Pilot Evaluation Report (STEVE)

Date: 3/13/13

Location: CCIS Building

Our first paper prototype evaluation was carried out by a novice user. She is a research assistant in the CCIS lab. She is not a programmer but does have facility with computers and uses them daily. She was given the handouts of T5 assignment as a form of debriefing the prototype. We let her know that we are performing this testing as part of a class project and asked her permission to videotape the process. She was co-operative as she was a friend of one of our team member.

Our second pilot test user was a speech pathologist in Boston Home. He has a master's degree in speech language pathology and is experienced in using computer on a daily basis for using email, browsing web and word processing.

Issues uncovered as part of pilot testing,

- We were not able to capture the initial experience of the user after seeing the interface. Since she used the information provided to her as part of debriefing.
- She wanted to add a new contact to her existing address book as shown in the interface.
- She wanted to open an attachment in a new window.
- She wanted to have a command next in inbox screen to read the subsequent messages after the current one.
- He enquired about the customization module of our interface.
- He suggested having a white text on black background to reduce the blur vision of the patients.
- He enquired whether the Font on the interface was large enough?
- He asked whether we can deploy this software on any system. And also asked us whether we are doing any hardware changes.

Changes made into the prototype based on the pilot test feedback,

- We shortened the debriefing session and never gave any information about the buttons and their purposes.
- We do not want to add a new functionality of adding new users to their email contacts. Since our user group finds it very difficult to do it. So we preprocess the information for every user and we add it to their list through the back door.
- Opening the attachment in a new window meant creating a new screen in our prototype. We had the goal of 2-3 screens in completing any task, so we had the idea about opening the attachment as a part of the email message.
- Next button on the inbox screen was a new functionality and we do not want to add it to our prototype until the target user really wants it.
- We are maintaining a user profile as a part of our system so customization of their commands, e mail addresses will be addressed for each user.
- Since different users have different preferences we do not want to change the prototype completely before trying the target users. We are trying to research this

information to find a common preference instead of customization. This can be found in the book as "Users are not designers - Nielsen Chapter 1.3"

- We designed the prototype with having just 8 options to select an email address and made use of the space with large fonts. We thought this was the right kind information display for our target user based on *Nielsen Chapter 5.3 Minimize user memory load*.
- We wanted to find the devices of our target users and their preferences before choosing the system architecture.

Since we choose our pilot test users in different categories, we were able to get some quick feedback on our prototype. We tested the learnability of the system using the novice user and learned the in-depth details required in the prototype from speech pathologist. The speech pathologist also told us "This is really a good system where the user can be trained easily and can be used as their training module for speech impaired people." "This is really easy to make even new email users start communicating with their friends and family."

Location: The Boston Home

Paper prototype evaluation was carried out with several users at the Boston Home. Each user was asked to perform the same three tasks as outlined in the prior assignment. Sessions took place in the residents' rooms and all members of the design team were present. Team members performed the roles of facilitator/proctor (giving the user the tasks, asking questions, guiding when necessary), prototype stage hand (changing layouts and components in the prototype as the user interacted with the system mock-up) and video operator. The users selected were representative of our target population and included residents with both motor and speech deficits. All test users currently use their computers to use email and interact with their friends and family. They have their own systems with settings to accommodate their needs and use a variety of products to navigate their systems (Dragon, Windows and custom software).

User Test Report

Our target users are people suffering some sort of speech and motor impairment. Therefore, we choose our test users at the Boston Home where we did our ethnographic exercise at this assisted living facility as well.

Our first patient was A. She is a female in her 40s and has severe motor impairment and her hand are balled into a fist all the time. She also has significant speech impairment. She uses the computer in her room with speech recognition software called "Dragon Naturally Speaking". However, due to her speech impairment it is difficult for her to use the speech recognition. She also uses an iPad with touch with a lot of difficulty.

She uses the computer to send emails, list her food in a word processor and Skype. She was very keen to test our system for us. However, it was difficult to get her to realize that we need her feedback to update the design of the system according her needs. She had low

expectation from her previous experiences and assumed that she would just get trained to use our system.

