Scenarios for user tasks

Digital Solution for Blind and Visually Challenged Individuals

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### User scenarios

#### User scenario 1: Creating the shopping list

The user opens the application and is greeted with a welcome screen offering three options: “Create shopping list”, “Shop assistance” and “My shops”. Opting to create a shopping list (“Create shopping list” option), the user is then prompted with a choice between creating a new shopping list or working with a previous one. If the user chooses to create a new list, the virtual assistant proceeds to inquire about their preferred shop location, potentially addressing multiple stores with identical names based on proximity. A new shopping list is then initiated, allowing the user to start adding items to it.

Alternatively, if the user has a previous list at the selected store, they are asked if they want to continue editing it. Depending on their response, the flow either leads to the continuation of editing the existing list or the creation of a new, empty list with the deletion of the previous one.

The user is then presented with options to edit or finish the list, offering buttons like “Finish order” for finishing the order, “X” for deleting items and “Add item” for adding new items to the list. This user scenario aims to provide a seamless experience for both creating a new shopping list and editing a previous one, taking into account user preferences at each step.

#### User scenario 2: Choosing the store

In the scenario where the user already has a shopping list:

Upon reaching the welcome screen, the user encounters three options: “Create shopping list”, “Shop assistance” and “My shops”.Opting for the last one (“My shops”), they are then asked if they want to hear their shops through an audio prompt, with options to press yes or no. If they choose yes, the virtual assistant proceeds to present the user with the shops where they already have an existing shopping list. If they select no, they are returned to the initial screen with the three options mentioned at the beginning of this paragraph. To select a specific store, the user can utilize voice commands or input the store number using the on screen keyboard.

In the scenario where the user is in the process of creating a shopping list:

Upon reaching the welcome screen, the user encounters three options: “Create shopping list”, “Shop assistance” and “My shops”. Opting for the first one (“Create shopping list”), they are then asked if they want to hear their shops through an audio prompt, with options to press yes or no. If they choose yes, the virtual assistant proceeds to inquire about their preferred shopping location. In cases where there are multiple stores with identical names, the user is informed and presented with a list, arranged by proximity. To select a specific store, they can use voice commands or input the store number.

#### User scenario 3: Be notified about the current sales in the shop you have selected

In the process of creating a shopping list and after selecting a store:

The user has chosen the store for their shopping list. Subsequently, they are presented with a choice through audio (or buttons): yes or no regarding whether they wish to find out the sales at the store. If they opt affirmatively, the user is then presented with the list through audio, allowing them to decide on adding each item on sale or not. After this, they encounter three options: “Finish order”, “X” and “add item”. If the user chooses to continue adding items, they are prompted with a yes or no question regarding adding new items. If they choose to do so, the process proceeds as a normal item addition, following a question-and-answer format. The user is then successively presented with the next items on sale.

#### User scenario 4: Managing the shopping list

Managing the shopping list implies adding and deleting items from your current list. A later verification is also added provided that the user wants to go through their items again and maybe cross something off - see user scenario 5.

The user is presented with 3 buttons: “X” - left bottom corner, “Add item” - right bottom corner, and “Finish list” - top half. The buttons are positioned so that together they fill the whole screen and the user can tap on them correctly, even though he/she can see what is written on them. This is also possible because they are presented by audio what the screen looks like.

If they press on “X” without anything in the process of being added, nothing happens. If the user was currently in the middle of adding an item, they are asked if they wanted to press “X” and presented with a new screen - top half “Yes”, bottom half “No”. This feature, the double checking, is consistent throughout the app since mispressing a button can often happen and in this case, our users wouldn’t be aware of it. Their position is also thought of, since pressing the bottom half of the screen is easier than the top and more often done by mistake.

