

Intuitive
Seated Mobility

Smart
Storage Solutions



User-Centered
Controls

Navigation
Assistance

We-A- GO

Personal Mobility for Aging with Ease

Taanya Gumidelli
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The Dedication

This is dedicated to all aging travelers

To my Grandmother

whose love for travel never faded, even when the world around her stopped accommodating her journey. Your quiet strength and unwavering independence inspired every page of this project. Watching you slowly withdraw from something you once cherished revealed how often design forgets those who move at a different pace.

And to every Aging traveler

who has ever hesitated at a terminal entrance, been made to feel like a burden, or had to choose between discomfort and staying home.

This is for you—for your courage, your resilience, and your right to move through the world on your own terms. You deserve tools that empower you, systems that support you, and experiences that celebrate your continued journey.



The Acknowledgements

To those who shaped, supported, and inspired this journey

This thesis would not have been possible without the unwavering support of my committee. I extend my sincere gratitude to Professor Joshua Nelson, committee chair, and to my committee members Professor Diane Elabidi, Professor Mara Skov, and Professor Chang Kim. Your insights, encouragement, and thoughtful critique helped guide this work into something far richer than I could have imagined.

Special thanks to Professor Diane Elabidi, my advisor, whose mentorship provided structure, clarity, and heart to every stage of this process. Your belief in my potential and design vision carried me forward, even during moments of uncertainty.

I am deeply grateful to the elderly travelers and airport staff who shared their stories, and to my family—especially my grandmother—for reminding me that good design begins with empathy and ends with dignity.



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Abstract

An overview of the research, insights, and design outcomes

Airports are spaces of movement—but for elderly travelers, they often become spaces of restriction, confusion, and exhaustion. This thesis addresses the overlooked needs of aging travelers in airport environments and presents a solution that reimagines mobility through empathy, autonomy, and inclusive design.

Based on extensive research including user interviews, accessibility audits, and simulation exercises, this project identifies key emotional and physical barriers encountered by elderly travelers. The final outcome—We-A-Go—is a smart companion cart that integrates autonomous navigation, physical support, cognitive guidance, and emotional reassurance.

More than a product, We-A-Go is a philosophy: a commitment to design systems that affirm independence, preserve dignity, and restore trust in travel experiences. This thesis contributes to the growing movement toward inclusive mobility by offering a framework that prioritizes human connection over digital complexity—starting with those often left behind.

Introduction & Personal Context

Designing for Travel, Designing for Dignity

Airports are spaces of movement—but for elderly travelers, they often become spaces of restriction, confusion, and exhaustion. This thesis addresses the overlooked needs of aging travelers in airport environments and presents a solution that reimagines mobility through empathy, autonomy, and inclusive design.

Based on extensive research including user interviews, accessibility audits, and simulation exercises, this project identifies key emotional and physical barriers encountered by elderly travelers. The final outcome—We-A-Go—is a smart companion cart that integrates autonomous navigation, physical support, cognitive guidance, and emotional reassurance.

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The Personal Story & Origin of Inquiry

This thesis began with a moment I didn't expect to be so formative: a quiet conversation with my grandmother. Once an active and independent woman who loved traveling across cities and countries to visit family, she shared, with a trace of sadness, that she no longer flies. Not because she didn't want to—but because she no longer felt she could.

She didn't mention fear of flying, or age-related health concerns. What she described instead were the hallways that felt endless, the boarding instructions that echoed unintelligibly, the fast-paced systems that left no room for slowness, questions, or rest. She described feeling like an inconvenience—a traveler that the system didn't account for.

That moment stayed with me. It was the emotional spark that evolved into this thesis. It made me ask:

What happens when the infrastructure of travel fails the people who need it most?

What began as a personal observation soon revealed itself to be part of a larger, systemic issue facing aging travelers.



The Airport Mobility Crisis

Observation of Different Personas

I conducted in-depth observations of three challenging personas navigating airports:



Aging Travelers

Reading signage, standing in lines
Anxious, frustrated, dependent



Pregnant Women

Finding rest areas, standing duration
Uncomfortable, concerned, fatigued



Parents with Young Children

Managing luggage and children
Overwhelmed, distracted, hurried

Why Focus on Aging Travelers?

The Compelling Need

The modern airport is a masterclass in efficiency. It's built to move thousands of people quickly and seamlessly from entrance to gate. But embedded within this flow is an assumption: that everyone moves, sees, hears, reads, and understands at the same pace.

For elderly travelers, this assumption becomes a barrier.

They must navigate:

- Physically demanding distances between terminals and gates
- Complex and ever-changing digital interfaces at kiosks and mobile apps
- Crowded environments with overwhelming signage and unclear audio cues
- Inconsistent or under-resourced assistance systems that require waiting or asking for help

These compounding barriers create a travel environment that can feel disorienting, stressful, and inaccessible—not due to personal inability, but due to a lack of inclusive design.

Many elderly travelers internalize this burden. Instead of demanding better systems, they travel less. They miss birthdays, weddings, funerals. Not because they can't get there—but because getting through the airport is too much.

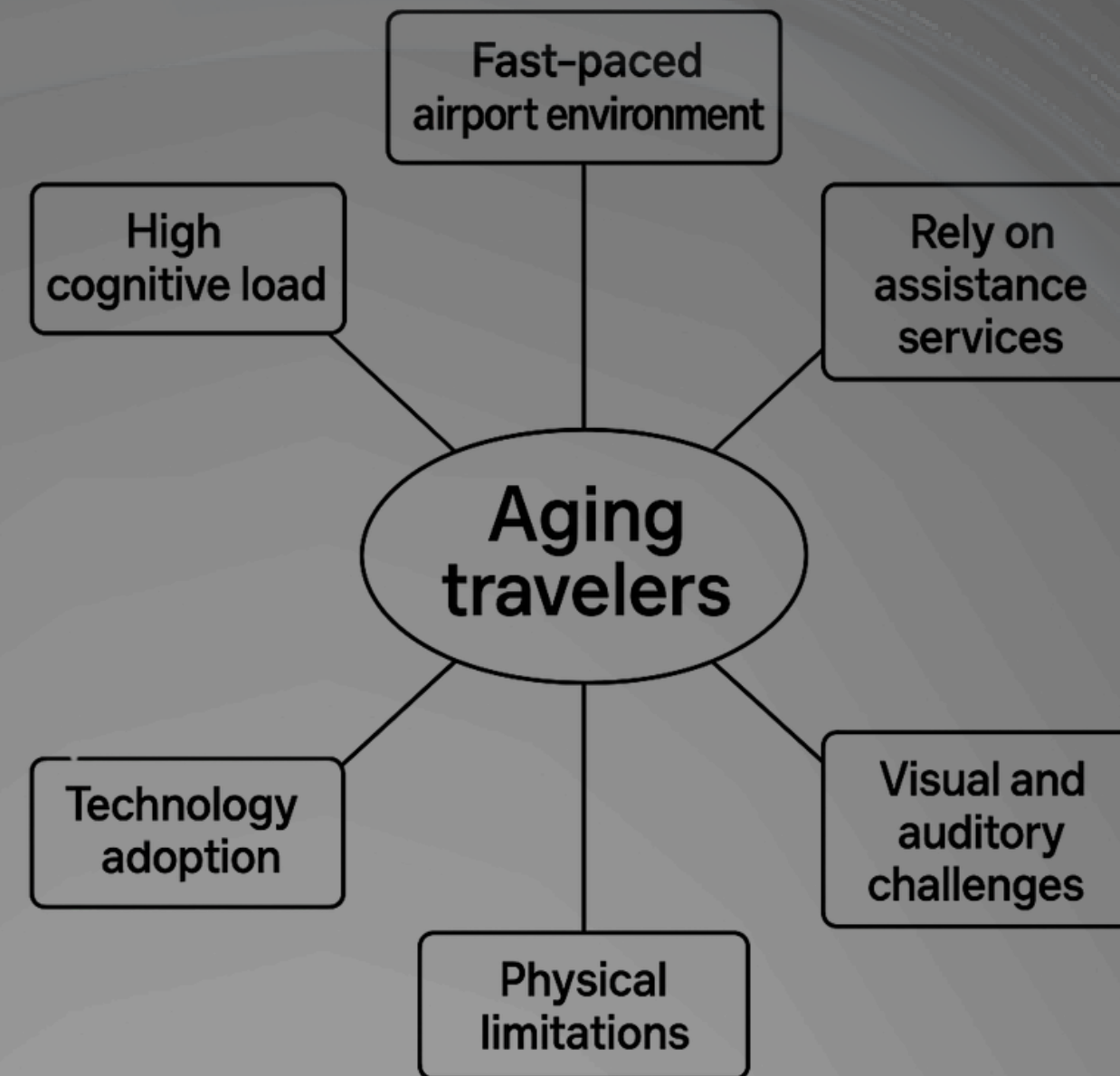
Why Focus on Aging Travelers?

The Compelling Need

My research revealed aging travelers face an interconnected web of challenges with significantly greater intensity than other travelers. This growing demographic (20% of population by 2050) encounters multiple barriers that compound each other.

Key Observations:

- Physical limitations greatly affect overall mobility and endurance
- Cognitive load from processing complex information creates anxiety
- Sensory challenges impair navigation and communication
- 78% avoid air travel entirely despite desire to visit family



Locating the Thesis Range

Design Roots and Personal Interests

Every thesis begins with a question. Mine started with a feeling: that the world is not designed for everyone equally.

