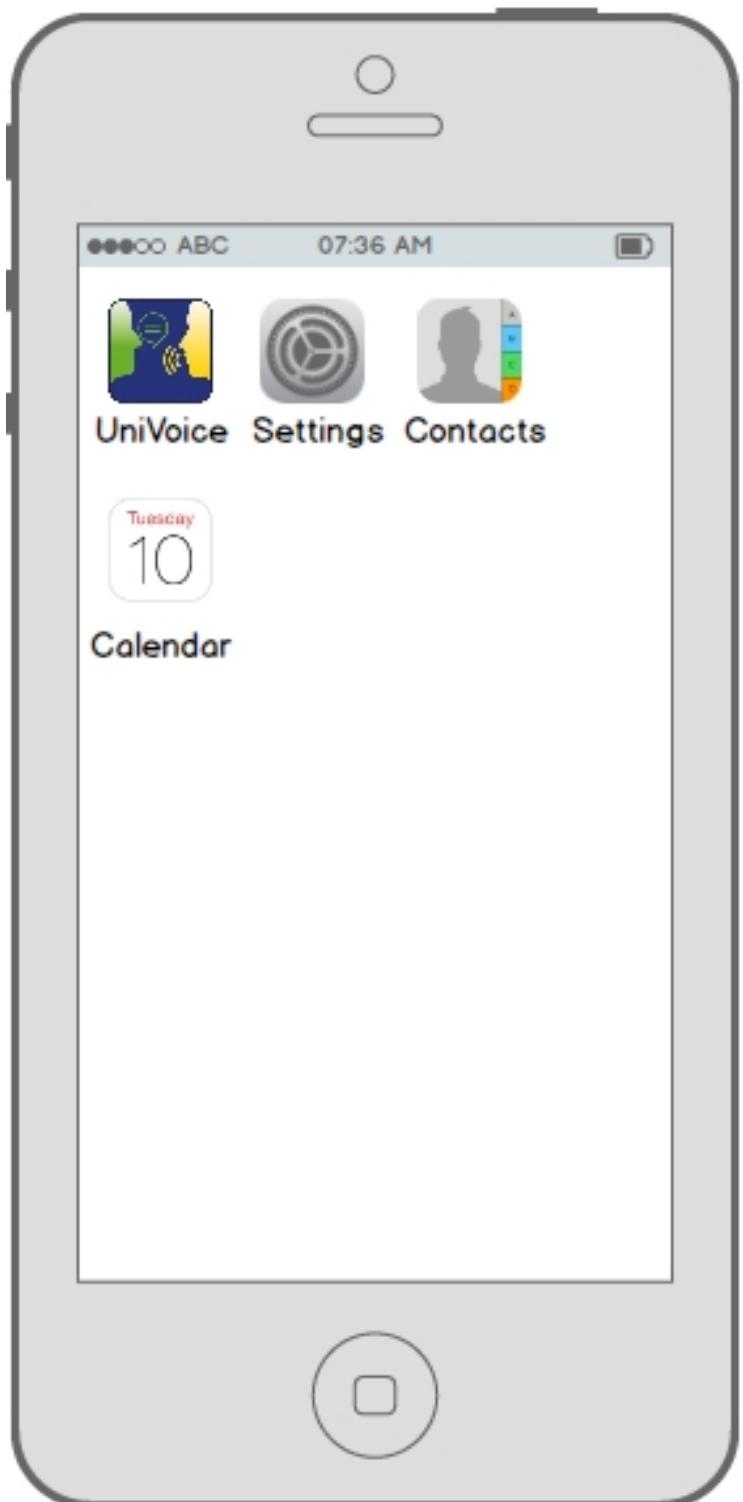


Storyboard #1: Application Launch



Design Principles:

Consistency: Consistency is maintained within the application by adhering to the iOS style guide and by leveraging other iOS applications for part of this application's functionality.

Learnability: By utilizing iOS style, the user is already familiar with how iOS applications work.

Recognition rather than recall (MEMORY): Users will instantly know how to use the application as it acts like other iOS app they know and use.

Justification:

The user already has both a mental model as to how iOS applications should behave, we assist with recognition over recall as users will see familiar elements in our application as they do other iOS applications.

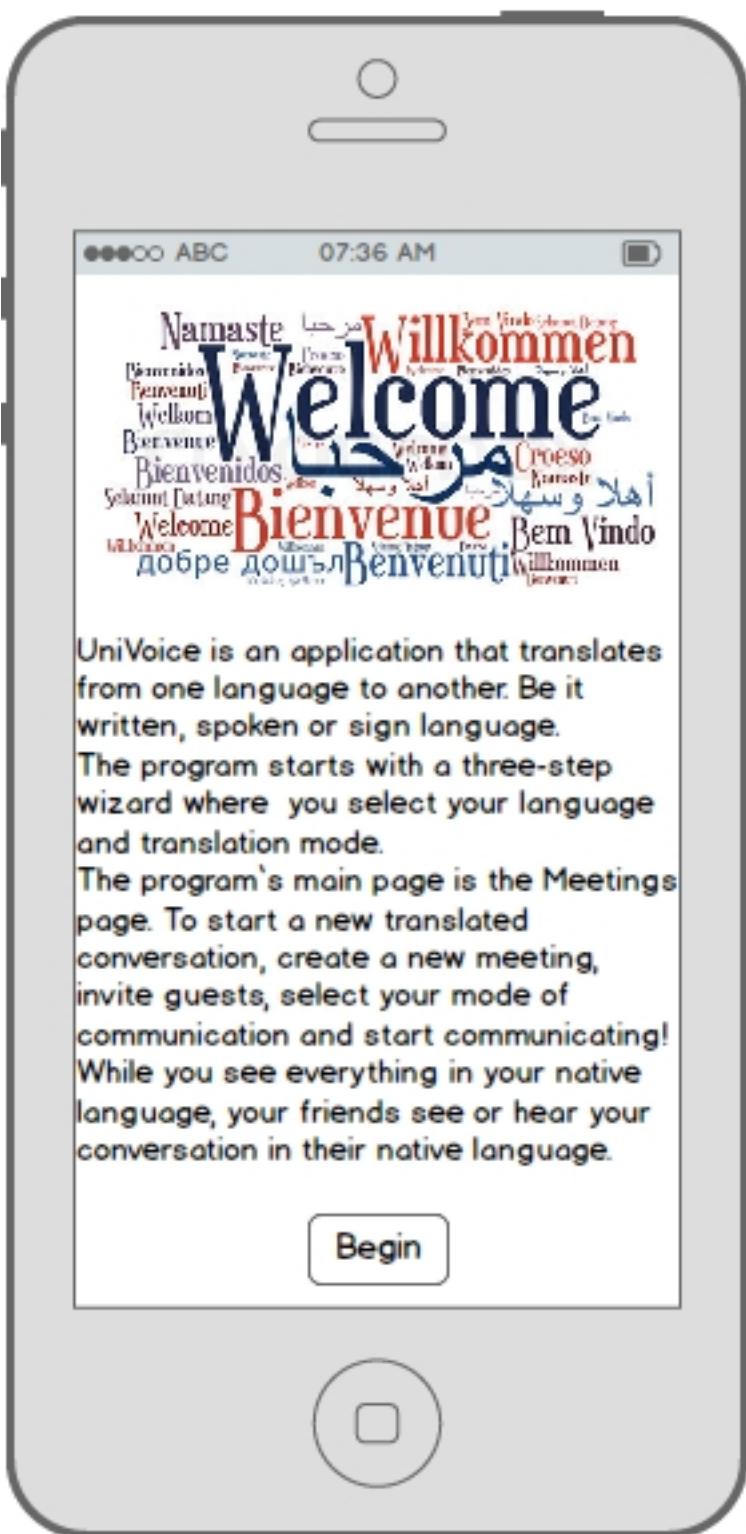
We chose to leverage settings, contacts and calendar as these are apps the user already knows how to use, thus they already know how to use most of our app.

Changes From previous: We added the use of Settings, Contacts and Calendar as our test subjects broke the app into these tasks naturally.

Usage:

User clicks The app icon to start the UniVoice application. The user can optionally go to settings and adjust key functions of the programs usage. The user may also add to or remove contacts through the default iOS Contacts program. The user may also schedule conversations in the default Calendar application. Both contacts and events are reflected back into the UniVoice application.

Storyboard #2: The Application



Design Principles:

Help and documentation (Help): We embedded help throughout parts of the application, this help is intended to give the user an overview of the application and what it does.

Learnability: through a simple set up wizard.

Efficiency: Three steps and you're done

Attention Investment: we have reduce the perceived cost of using the app and also explained what reward the user can anticipate by using it.

Affordability: A simple obvious button invites the user to begin using the app

Justification:

To help the user better estimate the reward for using this app, we provide upfront instructions to make the cost of using the application more visible to the user.

There is only one thing a user can do here so it is easy and avoids mistasks from multiple options.

Changes From previous: There has been no change to this page from our previous prototype.

Usage:

Wizard mode is on by default. Click the Start button to begin the wizard. The user can turn off the wizard in settings.

Storyboard #3 Settings Wizard



Design Principles:

Constraints: This is a simple single function page, the user can select one item only, no other action is possible.

Flexibility and efficiency of use

(EFFICIENCY): The wizard walks the user through the setup process the first time.

The new user doesn't realize all the setting that are possible and gains a short cut to immediate operation.

Will the user see how to do it? (Gulf of exec): Yes there is only one option here, the preselected item helps the user understand what they can do.

Justification:

There are a lots of settings to this application, we simplify this by offering constraints that help the user to select the most critical items to get the application up and running quickly and correctly. As the user learns more, they can control the application by changing these settings.

This was the most requested feature of our application!

Changes From previous: Changed the title as it was not clear what this was asking for.

Usage:

User clicks their native language and the wizard automatically advances to the next option.

Storyboard #3 Settings Wizard



Design Principles:

Constraints: This is a simple single function page, the user can select one item only, no other action is possible

Flexibility and efficiency of use (EFFICIENCY): The wizard walks the user through the setup process the first time. The new user doesn't realize all the setting that are possible and gains a short cut to immediate operation.

Will the user see how to do it? (Gulf of exec): Yes there is only one option here, the preselected item helps the user understand what they can do.

Justification:

There are a lots of settings to this application, we simplify this by offering constraints that help the user to select the most critical items to get the application up and running quickly and correctly. As the user learns more, they can control the application by changing these settings. This was the most requested feature of our application!

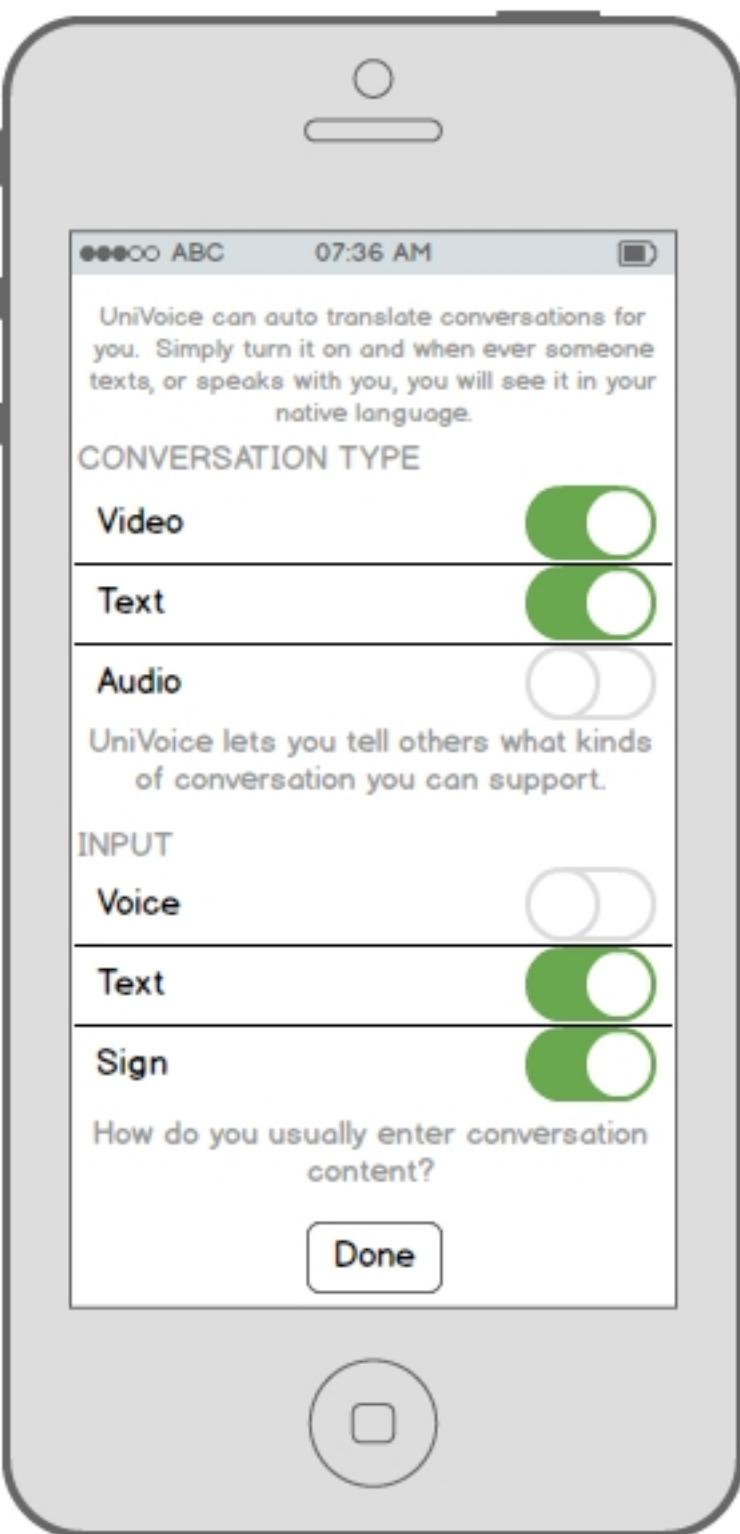
Changes From previous: Changed the title as it was not clear what this was asking for.