When they press on “Add item”, they begin the process of adding an item. This is done by means of vocal commands. A sequence of vocal instructions is used to lead users through the procedure. Initially, they are prompted with the question, "What would you like to include?" to which they reply with the product name, such as "Chocolate". Subsequently, they are presented with information regarding the available choices, including options like "We offer Milka, Primola, Toblerone and Hershey’s" and they specify their preference. The user then proceeds to provide additional details, such as quantity, in response to prompts like "Please specify the quantity." They ultimately receive the product price and the total cost. When they press the "Add item" button once more, the item is successfully added to their list. This sequence repeats as the user continues to populate and finalize their list.

If they press on “Finish list” the process they are currently in stops and they are asked whether or not they want to go through their item again (next scenario).

#### User scenario 5: Verifying the shopping list

After completing their shopping list, the user can opt for checking their list. If they decide to do so by pressing “Yes” (top half of the screen), the application goes through the entire list and for each one, the user must tap on the top half of the screen if they want to keep it and bottom if they do not.

Even though here it would be most likely for the user to want to keep a majority of their items and so “Yes” would be better placed on the bottom half, we have decided not to do that in order to have consistency throughout the app regarding the yes/no screens.

At the end, the user is asked whether or not they want to add new items into the list as that is something likely to happen when iterating through what we have already added. If that is the case, they are led to the “Managing the shopping list” screen, which is presented above. If they don’t want to add any new items, they continue the flow regarding delivery and payment.

#### User scenario 6: Choosing delivery or pick up option

The user can either finish their shopping online and opt for delivery at home - at a location initially inserted when their account was set up, or they can opt to do the shopping by themselves at the store. They are presented with a screen where in the top half we have a button for “Delivery” and in the bottom half one for “Pick-up”. After selecting either one, there is a double check regarding their choice.

The flow is continued slightly differently since for the delivery option they must pay online and they are directly redirected to that page, whilst for the pick-up option, they can choose between online payment and in-store payment. Regarding the details for the online payment, we have assumed they were initially added with the creation of the account.

#### User scenario 7: Be guided to the shop by means of an Uber

The user decides to independently go grocery shopping, because they find this activity relaxing. They are facing challenges in reaching the store on foot. To ease their journey, they opt to use our application to request an Uber.

After selecting the pre-made shopping list, the app prompts them with a question: “Would you like to request an Uber?”. They have 2 buttons: Yes and No. The user chooses “Yes”. Subsequently, they receive verbal information about the estimated arrival time of the driver, the duration of the ride, and the total cost. The details are also displayed on the screen for visually impaired people. Patiently, they wait for the Uber to arrive. Once the vehicle is at the location, the user hears a distinctive sound, signaling them to enter the car.

After the ride, the user successfully arrives at the desired shop. An unpleasant event may occur if the app cannot find an available car for the client, but they will be informed about this problem.

This task features a straightforward layout focused on sending information through verbal communication, as the user lacks the capability to visually perceive the interface.

#### User scenario 8: Walking to certain aisles

Our users seek a more convenient way to do their grocery shopping and turn to our app for assistance.

Having crafted a shopping list, the user arrives at the store prepared to navigate the aisles with the app’s support. The application provides them with a map, displaying the shortest path they should follow to locate their desired products. Thanks to the color-coded representation of categories on the map, they can distinguish between items like meat and vegetables. Throughout their journey, they receive auditory instructions, guiding them step by step: “Continue straight for the next 100 meters” or “Now, turn right”, ensuring they stay on the correct path and minimizing the risk of getting lost. Once the user completes the list, the app guides them to the payment area, ensuring a smooth and independent shopping experience.

The task is successful when the user arrives at the payment area with the list completed. A problem occurs when the user gets lost while collecting the products. In this case, they can get the help of an experienced employee that will come to them in the specific shop.

During this task, the individual with visual impairments can benefit from both the graphical interface and vocal commands of our application. The interface is designed to be straightforward, incorporating distinct colors to facilitate easy differentiation for the user. The design of the path will be similar to the navigation features on applications like Google Maps, but easier.

#### User scenario 9: Checking items with camera

The blind or visually impaired user, guided by our application’s vocal commands and map, navigates through the aisles of the store, picking up his products.