As a designer, I've always been drawn to the intersections where systems fail people. I am deeply interested in the spaces between:

- Autonomy and assistance
- Design and emotion
- Technology and intuition

My passion lies in creating tools and systems that make people feel capable, especially when environments tend to make them feel small or overwhelmed. Whether through layout, interface, object, or system—I seek to design with empathy that translates into real functionality.

This thesis emerged at the crossroads of these interests, combining:

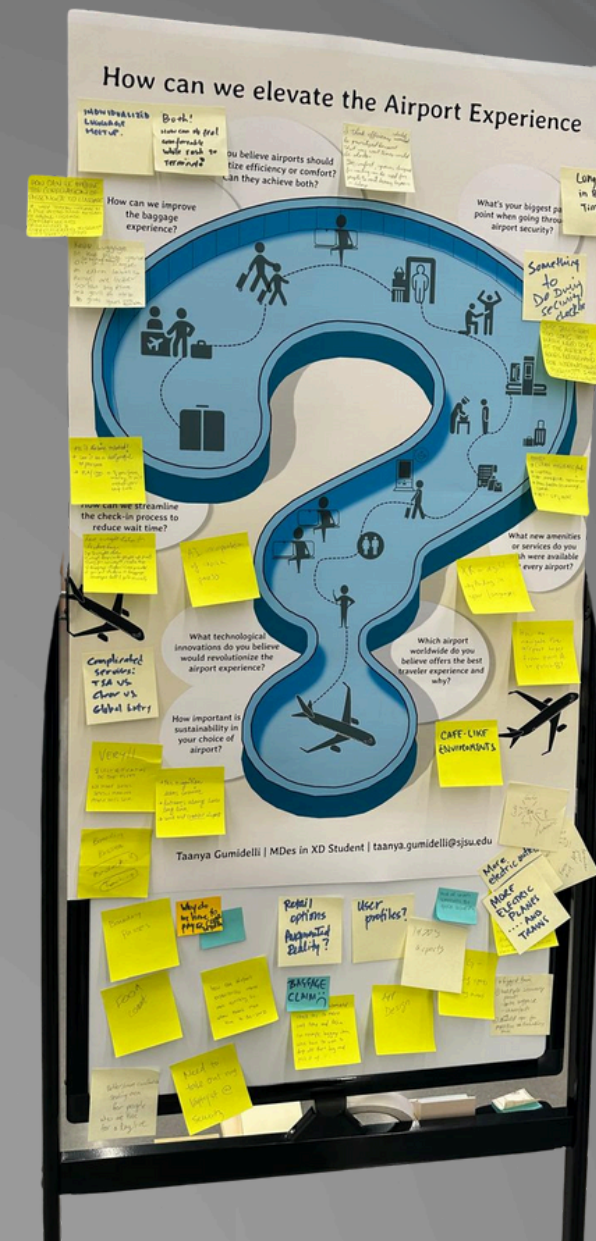
- My lifelong curiosity about design as a storytelling tool
- A deep respect for aging populations
- A critical eye toward the gaps in travel infrastructure

Common Threads in My Design Thinking

As I began exploring possible thesis directions, I noticed a clear pattern among my interests:

Design Concern	How It Shows Up in My Work
Form and function	My designs aim to feel intuitive, while working seamlessly across contexts
Emotional design	I pay attention to how people <i>feel</i> when interacting with a system—not just what they do
Environmental systems	I consider how people move through space, and what cues they need at each moment
Invisible exclusion	I am driven to uncover ways design unintentionally leaves people behind

Along the way, I explored multiple adjacent concepts that fed into this work:



Summary: Framing the Path Forward

By the end of my thesis framing process, I had identified both the what and the why of my project:

- What I am designing: A smart companion cart that guides, supports, and empowers aging travelers
- Why it matters: Because access to movement, space, and experience should not shrink with age
- What this contributes: A human-centered system that offers an emotional, physical, and navigational response to aging in public space

This chapter clarified the purpose and trajectory of the work. It gave me not just a problem to solve, but a framework of values to uphold: empathy, autonomy, clarity, and dignity.

The next chapter will outline the research questions that guided my inquiry, and the multi-method process I used to investigate the real challenges faced by elderly travelers.

Locating the Thesis Range

Designing for aging travelers required more than empathy—it demanded evidence.

While personal experience sparked this thesis, I knew my final solution needed to be grounded in what users truly experience, how current systems fail, and what emotional and functional needs remain unmet.

This chapter outlines the research structure that helped me understand:

- The everyday reality of airport travel for elderly passengers
- The breakdown of current navigation systems
- Emotional, cognitive, and physical patterns that influence user behavior
- The opportunity for a new kind of mobility system

Each research activity was aligned to a specific design inquiry, allowing the data to directly inform decision-making in later design phases.

People, Places & Objects

Everyday Worlds that Shape the Problem

Airports are emotionally charged spaces. They carry the promise of connection and exploration—but for elderly travelers, they often represent confusion, fatigue, and fear of being left behind. This chapter uses a symbolic lens to reflect on where this design problem “lives,” and the cultural and material landscapes that influence it.

Three places stood out repeatedly in my research as high-stress zones:

- Long, unfamiliar terminal corridors that demand physical stamina
- Security checkpoints, where unpredictability and unclear instructions amplify stress
- Boarding gates, where time pressure and seat availability cause tension and disorientation

These places aren’t inherently flawed—but they were never designed with slow walkers, anxious navigators, or hearing-impaired users in mind.

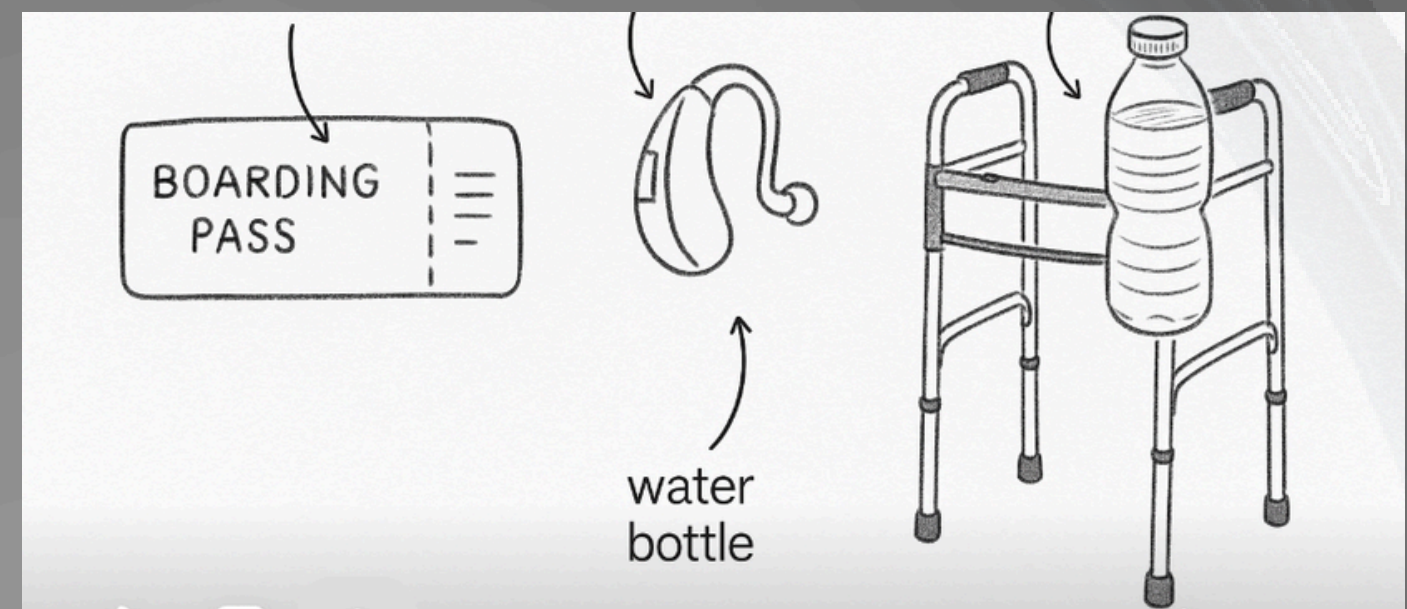


People, Places & Objects

Objects, Emotions, and Invisible Design Work

The challenges faced by elderly travelers are often revealed through the objects they interact with—and the emotions those interactions provoke. For example, a boarding pass may seem simple, but to a low-vision traveler fumbling with bags and forms, it becomes a point of stress. A hearing aid should help—but distorted airport announcements often bypass it. Even a mobility cart—useful in theory—can feel like a symbol of lost independence when poorly integrated.

This project also lives within invisible labor. Airport staff, family members, and travelers themselves perform emotional and logistical work to compensate for systems that don't support aging bodies. The tension between wanting independence and having to constantly ask for help became a major theme.



Research Methodology

My Three-Phase Approach

1

Exploratory Research



"Elderly travelers face unique mobility challenges that current solutions fail to address."
Emotion: Concerned.

2

Empathy-Driven Research



"Walking through their experience revealed barriers invisible to traditional design."
Emotion: Enlightened.

3

Solution Testing



"Our design transforms barriers into opportunities for independence."
Emotion: Inspired.

PHASE 1: EXPLORATORY RESEARCH

Problem Statement

- Elderly travelers with mobility, visual, or hearing impairments struggle to navigate independently through airports due to inadequate wayfinding systems and physically demanding layouts.
- This leads to increased stress, missed flights, and over-reliance on inconsistent assistance services, significantly diminishing their travel experience and independence.
- As the elderly population continues to grow globally, addressing these navigation challenges becomes increasingly critical for ensuring inclusive, stress-reduced travel for all passengers.



