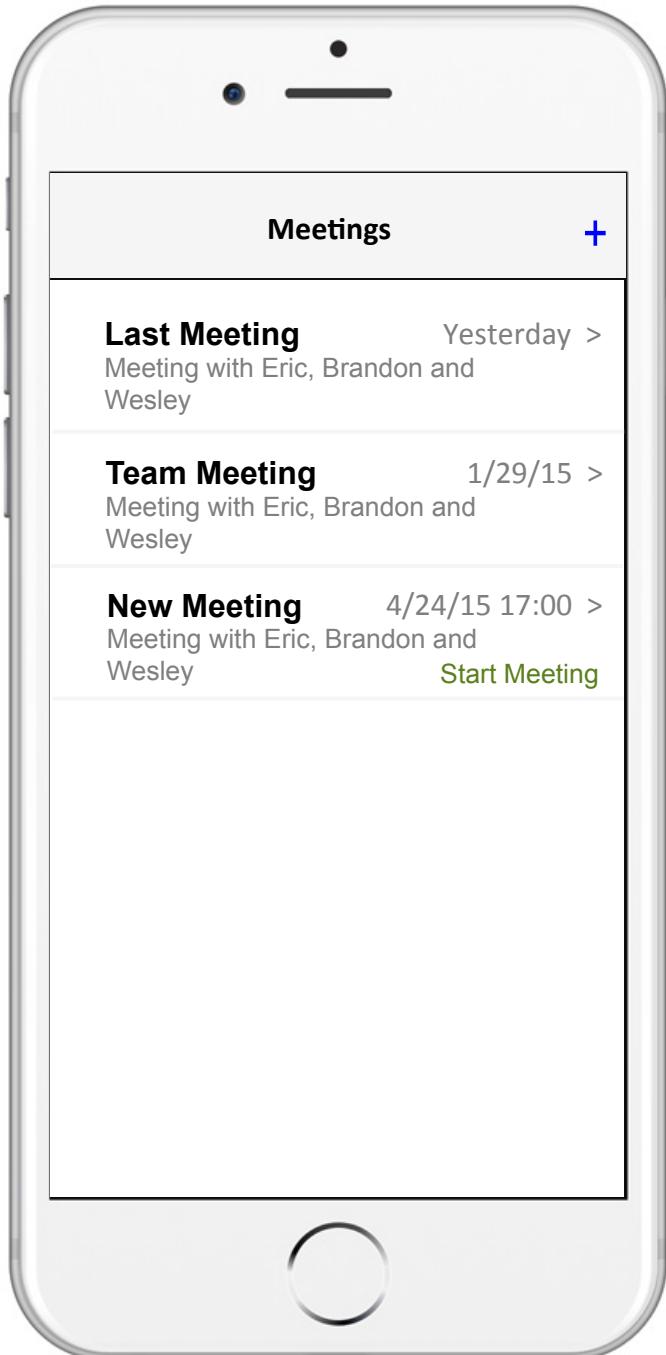


## Slide 7

Ask him what he can do with this page. What can he click what does he expect to happen.

There are multiple actions he can do with this page. Click the from/to and he gets a prefilled out schedule template. Click either the from or to date and the calendar shown here pops up. Click the Start time and a time picker shows up (we do not have this page). Click back to go to page 6, click the + to create a new schedule template (we do not have a page for this) and click done to set the schedule go to page 8.

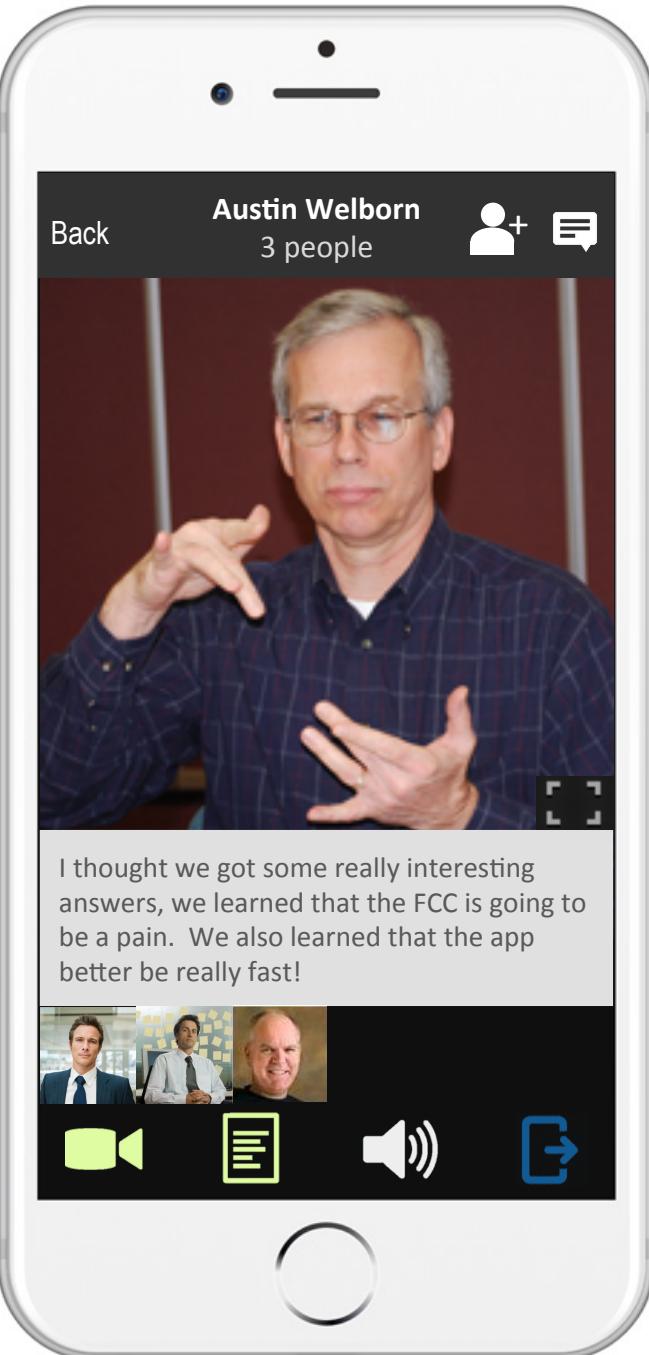
It is important to note that he may say he wants a conversation “now” if he does ask him how he feels about having to set the date and time to now to accomplish this.



## Slide 8

This page is the same as page 1 but with a new meeting added. Ask him what he can do with this page. What can he click what does he expect to happen.

There are three actions he can do with this page. Click the meeting and see details about it or click the “+” sign to create a new meeting or click the “start meeting” link and go to slide 9.



