# CS 352 *Project 6: Evaluation Plan*

*Eric Anderson, Austin Welborn, Wesley Jinks,*
*Brandon Gibson)*
*Team 24*

*Abstract*—**This document will outline a two-part evaluation plan to assess the suitability of our prototype to overcome communications barriers between foreign language speakers and /or people who are deaf or hard of hearing.**

I.                    ANALYTICAL EVALUATION

## A. What we are trying to find out

For the analytical evaluation we are going to use a Cognitive Walkthrough to evaluate our UI. We learned from our interviews that ease of use and "not getting in the way" were the most important factors to our users. We believe most of our users will be first time or sporadic single use users. Using the cognitive walkthrough three questions we will determine if we have created an interface that is very easy to learn (on the fly) and simple to use for the novice or occasional user. This evaluation should highlight areas that can be improved to allow for a user to occasionally pick up our app and use it at any given moment.

## 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 inpromptu 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.

In the latter cases, one will be a "sender" with communications challenges and the prior a "receiver" with communications challenges.

## D. Techniques To Be Used

The two design goals we have to achieve is Learnability and Utility, we attempt to solve this challenge from two perspectives (analytical and empirical), we chose the Cognitive Walkthrough method in order to evaluate the ease of learning for a new or infrequent learner (the profile of most of our target users). This assessment will occur prior to but completely separate from an empirical evaluation with one of the interviewees from our research.

## E. Data To Be Collected

Our method of analysis for the cognitive walkthrough is 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 will create multiple copies of the 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?

As we walk though the task we will document our thoughts to each of these questions as well as capture assumptions about what would cause the problems and why. We will also note any side issues or possible solutions we discover.

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?

After the cognitive walkthrough we will post all four reviews for each of the team members to review. We will each look for common problems and combine these into a unified set of issues (and side issues) from which to gain additional insights.

Post this collection, we will do an empirical evaluation with Logan. From our research Logan was very passionate about this application and had strong opinions about what would and would not work well.

The collected data from the four members of our team will be similar to the Seven Gulfs exercise. These conclusions will provide additional insights and help identify problems with our interface. However, it is important to note that this data alone will not be the basis for major changes, although we do anticipate some minor changes. Data that triangulates and agrees with the empirical evaluation will provide the basis for major changes to the interface.

II.                                     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 deaf person setting up an immediate meeting to converse with a hard of hearing person.

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 to think aloud (this this case written) to see if e stumbles on this part of the interface.

Specifically, will look for the following feedback;

1.  Does he understand that he must create a new meeting?

2.  Does he understand that a meeting can include just one person?

3.  Where does he expect to get contacts from? His contacts as provided by iOS or he creates these within the app?

4.  Does he understand the meaning of the icons representing the type of communications he can have?

5.  Does he 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'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. Techniques To Be Used*

We are going to use the "Wizard of Oz" paper prototype method for this as both parties in the evaluation will be deaf. We do not want to convey to Logan too polished of a prototype and deny him the opportunity to give us richer feedback. We also anticipate that given his deafness, he will want to write notes, comments and markup on the paper prototype . It will however give him a somewhat interactive experience.

We will place the meeting page in front of him, ask him to tap elements on the page. As he does, we will change the page to the appropriate "next" page just as if the app were live. We could give him the interactive pdf version but given his limitations of speech and his need to write responses, we feel this will be a better approach.

*E. Data To Be Collected*

We expect that this evaluation will produce a list of fairly major problems with the interface, so we will be comparing these with the analytical study and our current insights. Its the triangulation of these that will yield a good set of data on

learnability problems, along with data on how "natural" our interface is to use.  If we can get these right, there is a good possibility this user interface will be widely used!

MATERIALS FOR EMPIRICAL EVALUATION

# Usability test script

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.

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.

❑ **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.**

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.

---

❑ **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

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.

# Content consent form

Thank you for participating in our usability research.

We will be collecting your written conversations, comments and notes for your session to allow OSU CS 352 Team 24 (Eric Anderson, Austin Welborn, Wesley Jinks, and Brandon Gibson) staff members who are unable to be here today to read about your session and benefit from your comments.

Please read the statement below and sign where indicated.

