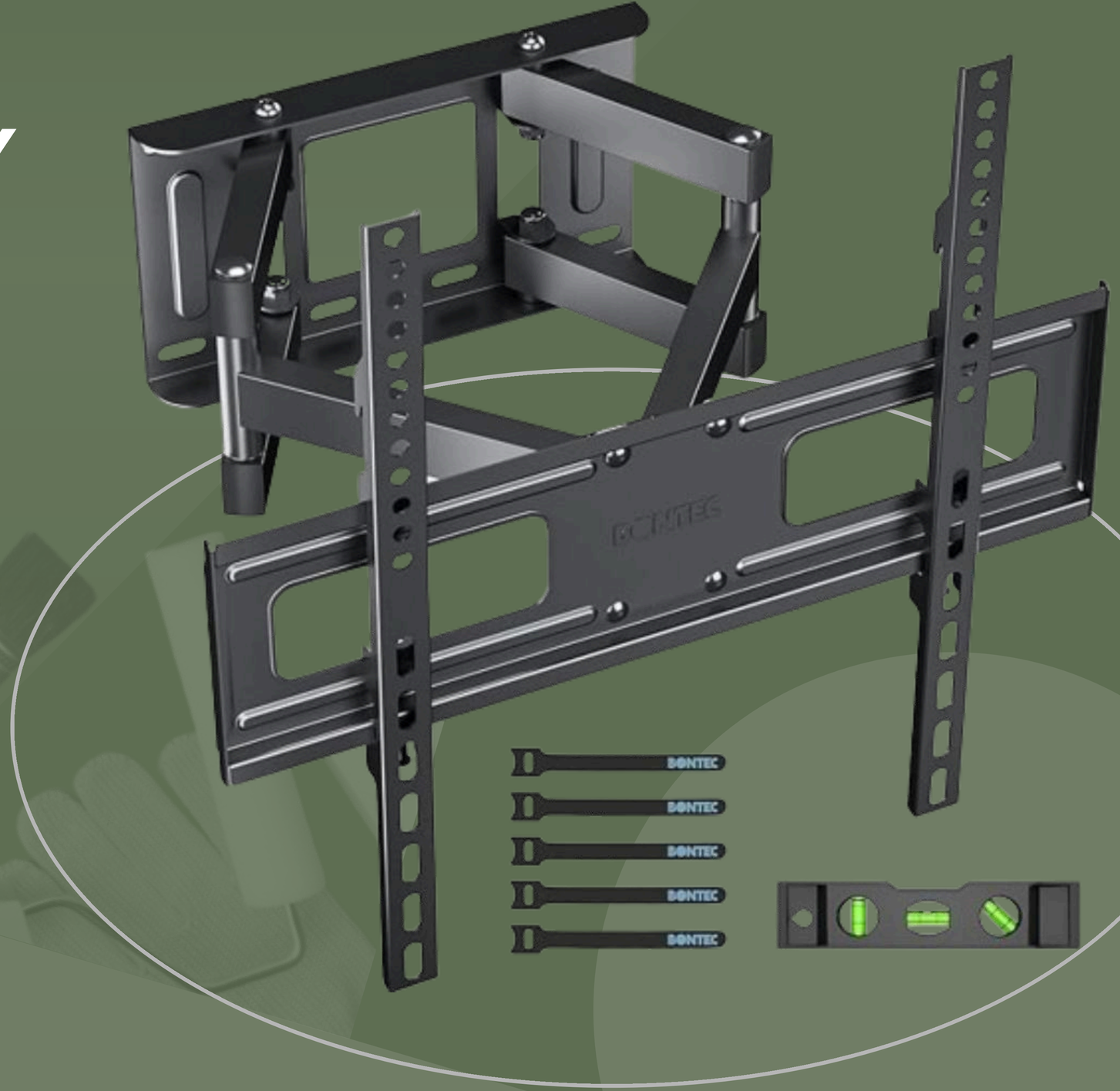
ASSEMBLEIFY



Tools

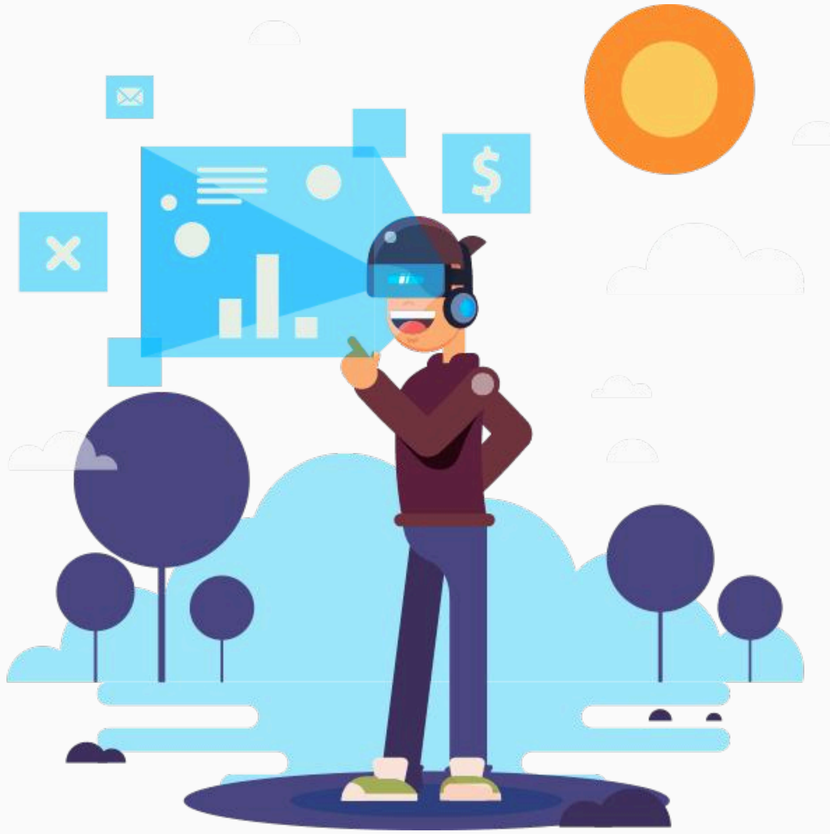
Problem Statement

- Hard-to-read paper manuals that are difficult to follow.
- Reliance on text and 2D diagrams that don't adequately guide the assembly process.
- Confusing assembly steps that lead to errors, time wastage, and dissatisfaction with the product.
- Frequent trial and error due to complex instructions, increasing frustration and reducing product satisfaction.

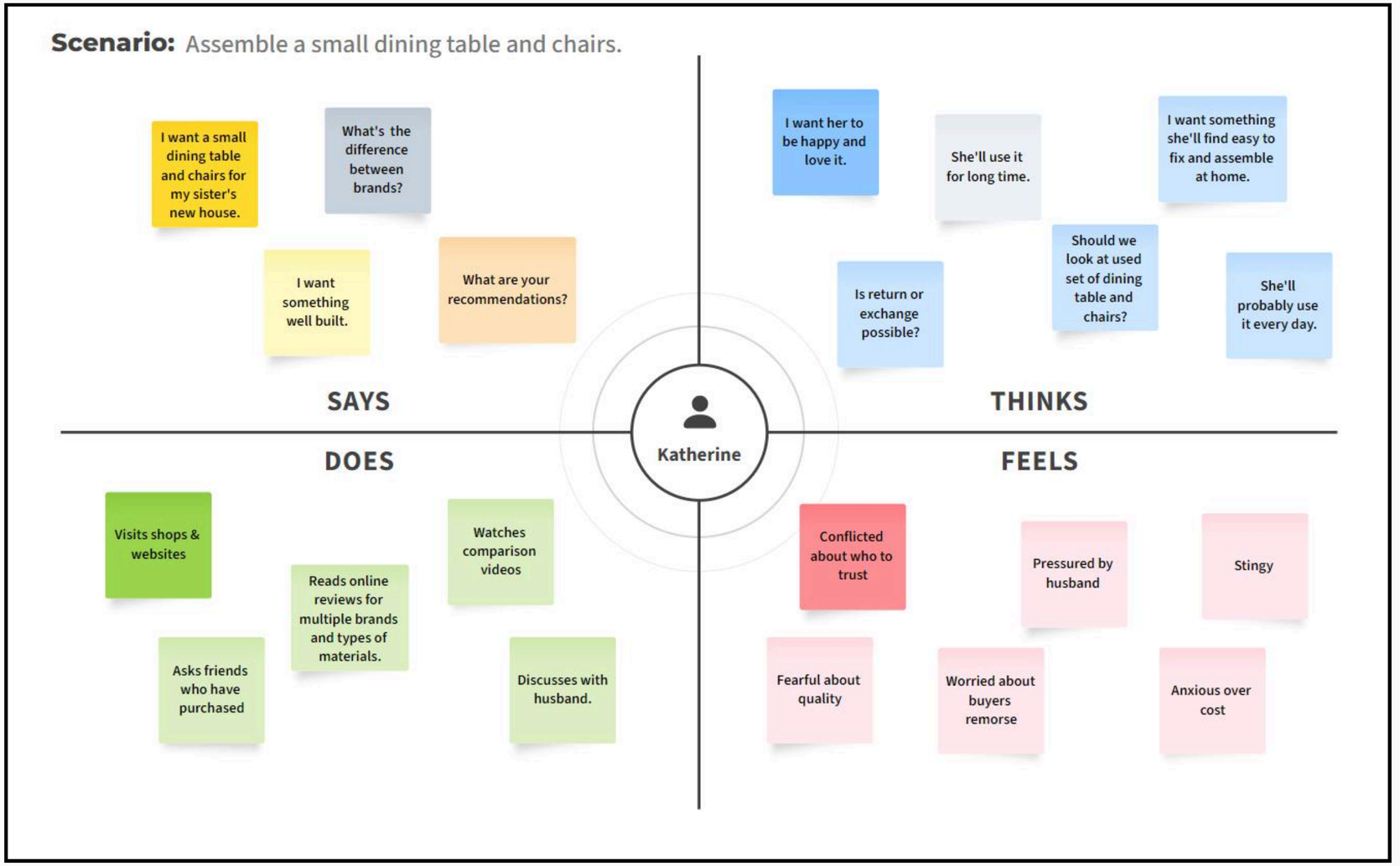
User Research

We conducted in-depth user interviews to understand challenges and preferences during product assembly. Participants shared their experiences with assembling products, highlighting the following key issues:

- Confusing manuals with unclear instructions and overly complex illustrations.
- Difficulty in explaining problems over the phone to customer support.
- Preference for video tutorials over text-based guides due to ease of understanding.
- Reliance on re-reading manuals, searching online resources, or seeking professional help when encountering issues.



Empathy Map


Scenario: Assemble a small dining table and chairs.
I want a small dining table and chairs for my sister's new house.
What's the difference between brands?
I want something well built.
What are your recommendations?
I want her to be happy and love it.
She'll use it for long time.
I want something she'll find easy to fix and assemble at home.
Should we look at used set of dining table and chairs?
Is return or exchange possible?
She'll probably use it every day.
SAYS
THINKS
Katherine
DOES
FEELS
Visits shops & websites
Watches comparison videos
Reads online reviews for multiple brands and types of materials.
Asks friends who have purchased
Discusses with husband.
Conflicted about who to trust
Pressured by husband
Stingy
Fearful about quality
Worried about buyers remorse
Anxious over cost

Competitive Analysis

“IKEA” is Our head to head Rival.
Ikea is 3D application designed to have a look at the interior design products before someone purchase it. This app includes true-to-scale models of everything from sofas and armchairs to footstools and coffee tables.

Positives

- Text style onboarding
- 3D images are quite accurate convey the real life sizes
- Limited functionality makes it easier to use

Nagetives

- Doesn’t offer product assembling
- No option to measure user’s space
- App limited to IKEA products

User Persona

Age: 31 years old

Occupation: Nurse

Status: Single

Location: Birmingham, UK

Goals

- Sam wants to know the estimated duration for the entire assembly process
- He wants to see more realistic visualisation rather than manual sketches
- He wants to know which part belongs to which step

Pain Points

- He does not know how long it takes to assemble. So, it affects his schedule
- He can not find a correct direction of the items
- He does not know if he could assemble by himself or need a second hand

User Scenario

Sam, a 31-year-old nurse, recently moved into a one-bedroom, unfurnished apartment. Excited to make the space his own, he purchased a TV set.But as he started assembling it, he found himself overwhelmed with unidentified parts and confusing instructions. As he needed someone to help him to assemble the product he spent his whole day and he missed one shift at the hospital.

Thus, Sam downloaded an AR app, designed to assist with assembly tasks. Instead of staring at abstract PDF instructions, the app gave him a more interactive experience.He simply aimed his phone's camera at each component, and the app identified it, demonstrating exactly how and where it fit into the overall assembly. The app also provided a time estimate for completing the assembly, and if second hand is need.

User Persona

Age: 30 years old

Occupation: Teacher

Status: Single

Location: Barcelona, Spain

Goals

- She wants assemble with breaking product in to easy steps guidance
- She wants clear understandable guidance
- Alexendra wants to connect to an expert

Pain Points

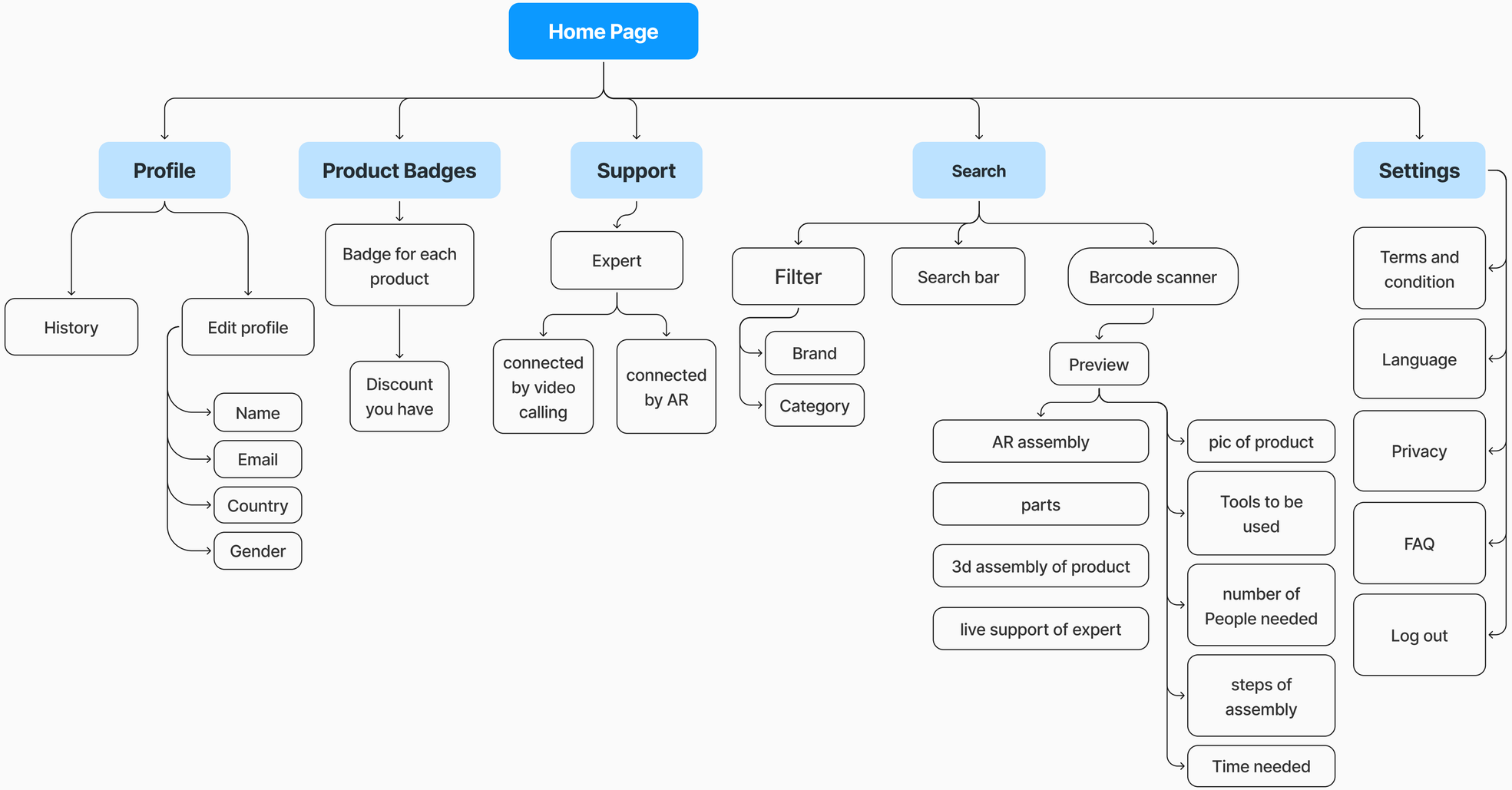
- Complexity of manual assembling makes her overwhelming
- Poorly labelled or mismatched parts
- Do not know how to solve problem by alone while assembling