As he reaches the first product, the map transitions to a camera view. Utilizing the camera, he scans the surroundings, and upon reaching the desired item, he hears its name, such as “Water”. He retrieves the product, and the application returns to the map, directing him to the next item on his list. The process continues until he completes his shopping list.

The process is successful when all the items are correctly identified and added to the shopping cart. An error occurs if they move the camera too fast or if they don’t move the camera in the right direction. In this case an employee will come to offer help.

This task is user-friendly, allowing the user to easily identify the correct product through clear vocal commands.

### Alternate successful user scenarios

#### 1. Managing the shopping list

*Alternative 1:*

The user is currently in the process of either creating a new list or editing an existing one. There are three buttons available on the screen: “Add a new item”, “X” (Remove an item), and “Finish the list”. The user clicks on “Add a new item”. A series of voice commands guide them through the process. Initially, they are asked “What do you want to add?”, to which they respond with the product, for example, “Water”. Following this, they receive information about the available options, such as “We have Dorna, Borsec, Aquatique, etc.” and specify their choice, like “Borsec”. The user then goes on to provide details like quantity, responding to prompts such as “Specify the quantity”. They finally get the price of the product and then the total price. When they press the “Add item” button again, the item is successfully added to the list. The sequence is repeated as the user continues to populate and complete their list.

*Alternative 2:*

The user manages a previously existing list. This can be done by selecting “My shops” in the home page. This will further present to the user the shops where he/she has already started lists at. After selecting the desired shop, the user can either delete the existing list or continue editing it.

The alternatives are successful if the desired list is obtained. This can currently be done from 2 places in the app. An error may occur while receiving the vocal commands. In this case, they can request help from a professional.

The design has only three buttons, each representing key modifications that users can make to their lists. Importantly, the design prioritizes simplicity, ensuring that the interface remains user-friendly for individuals with visual impairments.

#### 2. Choosing delivery or pick-up

*Alternative 1:*

Upon completing the list successfully, the user encounters a screen prompting them to select a delivery option. Presented with two buttons, “Delivery” and “Pick-up”, the user opts for the “Delivery” button. A confirmation step follows, where they are asked to confirm their choice, and upon pressing “Yes” they are redirected to the payment screen. This transition indicates that the selected products will be delivered to their specified address.

*Alternative 2:*

The process is the same described before, instead of the “Delivery” option, the user presses now on the “Pick-up” button, They confirm their choice and are redirected to the payment screen. They need to choose the payment option before personally going to get their products from the desired store.

The process is almost always successful. The user may encounter problems with the interface, but in this case they will be redirected to a call with a professional.

The design is simple, containing few buttons and vocal commands to help the blind individuals.

#### 3. Selecting the shop

*Alternative 1:*

The user is presented with three options: "Create shopping list," "Shop assistance," and "My shops." If they choose the last option, "My shops," they are then given the choice to hear their shops through an audio prompt, with the options to select "Yes'' or "No." If they opt for "Yes," the virtual assistant proceeds to display the shops where they already have an existing shopping list. If they select "No," they are taken back to the initial screen with the three aforementioned options. To choose a specific store, the user can either use voice commands or enter the store number using the on-screen keyboard.

*Alternative 2:*

Upon reaching the welcome screen, the user encounters three options: "Create shopping list," "Shop assistance," and "My shops." If they select the first option, "Create shopping list", they are then prompted to decide if they want to hear their shops through an audio prompt, with the options to answer "Yes'' or "No." If they decide on "Yes," the virtual assistant proceeds to inquire about their preferred shopping location. In situations where there are multiple stores with identical names, the user is notified and presented with a list, organized by proximity. To select a specific store, they can utilize voice commands or input the store number.

The process is successful when they can create a shopping list at the desired shop. An error may occur due to the difficulty of interacting with the graphical interface. In this case, they receive the help of an employee.

The design is kept simple, having a few buttons and mostly vocal commands.