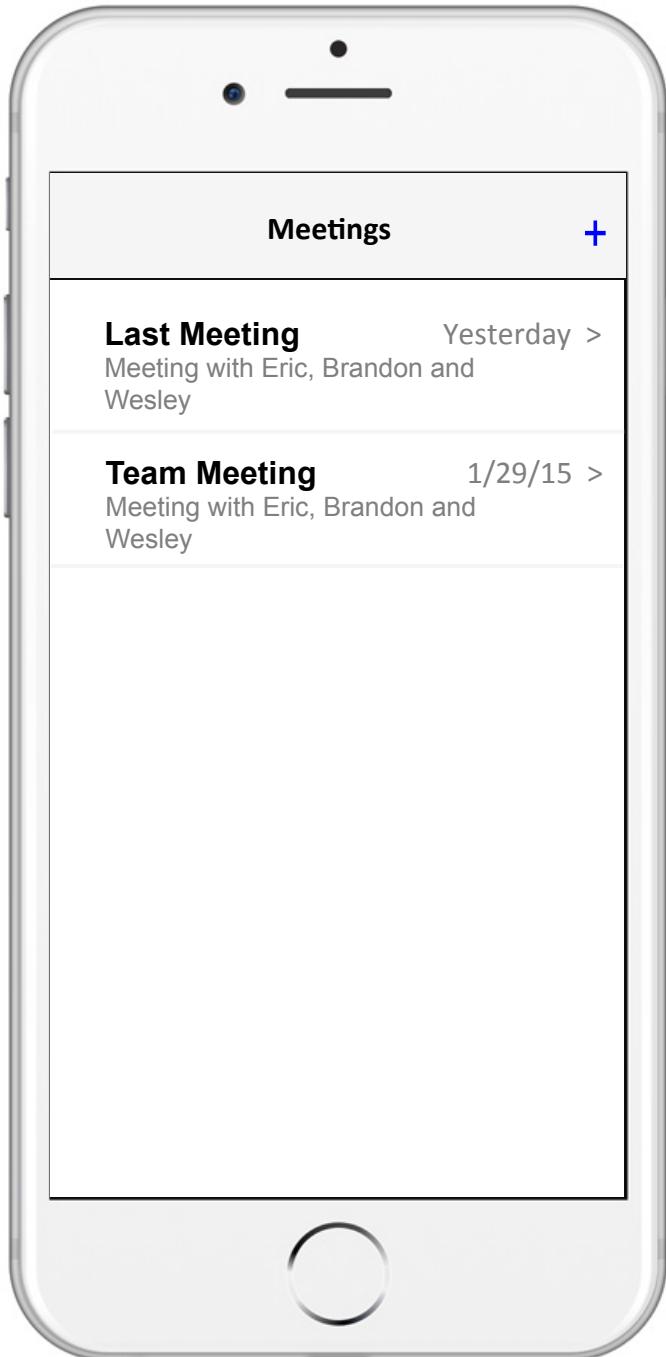
## Slide 9

Tell Logan that we are done, he has succeeded in the task.

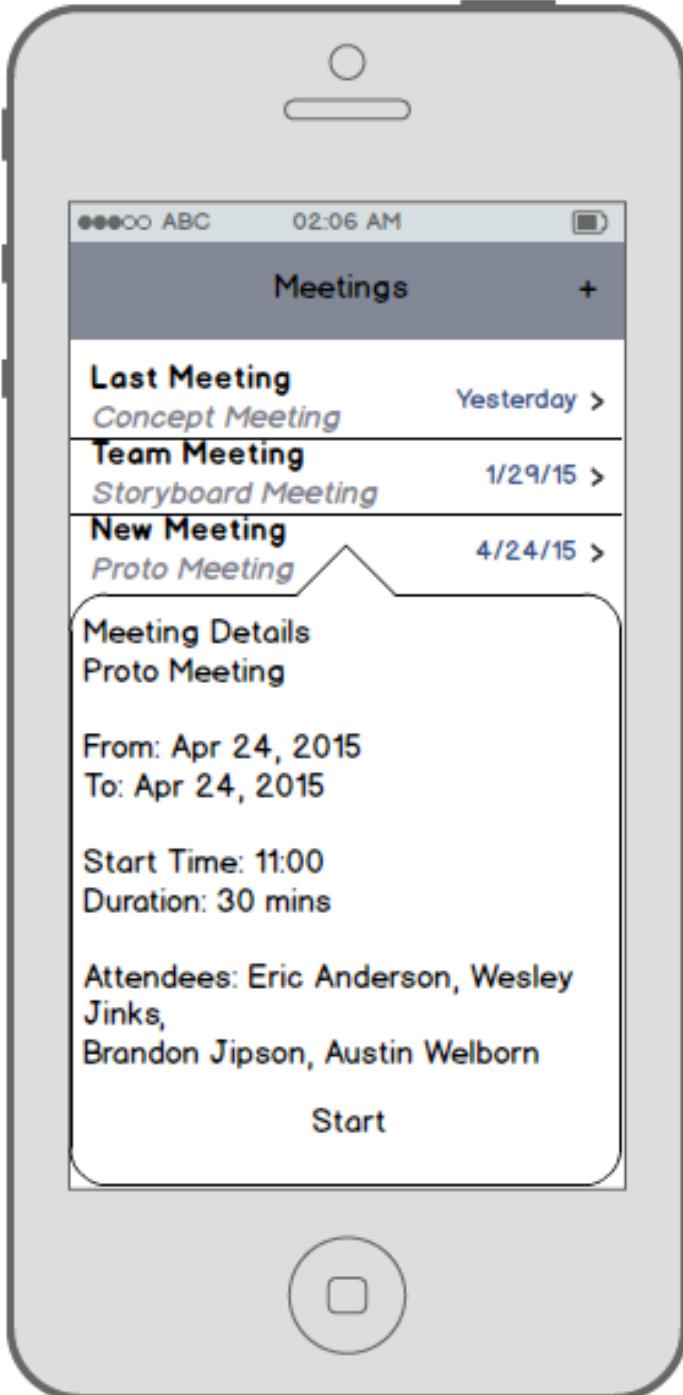
Invite him to offer comments, suggestions, etc.

Tell him the interview is over and thank him for his participation and answer any questions he may have.