Usage:

User clicks the native language of the person they wish to communicate with and the wizard automatically advances to the next option.

The target language is only intended for the case where the user is talking to someone immediately using just their phone. If someone else has the app, then there is no need to have a target language, it will use their language. The translation would occur between the two or in the case of a group, from the source language to the many target languages.

Storyboard #3 Settings Wizard



Design Principles:

Affordability: Each button is a simple toggle. The user can turn on many functions (multi-select) without having to comprehend the notion of multi-select.

Efficiency: All key settings for a function program are on one page.

Will the user know what to do? (Gulf of exec): Yes these are simple toggle settings.

Help and documentation (Help): Help is embedded in the settings to help the user understand what each function does.

Justification:

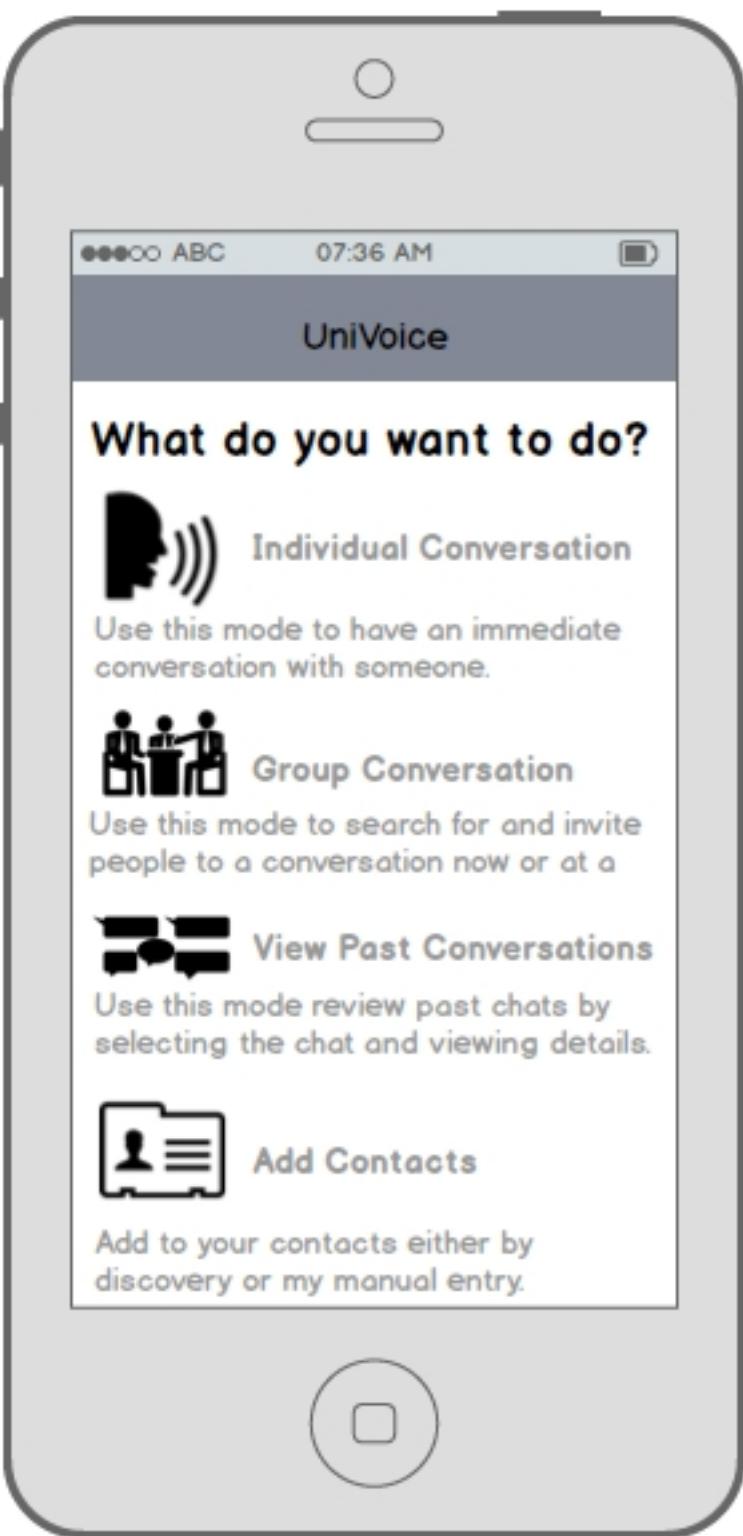
There are a lots of settings to this application, we simplify this by offering constraints that help the user to select the most critical items to get the application up and running quickly and correctly. As the user learns more, they can control the application by changing these settings.

Changes From previous: This page was refactored from our Cognitive Walkthrough

Usage:

User clicks Video, Text or Audio to set the output that the listener will see or hear. The user then clicks Voice, Text, or Sign Language to tell the program what communication medium the owner of the device will use to communicate to others. When all settings have been indicated the user clicks the "Done" button to exit the wizard and begin using the program.

Storyboard #4 Main Page



Design Principles:

Help and documentation (Help): Each item is explained on the page

Learnability: through a simple 4 options.

Utility: Fast path to any task

Efficiency: Three steps per task and you're done

Constraints: There are only four options!

Justification:

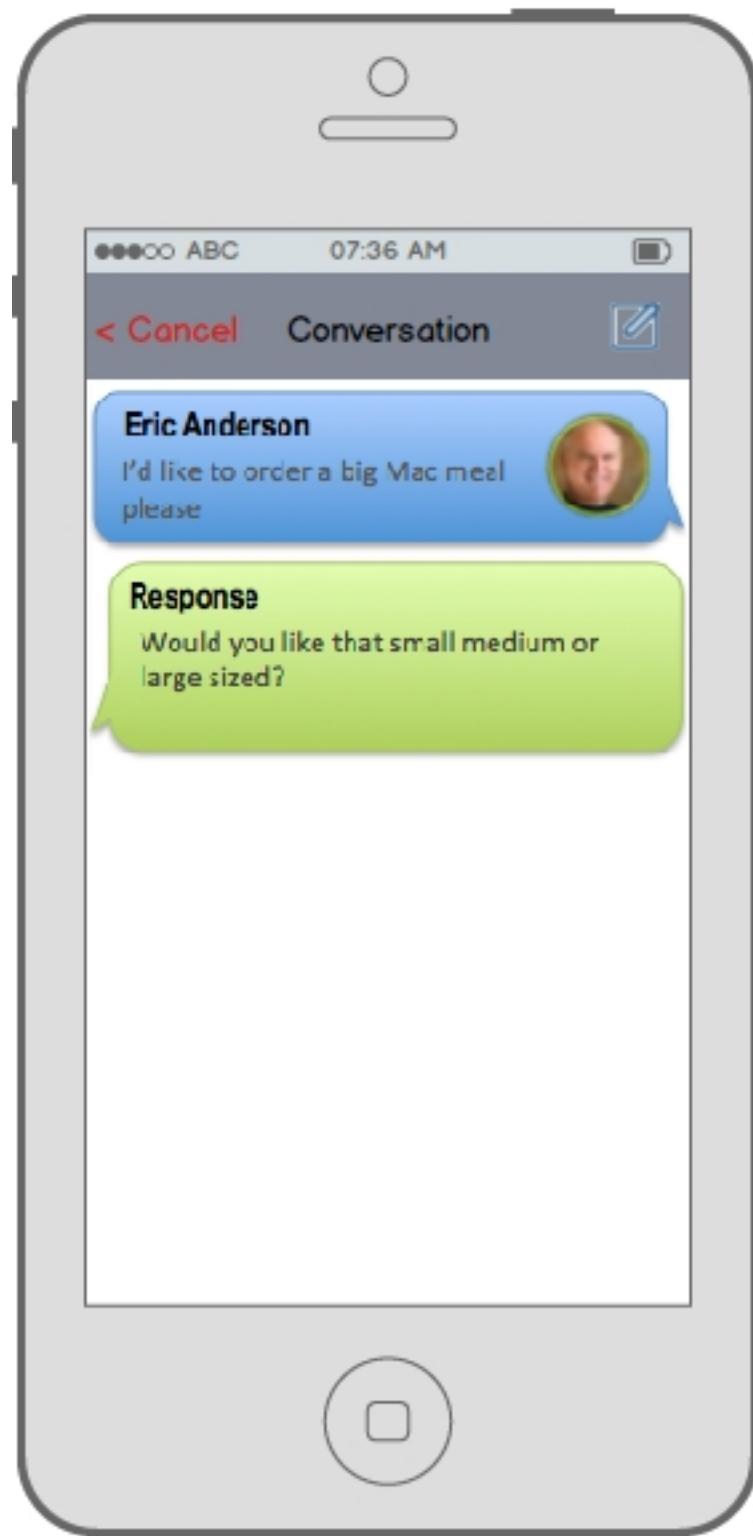
This separates the program into four unique tasks, some of which will be performed frequently, other rarely. By chunking things this way, it is easier for the user to understand the program and complete the desired task very rapidly.

Changes from previous: This page is totally new. We learned from our empiricle studies that our users had a very different mental model from ours. We added this page to both guide the user through 4 simple tasks and to divide what was once a monlythic task.

Usage:

Click any of the four settings to initiate a task.

Storyboard #5: Individual Conversation



Design Principles:

Consistency: just like iOS messages.

Efficiency: You type your message and the other party can respond verbally or by typing a response.

Aesthetic and minimalist design (DESIGN):

A very sparse simple page.

Color: We added colors to better distinguish the threads of the conversation.

Justification:

All the user wants is very fast utility! In this case the user is standing at a McDonald's counter trying to order. They don't want to fumble with a program to do this. The person behind the counter can't type back a response. This mode allows for fast reward, and high utility by allowing the person behind the counter to respond verbally.

Change from previous: This case was missed by us and was the most significant finding from our empirical studies. This feature is entirely new.

Usage:

Click the box in the upper right hand corner.

Type in your message or

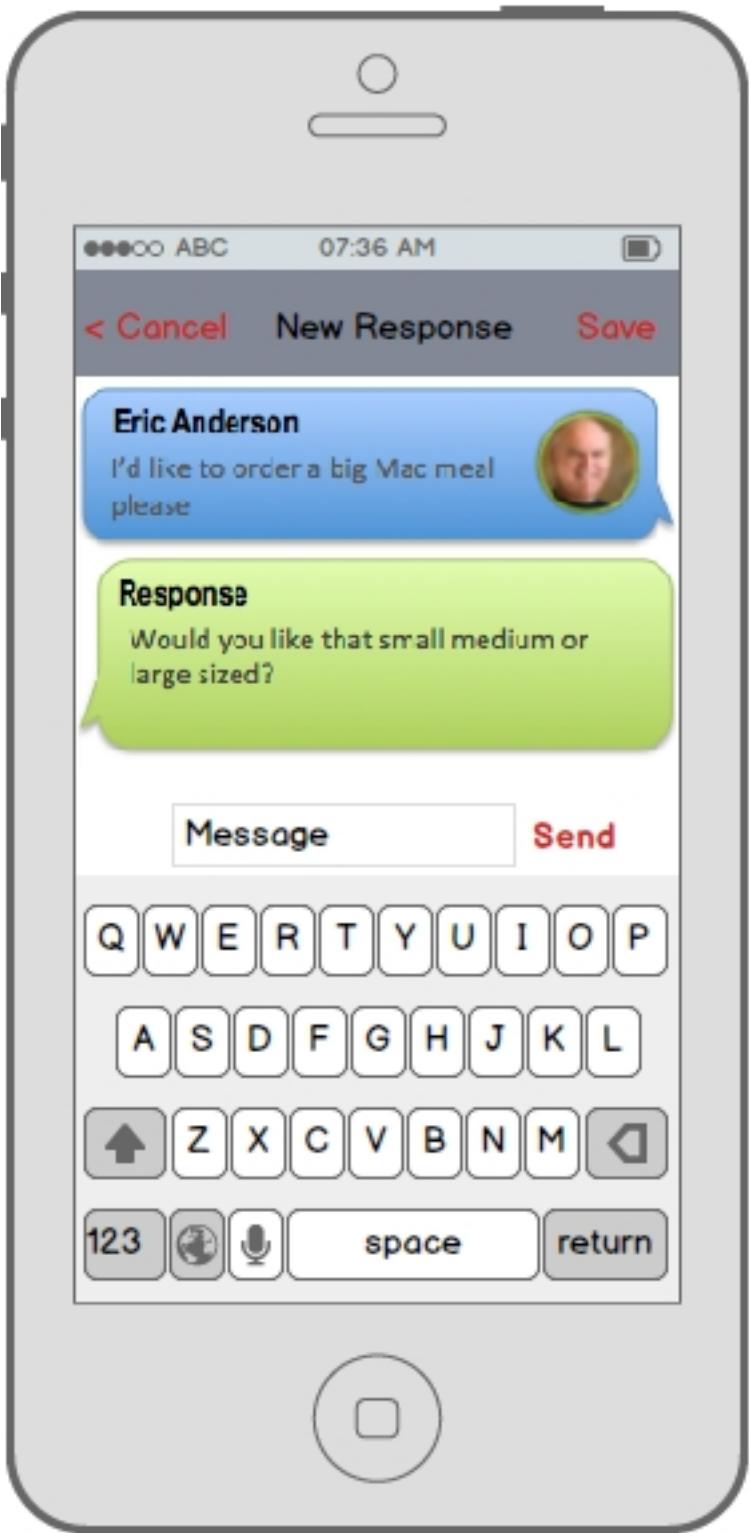
Click the microphone and speak your message.

Automatic translation occurs.

Other party can take your phone and type response or

Answer back audibly and will convert to text
(This is Austin's McDonalds case)

Storyboard #5: Individual Conversation



Same as previous page, this page shows the pop up keyboard common to iOS apps.

