CS 352 Final *Project*

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***Abstract*— This final version of the prototype reflects updates based on our implementation of the RECIPE process, cognitive walkthrough, two empirical studies we conducted and the interactive design galleries.**

I. PROJECT SUMMARY

Our project is to design a user interface that facilitates communication, one with one another despite potential communication barriers. These barriers could range from a difference of language to deafness.

Two interesting observations, 1. There are many users in the design galleries that are not iOS users and thus provide comments that are contrary to iOS design. Our basic design goal is not to create a UniVoice app style but rather to become as native to the device we are going to run on as possible. For the purposes of this class, we choose to only prototype iOS, in reality, we would do the design in both an iOS and an Android style. Given the limited use of Windows Mobile, we would most likely not prototype according to that style 2. We are at a point where we are receiving conflicting feedback. We find ourselves having to choose between the two points of view.

A. Changes from version two

- Eliminated the Contacts and Calendar icons - Too confusing to users that these are alternative ways of "seeing" some of our data
- Simplified the wizard down to two steps and defaulted more options - some people could have a hard time with some of these options, but if they were all preselected then it could save a lot of time.
- Changed to different icon for "add" in various parts of the UI - This repetition confused users as they associate "+" with a contact add and are looking for edit or "add" for things like chat.
- Changed the usage and color of "Done" buttons - Some of the buttons contained a border with a separate background color while other buttons do not have any distinguishing characteristics from text . This confused some users.
- Added contextual and menu based help - it was not obvious to the user if they clicked to not show the welcome screen, that the wizard is also not going to automatically come up every time.
- Localization & Internationalization - We now ask that you select your language up front and the whole app changes to your native language. This is demonstrated in help and a settings page, we did not do the whole app in the language.
- Eliminated grey text - The grey text was something we borrowed from Apple. I think part of the difficulty is how Balsamiq renders this (same with font sizes). We converted all this to a dark grey to improve the contrast.
- Added step text to the wizard - Although the app tells you that there are 3 steps, the user is not sure if they have completed step 1, or maybe the steps the user has taken are all part of step 1, add this text might help estimate the amount of investment need for the app.
- Added a lot more flow control - We added lots of "flow" screens so that a user with no knowledge of the prototype would have a near real experience to the app.
- Added better/more graphics - To raise the fidelity of the prototype to look like the real application. Little effort is required to understand what the real app will look like.
- Improved the settings experience - we demonstrate better who settings in the iOS world works. We show application settings and all the sunscreens for settings.
- Completely reworked the flow of Group Talk. On Piazza someone pointed out that this allowed scheduling but we didn't have any scheduling capability!

B. Users we are targeting

The two types of users we are targeting are first, the newly immigrated non-native English speaker that struggles to communicate simple needs e.g. Ordering food at McDonalds. Second, those who are either deaf or hard of hearing. These can be any gender, social class or age demographic.

DESIGN DECISIONS IN THIS VERSION

A. Storyboard 1: Application Launch

Design Decision:

Page 1: Eliminated the Contacts and Calendar application icons.

Justification:

The feedback we got from users in the design gallery and from one of our team members was that these were confusing. They didn't understand that these are iOS apps and represent an alternative way to view some of the app content. Given that we don't learn anything new from this, we eliminated this view. From our empirical evaluations we knew we needed to have the ability to add and retrieve contacts and to schedule meetings. We found that it made more sense to have these features pull from native apps on IOS than to build them into the app. We had shown those native apps initially in our design, but found that it was too confusing for users and instead now just show how these would work inside the app itself.

B. Storyboard 2: The Application Wizard

Design Decision:

Page 1: We reduced the wizard down to two simple steps by merging the language selection with the welcome content, reduced the amount of text on the screen and added a help icon and help text.

Page 2: Reduced the number of options from 6 to three.

Justification:

The most frequent feedback we got from the design galleries was in this area! One user requested we place "step 1 of n" text so that they better understood or could predict how long the wizard would take. This helps estimate cost and risk.

The most frequent request/concern for our app was the volume to text on the first page of the app. We moved all this text into a help page. The feedback was that seeing all the text on the very first page scared users. They thought the whole app might be that way. First impressions matter!

We also got feedback from the latest design gallery that we add more text!

Another user wasn't sure that the wizard would run every time (it doesn't). We added a help icon and help page to move the text off the main page and to give us the ability to better explain that the wizard is optional.

From our interviews with potential users, we had found that they wanted an app to be "set and forget" or to "just work" when they launched it. Our changes address making the app simple to setup with only two screens and easy to make just work by having a help icon and text. It also now lets users know how much time they will need to invest by telling them how many steps it will take. In an ideal situation, we could auto-detect the user's native language to eliminate this step, but we were not sure at this point how reliable that would be for the user. This step ensures that the correct native language is set up as someone might buy a phone in a region different from their native language.

