

Heuristic Evaluation of FlexiVoice

1. Problem

FlexiVoice is a voice based app to help you take advantage of your in-home voice assistants by providing unique, personalized commands and an organized use history.

2. Violations Found

1. H3 User Control and Freedom Severity: 3 Found By: A

I cannot exit out of the pop-up that shows up when I click “Share my personalized commands.” If the user either decides they don’t want to share their commands or accidentally clicks the wrong share button, they have to go all the way through the share process. There is no exit strategy.

Fix: I would suggest putting a little “x” in the top right corner of the menu where you choose either airdrop, text, email, etc. This way the user has a clear cue about how to exit if they have made a mistake.

Note: You also cannot exit from the “choose a contact” page either when sharing commands. So if you choose text, you can’t go back and change it to email, etc.

2. H5 Error Prevention Severity: 3 Found By: A,B,C

When I sent my commands to Rachel J. there is no check/confirmation screen to make sure that this is the person you would like to send your commands to. The user may make accidentally click on the wrong person, but there is no error check in this case. They could also accidentally send the wrong information.

Fix: I would suggest having a confirmation page that tells you exactly what will be sent to your friend so the user can confirm. I would suggest something like: “Would you like to share your personal commands with Rachel J?” (Yes/No). This way the user knows exactly what is being sent and who it is being sent to. Let the user preview their message.

Note: This problem occurs in other places - i.e. when you are creating a new command. A confirmation here about exactly what the new command is and on what device it is associated with would be nice.

3. H6 Recognition rather than Recall Severity: 4 Found By: A,C,D

When I am changing a command I have to remember the old command that I had originally. This makes it really difficult on the user since they have to remember exactly what the old command was in order to change it. I would also be worried about the behavior if you accidentally recall the command incorrectly. Would a new command be added? Would the old command still exist?

Fix: I would suggest maybe having a drop down menu that lists all the commands you have already set or a type of autocomplete like they have when you are searching URLs. Thus the user simply just has to recognize the command they want to change instead of recall it.

4. H4 Consistency and Standards Severity: 1 Found By: A

For the add a new command task you click on the “+” for add a new command. Except when it takes you to the next page there is a place for an old command and a place for a new command. I was confused by the terminology here. I thought I was adding a command that didn’t already exist, whereas the interface seems to want me to update an old command.

Fix: I would suggest splitting up the two actions of adding a completely new command and updating an old command. I would be consistent about the labeling, so choose either “update a command” or “create a new command” so the user is completely clear on the task they are executing.

5. H4 Consistency and Standards Severity: 2 Found By: A,B,C

At first I was confused about exactly what “share my devices” meant. This is not common terminology, so I was not entirely sure what I was going to find in this section of the app. I knew from your slides and task flows that under this I would find share my commands, but I think if I didn’t know that I would be confused about where to look.

Fix: I would change the terminology to be “share device information” or “share device commands.” I know you haven’t implemented the my devices section, but you could possibly absorb the sharing functionality under my devices. I think it would be a good grouping of information.

6. H9 Aesthetic and minimalist design Severity: 1 Found By: A,D

I think that the placement of the microphone is very obtrusive on the pages. For example on the home page it is partially covering some of the use history. Also since your pages are sometimes white or sometimes colored, it makes the design look inconsistent.

Fix: I would suggest just having a simple black microphone in one of the corners. I would eliminate the circle that makes it look like a button. I think this will help it look nice on all of the screens.

7. H1 Visibility of system status Severity: 3 Found By: A,D

When I create a new command for one of the devices, after you click ok at the end of the flow it just takes you back to the home page. There is no status message that shows whether or not the command was created successfully.

Fix: Add a simple message that says something like commands: “_____” was successfully created on device “_____.”

8. H5 Error Prevention Severity: 3 Found By: A,B,D

When I was testing the send my commands to a friends flow, I noticed that there was a sharing history and a reshare button. I know it is not implemented yet, but the exact functionality of this button is confusing. Are you sharing with everyone? Or can you share with a particular user again? The user might accidentally share with too many people.

