

# Hack4Change @ charcha

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## Team Details

Team Name: Cyber Crew

Team Leader Name: Parag Sharma

Problem Statement: Enhancing mobile app accessibility to empower visually and auditorily impaired individuals in their daily digital interactions.

## Brief about the Prototype

- Orbcura is a mobile app for visually and auditorily impaired people to help them conduct their day to day tasks effectively. Often mobile apps have poor accessibility options. While most people easily enjoy the luxuries that technology provides, physically challenged people often struggle to use these apps. In short, we are building an app which extends the functionalities and accessibility options of apps which are used daily like WhatsApp, UPI Payments, Instagram, News, etc. This insures that impaired individuals can fully utilize these essential services.

## Opportunities

### How is it different from other solutions?

- **TalkBack** is an accessibility feature incorporated into Android smartphones that allows visually impaired people to engage with their devices via touch gestures. But, this feature only provides navigation. Our app provides complete integration to most used apps for efficient usage.
- **VoiceOver** is an accessibility feature on Apple devices that gives audio explanations and spoken feedback. But, this requires the apps to actually implement these accessibility options. Not all the apps implement these. Our app provides integrations to the app which do not even implement these.

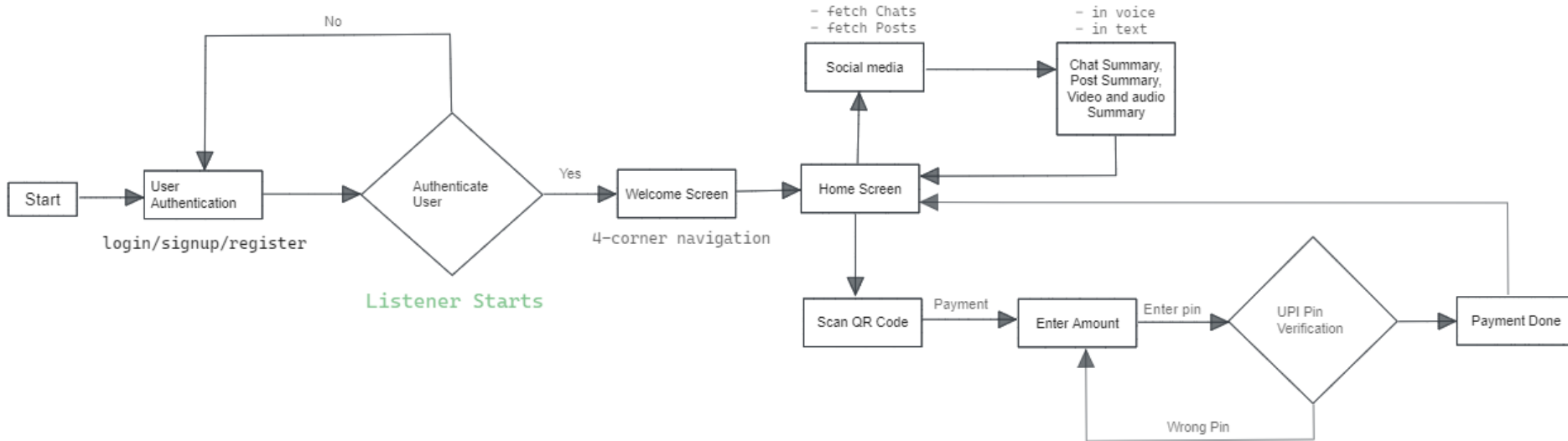
### USP of Orbcura

- Thus, the unique selling proposition (USP) of the idea is the extension of accessibility features outside the allowed domains.