Storyboard #5: Individual Conversation



Same as previous page, this page switches from typed entry to vocal entry. This was done by pressing the microphone button on the keyboard. This is consistent with iOS apps.

Storyboard #6: Group Conversation



Design Principles:

Consistency: just like iOS FaceTime app but with text mode and automatic verbal or written translation.

Efficient: Uses contacts page so it is as simple as select or multi-select names (by clicking the checkbox next to the name (User feedback) and you go to Third page.

Aesthetic and minimalist design (DESIGN): Lots of white space! Few operations to perform.

Help and documentation (Help): Help embedded on the page.

Justification:

The user already has both a mental model as to how iOS applications should behave, we assist with recognition over recall as users will see familiar elements in our application as they do other iOS applications.

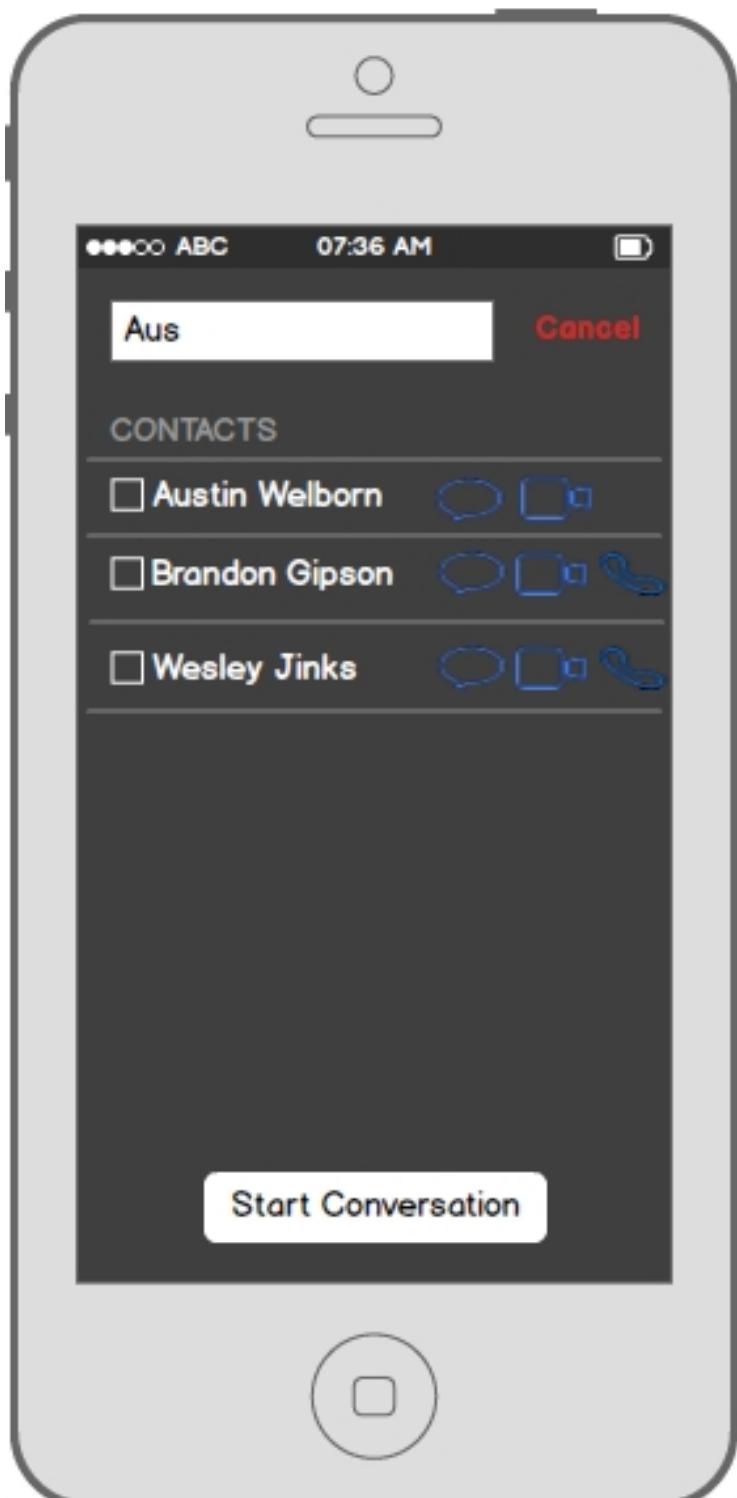
Changes from previous: People were confused how to start the conversations as they required a meeting first. We learned that they might know how to create a meeting to create a video conference when the desire was to speak now. We changed all this to allow the user to select the type of meeting they want, then offer to let them do it immediately or schedule it for later.

Usage:

Select mode you want to use, video, audio or text. When in the app you can add additional modes.

Select contacts either by entering name or selecting from preexisting contacts.

Storyboard #6: Group Conversation



Design Principles:

Consistency: just like iOS FaceTime app but with text mode and automatic verbal or written translation.

Feedback: Using a "spotlight" approach, when the user starts typing in a name, a list of existing contacts is populated below.

Simple: Uses contacts page so it is as simple as select or multi-select names (by clicking the checkbox next to the name (User feedback) and you go to Third page).

Flexibility and efficiency of use (EFFICIENCY): When the user clicks a name, the app sets up the call to that person automatically.

Recognition rather than recall (MEMORY): iOS users already know FaceTime well, this is a slight variation on FaceTime. They will recognize how to do this task.

Justification:

We found that users were confused by our custom version of contacts. We were asked if our contacts was coming from the contacts app.

We also found that the minimalist design of iOS confuses users in that there is no indication of multi-select. We depart from iOS style and introduce it here.

Changes from previous: This page is entirely new and reflects the usage of FaceTime-like screens and embeds Contacts so the user gains efficiency by only managing their Contacts once.

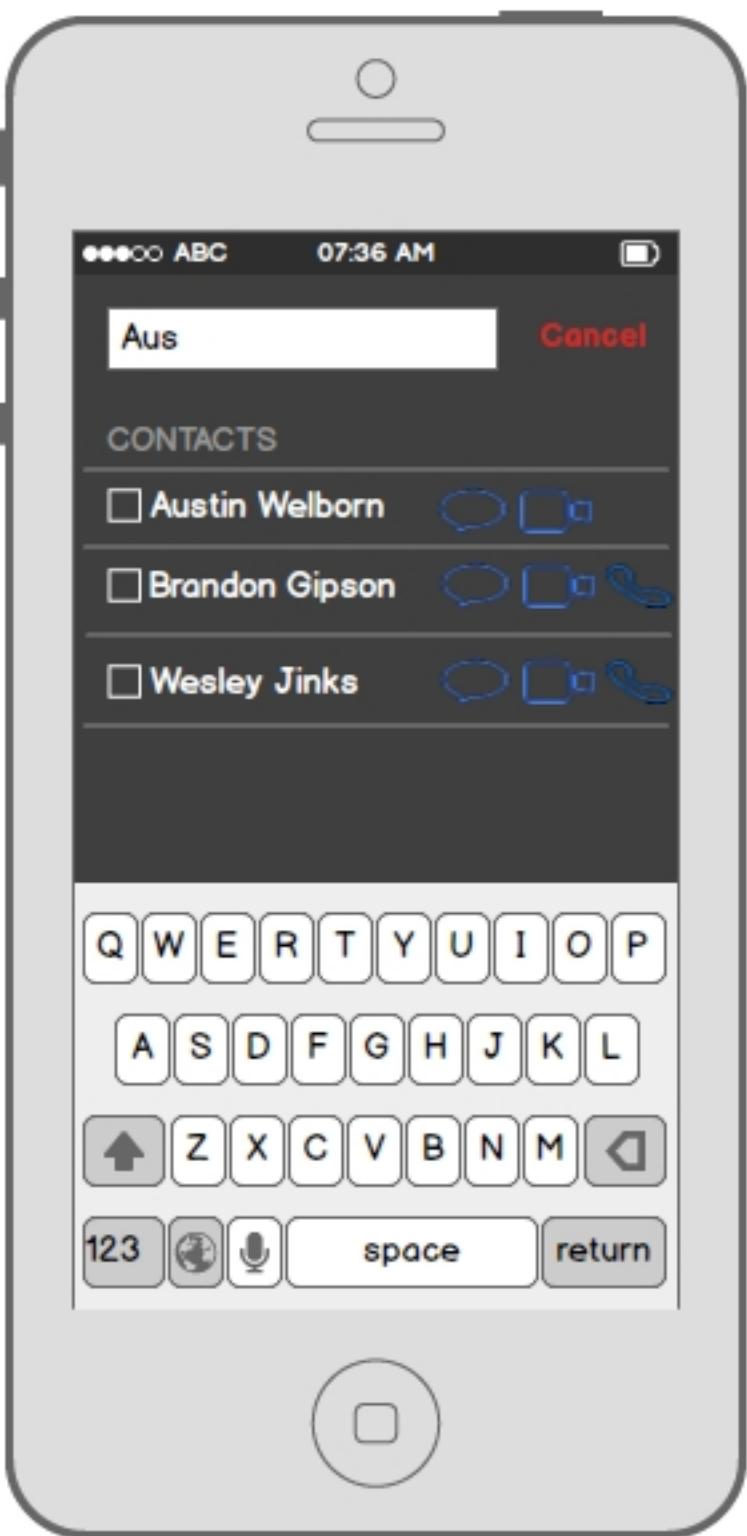
Usage:

Select contacts either by entering name or selecting from preexisting contacts.

Click the start button to begin the conversation.

NOTE: Balsamiq doesn't support multi-select operations so we added the start conversation button to support it. We link each individual to demonstrate user specific setup of a conversation.

Storyboard #6: Group Conversation



This is the same as the previous slide to demonstrate the pop-up keyboard and voice operations familiar to iOS users. Clicking on the text entry field will automatically bring up the keyboard.

Storyboard #6: Group Conversation



Design Principles:

Consistency: just like iOS FaceTime app but with text mode and automatic verbal or written translation.

Simple: Point and click operations for modes, hanging up the call or switching between views.

Visibility of system status (Feedback): The colored buttons indicate on or off. The video swaps when the thumbnails are selected. The text changes with each speaker.

Effectiveness at task: Once in this page all communications are possible with the backend of the app simultaneously translating into multiple languages seamlessly to the user.

Justification:

Our previous page was fairly easy to navigate (from our Cognitive Walkthrough) but the buttons at the bottom of the page were confusing. People wanted to "hang up" on a "call", the text obscured the presenter (this is important to deaf participants) and the interface required multiple steps to switch presenters.

Changes from previous: Single click operations to switch presenters, simple toggle buttons, added hangup instead of exit.

Usage:

Selecting any of the video participants will swap video.

Selecting the phone icon will stop "the call"

Selecting any of the other buttons will turn on/off additional modes or mute the audio. Video and text modes are shown here. (User Feedback)

In video mode, the presenter sees a large picture of the presenter (in this case Austin signing). If the user has also selected text, the text will be displayed under the picture. This is based on an audio to text feature.

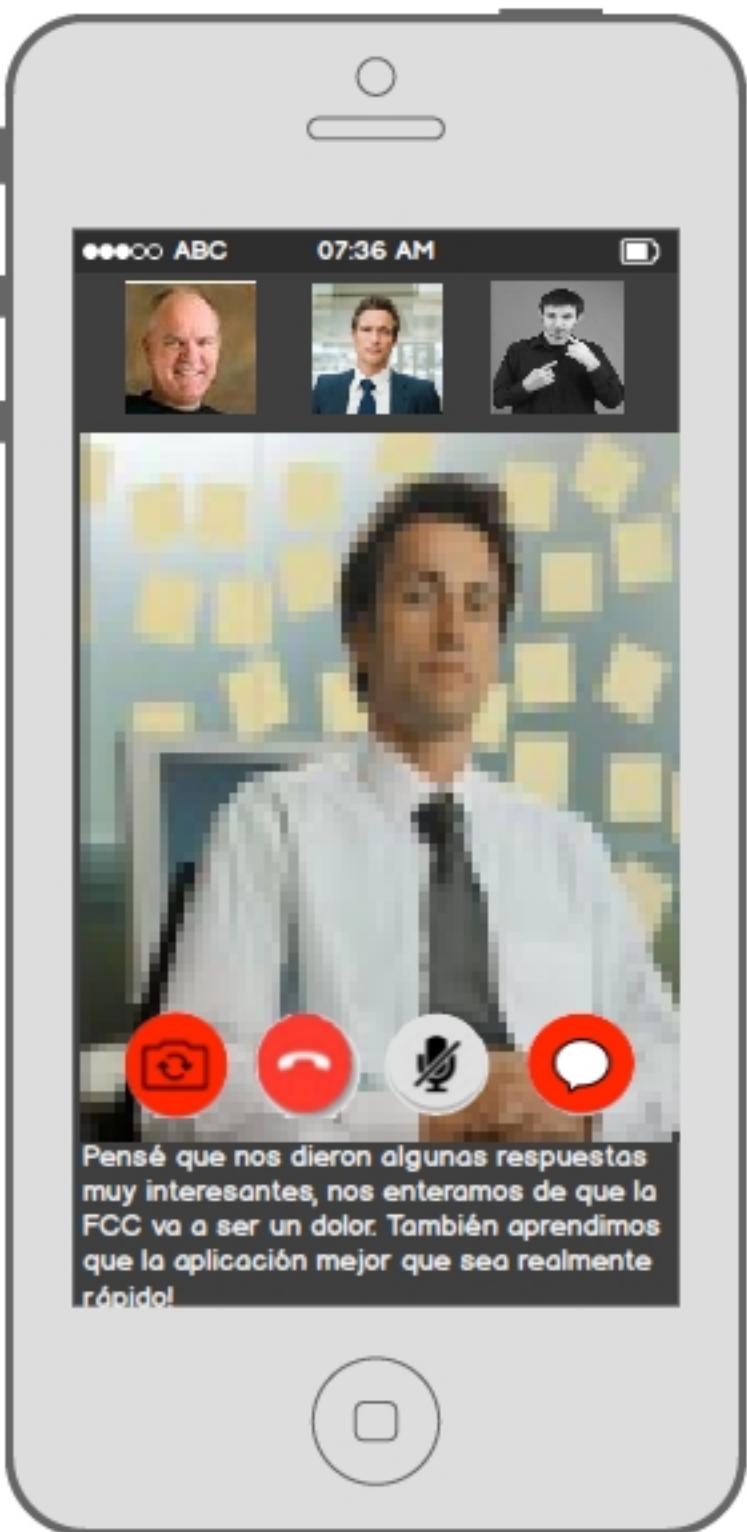
The listener or attendee will see the text and/or audio in the default language they chose within settings.

