CS6750 HCI – Assignment M5

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***Abstract*—** As a company, Amazon is much more than an online marketplace. The company manufactures and distributes a huge variety of electronic devices, from smart speakers and E-readers to tablets, streaming devices and many more, that are used in every aspect of daily activities. Each device is registered to an Amazon account and managed from the Amazon interface under "Account & Lists". As with most technology, users upgrade their hardware by purchasing new products as improvements are released. Old devices are powered off/unplugged and live the rest of their life in the back of a drawer or on a closet shelf never to see the light of day again. The task of managing these devices is an important task and will be the subject of evaluation throughout this M assignment.

1 QUALITATIVE EVALUATION

The surveys completed in the M2 assignment provide sufficient data to prove that a need exists to improve the Amazon device management user interface. As a result, a textual prototype for an improved Amazon device management interface was created and subsequent evaluation performed. The textual prototype can be found in the Appendix, section 4.1.1. This qualitative evaluation explores the improved installation process when adding a new Amazon Fire Stick to an existing Amazon account. To begin, I asked two coworkers to peer review the survey and provide feedback on the questions. Overall, the feedback was positive. The survey was then sent to a population consisting of 20 people, of which, and to my surprise, all 20 people completed it and sent back their responses. The same 6 questions were asked to each participant. The complete survey can be found in the appendix, section 4.1.2.

1.1 Evaluation Results

Compared to the M2 survey and results, the number of participants decreased but the result follows a few similarities. First and foremost, the increase in time

to setup/install the new device was not a big enough deterrent to support a need to redesign this textual prototype. Lastly, and most importantly, 85% of the participants, which is 17 of the 20, responded that this prototype would be extremely useful for managing devices from the Amazon device management user interface. The raw data from the survey has been added to the Appendix, section 4.1.3. To summarize the results, 50% (10) of the total participants evaluated the installation process as extremely easy, and another 40% (8) evaluated it as somewhat easy. The greatest complaint/criticism regarding the textual prototype was the additional time the installation process takes. This accounted for 30% (6) of the participants response. Another 10% (2) of the participants noted "other" as a dislike of the installation process. In my opinion, this response was to be expected because 45% (9) of the participants goals was to get through the process as quickly as possible. Finally, 55% (11) of the participants like the consistency employed when comparing the present day installation process with the installation process introduced in this prototype. I'm confident this will be a key principle to keep the prototypes acceptable to each user. Also, as it relates to what the survey participants liked about this prototype, 40% (8) of the survey participants like the specificity of including the location where the device is being installed and giving the device a descriptive name.

1.2 Feedback Analysis

The feedback received from the survey is enormously helpful interpreting the effectiveness of this prototype as it relates to device management. What stands out immediately about this qualitative evaluation is that out of the 20 participants who participated in this survey, 85% of them responded that the improvements implemented in this textual prototype would be extremely useful for device management. As it relates to the M2 survey results, the 73% of participants who have between 1 and 4 devices in their homes would be more easily able to manage their devices after they have been replaced. Moreover, the fact that 59% of the M2 survey participants replace their devices between 2 and 5 years tells me that device management is a critical need, and that this prototype could be a jumping off point to solving a device management problem.

On the other hand, it was surprising to see the data show how many of the participants may not see the improvements that this prototype brings with it. Of the 20 participants, 70% of them (14) either setup an Amazon Fire Stick as quickly as

possible intending to stream something as quickly as possible, or setup the device in a way that follows the required input without seeing the correlation between setup and device management. It is possible that these users would need to manage their devices at some point in time and would see the advantage of giving the device a name and location in hindsight. Unfortunately, assuming a user would manage their devices without knowing the need exists today would make me a fortune teller and is not sensible when evaluating the survey results.

1.3 Feedback Based Changes

While it would be best to use another needfinding exercise to determine changes that might make this prototype more useful, I think including some additional information or insight into the importance of device management would be beneficial. The problem here is that I would not want to take the user on too long of a journey when setting up a new device. The current setup process takes a few minutes and including too much information will increase the setup time and potentially push the consumer away from using this device as a long term streaming solution. Another prototype would have to be built keeping in mind the principles of consistency, mapping, and discoverability.