Our second patient was B. She is in her 50s and is severely motor impaired and cannot use her hands at all for any sort of input control to the computer. She only uses voice (as an input) to use her computer. She uses windows speech recognition to control the computer. She was also dysarthric with a strong Boston accent which makes it difficult for the speech recognition to work for her. However, she has been trained to pronounce some of the words differently (the words where the speech recognition fails).

She used to be a nurse before and was keen to help us with the prototype testing. She had some cognitive restraints as well because it seemed that she was forgetting the task as she moved from one screen to the next screen. She uses the computer to email her Husband, Son and daughter. Use the web browser to browse the internet and even has a Facebook account. It takes her more than 30 minutes to write one email.

Our third patient was C. He is in his early 40s. He has been using a personalized speech recognition system which was developed for him by his brother in law. He uses the computer to control his TV, to browse the web and to access his emails. He has accented speech and also is severely motor compromised and cannot even move his hands at all.

We performed "A typical method to use for summative evaluation is a measurement test" as mentioned in *Nielsen Chapter 6.1*. We choose to conduct the process at each participants' room, because we have the "responsibility to make the users feel as comfortable as possible during and after the test" as suggested in Nielsen Chapter 6.4 Ethical aspects of tests with human subjects. And throughout the process, we sometime provide a hint if the participant spent long time on one task, and we also allow them to "think aloud". Because as in Nielsen Chapter 6.8 Thinking aloud says: "By verbalizing their thoughts, the test users enable us to understand how they view the computer system, and this again makes it easy to identify the user' major misconceptions."

Briefing Used

You are going to test for us this new email system that will work for your voice and speech impairment. In this application you can record your voice as an email message instead of typing or dictating the email message. This will allow you to test the email application and tell us if it is better than your current method of accessing email. We would like you to tell us about any problems that you faced with the system.

Tasks Requested to Perform

- 1. Send an email to James Cameron, (you will find his email address in your address book).
- 2. Reply to an email that is in your inbox
- 3. Review the list of sent emails

Questions

Keeping in mind the cognitive and speech motor impairments of our test users we asked

them the following questions after every task.

Pre

- 1. May we test this paper prototype with you?
- 2. Do you use your computer to send emails to your friends or family?
- 3. Will it be ok with you, if we video-recorded this exercise, without having your face in the video?

During

Besides the questions below we asked the users to list down the commands they thought were available to them when they arrived on to a new screen. The following questions were asked at the end of every task.

- 1. What are the problems the user faced with the system?
- 2. Which options in the system were not clear or obvious?
- 3. Were you able to figure out the available commands by looking at the screen?
- 4. Which part of the system was more confusing in completing the task?

Post

- 1. What were the problems that you faced in the user interface?
- 2. What do you think we could do better with this system?
- 3. Do you think this system is better than your current email application?
- 4. Would you like to use this system instead of your current email application?
- 5. Do you send a single email to multiple recipients?
- 6. Do you forward emails to family or friends?
- 7. Do you want the option to change the subject on the outgoing email?
- 8. Do you want to change the text on the buttons?

Problems and Proposed Solutions

Design issues identified during paper prototyping

- Our initial design intent had been to offer multiple functions on a main screen to limit the number of pages to navigate, to help users from getting "lost" or overwhelmed with too many changes between screens. We will have to rethink this approach because our users with visual impairment had some problems with the screen layout and a sparser offering may be a better choice.
- Users had difficulty identifying command buttons on the prototype. The users all have some degree of visual impairment and though we had made the font large, the buttons did not stand out enough from the background and users could not locate them easily. Our original design scheme was to gray out or move to the background

any buttons that were not part of the current screen, but this was something we could not represent well with paper prototype. We can address this issue by incorporating more color and screen texture in the next prototypes in addition to font changes, and by removing buttons from view when not active.