Storyboard #6: Group Conversation



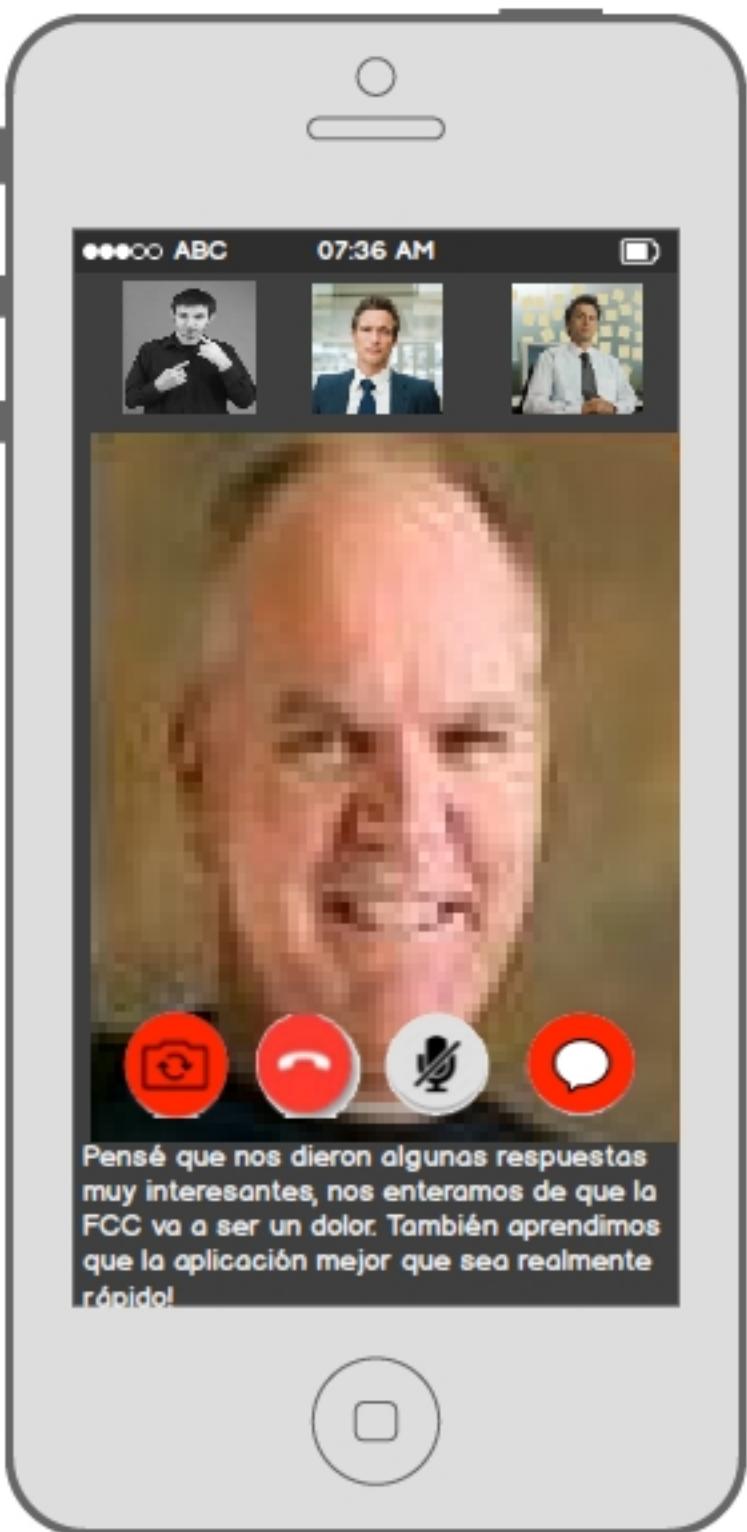
This is an alternate presenter based on selecting the presenter thumbnail. All other operations are the same as the previous page.

Storyboard #6: Group Conversation



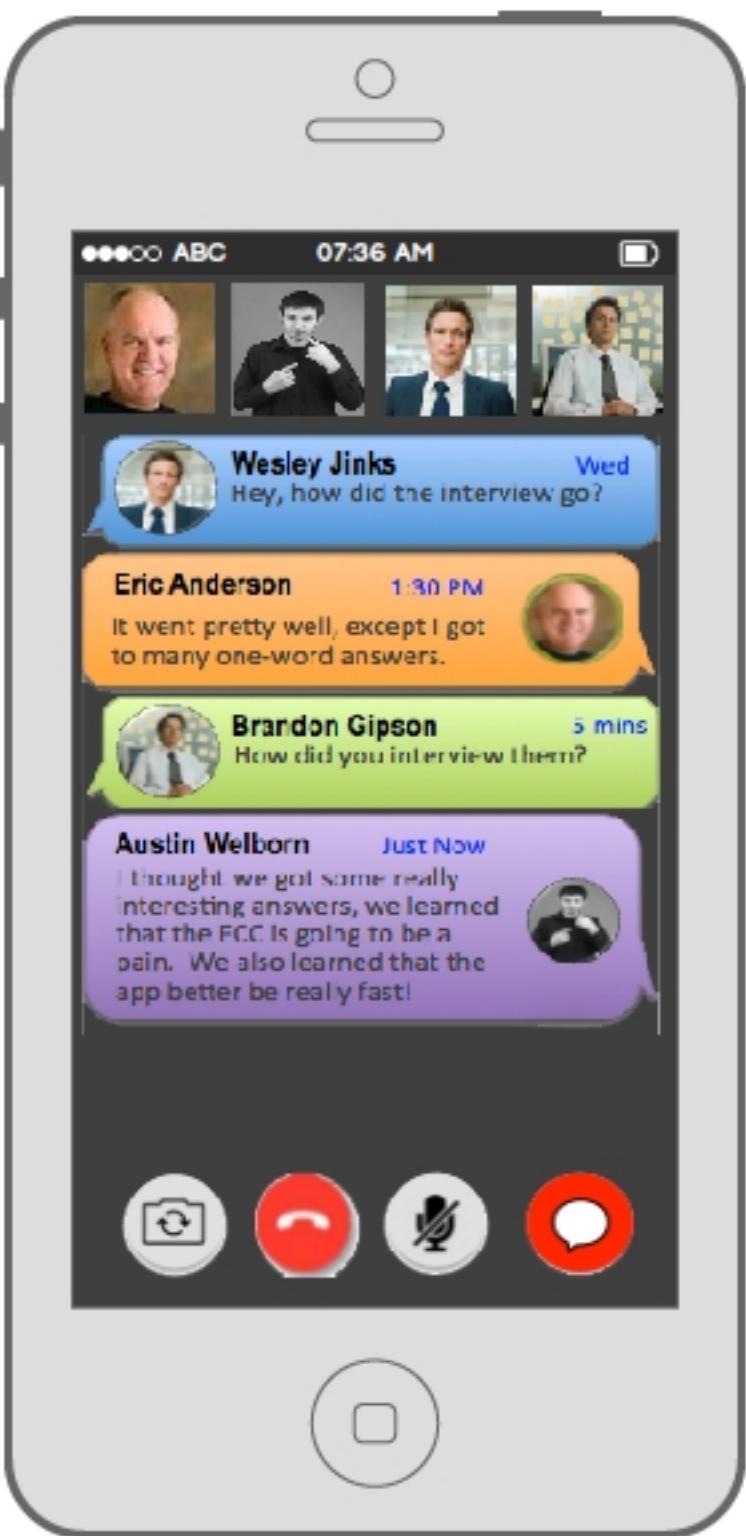
This is an alternate presenter based on selecting the presenter thumbnail. All other operations are the same as the previous page.

Storyboard #6: Group Conversation



This is an alternate presenter based on selecting the presenter thumbnail. All other operations are the same as the previous page.

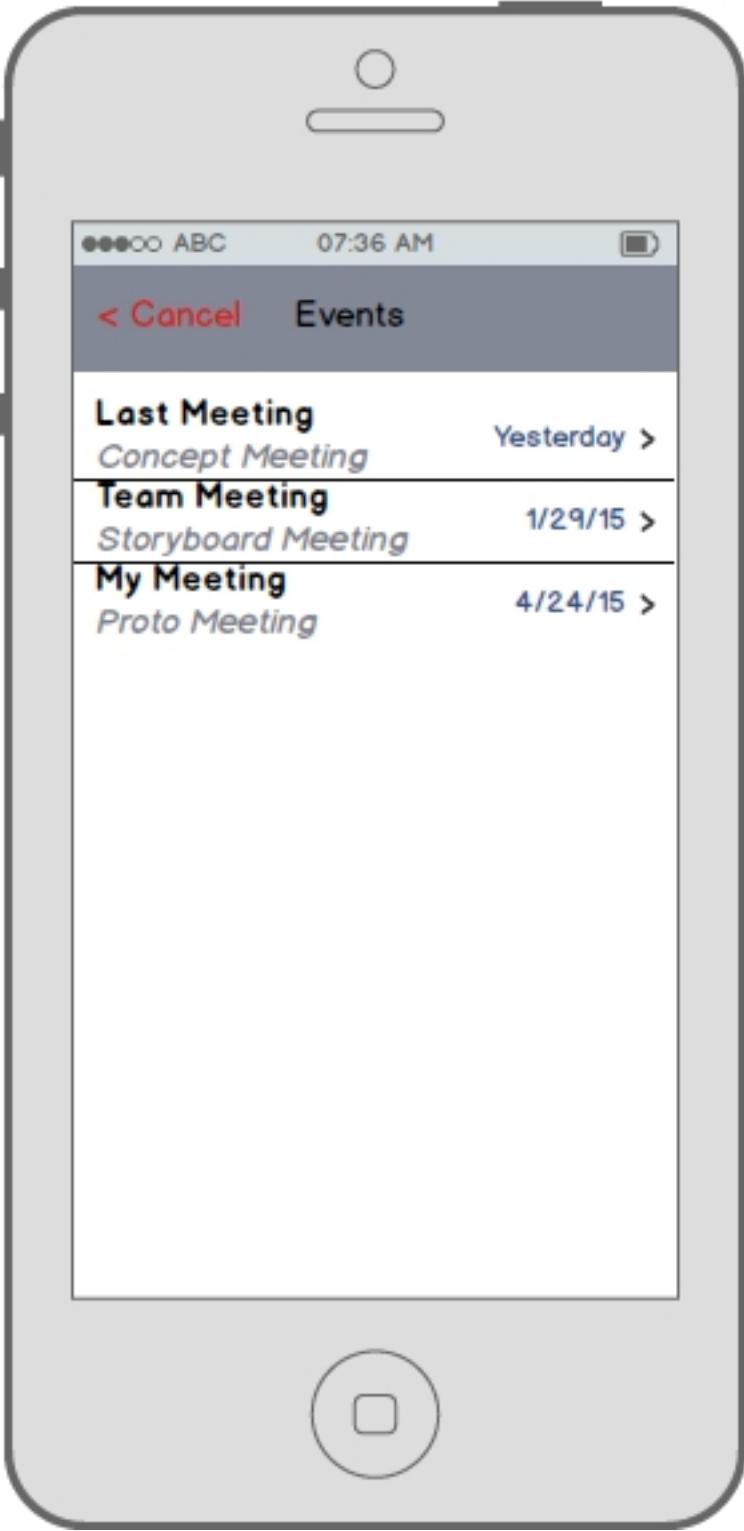
Storyboard #6: Group Conversation



This is an alternate text input page based on selecting the text/chat button. All other operations are the same as the previous page.

NOTE: We introduced color coded text bubbles so that the reader can follow who said what and when.

Storyboard #7: View Past Conversations



Design Principles:

Learnability: This is exactly the same as the iOS Calendar app

Efficiency: The user only has to maintain the Calendar app, no duplication or redundant entries.

Error prevention (PREVENTION): The user only has the option to select a meeting. If they do not want the resultant meeting they simply click Cancel. This is the same exit strategy used on all pages.

