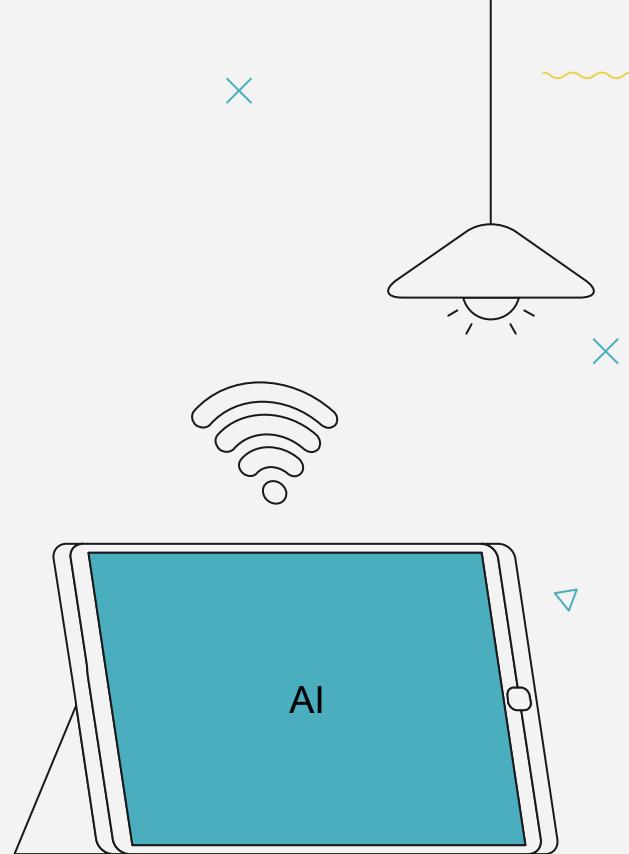


Project on

AI-Enabled Smart Home Tablet



Team Members



Rajat Burde



Zainub Fatima



Jyoti Agrawal



Punyatoya

Brief

Design a digital prototype of an **AI-enabled tablet interface** that acts as the central hub for managing smart home functionalities. The prototype should seamlessly adapt to user preferences, offering control over home environments (e.g., lighting, temperature, security) while emphasizing user customization and intuitive navigation.

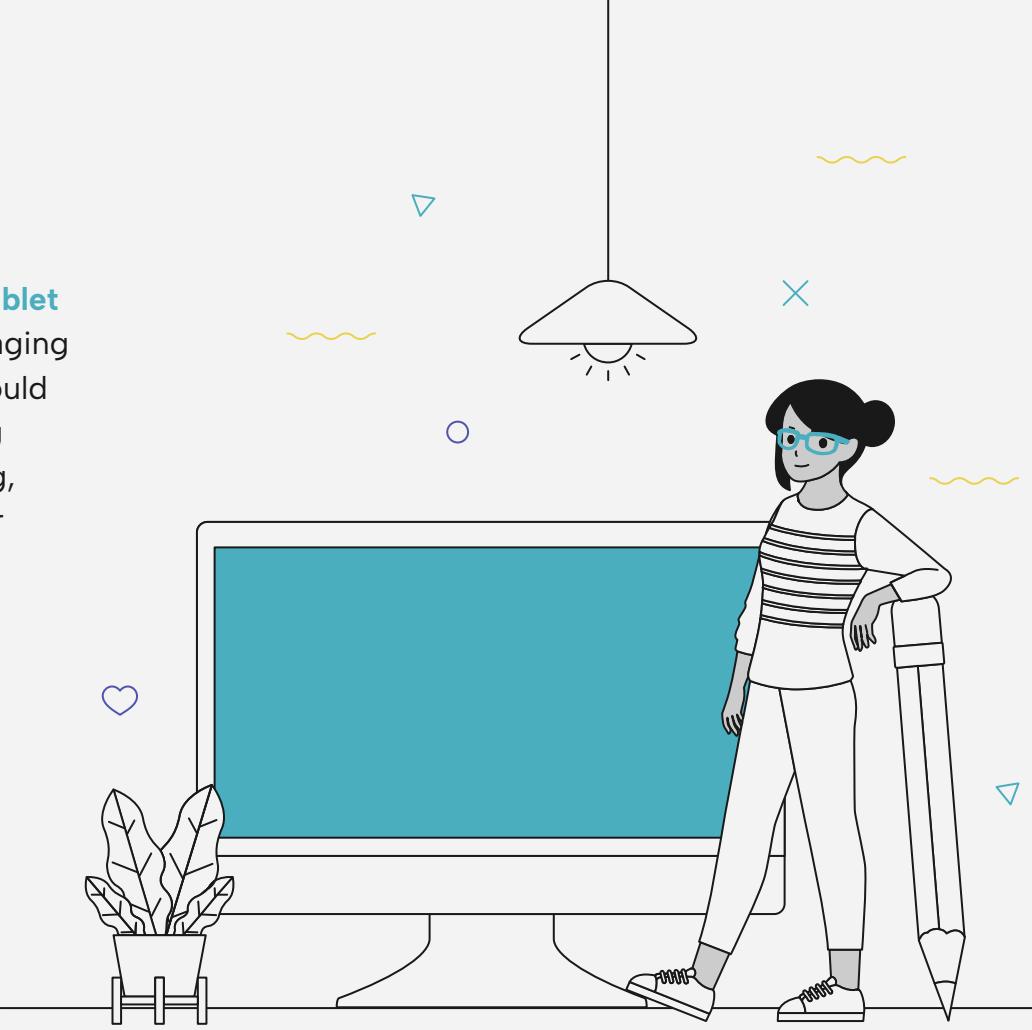




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03 Ideation

- Brainstorming
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- MoSCoW Prioritization Technique
- Information Architecture
- User Flow

0

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- User Flow
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05 High fidelity Wireframes

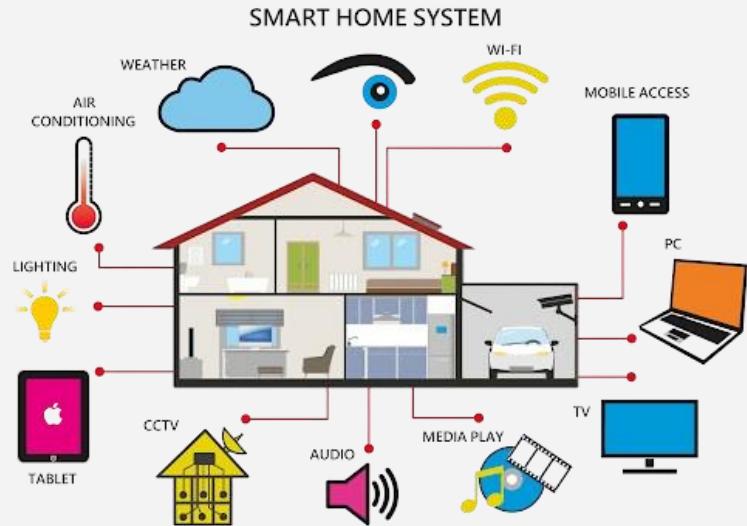
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What is Smart home technology

- Smart home technology, or home automation, integrates advanced devices and systems controlled remotely or automatically for **convenience, security, and energy efficiency.**
- Devices are interconnected using the **Internet of Things (IoT)** and managed via **apps, tablets, or voice assistants.**





List of Smart devices



Smart Tv



Smart Lighting



Smart Thermostats



Smart Security Cameras



Smart Door Locks



Smart Doorbells



Smart Plugs



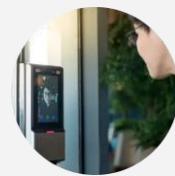
Smart Speakers



Smart Appliances



Smart Irrigation Systems



Smart Sensors



Smart Air Quality Monitors





List of Smart devices



Smart Health devices



Smart Mirrors



Smart Water Heaters



Smart Kitchen devices



Smart Vacuums



Smart Smoke and Carbon Monoxide Detectors



Smart Windows



Smart Ceiling Fan



Smart Bed



Smart Pet Feeder



Features of Smart Home System



Remote Control



Voice Control



Automation



Touchless Interaction



Smart Security



Lighting Automation



Energy Management



Water Management



Smoke & Fire Detection



Window Treatments



Smart Appliances



Home Assistants

Trending Technologies



Internet of Things (IoT)

Connects devices for communication and automation.