C. Storyboard 3 Main Page

Design Decision:

Page 1: We reduced the amount of text of this page, made the chunking of this page more obvious (visually), improved contrast (by color change), and created simple rememberable task names for the app, and eliminated the Contacts task. Added help for this task

Justification:

Following the comments about our wizard page, this page reenforces the users concern about being very "text heavy". We altered the balance between the desire for help and simplicity to be more in favor of simplicity.

Some of the feedback on the design gallery indicated that they recognized that there are four tasks via the icons (which they liked) but visually, things weren't spread out enough to make it clear there were four tasks.

As part of the visual separation described above, we reduced the verboseness of each task name to make it easier to both describe the task to users and to help the user quickly learn our jargon and the four tasks offered.

Recently a user in the last design forum pointed out that there was no scheduling in the Group Talk task (which we renamed based on their feedback). Moving the scheduling cause a complete rework of the Group talk task and eliminate the need for the contacts task.

The two most recent posts made it clear to us that people weren't sure what the Talk Now and Group talk task were for and how they differed. We added help text to address this.

From our interviews, users had said that they wanted to know clearly what they would be able to do, that is what options and tasks they could perform. We believe by chunking the options into three distinct parts with icons and texts prompts, we have made this clear. We also added a help icon so that a user who wanted more information on each option would be able to read more detail on the option.

D. Task 1: Talk Now - Individual Conversation

Design Decision:

Moved target language to this task from the wizard. Added more flow to better demonstrate keyboard and verbal input. Better demonstrated how a user inputs text in their native language and it is automatically translated. We also added a bit of help text on some of the pages. Normally iOS apps would not do this!

Page 1: Moved the target language to a new page in this task.

Pages 2-5: Added new pages to demonstrate text and voice input for a single conversation.

Page 6: Visually demonstrated automatic translation from English to Spanish.

Pages 7-9: Added new pages to demonstrate voice response for a single conversation.

Page 10: Visually demonstrated automatic translation from Spanish to English.

Justification:

This section is new and based on both the empirical study and watching the mental model's of two of our participants. The question was asked, "what if I am standing at McDonalds and I want to order something but I either am deaf (and thus don't speak) or I am in a foreign land?" This assumes that the communications need to be immediate and that one the speaker's cell phone will be used. First we need a way for the speaker to indicate what language his or her target audience speaks. This used to be a setting for the app but we discovered that this can change quite frequently and thus needed to be set "on the fly"

For the prototype we had to add flow to demonstrate in a very chat-like way how a single phone could be used to do this. The user enters their order in sign or their native language, the message is converted to the target language, the speaker hands or show their phone to the lister. The listener then speaks a response (they don't have time to type nor is it natural) and this is translated back to the speaker's native language.

We have shown this feature to our original participants and this feature alone now makes the application very compelling. As one participant said, "I hope you make this into a real app because I can't wait to buy it!"

All of the keyboard and voice input is a function of iOS. The chat is based on Apple's Messages application.

E. Task 2: Group Talk - Group Conversation

Design Decision:

The biggest change here is to very highly pattern this after Apple's FaceTime application. We enhanced the prototype to demonstrate clicking on a text field and popping up keyboard or text input. We the added additional pages to the prototype to demonstrate scale by multi selecting up to three users. We enhanced the artwork to make the experience more real and added additional button actions to some of the buttons to better enable the user to understand what feedback is provided by the UI. We added additional pages to the text mode of the application to illustrate how text entry would work using the iOS keyboard and voice functions. The biggest design change we made to this area is the addition of a confirmation dialog to the end call function.

As mentioned earlier, we completely redid this task to make it self contained and to add scheduling capability (which we missed) We duplicated many of the steps in this area to support the Video, Audio, and Text modes the app supports to make it more clear that the user can select any of these modes.

Pages 1-3: Added page to demonstrate Video, Audio and Text selection. Added Now and scheduled options.

"Now" Conversations

Pages 38-39: These pages were moved from the contacts task. If the user selects to talk now (either in video/audio or text modes), they will be taken to this discovery page. This page indicates that other users of UniVoice are discoverable in addition to contacts the user may already have. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Page 40: Combined text fill, keyboard popup and returned contact list into one page. Deactivated Start Conversation button. Enabled multi-select to demonstrate scale of inviting more than one person.

Pages 41-47: Added pages to demonstrate multi-select, added plus symbol indicate text entry (per forums), and activated the Start Conversation button. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Scheduled Conversations

Pages 4-13: Inserted scheduling page for video/audio. Added a title and location for the meeting. None of this functionality was demonstrated in the previous prototype. Turned off links in page to simplify the flow of the prototype. Pages 4 & 5, 6 & 7, 8 & 9, 10 & 11, 12 & 13 are the same to allow Balsamiq to branch on video and text selections.

Pages 14-17: Added live links to the start and stop date/ time pickers to demonstrate page flow. Pages 14 & 15, 16 & 17 are the same to allow Balsamiq to branch on video and text selections.