Justification:

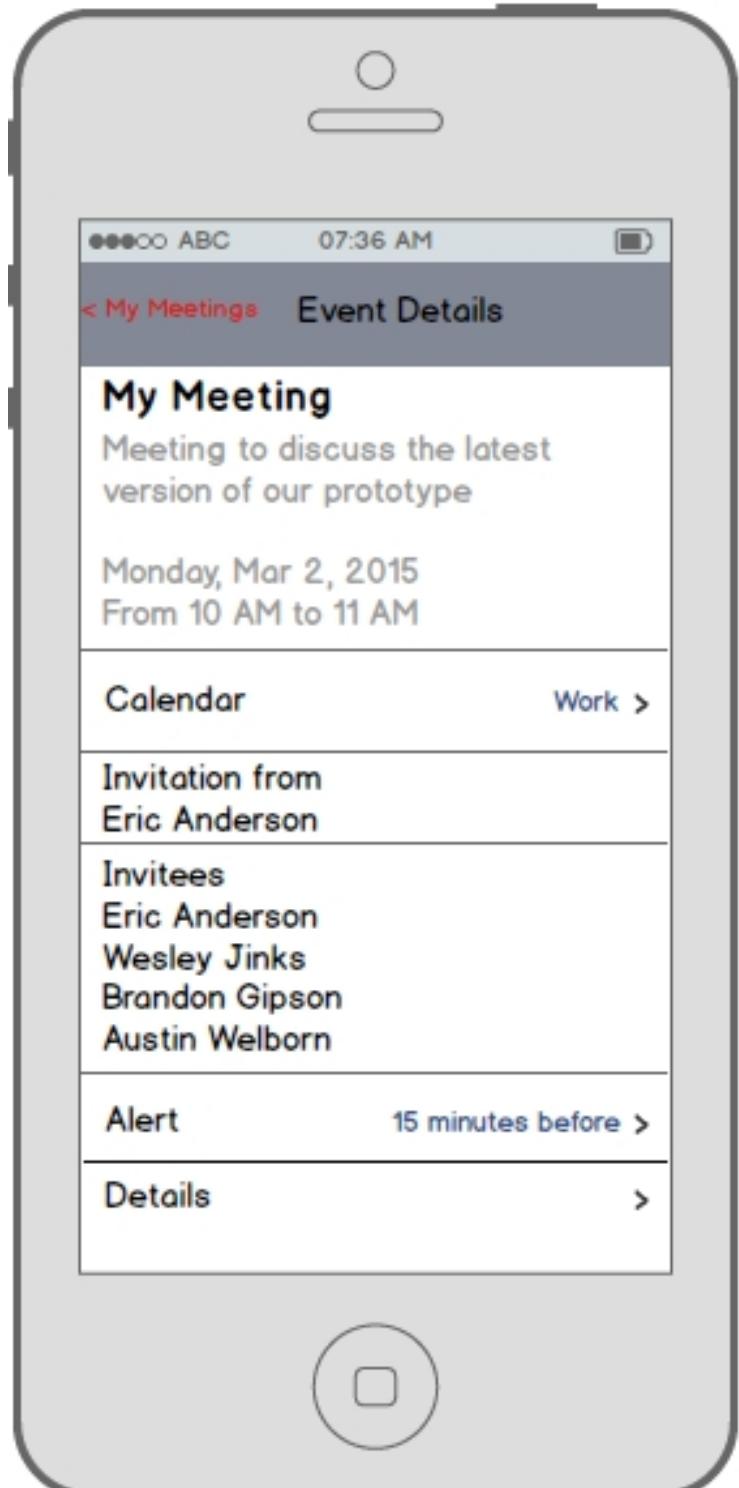
From our empirical studies we were constantly asked if the Calendar was the same as the iOS Calendar app. Originally in our app, it was not, the users complained about two sets of meetings and asked us to combine these. This results in both familiarity and efficiency for the user. It also allowed us to separate the meeting review task into a separate task.

Changes from previous: removed custom item so we could use the Calendar app.

Usage:

User clicks the meeting they want to review and details for that meeting are presented.

Storyboard #7: View Past Conversations



Design Principles:

Learnability: This is exactly the same as the iOS Calendar app

Efficiency: The user only has to maintain the Calendar app, no duplication or redundant entries.

Consistency: In this case it IS the Calendar app, we are just driving data into it automatically.
Will the user know what to do? (Gulf of exec): Yes.

Error prevention (PREVENTION): This is mostly a view only screen. They can exit out by selecting My Meetings

Justification:

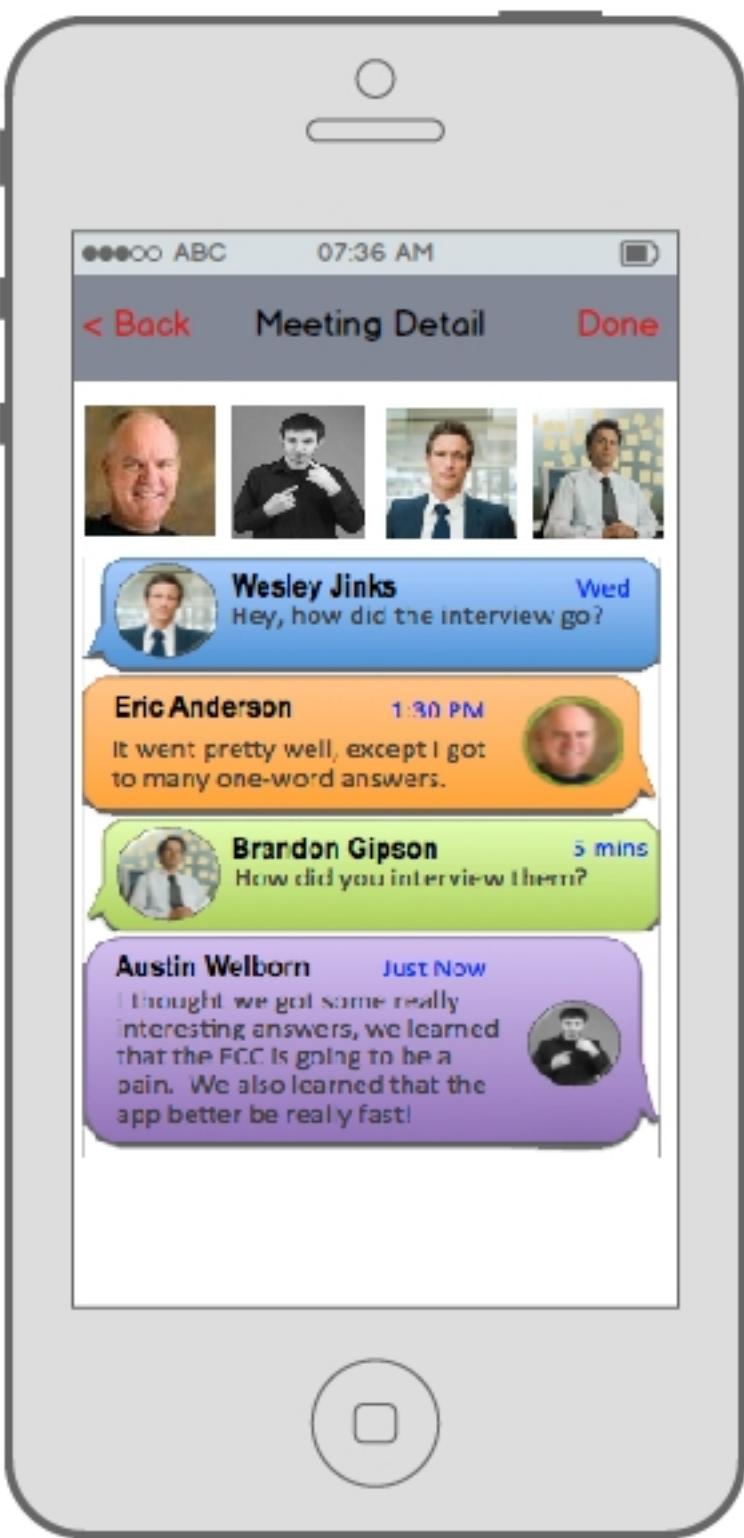
In the previous prototype, users had to learn how to use our "Meeting" task. This was confusing in that they already knew how to use the Calendar app. They didn't want to have duplicate meeting entries and there were features like multiple calendars and alerts that were missing. By making this change users are already familiar with much of our app.

Changes from previous: Removed the custom details page and used the Calendar app directly.

Usage:

User clicks the my Meeting button to return to the meetings list. User views which calendar the meeting was place on. the user can view the Alerts for this meeting and the user can click on the Details item to review the actual saved conversation.

Storyboard #7: View Past Conversations



Design Principles:

Consistency: This page is similar in look and feel to all other text pages. This is a read only view.

Color: Uses color coding for each thread of conversation.

Utility: We may add thread filtering by selecting the individual in our final design.

Justification:

This was a very popular feature of our previous prototype. The most requested item was color coding the threads to make it easier to read who said what. We added the thumbnails to allow us to ask the question of filtering the threads.

Change from previous: Added colored threads, filter option

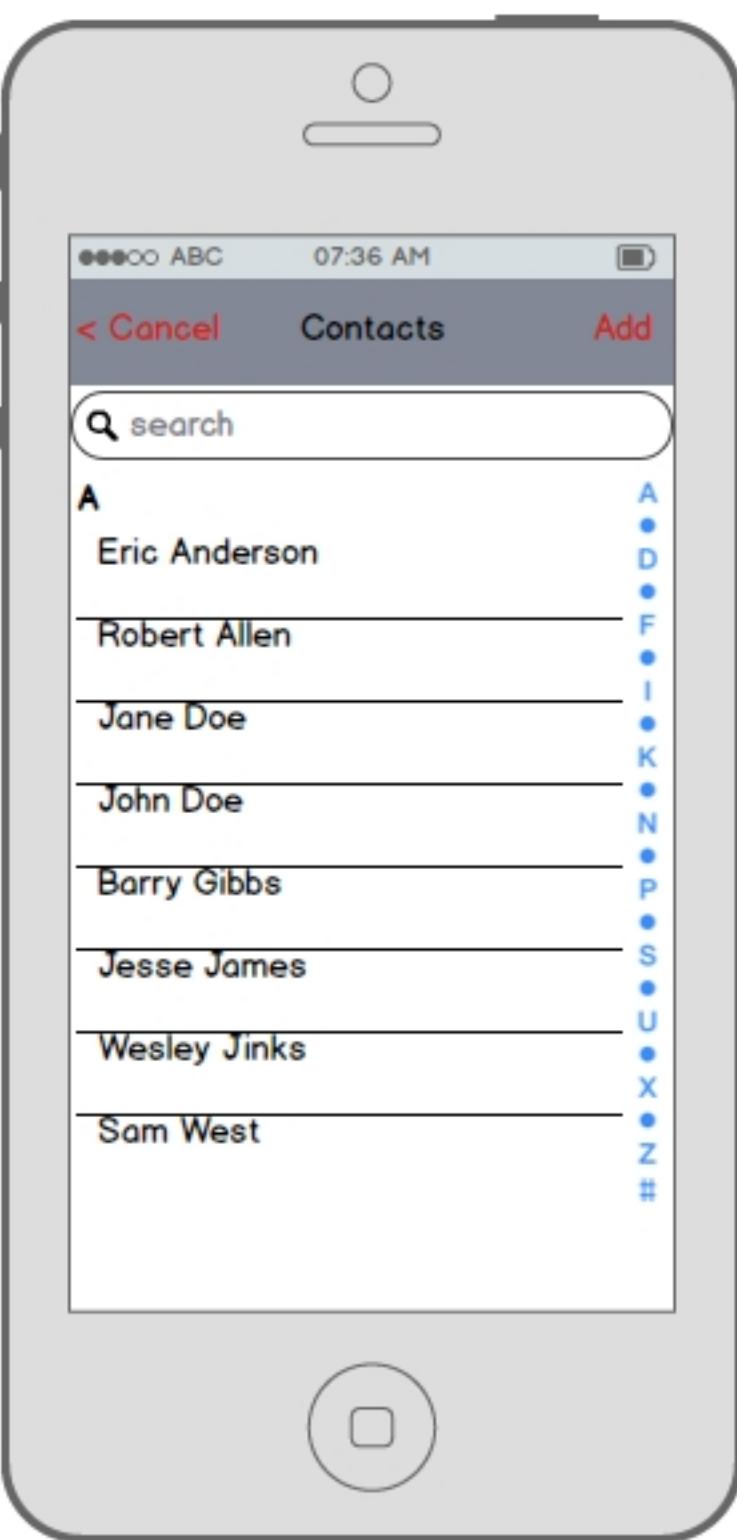
Usage:

Selecting any of the video participants will filter threads "Show me everything Wesley said"

Selecting the back button will take you back to the meeting detail for this discussion.

Selecting the Done button will take you back to the Meetings list page.

Storyboard #8: Contacts



Design Principles:

Consistency: just like iOS messages + uses Contacts app directly.

Simple: Inserted new contacts discovery in contact app (This was Wesley's idea)

Utility: Creates new contact and also adds to add contact list. Added alpha indexing should the list get large.

Justification:

We offered a custom Contacts page in our original prototype, users wanted us to use the Contacts app directly. We compromised by recreating the contacts app with the additional of an autodiscovery page for rapid connections and discussions. This came from direct feedback from Logan who told us that this part of the app was so difficult that he wouldn't use it.

Change from previous: Re-did page to be same as iOS Contacts app. Push data to and from Contacts app.

