Assistive Technology for Grocery Shopping at giant eagle®

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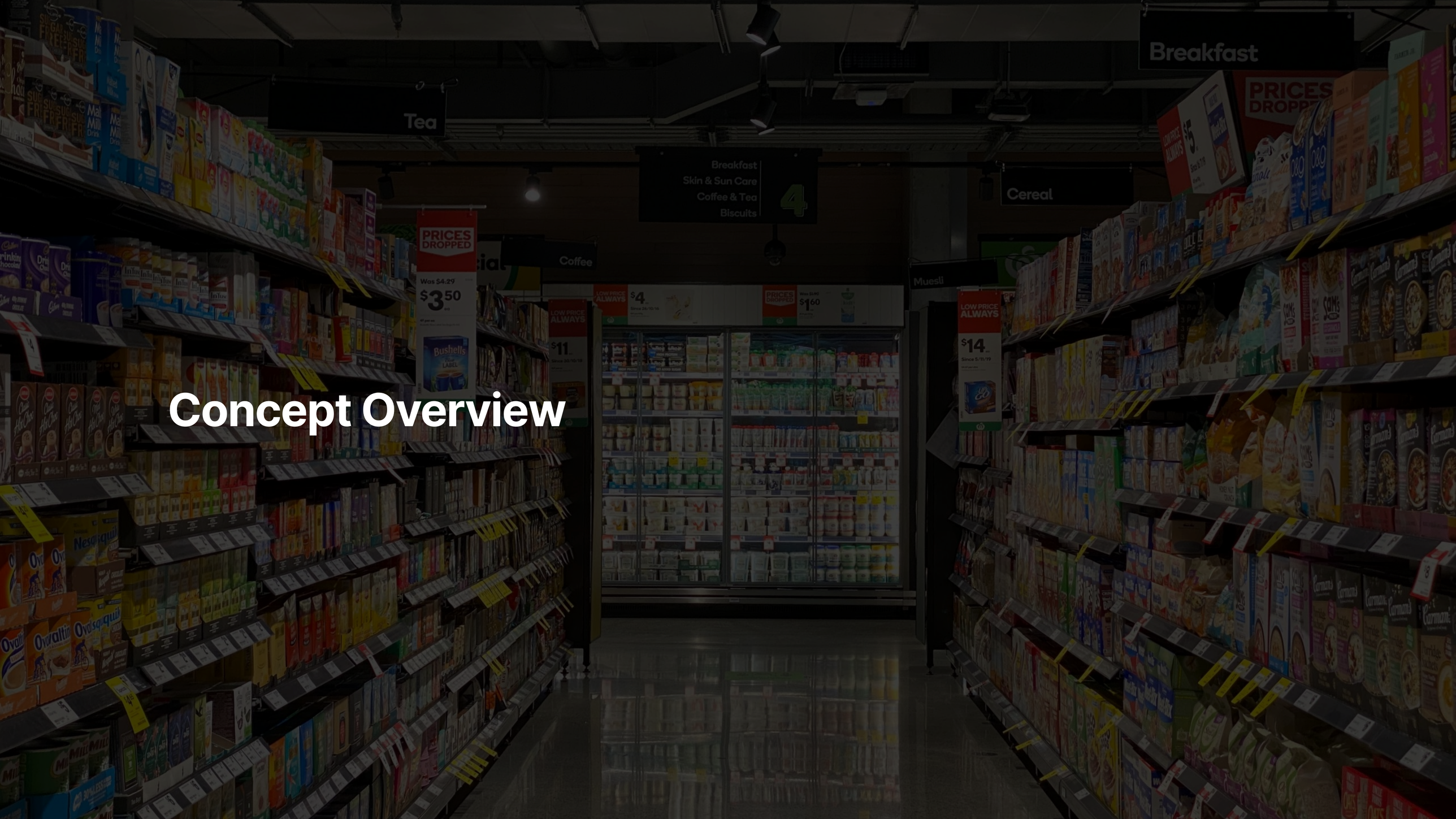


Concept Overview

Concept Overview

Giant Eagle AR Shopping Experience

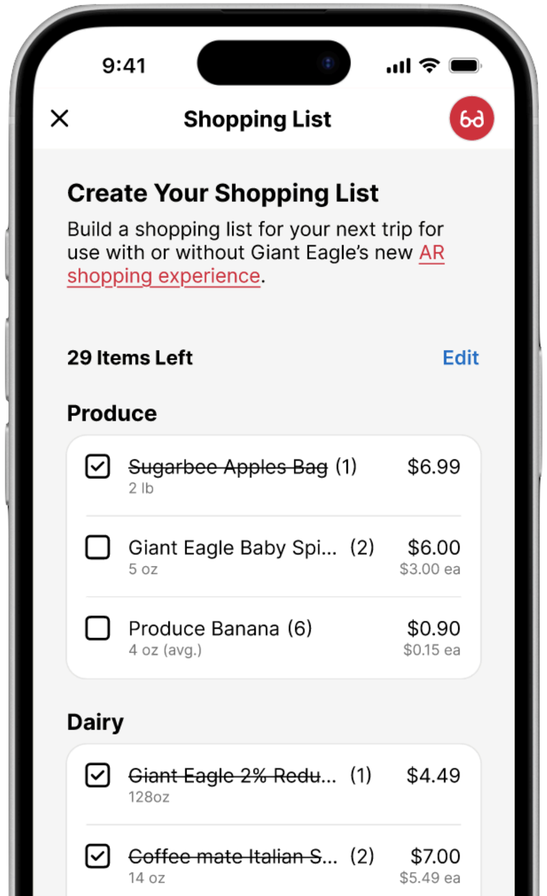
By leveraging the capabilities of AR in uniquely designed glasses, we aim to improve the accessibility of shopping at Giant Eagle for users with ADHD.

Our solution specifically targets challenges users have expressed related to excessive visual stimulation.

Concept Overview

How It Works

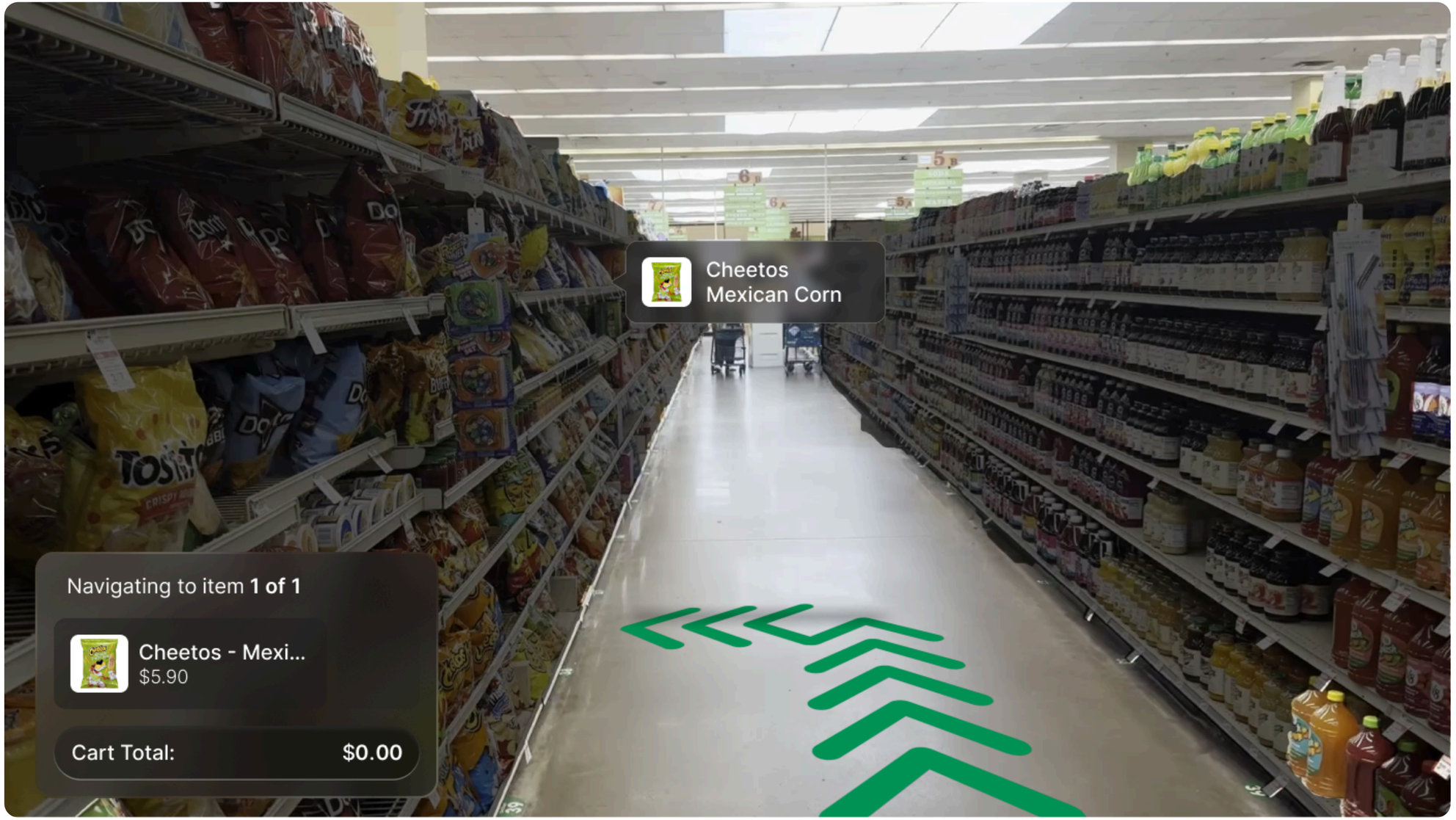
Create your shopping list inside the Giant Eagle app

