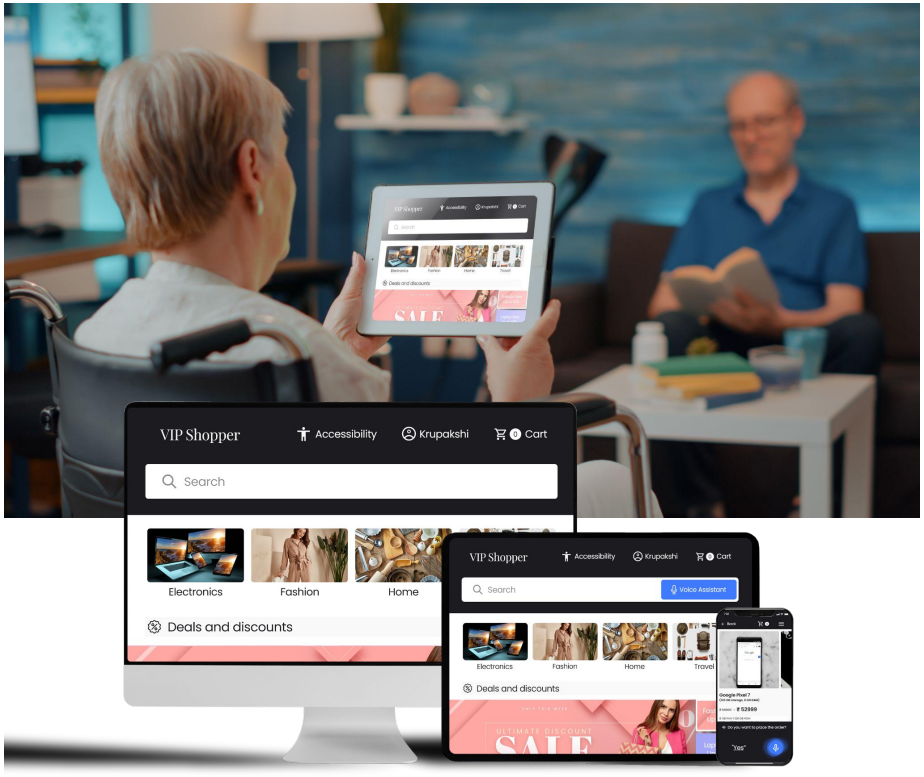
E-commerce app and responsive website for blind people

Sahaj Joshi

Project overview

The product:

The VIP shopper app and responsive website is targeted towards visually impaired people. It is an online shopping cross platform designed for visually impaired people. From the user experience to the interface is completely designed keep the spectrum of blindness in mind.



Project duration:

Jan 2023 to Mar 2023

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Project overview

The problem:

According to the World Health Organization (WHO), approximately 2.2 billion people worldwide have a visual impairment, which can range from mild to severe. There are very few e-commerce websites or apps that are designed with visual accessibility in mind.

The goal:

The goal is to empathise with visually impaired users, and to understand their problems and pain-points. And through that understanding, create an easy to use and accessible online shopping platform for visually impaired people. And in the end, create an universal product.

Project overview

My role:

UX researcher, UX designer, UI designer

Responsibilities:

Determining the project goals and targets

Conducting user research

Determining user pain points

Wireframing

Conducting usability studies

Designing mockups and prototypes

Understanding the user

- User research
- Personas
- Problem statements
- Competitive audit
- Ideation

User research: summary

Background:
I conducted a user research study to understand the experience of visually impaired individuals when using digital interfaces. We aimed to identify pain points, usability issues, and best practices for designing accessible and user-friendly interfaces for this population.

Methodology:
I conducted a series of in-depth interviews with 2 visually impaired individuals, one with near sightedness of 20/100 visual acuity and the other with complete blindness. We asked participants to perform a series of tasks on a variety of websites and mobile applications, while we observed their interactions and asked follow-up questions. This was my primary research method.
I also did research on different types of blindness, along with usage of technology and input methods of visually impaired on web as secondary research.

Persona 1: **Nita**

Problem statement:

Nita is a visually impaired person with limited vision and who loves shopping who needs simple and fast way to buy day to day items and explore different products from home because It's difficult for her to find and shop items offline.

Neeta

Age: 58
Education: B. Arts
Hometown: Vadodara
Family: Husband
Occupation: Homemaker

"My low vision is not the hurdle, instead it's a booster to my liveliness and curiosity. And I'm a shopping lover."

Goals

- Wishes to purchase day-to-day items online easily and fast.
- Wants an easy way to explore new and unique stuff online.

Frustrations

- All the ecommerce platforms are either not designed for people with visual impairment, or they are too stuffed with content and too complex to use.

Neeta is an extremely positive and creative housewife who lives with her husband. She lost most of her vision few years ago due to cataract surgery complication. But she still loves to decorate her home with new and unique things that she makes and buys. And she also needs day to day items. She can't go out and explore shops outside as often anymore. She uses her smartphone most of the time, so she is looking for good platforms that can facilitate her passion.

Google

Persona 1: **Darpan**

Problem statement:

Darpan is an accountant with complete blindness who needs simple and fast way to buy day to day items and explore different products from home because he wants to focus on his work and not spend too much time on tasks like shopping.

Darpan

Age: 32
Education: Chartered Accountant
Hometown: Vadodara
Family: Parents
Occupation: Accountant

"Success is not depended on if or what you can see, it's depended on how far you can see."