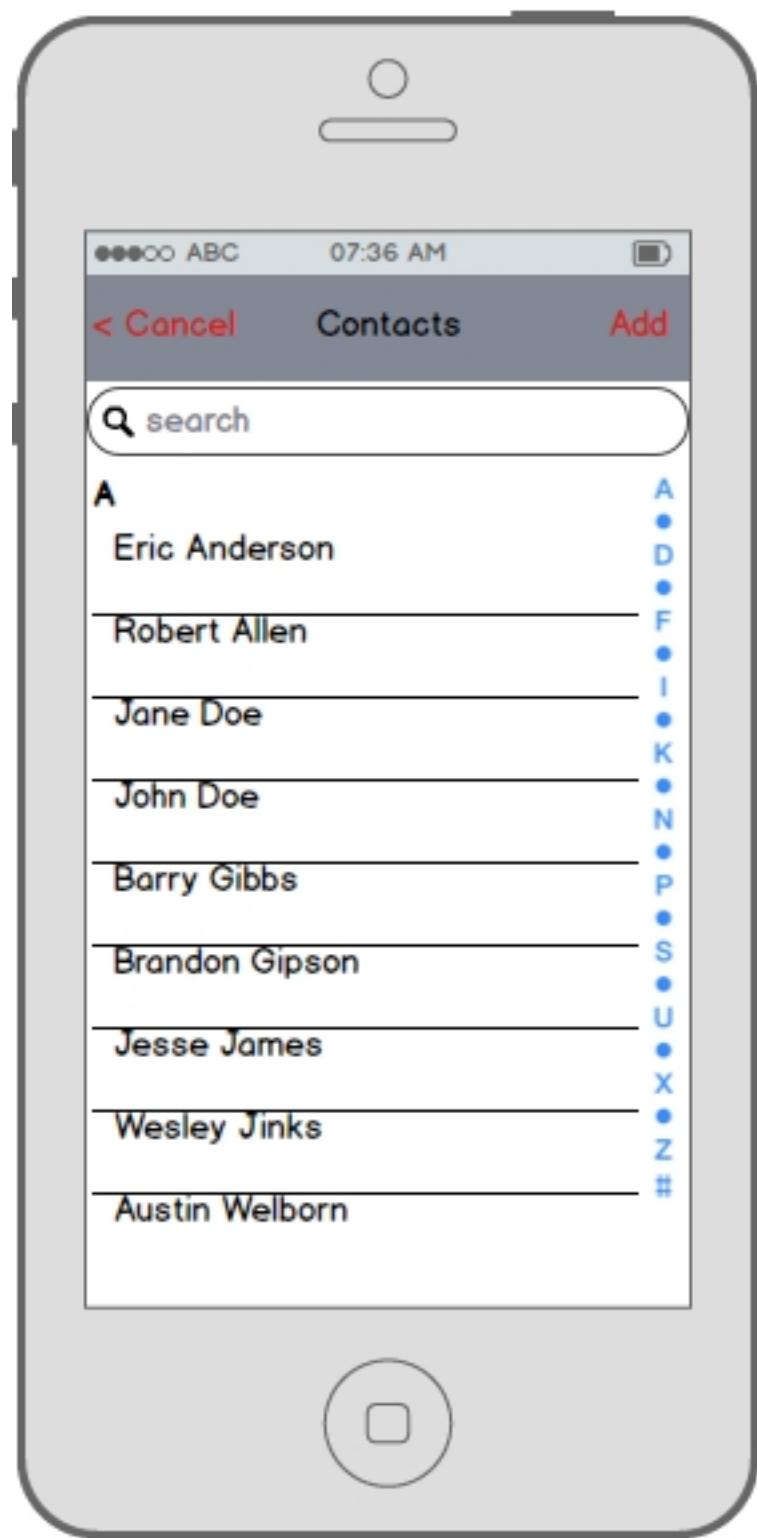
Usage:

First page lists contacts, this comes from Contacts app.

Selecting any contact takes you to the Contacts detail page, this comes from iOS. Click the add button to discover a new contact. If none are found, then use the contacts app to manually add a new contact.

Settings now tells you what capability the contact has, this is automatically populated.

Storyboard #8: Contacts



This is exactly the same as the contacts page but with additional names from the discovery step.

Storyboard #8: Contacts



Design Principles:

Consistency: just like iOS messages + uses Contacts app directly.

Simple: Inserted new contacts discovery in contact app (This was Wesley's idea)

Utility: Creates new contact and also adds to add contact list.

Justification:

This was a feature added directly from our interviews and empirical studies. In both cases the participants described a "fast mode" where you could discover another user of the app and directly link and converse with them. We have added this capability here.

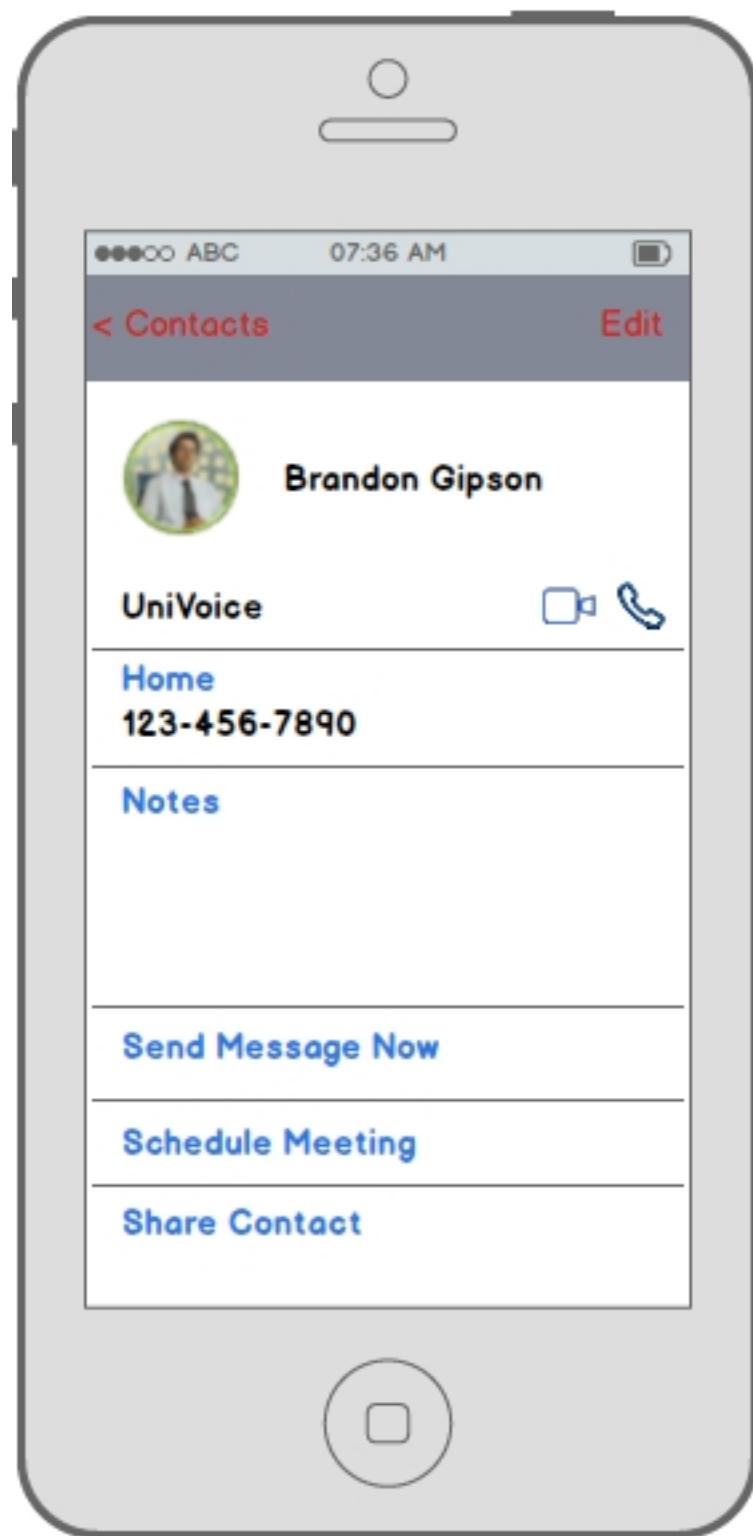
Change from previous: This page is entirely new but stylistically the same as the Contacts app.

Usage:

Click the Cancel button to stop discovery, click the done button to add any discovered contacts to the Contacts app.

Autodiscovery can be turned off or on in the Settings Option.

Storyboard #8: Contacts



Design Principles:

Consistency: just like iOS messages + uses Contacts app directly.

Justification:

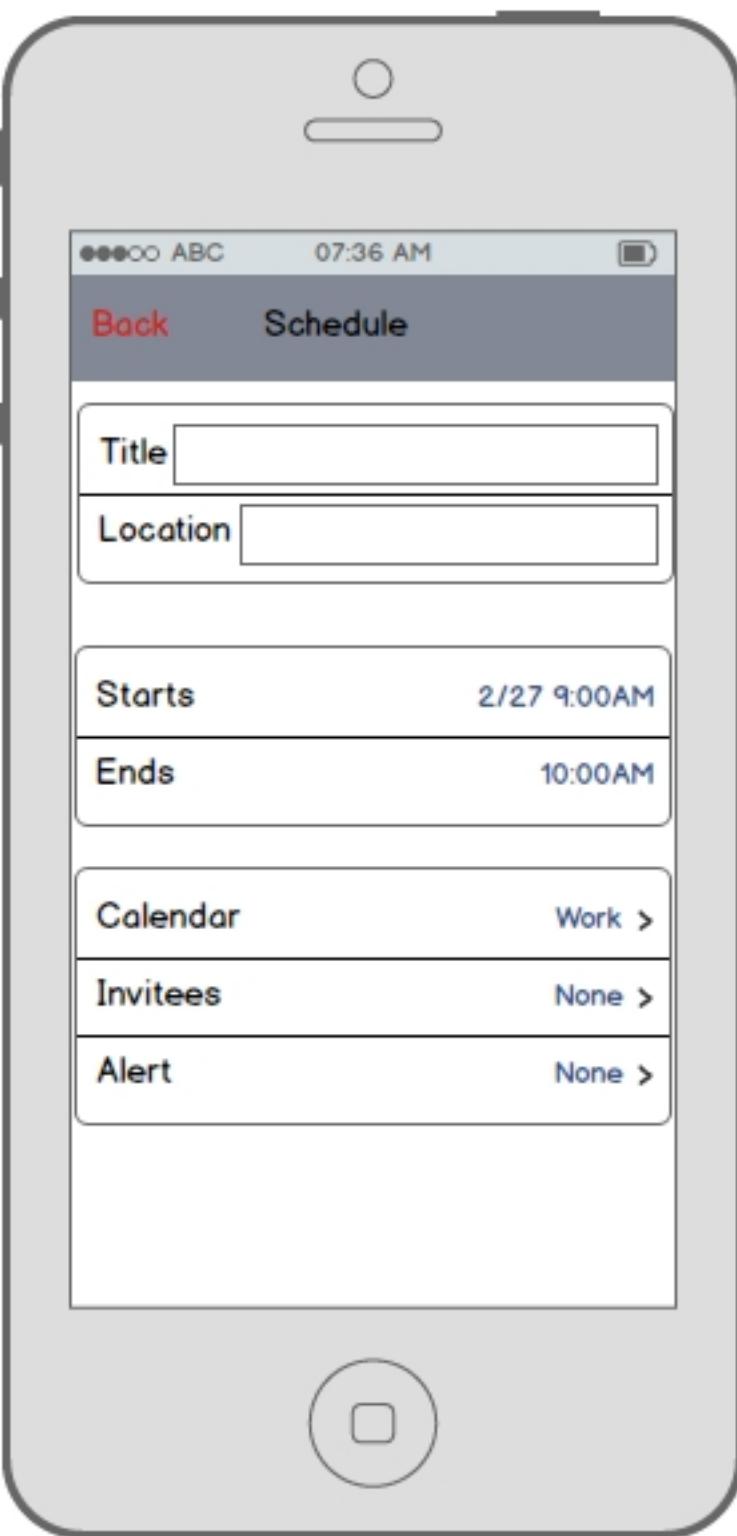
This page is directly inherited from the Contacts application. This page gave us the links for immediate communications and scheduled communications for free. This was natural for our users and consistent with their mental model of how things should work.

Usage:

The UniVoice option tells you what communication types the user can support. These were set in the Settings part of the app. Home, Notes and share contact are all options coming from the Contacts app. Send message now links to the immediate conversation capability of the app and auto populates all the connection information. Schedule a meeting is inherited from the Calendar application.

Clicking contacts will take you back to the contacts list. Clicking edit will take you to the Contacts app and allow you to change data for the contact directly (not shown)

Storyboard #9: Schedule



Design Principles:

Consistency: This is the Calendar app of iOS, it is integrated with our app.

Learnability: We inherit this so the user already is familiar with it.

Utility: Creates a new calendar item and can be viewed here or in the Calendar app directly

Justification:

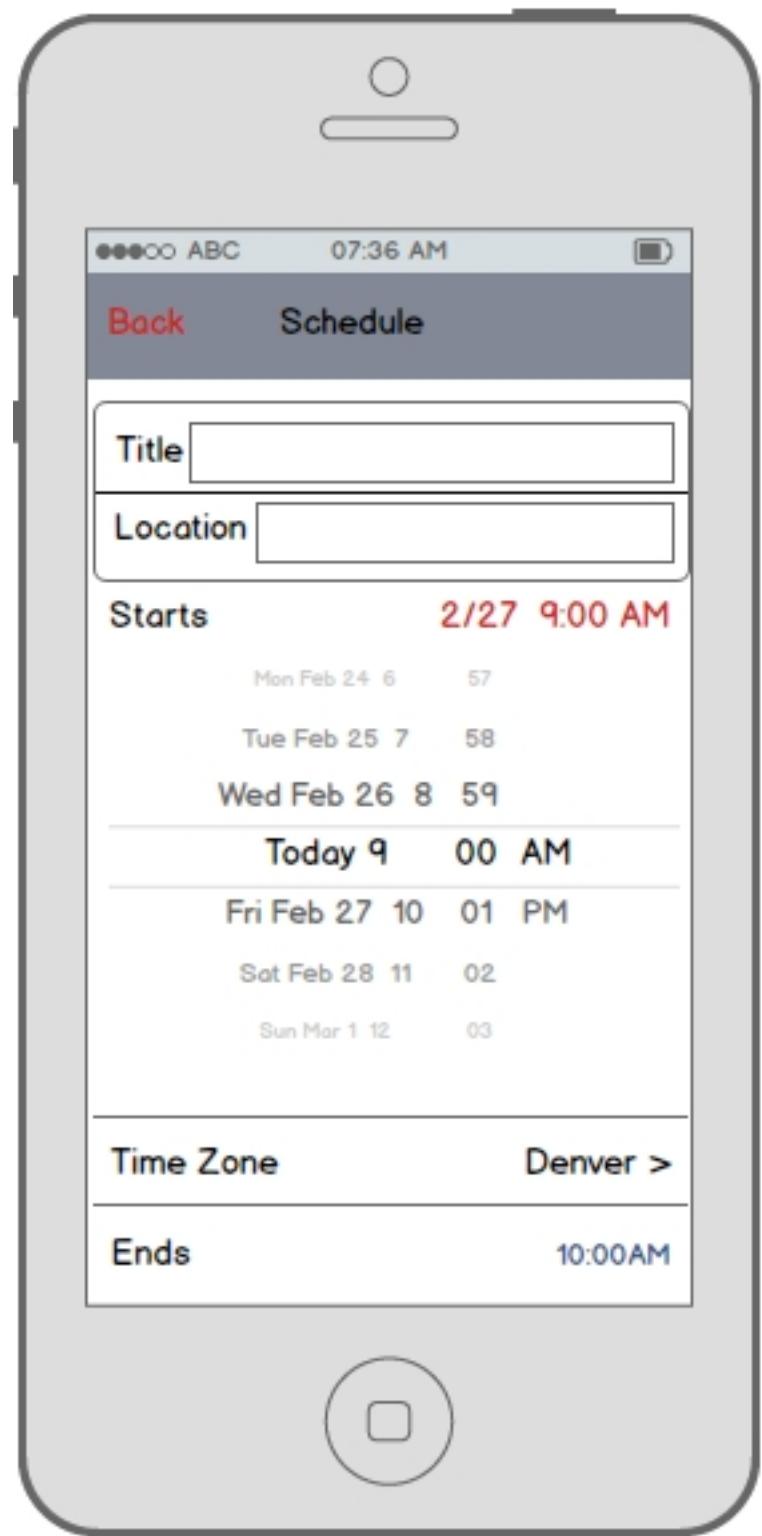
Like the Contacts app, our users asked us to integrate the Calendar app so that they could view their calendar from the iOS app. This reduces duplicate calendar entries (efficiency) and give the user a familiar environment.