Artificial Intelligence (AI)

Enables seamless communication among devices



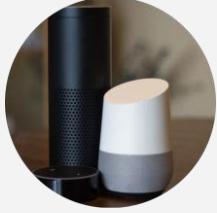
5G Connectivity

Automates tasks, adapts, enables smart decisions



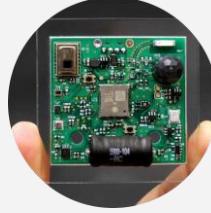
Wireless Protocols

Hands-free control using natural language



Voice Assistants

Ensures real-time, fast device interaction



Smart Sensors

Detects changes, triggers automated responses

Trending Technologies



Cloud Computing

Syncs and accesses data remotely anytime.



Blockchain Technology

Secures data and prevents unauthorized access



Security Technologies

Biometric locks and encrypted smart systems



Energy Management Systems

Automates, optimizes energy usage and savings



Augmented Reality (AR)

Visualizes smart setups for easier customization



Machine Learning (ML)

Learns behaviour, improves efficiency and automation

Trending Technologies



Edge Computing

Processes data locally for faster responses.



Facial Recognition

Enhances security with personalized face access.



Smart Beds & Sleep Tech

Personalized comfort through sleep pattern monitoring



Smart Kitchens

AI-IoT integration for efficient cooking solutions.



Robotic Assistants

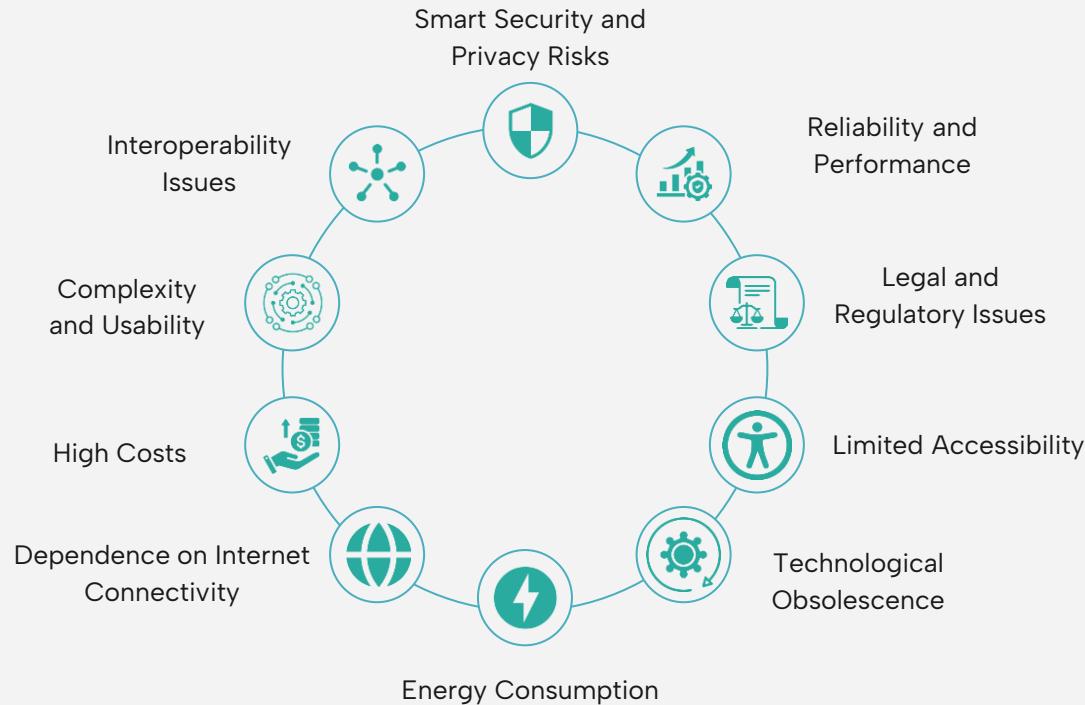
Automates tasks, reduces manual labor efficiently.



Gesture Control

Enables intuitive control using hand gestures.

Challenges



Competitors



Amazon Echo Show

The Amazon Echo Show combines a smart speaker and touchscreen, enhancing interactions with [Alexa's visuals and voice](#).



Apple HomeKit

Apple HomeKit seamlessly integrates smart devices, controlled via the [Home app or Siri on Apple devices](#).



Google Nest Hub

Google Nest Hub combines a [Google Assistant smart speaker and touchscreen](#), enhancing home automation, entertainment, and productivity.

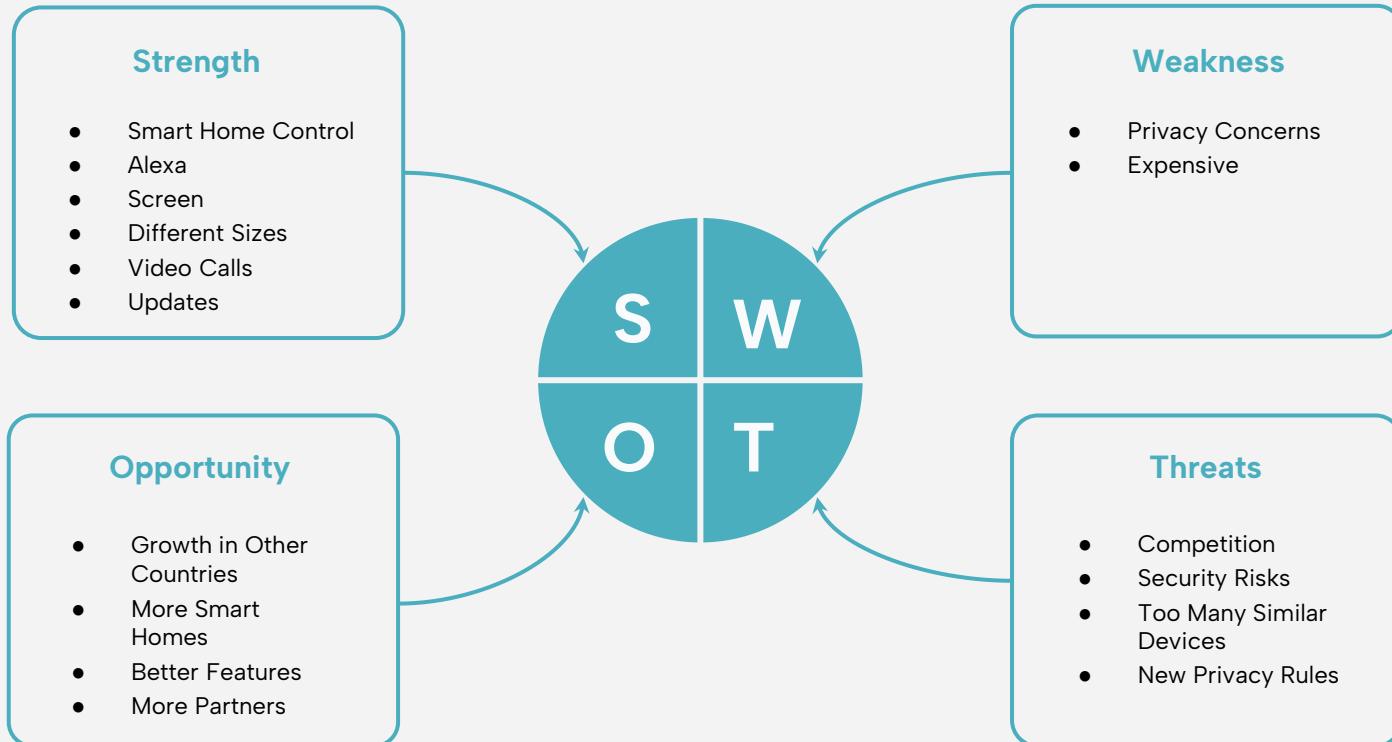
Competitors Features Analysis

Features	 Nest		 amazon echo
Smart Display	✓	✗	✓
Voice Assistant	✓	✓	✓
Smart Home Control	✓	✓	✓
Device Compatibility	✓	✗	✓
Automation & Routines	✓	✓	✓
Entertainment and Music Service (Streaming)	✓	✗	✓
Video Calling	✓	✗	✓
Camera Features	✓	✗	✓
Multi-Room Audio	✓	✓	✓
Personalization	✓	✓	✓