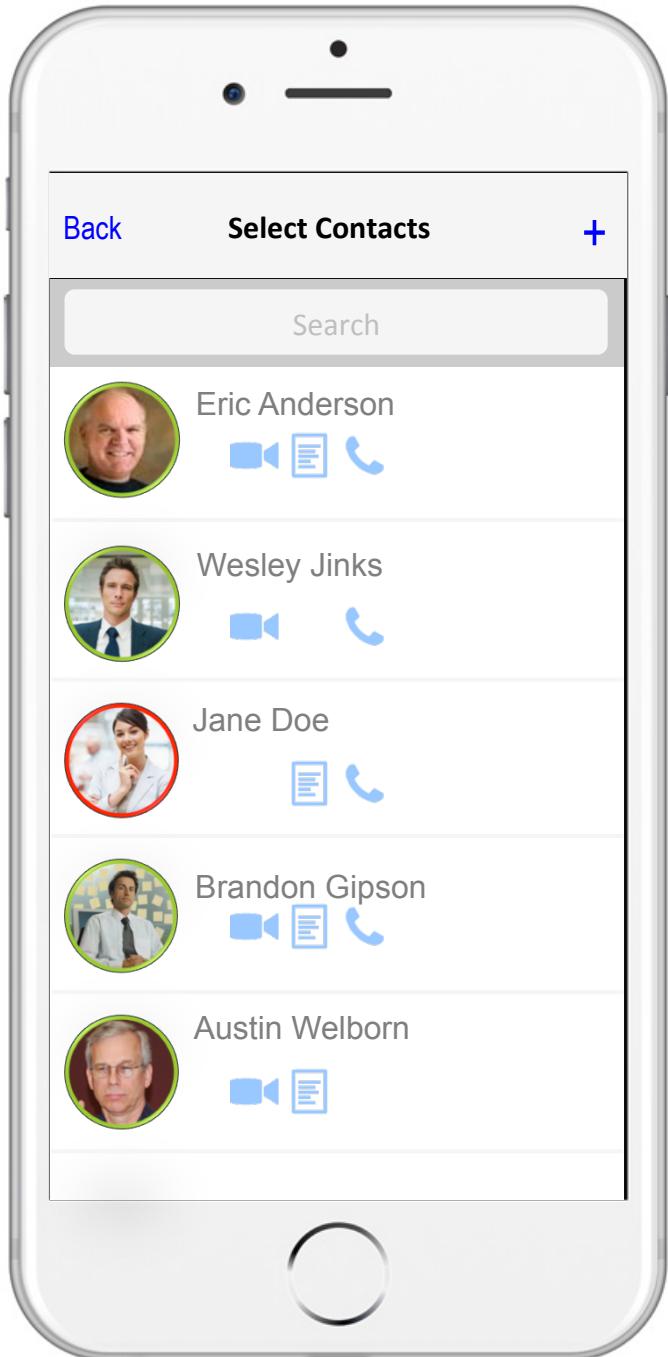
Then write it all up! I videoed my session so I could go back and look at it.



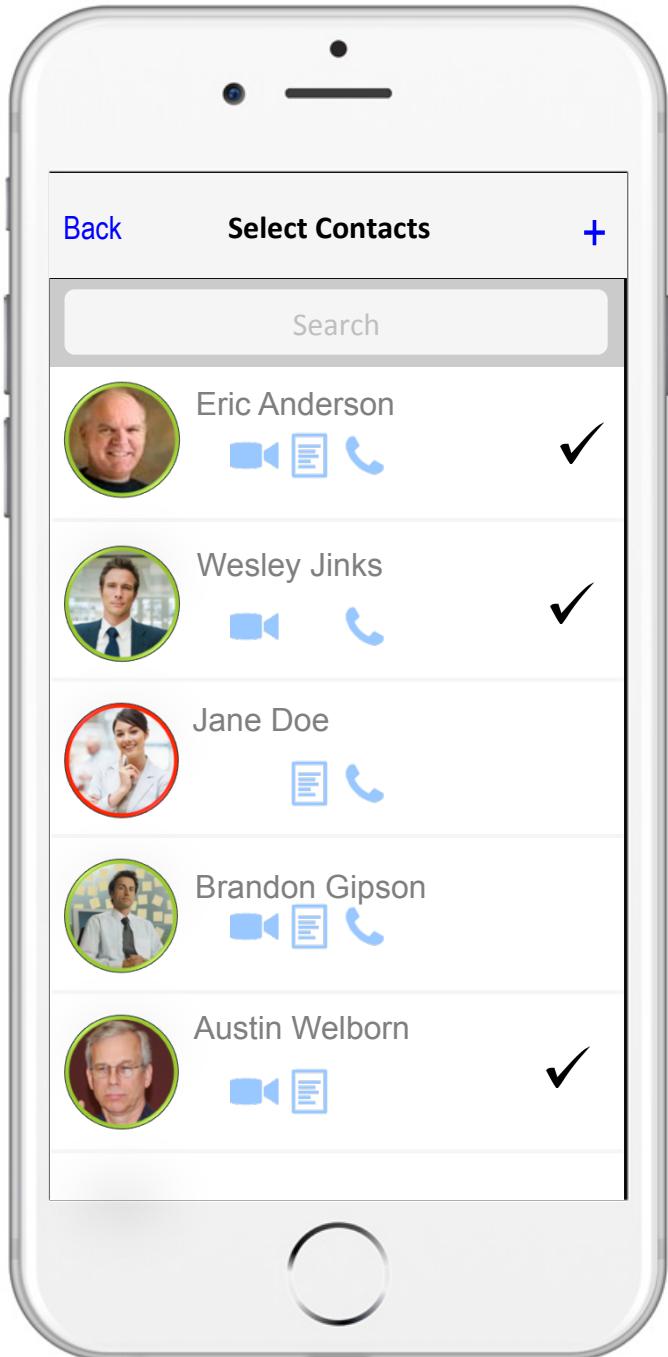
1. Click the add button to start a new meeting
2. I think that having a standalone page probably at the start would be best. The fact that I would most likely have to start the app then go into the saved meetings involves too many steps that may be to convoluted when trying to start a last minute conversation. Having a stand alone page with a button that says, "New Meeting" would be better and more intuitive.
3. I like this page after the meeting has already happened. Having this page at the end after the meeting seems more like the appropriate progression of things but as the start up for a meeting it seems counter-intuitive and could be easy to miss the add button as a way to start the meeting.



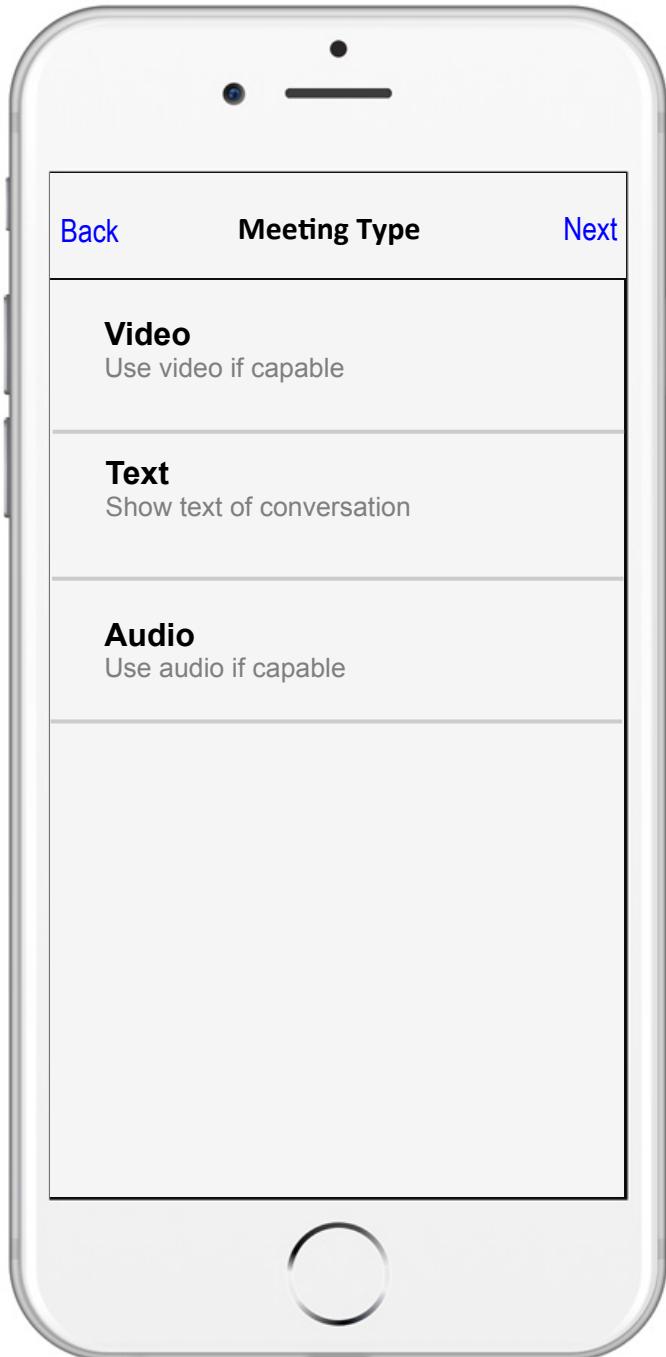
1. I click the add button then a pull down menu appears from the added new meeting. After that I add the details.
2. This section to me seems like it is missing several features for transition. For me a breakdown option for each component would make more sense. The Meeting Details is missing text cues to show the break in listing the details. for example each section should show up listed as their individual components and not give what appears to be estimated dates, times, and attendees.
3. Meeting Details should be in Bold and separated in some manner to show that it is a fixed area while the following areas should be simplified and show a pull down menu. For example Name of Meeting with an arrow to pull down from (perhaps a generic list of meeting types with an option to make a new name), the date with an pull down arrow leading to a menu to push from (with an option to add the meeting to the device calendar), time with a pull down arrow to list the time, and last a contact button for attendees. The start button should be grayed until everything is added.