Fix: Be specific about the options for what device you are sharing and who you are resharing with.

9. H3 User Control and Freedom Severity: 2 Found By: A,D

When I am on the last page of creating a command or the ingredients page, to get all the way back to the home page I have to click the back arrow about 4 or 5 times. It would be nice to have a quick menu where you can just return back to the homepage in one step.

Fix: I would suggest adding a hamburger that allows you to jump to the different pages in your design.

10. H4 Consistency and standards Severity: 1 Found By: A

The button for adding a new command is not really a button. I feel like the add a new command button should be consistent with all of the other add buttons you have in your design (i.e. the add new device button that is a blue circle)

Fix: Add a circular button that looks like the other add buttons. It will make it stand out.

11. H4 Consistency and standards Severity: 2 Found By: A,C,D

On the share my devices page and add a command page you have an option to add a new device. However, when you look at the old recipes you made there is no option to add a device. I know that it makes no sense for this to be an option, but because of the format I saw, I expected it to be there.

Fix: I would suggest only having add a new device in one location. I think it is confusing that you can add devices in multiple places. I think I would put an add device option under “my devices.” I know it is not implemented yet, but that is where I would put it.

12. H8 Aesthetic and minimalist design Severity: 1 Found By: A

I think that it is not necessary to have the device that you made the recipe on be displayed on the recipes page. If you are going to look up the recipe anyway, then I am unsure why you would need

to know which device you made it on. Especially since the device is noted in the description of the recipe itself. The information seems redundant. This also applies to the date and time as well. There is just a lot of repeated information.

Fix: I would suggest only displaying the name of the recipe on the screen.

13. H8 Aesthetic and minimalist design Severity: 1 Found By: A,C

The design of the pages is inconsistent in that some pages are purple and blue and black, while others are mainly white. Also the black is a little difficult to see on the dark background colors.

Fix: I would try to standardize the design as much as possible. Try to keep the page layouts as similar as possible across the various task flows. Also maybe consider changing the font color to white.

14. H5 Error Prevention Severity: 4 Found By: A,B,C,D

When you hit the ok button on the ingredients page for a particular recipe it takes you back to the home page. I think the meaning of this button is just unclear in general. I am not entirely sure why you would want to click ok. It is possible that someone accidentally selects ok, and then they have to navigate their way back to the recipe.

Fix: Either remove the ok button, or clarify its purpose. Have the "Ok" button return to the last page you were at.

15. H7 Flexibility and efficiency of use Severity: 3 Found By: A

For the recipes page and the commands page there is no way to search for a command or recipe by device. I know that this is a recognition vs. recall situation. However, I think there should be an option to browse by the device used. This allows for a wider range of use that can accommodate different ways of thinking. Maybe someone knows exactly what device they want to get a command or recipe from. It would be easier for them to just search under the specific device instead of searching through a list of random commands or recipes. It also may reduce the amount of information on the screen.

Fix: Add a browse commands/recipes by device option.

16. H8 Aesthetic and minimalist design Severity: 3 Found By: A,B,C,D

When I first clicked on my usage history I was very overwhelmed by all the content on the next page. It took me a minute to find my recipes.

Fix: I would suggest having some sort of priority. Maybe have the most used apps at the top, or split the options up into different categories. I think there just needs to be less information on this page. So

maybe you have the top used apps shown and then a button that is like show more options, which expands and shows the other options not originally shown.

17. H2 between system and real world Severity: 1 Found By: A

After you share your commands with a friend, a message pops up that says the commands have been shared with Rachel J. To exit you have to click ok. I think that ok may not match what a user expects. "Ok what?" was the question I asked myself when I was going through this.

Fix: I would suggest changing the name of this button to something like "return to commands page" or "exit" or "finish."