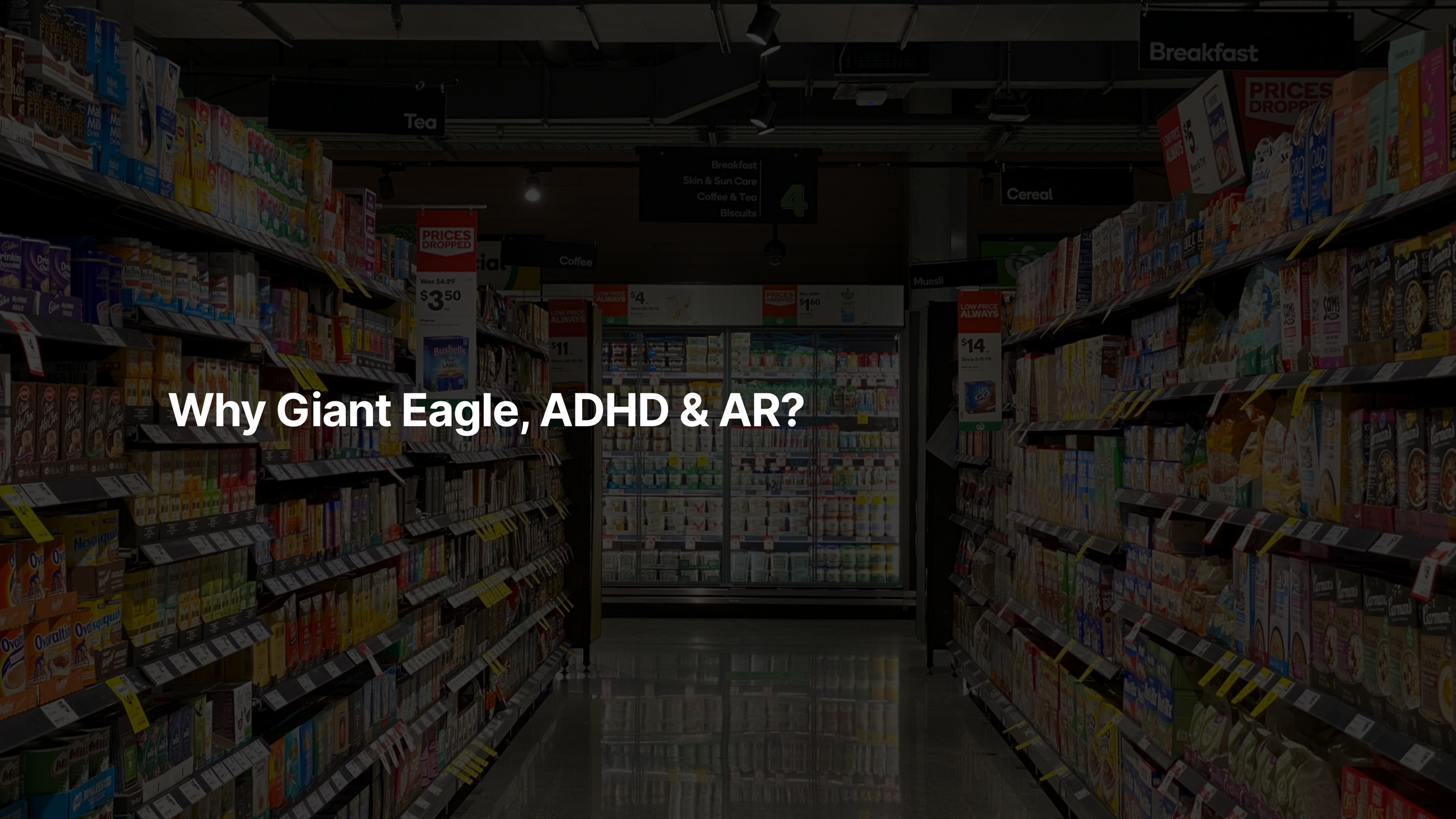


Grab your glasses at the customer service counter

Sync your list to your glasses via QR code

Enter the experience to take advantage of efficient shopping with decreased distractions





Why Giant Eagle, ADHD & AR?

Understanding the Space

Giant Eagle, Shadyside Market District

Giant Eagle, Inc. is an American supermarket chain with stores in Pennsylvania, Ohio, West Virginia, Indiana & Maryland. Founded in 1931, the company now has an annual revenue of approximately $11 billion.

As is the case with most large supermarkets, Giant Eagle stocks an enormous array of products & brands (including their own), providing shoppers with near-endless options.

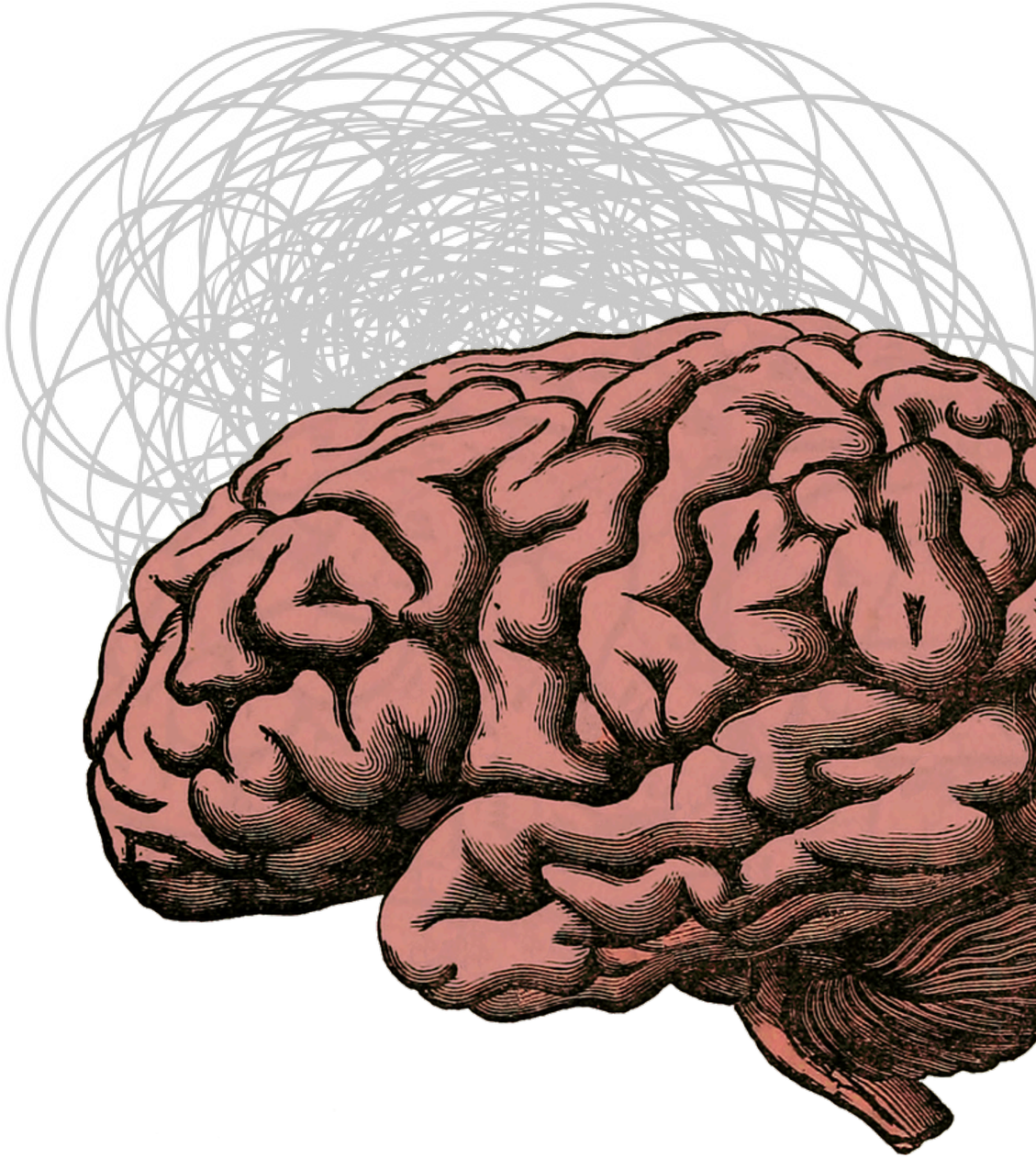
The size of these stores & the sheer variety of items can allow for much appreciated flexibility for some & create overwhelming complexity for others. We've identified this as a promising problem space.

Understanding the Target User

ADHD

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition characterized by **persistent patterns of inattention, impulsivity, and hyperactivity that can interfere with daily functioning and decision-making.**

These characteristics, coupled with the overwhelming sensory demands of grocery shopping, make an environment such as a Giant Eagle particularly challenging and overstimulating for individuals with ADHD.



Understanding the Target User

Painpoints for ADHD Shoppers

Grocery lists help shoppers approach shopping with a plan, but they still **spend a lot of time** in the store.

ADHD shoppers experience **sensory overload** and **decision fatigue**, which can be debilitating.

Headphones are often used to further limit auditory stimuli.

r/adhdwomen *Grocery shopping anyone?*
r/ADHD *Grocery shopping is the natural enemy*
How do you grocery shop and meal prep?
Overstimulated while grocery shopping

“Grocery shopping is sensory hell. **The lights are too bright, there is a lot of sounds, smells, and a lot going on.**”

“... if I need more than a couple of things, my SO has to go with me. **It's too overwhelming for me to do by myself.**”

“... even if I go in with a list, once I get into the grocery store **i'm overwhelmed by everything** and **find it hard to just go in grab the things I need** and get out.

I get stuck looking at everything and its time consuming and often stressful.”

r/adhdwomen *Grocery shopping anyone?*
r/ADHD *Grocery shopping is the natural enemy*
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Understanding the Technology

Augmented Reality

Augmented Reality (AR) differs from Mixed Reality (MR) & Virtual Reality (VR) in that it overlays digital information onto the real world, as opposed to merging the real world with the digital or immersing the user in a completely digital world.