### Examples of walkthrough evaluation

#### Scenario 1: Creating the shopping list

Why will the user be trying to produce the effect?

For blind and visually impaired users, the creation of a shopping list serves as a crucial tool to facilitate a smoother and more organized shopping experience. Here are some reasons why a user might want to create a shopping list using this app:

* *Preparation for shopping*
  + Creating a shopping list helps users organize their shopping needs in advance. For individuals with visual impairments, having a structured list can facilitate a smoother and more efficient shopping process.
* *Independence*
  + The application empowers users to independently manage and plan their shopping without relying on external assistance. This promotes a sense of autonomy for individuals with visual impairments.
* *Efficiency in shopping*
  + Knowing the preferred shopping location allows the app to provide information about the stores in proximity. This feature helps users efficiently navigate to the desired store, improving their overall shopping experience.
* *Adaptability to previous lists*
  + The application accommodates users who may want to either create a new shopping list or continue editing a previous one. This flexibility caters to individual preferences and specific needs during the shopping process.

Why will the user see the correct control?

In the context of an application designed for blind and visually impaired users, ensuring that the user sees (or perceives) the correct control is crucial for an accessible and user-friendly experience. Our target users rely on auditory cues, touch gestures, or voice commands to interact with the application. The correct control presentation ensures that these users can easily identify and select the intended controls through non-visual means.

Why will the user see that the control produces the desired effect?

For blind and visually impaired users, the assurance that the control produces the desired effect relies heavily on a well-designed and intuitive audio feedback system. Here's how the described steps in the task cater to this audience:

* *Audio feedback for button selection*
* *Confirmation of user choices*
  + When the user is prompted to create a new shopping list, the "yes" and "no" options are presented with audio cues. This allows the user to hear and confirm their choice, providing a clear understanding of the selected action.
* *Seamless transition between tasks*
  + When transitioning from creating a new shopping list to editing a previous list, or vice versa, the user is guided through the process with clear audio instructions. This helps users understand the current state of the application and the available options.
* *Editing or creating new lists*
  + The user is given options to continue editing a previous list or create a new, empty one. The flow is clearly communicated through audio prompts, allowing users to make choices confidently based on the information provided.

Why is there another control that the user might select instead of the correct one?

In an application designed for blind and visually impaired individuals, the inclusion of alternative controls or options is essential to accommodate diverse preferences and accessibility needs. The presence of multiple controls or options allows users to interact with the application in a way that suits their comfort and usability.

Moreover, providing redundancy in controls ensures that users with various levels of visual impairment can choose the method that works best for them. Some users might prefer audio cues and voice commands, while others may rely more on tactile or gesture-based controls.

By offering a range of controls and options, the application aims to enhance inclusivity and usability for a diverse user base with varying needs and preferences, aligning with the goal of creating an accessible and user-friendly experience for blind and visually impaired individuals.

Why will the user understand the feedback to proceed correctly?

In designing the user interface and feedback mechanisms for this application catering to blind and visually impaired individuals, several considerations have been incorporated to ensure a clear and comprehensible experience.

* Clear yes/no options with audio prompts
  + The "yes" and "no" options are reinforced with audio prompts to clearly convey the choices. This ensures that users, relying primarily on auditory cues, can confidently make selections, such as when deciding to create a new shopping list or not.
* Consistent flow in auditory instructions
  + Throughout the entire process, the application maintains a consistent flow in auditory instructions, ensuring that blind and visually impaired users can follow the sequence of actions seamlessly.

#### Scenario 2: Choosing the store

Why will the user be trying to produce the effect?