Goals

- Wishes to purchase day-to-day items online easily and fast.
- Wants an easy way to explore new and unique stuff online.
- Wants a platform that can integrate accessibility input and output

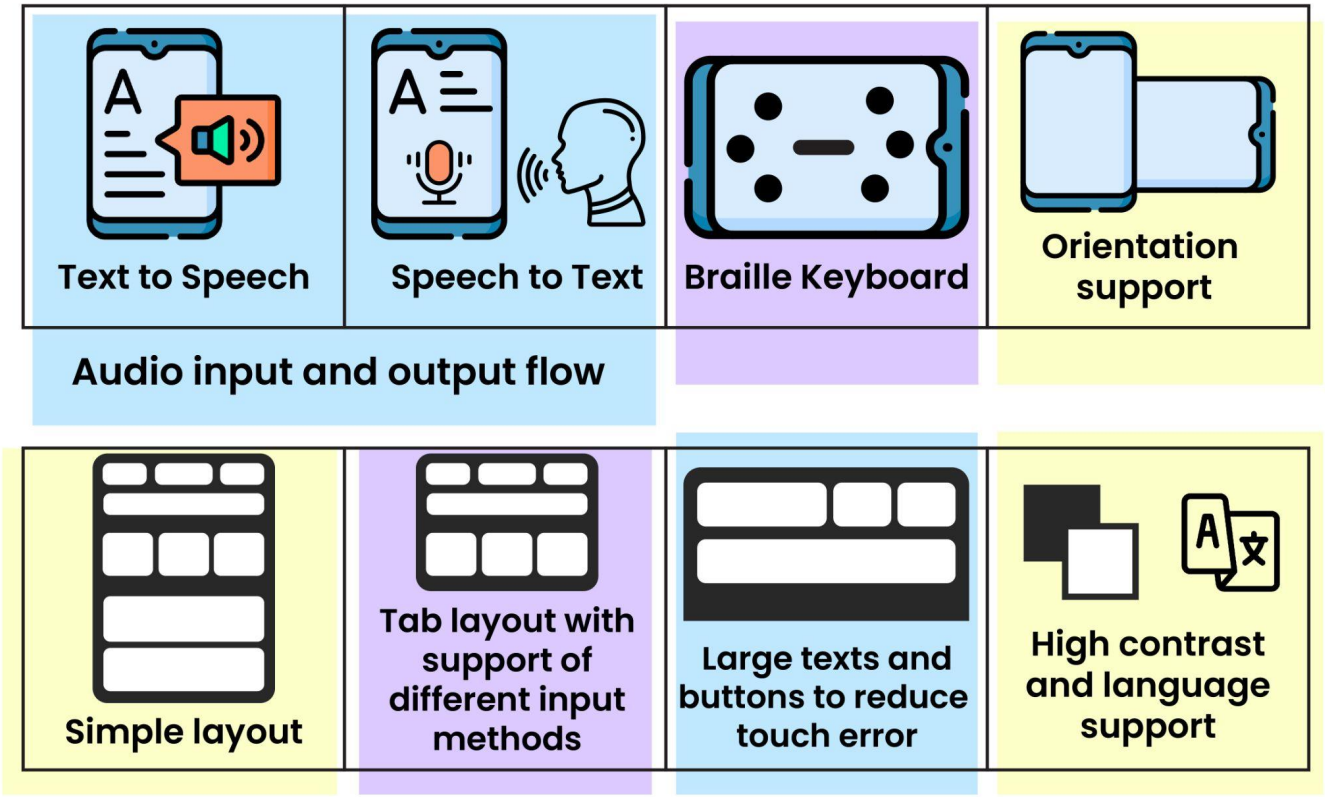
Frustrations

- All the ecommerce platforms are either not designed for people with visual impairment, or they are too stuffed with content and too complex to use.

Darpan is a genius accountant and a dedicated son. He comes from a poor family but his brilliance and hard work made him a successful accountant despite his complete blindness. Now he wants to bring his parents out of poverty so he took on most of the responsibilities on his shoulders. He uses braille keyboard on pc and smartphone, for work and accessing internet. He wants a platform that can make daily tasks like ordering items online fast and easy. So that he can focus on work.

Google

Ideation



I started the ideation process with crazy 8s and came up with eight essential ideas that makes the design accessible to most of the visual impaired people.

Blindness is a spectrum and there are many kinds of visual impairments so my goal with this exercise was to come up with ideas covering as many types of blindness as possible.