AR devices currently on the market include headsets (like the Meta Quest 3 & Apple Vision Pro) as well as smart glasses (like the Ray Ban Meta Smart Glasses & XREAL One). Applications on mobile devices may also utilize AR.

Top: Apple Vision Pro
Bottom: Ray Ban Meta Smart Glasses

Understanding the Technology

AR Use Cases & Capabilities

AR is already a technology of note for use in the retail space.

Not only can customers virtually try on clothing & preview furniture in their homes, but the ability to use a device to instantly see prices, product reviews, color options, or styling suggestions makes the shopping experience smoother & keeps users informed.

Understanding the Technology

Assumptions

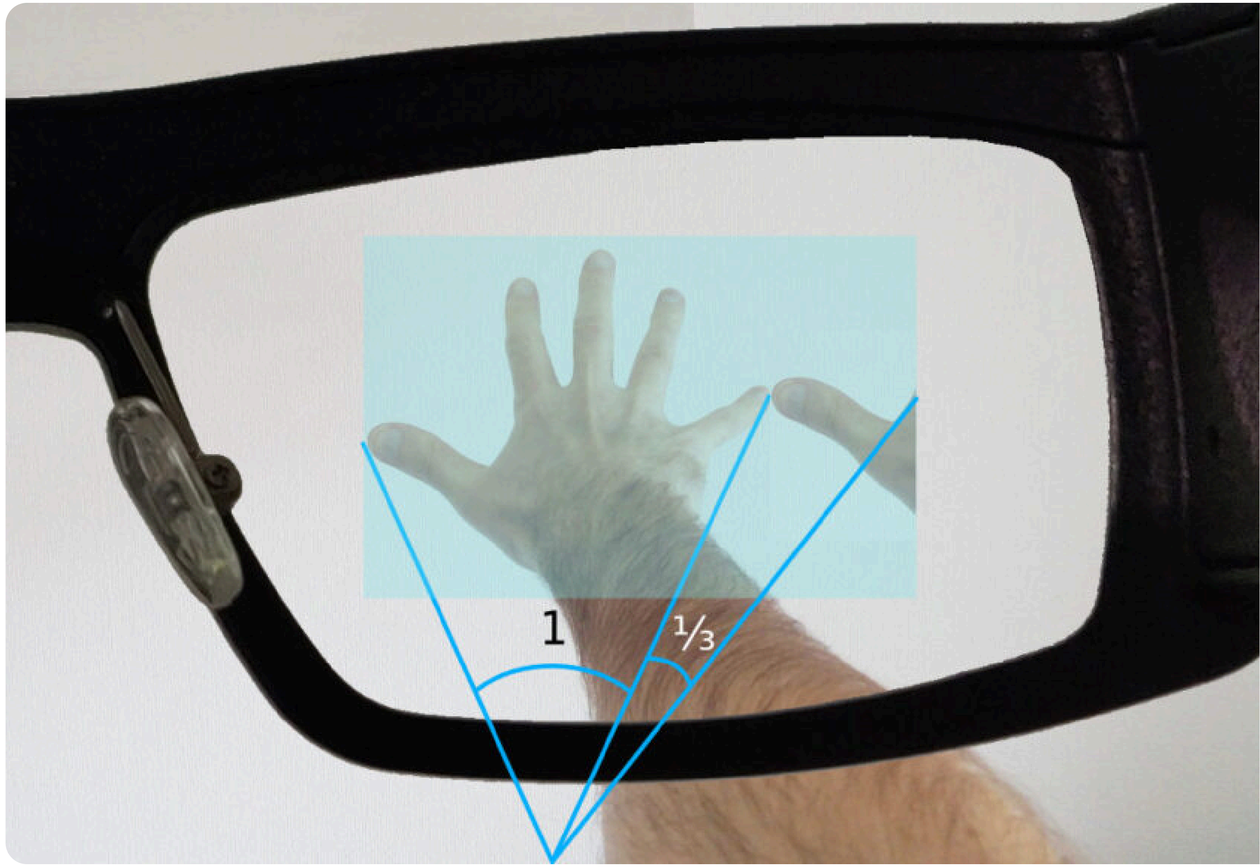
We acknowledge that our experience assumes a level of performance just beyond the current capabilities of AR devices. However, we imagine that, with constant advancement in the field, these limitations will decrease in a few short years.

Field of view (FoV) will likely expand

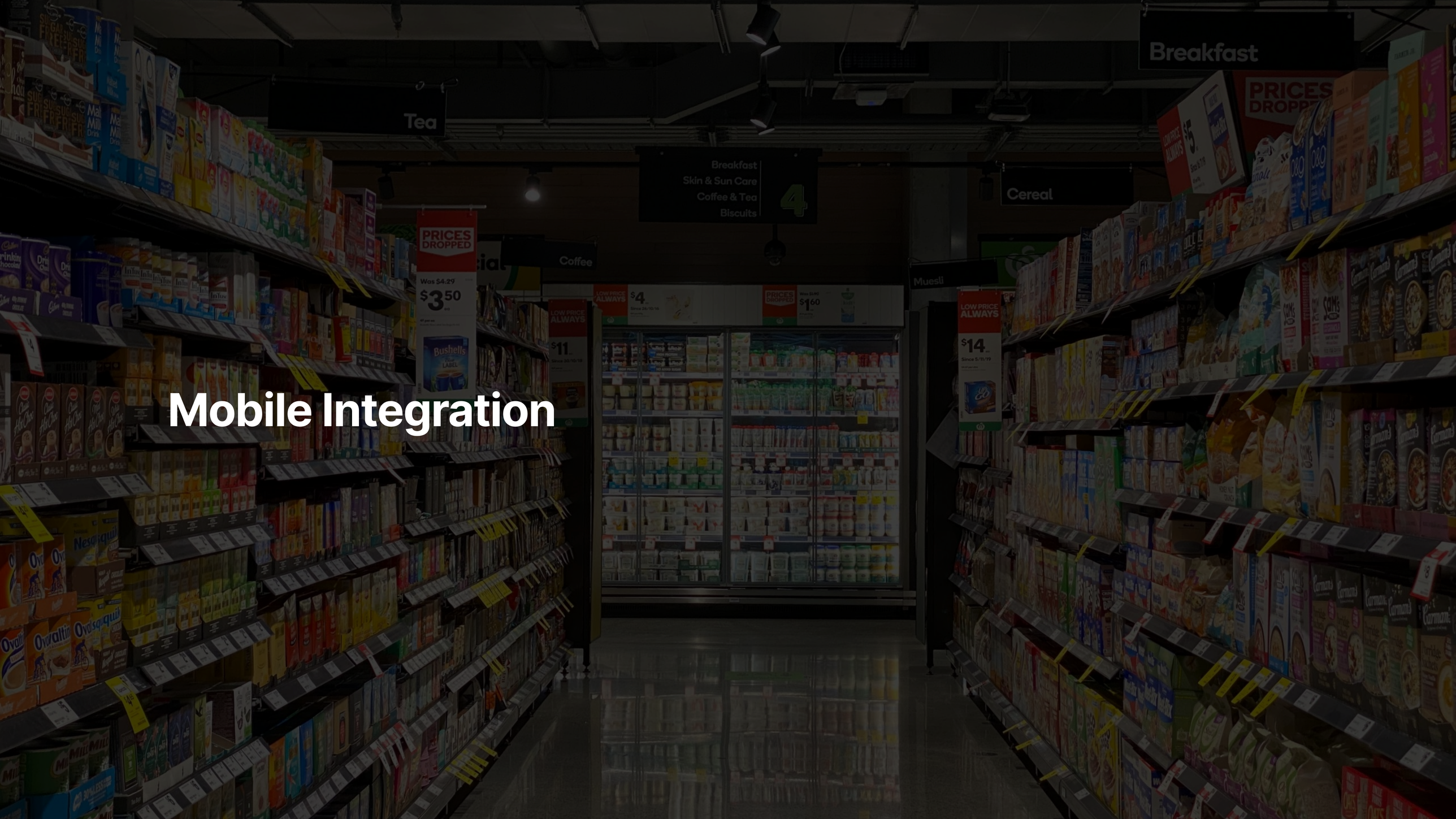
RayNeo X2's currently have a FoV of 25°, but the industry average is about 30-50°

Resolution will likely increase

RayNeo X2's currently have a resolution of 640×480 per eye, but the RayNeo Air 3S XREAL One both reach 1920×1080



Interaction Design Foundation *Field of View (FOV) in Extended Reality*
Tech Radar *The best smart glasses 2025*