Note: This type of language mismatch also shows up when you are creating a new command. To create the new command you click ok to finish the action. I would suggest changing that to something like "create" or "update" (in the case of updating a command).

18. H8 Aesthetic and minimalist design Severity: 1 Found By: A,C

When I was sharing my commands with Rachel J., I noticed that the word sizes of the text, email and airdrop page and the contacts page were different sizes. I think for pop-up menus you should be consistent in the size and formatting. Also the names are so small I worry about hitting the wrong name. Like Fitts' law explains, the bigger something is the easier and faster a user can hit it.

Fix: I would suggest choosing a pop-up menu format and sticking with it. I would also make the contact names larger, even if it means showing fewer at a time.

19. H1 Visibility of System Status Severity: 2 Found By: B,C,D

When a user creates a new command, and clicks ok to confirm the creation of the command, the UI takes the user back to the homepage. This can be rather disorienting, since the user cannot see the new command they created.

Fix: The flow should instead take the user back to the "My Commands" page. This allows the user to see the newly added command on the "My Commands" page as a confirmation

20. H6: Recognition rather than recall Severity: 2 Found By: B

The homepage UI has a search icon in the top right-hand corner. I am confused about what exactly it means to "search" within your application. What would search results consist of? Users might not be able to recall what content they're searching. (general)

Fix: You should add additional information to make the task of searching rely on recognition rather than recall. This could be done by adding a text box where the user enters their search string, and have a default prompt like "search devices" so that the user can easily recognize the functionality presented.

21 . H2: Matches System and World Severity: 2 Found by: B,C

On the Share my Devices screen, I do not know what “Share all Device Info” means, and I do not know if I click that button, who I am sharing that info with as well. This occurs on a lot of actions on the Share my Devices task, such as when I click Living Room Alexa. I would expect to choose certain commands and choose certain contacts before having “Share” be the final step

Fix: Add a sequence where you first select a command (or set of commands), then the contacts you would like to share, then a confirmation page with a share button

22. H2: Match between system and the real world Severity: 2 Found by: B,C

On the home screen, I am not exactly sure what kind of information the "usage" graph is meant to communicate. What does "usage" of a connected device mean? Is it how many individual times you interacted with the device? Is it duration of use? Is it electricity consumption? (Task: Look Up History)

Fix: You could remedy this by being more explicit in how your terminology of "usage" matches up to real world actions.

23. H3: User Control and Freedom Severity: 3 Found by, C,D

When I click “My Commands” and am presented with a list of commands, I expect to be able to make edits to them if I made a mistake or wanted to change them. Additionally, I would want to be able to delete a command I no longer wanted.

Fix: Add an edit/delete button to any text that the user can edit

24. H7: Flexibility and efficiency of use Severity: 3 Found By: B,D

A "power-user" would likely want to add more than one device to a new custom command in order to create consistency across the voice interfaces of their different devices. Currently, it seems like they would have to accomplish this task by adding this custom command separately for each of their devices, which would be tedious. (Task: Add a Command)

Fix: Adding the piece of functionality where you can apply a custom command to all of your devices would make it more efficient for them to do so, allowing users to tailor frequent actions.

25. H4: Consistency and Standards Severity: 1 Found by: C

On the “Share my Devices” page, once I click “Living Room Alexa”, the background color for the icon of the app turns white, where on the rest of the app, the background is blue.

26. H6: Recognition rather than recall Severity: 1 Found by: B

On the "My History" page, I am confused about what "add new" means, given that the rest of the buttons on the screen are diverse with respect to their category. (Task: Look Up History)

Fix: Some additional text clarifying what the user can add would help users understand what additional information they could customize.

27. H4: Consistency and standards Severity: 2 Found By: B, C

When the user clicks on the "My usage history" button, the title on the page is "My history." There are many instances where such naming inconsistency occurs

Fix: Consider changing this title to "My usage history" for consistency. In general, the text on a button should exactly match the title of the page it directs the user to.

