Assignment M2
CS6750 Spring 2019

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Abstract. According to a new report from Juniper Research, smart devices like the Amazon Echo, Google Home and Sonos One will be installed in a majority – that is, 55 percent – of U.S. households by the year 2022.(Perez, 2018) With this accelerated adoption rate of voice-assisted speakers comes the desire by consumers for new and innovative ways to share, access and socialize with these speech-enabled services.

Need finding: Interview

Execution

Over the past two weeks, I have engaged three family members and one friend in informal but scripted interviews to capture their thoughts and ideas on using smart speaker technologies. These discussions covered general usage but also focused on usage in group environments and potential usage while not in their homes. The results of the interview process were captured in a set of hand-written notes.

The outline for the interviews was derived from the work of the Institute of Design at Stanford (stanford.edu, 2007) And included the following sections: Kick-Off (get background), Build Rapport (most common usages), Grand Tour (example of usage, successes and failures) Reflection (what would make an ideal experience) Wrap-Up (final thoughts)

Interesting comments on voice assisted speaker usage included using the Amazon Echo as a wake-up alarm, sending announcements throughout the house (“come down for dinner," etc.) Asking for answers to questions about current news events.

Failures or Annoyances included too many requests for changes in music from multiple participants. For example, asking for music change before a song even ends. Another shortcoming is the Alexa service does not understand or fails to answer questions correctly.

Summary

The Interview process provided many new insights it also confirmed many currently held expectationsconfirmed. The involvement of children and young adults as critical contributors to group activities was an area of significant importance. (This was not an expected) Additionally, including voice-enabled games such as Jeopardy, Sports Trivia, Name that Tune. (Was not expected)

Biases Controls

The concretes steps I took to control for the biases.

1. Recall Bias: Before the interviews, I ask the interviewee to execute some common tasks and at least one uncommon task on their voice-assisted speaker. (This help in getting accurate and potentially additional details on the recall.)
2. Observer Bias: To help mitigate this bias I used a script to control the conversation, I was conscious of my voice and body posture. I also worked on being quiet and letting the interviewee do most of the talking.
3. Social Desirability Bias: I did my best not to allow interviewees to answer in a way that they believed I wanted to hear. In this area, I was likely not as successful as I would have like to be, as my interview group was family and friends. (I did not have the time or resources to get unknown people to participate.)

Need finding: Survey

Execution

The survey was executed over two weeks on the GA Tech Peer Survey Platform, and as of the time of writing we had 22 respondents. The results of the quantitative data that collected are visually represented in the Appendix.

The quantitative responses

94% of respondents had a voice-enabled speaker and 17% use it "At least three times a day." This response would indicate we have a solid participation group.

The survey shows that the majority of respondents (70%) are willing to share their location information with a service provider, but an almost equal amount (67%) are unwilling to share their contact information with a service provider. The 67% was unexpected but provides an excellent counterpoint to initial thoughts and feedback from interviewees.

The findings on allowing the device to make group recommendations were stronger than expected. 78% of respondents would allow Google or Amazon to make group recommendations for Music, Movies, or Dining based on family and friends they are gathered.

Although 50% of respondents reply not expecting to use the services often. A full 78% would like to be able to be able to stream music at a friend or family members home seamlessly.

The qualitative responses

Are there other services that you would like to be able to share while at a friend or family members home? Apple Music, Spotify, Amazon Video Libraries, Hulu, Spotify, Netflix, Amazon Prime Movies, Amazon Music, YouTube Premium

What other group recommendations would you consider useful for a smart speaker to provide? Dining, local events, museum exhibits, kid-friendly, wine, beer, cheese

What if any other locations would you find it acceptable for a smart speaker to know you are present and be able to respond to you personally? Car, Work, my home, Notifications while shopping

Summary

The survey showed that even with a high desire to have voice-enabled speakers in different contexts there is equal concern about privacy and data security. These aspects need to be critical considerations in the interface design.

Biases Controls

1. Confirmation Bias: To help mitigate this bias of respondents answering in a way that they believe confirms what the survey creator wanted to hear. The survey questions where reviewed closely for leading content and these questions where adjusted appropriately.
2. Voluntary response Bias: This bias occurs when people with strong opinions both favorable and unfavorable take the survey. I did not have firm control over this bias as students could choose to take or not take my survey. However, adding some of the survey questions to the interview process helped in identifying if there was more significant than the expected variance in the results.