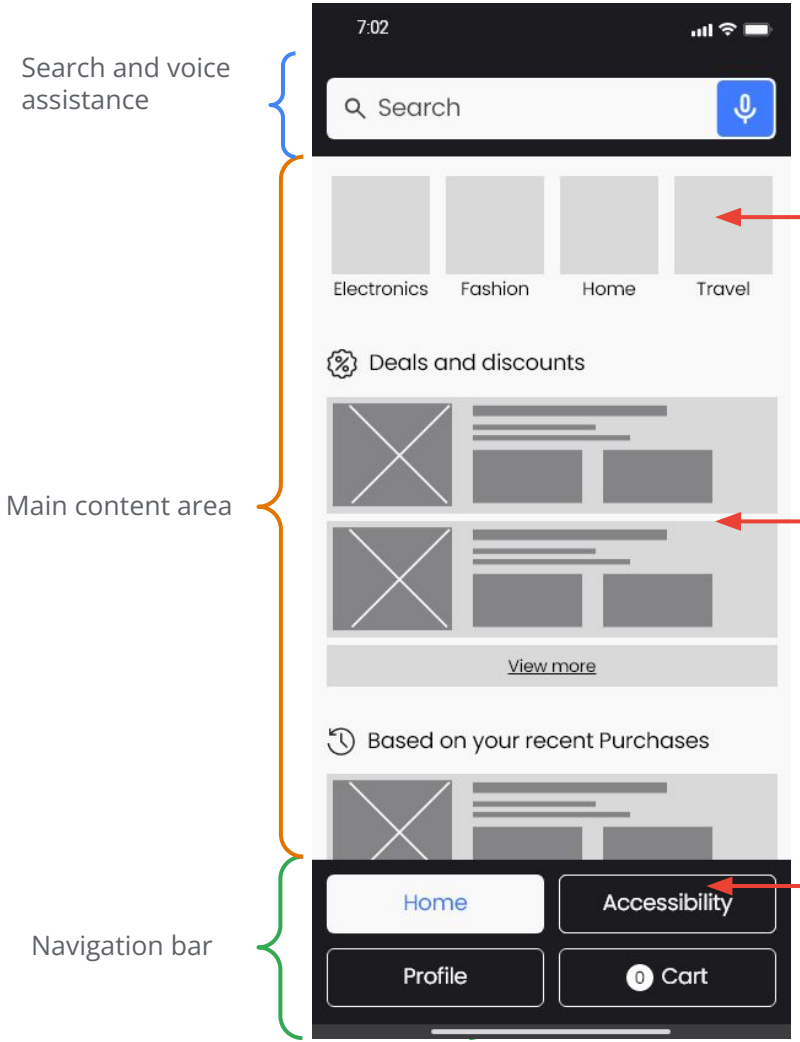
Google

Starting the design

- Digital wireframes
- Low-fidelity prototype
- Usability studies

Digital wireframes

I divided the interface in 3 parts with search and voice assistance button on top, and navigation bar at bottom. The remaining is main content area.



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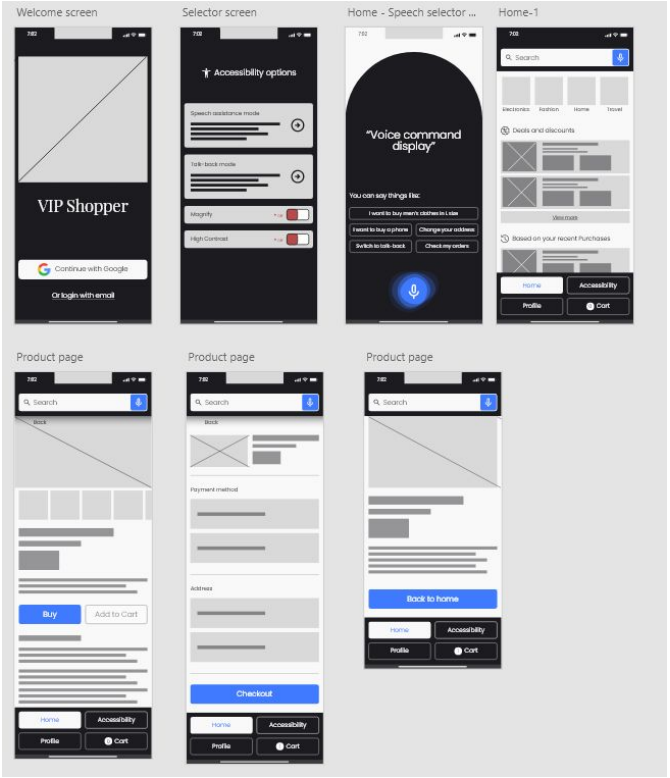
Low-fidelity prototype

https://xd.adobe.com/view/96a5db67-454f-40f9-910b-ee77c176d72b-c3f6/

I added option to select accessibility settings early on in the flow. So that users can choose between normal touch layout or voice control layout.



Usability study: parameters

Study type:

Unmoderated usability study

Location:

India, remote

Participants:

2 participants

Length:

30-40 minutes

Usability study: findings

I conducted a usability study with 2 visually impaired participants, and below are the insights:

1

Less space for content

Both users found it difficult to navigate around the main products. As the fixed navigation bar at bottom and search bar at top took lot of space.

2

Lack to audio feedback

Voice input and output is necessary for the users in order to complete any task in the prototype.

3

Small elements

Users found that there was no option to zoom in to read any text or buttons which made it difficult to complete any task.

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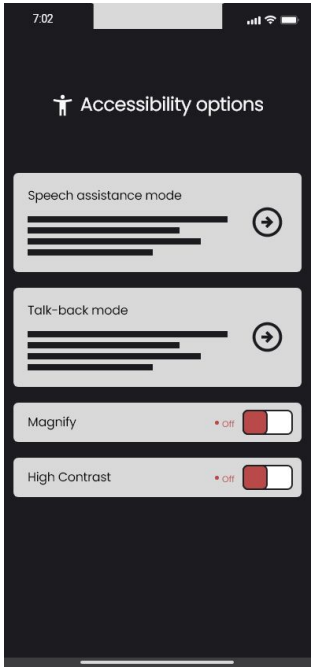
Refining the design

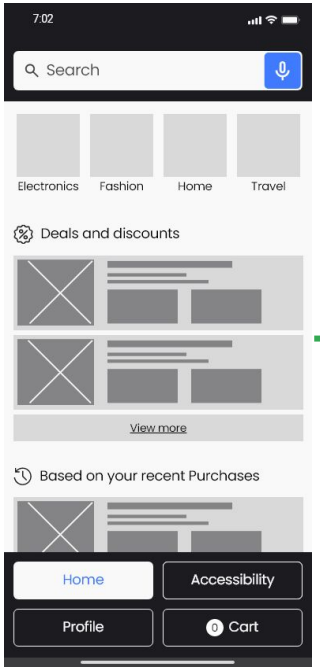
- Mockups
- High-fidelity prototype
- Accessibility

Mockups

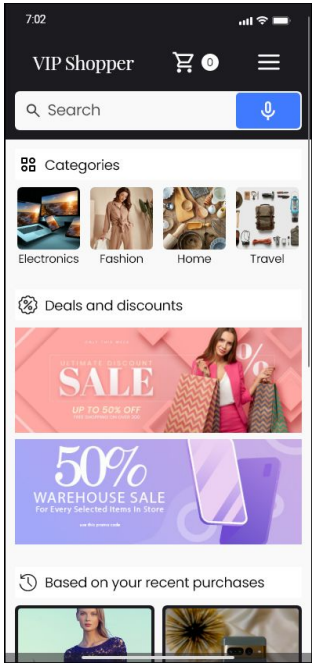
According to user feedback, implemented audio input and output in the interface. And gave clear and defined space for main content. Along with creating no obstructions for scrolling by removing bottom navigation bar.