User Scenario

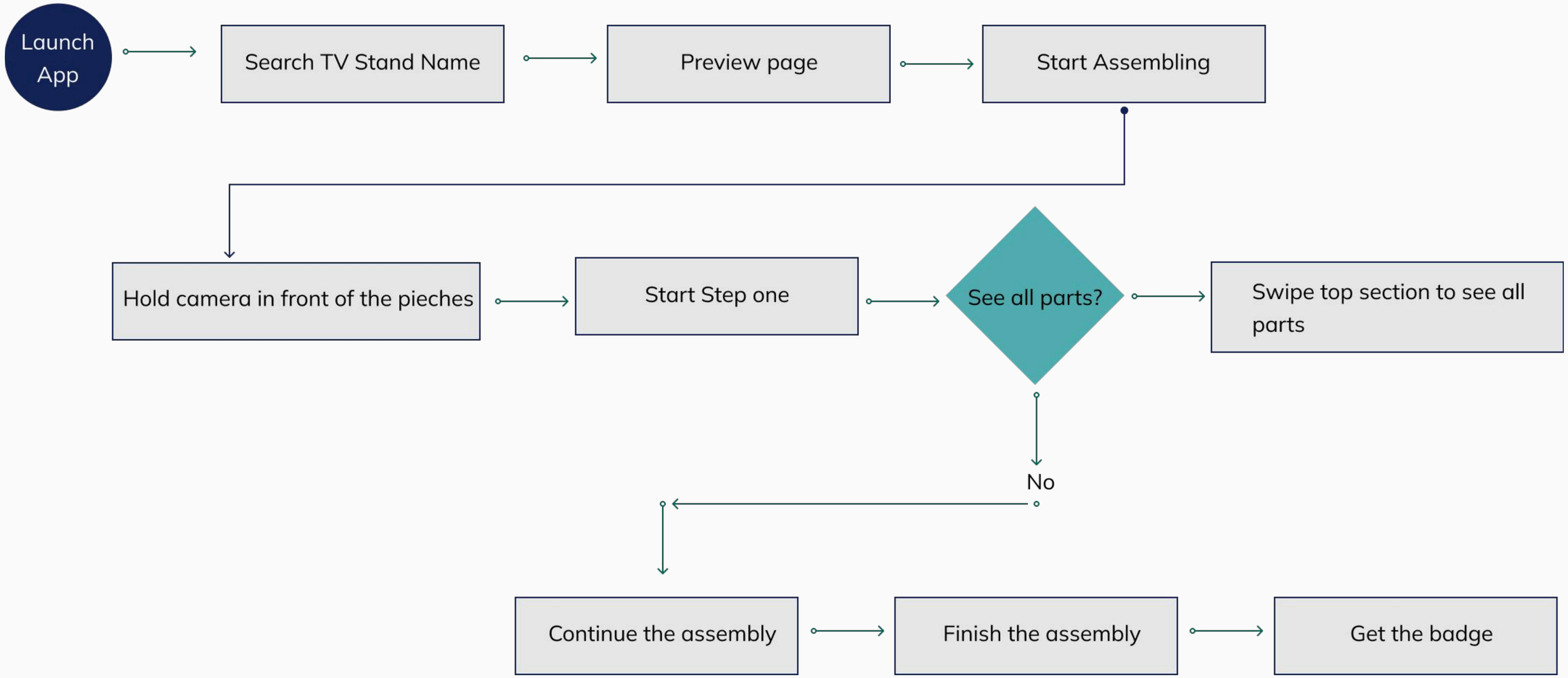
Sarah is a 30-year-old professional teacher who recently purchased a new TV stand for her home. She is excited to set it up and give her living room a fresh look.

However, she has had negative experiences in the past with assembling furniture, finding it to be a complex and frustrating task. She often struggles with poorly labeled or mismatched parts and feels overwhelmed by the instructions provided in the manual.The vast majority of the time, she is at confused for what to do when she is confronted with a difficulty while she is putting together a product. Thus, she decided to download an application to provide her clear and understandable guidance and she can connect to an expert anytime when she faced an issues.