Need finding: Participant Observer

Execution

The third need finding method to be applied was Participant Observer. In this method, I observed family and friends using voice-enabled technologies in different contexts. (I could not afford to employ people I did not know) Data collection occurred through direct observations and informal conversations querying users about different potential usages of the technology. The observer process included both "overt" involvement where my friends were aware of my desire to learn for design purposes and "covert" involvement where I withhold my longer-term intentions to not unduly influence the observed behavior.

Key takeaways include:

1. Alexa does not always behave as intended for example the user asks for music from Amazon Music but gets music from Spotify.
2. People desiring to share media services often end up logging into (or giving) others passwords to media accounts which violates the terms of agreement for most services." However, users would also preferer a better solution if one was available.
3. Sharing content and configuring systems to share is complicated and often not worth the effort.

Summary

The users I observed regularly use voice-enabled technologies for music and video in their homes and are eager to share their experience with others. They also desire to be able to share the services that they are already paying for outside of their home environments. The ability to share these services provides additional advantages such as having playlists, music stations, and recommendations already customized for use in a new contexts.

Biases Controls

1. Observation Bias: This bias focuses on "You are not your user." (Joyner, 2017) To mitigate this bias, I focused on the users and their emotions and not on my own as an observer. Also being consciously aware of the bias and actively listening to the users helps mitigate this bias.

Data Inventory

Questions

1. Who are the primary users of the system?
    - The primary user of the system are active users of voice technologies within their own home environment who would like to expand that usage seamlessly to other contexts primarily to the homes of other family and friends. A user

that we did not initially identify is that of younger family members who could act as either primary or secondary users.

2. When and where do the users interact with the system?
    - The primary use is in the users home, but an essential secondary location is in the homes of family and friends.
3. In what contexts (environments) do the users execute tasks?
    - Users are using voice-activated speaker technology in many contexts however we are focusing on the use in a group environment for entertainment purposes.
4. What are the users' goals in using the system?
    - The primary goal is to have fun. This is accomplished by sharing common activities, that an entire group enjoys doing together like listening to music, playing games, watching a movie.
5. What do they need?
    - They must have voice-activated speaker technology. These technologies also often have monitors (TV-like screens), so video can be displayed with the audio content. Additionally, the user must have a streaming service that they subscribe to and want to share.
6. What are the tasks the user wants to accomplish?
    - Play music using a music subscription, starting a movie, playing a game.
7. What are their subtasks or pre-tasks that need to be accomplished?
    - The devices need to be configured and connected to the internet.
    - The service or services need to be subscribed to and configured. (Playlists, favorites, purchases, etc.)
    - The usage permissions need to be granted.

Defined Requirements

We will initially emphasize advanced users and early adopters thus some aspects of addressing novice users on learnability will come in later versions. This design is to be built on top of the current Amazon Alexa Infrastructure and Amazon Services offerings. The below requirements amend those requirements already fulfilled by Amazon and it current offerings.

Functionality:

The interface will seamlessly enable Amazon Echo users to share content across Amazon media subscriptions but only if the subscription holder is present. The initial subscriptions would be Amazon Unlimited Music, Amazon Prime Movies, and Audible Books. (Additional services could be straightforwardly added in the future.)

For example, when at a friend's home. Say "Alex play Portugal the man from Dan's Account," and Alexa finds the music in the shared account named Dan and starts playing. This is made possible because the account subscriber ("Dan") is present at his friends' home and his friend has given permission to share his Amazon Echo device. If "Dan" were not there, the service would not be available. Another example when at a family members home "Alexa play the Iron Man Movie from Dan's Account" The movie queues and starts playing on the family members Amazon Fire TV. Again, this happens only because "Dan" has purchased this movie and Dan is present, and his family member has given permission to access the fire TV.

It is important to note that once permissions are granted, they remain available until revoked.

Continued Need finding

What remaining questions are there that would benefit from additional need finding investigation?

- Now that we have a strong direction on the experience while using the interface we must ask additional questions on how to simplify the configuration of the system before using the interface.

What new questions arose during this initial round of needfinding?

- How to best incorporate children and young adults into the process as secondary users?

What types of exercises would you do next to address these remaining or new questions?

- Another interview round with users specifically focused on the questions posed above.