2 PREDICTIVE EVALUATION

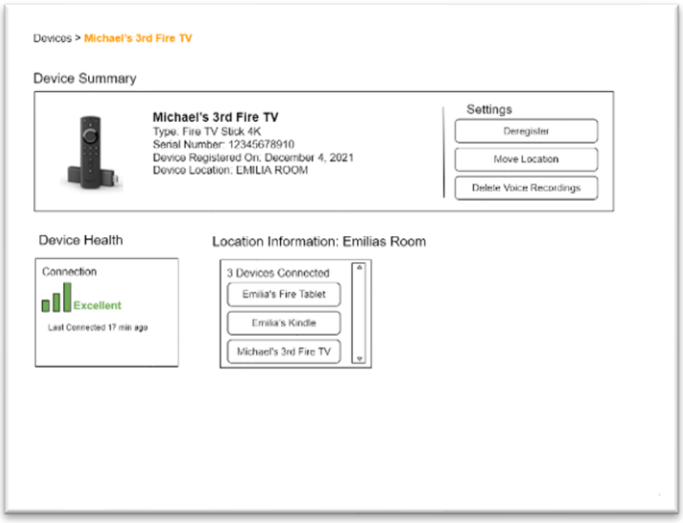
The cognitive walkthrough for this evaluation was performed using the wire frame prototype, included in the Appendix, section 4.2.1, with the user's goal being that of removing a device from their Amazon accounts device management interface. Specific to this prototype, the Amazon device management interface includes the device location as part of the device management interface.

To start the cognitive walkthrough, I defined my requirements as removing a device from the wire frame prototype. Because my family uses the Amazon Fire Stick in our daughter's playroom the most, this would be the one being removed. To begin the walkthrough, I immediately noticed that I could search for the device using the device name, filter for devices used in the last 30 days, or filter devices by location. The wire frame prototype does an excellent job making these features discoverable to user, because of their visibility. As such, the principle of discoverability is present in this prototype. Moreover, once a filter has been

applied, the user is able to see all the devices that are present as well as their corresponding location. Each device, being a clickable button, is an affordance for the user. That is, each device represented as a button is a place where the visual design of interface is precisely as it is supposed to be used. Buttons are meant to be pressed. By implementing the principles of affordances and discoverability, any user, experienced or new, will know what to do to search for or filter for a device. Although not a part of this cognitive walkthrough, there exists another scenario where a user would not be familiar with the interface introduced by this wire frame and, as a result, want to use the current day Amazon interface for device management. This is entirely possible as the top half of the wire frame prototype is an implementation of the present Amazon device management solution. By keeping the old with the new, the principle of consistency is employed. Some of the controls, visualizations, and layouts are left unchanged as an option for the user to use. Not only does this lower the cognitive load of the user because it is not necessary to use something that is unfamiliar, it also increases discoverability by minimizing the user's memory load by making objects, actions, and options viable.

Continuing with the cognitive walkthrough, once a device has been identified, it is a straightforward process to remove it. Although this wire frame does not include additional screens that a user would use to remove a device, it can be expected that it would look like prototype below in Figure 1.

Figure 1 — Interface to remove a device. Source: Author



3 EVALUATION SUMMARY

Based on the result from each evaluation, the next iteration through the design lifecycle would be unique for each prototype. The results of the qualitative evaluation, which introduced a new installation process to include location and naming the device, could benefit from a design alternative based on the feedback gained from the survey and subsequent analysis of the data. Also, based on the cognitive walkthrough performed during the predictive evaluation, a reevaluation of the prototype's completeness should be gauged.

Starting with the qualitative evaluation, I recognize that a need exists to continue needfinding and better understand the user more fully. To do this, the next iteration of the design lifecycle would be creating an entirely new design alternative to include any additional subtasks the user would encounter and visually present the setup process. The textual prototype and survey used during this evaluation provided highly positive results, however, a new needfinding exercise would be advantageous to get a better understanding of the users thought process and cognitive load when using the prototype in real time. Taking into account these considerations, a future evaluation of the Amazon Fire Stick setup would increase the degree of fidelity for implementation but not to the point where an empirical evaluation would need to be employed. Since the goal of designing a new interface is to achieve invisibility, a needfinding exercise employing a think aloud and medium fidelity card prototype would help me to better understand the users thought process in real time.