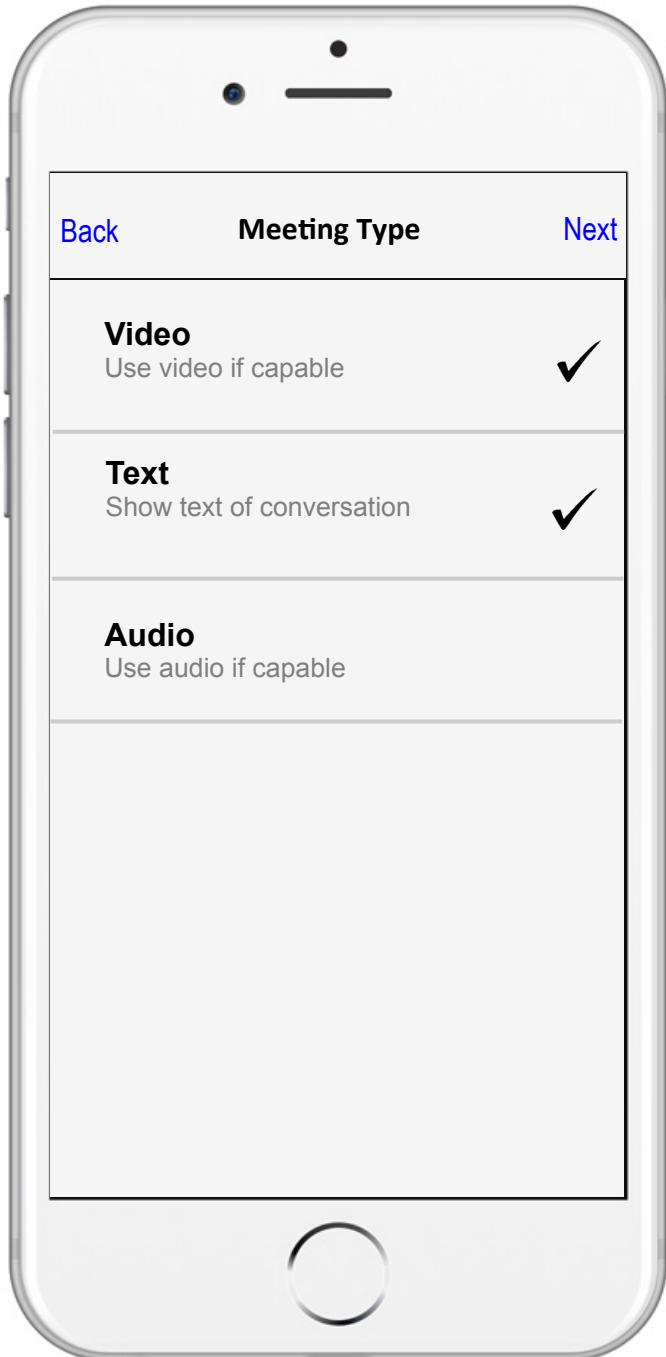
1. Add each contact from your contact list by clicking each contact. I am not clear what the add button is for at the top right corner.
2. Its not entirely clear why the icons representing text, video, and phone show up on my listing since I can only assume that it is their preference for communication.
3. I like the color coding to show who is available and who is not available. The communication preferences seem confusing to have in this section though.



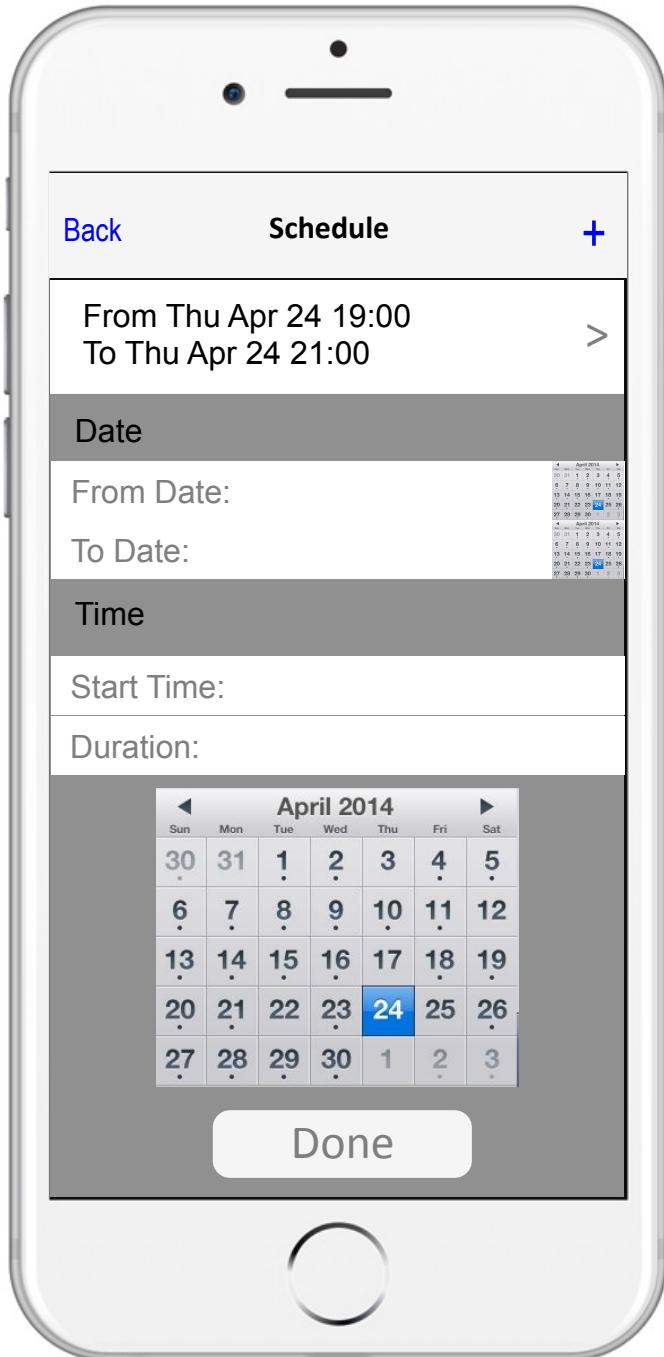
1. After I click the members from the list a check mark is shown verifying my selection. I am not sure what to click after that the add button or not considering there is a back button but no next button. I will assume the add button is pushed after selection.
2. The add button initially is to add a new meeting and there is a marked back button but no next button. This is counter-intuitive.
3. Replace the add button with a next button.