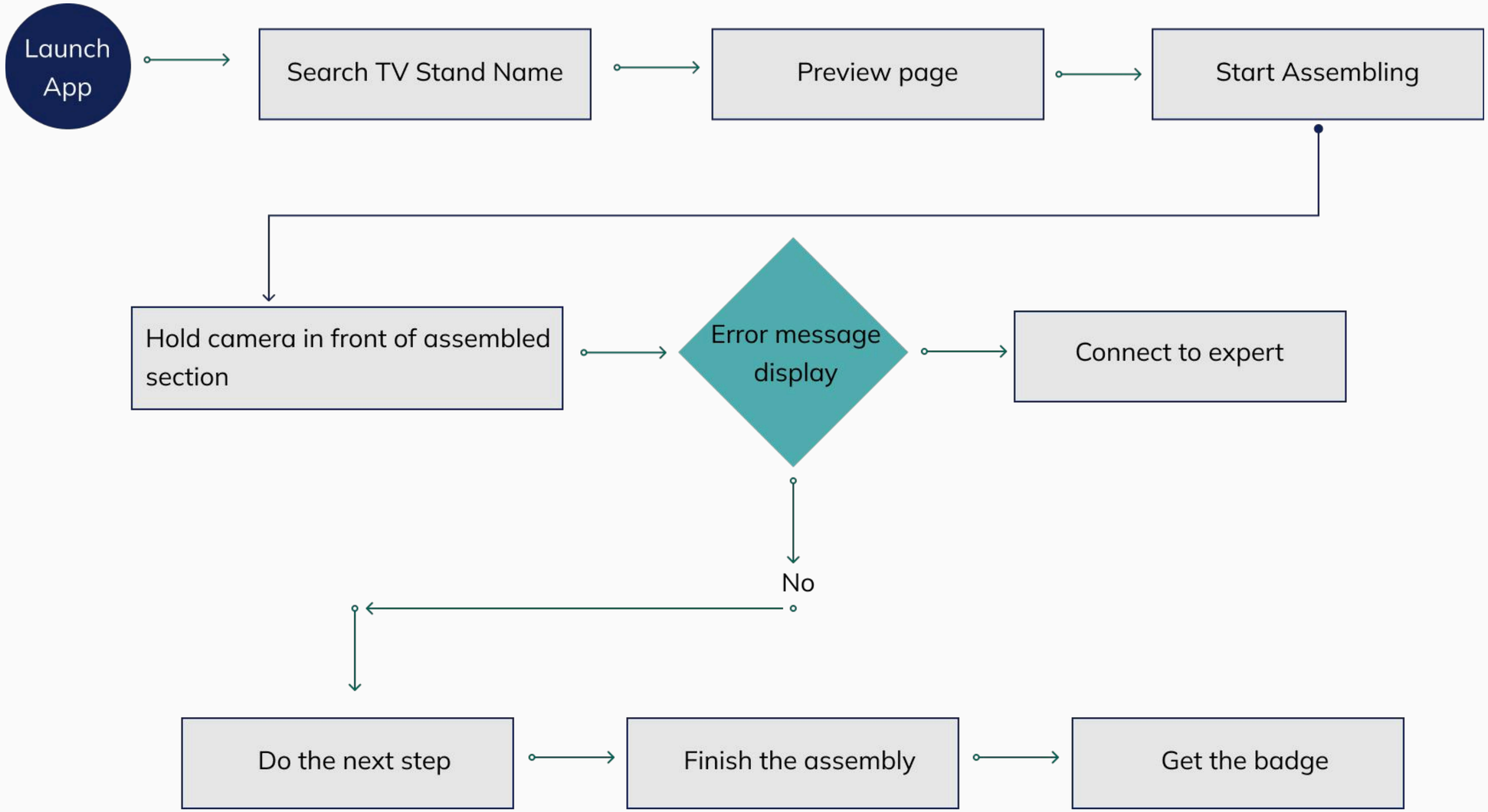
Information Architecture



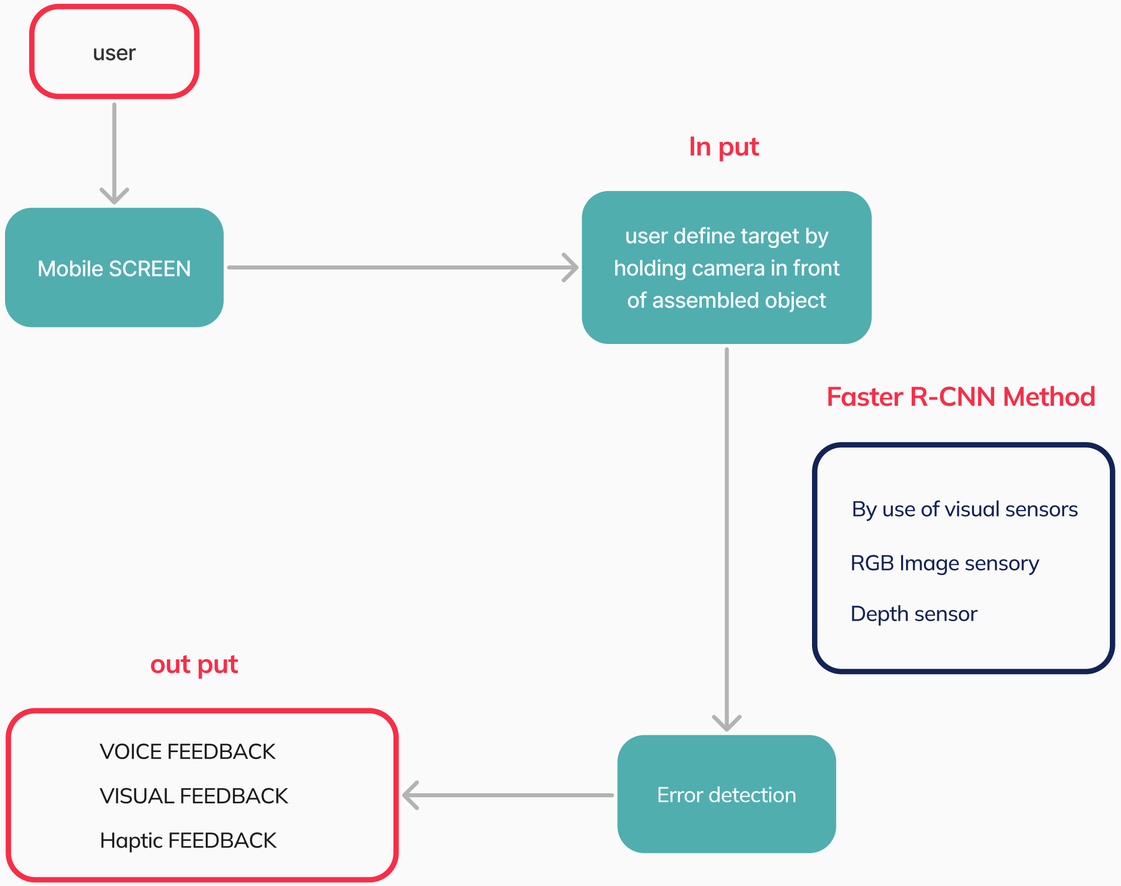
User Flow One

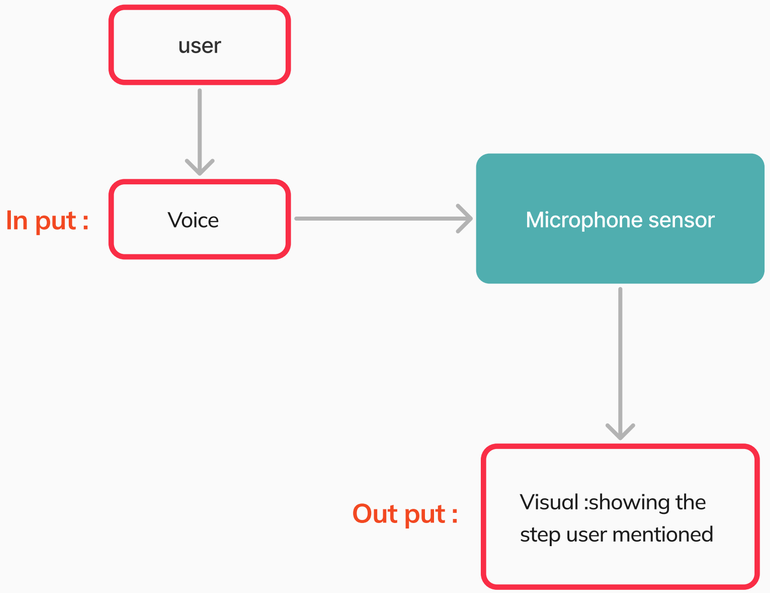


User Flow Two

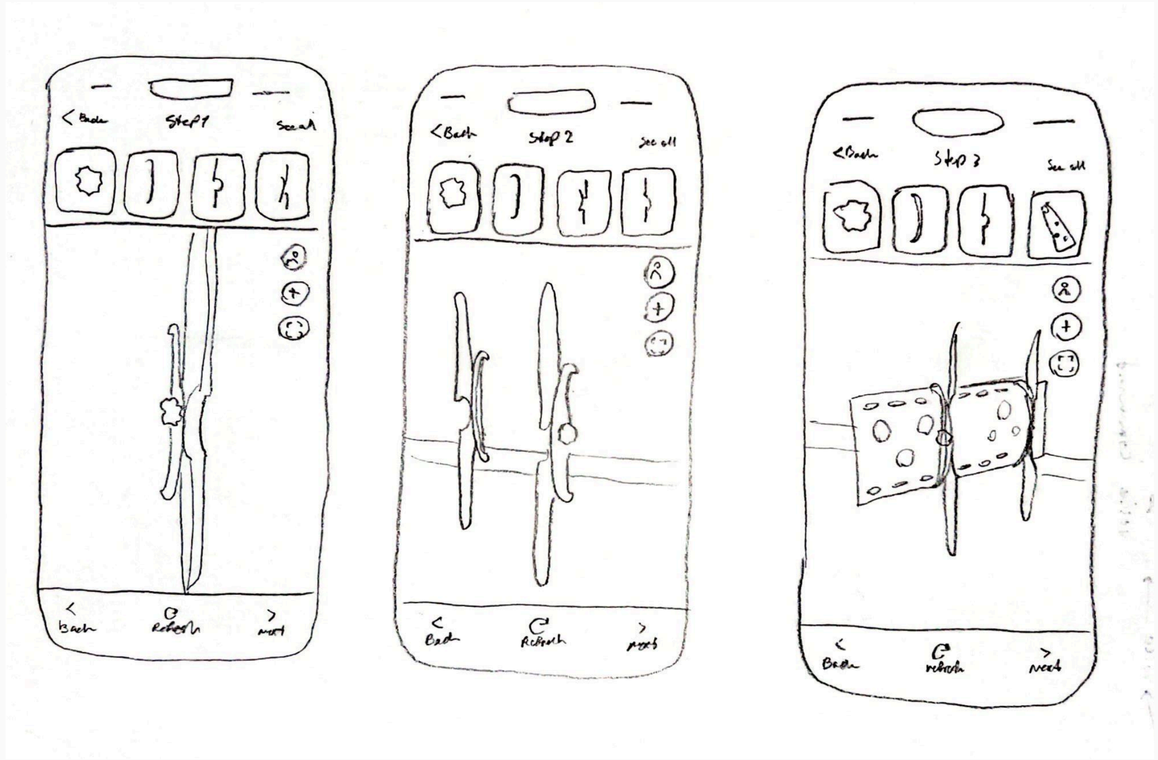


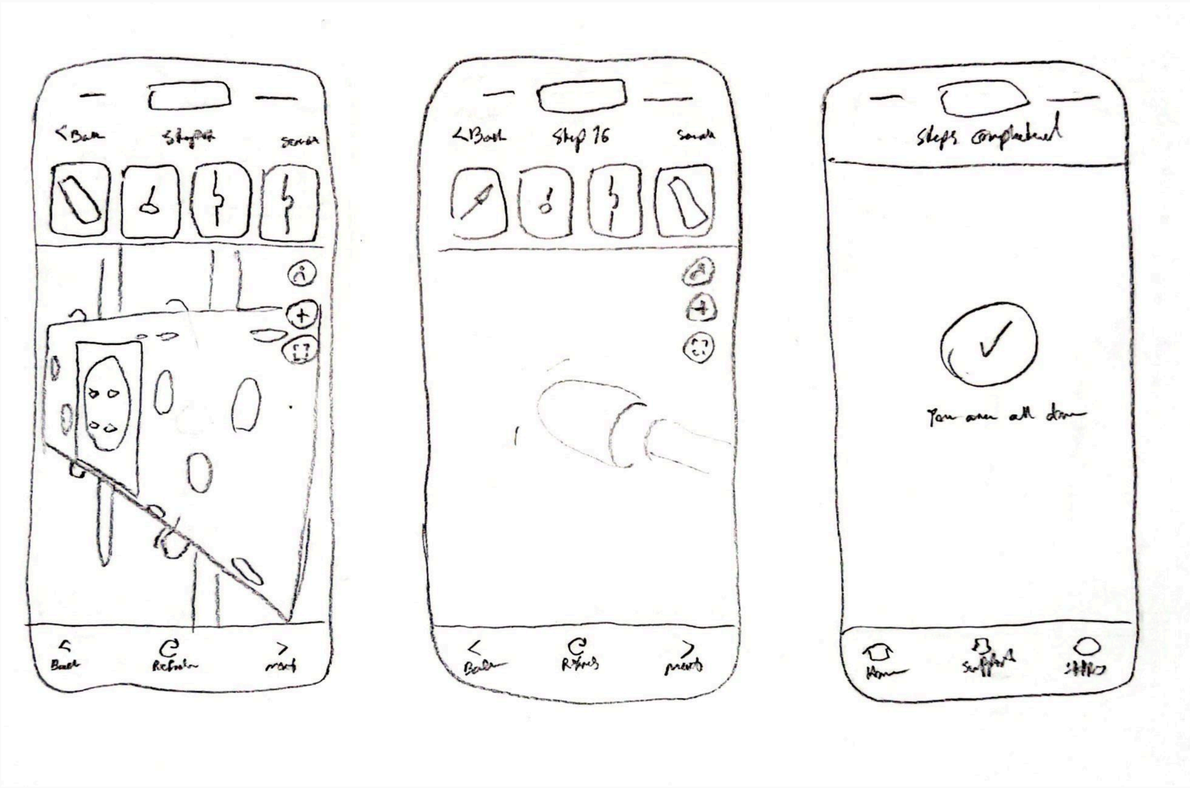
System Design (HLA)