PHASE 1: EXPLORATORY RESEARCH

Interview Insights



Sarah, 68
Elderly Traveler with Hearing
and Sight Issues
Travel Frequency: 1-2 times per
year (Family Visits)

"The biggest challenge for me is reading
signs from a distance and hearing
announcements clearly."

"I often feel mentally exhausted by the
time I reach my gate."



RAJ, 72
International Wheelchair User
Travel Frequency: Annual trips
to India (Family Visits)

"The biggest change in the last 3 years is
feeling less independent in the airport."

"I rely entirely on the airport staff for
navigation. I don't really wayfind on my
own anymore."



MARGARET, 75
Walking Stick User Travel
Frequency: Occasional Traveler

"Trying to remember directions while
focusing on walking safely is mentally
exhausting."

"Airports seem to forget that not
everyone can rush from point A to B
effortlessly."

PHASE 1: EXPLORATORY RESEARCH

Interview Insights



ROBERT & HELEN, 75 & 72
Elderly Couple Traveling
Together Travel
Frequency: Twice yearly
(Grandchildren Visits)

"Navigating airports together is challenging. We have to look out for each other while managing our own limitations."

"The pace of everything in airports is too fast for us. We constantly feel rushed and anxious."



LINDA, 73
Temporary Wheelchair User with
Broken Arm Travel Frequency:
Special occasion (Daughter's
wedding)

"Using my phone one-handed in a wheelchair is nearly impossible. I can't navigate apps and move at the same time."

"Most accessibility features seem designed for either wheelchair users or people with a single disability, not both."



JAMES, Expert
SFO Wheelchair Assistant
Experience: 4 years

"The time crunch is especially stressful when dealing with tight connections."

"Some elderly passengers need more than just mobility assistance. They might have multiple health issues or cognitive impairments."

PHASE 1: EXPLORATORY RESEARCH

Interviews



PHASE 1: EXPLORATORY RESEARCH

Gap Identified

1

Elderly travelers often feel overwhelmed by the fast-paced airport environment

2

Many rely heavily on assistance services, sometimes at the cost of independence

3

Visual and auditory challenges significantly impact navigation and information gathering

4

There's a high cognitive load involved in processing airport information and procedures

5

Physical limitations greatly affect the overall airport experience

6

Technology adoption varies widely among elderly travelers

PHASE 1: EXPLORATORY RESEARCH

Design Criteria Insights



Smart Navigation
and Emotional
Feedback System

Track physical and cognitive stress levels to adapt navigation guidance and support in real-time.



Flexible Assistance
Features

Provide modular assistance to accommodate varying levels of mobility and independence.



Integrated Wayfinding
and Multi-Use Functions

Combine navigation, mobility support, and item management in a single system.



Personalized and
Seamless Planning
Integration

Align the smart cart's features with the user's preferences and journey goals.



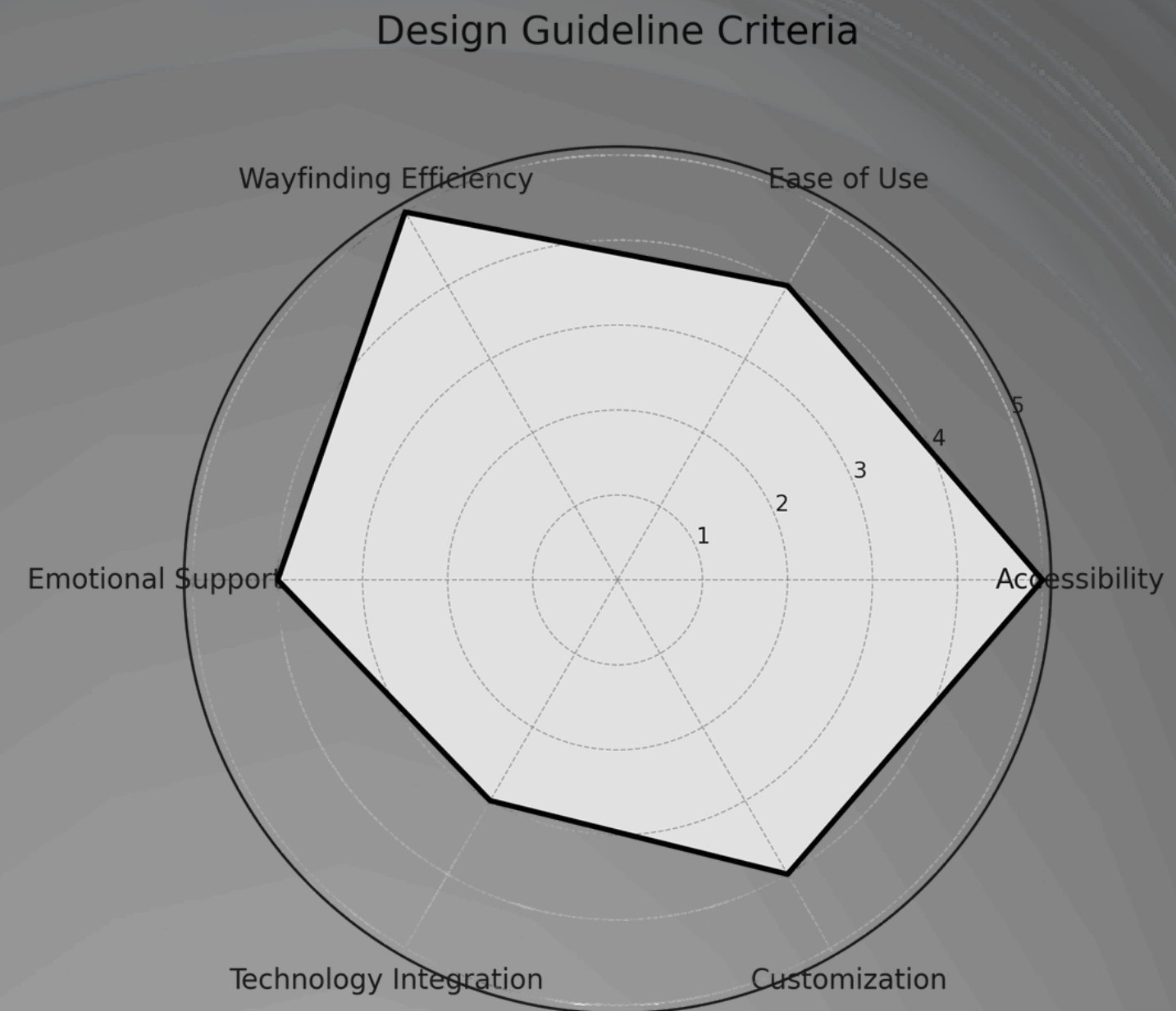
Supportive and Inclusive
Guidance System

Provide intuitive, non-intrusive support for users with reduced mobility or cognitive load.

PHASE 1: EXPLORATORY RESEARCH

Opportunities for Improvement

- **Accessibility:** Design must prioritize universal access and accommodate various physical and cognitive abilities
- **Ease of Use:** Interfaces need to be intuitive and minimize cognitive load during navigation
- **Wayfinding:** Efficiency: Systems should provide clear, timely directions with minimal user confusion
- **Emotional Support:** Solutions must address user anxiety and build confidence during airport journeys
- **Technology Integration:** Seamless integration with existing airport systems