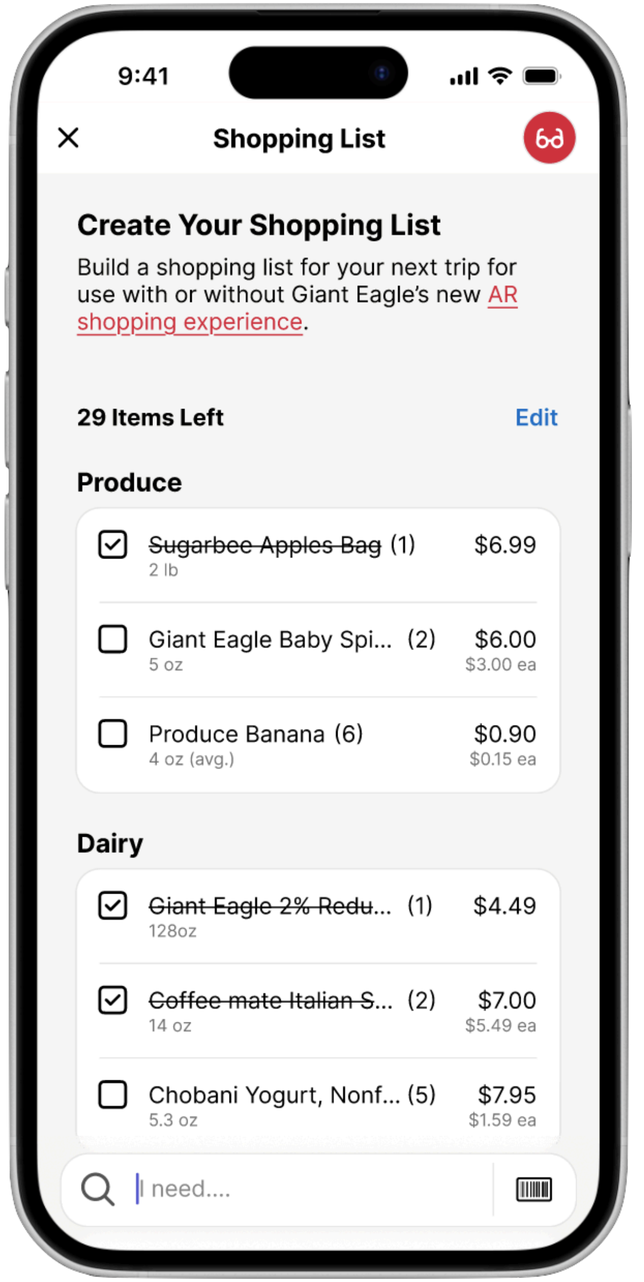
Mobile Integration

Mobile Integration

Creating a Shopping List

In order to use this service, users must create a shopping list within the Giant Eagle app. This list is synced with their glasses once they begin the experience.

We acknowledge that not everyone enters the store with a pre-defined list of items they need to buy, but list-making is already a common practice amongst shoppers with ADHD. We aimed to leverage a step our target users are likely to take anyway in designing the experience.

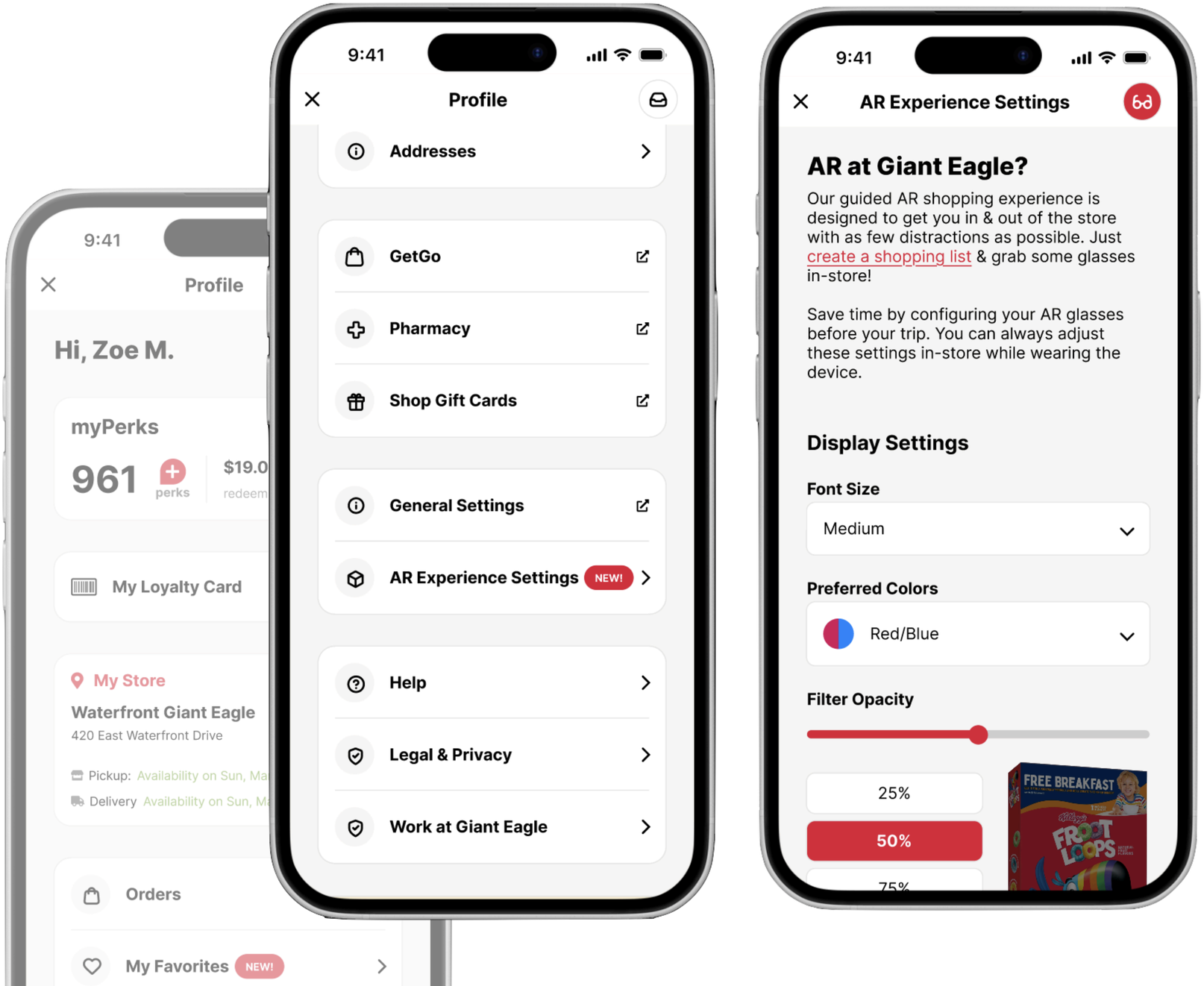


Mobile Integration

Configuring the AR Experience

Users can adjust certain parts of their experience (eg. font size & filter opacity) before picking up their glasses in-store.

This can be accomplished by finding *AR Experience Settings* under the *Profile* of the GE app.



Mobile Integration

Configuring the AR Experience

Display Settings

Font Size

Medium

Preferred Colors

Red/Blue

Filter Opacity

25%

50%

75%

Custom

Audio Settings

To receive audio during your AR experience, please connect to the following device through your device's Bluetooth settings:

GE-GL182736

Bluetooth Connected

Language

English

- [x] Enable Spatial Audio
- [x] Default to headphones for best experience

Order of Pick-Up

Choose from the options below to specify how you'd like your route through the store to be determined.

Quickest Time (Default)

Shortest Distance

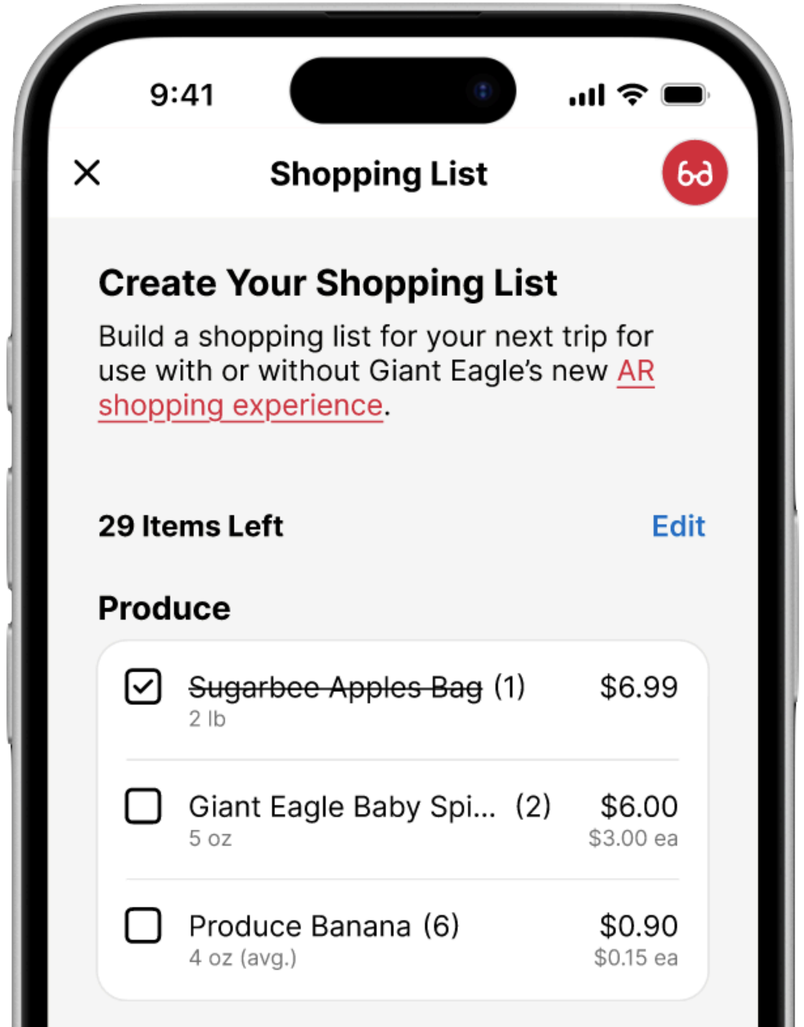
Follow the order of my shopping list

More customizable settings.

Audio provided during the experience would be similar to that of GPS narration ("Approaching [item] on the left", "Proceed to the end of the aisle", etc.)