Changes from previous: We removed our custom meeting scheduler and adopted the iOS Calendar app.

Usage:

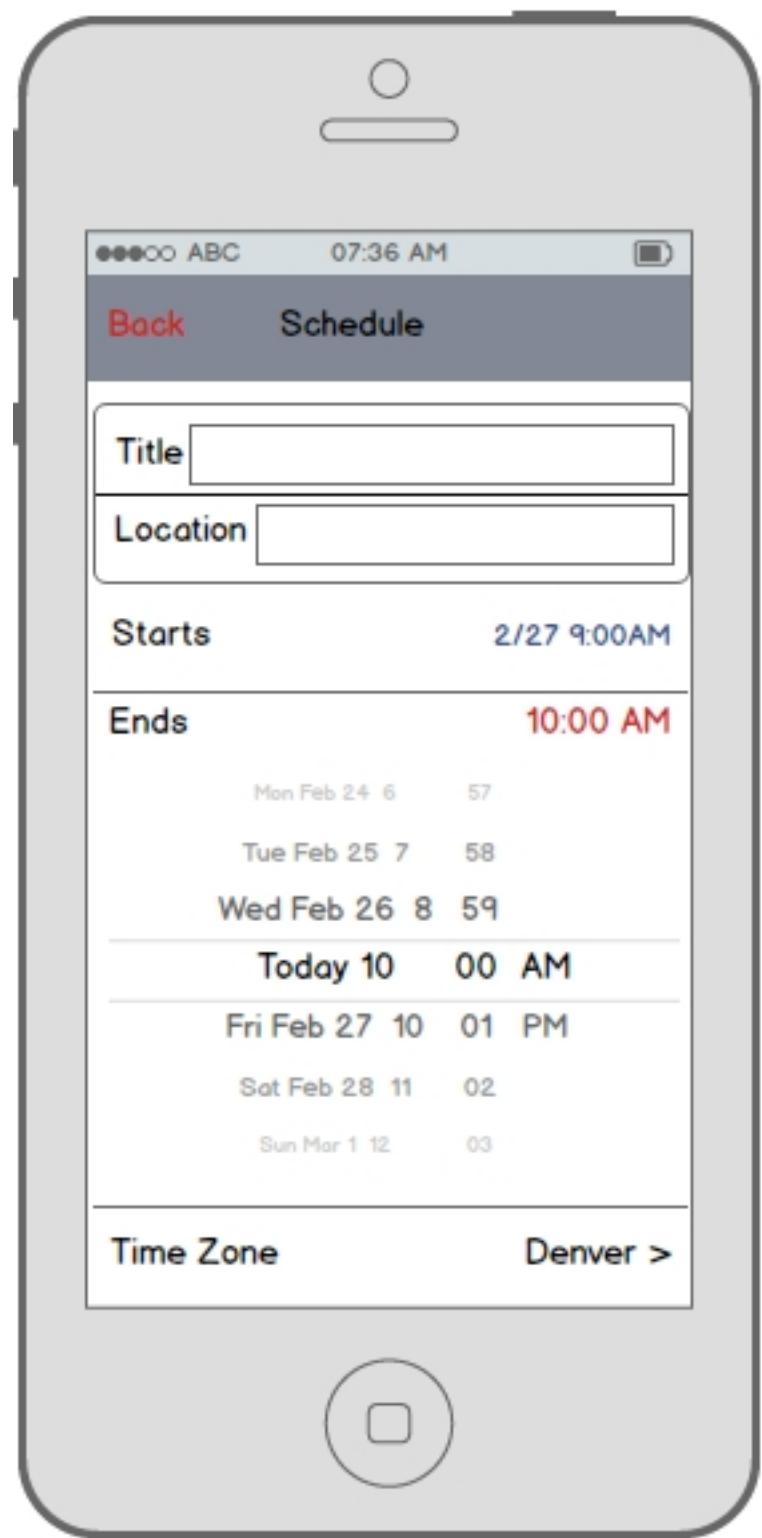
Fill in a name and description for the meeting. Click start to reveal a date/time picker. Click End to do the same. Click Calendar to select which calendar this event to be placed in. Click invitees to add invitees to the meeting from your contacts, and click alert to set when an alert is to sound prior to the meeting as a reminder of the upcoming meeting.

Storyboard #9: Schedule



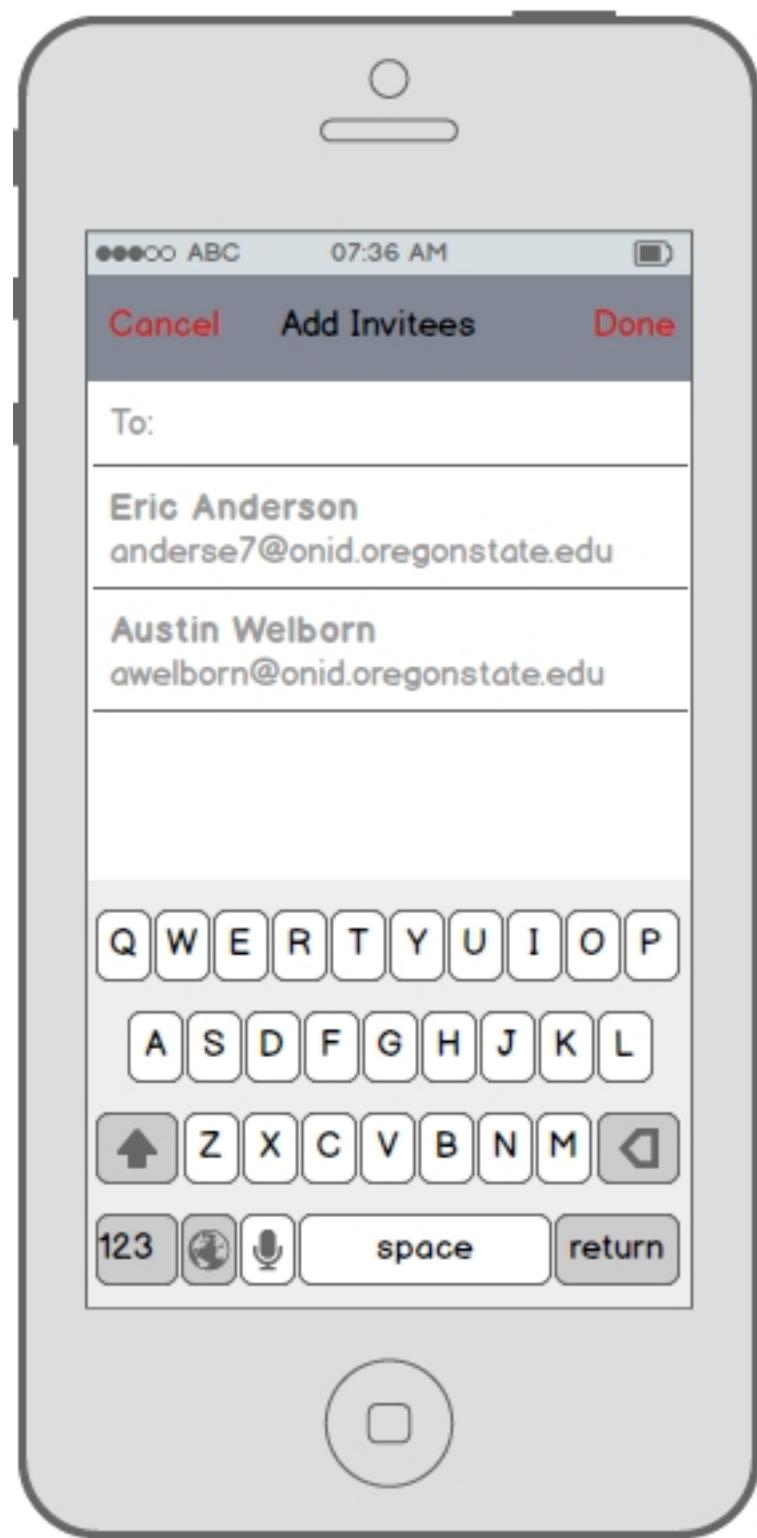
This page is part of the calendar app and demonstrates the date/time picker

Storyboard #9: Schedule



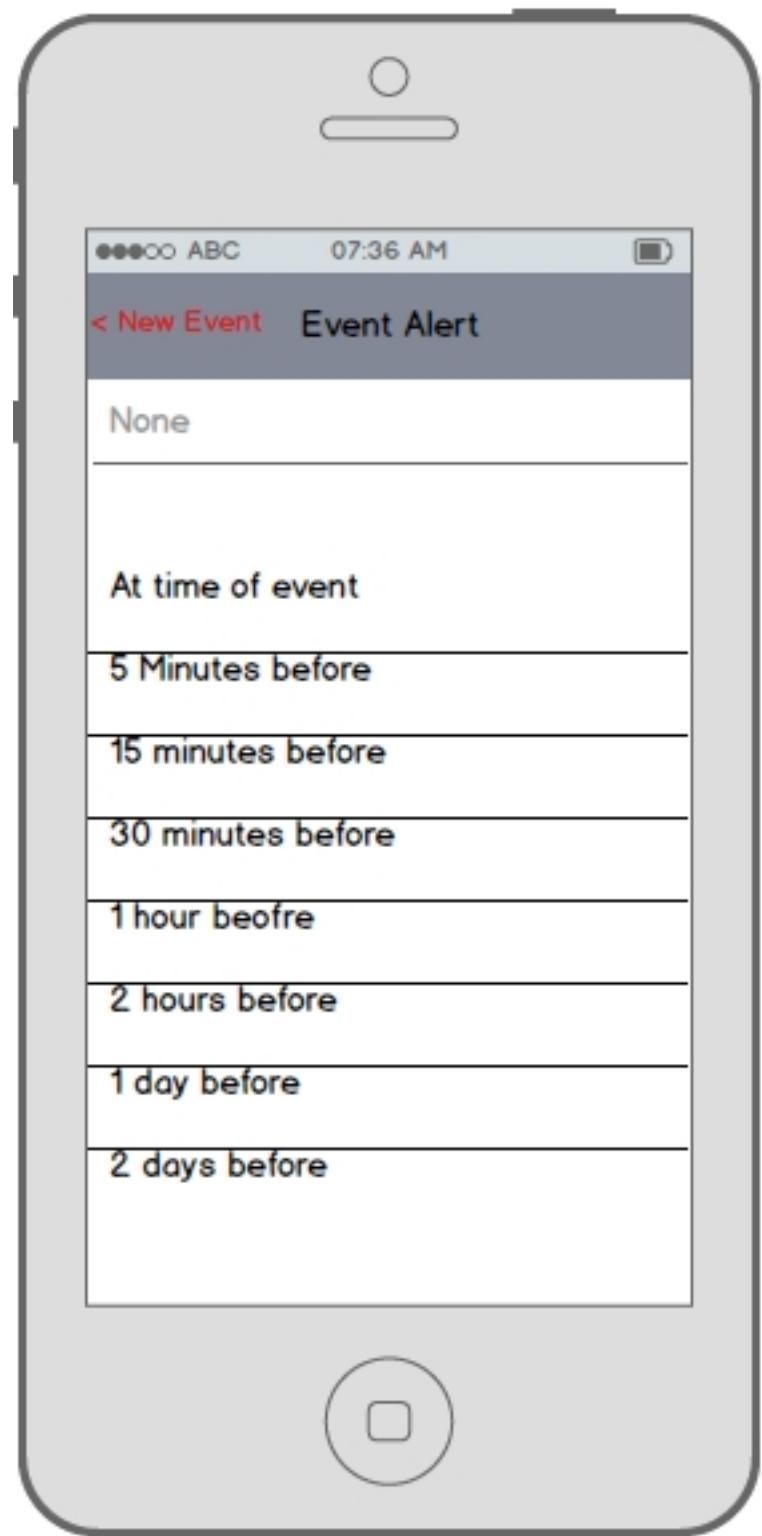
This page is part of the calendar app and demonstrates the date/time picker