Before usability study



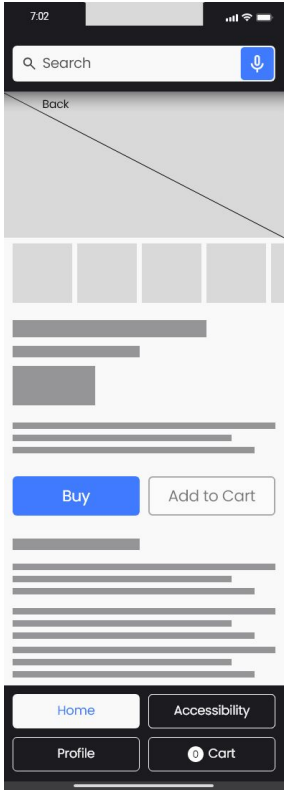


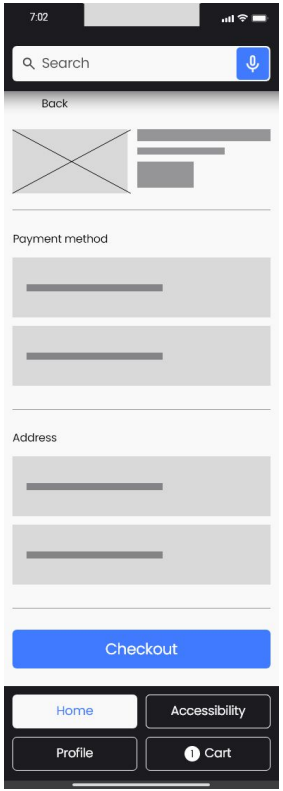
After usability study



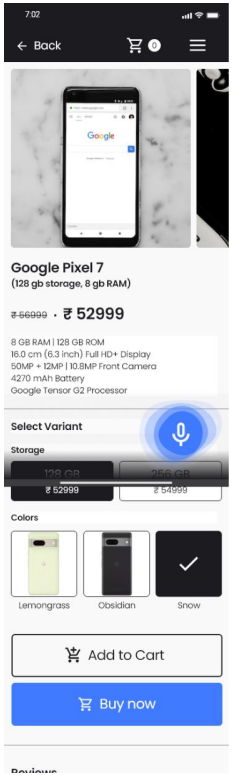
Mockups

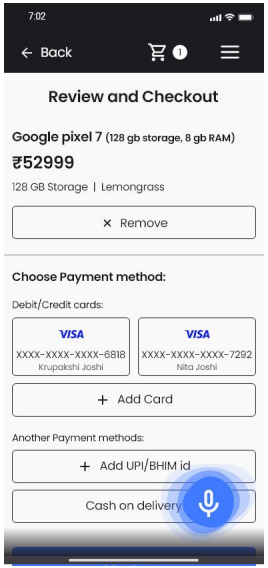
Before usability study

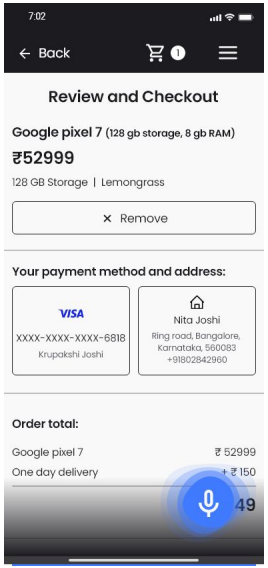




After usability study



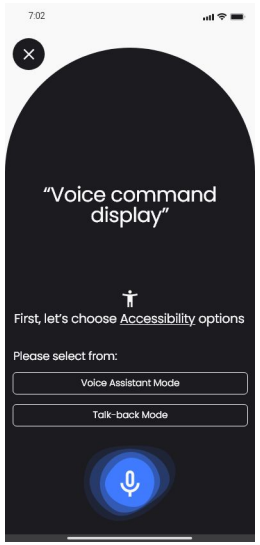


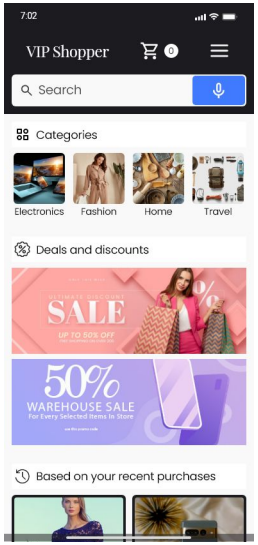


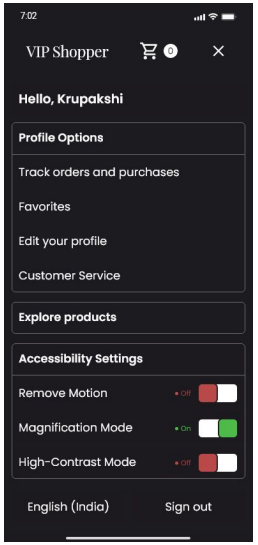
Google

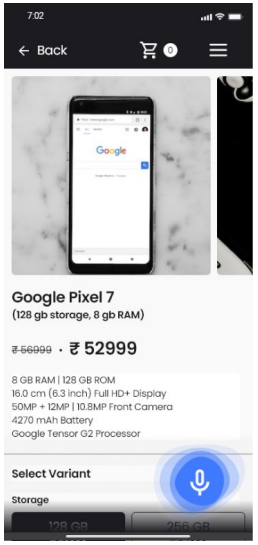
Mockups

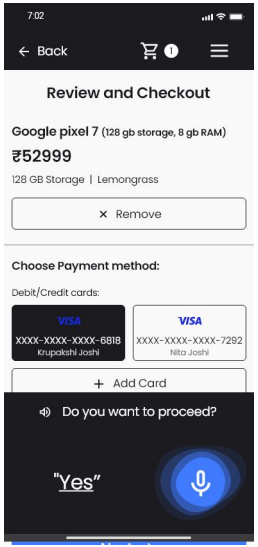

7:02
VIP Shopper
Online shopping for visually impaired
Continue with Google
Or login with email