Pages 18-19: Added a calendar selection page to show how this works. This is an exact copy of iOS Calendar functionality. Pages 18 & 19 are the same to allow Balsamiq to branch on video and text selections.

Pages 20-27: Added pages to demonstrate single/multi-person invite to meeting process. This is an exact copy of iOS Calendar functionality. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 28-29: This is the same as the initial schedule page with all the content filled in. The only change to this page from previous version is the addition of a done button to progress the user to the next step. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 30-31: New page to illustrate setting an alert before the scheduled time for a call. Also added check to provide feedback. This is an exact copy of iOS Calendar functionality. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 32-33: This is the same as the initial schedule page with all the content filled in. The only change to this page from previous version is the addition of a done button to progress the user to the scheduled meeting page. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 34-35: These are new pages, At the conclusion of setting the schedule, the user views a meeting list page providing feedback on the meeting just scheduled. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 36-37: These are new pages, Clicking on the meeting schedule summary presents the user with a detailed view of the meeting as well as a "Start Now button, that would appear within the time interval set by the alert setting. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Video/Audio Conversation

Page 48&50: Added toggle for mute button to illustrate visual feedback.

Page 49: Help page for Video/Audio/Text modes

Pages 51-55: Added toggle for mute button and tool tips to identify individuals by hovering over picture.

Page 56-60: Added pages to demonstrate text entry for text-based conversations. Page pairs are the same to allow Balsamiq to branch on video and text selections.

Pages 61-64: Added a save contents page, Added page for ending a conversation with/without save to provide constraints by a "confirmation" dialogs.

Justification:

Both Piazza and empirical studies had people telling us, "Oh this is like FaceTime!" We took this to heart and realized that the closer we could get to FaceTime the more easy to learn our app would be.

One of the decisions we felt like we had to make was to demonstrate scale. If we were to hand this to a group of developers and say "build this" they would not understand how to treat the second participant or contact. We added this to the prototype to make this clear.

The additional button actions was to address lack of feedback by the UI as already mentioned.

The most stunning revelation for us was the receipt of feedback on Piazza that one user had accidentally hung up on people during calls and ask how we would prevent this.

One forum post said, “task 2: I was unclear on how to navigate to the video portion, there was a talk now option which didn't offer video when I tried the talk later feature it did have video (but I was unclear why it was called talk later) “ This was the bomb shell that caused a complete rework of the this task. Its key function was to allow you to talk with a group now or later but didn’t have any indication of later. The rework was to address this by adding the selection right up front and adding lots of duplicate Balsamiq pages to branch between video mode and text modes.

Another comment was, “I would like a way to select between written, spoken and video call options from the main menu.” While we didn’t put this at the main menu, we did put this in the Group Conversation task (where it makes sense) and demonstrate its use with two paths (video/audio & text). This resulted in lots of Balsamiq pages. The real app would seem much smaller.

From our empirical studies we found that user’s would need to use this to do in-person meetings and virtual meetings. By letting user’s toggle between participants and between video, audio and text options or having all of them, we addressed the variety of needs of different meetings. In our analysis we tried to make the scheduling as similar to the calendar app as possible to make native for the user. The option in the meeting setup allows users to choose the primary means of communication(video, audio, text), but during the meeting others can be toggled on or off with icon’s that are universally apparent.

F. Task 3: View Past Conversations

Design Decisions:

The only change we made to this task was to fully integrate with Calendar. We added a delete meetings page as we were asked. :”how do you delete a meeting?” The UI in this area is exactly the same as Calendar.

Justification:

We did this to better leverage the Calendar app as most user as VERY familiar with it. It allows us to integrate seamlessly into the user already existent “digital life” and it make the program instantly usable (learnable, utility) as people already know how to use it.

An additional justification for this is that it reduces the amount of code that has to be developed to create this app resulting in faster time to market and hopefully more revenue!

We included this feature as from our interviews we found that people would want a record of meetings. This enables users to quickly review past conversations for information that they might need.

G. Task 4: Contacts

Design Decisions:

We removed this task from the final version.

Justification:

This is now redundant to the Group talk task (where it is embedded). It confused users when we showed them that you could see the same contacts in the iOS Contacts app. It did not yield any new insights.

H. Task 5: Scheduling

Design Decision:

We removed this task from the final version.

Justification:

This is now redundant to the Group talk task (where it is embedded). It confused users when we showed them that you could see the same calendar entries in the iOS Calendar app. It did not yield any new insights..

I. Task 6: Application Settings

Design Decisions:

This is the same as in previous prototypes. We added an applications setting page to help the prototype user better understand that this is the iOS settings app, we are just another app in the list. We also added a few pages to demonstrate to the user how “picklist” settings will look vs. multi-select settings.

Justification:

In our empirical study we learned that the efficiency of the app was poor due to setting and resetting options every time 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.

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