

FINAL REPORT

Human-Computer Interaction I (CPSC 481)

Stage 5

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EXECUTIVE SUMMARY

Our product is a Smart Home Manager that improves on all of the weaknesses that current managers have. It highlights ease of use, compactability, and a rich variety of features, some of which aren't available in other Smart Home Managers on the market today.

INTRODUCTION

This report goes through our team's entire process of designing an application for a smart home management system through a User Centered Design process. It goes through how we came up with the original idea and design, and how we improved it throughout using methods such as heuristic evaluation, and what we can do in the future to improve the application.

DESIGN PROBLEM

Desirability - No application is desirable because there is a small market for applications of this nature

Usefulness - most people today don't have enough smart devices to warrant them using a manager to control their devices. They'd just use the one/two apps that control their one/two devices.

Usability - the use of controlling devices happens outside of the app, either in voice form or tangible form, not through an app itself

Accessibility - the problem is not about accessibility. We will maintain a similar level

Valuable - as smart homes become increasingly popular, an app that can be efficiently used to manage your devices becomes more and more valuable. No one wants to have 3 different applications to manage 3 different devices, or 4 apps for 4 devices, so on

END-USERS AND STAKEHOLDERS

Users - anyone with a home or anyone that own(s) smart home devices, because our application is a smart HOME manager. Within home users, we target mostly the parents/adults/owners of the home because they'll not only need the most control of their house, but WANT most control over their house. Other members will need permission to perform such actions.

- These users will go through their routine daily activities. They'd mostly use this app inside their own home, occasionally using it outside to check some device's state.

- These users could go on vacation and would need to check their home status while away. When they come back home, they can use the application to quickly restore their house's state to how it was before.

Stakeholders - anyone involved in the creation of smart devices, because they would want to make their devices compatible with our application.

- Many stakeholders are companies, either ones making smart devices or not, or integrating smart home systems:
 - They would designing smart devices that can be integrated into a home
 - They might not design smart devices, but would consider after seeing our app

USER RESEARCH AND FINDINGS

When doing the Extreme User Interview, one of the biggest things we found was that most users of Google Home don't actually use the app very frequently. They are more inclined to use the voice recognition that Google Home Speaker provides, or just do the action manually. We wanted to know more.

Through the Questionnaire, a big find, and possibly one of the reasons for the lack of app use, was that people really don't like the way the google home app is layed out. They wished that they could use a system that was easier to use and less confusing in terms of what they could do, as well as see the current state of each device from the main screen.

When Shadowing, we found that people were also annoyed that they had to use multiple apps to achieve the same goals with their smart devices. They would also get frustrated when they accidentally clicked on a device and then had to switch screens and then go back to the main screen to correct their mistake. People want a simple, centralized application where they can control their smart devices while exerting as little energy as possible to do so.

DESIGN AND JUSTIFICATION

There was little content to go off because there are not many big-name smart home managing applications besides Google Home.

The biggest must-have for us was the ability for the user to easily familiarize themselves with the application.

- We thought of accomplishing this by displaying the user's home in a floor plan/blueprint layout. Being able to see your rooms and recognize what you're seeing will preserve the familiarity the user wants.

Our other biggest must-have was to make functionality as simple as possible to lets users manage their home with little effort.

- Much like Google Home, we wanted simple click-then-on features for managing your devices. We desire a minimal learning curve for the app to grant usability

Floor plan - by being able to see your house in birds-eye-view, users can easily familiarize themselves with the usage of the app because they know the layout of their home and can track the devices in your home.

HEURISTIC EVALUATION AND FINDINGS

Overall, what we found in our heuristic evaluation was that our initial hi-fi prototype mainly had certain usability issues and clarity of the application. However, we also learned that the app was easy to learn since it was simple and it was easy to understand and the app was mostly intuitive.

- The biggest problem with usability was that our devices page did not have the functionality that the user expected. The user expected to be able to have more interaction and more information for the devices page.
- The problems with clarity were that it was hard to determine where the user was in our app and it was hard to determine where the object the user was interacting with was within the house. Also the layout of the house was hard to read because of how the floor plan looked.
- Another clarity issue that arose was that some of the functions were inconsistent with each other. For example some of the back buttons brought back to the main home area while others were just back buttons that brought back to previous pages.

DESIGN CHANGES BASED ON HEURISTIC

Aesthetics - it was difficult to settle on a specific color scheme and aesthetic design pattern when we started our high fidelity prototype (our low fidelity prototype had almost no color, just black and white). We experimented with only a couple of ideas because there are only a few existing apps that we could pull elements off of.

- The fonts, menus, colors, sizing, alignments, etc. were all inferred in our process of creating the high fidelity prototype; almost like guess and check style.
 - We settled in on a monochromatic purple style, with some blue hues thrown in
- Our initial high fidelity prototype had an outdated feeling in terms of its design details. It lacked that sense of realism, where many applications today feel like real applications to use because they are appealing to the eye. Ours had the same minimalism and ease of use, but lacked the visual aspects that make an application feel real.

Functionality - Adobe XD did have support for “hover-over” features. Our intent was to be able to hover over devices with your mouse and have additional information show up to inform the user. It was relatively difficult to set up and we didn’t realize until towards the final deadline.

We had several inconsistencies as a result:

- There were other things that were unable to be shown, for example keeping track of all device states at once and updating them when necessary. The heuristic outlined this by saying roughly “states aren’t consistently changed”. In order for us to accomplish this, we would need to have ~800ish slides which was not feasible in the slightest...
- We alleviated this by providing functionality for most features that we missed in the first prototype, but not all

Consistency - We improved the navigation pane and removed back buttons that were redundant. This improved the usability of the system and reduced confusion for users trying to learn the system.

RECOMMENDATIONS FOR NEXT ITERATION

- We would experiment with other applications that can support the desired functionality
- Search up preset color schemes online and experiment with what we feel is appropriate
- Scout design aspects from similar apps to get a quicker foundation for our design (eg. app to manage your camera’s only, app to manage your lights only, Amazon Alexa, etc.) to find inspiration and a general theme
- Improve consistency between all aspects of the design so aesthetics call in line
- Design a mobile version of this application to increase accessibility and cater to the idea that similar apps are all phone apps, not web apps

CONCLUSION

- It was a great experience to learn about the apps that you can use to create prototypes
- We learned that it about how
- It was quite difficult to design an app from scratch. It is easier to follow designs that people are familiar with anyways