Features	 Nest		 amazon echo
Privacy Controls	✓	✓	✓
Home Monitoring/Security	✓	✓	✓
Energy Monitoring	✓	✓	✓
Intercom/Announcements	✓	✓	✓
Sleep Tracking	✓	✗	✗
Photo Display/Frames	✓	✓	✓
Built-in Smart Hub	✓	✓	✓
Adaptive Lighting	✓	✓	✓
Hands-Free Help in Kitchen	✓	✗	✓
Ambient Mode/Screen Off Features	✓	✗	✓

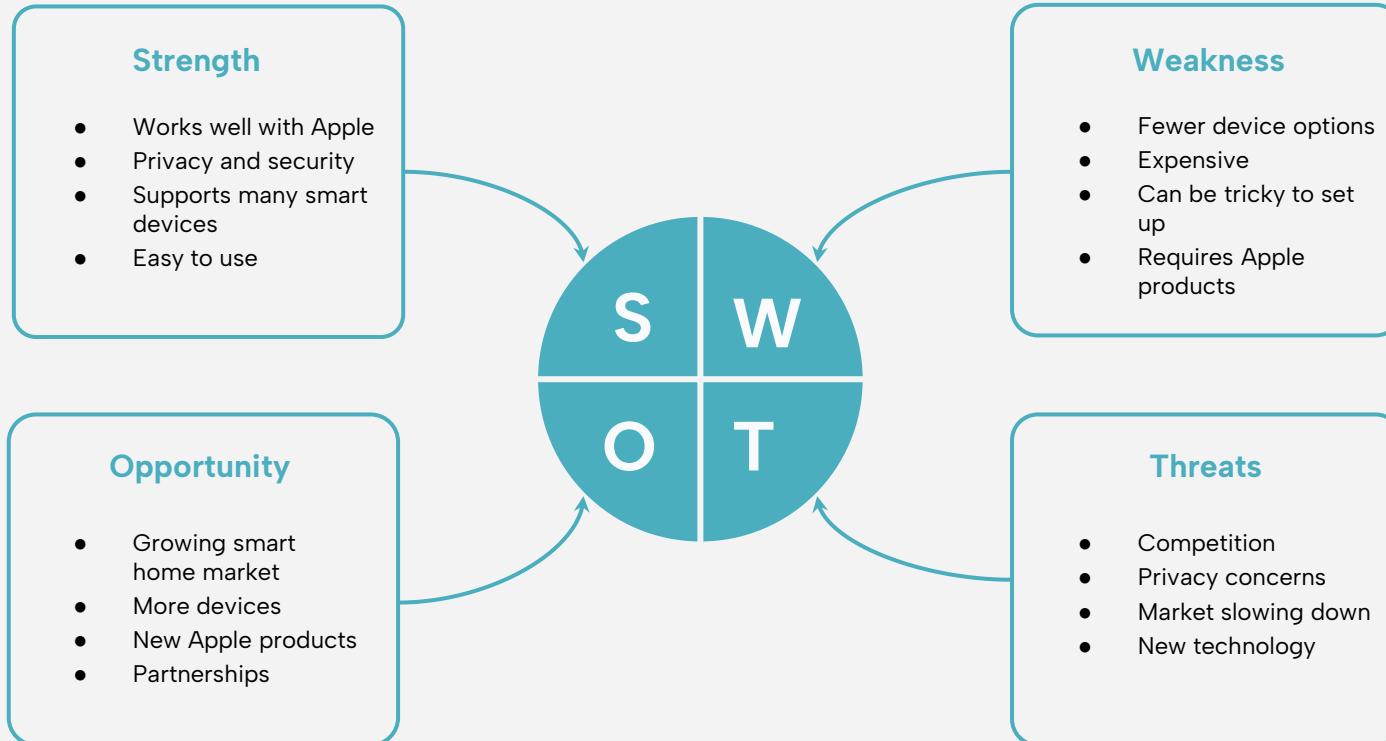
SWOT Analysis

(Amazon Echo Show)



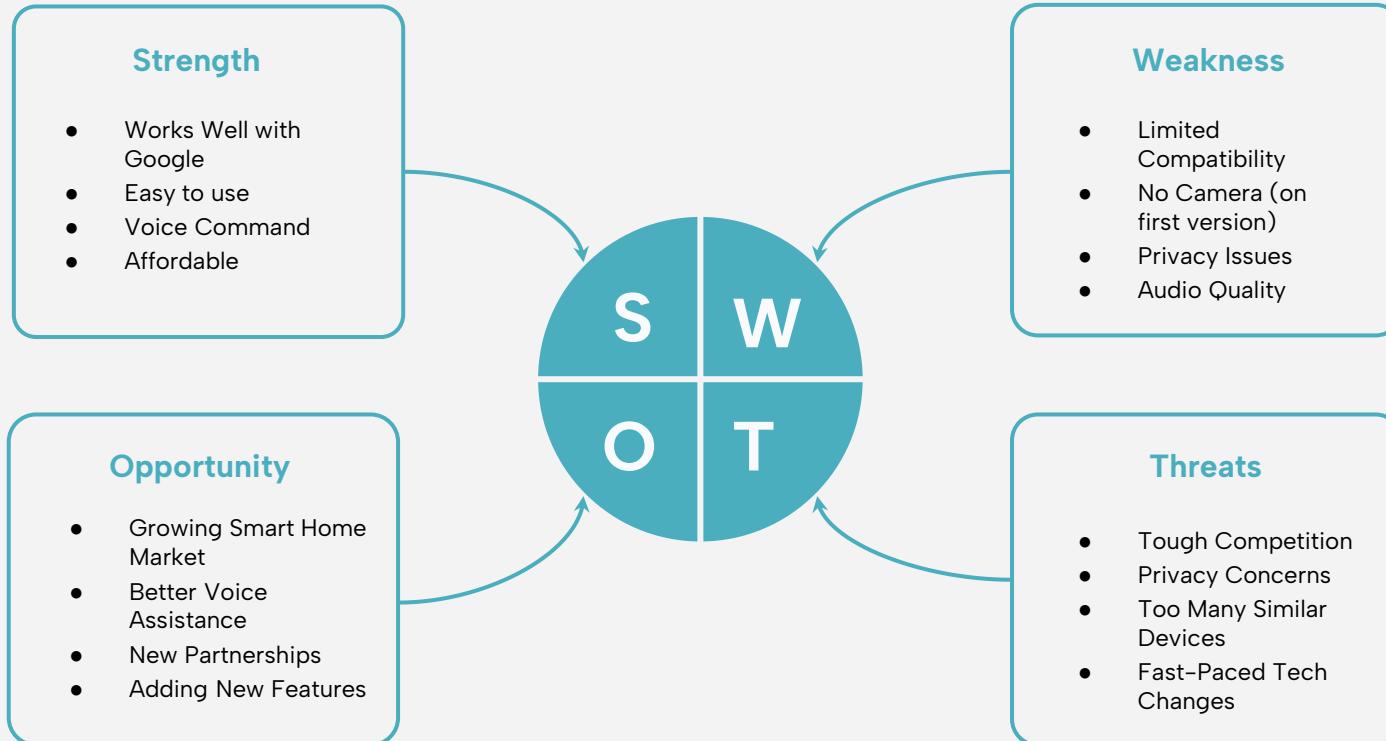
SWOT Analysis

(Apple HomeKit)