The user's intention in selecting a store while creating or managing a shopping list is to streamline their shopping experience and ensure efficiency in the process. The key reasons behind this action include:

* *Optimizing item availability*
  + By designating a specific store, the user aims to increase the likelihood of finding all the required items in one location. This is particularly important for users with visual impairments, as it minimizes the need to navigate between multiple stores.
* *Notifications for unavailable items*
  + Designating a store allows the application to notify the user promptly if any of the required items are unavailable in the selected shop. This ensures that the user is informed in advance and can plan accordingly, avoiding unnecessary delays or inconveniences during the shopping process.
* *Efficient navigation for users*
  + For users with visual impairments, knowing the layout and location of the store is crucial. Designating a specific store allows the application to provide tailored assistance and guidance, facilitating a more efficient and comfortable shopping experience.
* *Streamlining the shopping list creation process*
  + In both scenarios—creating a new shopping list or managing an existing one—the user's choice to select a store streamlines the overall process. It ensures that the user receives relevant information and assistance based on their current shopping context.

Why will the user see the correct control?

In a manner similar to the preceding scenario, the user's ability to discern and engage with the correct controls in this application is facilitated through auditory prompts, distinctive yes/no options, and the utilization of voice commands. The logical flow and structure of the task sequence remain consistent, ensuring that users are guided step by step with corresponding auditory cues aligning with the controls relevant to each stage. Additionally, the adaptive interface accommodates user preferences, allowing them to respond through voice commands or button presses, contributing to a personalized and accurate user experience.

Why will the user see that the control produces the desired effect?

In the context of visually impaired users interacting with the application to select a store while creating or managing a shopping list, the design and feedback mechanisms have been crafted to ensure that users can perceive and understand that the controls produce the desired effects. Here's why:

* *Auditory feedback*
* *Consistency in interaction flow*
  + The interaction flow is designed to be consistent and logical. When users are presented with options such as creating a new shopping list, moving to their shops, or selecting a store, the auditory instructions guide them through the process. The consistency helps users build a mental model of the application's structure and how their actions lead to specific outcomes.
* *Clear voice prompts*
  + Voice prompts are used throughout the process to guide users. For instance, when users are queried about their preferred shopping location, the virtual assistant employs clear voice prompts. Users, relying on audio commands, can understand the context and respond appropriately.
* *Logical sequencing of steps*
  + The steps are logically sequenced, ensuring that users can follow a natural progression from selecting the "My shops" option to deciding whether to move to their shops. The auditory instructions at each step guide users through the decision-making process, reinforcing the cause-and-effect relationship between their actions and the application's responses.
* *Numeric selection for store identification*
  + In the scenario where users are selecting a store, they can do so by voice command or by inserting the store number. This dual approach provides flexibility, and users can choose the method that suits them best. The option to insert the store number reinforces the cause-and-effect relationship, allowing users to understand how their input directly influences the outcome.
* *Contextual information for multiple stores*
  + In cases where there are multiple stores with identical names, users are informed of this and presented with a list arranged by proximity. This contextual information, delivered through auditory cues, helps users grasp the situation and make informed decisions.

Why is there another control that the user might select instead of the correct one?

The possibility of users selecting an incorrect control in the application arises from factors such as similar auditory cues, potential misinterpretation of voice commands, and the presence of confusing menu options. If the auditory cues for different controls are not distinct, users might unintentionally choose the wrong option. Additionally, misinterpretation of voice commands or unclear language in instructions can contribute to users making unintended selections. Confusing menu options may also play a role in users inadvertently choosing an incorrect control.

Why will the user understand the feedback to proceed correctly?

As previously discussed in the scenario exemplification, users are expected to comprehend the provided feedback and proceed correctly due to several strategic design elements. The auditory feedback, characterized by clear voice prompts and distinct audio cues, is particularly tailored to users who are blind or visually impaired. The interaction flow maintains consistency, offering users a logical and predictable sequence of steps. Contextual information is presented through voice prompts, aiding users in understanding the purpose of each action. Additionally, user-friendly voice commands and the option for numeric selection contribute to a clearer interaction process. Throughout, the application emphasizes feedback on the current state, ensuring users receive confirmation of their actions. The overall design is intentionally focused on accessibility, taking into account the specific needs and challenges of blind and visually impaired individuals. This collective approach is designed to foster user understanding and facilitate accurate navigation through the application's tasks.