Thinking about the predictive evaluation, the questions that arise after analyzing the cognitive walkthrough results center around the subtasks I have not accounted for as part of the wire frame prototype. Because there are no immediate design alternatives needed at this time, a higher fidelity evaluation could be employed to test useability and identify any additional issues in the workflow. However, before attempting this, it might be beneficial to include one additional prototype to include the missed subtasks identified earlier on. That is, there needs to be more information gathered from the user with regard to renaming a device, relocating a device, removing a device, etc. Once these have been incorporated into the prototype, an additional cognitive walkthrough would be performed to confirm all users' actions can be accounted for. Assuming this is true after additional needfinding, a higher fidelity evaluation could that place.

4 APPENDIX

4.1 Qualitative Evaluation

4.1.1 *Textual Prototype*

Instructions to install a new device:

a) The Fire Stick will need the power supply connected and plugged into the wall. It will be connected to any open HDMI port on the TV.
b) The remote will also need power using the provided batteries.
c) On the TV, the user will navigate to the HDMI input where the Fire Stick is connected and follow on the onscreen prompts. The user will be prompted to sync the remote, select a preferred language, and select a Wi-Fi network before being asked to provide their Amazon credentials.
d) Once the Amazon credentials are provided, this is where I would require the user to give the device a descriptive name AND provide the location it is being installed. The location would be selected from a dropdown with preselected options such as bedroom, living room, kitchen, guest room, etc. An "Other" selection would be available to the user if needed.
e) Once the user selects the location and gives a name, the device would display in the Amazon device management interface with the information provided by the user.
f) The user would complete the setup consistent with what is currently in place.

4.1.2 *Survey for Qualitative Evaluation*

1) On a scale of 1 to 5, how easy is the installation process?
    a. 1 – Extremely Difficult
    b. 2 – Somewhat Difficult
    c. 3 - Not Difficult and Not Easy
    d. 4 - Somewhat Easy
    e. 5 - Extremely Easy
2) What did you dislike about the installation process?
    a. Increased install time.
    b. Unable to complete installation.

c. Confusing install process
d. Other reason

3) What did you like about the installation process?
    a. Similar process to present install
    b. Specificity of location
    c. Install question order
    d. Other reason
4) What were you thinking while using the installation interface?
    a. I want to stream something as soon as possible
    b. I want to set this up so I can manage it
    c. I was just following the setup instructions and not thinking much about it.
    d. Other
5) On a scale of 1 to 5, how useful do you think this will be when managing the devices from the Amazon device management user interface? 1 is not useful at all, 5 is extremely useful.
    a. 1 – Extremely Useless
    b. 2 - Somewhat Useless
    c. 3 - Not Useless and Not Useful
    d. 4 - Somewhat Useful
    e. 5 - Extremely Useful
6) When giving the device a name and a location, what was your goal?
    a. I want to be able to identify this device at another time for some other purpose.
    b. There was no goal, but it was required.
    c. I will manage this device at a later date.
    d. Other.