PHASE 1: EXPLORATORY RESEARCH

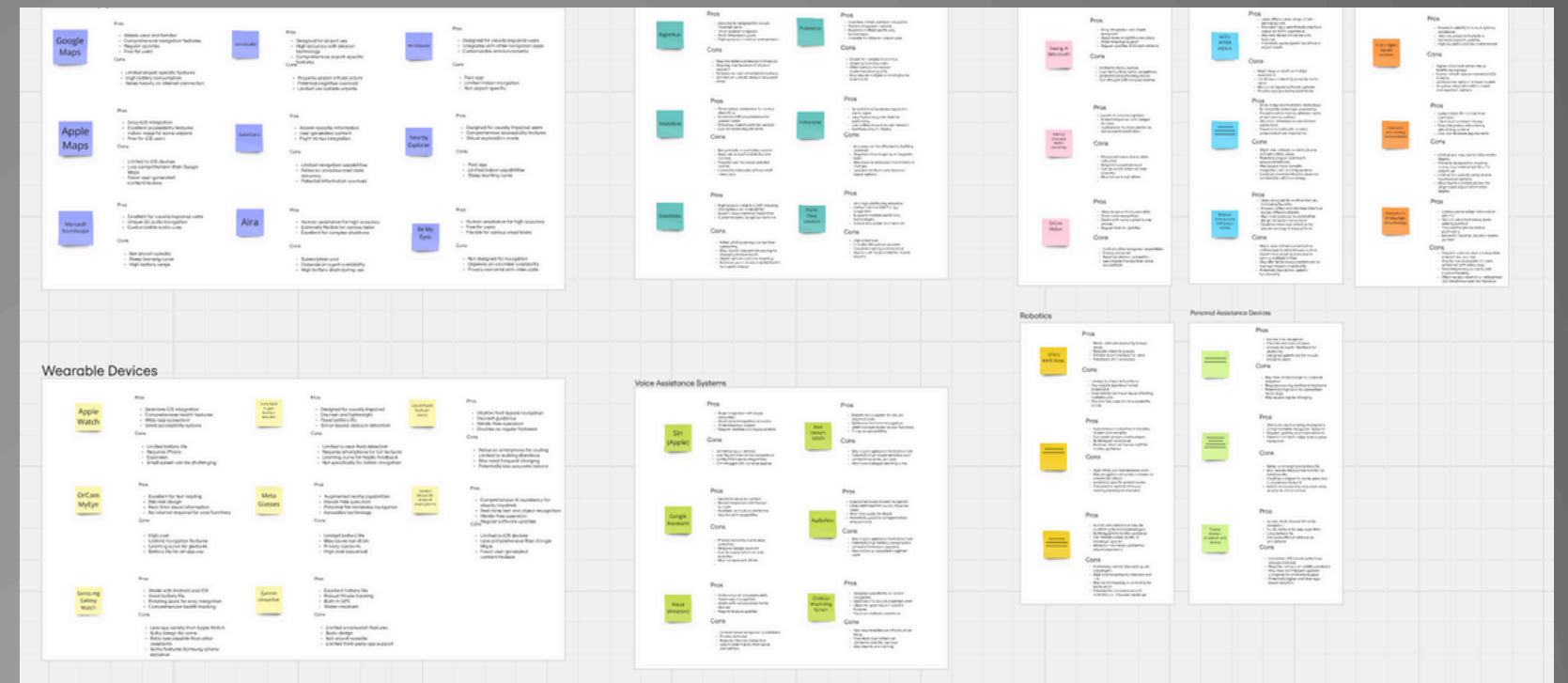
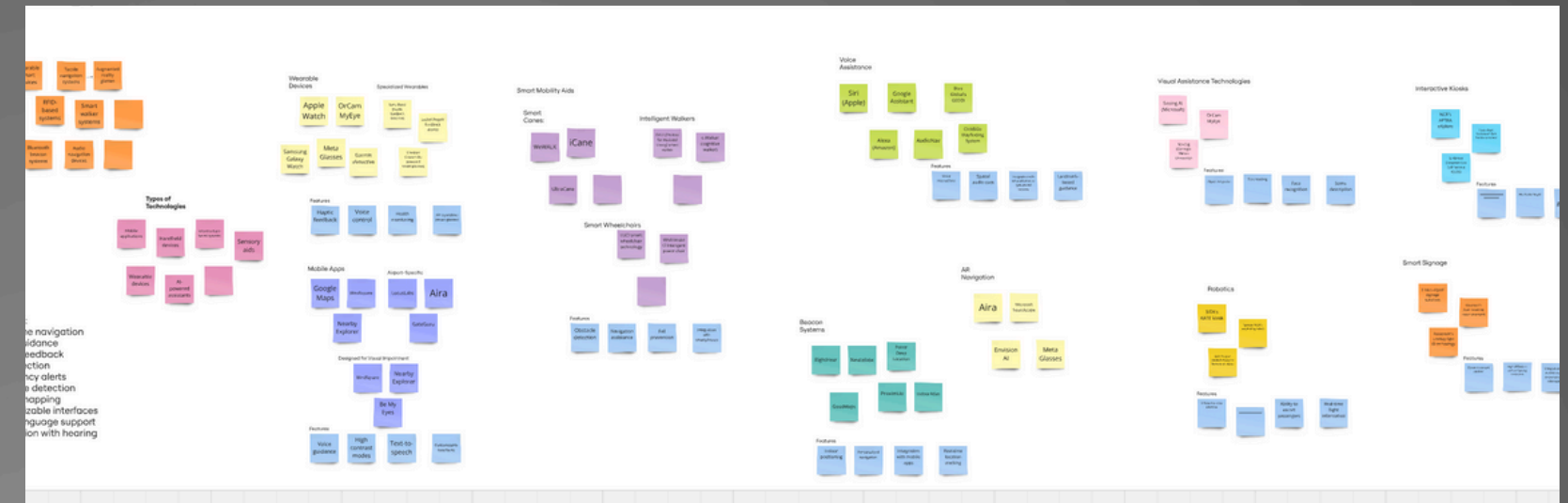
Comparative Technology Evaluation

Goal:

To evaluate existing navigation and mobility support tools for usability, inclusivity, and fit for elderly users.

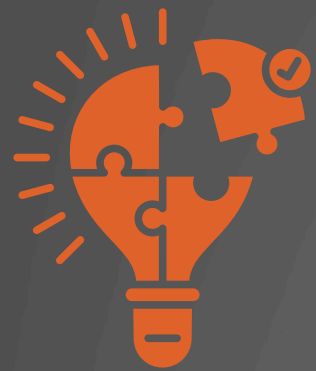
Process:

- 21 technologies analyzed: mobile apps (Google Maps, Soundscape), wearables (Sunu Band, Apple Watch), beacon systems, and voice assistants
- Developed a rubric to assess each tool on:
 - Interface clarity
 - Multi-sensory feedback
 - Customizability for impairments
 - Environmental awareness
 - Emotional burden
 - Cost and technical access



PHASE 1: EXPLORATORY RESEARCH

Comparative Technology Insights



DIVERSE SOLUTIONS

Mix of hardware (wearables, smart canes) and software (apps) working together



SEAMLESS CONNECTIVITY

Strong integration between devices and services for continuous assistance



CORE FEATURES

Emergency alerts and customizable interfaces across all technologies

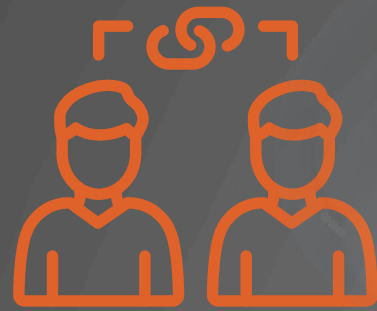


MULTI-MODAL INTERACTION

Combines visual, audio, and touch-based feedback for varied user needs

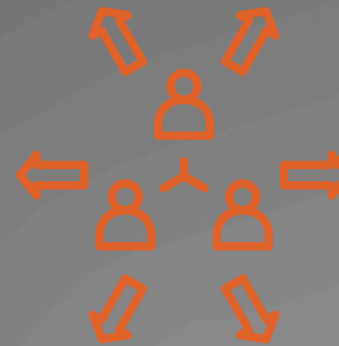
PHASE 1: EXPLORATORY RESEARCH

Comparative Technology Pros and cons Insights



BATTERY DEPENDENCY

Most portable solutions face battery life limitations, creating reliability concerns for elderly users



ECOSYSTEM FRAGMENTATION

While many solutions exist (mobile apps, wearables, beacons), they rarely work together seamlessly



INFRASTRUCTURE NEEDS

Many advanced solutions (beacons, smart signage) require extensive installation in public spaces

PHASE 1: EXPLORATORY RESEARCH

Specific user pain points Identification



Elderly users reported confusion with touch-screen kiosks due to lack of clear instructions and small text sizes.



Difficulty in following step-by-step directions from mobile apps in noisy airport environments.

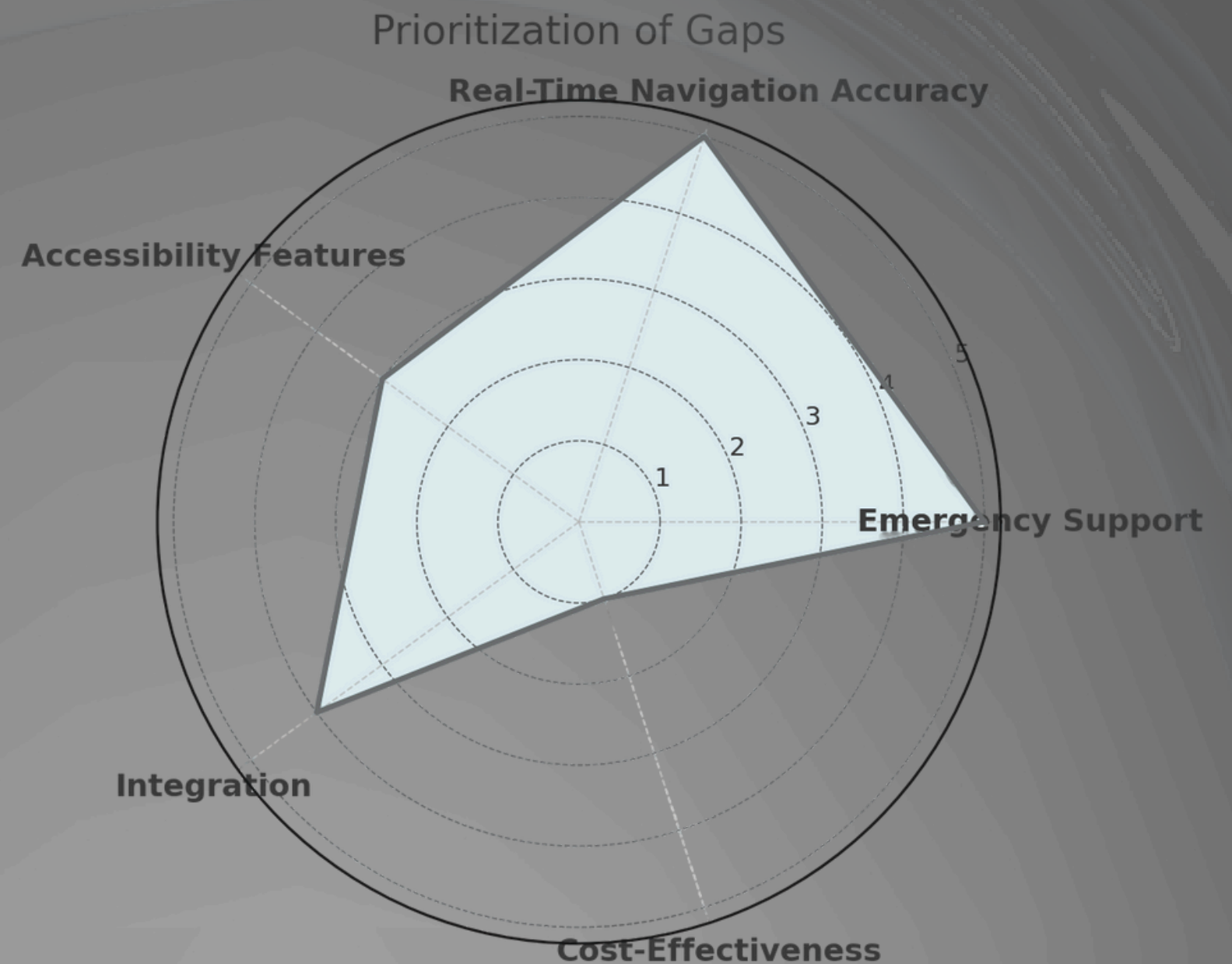


Lack of confidence in emergency systems, with many elderly users unsure how to trigger alerts effectively.