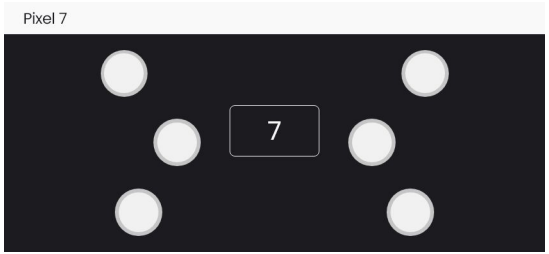

7:02
"Voice command display"
First, let's choose Accessibility options
Please select from:
Voice Assistant Mode
Talk-back Mode


7:02
VIP Shopper
Search
Categories
Electronics
Fashion
Home
Travel
Deals and discounts
SALE
50%
WAREHOUSE SALE
Based on your recent purchases

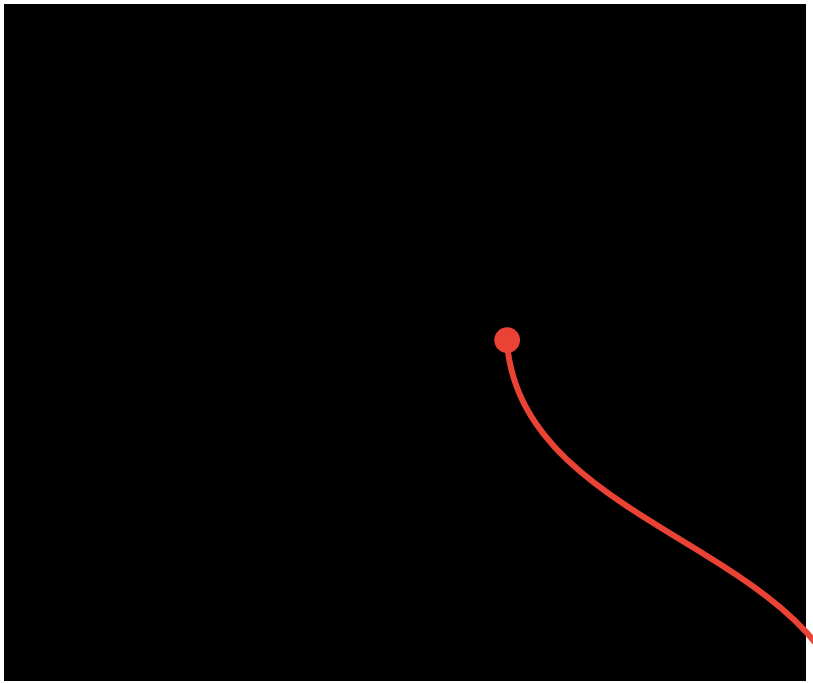

7:02
VIP Shopper
Hello, Krupakshi
Profile Options
Track orders and purchases
Favorites
Edit your profile
Customer Service
Explore products
Accessibility Settings
Remove Motion
Magnification Mode
High-Contrast Mode
English (India)
Sign out


7:02
Back
Google Pixel 7
(128 gb storage, 8 gb RAM)
₹ 52999
8 GB RAM | 128 GB ROM
16.0 cm (6.3 inch) Full HD+ Display
50MP + 12MP | 10.8MP Front Camera
4270 mAh Battery
Google Tensor G2 Processor
Select Variant
Storage


7:02
Back
Review and Checkout
Google pixel 7 (128 gb storage, 8 gb RAM)
₹52999
128 GB Storage | Lemongrass
Remove
Choose Payment method:
Debit/Credit cards:
XXXX-XXXX-XXXX-6818
Krupakshi Joshi
XXXX-XXXX-XXXX-7292
Nita Joshi
Add Card
Do you want to proceed?
"Yes"