28. H2: Match between system and the real world Severity: 2 Found By: B

On the home screen, there is a button that reads "Get a usage recommendation." As a user, I don't really understand what this means (perhaps because the term "usage" is vague). (Task: Add a Command)

Fix: Consider changing to something that better maps to real world actions. Like "try a new command."

3. Summary of Violations

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
H1: Visibility of Status			1	1		
H2: Match Sys & World		1	3			
H3: User Control			1	2		
H4: Consistency		3	3			
H5: Error Prevention				2	1	
H6: Recognition not Recall		1	1		1	
H7: Efficiency of Use				2		
H8: Minimalist Design		3		1		
H9: Help Users with Errors		1				
H10: Documentation						
Total Violations by Severity						28
<i>Note: check your answer for the green box by making sure the sum of the last column is equal to the sum of the last row (not including the green box)</i>		9	9	8	2	

Speech HE

Category	# Viol. (sev 0)	# Viol. (sev 1)	# Viol. (sev 2)	# Viol. (sev 3)	# Viol. (sev 4)	# Viol. (total)
S1: Give agent persona through language, sounds and other styles						
S2: Make system status clear						
S6: Use spoken language characteristics						
S7: Make conversation a back and forth						
S9: Guide users through a conversation so they are not easily lost						
S11: Keep feedback and prompts short						
S12: Confirm input intelligently						
S14: Use multimodal feedback when available						
S16: Use normal language in communicating errors						
S17: Allow users to exit from errors or a mistaken conversation						
Total Violations by Severity						
<i>Note: check your answer for the green box by making sure the sum of the last column is equal to the sum of the last row (not including the green box)</i>						

4. Evaluation Statistics

Severity / Evaluator	Evaluator A	Evaluator B	Evaluator C	Evaluator D	Evaluator E
sev. 0	100%	100%	100%	100%	
sev. 1	77.7%	11%	33%	11%	
sev. 2	33%	77%	66%	33%	
sev. 3	75%	50%	37.5%	62.5%	
sev. 4	100%	50%	100%	100%	
total (sev. 3 & 4)	80%	50%	50%	70%	
total (all severity levels)	67.8%	46%	50%	39%	

***Note that the bottom rows are *not* calculated by adding the numbers above it.**

5. Summary Recommendations

We recommend reworking the flow of navigation throughout the app. It would be nice if there was a hamburger menu that could help with organization and navigation. In particular, a hamburger menu would allow the user to jump to other screens in the application, which would improve ease and efficiency of use. Currently, it seems as though many task flows end abruptly back at the home screen, in ways a user might not expect (ex. Back to home screen after an action). We would recommend that OK buttons should instead take the user back to the parent screen (the screen that began the action).

We also recommend having edit/delete buttons in any area when a user inputs data. This would be everywhere from the recipe list to the command list. This will make the app easier to use, and if an error occurs, this would make it easier for the user to correct. It should also be more clear which personalized commands pertain to which devices. One piece of suggested functionality is that when a user makes a new command, they want to automatically apply this command to all their devices, in order to enforce consistency. Additionally, when a new command is shared, maybe you want to share just that new command with the other users of the device.

Another suggestion we have would be slightly redesigning the recipes page to emphasize the recipe itself rather than the device it was created on. As a group we believed that if we were looking for a recipe, we did not care about which device it was on. Rather we thought it might be a good idea to have the app enable the recipe on a particular device. For example, if a user was interested in making chocolate chip cookies, the user could ask the app to download the recipe on the alexa in the kitchen. We thought this would be a more effective use for accessing the previous recipes.

Lastly, we would encourage the group to consider a simpler UI. At times we felt overwhelmed by the amount of information displayed on each page. A few ideas might include a way to prioritize the icons based on the frequency of use or provide a way to allow the user to customize their home screens.