PHASE 1: EXPLORATORY RESEARCH

Opportunities for Improvement

- **REAL-TIME NAVIGATION** "Current systems lack precision in providing accurate, timely guidance"
- **ACCESSIBILITY FEATURES** "Need for better adaptable interfaces for varying user capabilities"
- **EMERGENCY SUPPORT** "Systems require stronger safety and assistance features"
- **INTEGRATION** "Limited compatibility between different navigation solutions"
- **COST-EFFECTIVENESS** "High costs restrict widespread implementation and adoption"



PHASE 2: EMPATHY-DRIVEN RESEARCH

Stepping Into Their World & Evaluating Solution

Simulation Methods:

- Vision impairment: Frosted glasses with diminishing clarity
- Hearing difficulty: Sound distortion headphones
- Mobility constraints: Weighted bands and restrictive gloves
- Cognitive load: Multi-tasking under sensory limitations



EMPATHY-DRIVEN RESEARCH

Aira and Be my eyes Interview



Sarah, 68
Elderly Traveler with Hearing
and Sight Issues
Travel Frequency: 1-2 times per
year (Family Visits)

"Using Aira felt like having a personalized assistant who could guide me through the airport chaos. The voice commands and real-time agent support made me feel independent, even in a busy environment."



RAJ, 72
International Wheelchair User
Travel Frequency: Annual trips
to India (Family Visits)

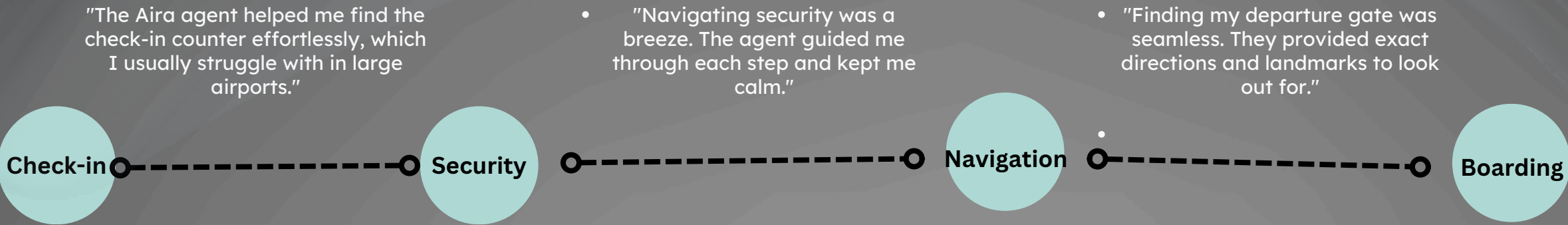
Be My Eyes was incredibly easy to use, and the volunteers were always patient and helpful, especially with last-minute gate changes."

PHASE 2: EMPATHY-DRIVEN RESEARCH

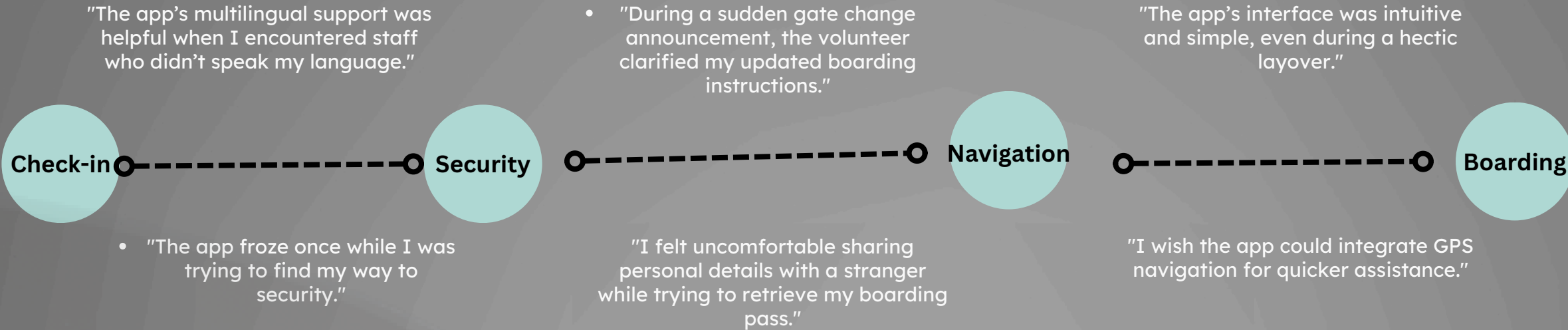
Airport-Specific Navigation Systems Insights



Sarah, 68
Elderly Traveler with Hearing and Sight Issues
Travel Frequency: 1-2 times per year (Family Visits)



RAJ, 72
International Wheelchair User
Travel Frequency: Annual trips to India (Family Visits)



PHASE 2: EMPATHY-DRIVEN RESEARCH

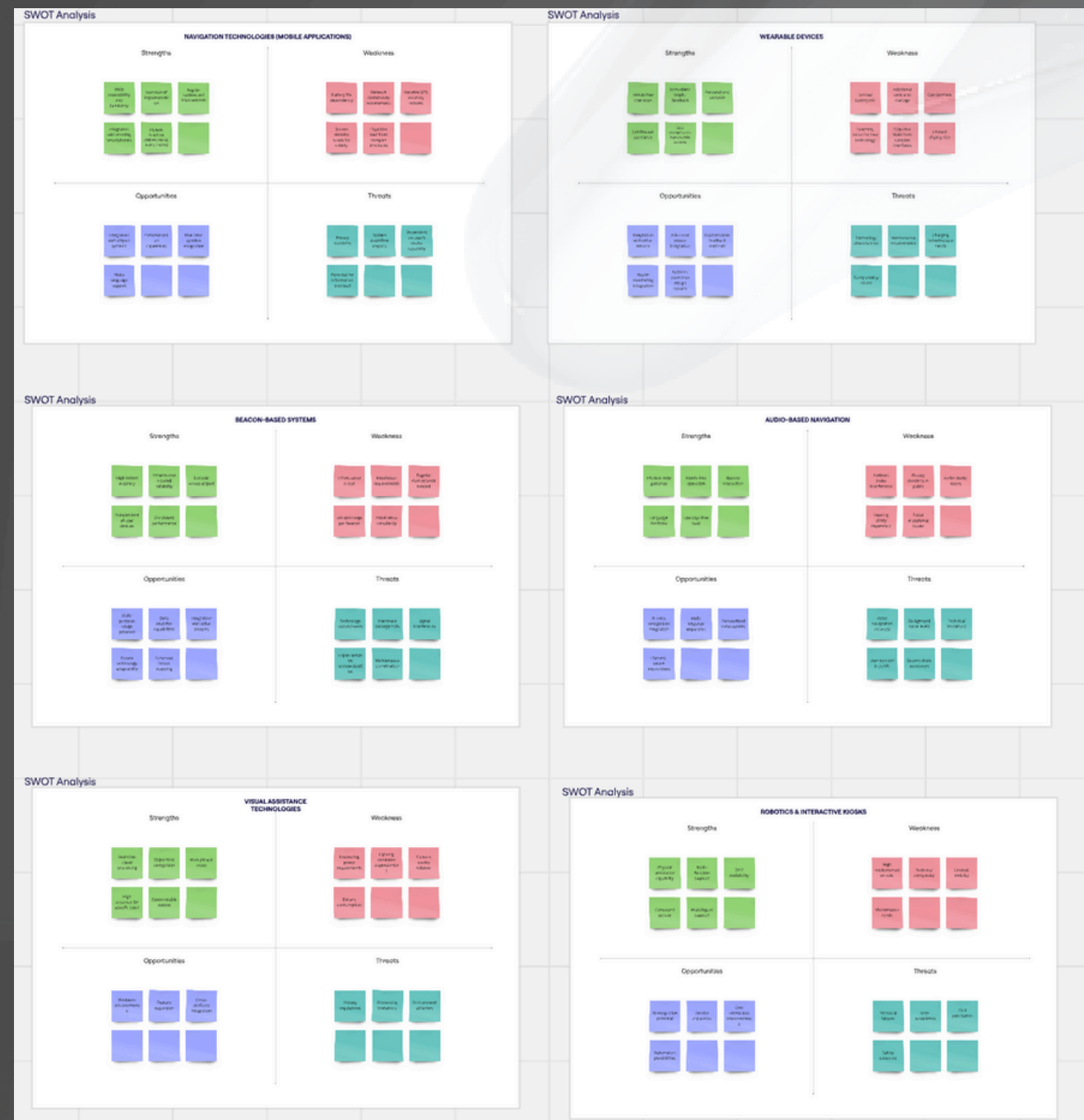
Airport-Specific Navigation Systems Insights

- **SERVICE MODEL TRADE-OFFS** Professional vs. volunteer assistance creates a clear trade-off between reliability and accessibility, with each model suited for different user needs.
- **COST VS. AVAILABILITY** While free services increase accessibility, they may compromise on 24/7 availability - crucial for unpredictable airport scenarios.
- **INTERFACE PRIORITIES** Both services recognize the importance of high-contrast, simple interfaces, suggesting these are essential features for elderly users.
- **PRIVACY CONSIDERATIONS** Airport navigation involves sensitive information handling, making professional services potentially more suitable despite higher costs.
- **TECHNICAL REQUIREMENTS** Both solutions depend heavily on reliable internet connectivity and battery life, highlighting the need for infrastructure support in airports.