4.1.3 *Survey Data*

Figure 2 — Question 1 results

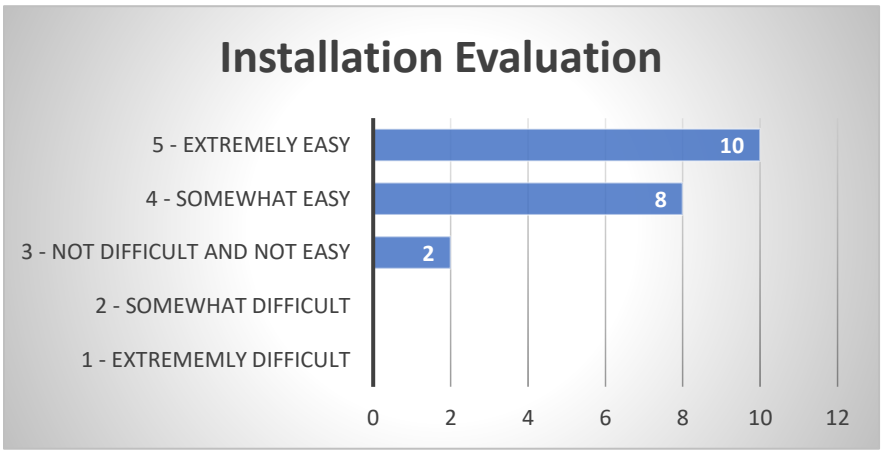


Figure 3 — Question 2 results

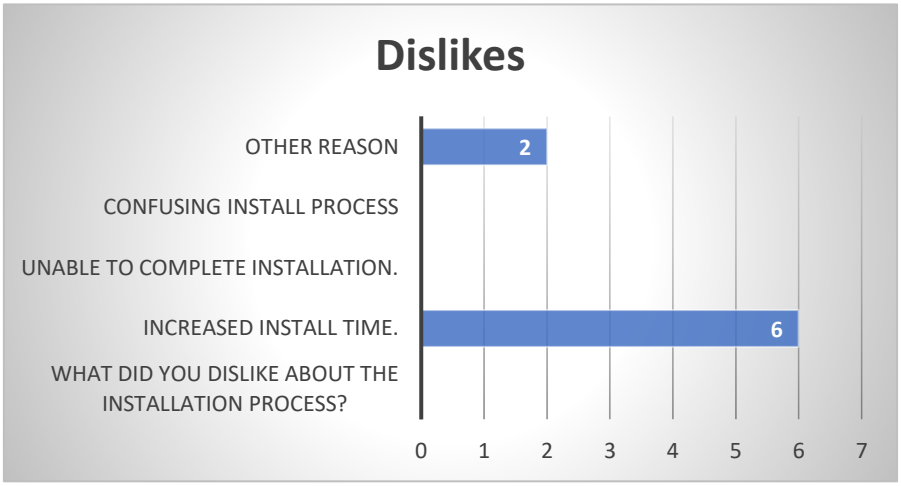


Figure 4 — Question 3 results

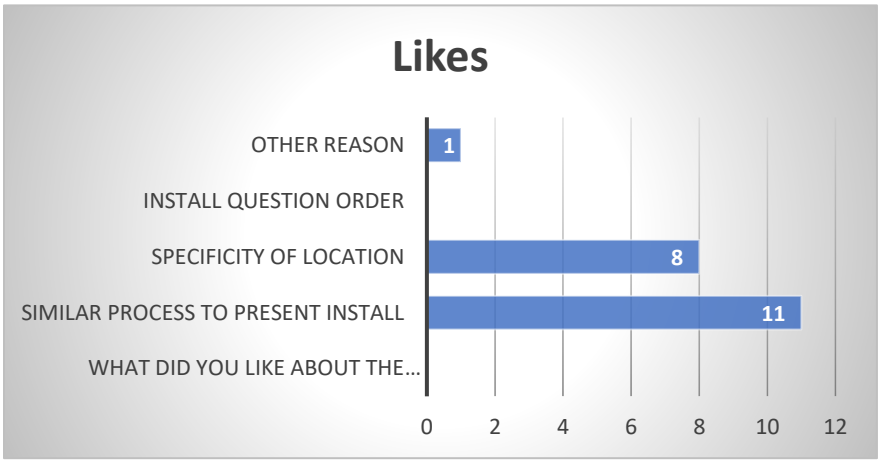


Figure 5 — Question 4 results

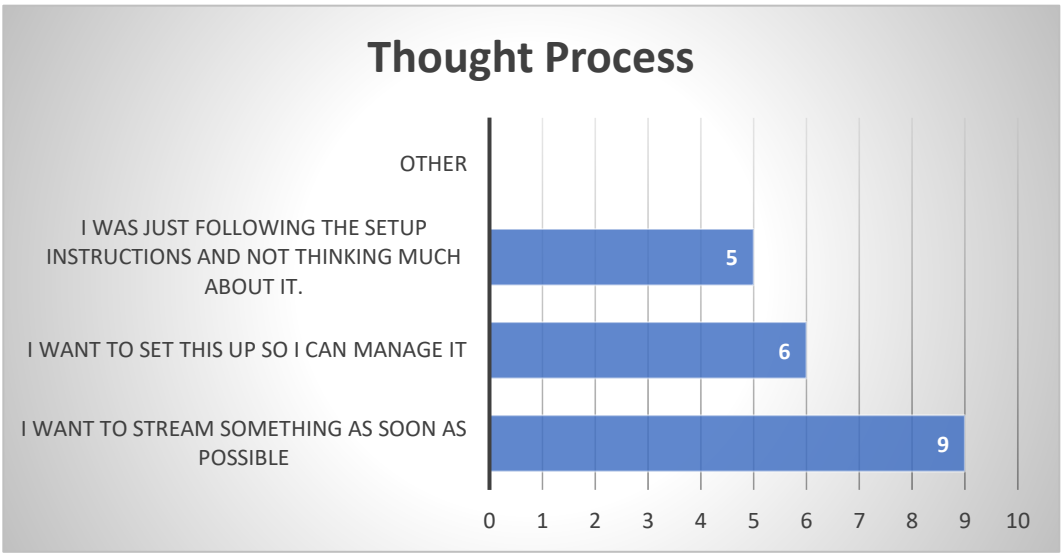


