HCI CS6750 - Assignment M3

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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 discussion throughout this M assignment.

1 BRAINSTORMING

Brainstorming plays a vital role in the design lifecycle. Positioned between designing alternative solutions and prototyping, brainstorming is an effective way of generating high-level ideas to improve on design problems. Because brainstorming is intended on generating a lot of general ideas to solve the problem, the process can take the brainstormer in many different directions. Below, I will discuss a brainstorming plan and execution, as well as how will choose ideas to move forward to prototyping.

1.1 Brainstorming Plan

This phase of the design lifecycle will take place individually. Per the abstract above, I will focus my brainstorming on solving the task of managing devices from the device management UI. The main goal will be generating as many ideas as possible, however, I will keep the problem as the center of my focus by writing it on top of my paper. I will break the brainstorming process up into two separate sessions, spread out over two days. Each session should not last longer than 30 min and will ideally result in 20 ideas. To be sure I capture all

ideas as they come to mind, I will also create a note on my iPhone for possible brainstorming ideas that are thought of while outside of the dedicated 30 minute sessions. I don't want to lose any ideas that come to me while walking the dog, at the gym, or anywhere else when I don't have a pen and paper accessible.

Four questions that I need to focus on:

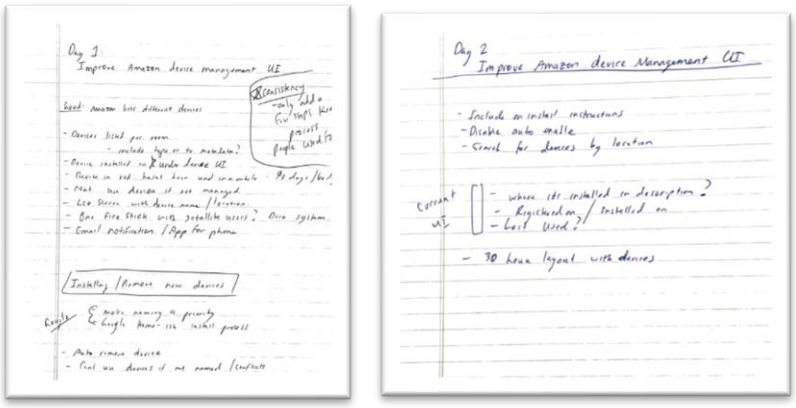
a) How might I solve too many devices listed in the device section of device management?
b) How might I make the user aware of device management?
c) How might I include device management in the registration/initial setup process?
d) How might I improve on existing design principles? Discoverability, consistency, simplicity, flexibility?

These four questions are derived from the previous assignments needfinding exercise.

1.2 Brainstorming Execution

I was able to successfully execute my brainstorming plan and creatively generate a lot of ideas over the two days. Because I did not want to limit the directions in which my ideas went, I ended up not focusing to heavily on the design principles. Rather, I let the ideas flow freely and without any constraints. The results of the two brainstorming sessions follow in figure 1. Included in the image are a few ideas that came to me while walking outside of my home.

Figure 1 — Brainstorming session results. Source: Author



1.3 Select Criteria

The ideas that resulted from the brainstorming exercise must all consider the requirements defined in the previous M2 assignment as it relates to selection criteria. More specifically, any idea that I will move forward with as a prototype must adhere to the following selection criteria:

1) The improvement does not increase the gulf of execution or the gulf of evaluation.
2) The cognitive load required to complete the task is not increased.
3) The improvement must stay consistent with the current device management interface.

I will be moving forward with these ideas:

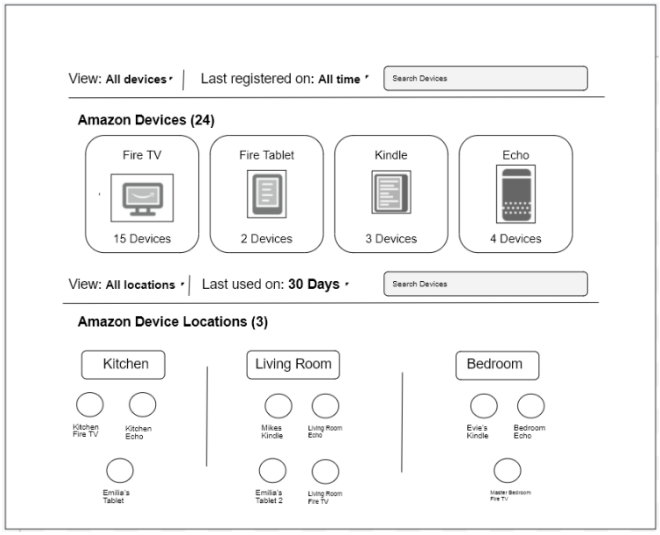
Table 1 — Prototype Ideas. Source: Author

Idea #	Prototyping Ideas	Relationship to defining requirements and data inventory
1	Display devices in location of the home.	This will decrease the amount of effort a user needs to identify a device, thus reducing the gulf of execution. The gulf of evaluation is also narrowed because it will reduce the burden of identifying the device which they need to interact with. Potential here to increase the cognitive load by asking the user location specific questions but is minimal and used by other similar Google devices.

Idea #	Prototyping Ideas	Relationship to defining requirements and data inventory
2	Improve device description (where it's installed, last used date) within device management UI.	Reduces gulf of execution and gulf of evaluation by enabling user to easily identify the device to manage. Reduces cognitive load by giving more information by keeping device management interface consistent with what it looks like today.
3	Include device name and location requirement during initial setup	No impact to the gulf of evaluation, gulf of execution, and cognitive load. This will add a small amount of time to the setup process but is required for the Amazon device management UI to assign device specific info.