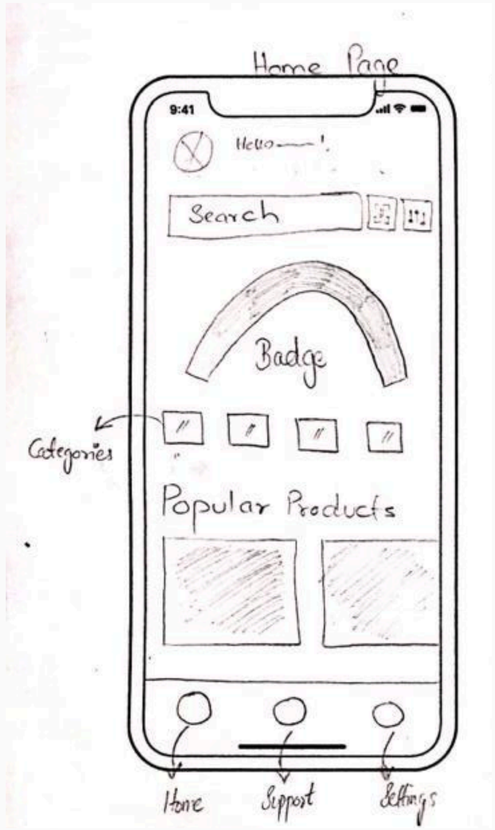


Sketches

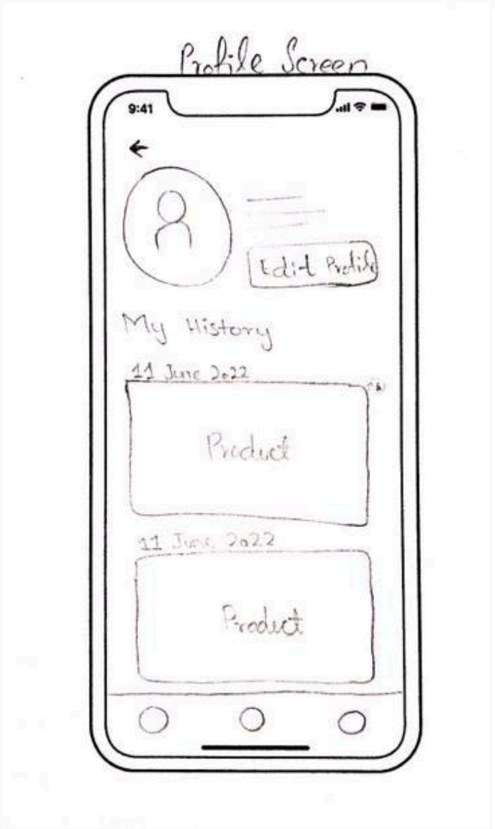

Step 1
Step 2
Step 3


Step 4
Step 5
Step 6
Steps completed
You are all done

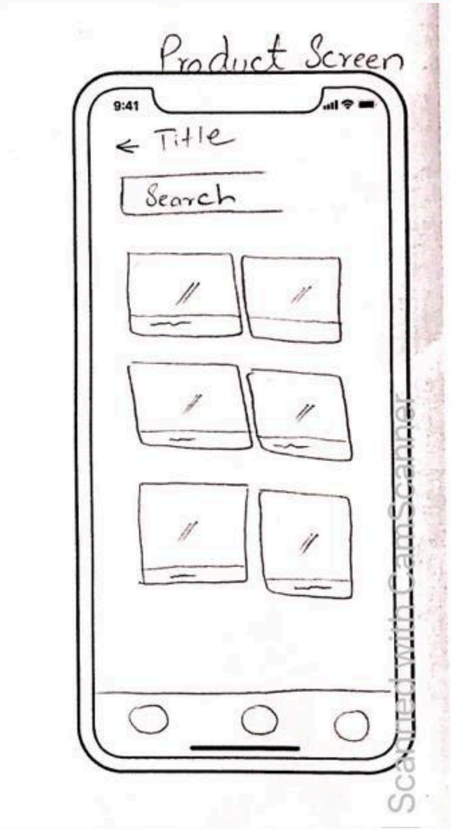
Sketches



Home



Profile

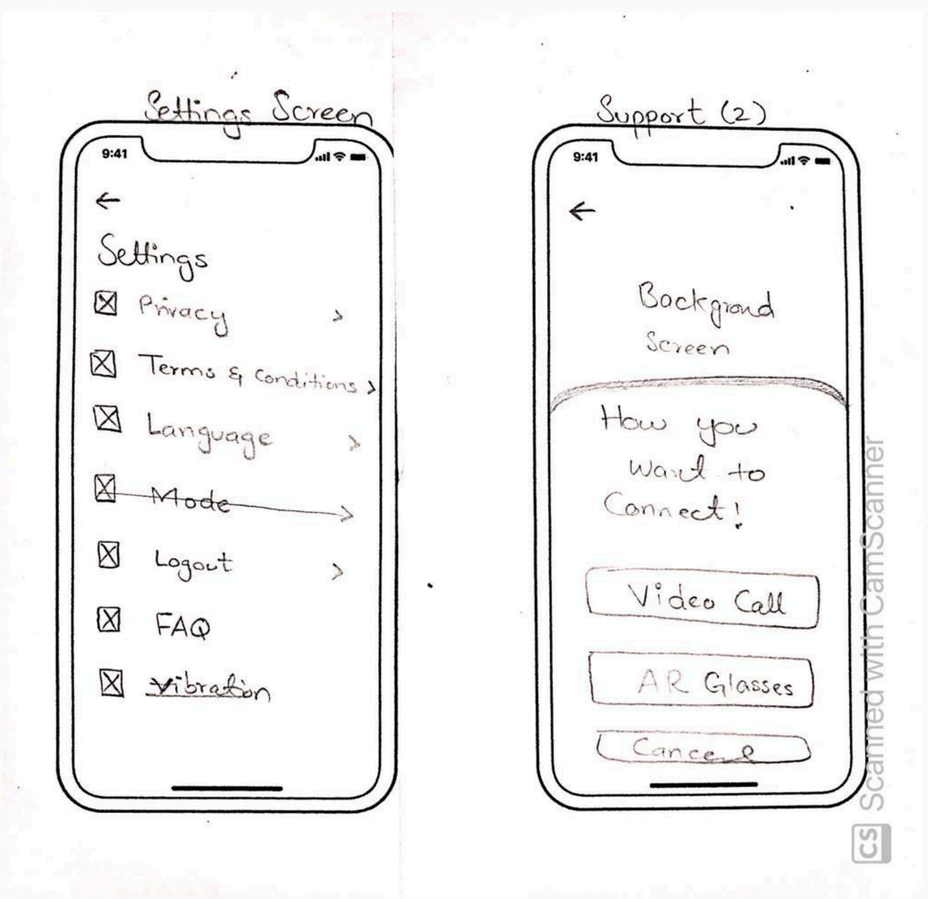


Product page

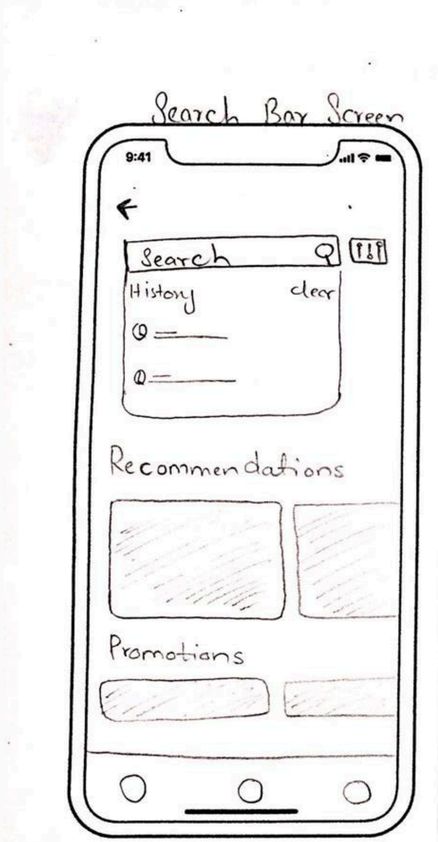
QR scan

Sketches

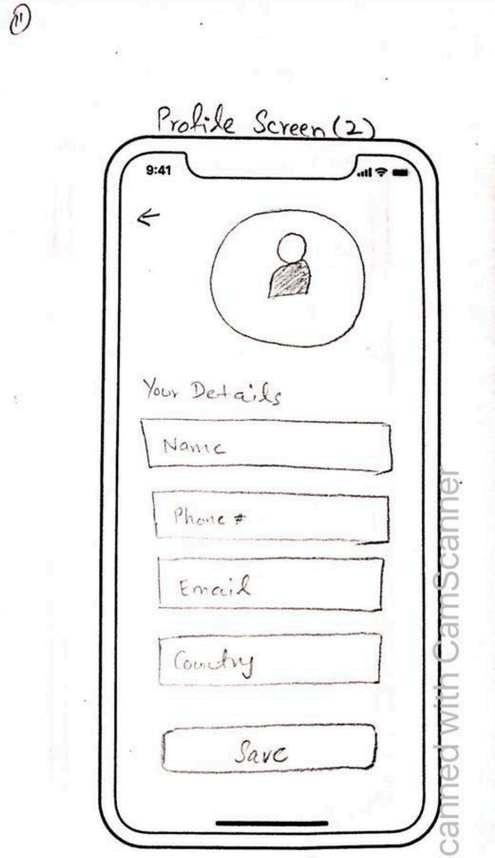
Setting page



Support page

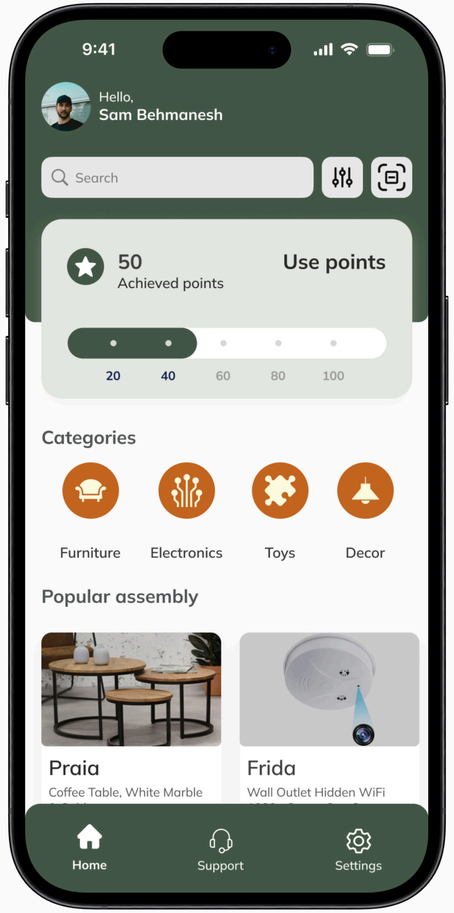


Search page

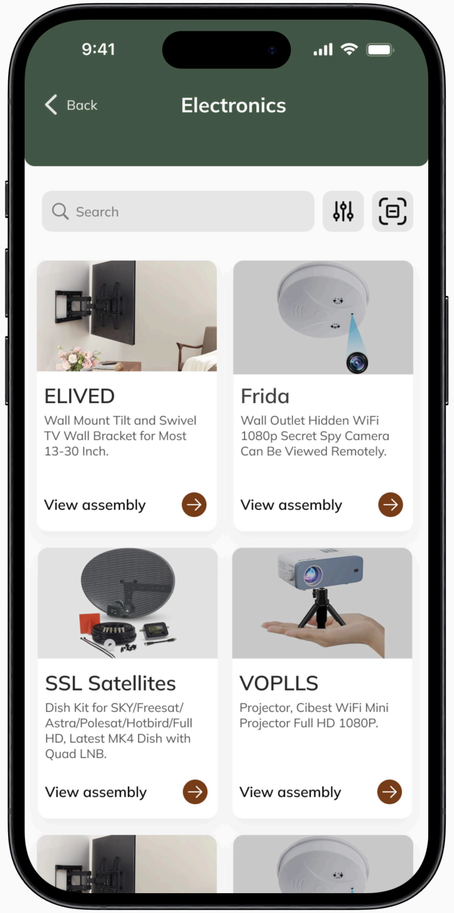


Profile page

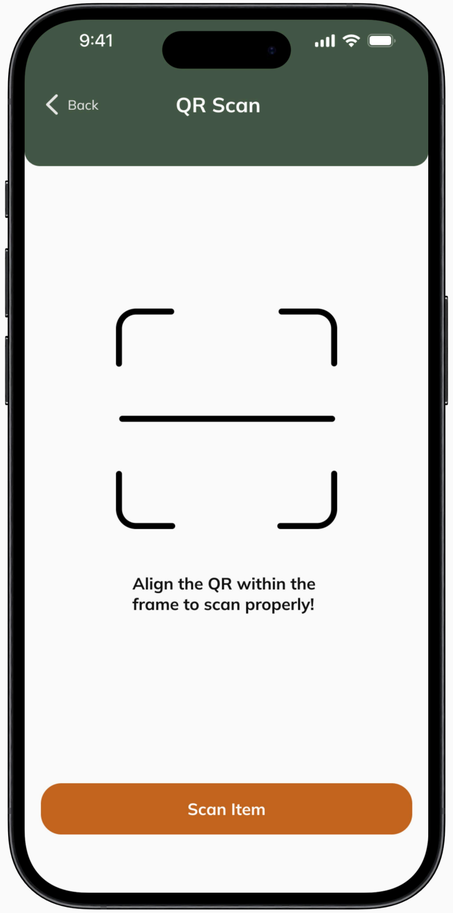
High Fidelity



Home

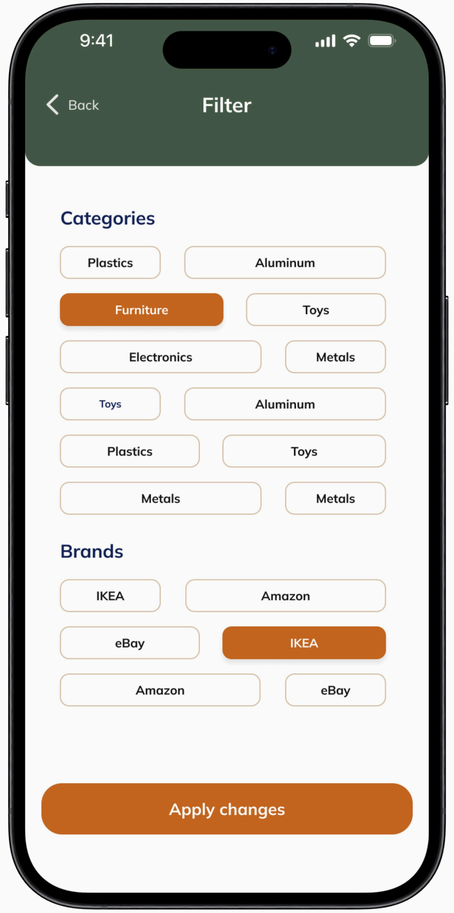


Electronics Assembly

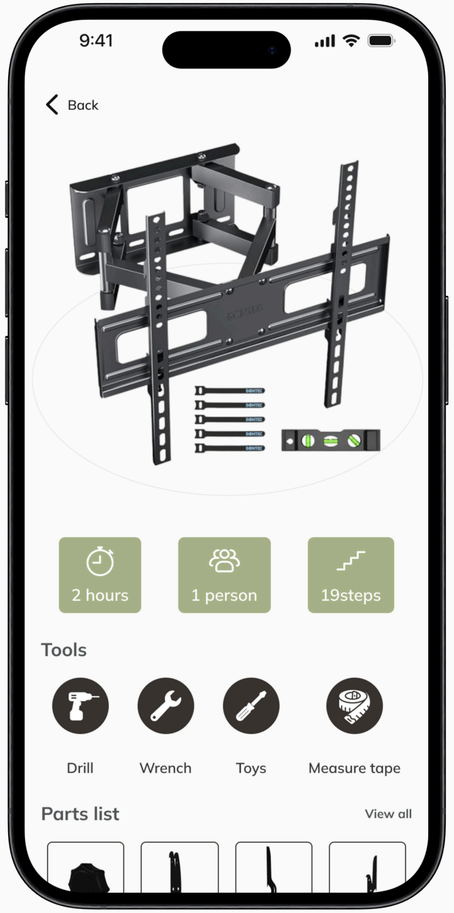


QR Scan

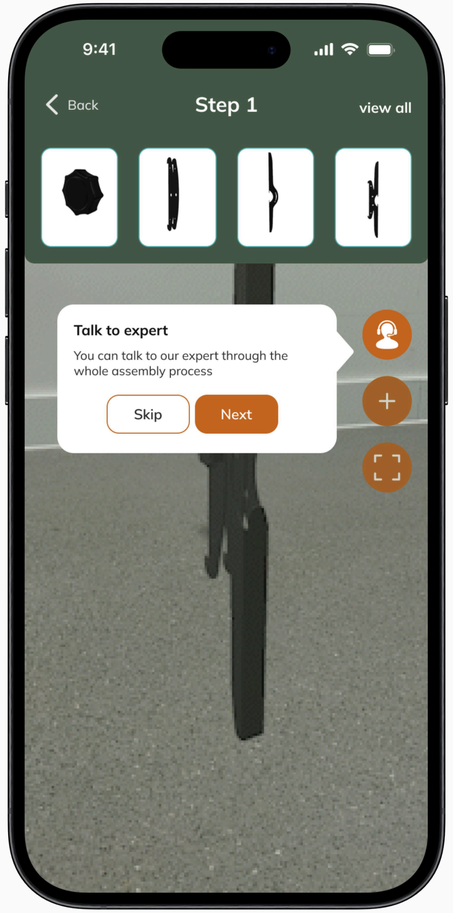
High Fidelity



Filter

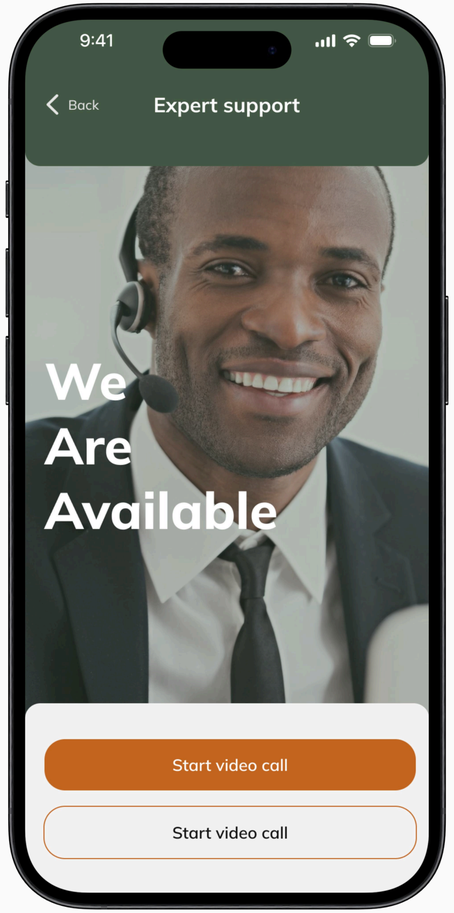