Pixel 7
7

Touch interaction and Speech interaction



Touch interaction flow

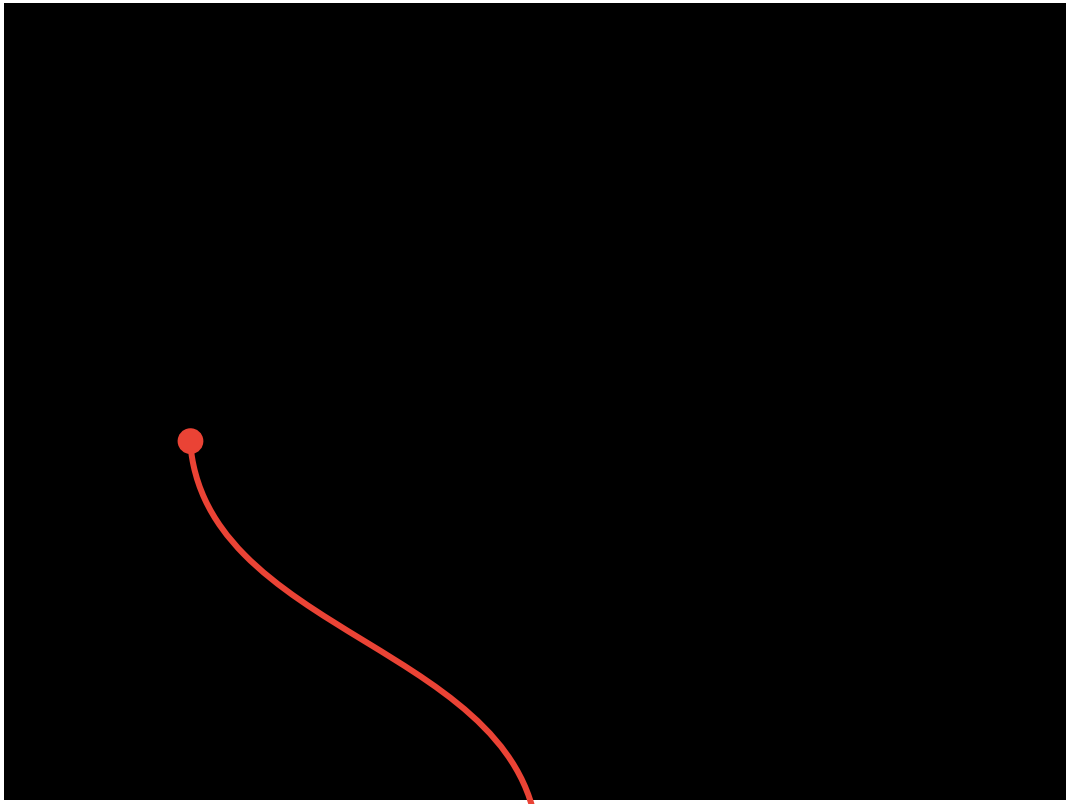
Speech interaction flow

Click on the rectangles to view the videos in pdf

Google

High-fidelity prototype

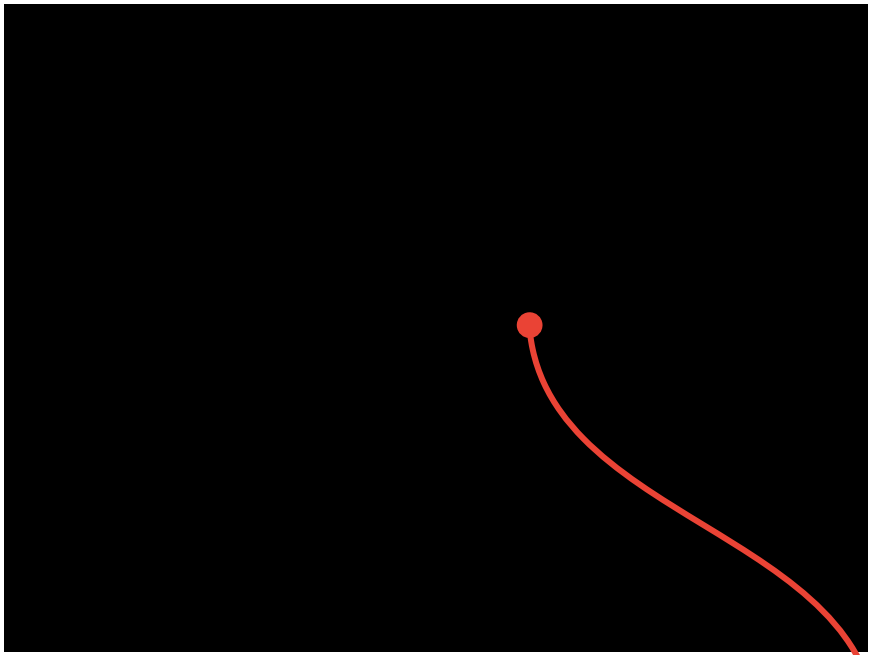
https://xd.adobe.com/view/cca526a1-ec83-4dd6-86d0-0cf0a802699e-99f6/



Click on the rectangles to view the videos in pdf

Google

Touch interactions and gestures for final product



Touch and hold to get audio-visual feedback

Double tap for interaction

Click on the rectangles to view the videos in pdf

Google

Accessibility considerations

1

Both visual and audio feedback/response added throughout in all interactions. So users with visual impairment can understand their input and the output better.

2

The option of removal of motion throughout the UI is added. So users with motion blindness can easily use the platform.

3

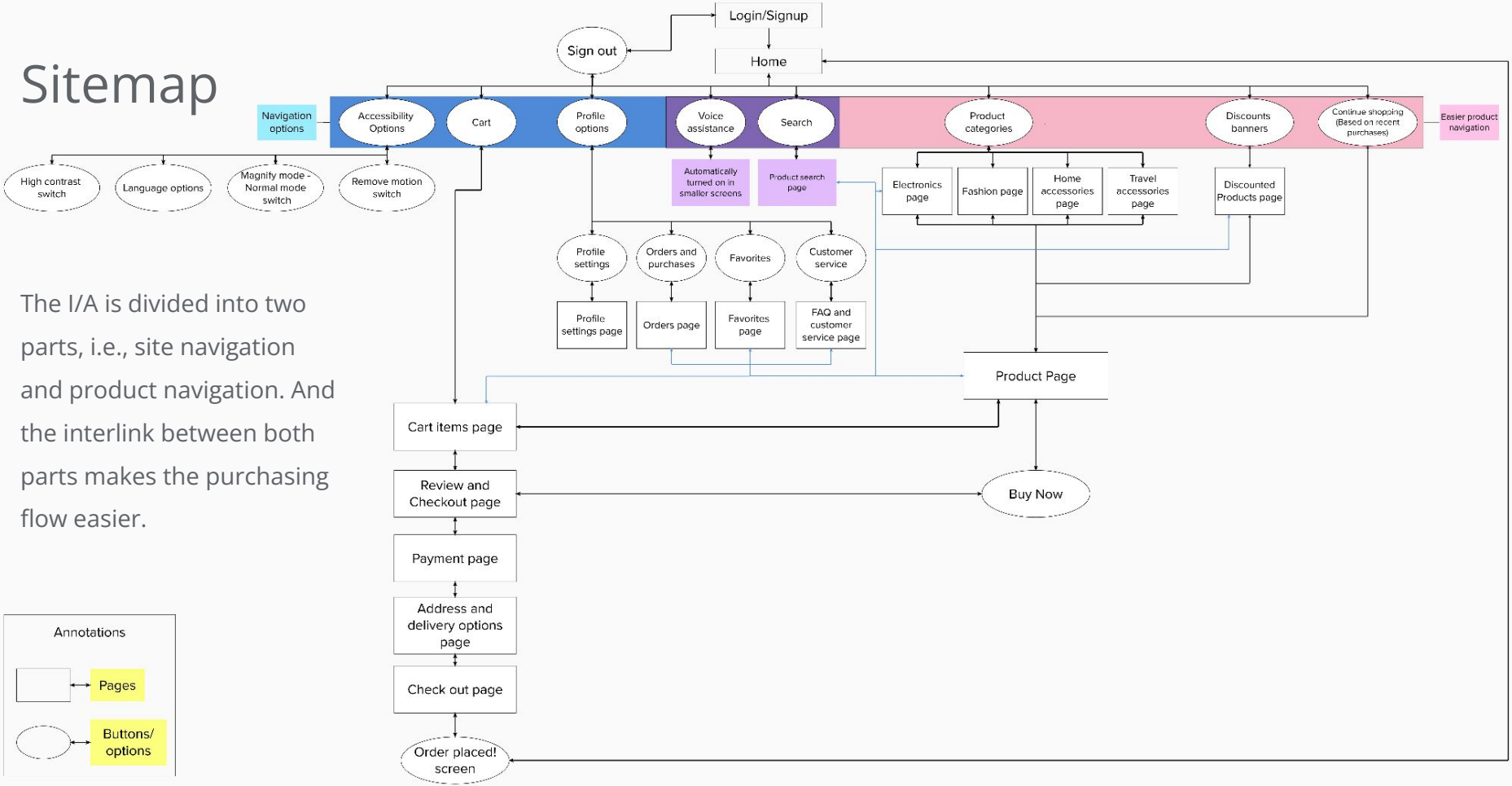
Most of the interactive elements have bigger sizes, so the touch/click error can be reduced. The option to magnify texts and other elements is also provided. Local language support is also provided.