2 PROTOTYPE 1: LOACTION SPECIFIC DEVICES (WIRE FRAME)

Figure 2— Amazon device management interface with location specific devices. Source: Author



2.1 Prototype Evaluation

For this prototype, I thought it would be advantageous for the user to have access to all their devices as well as their devices split up depending on where it is in their house. Each section has a dropdown which the user can use to narrow the device type, a drop down to filter on a registration/last used date, and

a search feature. The area with the device location will scale to the appropriate size if more locations are applicable.

Table 2 — Wire Frame prototype evaluation

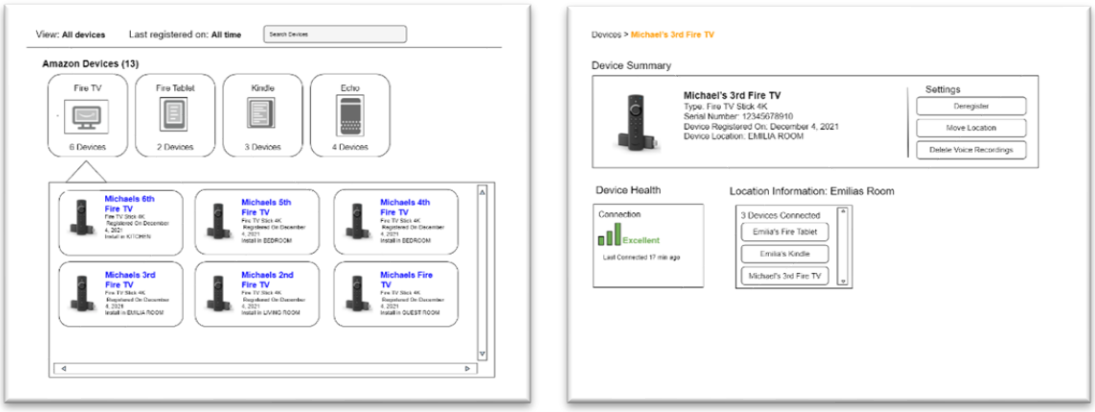
Requirement	**Description**
Functionality	The user can more effectively identify and manage their Amazon devices from the Amazon device management interface
Usability	After being notified of the feature, the user is more easily able use the device management as they can see what room a device is in and what the devices name is per each location
Learnability	The user would need to be informed of this new feature and understand the filtering features available.
Accessibility	This is functionality that is present in other smart devices. Experienced users can adapt quickly, while novice users may need to play around with the feature.
Compatibility	This feature will be new to the Amazon device management interface.

For a novice using this new interface for the first time, it is possible the gulf of execution is increased. Because more information is available to the user, defining the actions to complete the task of device management could be harder to identify. I would categorize this as a potential miss in the requirements.

3 PROTOTYPE 2: IMPROVED DEVICE DESCRIPTIONS (CARD PROTOTYPE)

For this prototype, I want to make the information available to the user more revealing. Currently, the only information provided is the devices name, the device type, and what date the device was registered on. By keeping the layout consistent with its current state, but giving the user more identifiable information, the user can more easily identify and manage devices.

Figure 3 — Amazon device description interface. Left: Device list, Right: Device Summary after clicking on a device. Source: Author



3.1 Prototype Evaluation

For this prototype, I explore the device summary page within the Amazon device management UI. The current interface does not give enough relevant information as it relates to identifying and managing devices. As such, this prototyped solution would use similar functionality but reveal more information needed to manage devices successfully.

Table 3 — Card prototype evaluation

Requirement	Description
Functionality	The user can more effectively identify and manage their Amazon devices from the Amazon device management interface. Additional information is provided to the user.
Usability	After being notified of the feature, the user is more easily able use the device management as they can see more information regarding the device. This included when it was registered, what room it is in, and any additional devices registered in that location.
Learnability	The user would need to be informed of this new feature and understand that additional information is available when clicking on the device name in the Device Summary window.

Requirement	Description
Accessibility	This is functionality uses similar ideas (location) in its use, however, it does not exist in any other interfaces. Experienced users can adapt quickly, while novice users may need to play around with the feature.
Compatibility	This feature will be new to the Amazon device management interface.

In addition to the requirements defined above, this solution shrinks the gulf of evaluation as it makes the steps needed to perform the task more obvious to the user. The gulf of evaluation should remain the same as the output from managing the device will be similar across all methods. The cognitive load required by the user to complete this task is also reduced. By giving the user more information up front, they would not need to increase and/or overload their working memory to complete this task.

4 PROTOTYPE 3: IMPROVING SETUP (TEXTUAL PROTOTYPE)

For the last prototype, the improvement will be in the initial setup process for an Amazon Fire Stick. The requirement of a compatible TV, an internet connection, and an Amazon account will remain unchanged. The flow will be consistent with the current setup, however, it will include one additional step to name and identify the location where the device is being installed.

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.

Table 4 — Textual prototype evaluation

Requirement	**Description**
Functionality	The user will experience the same step-by-step setup process with the addition of one screen that does not exist today. The functionality of set-up will be unchanged.
Usability	The user will be directly involved with the naming/location settings. As such, they will be aware of the feature, and this increases useability for all users.
Learnability	As is the case with the current setup process, the user would be required to enter certain information following a step-by-step installation process. This would not require any new functionality to be learned.
Accessibility	This functionality exits with other installation processes and would be accessible to all users, novice or experienced.
Compatibility	This feature builds on the current setup process. All Amazon devices would utilize this feature making it compatible across the entire domain of device management.

This prototype does not increate the gulf of evaluation. The user is given explicit instruction and, as such, will know the steps to take when completing the task. The gulf of evaluation is also unchanged. The setup process, when complete, will be the same as it is with the current requirements. Furthermore, the cognitive load neither increases nor decreases with this prototype. As a result, this prototype meets all the requirements defined above and in the previous assignment.