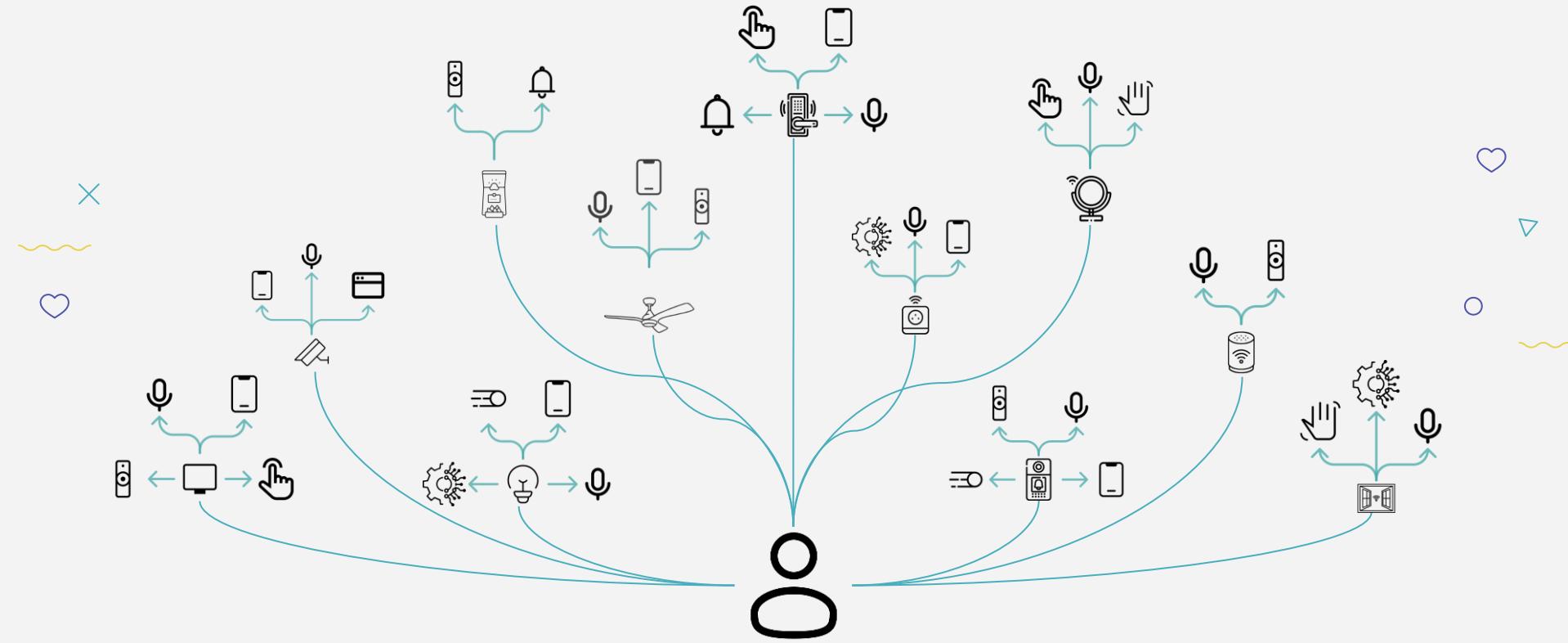


SWOT Analysis

(Google Nest Hub)



Interaction Matrices



Research Objective



To understand the diverse **needs, pain points, and expectations of users** when managing smart home environments through a digital interface, in order to define **key functionalities and user-centric design** requirements for an AI-enabled smart home tablet interface.



Target Audience

High Middle Class – High Class



- Young professionals (25-35)
- Parents (35-50)
- Elderly users (50+)

Survey Questions

- What is your age?
- What is your role in your household?
- Do you currently use any smart home devices?
- Which smart devices do you use at home?
- How do you primarily control these devices?
- What challenges do you face while managing your smart devices?
- What features would make a centralized control app useful to you?
- How important is it for the system to adapt to your preferences over time?

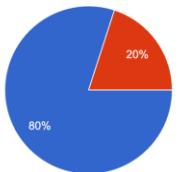


<https://docs.google.com/forms/d/e/1FAIpQLScpsJByAqLzAOlkKhYqa-QU7wAtVOab9CpqJdlGiZgXfwhzl5w/viewform?usp=header>

Survey Responses

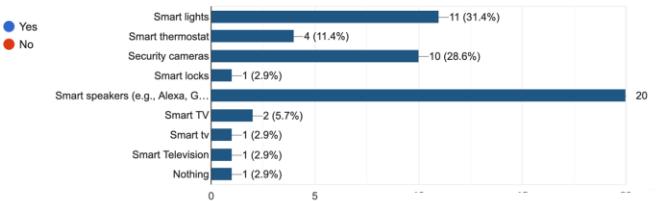
Do you currently use any smart home devices?

35 responses



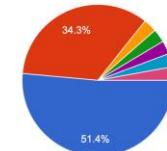
Which smart devices do you use at home?

35 responses



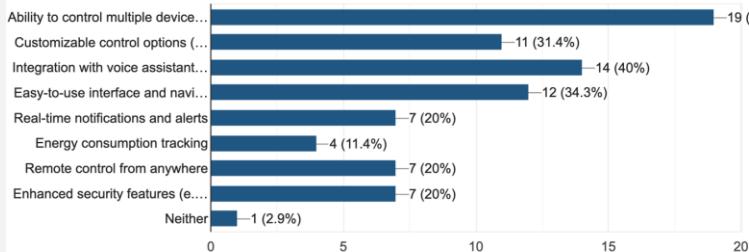
How do you primarily control these devices?

35 responses



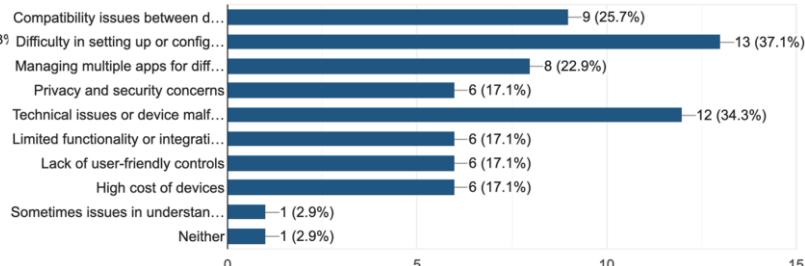
What features would make a centralized control app useful to you?

35 responses



What challenges do you face while managing your smart devices?

35 responses



Interview Questions

- How do you usually control your smart home devices (lights, temperature, security)?
- What aspects of your smart home system do you enjoy the most?
- When utilizing your smart home, have you ever encountered any issues or frustrations? What were they?
- What aspect of your present system would you like to modify or enhance?
- How important is it for you to customize your smart home settings (e.g., lighting, temperature)?
- Do you want your system to adapt to your routine on its own? Could you provide an example?
- What are your thoughts on your smart home system's security features? Are they sufficient?
- Would you like to get warnings from the system in the event that something goes wrong, such a security issue?
- Is there anything about your smart home system that you find challenging to use? What would facilitate it?
- In your opinion, what features may improve your smart home system going forward?