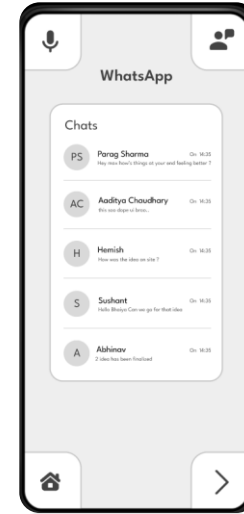
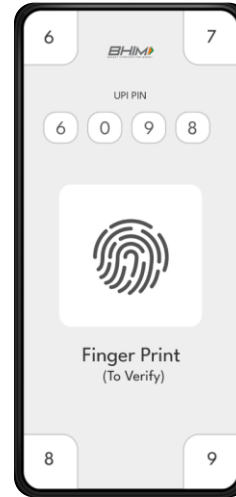
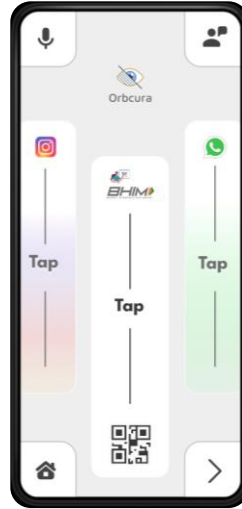
## List of features offered by the prototype

- Navigate screens within apps using voice commands.
- Enhanced **screen reader** capabilities tested for each app.
- A **4-corner touch** and center button **UI** for common tasks.
- Adds accessibility support to apps lacking native features.
- **Summarizes** groups of **messages** on WhatsApp for easier comprehension.
- Provides **text summaries** of photos and videos on Instagram for visually impaired users.
- Converts audio output from any app into text for **auditorily impaired** users.
- Easy UPI payments by **intuitive PIN UI** specially designed **for impaired users**.
- **Inclusive community platform** which allows sharing of ideas.

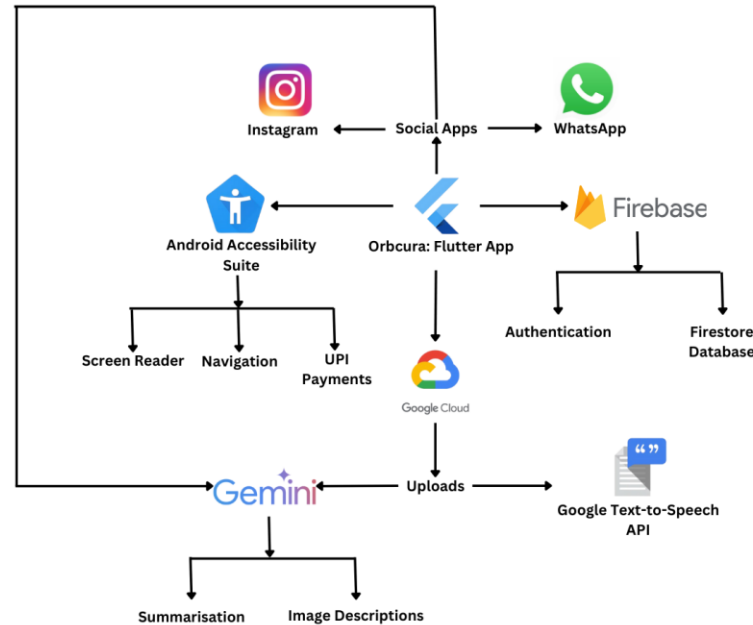
## Process flow diagram or Use-case diagram



## Wireframes/Mock diagrams of the proposed solution



## Architecture diagram of the proposed solution



## Technologies to be used in the solution



Flutter



System Accessibility



Firebase Firestore



Text to Speech API



Google Gemini API

- Flutter for rapid Mobile App Development.
- System Accessibility options for reading the screen text and performing automated activities.
- Firebase for storing basic user information and to handle authentication.
- Google Cloud and Google Text to speech API's for voice and text features.
- Gemini API for providing descriptions of images and summarization of messages