Figure 6 — Question 5 results

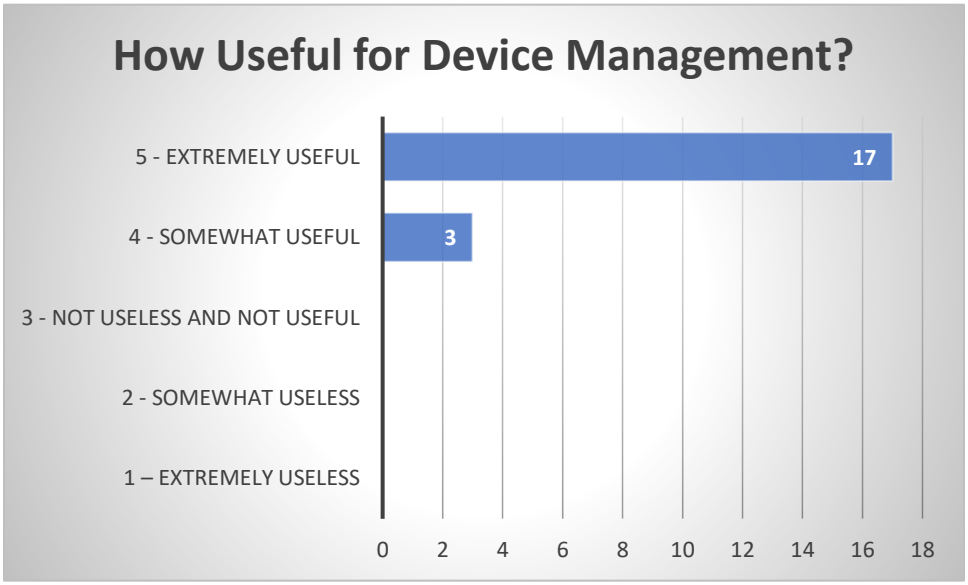
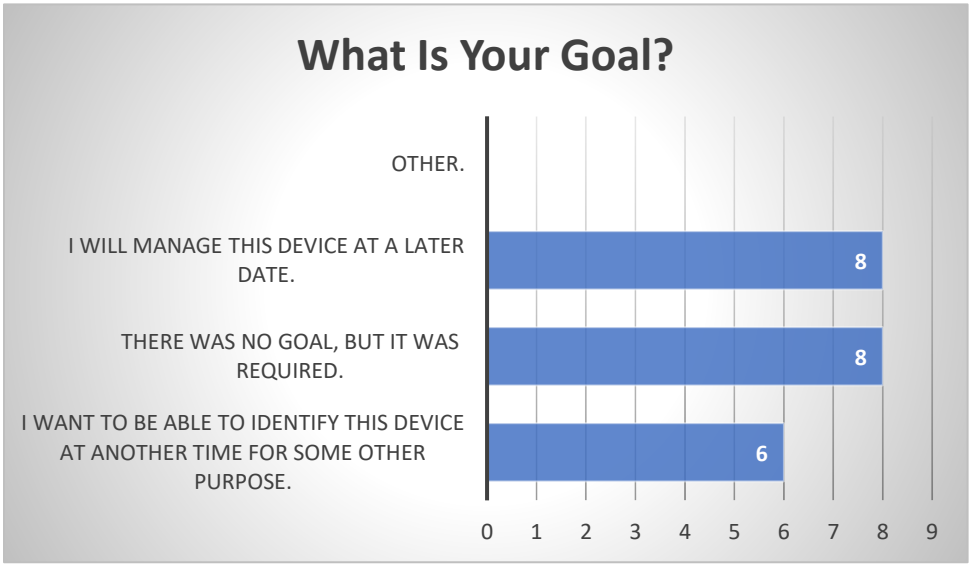


Figure 7 — Question 6 results



4.2 Predictive Evaluation

4.2.1 *Wire Frame Prototype*

Figure 8— Amazon device management interface M3 prototype with device location.