Insights from Personal Interview

- **Voice control is popular**, but app-based control and automation are increasingly preferred for **detailed tasks**.
- **Convenience** is the top priority, followed by safety and security; **energy savings** matter less unless highlighted.
- **Connectivity issues** are the biggest pain point, with users wanting all devices to work seamlessly together.
- Device integration needs improvement, as users want a unified system that works **across multiple devices, regardless of brand**.
- Customization is important, but some users find it unnecessary or overly complicated.
- User interfaces are often too complex, and **voice control doesn't always accommodate non-American accents**.
- Security concerns are significant, with users desiring stronger safeguards like **encryption and multi-factor authentication**.
- **A centralized, simplified control system** that integrates all devices and improves user experience is highly desired.
- Improvements to **device compatibility, automation, and security** are essential for increasing user satisfaction.



Persona (High Class)



👤 BIO

Rajesh is highly tech-savvy and has a deep passion for gadgets, constantly exploring the latest innovations. He relies on smart home devices to efficiently manage his hectic work schedule and balance his family life, finding convenience and control through technology.

⬇️ Need

- A centralized system integrating all smart devices.
- Customization options that are easy to understand.
- Reliable voice and touch controls.
- Enhanced security features with simple settings.

Rajesh Sharma

♂ Male

⌚ 38

💼 IT Manager

💳 High

🎯 Goals

- Seamless control of all devices.
- Easier automation setup.
- Better device security and alerts.
- More intuitive and simpler interfaces.

✳️ Pain Points

- Devices don't work well together.
- Voice control struggles with accents.
- Setting up automation feels complicated.
- Security features seem weak or unreliable.

Empathy Map (High Class)



Persona (Middle Class)



Anjali Verma

Female

34

School Teacher

Middle

👤 BIO

Anjali juggles work and family responsibilities, seeking smart home solutions that simplify daily chores, enhance convenience, and prioritize her family's safety, helping her create a secure and efficient home environment.

👉 Need

- Cost-effective devices with clear instructions.
- A simple, intuitive interface for easy management.
- Reliable support for troubleshooting.
- Features that enhance security and save time.

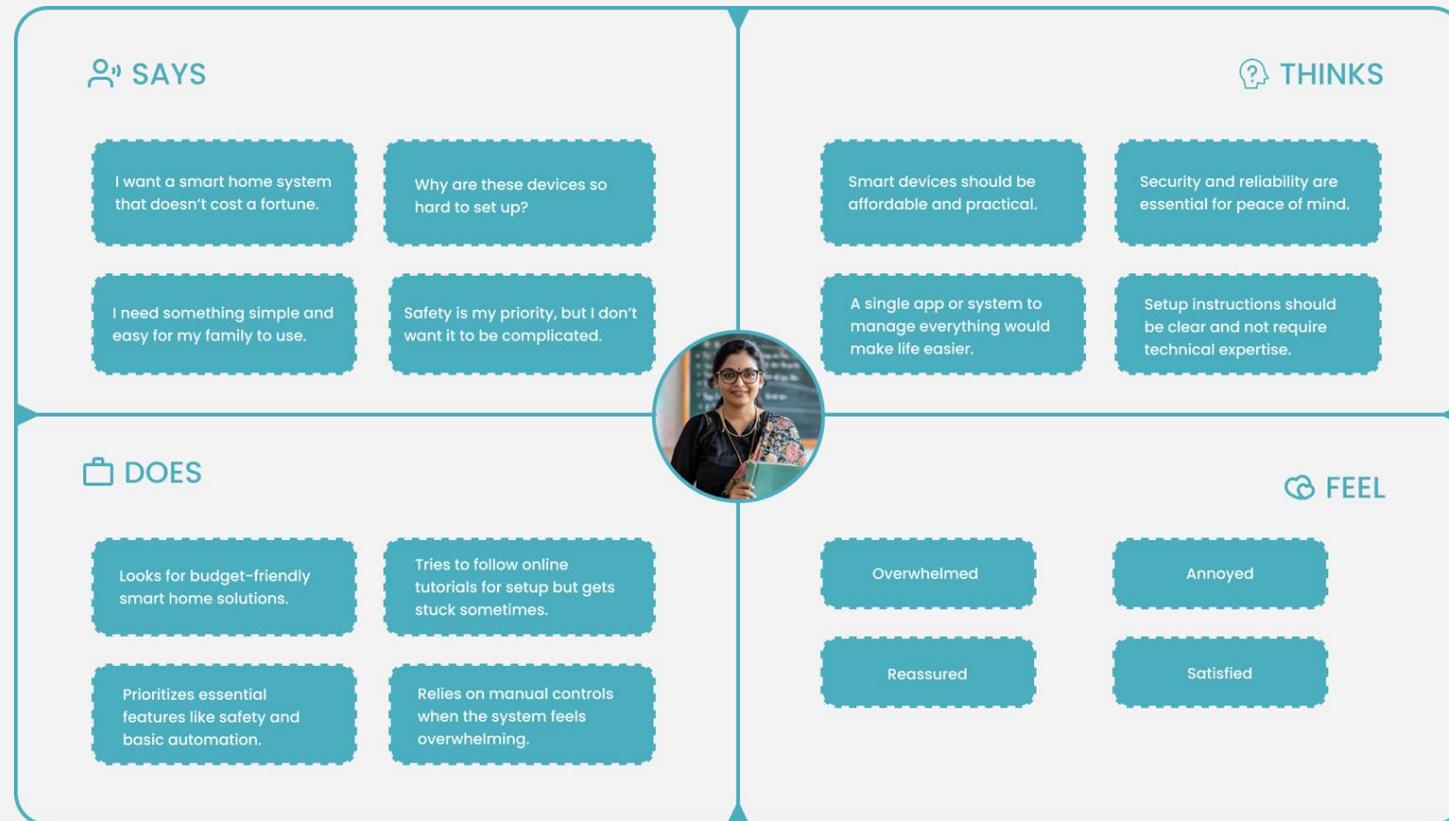
🎯 Goals

- Affordable and efficient smart home solutions.
- Simplified setup processes.
- Compatibility across all devices.
- Better control over home safety and energy use.

✳️ Pain Points

- Devices are expensive and difficult to maintain.
- Struggles with technical setups.
- Limited compatibility between devices.
- Lack of clear instructions for use.

Empathy Map (Middle Class)



Customer Journey Maps (As-Is)

SCENARIO				
A User has purchased a smart home hub and is setting it up to integrate with their existing devices for daily use.				
TRIGGERS		Busy Schedule, Convenience, Smart Devices,		
STAGES	Setup Process	Integration with Devices	Initial Use	Ongoing use and Maintenance
USER JOURNEY	Unboxing and connecting the device to the home network.	Connecting the hub to existing devices like lights, cameras, and thermostats.	Testing device control through the app or voice commands.	Using the system daily and addressing connectivity or performance issues.
TOUCH POINTS	Mobile apps, user manuals, support forums.	Device pairing screens, brand-specific apps.	Mobile apps, voice assistants, hub interface.	App updates, customer support, online troubleshooting guides.
PAIN POINTS	<ul style="list-style-type: none">Confusing instructions.Poor connectivity during the initial setup.No clear indicators for successful integration.	<ul style="list-style-type: none">Limited compatibility across brands.Frequent disconnections during pairing.Difficulties understanding technical terms.	<ul style="list-style-type: none">Delayed or inconsistent responses.Difficulty customizing settings.Voice commands misinterpreted, especially accents.	<ul style="list-style-type: none">Updates causing compatibility issues.Lack of active alerts for device errors.Limited or slow support for troubleshooting.
EMOTIONS				
FEATURES	Step-by-step setup guide, visual cues for successful setup.	Universal compatibility tools, plain-language instructions.	Faster response times, guided customization options.	Automatic compatibility updates, proactive error notifications.