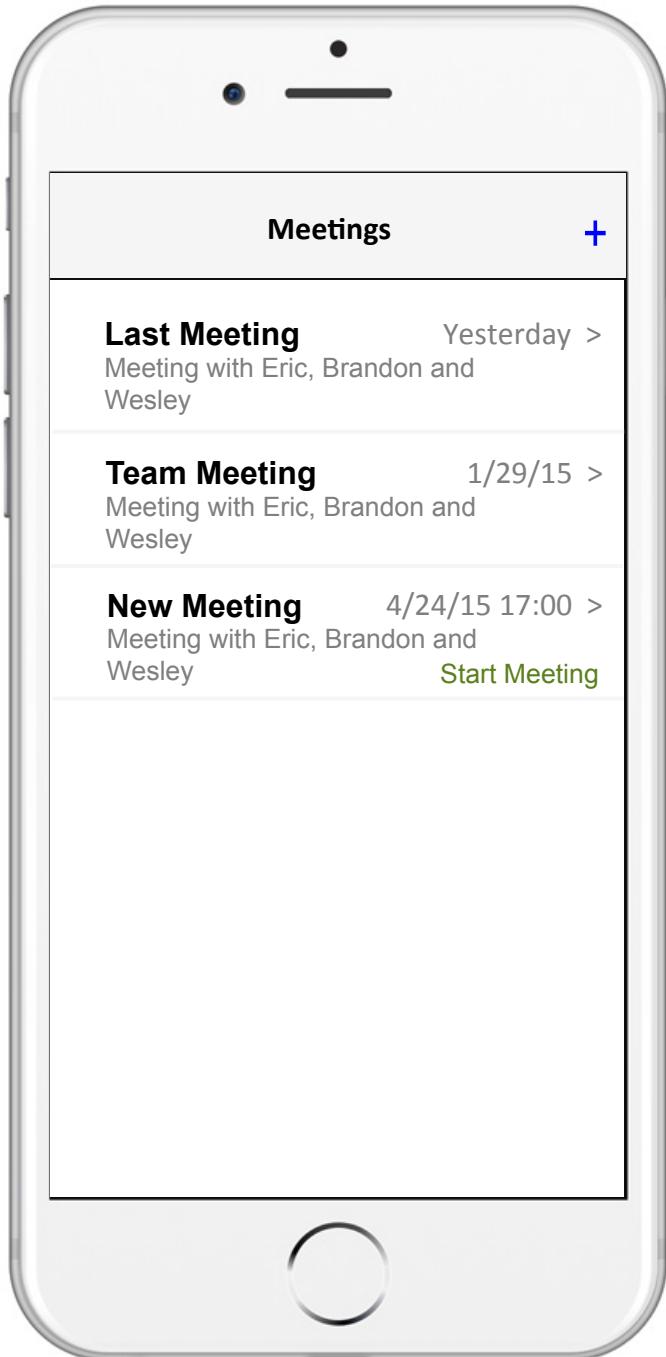
1. I click which form of communication I want to use for the meeting.
2. I don't get how this works if the person I am having a meeting with doesn't use the listed options. Jane Doe for example doesn't have video capability listed. If the previous screen is meant for me to know who can or can't use the preferred communication type I am using then it makes more sense for this page to be first and the other individuals to be grayed out.
3. The page itself is fine but needs to be prioritized differently.



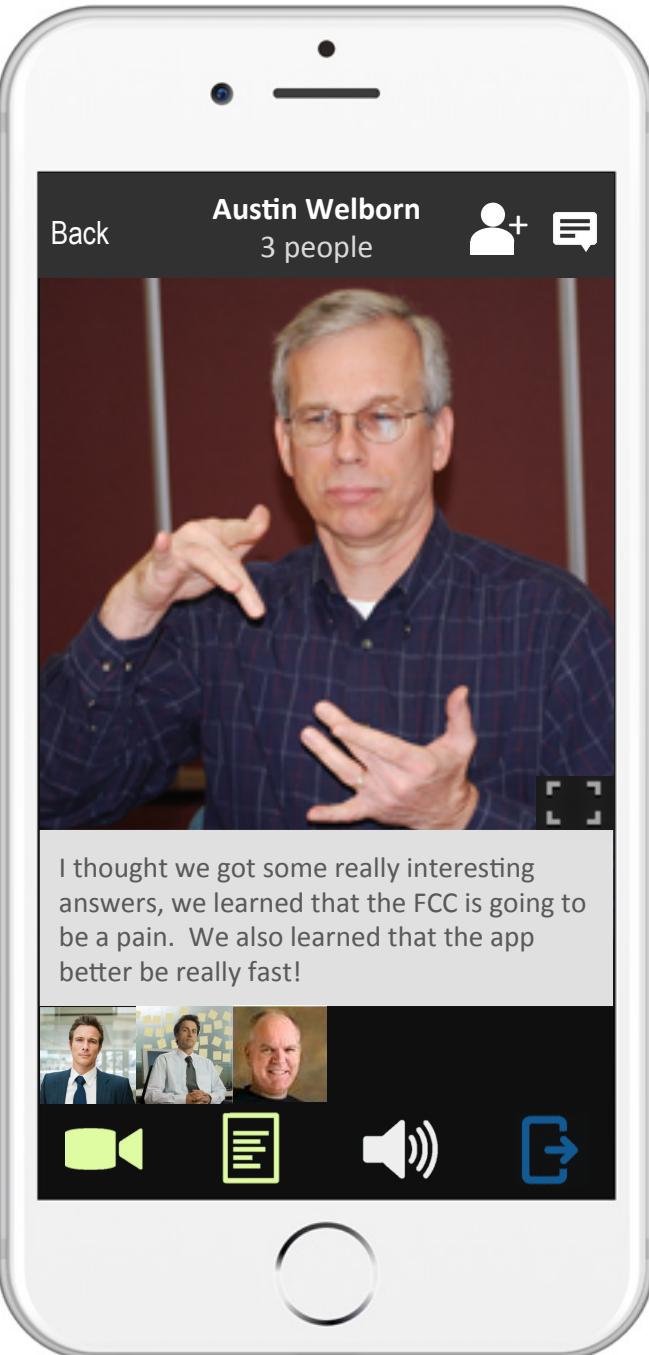
1. I click the forms of communication I am using for the meeting and then I click next.
2. Simple
3. Seems simple and intuitive.