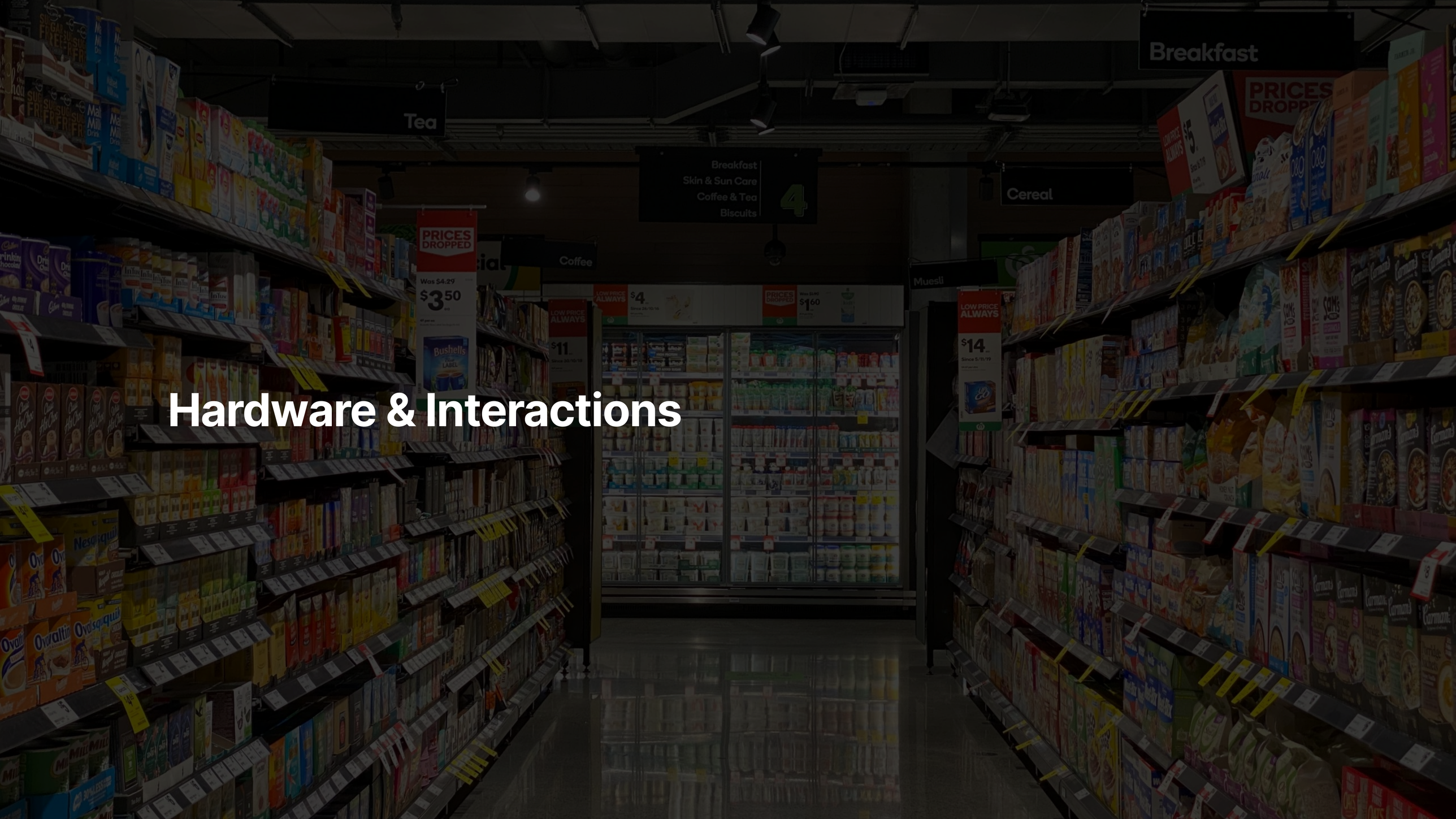
Mobile Integration

Launching the Experience



Once users have made their shopping list & are in-store with their glasses ready to go, they'll be prompted by the device to bring up the QR code used to pair their GE account.

This can be done by tapping the icon in the upper left of their list page.



Hardware & Interactions

Hardware & Interactions

Evaluating Existing Tech

We had a checklist of requirements when seeking out the best device to model our experience around ...

But soon found that they couldn't all be met by an existing product.

Hardware use would not alienate user in GE's public setting.

- [ ] Reasonably inconspicuous (likely won't include hand or eye tracking)

Hardware would not be overly difficult for GE to monitor & maintain.

- [ ] Does not require additional hardware
- [ ] Does not require the purchase of many slight variations to suit many users

Hardware can be used communally.

- [ ] Can accommodate physical differences in users
- [ ] Can be worn with (most) prescription eyewear

Hardware & Interactions

Evaluating Existing Tech

The RayNeo X2's came the closest.
In addition to consolidated hardware, they offered a limited set of interactions that remain confined to the glasses themselves that we've adopted for our experience.

To satisfy the other items on our list, we designed & propose a more adaptable frame ...

Hardware use would not alienate user in GE's public setting.

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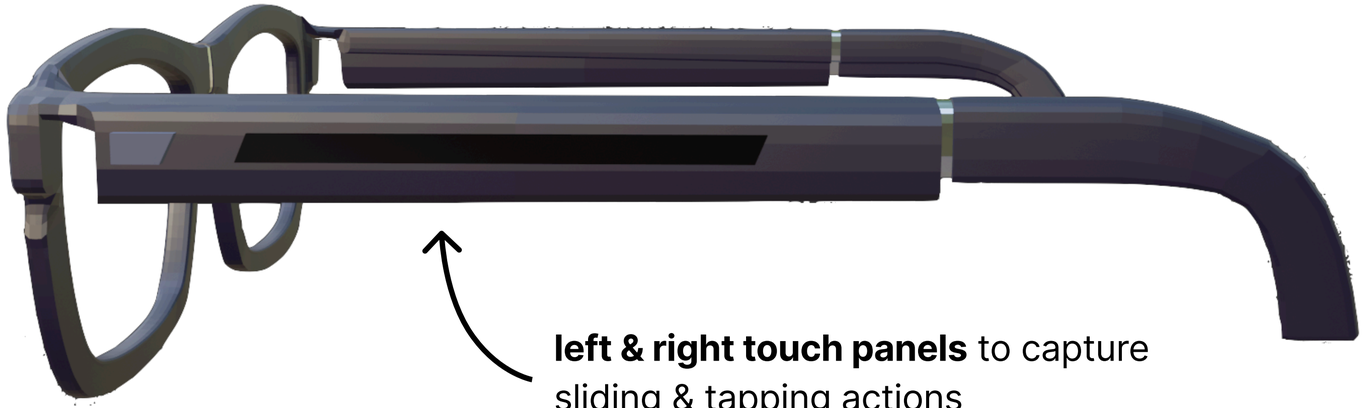
Hardware & Interactions

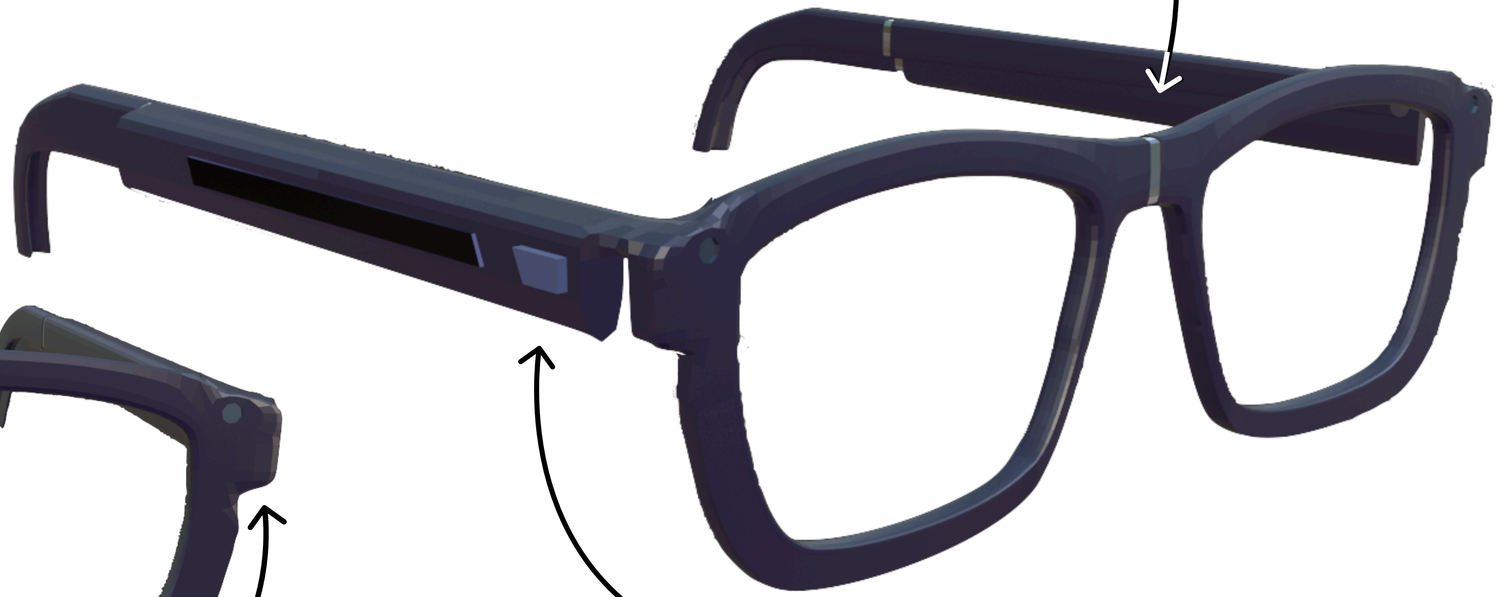
AR Glasses Specs



left & right touch panels to capture sliding & tapping actions

expandable/retractable components to fit differently sized individuals

hollow frame is functional on it's own but also fits over glasses



power button

two front-facing cameras

Hardware & Interactions

Gestures

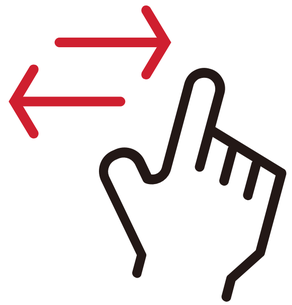
Users may make these 3 gestures on either of the glasses' touch panels to interact with UI elements.