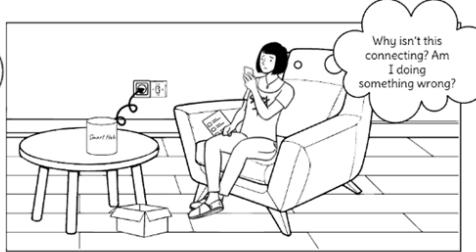
Storyboard (As-Is)

Scene 1 - Unboxing and Preparation



The user opens the packaging excitedly but finds a long manual with technical terms they don't understand.

Scene 2 - Starting the Setup



The user plugs in the device and downloads the app but struggles to connect the hub to the Wi-Fi due to unclear instructions.

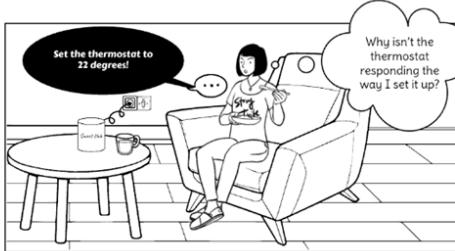
Scene 3 - Pairing Other Devices



The user tries to pair smart devices like lights and cameras, but only a few devices connect successfully, while others fail due to compatibility issues.

Scenario – The User struggles with setup, pairing, and connectivity, turning the Smart Hub experience into frustration.

Scene 4 - Testing the System



The user tests the connected devices, like adjusting a smart thermostat, but faces delayed responses and incomplete functionality.

Scene 5 - Daily Usage



The user navigates the app to adjust settings for the connected devices, but the app layout is confusing, and they struggle to find basic controls.

Scene 6 - Facing Connectivity Issues

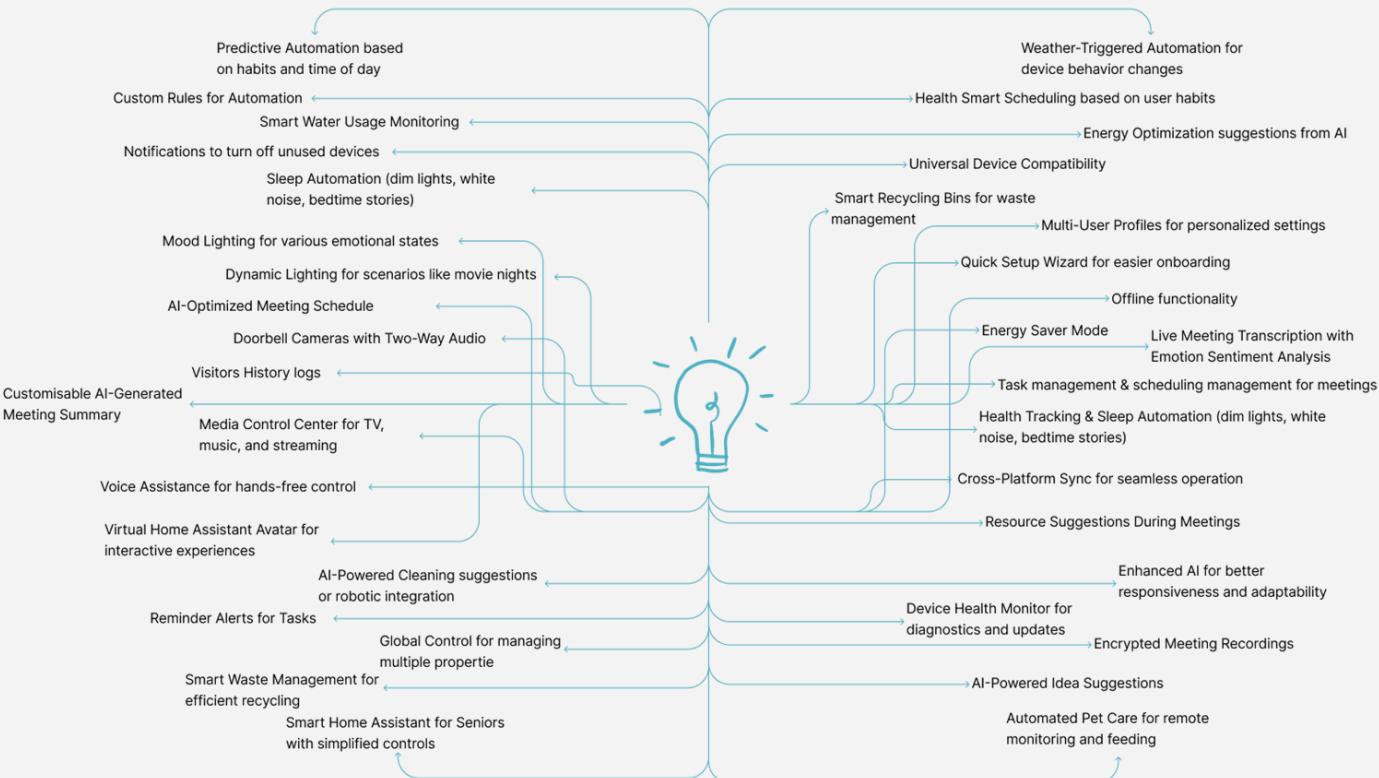


Some devices disconnect frequently, while others stop responding altogether, leaving the user frustrated and unsure how to fix the problem.

Problem Statement

Smart home systems promise **convenience, safety, and efficiency**, but current platforms often fail to meet user expectations. **High Middle Class – High Class** households face challenges such as **complex setup** processes that frustrate users, **limited compatibility** between devices from different brands, and **connectivity issues** that disrupt seamless operation. Additionally, **overly complicated interfaces** make the systems hard to use, and **inadequate security features** leave users feeling vulnerable. These pain points prevent users from fully benefiting from their smart home systems, highlighting the need for an **intuitive, customizable, and unified solution** tailored to diverse household needs.

Brainstorming



Six Thinking Hat



Blue Hat

- Objective - Build a seamless, efficient smart home system.
- Process -
 1. Gather Ideas - Collect inputs (Green, Yellow, Black, Red, White).
 2. Analyse - Review data and insights.
 3. Organise - Plan and structure tasks.
 4. Decide - Address concerns and finalise actions.
 5. Execute - Test, launch, and improve.



White Hat

- Smart Devices - Include health monitors, robotic vacuums, smart mirrors, and energy-efficient appliances, improving safety and convenience.
- Features - Offer remote/voice control, automation, touch-less interaction, and enhanced security.
- Competitors -
 - Google Nest Hub - Sleep tracking leader.
 - Amazon Echo Show - Best in entertainment and compatibility.
 - Apple HomeKit - Prioritises privacy but limited compatibility.



Green Hat

- Multi-User Profiles
- Offline Functionality
- Emergency Routines - (Activates security routines, including lockdowns and emergency alerts)
- Facial Recognition Access
- Smart Home Gamification
- Party Mode



Yellow Hat

- Multi-User Profiles - Tailored experiences for every family member's preferences.
- Offline Functionality - Operate essential functions even without an internet connection.
- Emergency Routines - Quick responses to emergencies.
- Facial Recognition - Secure access for trusted users.
- Party Mode - Creates perfect ambiance for gatherings with minimal effort.
- Smart Home Gamification - Encourages efficient usage through fun and interactive rewards.



Black Hat

- Multi-User Profiles - Risk of personal data leaks.
- Offline Issues - Limited features and sync errors.
- Automation Risks - Failures can cause panic.
- Facial Data - Privacy risks and potential deepfake threats.
- Gamification - Can distract from key features.
- Customisation - Makes setup harder for users.