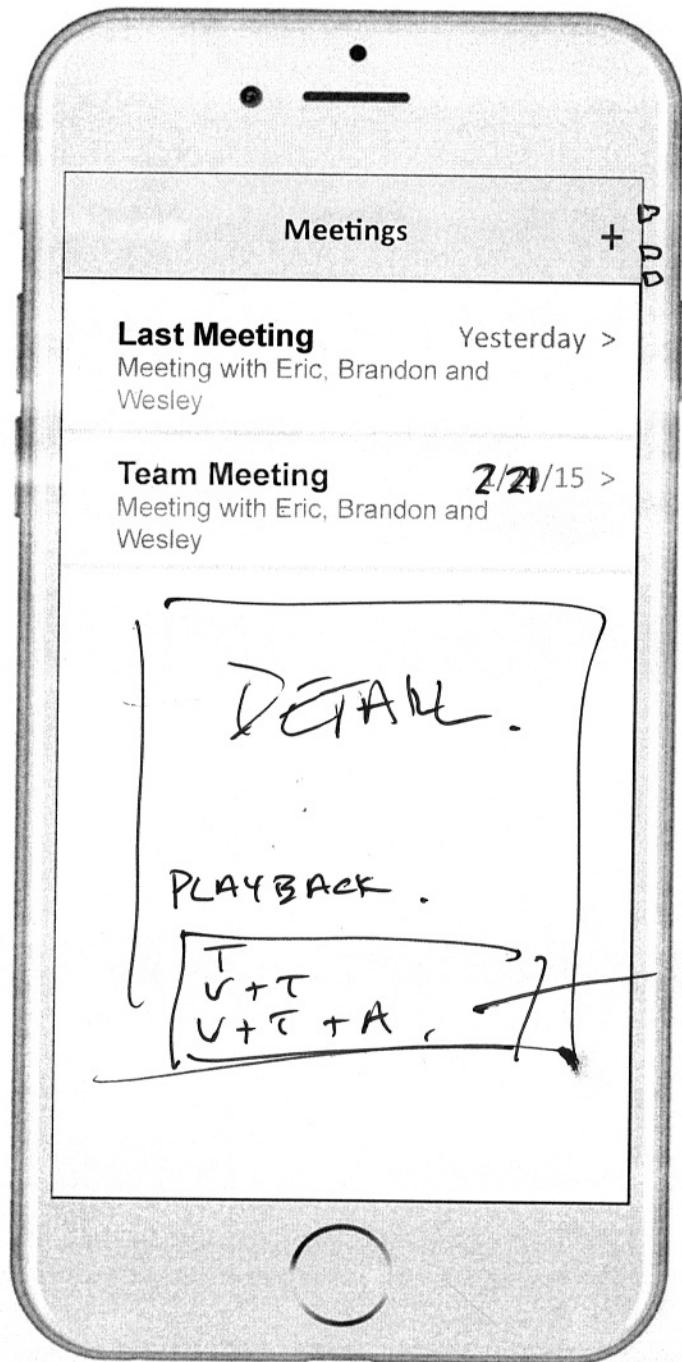
1. I set the meeting dates and times.
2. The add button shows up again but there is also a done button. It is confusing to know which one to push.
3. I would remove the done button since that signifies the meeting is starting to me. I would replace the add button with a next button.



1. I click the start meeting button.
2. This is confusing since the start meeting is inside of the bar instead of its own button page.
3. I would make the new meeting bar into its own page with the start meeting button prominent.