References

How to Conduct User Interviews. (2017). Retrieved from https://www.interaction-design.org/literature/article/how-to-conduct-user-interviews

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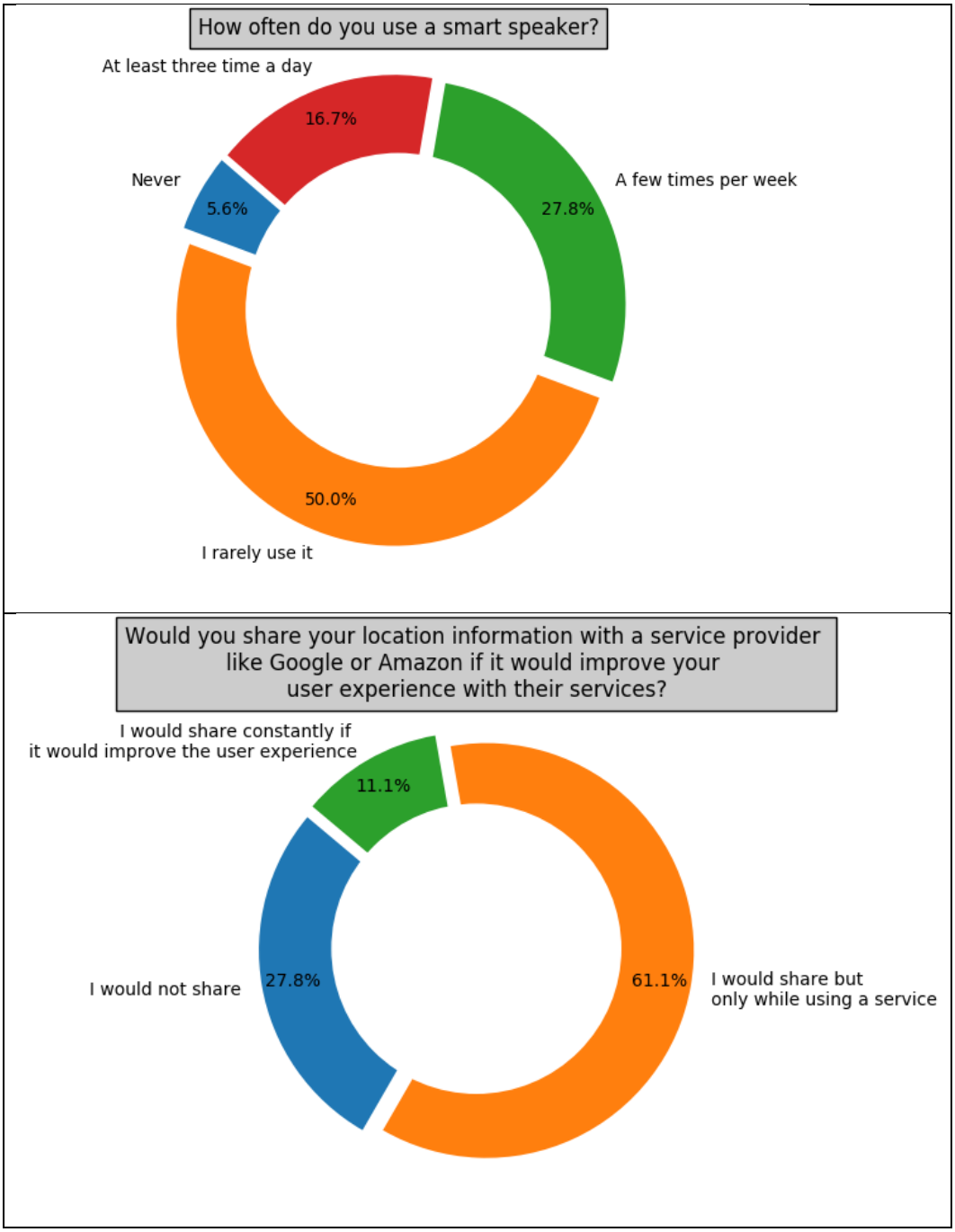
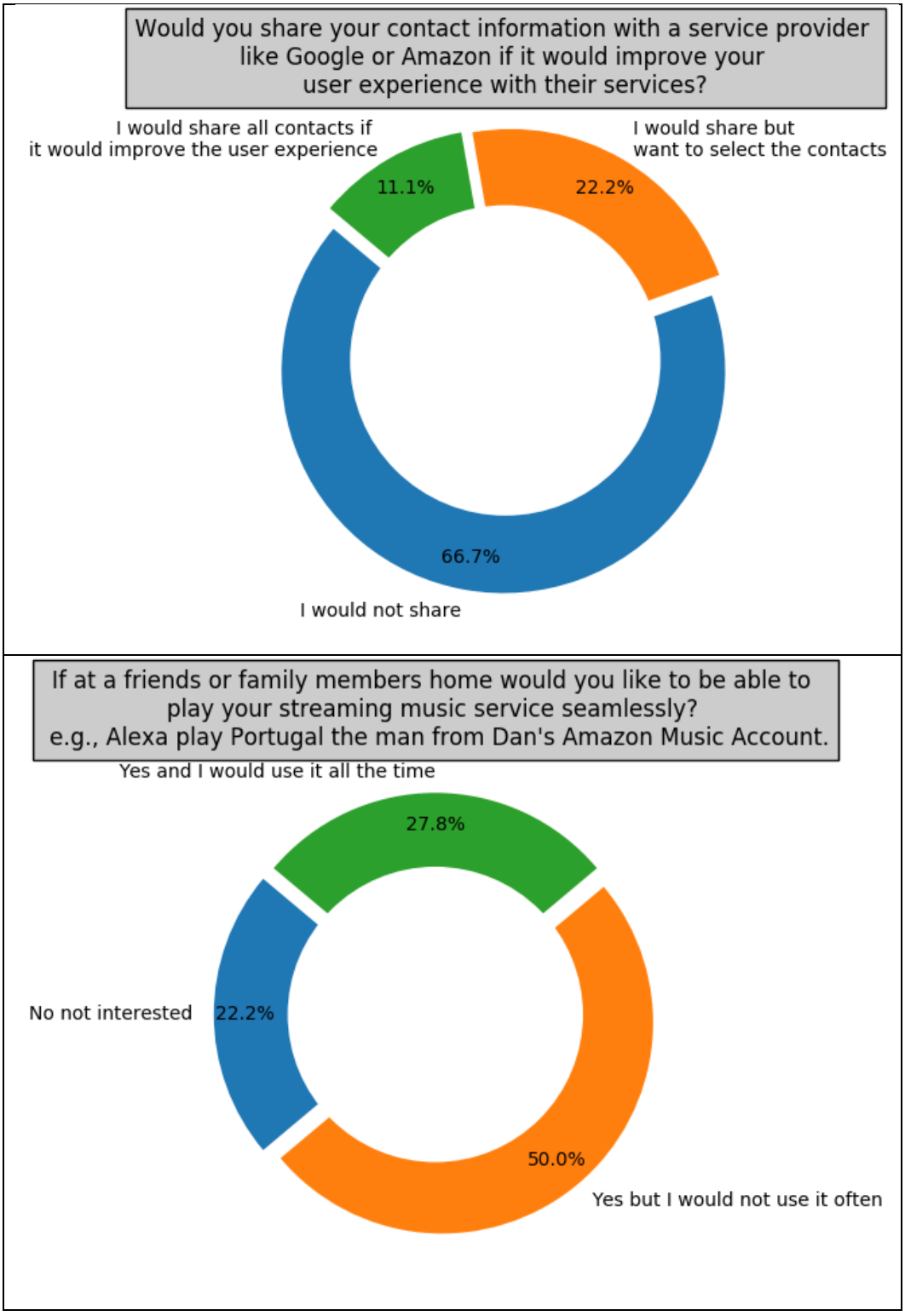