Product Assembly Overview

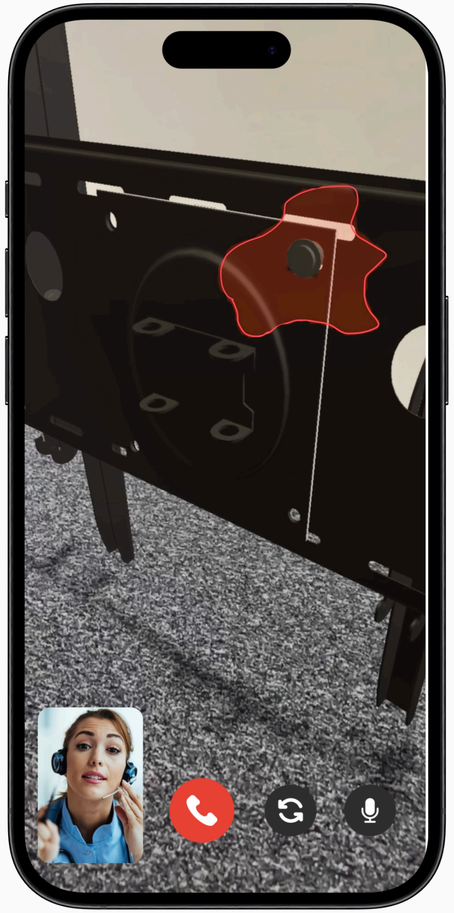


Assembling Guide

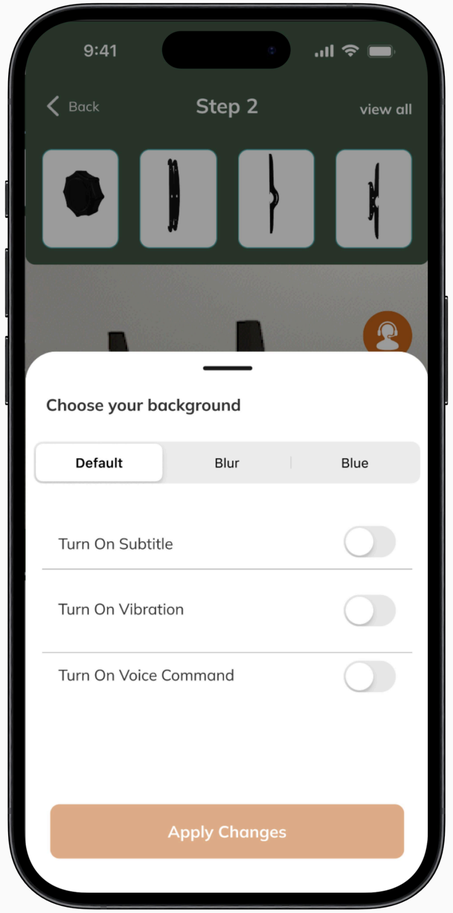
High Fidelity



Connect To Expert



Expert Help

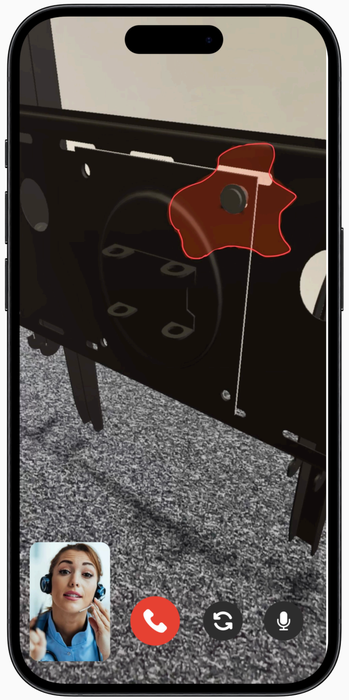


More Options

Features Definition

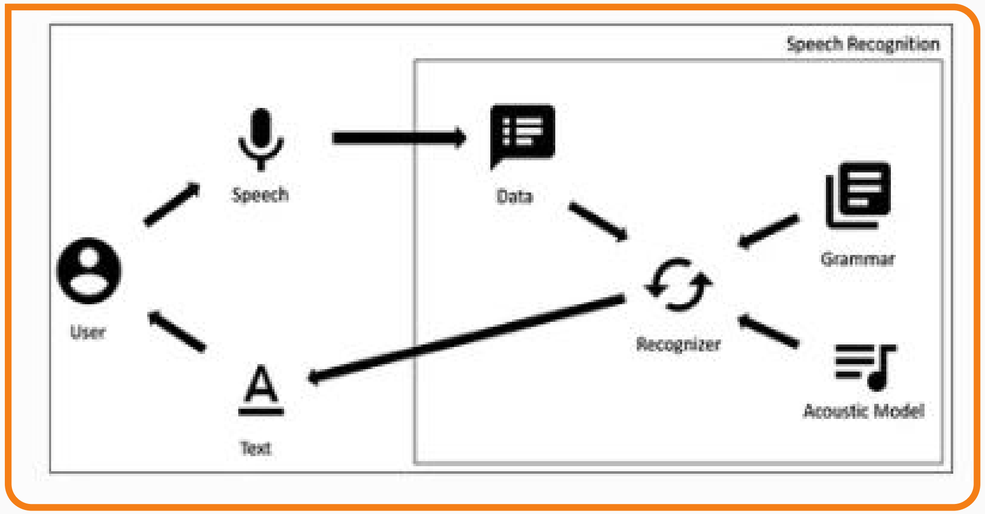
1. Our AR application uses haptic feedback to instantly alert users of assembly issues, enhancing the process with a tactile response.
2. Visual feedback, including clear red indicators, complements haptic alerts to make problem identification seamless.
3. These features ensure an immersive, intuitive, and user-friendly experience for quick issue resolution.

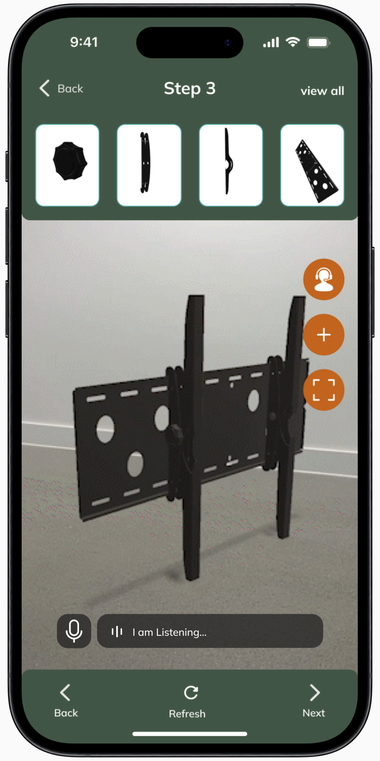
1. Users can start a real-time video call with an expert when facing assembly difficulties.
2. By sharing a live view of the task through their device's camera, the expert sees the issue directly.
3. The expert provides guidance and highlights any incorrect parts for quick resolution.



Features Definition- Voice Command

Voice commands, enabled by a microphone sensor, allow users to interact hands-free with the application using speech recognition, facilitating easier navigation and function search during assembly.





Voice Command Active

User Talks

System Shows Feedback While Processing The Command

Features Definition- Object Recognition

1. Object recognition enhances assembly by identifying objects and corresponding steps, as shown in Figure 1.
2. Users can use the camera to detect incorrect parts through visual, voice, and haptic feedback during or after assembly.
3. In the expert section (Figure 3), the technology helps experts highlight errors with clear visual indicators.