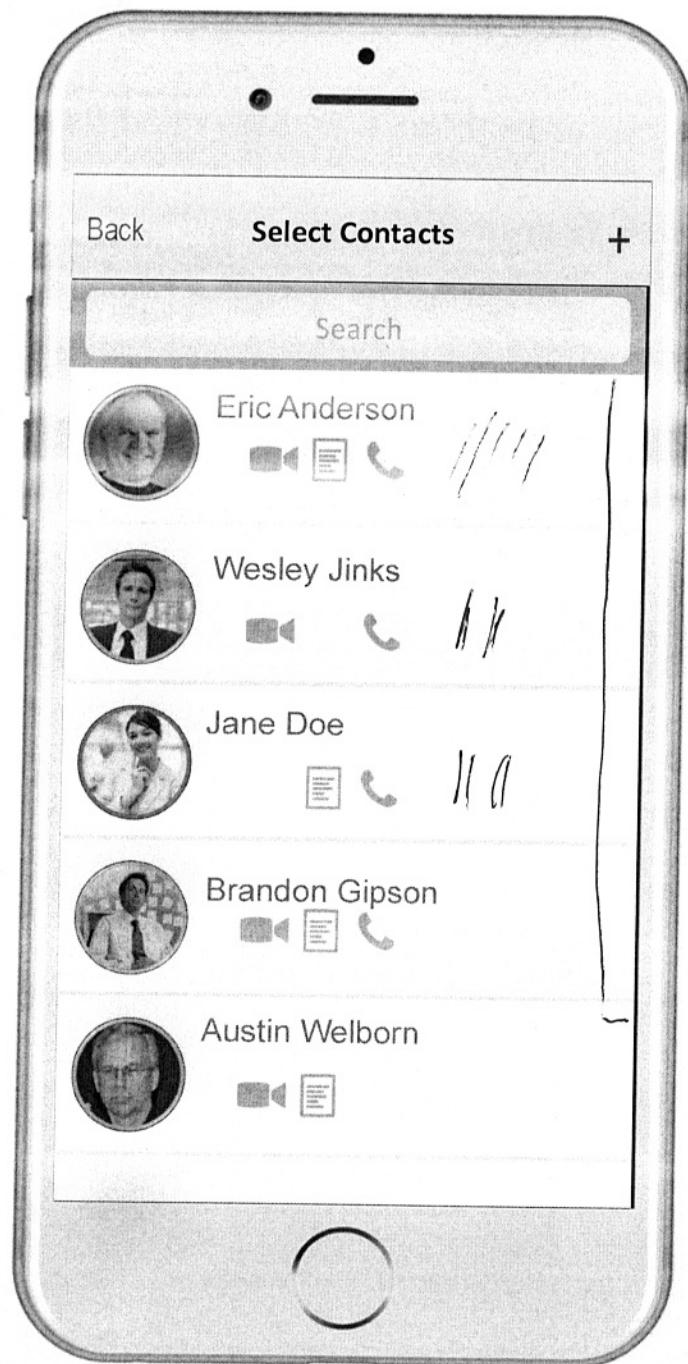


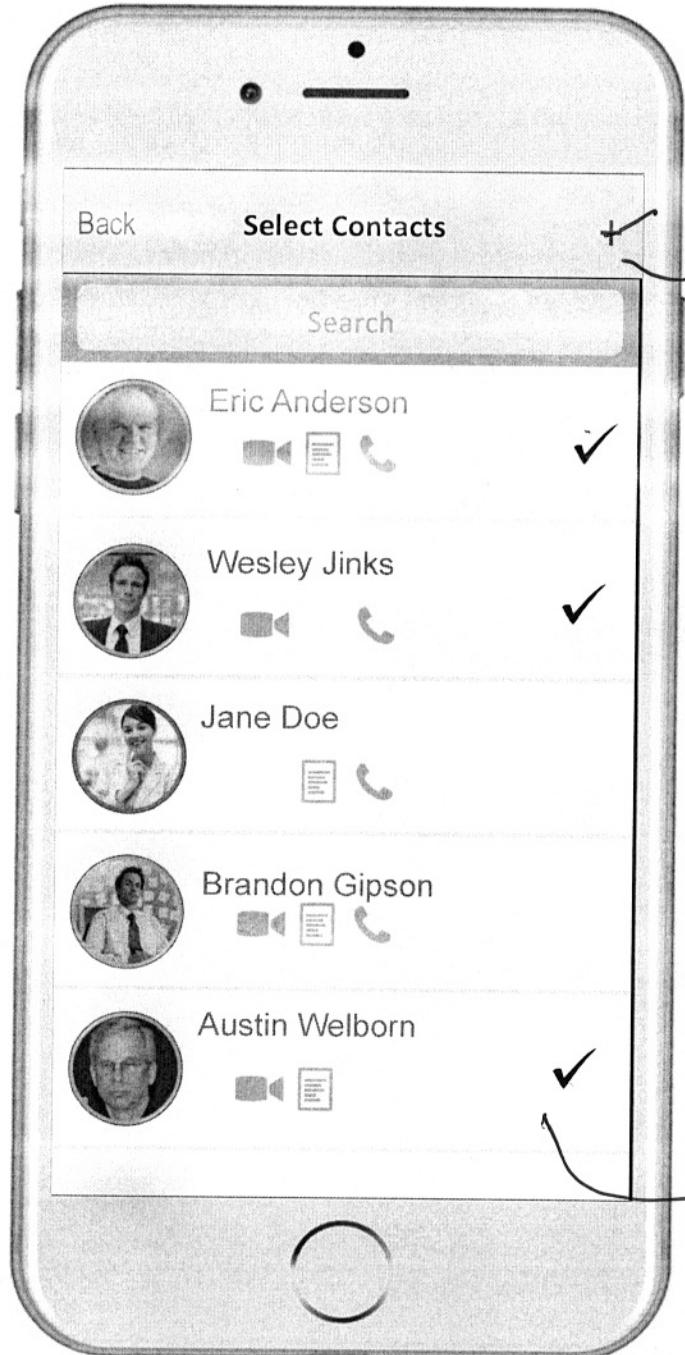
1. The meeting has started if I want to add someone to the meeting I can click the add person button. I can click any of the three icons in the lower section to turn off the selected area or to turn it on.
2. I am not sure what the text box in the upper right hand corner represents. The back button in the upper left hand corner and the exit button in the lower right hand corner seem to do the same thing.
3. Chose one or the other the back button or the exit button. get rid of the text box in the upper right hand corner unless it has a specified reason to have it.



Date or prototype could be confusing.

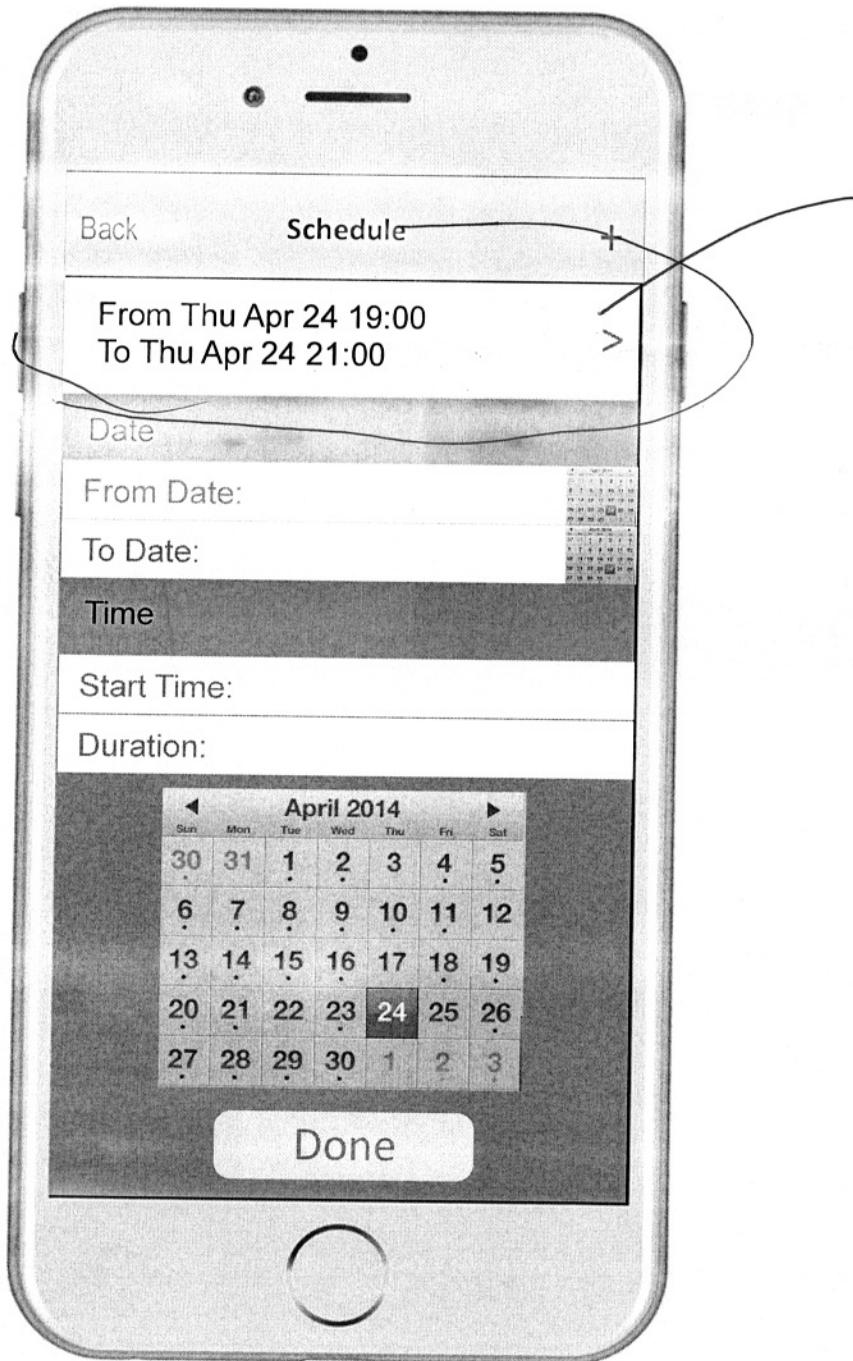
mult-select.