Tap

Select

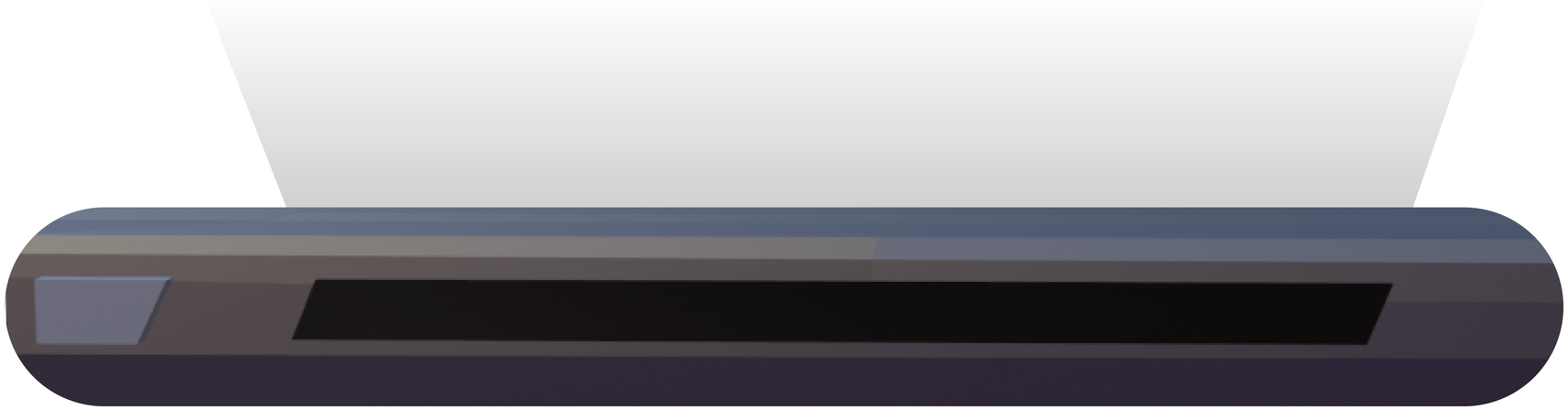
Double Tap

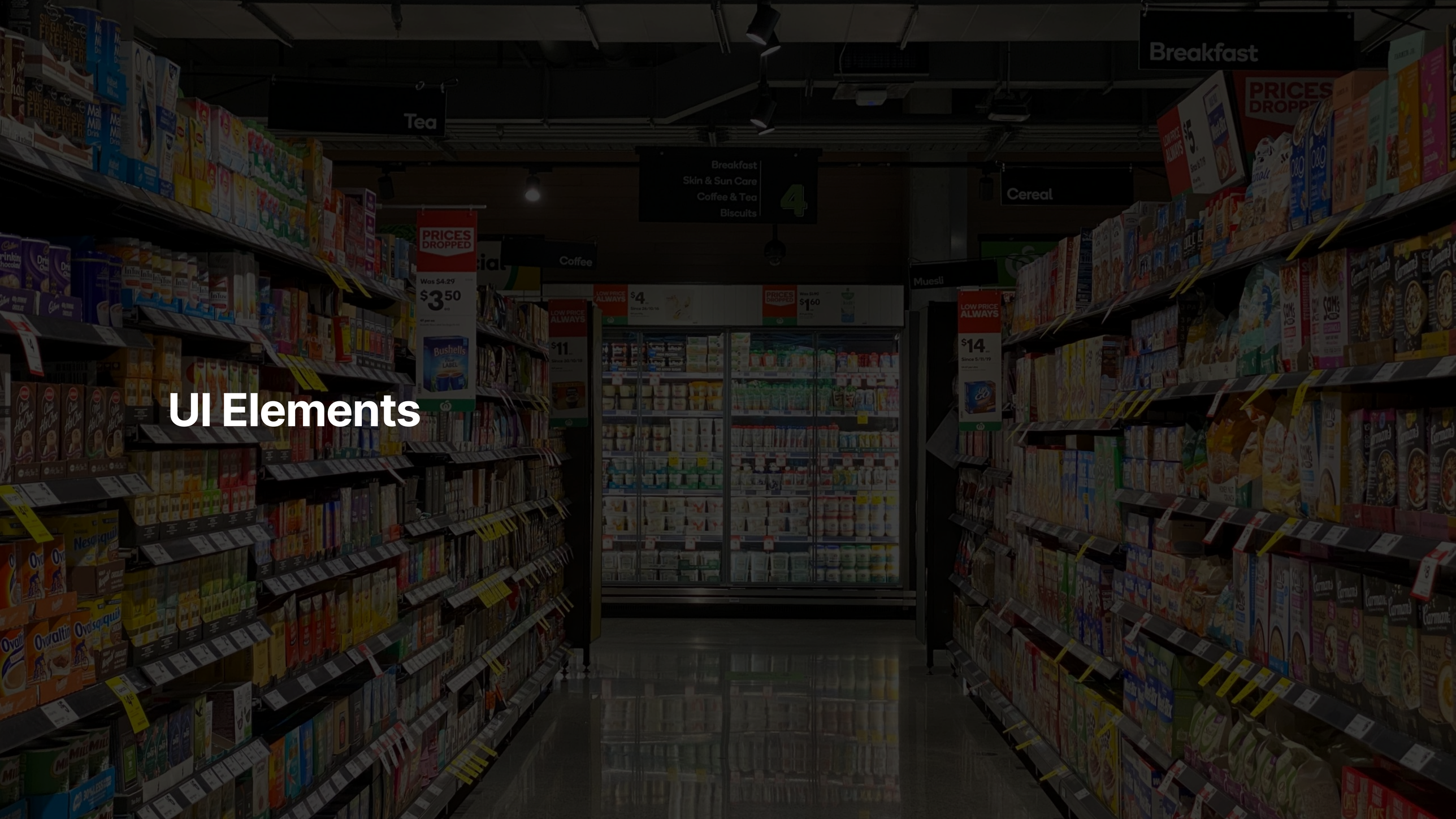
Back



Slide Forward/Backward

Previous/Next

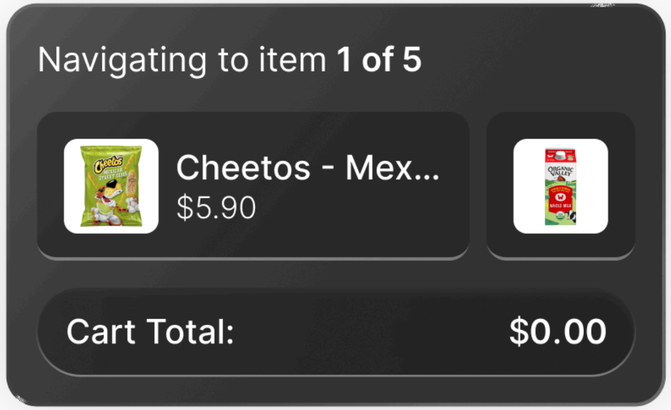



Tea
Breakfast
Skin & Sun Care
Coffee & Tea
Biscuits
4
Breakfast
PRICES DROPPED
Was $4.29
$3.50
Bushells
Coffee
LOW PRICE ALWAYS
$11
$4
PRICES DROPPED
$1.60
Cereal
Muesli
LOW PRICE ALWAYS
$14
Since 5/11/19

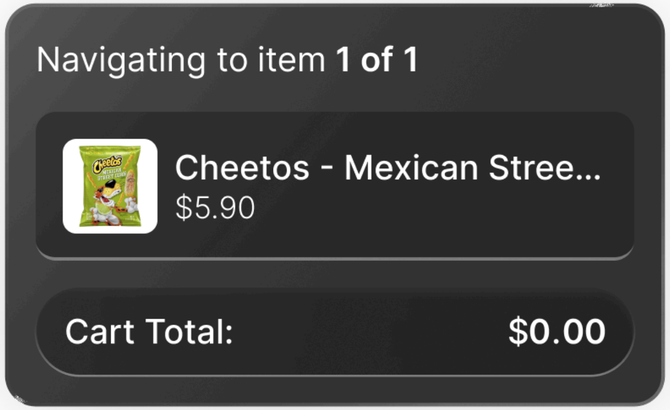
UI Elements

UI Elements

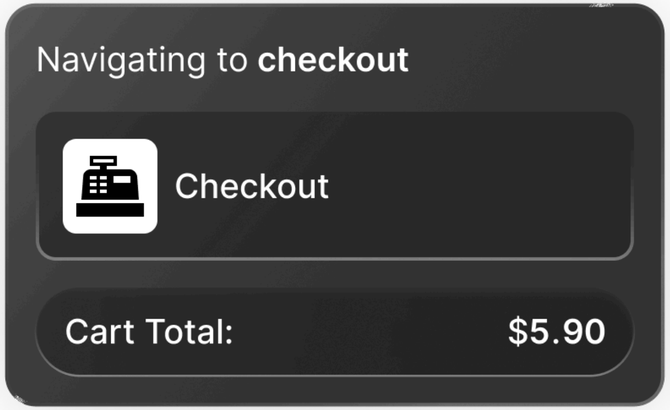
Primary Informational Component



When a user's **list includes more than 1 item**, the current & next item are both shown.



When a user's **list only 1 item**, oly the current item is shown.



When a user **has picked up everything on their list**, they are directed to the checkout counter.

UI Elements

Navigational Arrows

Large, brightly colored arrows are located on the floor for directing the user to the items on their list.