Aspect	Aira	Be My Eyes	Implications for Elderly Airport Navigation
Assistance Type	Professional, trained agents	Volunteer community	Aira's professional assistance might be more reliable for complex airport navigation, but Be My Eyes' larger volunteer base could offer quicker connections.
Cost	Paid service	Free	Be My Eyes' free service makes it more accessible, especially for infrequent travelers. Aira's cost might be justified for frequent travelers needing reliable assistance.
Availability	24/7 professional service	Dependent on volunteer availability	Aira's 24/7 availability is crucial for international travel and unexpected delays. Be My Eyes might have longer wait times during off-peak hours.
Language Support	Limited to agents' languages	Wide range of languages due to global volunteer base	Be My Eyes' broader language support is advantageous in international airports. Aira might need to expand language offerings for global usability.
Consistency of Service	High consistency due to trained professionals	May vary based on volunteer knowledge	Aira's consistency is beneficial for complex airport procedures. Be My Eyes might require multiple calls for comprehensive assistance.
Privacy Concerns	Professional agents, potentially higher trust	Volunteers, potential privacy concerns	Aira might be preferred for tasks involving sensitive information (e.g., passport details). Be My Eyes users might hesitate to share certain information in airports.
Technical Requirements	Stable internet connection, potential for higher battery usage	Internet connection required, potentially lower battery usage due to shorter interactions	Both apps require reliable Wi-Fi/cellular data in airports. Aira's potentially higher battery usage might necessitate charging stations or portable chargers for long journeys.
Specialized Knowledge	Agents can be trained for airport-specific knowledge	Volunteers' knowledge of airports may vary	Aira could potentially offer more consistent and specialized airport navigation assistance. Be My Eyes might be more suitable for general tasks in airports.
User Interface	Simple, high-contrast interface with large buttons	High-contrast interface, screen reader compatible	Both apps prioritize accessibility, but may benefit from a simplified "elderly mode" for less tech-savvy users in stressful airport environments.

PHASE 2: EMPATHY-DRIVEN RESEARCH

Swot Analysis



Swot Analysis Gap Identified

Reliability and Accessibility

Elderly travelers value tools that are dependable and user-friendly. Consistent, real-time support through professional agents or well-designed interfaces provides confidence and independence throughout their airport journey.

Affordability

Cost is a significant factor for elderly travelers, especially retirees or infrequent travelers. Accessible pricing models and free options like Be My Eyes enhance usability without financial strain

Stress Reduction

High-pressure scenarios such as navigating security checks and managing gate changes become less intimidating with professional or well-trained assistance. Clear guidance helps elderly travelers stay calm and focused.

Personalized Design Enhancements

Simplified interfaces with larger buttons, streamlined workflows, and optional "elderly-friendly modes" can significantly improve usability. These changes can create a smoother, more inclusive travel experience tailored to elderly travelers' specific needs.

Inclusivity

Multilingual support and culturally adaptive features are critical for elderly users traveling internationally. These features ensure effective communication and reduce anxiety in unfamiliar environments.

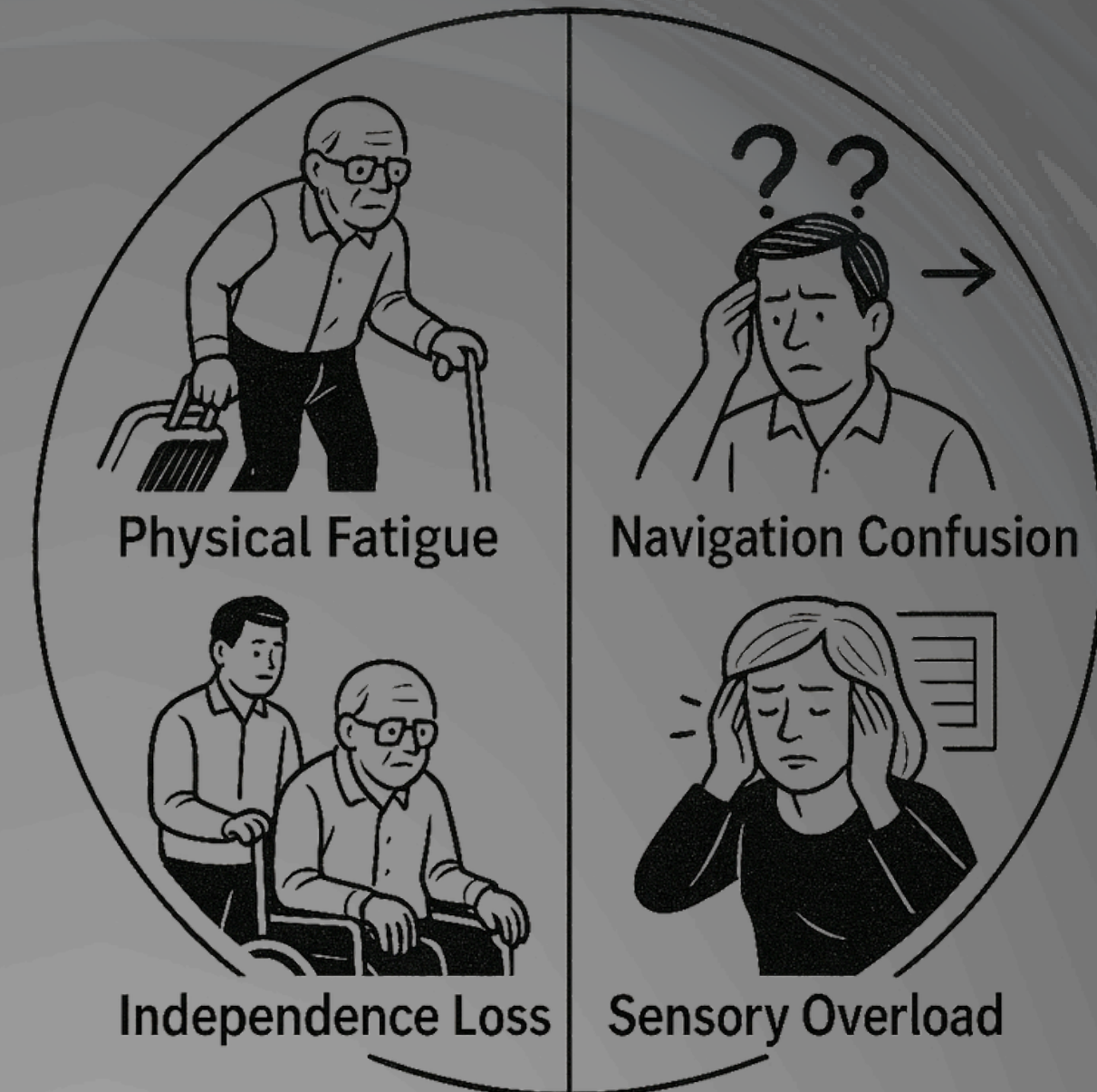
Functionality

The reliance on internet connectivity is a pain point for both apps. Developing offline features, such as cached maps or basic assistance modes, can reduce disruptions caused by unstable or low-bandwidth connections.

PHASE 2: EMPATHY-DRIVEN RESEARCH

What I Discovered

- Physical Fatigue: Reported exhaustion from airport distances, leading to missed connections
- Navigation Confusion: Experienced disorientation in terminals, creating high-stress situations
- Sensory Overload: Struggled with processing airport information, causing decision paralysis
- Independence Loss: Felt diminished autonomy, resulting in over-reliance on inconsistent assistance



Repository of Insight

Quotations, Thinkers, and Frameworks That Shaped This Thesis

Throughout my research journey, I found myself repeatedly drawn to the voices of designers, theorists, and accessibility advocates whose work helped clarify the core philosophy behind We-A-Go. These weren't just inspiring quotations—they were anchors. They helped me define what design for aging could be: intentional, adaptive, and empathetic.

This chapter collects those voices into a Repository of Insight—a curated group of 12–16 impactful quotations that provided intellectual, emotional, and ethical grounding throughout this project.

Each quote is accompanied by context, with one extended reflection toward the end of the chapter.

“Accessibility should not be a retrofit; it should be a mindset.”

— Patricia Moore

This was the first quote I pinned to my wall. Moore's thinking constantly reminded me that good accessibility is not about reacting to disability—it's about anticipating variation from the very beginning.

“Design is the silent ambassador of your brand.”

— Paul Rand

While not directly about accessibility, Rand's quote reminded me of responsibility. The experience my cart delivers represents a way of treating aging populations. It communicates values.

Repository of Insight

“Good design is as little design as possible.”

— Dieter Rams

Rams’ clarity pushed me to remove unnecessary complexity from the cart’s UI and mechanical form. Elderly users don’t need novelty—they need trust.

“Disability is not a ‘problem’ to solve. It is a context to understand.”

— Liz Jackson, The Disabled List

This helped me move away from “solutionism” and toward designing for empowerment. The problem isn’t the person—it’s the environment.

“Design must serve human dignity.”

— Victor Papanek

An old quote with eternal relevance. Every decision about We-A-Go’s form, material, and interaction came back to this idea: does it respect the user’s dignity?