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -

I understand that all content from my usability test session will be collected and analyzed.
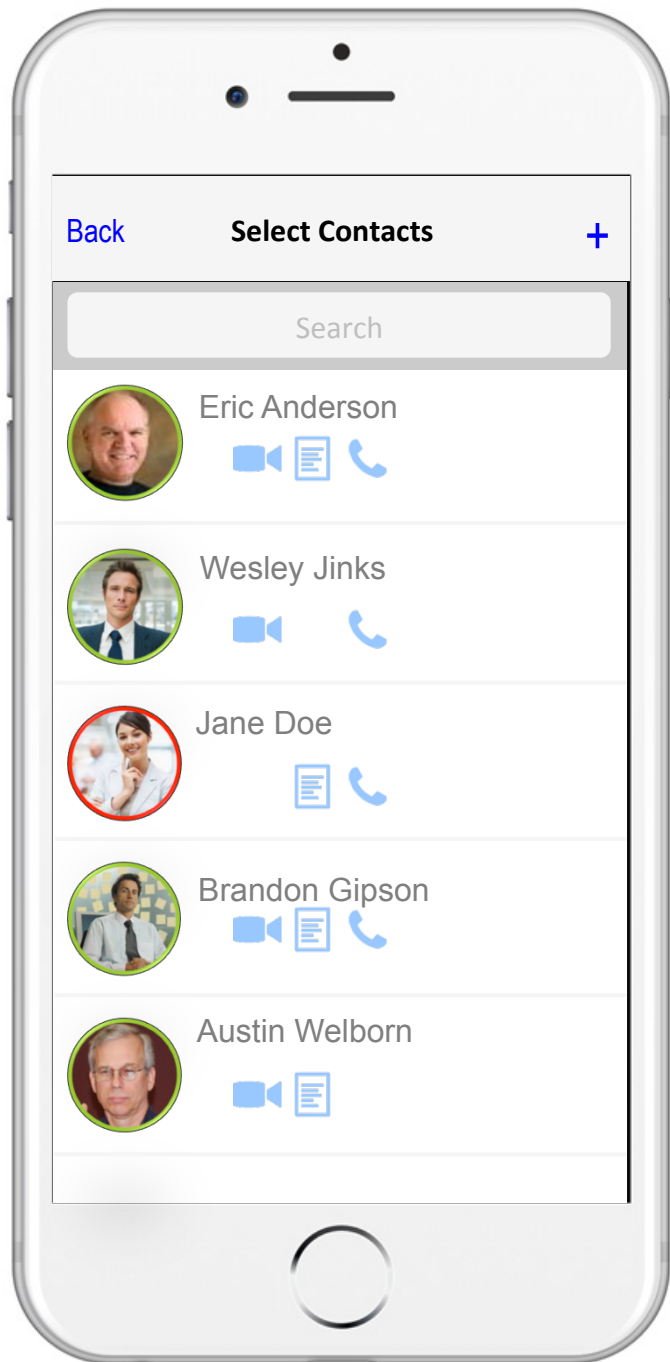
I grant OSU CS 352 Team 24 permission to use this content for internal use only, for the purpose of improving the designs being tested.
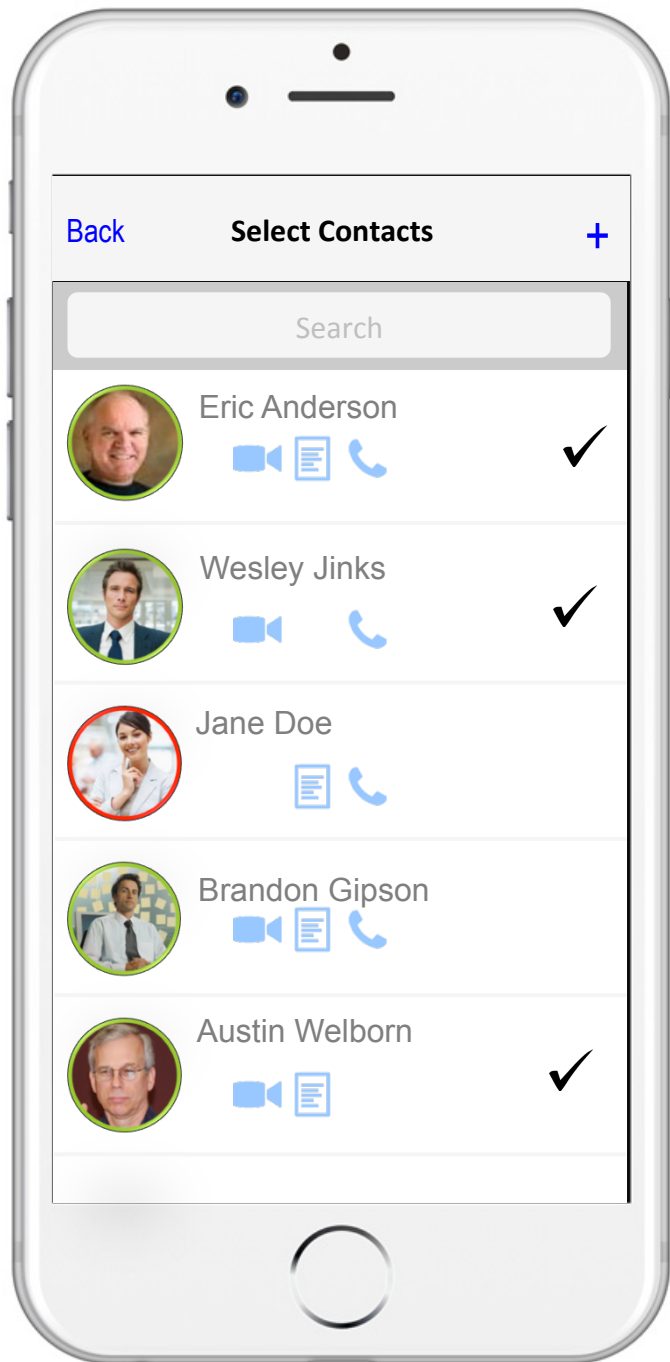
Signature: _____