Red Hat

- Multi-User Profiles - Personalization, Confusion
- Offline functionality - Security, Limitation
- Emergency Routines - Reassurance, Anxiety
- Facial Recognition Access - Confidence, Distrust
- Smart Home Gamification - Fun
- Party Mode - Excitement, Impersonal

Six Thinking Hat



Blue Hat

- Objective - To Manage the Decision-Making Process, Quality Control and Feedback Loop
- Blue Hat Role -
 1. Guide the team and plan steps.
 2. Ensure clear communication.
 3. Track progress and resolve conflicts.
 4. Maintain quality and focus on goals.



White Hat

- User Needs - Convenience, safety, and integration, but face challenges with complex interfaces, poor connectivity, and inconsistent voice recognition.
- Improvements Needed - Better customisation, stronger security, seamless syncing, and user-friendly automation.
- Concerns - Privacy fears, hacking risks, and setup complexities deter adoption.



Green Hat

- Customisable Voice Assistant
- Gesture-Based Navigation
- Multi-Zone Control
- Real-Time Monitoring (instant updates on device statuses and real-time activity monitoring)
- Guest Access (Temporary access with restricted permissions for guests or visitors)
- Integrated Payment Management (Consolidates and manages bill payments for utilities and services)



Yellow Hat

- Customisable Voice Assistant - Adapts to user preferences for a highly personalised experience.
- Gesture-Based Navigation - Enables hygienic and convenient control without physical contact.
- Multi-Zone Control - Independently manage sections of your home for better flexibility.
- Real-Time Monitoring - Check and fix devices instantly.
- Guest Access - Temporary, secure controls for visitors.
- Integrated Payment - Pay all household bills easily.



Black Hat

- Customisable Voice Assistant - Struggles with accents and personalisation privacy.
- Gesture Control - Errors due to lighting or misinterpretation.
- Zone Management - Overlaps confuse and frustrate users.
- Monitoring - Feels invasive and creates alert fatigue.
- Guest Access - Overstays or misuse of controls.
- Integrated Payment Management - Exposes finances and deters users.



Red Hat

- Customizable Voice Assistant - Clarity, Frustration
- Gesture-Based Navigation - Futuristic, Inaccuracy
- Multi-Zone Control - Flexibility, Complexity
- Real-Time Monitoring - Awareness, Surveillance
- Guest Access - Control, Complication
- Integrated Payment Management - Convenience, Worry

MoSCoW Prioritization Technique

Mo

Must Have (Critical for MVP)

- Universal Device Compatibility
- Unified Control Hub for all smart devices & Voice Assistance for hands-free control
- Multi-User Profiles for personalised settings
- Custom Rules for Automation
- Quick Setup Wizard for easier onboarding
- Home Security with AI Surveillance
- Offline Functionality
- Emergency Routines for lockdown or alerts
- Real-Time Monitoring of device status and activity

S

Should Have (High Priority but Not Essential for MVP)

- Dynamic Lighting for scenarios like movie nights
- Smart Scheduling based on user habits
- Facial Recognition Access for added security
- Notifications to turn off unused devices
- Guest Access with temporary and restricted controls
- Multi-Zone Control

Co

Could Have (Optional Enhancements)

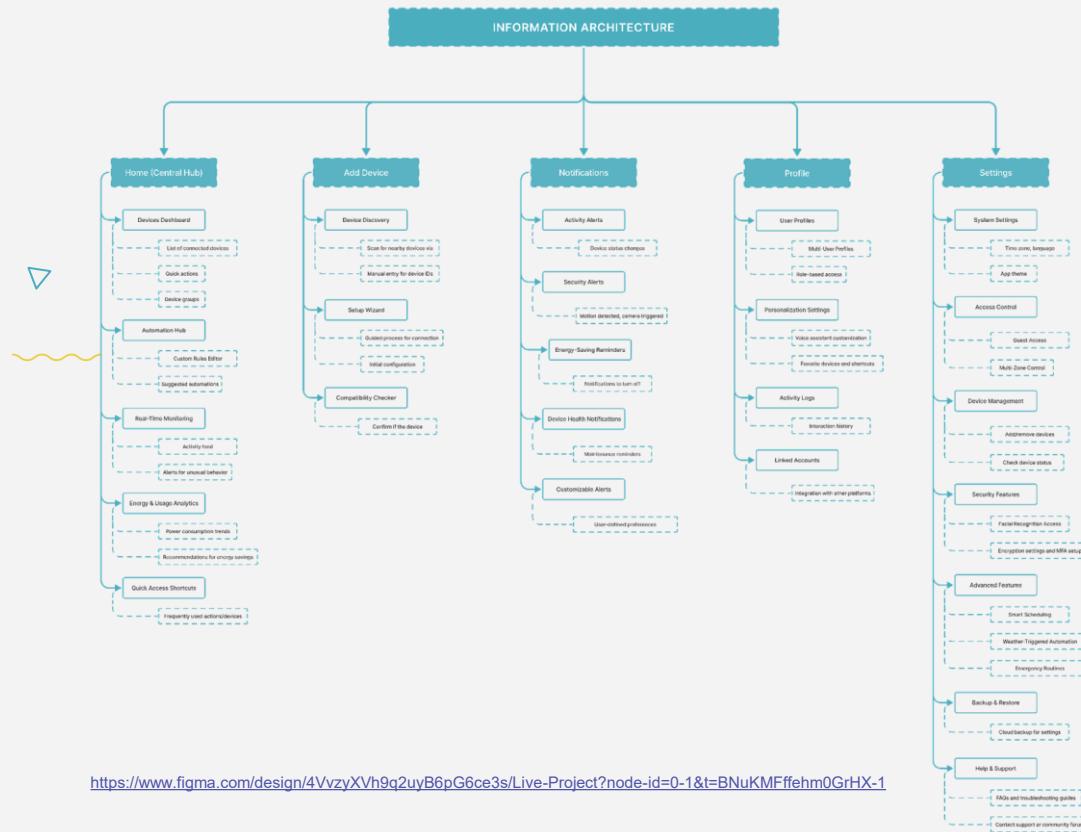
- Smart Water Usage Monitoring
- Health Tracking
- Mood Lighting for various emotional states
- Weather-Triggered Automation for device behaviour changes
- Interactive Voice Training for personalised AI learning
- Integrated Payment Management for utilities
- Automated Pet Care for remote monitoring and feeding
- AI-Generated Meeting Summary
- Live Meeting Transcription

W

Will Not Have (Not Feasible for Now)

- Smart Recycling Bins for waste management
- Virtual Home Assistant Avatar for interactive experiences
- Smart Home Gamification

Information Architecture



Additional Features (Integrated Throughout)

- **Voice Control** – Accessible via a floating button or hardware button.
- **Global Search** – Search across devices, settings, and notifications.
- **Interactive Tutorial** – Onboarding for new users, guiding them through features.
- **Insights & Suggestions** – AI-driven recommendations based on user habits.
- **Mood-Based Automations** – Quick setups for "Movie Night," "Party Mode," etc.