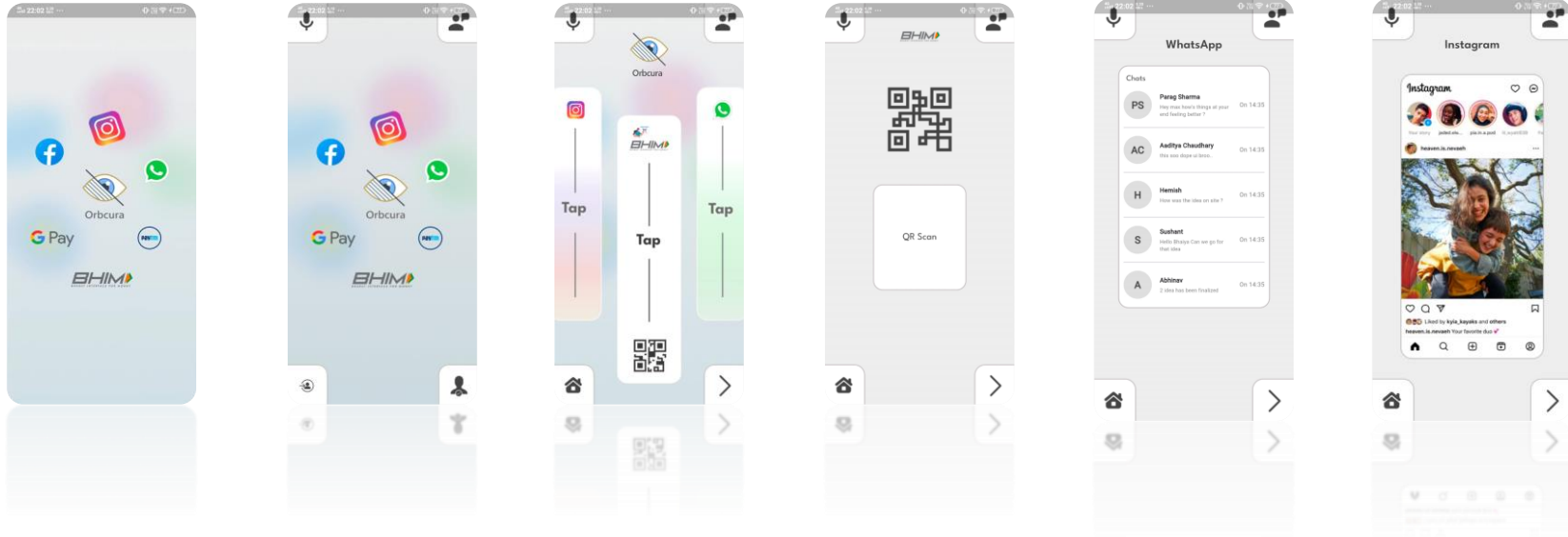


## Estimated implementation cost (optional)

Initially, the implementation cost would be 0 in testing phase, as all API's used have a free tier which would be enough for testing.

- Gemini API provides free 15 requests per minutes.
- Text to Speech API is available as a part of Google Cloud and has limits for the length of audios generated.
- Text to Speech API has 5 minutes of continuous streaming quota for one request which is greater than general length required (about 15-20 seconds).
- Firebase Firestore provides 20K writes/day and 50K reads/day on free plan, which is enough for general testing, and can sustain a thousand users easily.

## Snapshots of the prototype



## Prototype Performance Report/Benchmarking

- **Orbcura** is a fairly simple app with primitive features like navigation.
- Advanced features like **summarisation** and **text to speech** are outsourced to API's, so processing happens on cloud.
- Thus, it is ensured that it works well even on Non-Performant Hardware..
- **Orbcura** utilises a 'four corner and one centre touch' layout which is easy to use and implement.

## Additional Details/Future Developments (if any)

**We aim to integrated Orbcura with more apps and platforms in future.**

**Possible extensions include:**

- Integration with YouTube (providing video summaries).
- A Feature for visually Impaired people to know what objects are present in front of them.
- Easy OTP copy and paste on sufficient Authentication.
- Easy and voice-based Settings app.

## GitHub & Demo video URL

- GitHub URL :

<https://github.com/Developer-Student-Clubs-MMDU/Orbcura.git>



- Demo Video URL :

<https://youtu.be/4UPFwcG3wH8>



Meet Our Team Behind Orbcura

Parag Sharma



Aaditya Chaudhary



Hemish



Abhinav



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