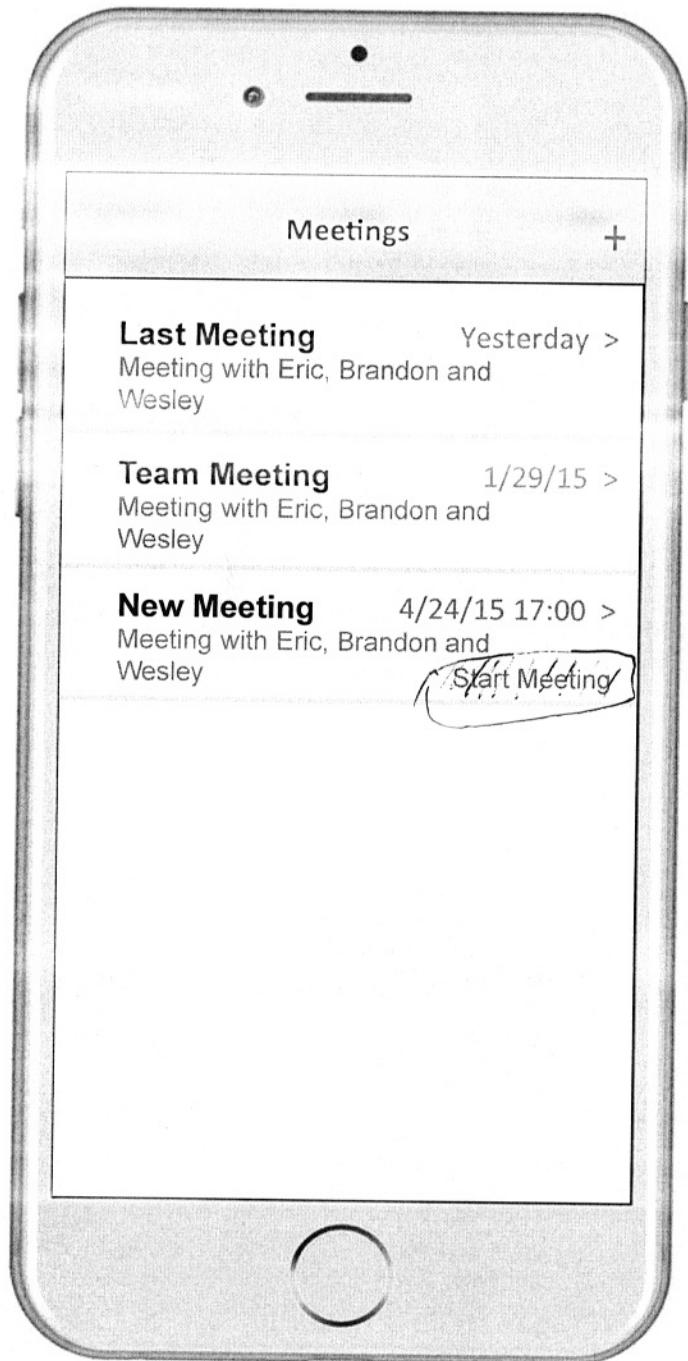


Next.  
Add.

Time-based pop up to start conversation.



Prior meeting as template?



## Usability test script

- Desk will be clean other than blank paper in case Austin and Logan need to write conversations. An iPad for this purpose only is also acceptable.**

Hi, \_\_\_\_\_. My name is \_\_\_\_\_, and I'm going to be walking you through this session today.

Before we begin, I have some information for you, and I'm going to read it to make sure that I cover everything.

You probably already have a good idea of why we asked you here, but let me go over it again briefly. We're asking people to try using an application that we're working on so we can see whether it works as intended. The session should take about 30 minutes.

The first thing I want to make clear right away is that we're testing the *application*, not you. You can't do anything wrong here. In fact, this is probably the one place today where you don't have to worry about making mistakes.

As you use the application, I'm going to ask you as much as possible to try to think out loud: to write what you're looking at, what you're trying to do, and what you're thinking. This will be a big help to us.

Also, please don't worry that you're going to hurt our feelings. We're doing this to improve the application, so we need to hear your honest reactions.

If you have any questions as we go along, just ask them. I may not be able to answer them right away, since we're interested in how people do when they don't have someone sitting next to them to help. But if you still have any questions when we're done I'll try to answer them then. And if you need to take a break at any point, just let me know.

#### [Alex Version]

You may have noticed the blank paper. With your permission, we're going to write notes and collect your written comments, notes and questions on what happens with our "paper" application and our conversation. The content will only be used to help us figure out how to improve the application, and it won't be seen by anyone except the people working on this project.

#### [Logan Version]

I have sent you the prototype. With your permission, I'm going to ask you to write notes and collect your written comments, notes and questions on what happens with our "paper" application and our conversation. The content will only be used to help us figure out how to improve the application, and it won't be seen by anyone except the people working on this project.

If you would, I'm going to ask you to sign a simple permission form for us. It just says that we have your permission to collect this information you, and that the content will only be seen by the people working on the project.

- Give them a recording permission form and a pen**

Do you have any questions so far?

OK. Before we look at the application, I'd like to ask you just a few quick questions.

First, what's your occupation? What do you do all day?

Now, roughly how many hours a week altogether—just a ballpark estimate—would you say you spend communicating with others that either are deaf or hard of hearing or who have English as a second language?

And what's the split between those who are deaf and those where English is a second language?

Currently, how do you communicate with these people?

Do you have any favorite methods to communicate?

OK, great. We're done with the questions, and we can start looking at things.

- Lay page one of the application prototype in front of the participant.**

First, I'm going to ask you to look at this page and tell me what you make of it: what strikes you about it, what you can do here, and what it's for. Just look around and do a little narrative.

You will navigate from the page by touching elements on the page but for now please don't touch anything yet.

- Allow this to continue for three or four minutes, at most.**

### [Alex Version]

Thanks. Now I'm going to ask you to try doing some specific tasks. I'm going to read each one out loud and give you a printed copy.

And again, as much as possible, it will help us if you can try to think out loud as you go along.

### [Logan Version]

Now I'm going to ask you to try doing some specific tasks. I'm going to give you a printed copy.

And again, as much as possible, it will help us if you can try to think out loud as you go along.

- Hand the participant the first scenario, and read it aloud.**
- Allow the user to proceed until you don't feel like it's producing any value or the user becomes very frustrated.**
- Repeat for each task or until time runs out.**

Thanks, that was very helpful.

Do you have any questions for me, now that we're done?

- Collect all documents, prototype pictures and any video or audio you collected.**
- Thank them and escort them out.**

# Task

[Alex Version]

You have John Doe in your office, he is deaf. You both have iPhones and only you have the UniVoice application. Your task is to start a conversation with him via the UniVoice application.

[Logan Version]

You and I are about to have a conversation in my office, You speak English, but I am deaf and can't hear you. You do not know how to "sign". We both have iPhones and only you have the UniVoice application. Your task is to start a conversation with me via the UniVoice application.