User Flow

Scenario – User wants to add the device



Scenario – User wants to control the device

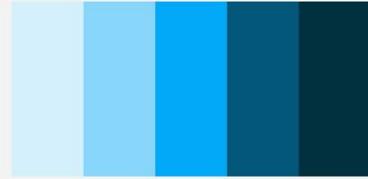


Scenario – User wants to add Guest Access for 3 days



Inspiration Board

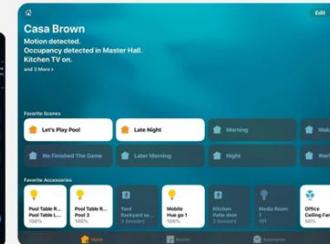
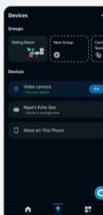
Your Home, Your Control



Color Palettes



Icons, Buttons & UI



Automation



Mood Board

Colour Palette

Logo, Name & Tagline

Typeface Combination

Heading - Poppins
Body - Roboto

Buttons Type

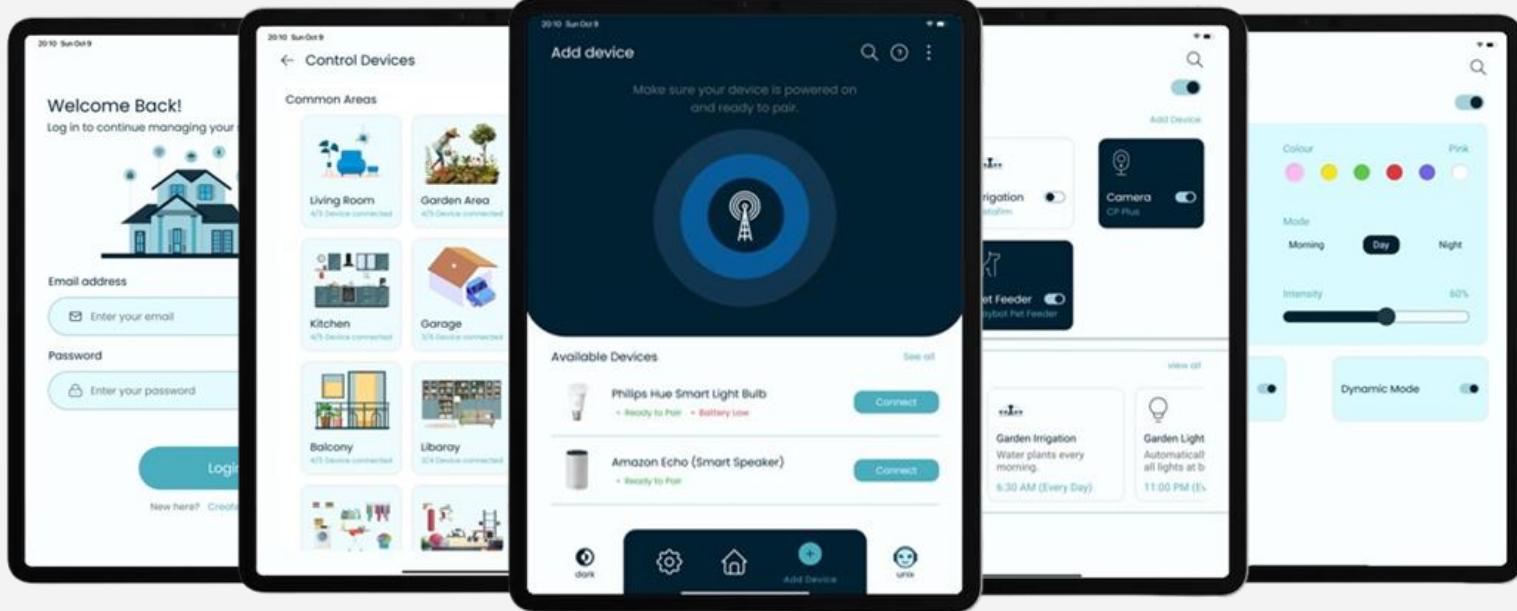
Images, Patterns & Illustrations

Selected Icons

Disselected Icons

Screens

High Fidelity Wireframes



<https://www.figma.com/design/4VvzyXvh9q2uyB6pG6ce3s/Live-Project?node-id=1588-7790&t=ohSKHU6iOn9T1HiM-1>

Testing

Tasks

- Task 1 - Log in with "Admin ID"
- Task 2 - Connect "Philips Hue Smart Light Bulb"
- Task 3 - Control "Harsh's Room's" Devices
- Task 4 - Add Guest User

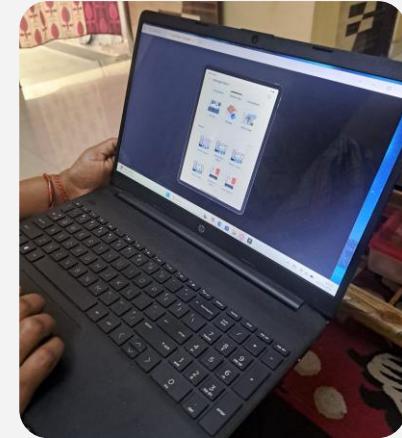
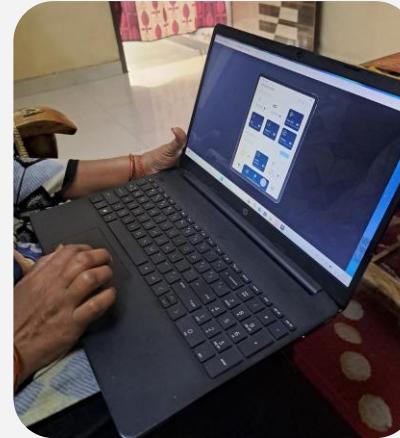
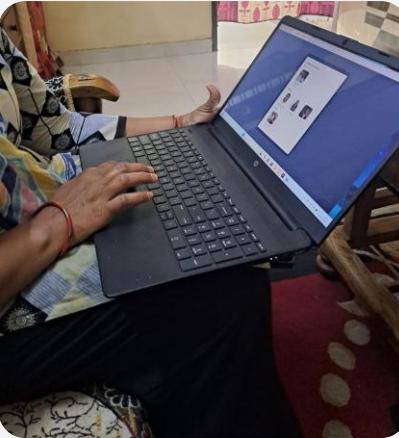
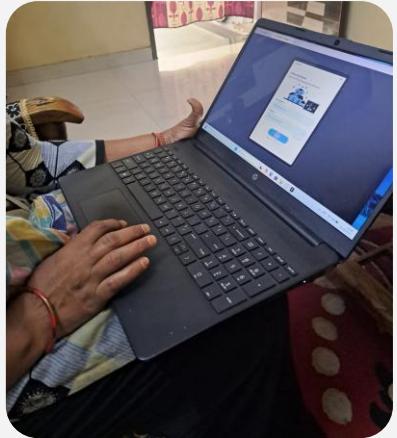
Qualitative

- Completion Rating
 - Time Taken
 - Error Per Task
 - Assistance Required
 - System Recall
 - Level of Difficulty
 - Emotional Response
-
- Specific Comment
 - Design Suggestion
 - Error Details
 - Assistance Required

Feedback Form Questions

- How would you rate your overall experience with the UniHub ?
- How easy was it to navigate through different sections of the app?
- How intuitive did you find the icons, buttons, and layout?
- How easy was it to complete tasks ?
- How clear were the instructions and labels for completing tasks?
- How would you rate the overall look and feel of the app?

Testing



Testing Insights

- Task Completion Rate **80%** rated 4-5 stars 
- Avg. Time Taken -
 - Log in: **10-15 sec**
 - Connect Smart Plug: **30-45 sec**
 - Control Devices: **15-20 sec**
 - Add Guest User: **45-60 sec**
- Most users found the process **smooth and easy to complete**, especially with tasks like **logging in and controlling devices**. The step-by-step connection guide was appreciated, especially for **setting up devices**
- The clean and simple interface was liked by users, making navigation easier and more pleasant.
- Users found it **quick and easy to control devices**, with real-time responses that were effective and fast.
- **Guest user permissions need more clarity**. Moving this section to the profile page and providing detailed information about what permissions guests have would simplify management.

Conclusion

This project has been a step forward in making smart homes more user-friendly and efficient. By focusing on features like **universal device compatibility, predictive automation, and energy monitoring, we aimed to create a system that fits the needs of modern households.** The design prioritizes **ease of use, strong security, and better control** over devices to ensure a smooth and safe experience for users.



Overall, this application shows how **AI can make daily life simpler and smarter.** It highlights the importance of practical and innovative solutions in improving the way we manage our homes.

References

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Thank You