Responsive Design

- Information architecture
- Responsive design

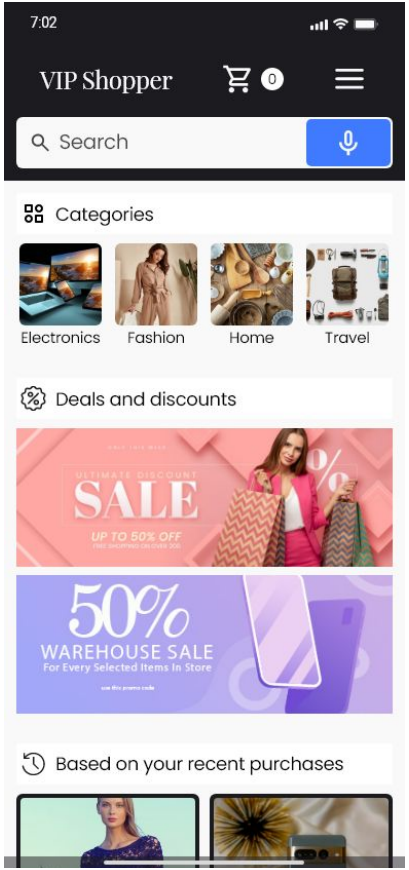
Sitemap

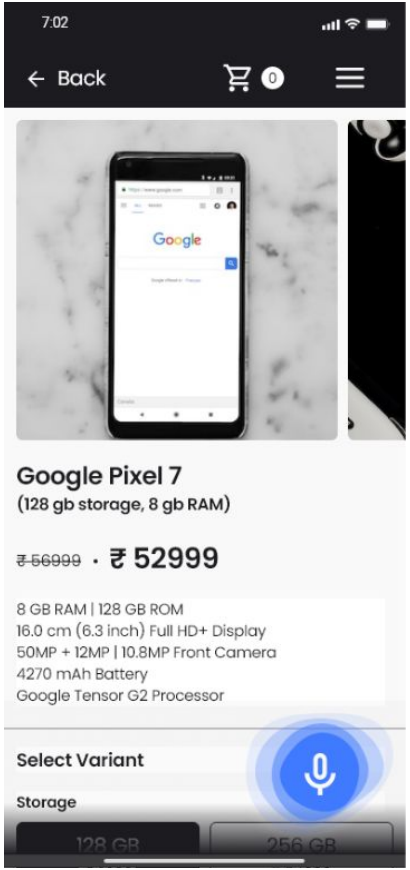
The I/A is divided into two parts, i.e., site navigation and product navigation. And the interlink between both parts makes the purchasing flow easier.



Responsive designs- Mobile

I kept all the touch and drag interactions/ gestures are provided in mobile website same as the mobile app. I kept the layout and almost all elements same as mobile app so that visually impaired users can get familiar with the locations and positions of the elements.