Print your name: _____

Date: _____
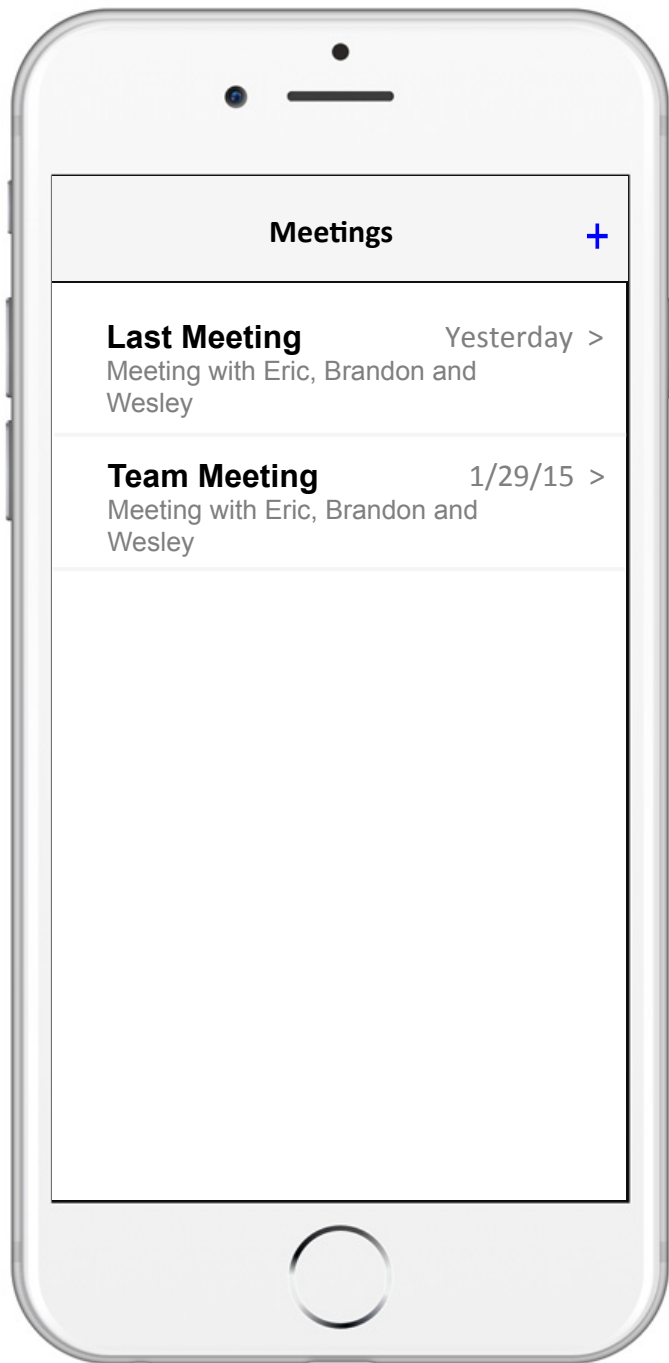
**Last Meeting**          Yesterday  >
Meeting with Eric, Brandon and
Wesley