- When selecting emails from the list to open or a name in the address book, the users intuitively said the name of the sender/addressee. Our intended design was to have the user say the number in the list next to the address or message to limit the vocal burden on the user. After discussion with users, we rectify this situation by offering a configuration choice to the users: they could select to identify items by number or name and could set this up to their preference. There may be some additional training involved as the user would have to record the names of people in the address book and they would still have to record the numbers, which would be needed in the case of email from a new sender.
- It was not clear to users that there was new email in the inbox. Our design had a number in the box on the home screen to show new messages, but this was not intuitive to the users. The users would like a strong visual message to show "you have new mail" or "you have 3 new messages" instead of the number only.
- Users thought the home screen option "New Email" was the place the go to look for newly arrived emails in their inbox. The users did not start with "Inbox". We will explore different naming schemes for our main screen to eliminate the confusion. Incorporating the more clear indication of new email in the preceding item can help in this area as well.
- One user thought that the default subjects were commonly used phrases and wanted to add them to their email message. The prototype displayed phrases such as "Thank you" in the subject defaults. This problem could be eliminated with more user training and the use of their own profiles and defaults.
- The 30 second duration for recording messages was deemed too short. Users would like a longer message option. The team discussed several options to address this: increasing the message duration to 120 seconds, giving the user a short and long message option, ending recording when the user stops speaking for a specified period, letting the user configure the duration they want, or trying to incorporate a command to stop recording when the user is finished.
- Users had some suggestions for renaming some command buttons, such as the Scroll Up and Scroll Down options. A user proposed "Go Up" and "Go down".
- Users selected the Next button in several situations where it would not be an option. For example, after selecting a recipient from the address book, a user would say "Next", thinking that would bring them to the next step of the process. The button was intended to move to the next page of the address book if the desired recipient was not found. This issue was enabled by the inability to "gray-out" or inactivate the buttons in the paper prototype, but it bears investigation in future versions. We will

look at moving or renaming the button to eliminate confusion (such as "next page" or "page down").

Proposed system modifications

It is a better design strategy to not require the users to memorize all sorts of voice commands, something particularly important with our target user group. Therefore, the button labels were designed such that those same labels could be used as voice commands. Therefore, the labels had to be concise yet clear as mentioned in *Details matter* - *Nielsen Chapter 1.*

Following are the changes that we are making to our prototype in the light of the feedback we received from our test users:

- 1. On the home screen we will:
 - a. Remove the Drafts option, the Sent Email option. It clearly specifices the design principle *Less is more as mentioned in Nielsen Chapter1*.
 - b. Update the Command for creating a new email to "Send Email".
 - c. Update the Command for accessing the inbox to "View Email".
 - d. Both points b and c can be derived from *Details matter as mentioned in Nielsen Chapter1.*
- 2. On the New Email (now the Send Email Screen) we will:
 - a. Remove the list of options to select a subject line from a list of subjects.
 - b. Restrict the email addresses in the address book to 10 people and remove the "Back" and "Next" buttons from the screen.
 - c. Have all the command options (buttons) at the bottom of the screen to allow the users to look at those in one scan.
 - d. Remove the Record, Save, Send Options completely from the screen. Instead when the user chooses an recipient on this screen (which is the only list visible to the user). After confirming the selection the Record Screen will pop up and the Send option will be on that screen now.
 - e. There will be no option to send a single email to multiple recipients now. So we will remove the Add option from this screen as well.
 - f. The above points represent clearly the design principle mentioned in *Nielsen Chapter 5.1 Simple and natural dialogue.*
- 3. On the Record message screen:
 - a. At the beginning will only show two options, 1. Start Record and the other option will be Cancel, which will cancel the new email process. This is based on the principle discussed in *Nielsen Chapter 5.9 Prevent Errors.*
 - b. After the user records a message, there will be four options on the screen: Replay, Redo, Send and Cancel.
 - c. The limit of the message will be increased to 2 minutes.
- 4. On the read email screen we will:
 - a. We will remove the Forward option.
 - b. The "Reply" option will be moved at the bottom of the screen.

c. The "Scroll Down" and "Scroll Up" will be replaced with "Go Down" and "Go Up".

d. The "Reply" option will take the user to the Record Message screen directly. Points a and b can be supported by the design rule in Nielsen Chapter 5.1 Simple and natural dialogue.

Team Contributions

Pilot Testing: Zhichun, Ganesh, Steve, Mansoor Updating the paper prototype: Zhichun User Testing: Zhichun, Ganesh, Steve, Mansoor Pilot Evaluation Report: Steve User Test Report: Mansoor Updates in Document: Zhichun, Ganesh, Steve, Mansoor

References

Nielsen, J., & Hackos, J. T. (1993). Usability engineering (Vol. 125184069). San Diego: Academic press.