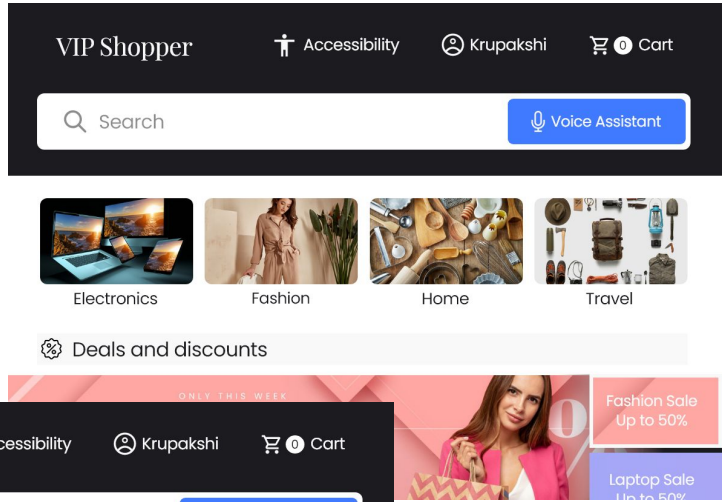


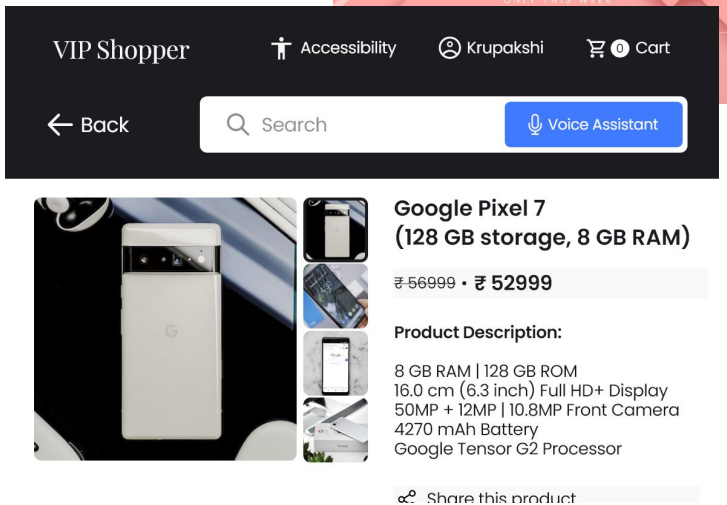


Google

Responsive designs- Tablet

The navigation bar is extended to reveal the menu options on larger touch displays like tablets. Still all the touch and drag interactions are present same as mobile version. As the tablets are mostly used in landscape orientation, the voice assistant on product page is moved to search bar unlike the mobile version.





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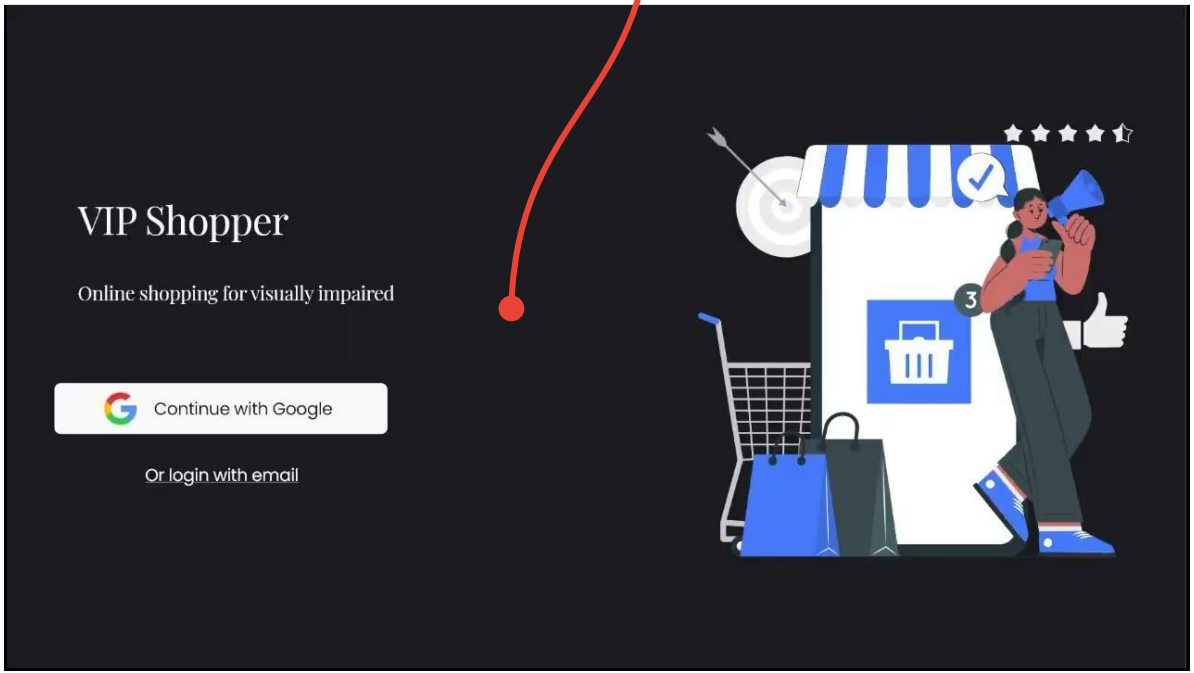
Responsive designs- Desktop

Click on the rectangles to view the videos in pdf

Braille input devices/ Keyboard preview:

For desktop or larger screen devices, I designed a keyboard/ braille input device navigation along with audio-visual feedback. This helps visually impaired to easily navigate the website without the use of mouse. And for users with low vision, the default UI is magnified with larger, and high contrast elements.

https://xd.adobe.com/view/2c584819-9913-437e-a495-8ac52cdcef00-790b/



Note: the website prototype does not have audio output due to technical difficulties.

Google

Going forward

- Takeaways
- Next steps

Takeaways

Impact:

This e-commerce project designed for visually impaired users can have a significant impact on their online shopping experience. Through thoughtful UX design considerations, such as clear and concise descriptions, easy navigation, and inclusive design features, the project can improve accessibility, usability, and overall satisfaction for visually impaired users. This can ultimately lead to increased sales, customer loyalty, and positive brand reputation.

What I learned:

I learned a lot from this project. From the primary and secondary research, I learned about the spectrum of blindness and usage of technology by visually impaired. My UX-UI design journey has also taught me a lot about considerations and pain-points of visually impaired users. I am eager to learn more about accessibility as there is still much more to discover.

Next steps

1

Firstly, I would like to conduct usability study with a larger sample size of visually impaired users which can guide my UX design even better.

2

Next, there are certain inconsistencies in mobile app and responsive website. So I want to improve the overall design to be more cohesive and inclusive.

3

Lastly, I want to design a better system for visually impaired which can better integrate the braille devices and input methods.

Let’s connect!

Thank you for your time!

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