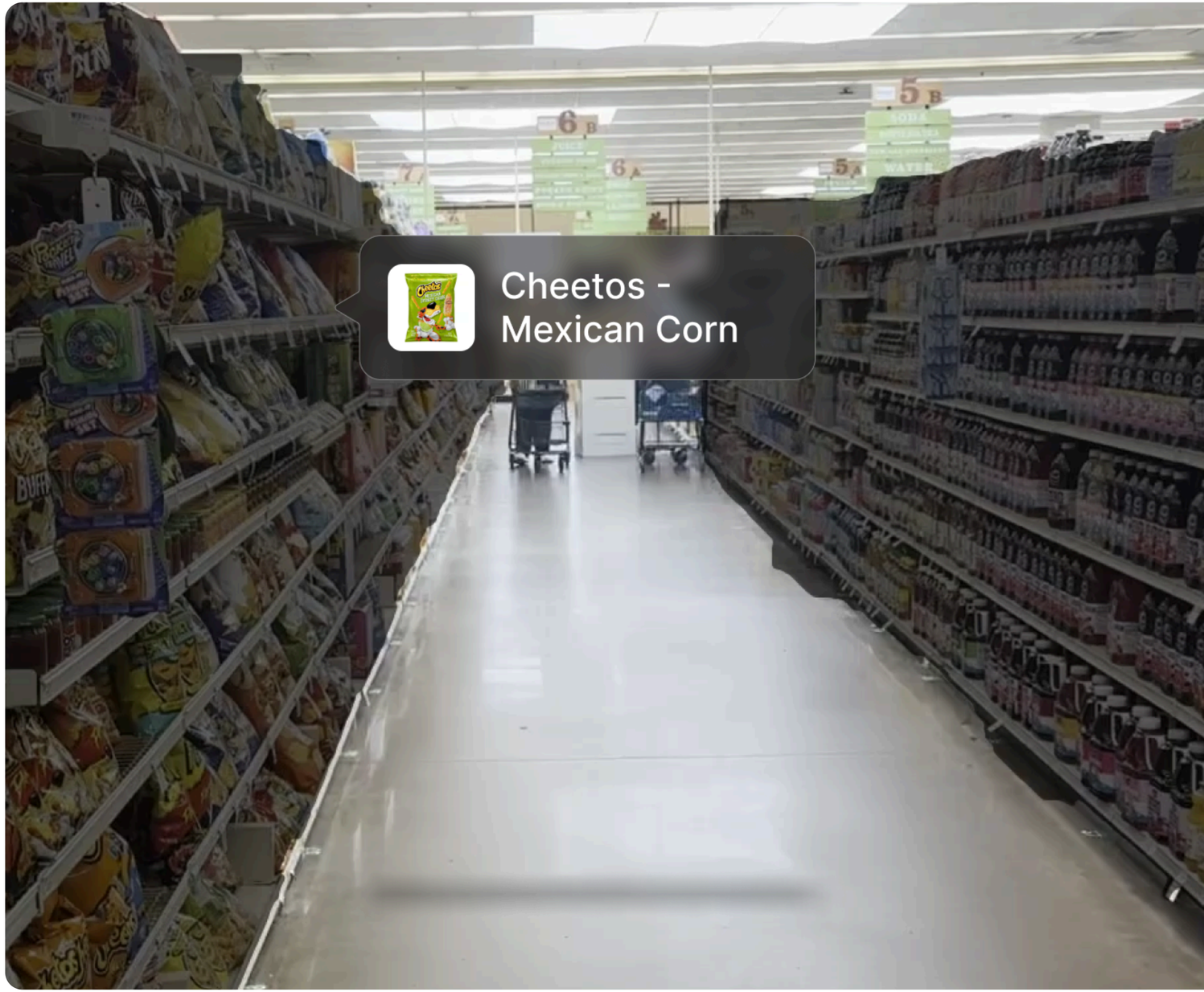
If a user experiences color blindness, these are one of the elements they can change to make more visible via the experience’s settings.

UI Elements

Item Indicator

When the user is approaching an item that is soon to be in sight, it is marked in the aisle with this indicator.

Paired with the arrows along the floor, the location of the item of interest in an aisle full of products is made more clear.

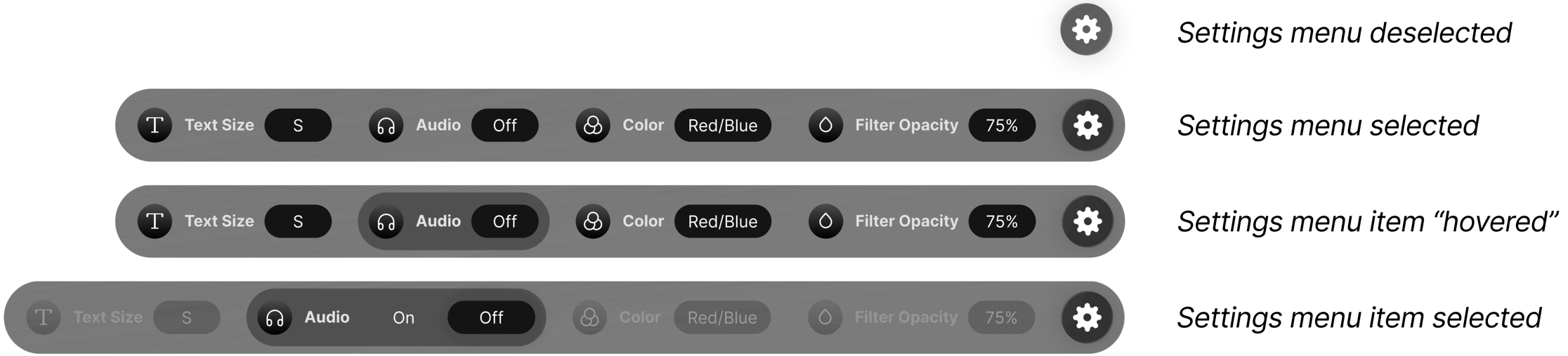


UI Elements

Settings

The user may interact with the settings menu through the gestures mentioned previously.

Sliding along either of the touch panels will progress them through the available configuration options.
Tapping once will allow them to select a specific setting or setting option o configure.
Double tapping will move them back into the previous state.



Settings menu deselected

Settings menu selected

Settings menu item “hovered”

Settings menu item selected

UI Elements

Product Filter

The product filter serves to diminish the distractions created by a constant bombardment of text & colors on packaging, as well as to keep users focused on the specific item they need as opposed to the endless options available.

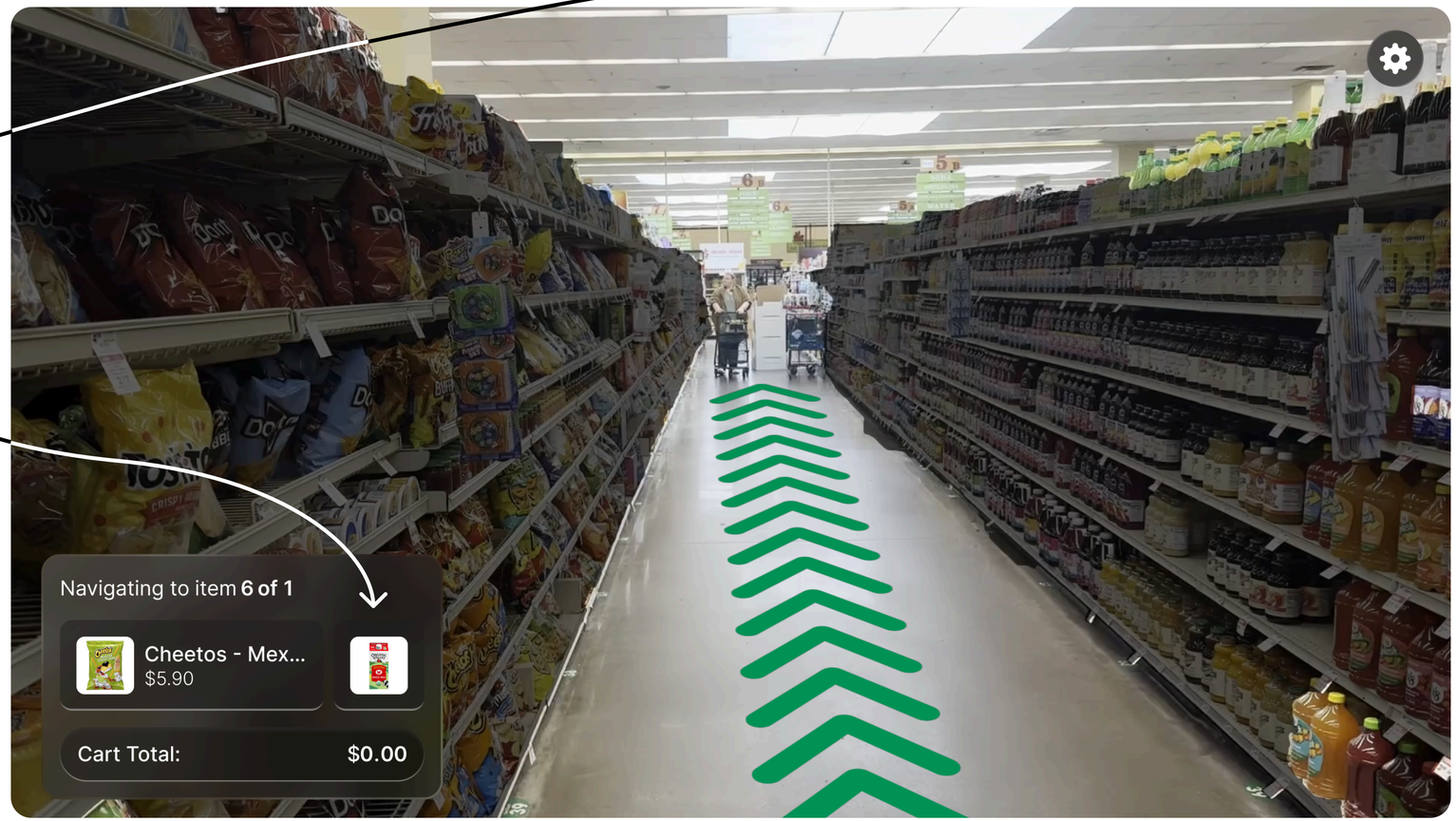
Users can adjust the opacity of the filter to their desired level either in-app or through the experience’s settings menu.