“Empathy is the first step, but not the end goal. Liberation is.”

— Sins Invalid (Disability Justice Collective)

This reframed the purpose of my work. While empathy simulations are valuable, real transformation comes from design that frees users—not just sympathizes with them.

Repository of Insight

“We’re not designing for a moment—we’re designing for a memory.”

— Ayse Birsal

This reminded me that good airport experiences aren’t just functional—they shape how travelers feel after. Will they fly again? Will they feel seen?

“Disability is not a ‘problem’ to solve. It is a context to understand.”

— Liz Jackson, *The Disabled List*

This helped me move away from “solutionism” and toward designing for empowerment. The problem isn’t the person—it’s the environment.

“Not being able to speak is not the same as having nothing to say.”

— Rosemarie Garland-Thomson

For many elderly users, communication is constrained—not absent. My cart had to accommodate quiet users, nonverbal signals, and body language.

“The opposite of design is default.”

— Kat Holmes, *Mismatch*

Defaults don’t serve the elderly well. My design had to question the defaults of speed, complexity, and visual overload in airports.

PHASE 2: EMPATHY-DRIVEN RESEARCH

From Insights to Concepts



Technology
Integration

Many concepts leverage advanced technologies like AR, VR, AI, and robotics



Personalization

Solutions focus on adapting to individual needs and preference



Accessibility

Improving physical accessibility and information clarity is a recurring theme.



Stress Reduction

Several concepts aim to minimize anxiety associated with airport navigation.



Independence

Many solutions strive to empower elderly travelers to navigate independently.

PHASE 2: EMPATHY-DRIVEN RESEARCH

70 concept sketches Ideations

30 Concept Ideation					40 Concept Ideation				
Smart Companion Cart	VR Orientation Tour	Biometric Wayfinding Wristband	Holographic Personal Assistant	AR Signage Translator	Interactive Wall Maps	Virtual Queue Management	Real-Time Health Monitoring Booths	Adaptive Lighting Paths	Digital Luggage Tags with Tracking
Robotic Luggage Escort	Sensory Calming Pods	Smart Floor Guidance System	AI Conversational Entrance Guide	Adaptive Moving Walkways	Smart Elevator Voice Commands	Personalized Boarding Notifications	Augmented Reality Gate Locators	Multilingual AI Translators	Wearable Proximity Alarms
Hearing-Enhanced Info Booths	Memory-Assist Digital Bracelet	Vision-Enhancing Smart Glasses	Fatigue-Sensing Transport Pods	Quiet Zone Pathways	Self-Sanitizing Mobility Devices	Smart Seat Locators	Temperature-Controlled Resting Pods	On-Demand Mobility Support Robots	Interactive Voice-Activated Directories
Simplified Touchscreen Kiosks	Mobility-Adaptive Security Lanes	Needs Navigator	Management System	Social Connection Pods	Baggage Priority Tags for Elderly	Real-Time Route Optimization Displays	Multisensory Relaxation Lounges	AI-Assisted Boarding Sequence Systems	Customizable Navigation Apps
Personalized Audio Guide System	Interactive Handrail Navigation	AI Assistant Kiosk Network	Smart Wheelchair Navigation	Projection-Based Wayfinding	Hands-Free Baggage Carriers	Emergency Response Wristbands	Customizable Navigation Apps	Wayfinding Through Smart Beacons	Portable Assisted Travel Kiosks
Volunteer Elder Buddy System	Color-Coded Zone Navigation	Tactile Navigation Strips	AR Waypoints	Escort Robot Service	Accessible Restroom Locators	Noise-Reduction Headset Rentals	Personalized Health Meal Zones	Real-Time Weather and Delay Alerts	Elder-Centric Concierge Services
					Comfortable Waiting Area Pods	Caregiver Notification Systems	Accessible Parking Finder	Interactive Check-In Robots	Tactile Airport Maps
					Guided Airport Tours for Elderly	Activity-Based Rest Stops	Energy-Saving Wheelchair Chargers	Low-Vision Navigation Systems	Virtual Caregiver Assistance

PHASE 2: EMPATHY-DRIVEN RESEARCH

5 concept Ideations



Smart Companion Cart

A robotic cart that assists in carrying luggage while navigating through the airport using AI-based pathfinding.



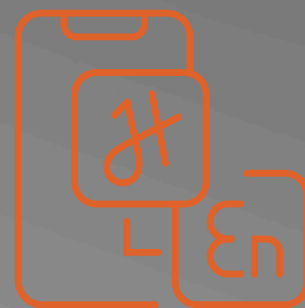
Sensory Calming Pods

Private relaxation pods offering sensory aids like calming sounds, aromatherapy, and comfortable seating to reduce travel stress.



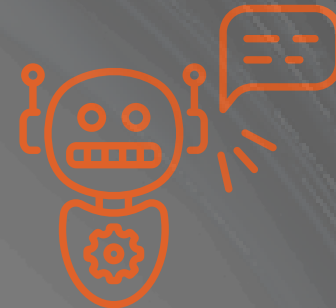
Interactive Wall Maps:

Digital, touch-responsive maps that provide step-by-step directions and real-time updates for easier navigation.



AR Signage Translator

Augmented reality-enabled signage translation to assist with language barriers in an intuitive and interactive way.



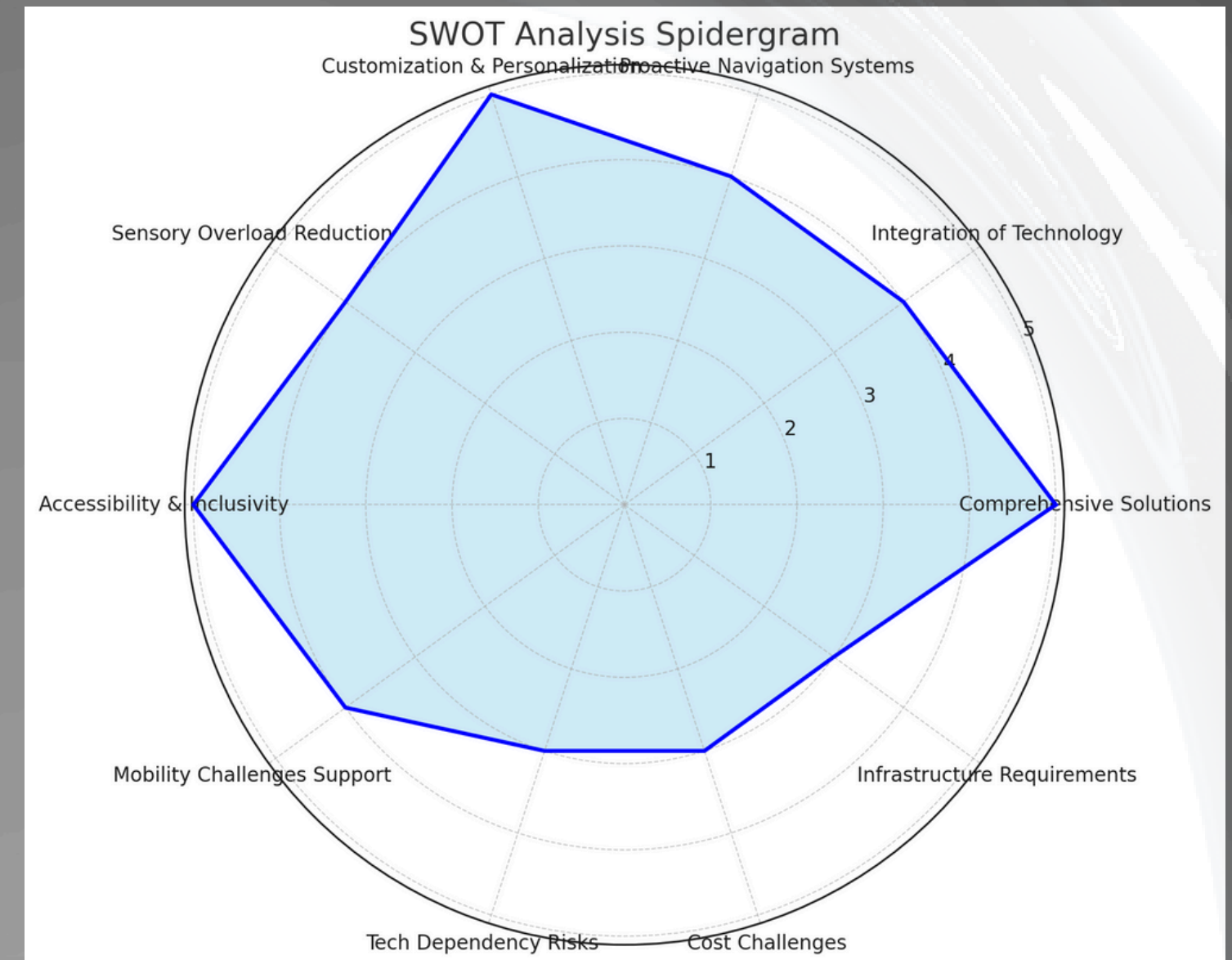
AI Conversational Earpiece Guide

Smart headphones that provide real-time, voice-guided navigation, gate alerts, and travel tips customized for elderly travelers.