Storyboard #9: Schedule



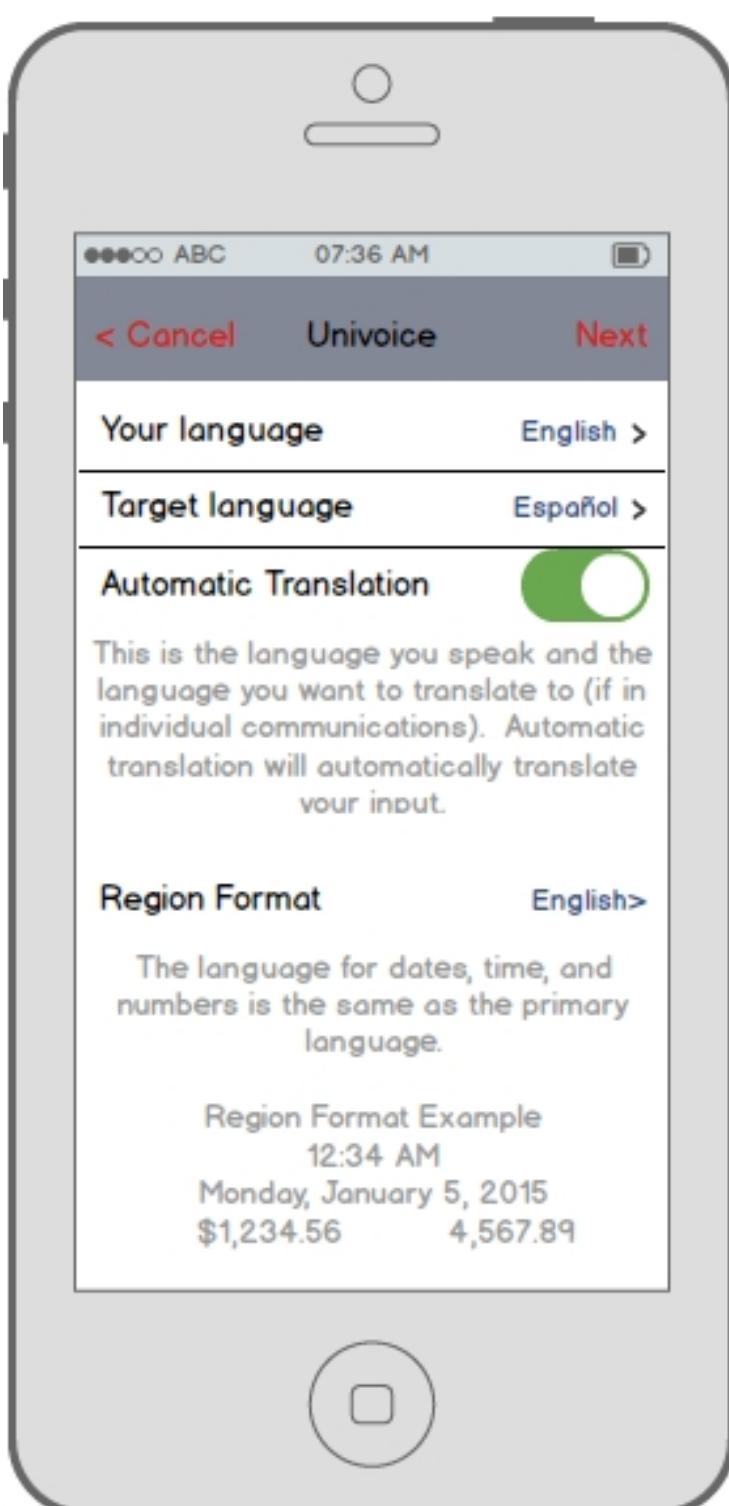
This page is part of the calendar app and demonstrates the invite feature

Storyboard #9: Schedule



This page is part of the calendar app and demonstrates the alerts pick list

Storyboard #10: Application Settings



Design Principles:

Consistency: just like iOS settings.

Learnability & Recognition: This is stylistically the same as all other iOS applications settings

Help and documentation (Help): Help has been embedded on the page to help the user make their selections.

Visibility: The page makes it plainly clear what settings can be changed.

Flexibility and efficiency of use (EFFICIENCY): This offers the user a set it once and be done approach to the application. This page will be infrequently used.

Justification:

In our empirical study we learned that the efficiency of the app was poor due to setting and resetting options everytime the user wanted to communicate. We found out that they can "set and forget" many options as they don't change very often. As we learned from the outset, for this program to be successful, it has to "get out of the way" of communications. By removing all these settings from the program and into the setting area, not only did user understand it more naturally but the program became less cumbersome to use. Our test subjects are now excited by the prospect of having this app!

Changes from previous: Combined all settings in one area, added wizard control here, added input and output settings and added auto discovery feature.

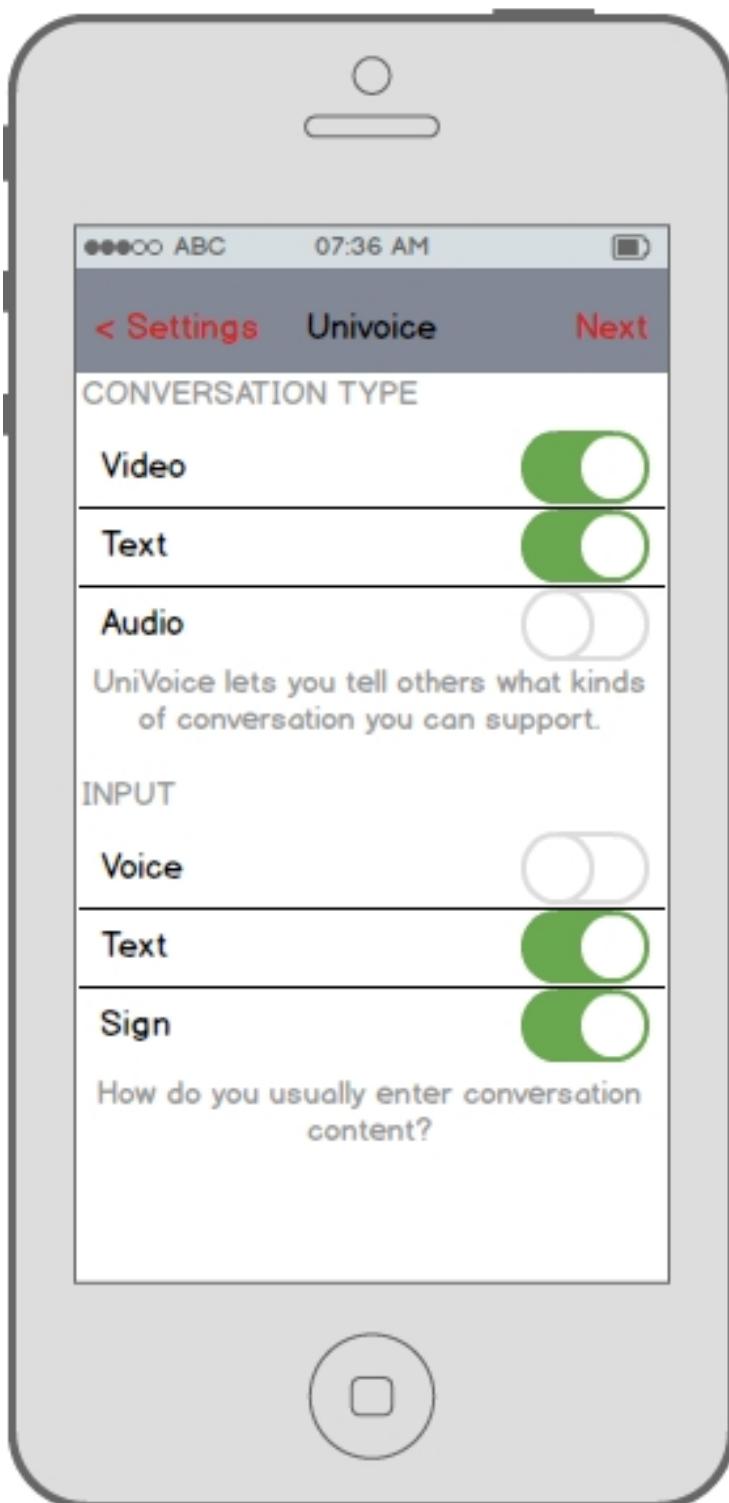
Usage:

Click Your Language to change the language you use to communicate.

Click target language for the single phone use case where your phone will translate as you hand it to someone else. Turn automatic translation on or off to stop your phone from "translating" regardless of if you are the "sender" or "receiver". Click the region format setting to change how date, currency and numbers are displayed.

This is actually one long scrollable page. Balsamiq doesn't support this operation so it is represented as three pages.

Storyboard #10: Application Settings



Design Principles:

Consistency: just like iOS settings.

Learnability & Recognition: This is stylistically the same as all other iOS applications settings

Help and documentation (Help): Help has been embedded on the page to help the user make their selections.

Visibility: The page makes it plainly clear what settings can be changed.

Flexibility and efficiency of use (EFFICIENCY): This offers the user a set it once and be done approach to the application. This page will be infrequently used.

Justification:

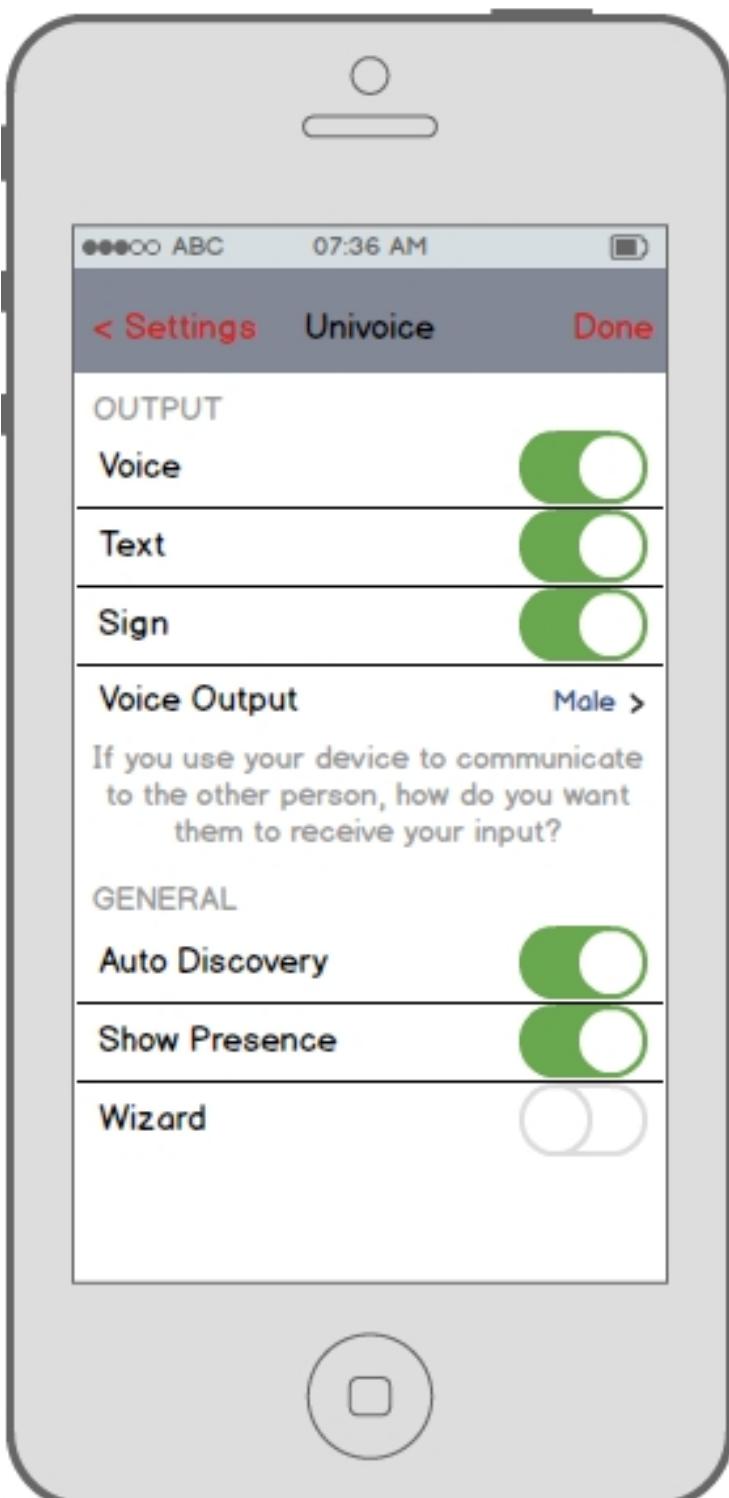
In our empirical study we learned that the efficiency of the app was poor due to setting and resetting options everytime the user wanted to communicate. We found out that they can "set and forget" many options as they don't change very often. As we learned from the outset, for this program to be successful, it has to "get out of the way" of communications. By removing all these settings from the program and into the setting area, not only did user understand it more naturally but the program became less cumbersome to use. Our test subjects are now excited by the prospect of having this app!

Changes from previous: Combined all settings in one area, added wizard control here, added input and output settings and added auto discovery feature.

Usage:

Click any or all of Video, Text or Audio to indicate the types of communication you can support. In the case of a deaf person, audio might be turned off. Click any or all of Voice, Text and Sign to indicate how you will use your phone for communications. Sign mode will use the camera to "see" your sign language and translate it. NOTE: A learn sign mode may be needed here and will be considered for the final prototype.

Storyboard #10: Application Settings



Design Principles:

Consistency: just like iOS settings.

Learnability & Recognition: This is stylistically the same as all other iOS applications settings

Help and documentation (Help): Help has been embedded on the page to help the user make their selections.

Visibility: The page makes it plainly clear what settings can be changed.

Flexibility and efficiency of use (EFFICIENCY): This offers the user a set it once and be done approach to the application. This page will be infrequently used.

Justification:

In our empirical study we learned that the efficiency of the app was poor due to setting and resetting options everytime the user wanted to communicate. We found out that they can "set and forget" many options as they don't change very often. As we learned from the outset, for this program to be successful, it has to "get out of the way" of communications. By removing all these settings from the program and into the setting area, not only did user understand it more naturally but the program became less cumbersome to use. Our test subjects are now excited by the prospect of having this app!

Changes from previous: Combined all settings in one area, added wizard control here, added input and output settings and added auto discovery feature.

Usage:

Click any or all of Video, Text or sign to indicate the types of communication your phone will translate to. In the case of a voice, you can select either a male or female voice for the audio output. Click any or all of Auto Discovery, Presence and Wizard mode to indicate if you will allow other to discover you and add you to their contacts, indicate if you are online and available for communications and if you want the Wizard to be executed when you run the application.