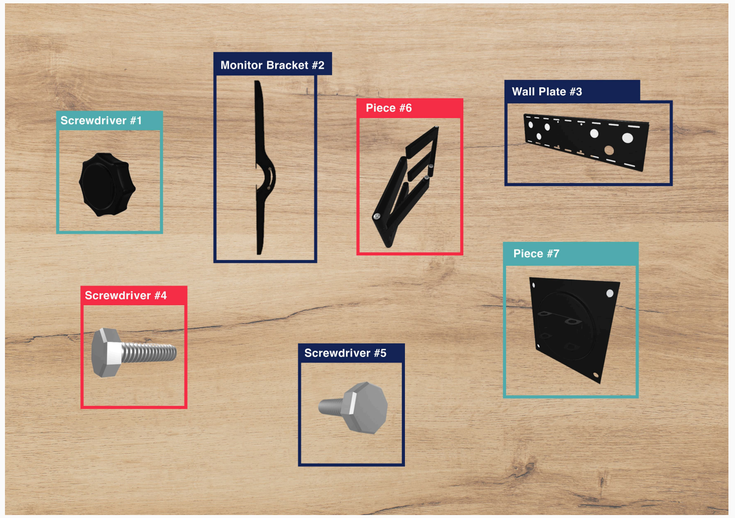


Figure 1

Figure 2

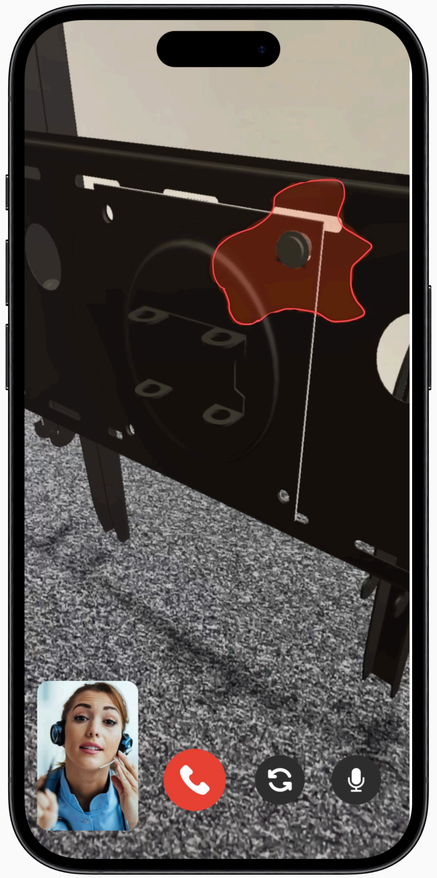


Figure 3

Usability Testing

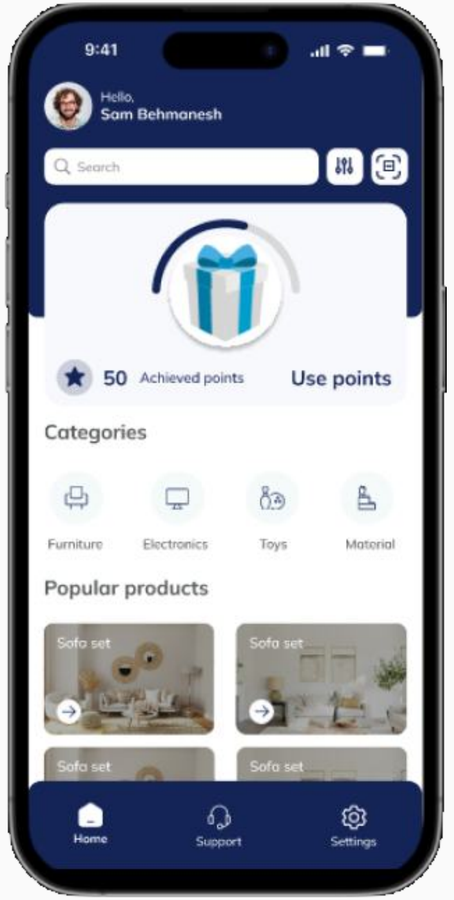
We conducted a moderated usability test with eight participants from diverse backgrounds, utilizing the **"Think Aloud"** protocol to gather real-time insights as they completed tasks. Using the **Handheld Augmented Reality Usability Scale (HARUS)**, the average score of **86.95** indicated a positive user experience with no major usability issues.

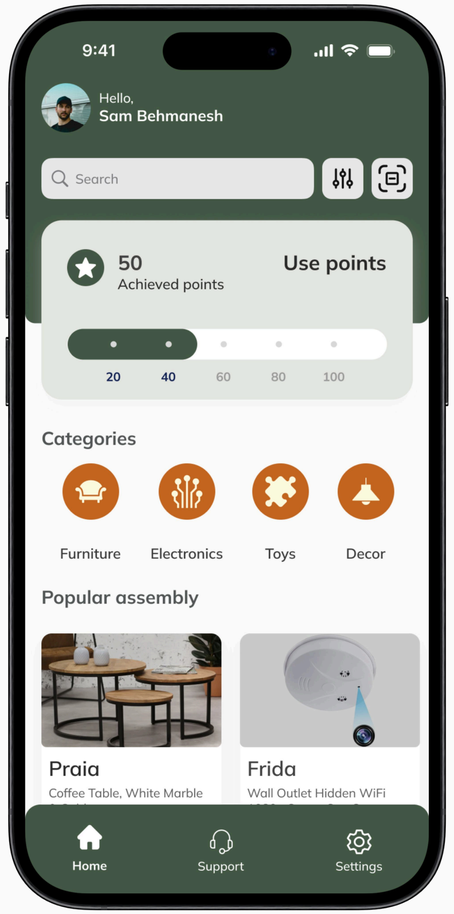
Participants' verbal feedback and comments highlighted the application's strengths and provided qualitative insights into areas for improvement.

Modification One: Enhanced Focus And Accessibility

To enhance focus on assembly tasks, we've updated our color palette to neutral tones. This change came after feedback from a participant with ADHD, who found the home page animations distracting. We've replaced the animated badges with a static design to minimize distractions.

Before



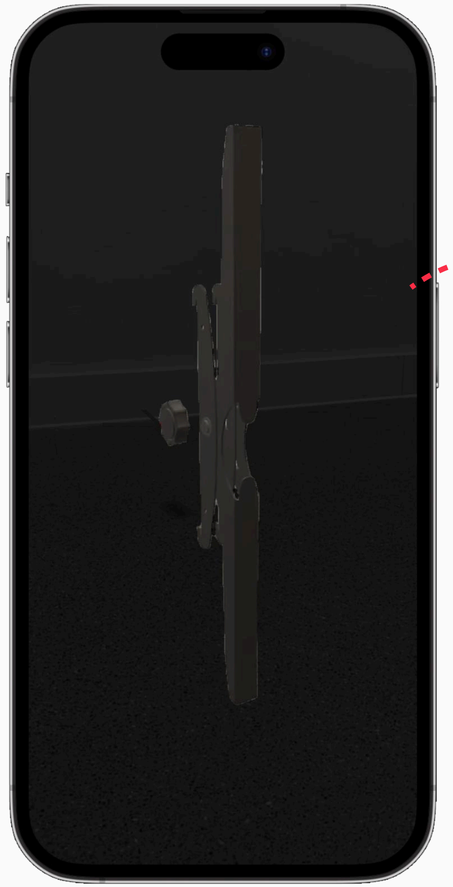


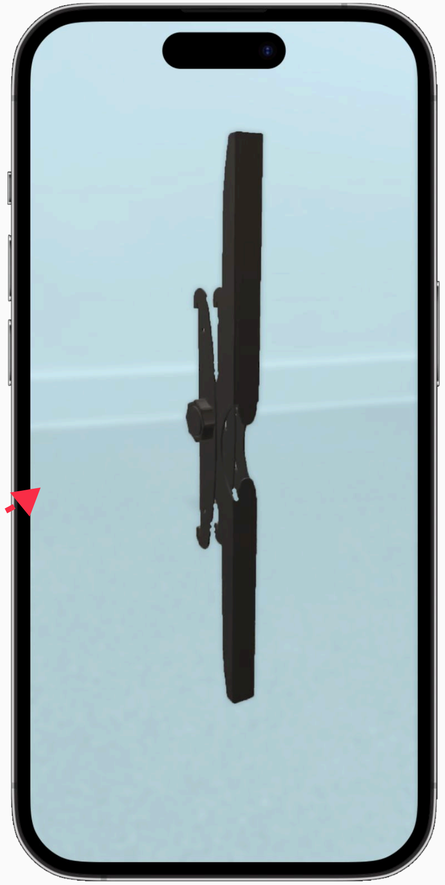
After

Modification Two: Change Background

To improve visibility, we've allowed users to change the background color in the app when it matches the product color, as two participants struggled to distinguish assembly details in such scenarios.

Before

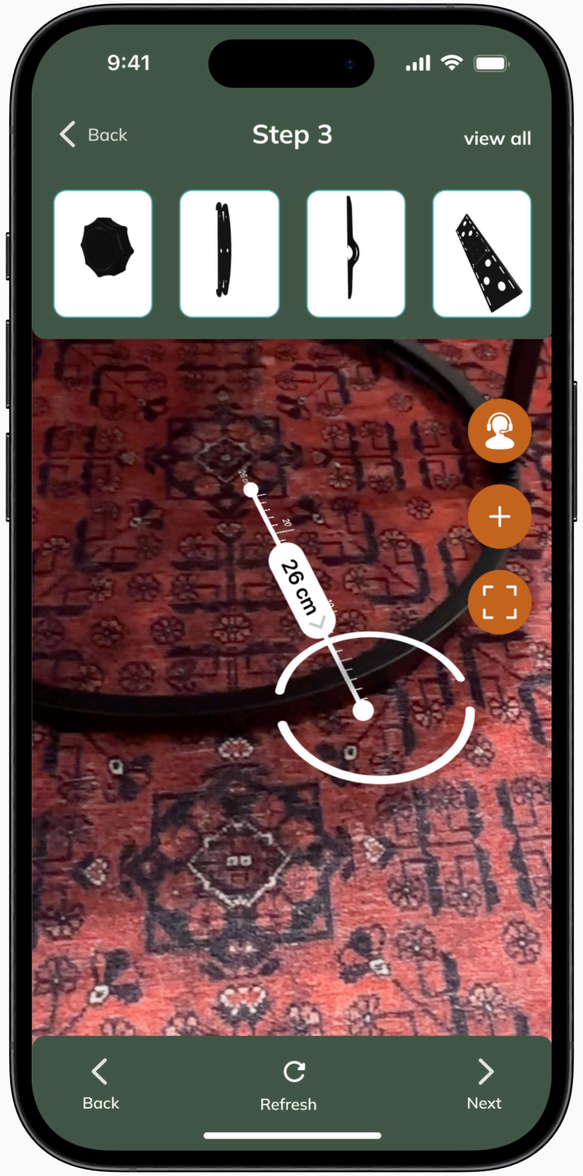




After

New Feature

Addressing feedback from two participants, we're adding a digital measuring feature to our app, allowing users to easily ensure product dimensions fit their space before and during assembly, enhancing accuracy and convenience without the need for manual measuring.



Future Consideration

1. Multi-Language Support
2. Offline Mode
3. Gamification Elements
4. Accessibility Features
5. Enhanced Security Features