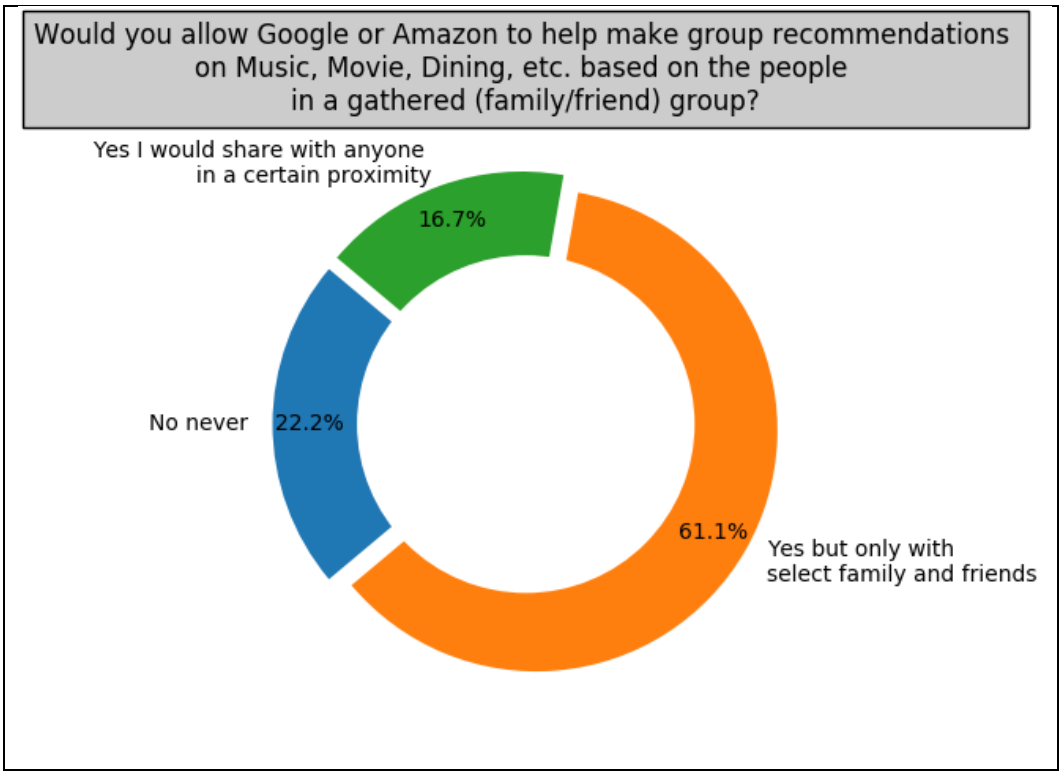
Perez, S. (2018). Voice-enabled smart speakers to reach 55% of U.S. households by 2022, says report. Retrieved from https://techcrunch.com/2017/11/08/voice-enabled-smart-speakers-to-reach-55-of-u-s-households-by-2022-says-report/