UI Elements

Using Controlling Gestures

Once the user has begun shopping & the experience is in it’s default state, using the swiping gesture will only toggle between the **settings menu** & the option to **skip to the next item** on their list.

Therefore, it is possible for the user to complete a shopping trip without needing to interact with the glasses’ controls further than what’s required to initiate the experience.

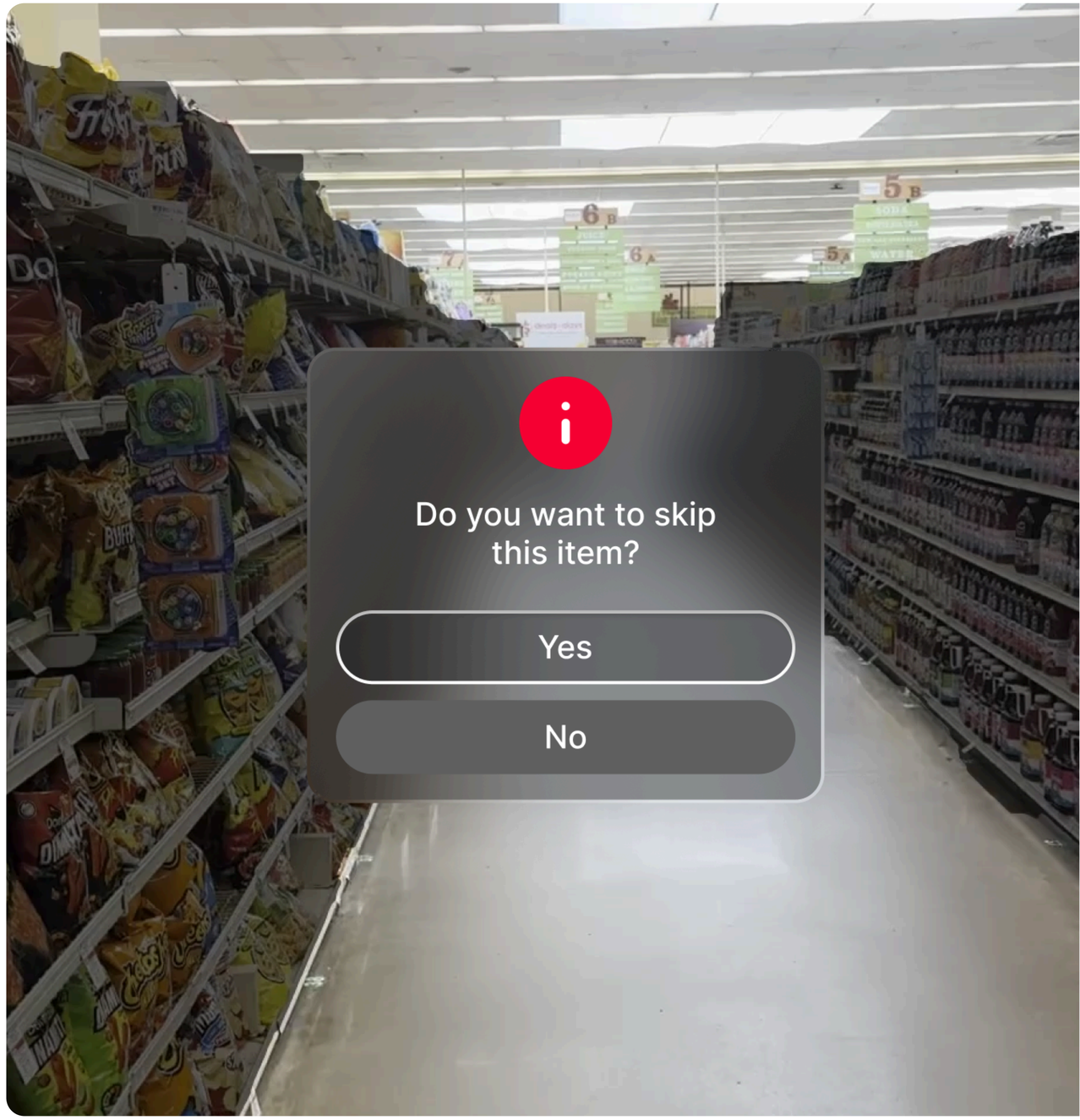


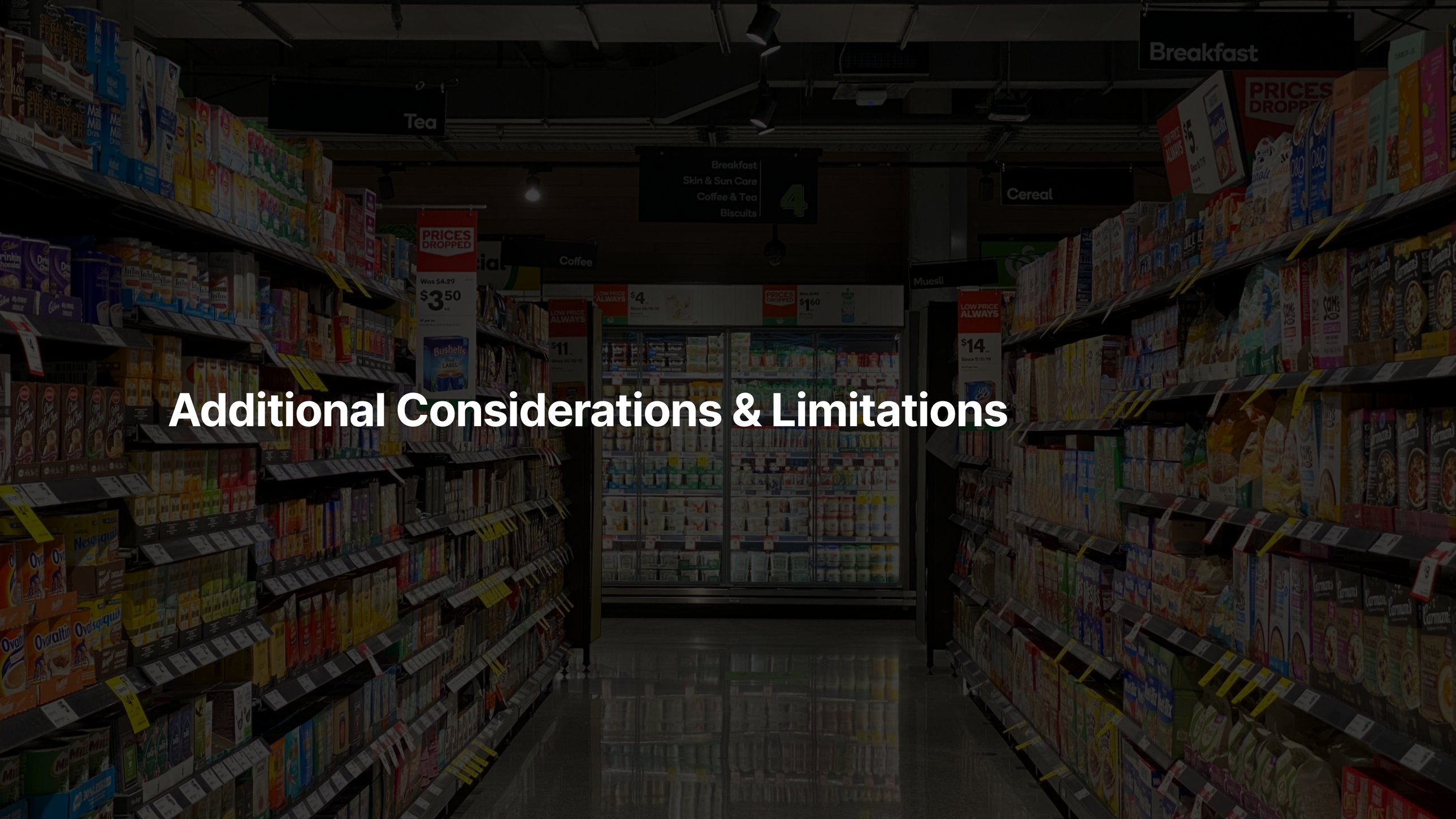
UI Elements

Using Controlling Gestures

Tapping the next item on their list will bring up a confirmation dialog.

The user can swipe forward & backwards to move between “Yes” & “No”, and tap to make a selection.





Additional Considerations & Limitations

Additional Considerations & Limitations

General Accessibility

Subtitles/CC are not provided with the experience, because audio is a purely optional feature.

The experience is, by default, accessible to the hearing-impaired.

As a medium, AR assumes some level of visual acuity.

However, the auditory component of the experience & it's reliance on the contract of bright signals in a dulled environment may still make it suitable for those with partial/reduced vision.

In order to interact with the glasses' controls, **users will need to (at least briefly) have one hand free.**

Looking into providing a voice-control option could be a helpful alternative.

Additional Considerations & Limitations

Business Implications

We recognize that essentially “hiding” the vast majority of items may not be seen to be in GE’s best interest - retail often relies on enticing shoppers by keeping products in plain view.

We would like to make the case that making stores more accessible to people of varied sensitivities is a smarter business move than forcing them to endure an uncomfortable experience.

Investing in the comfort of customers is likely to strengthen overall trust & loyalty over time.

🔗 Prototype Demo

🔗 Video