Severity Ratings

- 0 - don't agree that this is a usability problem
- 1 - cosmetic problem
- 2 - minor usability problem
- 3 - major usability problem; important to fix
- 4 - usability catastrophe; imperative to fix

Heuristics

H1: Visibility of System Status

- Keep users informed about what is going on

H2: Match Between System & Real World

- Speak the users' language
- Follow real world conventions

H3: User Control & Freedom

- "Exits" for mistaken choices, undo, redo
- Don't force down fixed paths

H4: Consistency & Standards

H5: Error Prevention

H6: Recognition Rather Than Recall

- Make objects, actions, options, & directions visible or easily retrievable

H7: Flexibility & Efficiency of Use

- Accelerators for experts (e.g., gestures, kb shortcuts)
- Allow users to tailor frequent actions (e.g., macros)

H8: Aesthetic & Minimalist Design

- No irrelevant information in dialogues

H9: Help Users Recognize, Diagnose, & Recover from Errors

- Error messages in plain language
- Precisely indicate the problem
- Constructively suggest a solution

H10: Help & Documentation

- Easy to search
- Focused on the user's task
- List concrete steps to carry out
- Not too large

Voice Heuristics

S1: Give agent persona through language, sounds and other styles

- Create an illusion by being consistent.
- Make sure to do this without being distracting.

S2: Make system status clear

- Use verbal, sound, or multimodal feedback.
- Communicate delays immediately and give feedback while “busy”.

S6: Use spoken language characteristics

- Use discourse markers as part of confirmations and prompts to make conversation more natural (e.g., “next”, “and”, “so”, “actually”, “sure”, “ok”, “got it”).
- Leverage prosody, including rhythm, tone, pauses, emphasis, discourse fillers (e.g., “uh”, “uhm”, “hmm”, “ah”, “like”).

S7: Make conversation a back and forth

- Don’t always prompt for everything all at once.
- Take turns and don’t let instructions get in the way.
- Give users a chance before jumping in.

S9: Guide users through a conversation so they are not easily lost

- Users prefer agents that have conversational style similar to their own — match it.
- Guide subtly using natural affordances rather than explicitly.
User: “Check my email.”
Agent: “You have two new emails. The first email is ...”
Agent: “Repeat, reply or go to the next one?”
- Guide user towards desired response and cue the user what type of response is desired.
User: “Trivia Game”
Agent: “Choose from the following: capitals of the world, sports stars, or inventors”
- Allow data to be naturally given in response to single or multiple prompts.
User: “Get a reservation at Ding Tai Fang for tonight.”
Agent: “For what time at Ding Tai Fang?”
User: “7PM.”
Agent: “How many people tonight at 7?”
User: “Three.”
Agent: “Ok, I made a reservation for John Smith for 3 people at Ding Tai Fang tonight at 7.”

S11: Keep feedback and prompts short

- Clear but succinct.
- Keep lists of items short (3-5 max.), and let people ask if they want to hear more.
- Let experienced users have faster and shorter prompts.

S12: Confirm input intelligently

- Confirm input implicitly through results or next prompt.
User: "What time is the Lakers game on tonight?"
Agent: "The Lakers game is at 7:30PM tonight on NBC."
- Confirm irreversible or critical actions explicitly and even allow undo after confirmation.
 - Actions involving other people (e.g., sending a text message or email)
 - Actions that can be seen publicly (e.g., posting on public social media)
 - Actions involving financial transactions (e.g., transferring funds or buying something)

S14: Use multimodal feedback when available

- Lights
- Graphic displays
- Sounds

S16: Use normal language in communicating errors

- Vary (error) prompt wording on re-prompts.
- Don't blame the user for errors (don't say: "that was not a valid response").
- Don't show mock concern (don't say: "I'm sorry. I did not understand the response I heard.").

S17: Allow users to exit from errors or a mistaken conversation

- Use a special escape word globally (e.g., "Stop").
User: "What's the weather in San Francisco?"
Agent: "Movies playing today in San Francisco include Titanic, The Godfather..."
User: "Stop."
- Use non-speech methods when speech fails (e.g., push a physical button).