stanford.edu. (2007). Need Finding Tools. Retrieved from https://hci.stanford.edu/courses/cs447/docs/NeedFindingCribSheet.pdf

Appendix


How often do you use a smart speaker?
At least three time a day
16.7%
Never
5.6%
A few times per week
27.8%
50.0%
I rarely use it
Would you share your location information with a service provider like Google or Amazon if it would improve your user experience with their services?
I would share constantly if it would improve the user experience
11.1%
I would not share
27.8%
61.1%
I would share but only while using a service


Would you share your contact information with a service provider like Google or Amazon if it would improve your user experience with their services?
I would share all contacts if it would improve the user experience
11.1%
I would share but want to select the contacts
22.2%
66.7%
I would not share
If at a friends or family members home would you like to be able to play your streaming music service seamlessly?
e.g., Alexa play Portugal the man from Dan's Amazon Music Account.
Yes and I would use it all the time
27.8%
No not interested
22.2%
50.0%
Yes but I would not use it often


Would you allow Google or Amazon to help make group recommendations on Music, Movie, Dining, etc. based on the people in a gathered (family/friend) group?
Yes I would share with anyone in a certain proximity
16.7%
No never
22.2%
61.1%
Yes but only with select family and friends

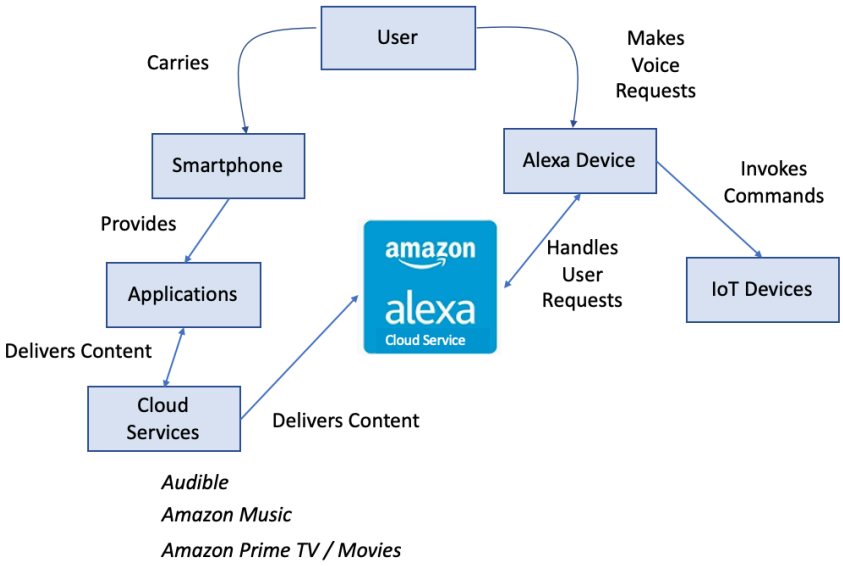


Figure 1: Need Finding Flow for Voice Enabled Technologies