**Team Meeting**          1/29/15  >
Meeting with Eric, Brandon and
Wesley

Search

Eric Anderson

Wesley Jinks

Jane Doe

Brandon Gipson

Austin Welborn

Search

Eric Anderson
✓

Wesley Jinks
✓

Jane Doe

Brandon Gipson

Austin Welborn
✓

**Video**
Use video if capable

**Text**
Show text of conversation

**Audio**
Use audio if capable

**Video**
Use video if capable ✓

**Text**
Show text of conversation ✓

**Audio**
Use audio if capable

From Thu Apr 24 19:00
To Thu Apr 24 21:00 >

## Date

From Date:

To Date:

## Time

Start Time:

Duration:

| ◀ | | **April 2014** | | | | ▶ |
|---|---|---|---|---|---|---|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| 30 | 31 | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | **24** | 25 | 26 |
| 27 | 28 | 29 | 30 | 1 | 2 | 3 |
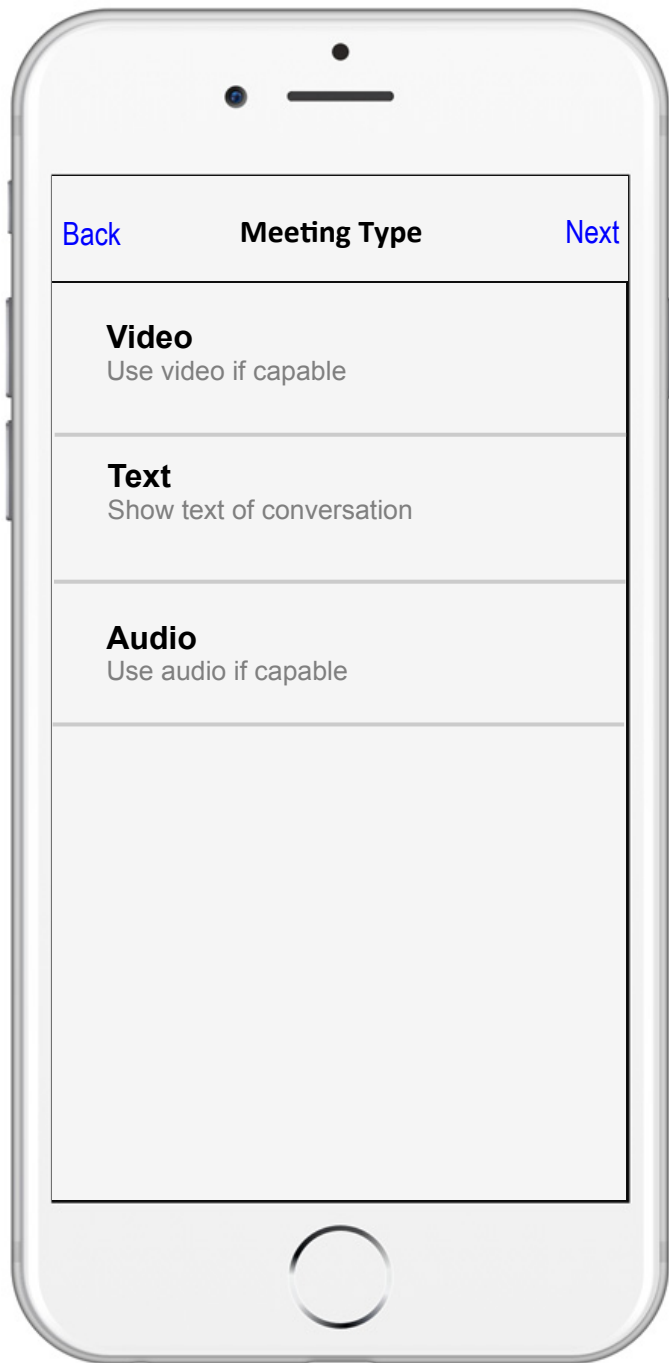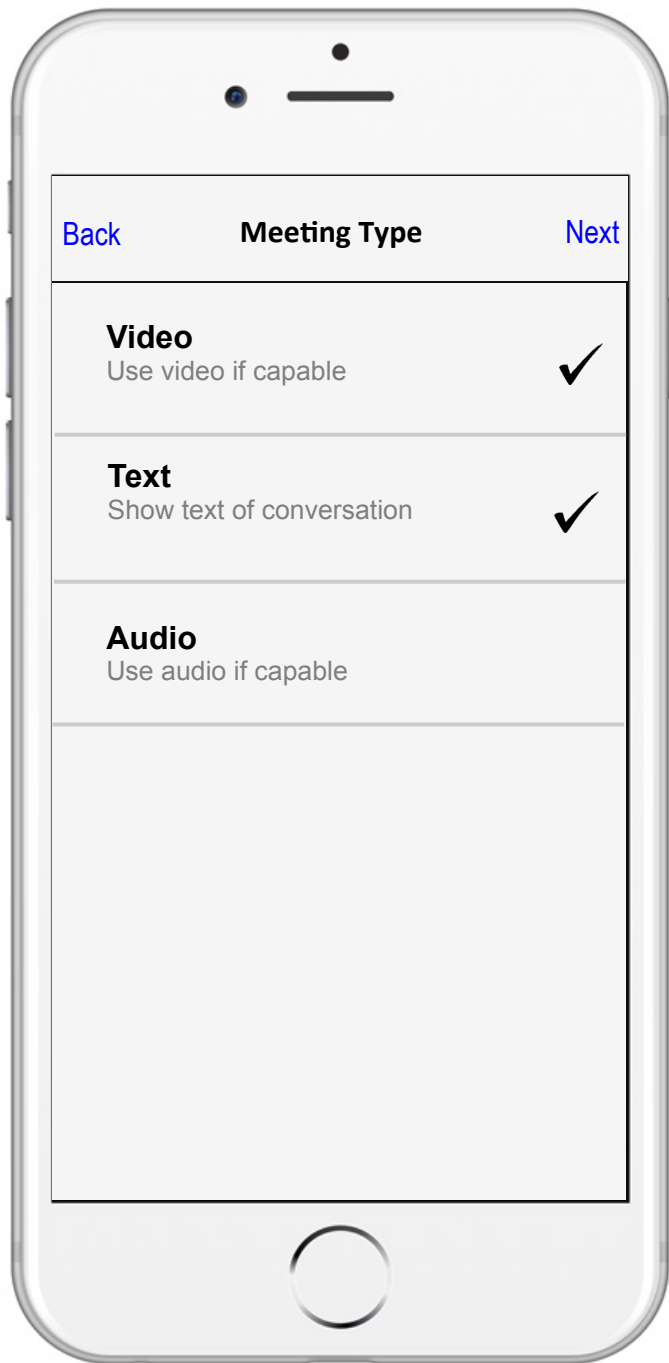
Done
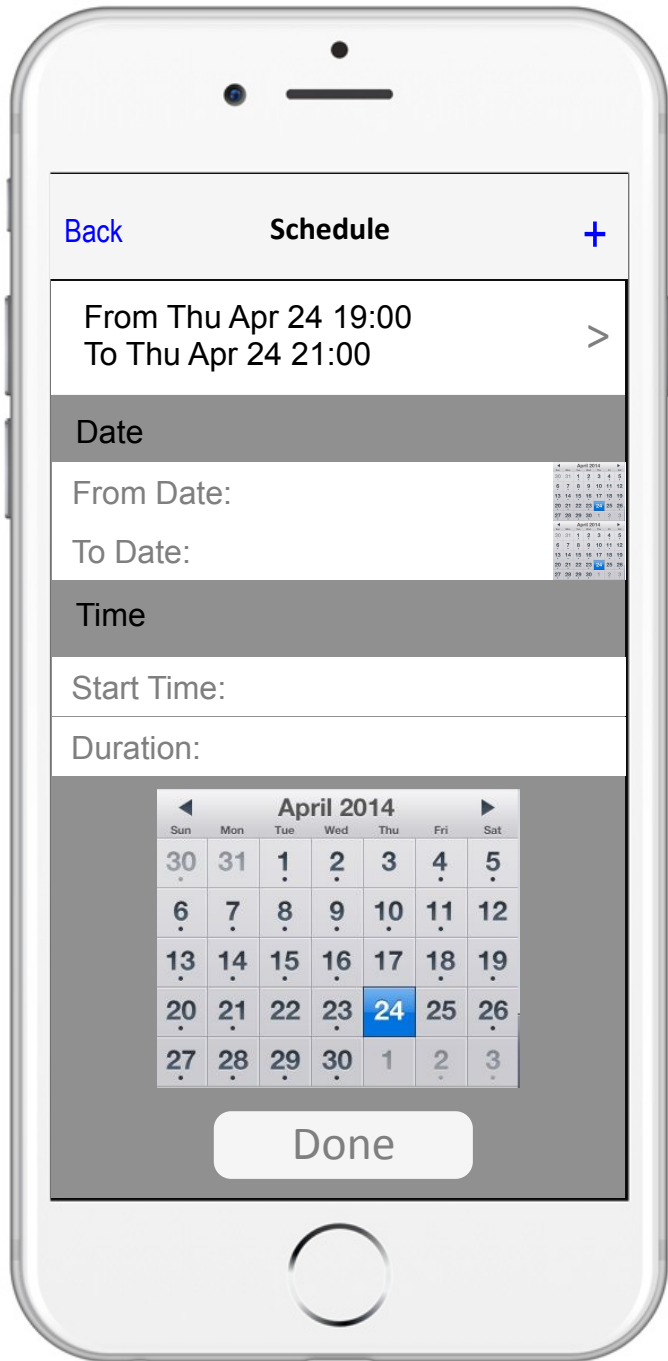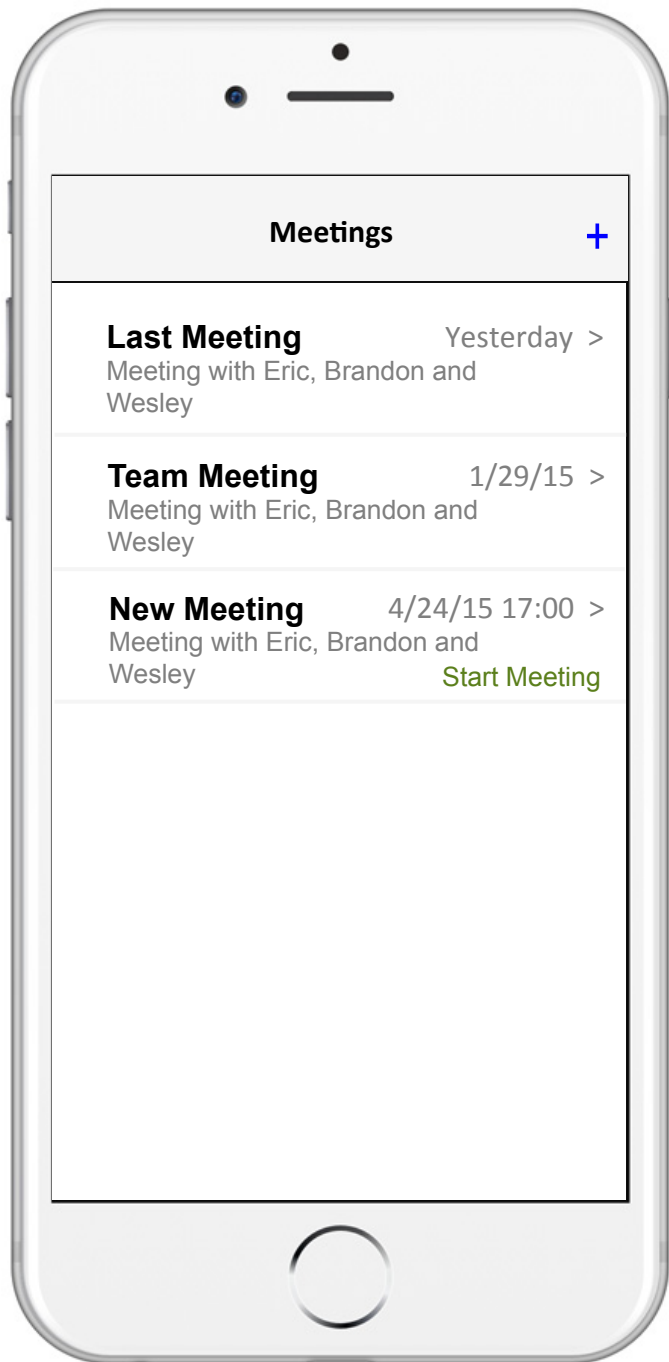
## Meetings

+

**Last Meeting**     Yesterday >
Meeting with Eric, Brandon and Wesley

**Team Meeting**     1/29/15 >
Meeting with Eric, Brandon and Wesley

**New Meeting**     4/24/15 17:00 >
Meeting with Eric, Brandon and Wesley     Start Meeting