PHASE 2: EMPATHY-DRIVEN RESEARCH

Criteria Analysis

- CUSTOMIZATION & PERSONALIZATION "Systems effectively adapt to individual user needs"
- INTEGRATION OF TECHNOLOGY "Strong potential for incorporating modern tech solutions"
- COMPREHENSIVE SOLUTIONS "Well-rounded approach to addressing navigation needs"
- INFRASTRUCTURE REQUIREMENTS "Significant physical changes needed in airports"
- COST CHALLENGES "High implementation and maintenance expenses"
- TECH DEPENDENCY RISKS "Over-reliance on technology could be problematic"
- MOBILITY CHALLENGES SUPPORT "Good handling of various movement difficulties"
- ACCESSIBILITY & INCLUSIVITY "Strong focus on universal design principles"
- SENSORY OVERLOAD REDUCTION "Effective management of overwhelming airport environments"



PHASE 3: SOLUTION TESTING

Hardware 3D Model | Digital Experience

Structure

- Lightweight aluminum alloy frame
- Anti-static material coating
- Weight-optimized design
- Main frame with robust base

Hardware Interface

- Adjustable handles with power assist
- Multiple grip positions for steering
- Adjustable handle height
- Ergonomic design for all users

Stability & Safety

- Balance sensors with auto-correction
- Emergency stop mechanism
- Automatic braking system
- Anti-roll back feature
- Obstacle detection sensors

Seating System

- Pop-up seat supporting 300 lbs
- Hidden design when not in use
- Automated push-button activation
- Back support with ergonomic design
- Side handle support for stability

Luggage System

- Folds flush when not in use
- Spring-assisted opening mechanism
- Smooth and quiet operation
- Weight sensor for load management
- Pop-up platform with auto-deploy

User Comfort

- Multiple grip position options
- Integrated cup/bottle holder
- Small storage compartment
- Document holder near handle
- Passport/ID holder with assistance

Power System

- Rechargeable battery with indicators
- Battery level display system
- Energy-efficient motor system
- Charging port for external devices
- Power-optimizing sensors

Smart Integration

- Tablet mount for digital interface
- Integrated sensor housing
- LED light system for visibility
- Emergency alert system
- Adjustable viewing angle

Key Hardware Components

- Structure: Lightweight aluminum alloy frame with anti-static materials, designed for optimal weight distribution and durability
- Hardware Interface: Adjustable handles with multiple grip positions, providing power-assisted steering for effortless navigation
- Stability & Safety: Integrated balance sensors, emergency stop mechanisms, automatic braking system, and anti-roll back features ensure maximum protection
- Seating System: Hidden design with pop-up functionality supporting up to 300 lbs, featuring automated deployment with ergonomic back support
- Luggage System: Space-efficient design that folds flush when not in use, with spring-assisted opening, quiet operation, and weight sensor for optimal load management
- User Comfort: Multiple grip positions, integrated holders for beverages and documents, and convenient storage options enhance the user experience
- Power System: Efficient rechargeable battery with level indicators, energy-optimized motor, and charging capabilities for external devices
- Smart Integration: Tablet mount system with optimal viewing height, clear visibility while walking, and built-in charging capability for seamless digital integration

PHASE 3: SOLUTION

Digital Experience

Navigation & Wayfinding

- Turn-by-turn directions with voice guidance
- Real-time gate change updates
- Estimated walking time calculations
- Accessible route suggestions
- Nearby amenities locator

Smart Companion

- Personalized journey guidance
- Real-time comfort planning
- Rest stop suggestions
- Energy level monitoring
- Gentle reminders for breaks
- Dynamic travel updates

User Profile & Customization

- Mobility settings preferences
- Language selection options
- Display customization with setup help
- Adaptive user speed adjustments
- Personalized walking pace
- Seamless profile sync across devices

Cost Control Center

- Speed control settings
- Motor assistance level adjustment
- Health indicators monitoring
- Battery usage optimization
- Energy efficiency settings

Multi-Sensory Support

- **Vision Assistance:**
 - High contrast mode
 - Adjustable text size
 - Color blind friendly options
 - Screen magnification
 - Icon-based navigation
- **Hearing Support:**
 - Vibration alerts and notifications
 - Emergency sound alerts
 - Noise cancellation
 - Bluetooth hearing aid connectivity

Integrated Safety Features

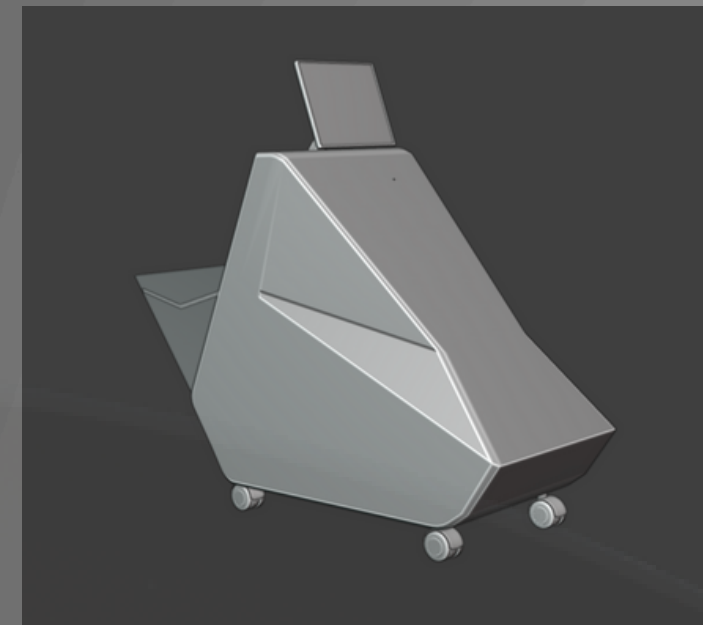
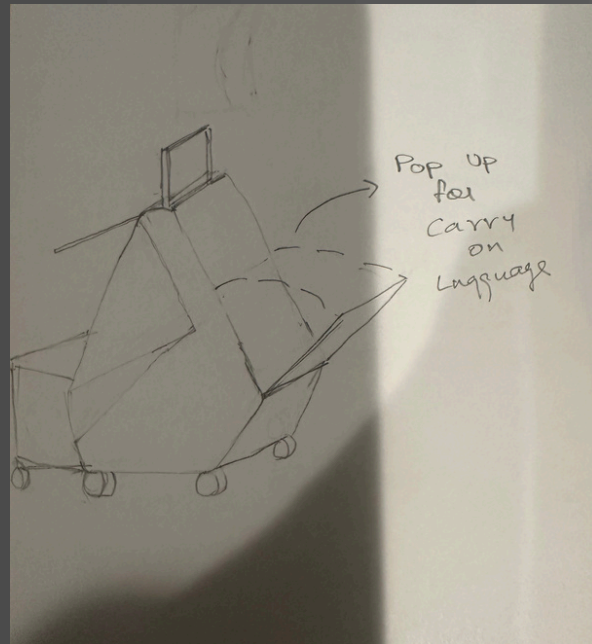
- Multi-modal emergency alerts (sound/light/vibration)
- One-touch staff contact button
- Clear audio/visual feedback
- Motion speed adaptation
- Customized walking speed control
- Fatigue detection with automatic alerts
- Balance monitoring system
- Gradual acceleration/deceleration

Key Digital Features

- **Navigation & Wayfinding:** Turn-by-turn directions with real-time gate updates, walking time estimates, accessible route suggestions, and nearby amenities locator
- **Smart Companion:** Personalized journey guidance with contextual suggestions like "You have a comfortable 30 minutes, would you like to grab a snack?" and adaptive comfort planning
- **User Profile & Customization:** Comprehensive settings for mobility preferences, language selection, display options, and personalized interface adjustment
- **Cost Control Center:** Optimize energy usage with adjustable speed controls, motor assistance levels, and health monitoring indicators
- **Multi-Sensory Support:** Inclusive design featuring vision assistance (high contrast, adjustable text, color-blind options), hearing support (vibration alerts, visual notifications), and motion adaptations
- **Integrated Safety Features:** Multi-modal emergency alerts, one-touch staff contact, fatigue detection, balance monitoring, and speed adaptation for maximum security and confidence

PHASE 3: SOLUTION TESTING

Rough Hardware 3D Model Sketches



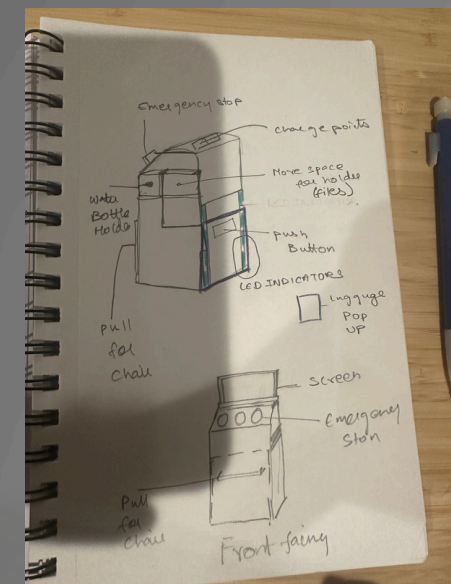
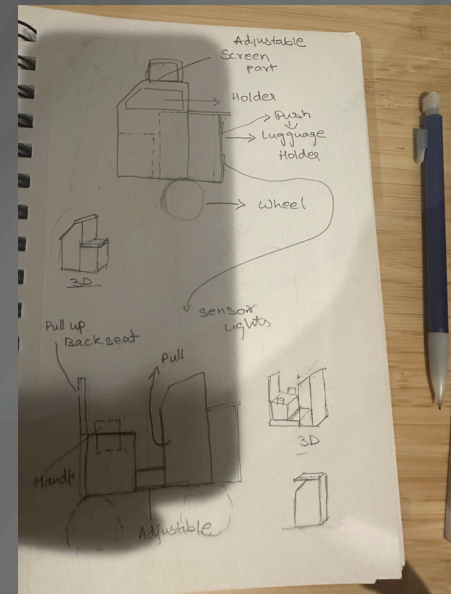
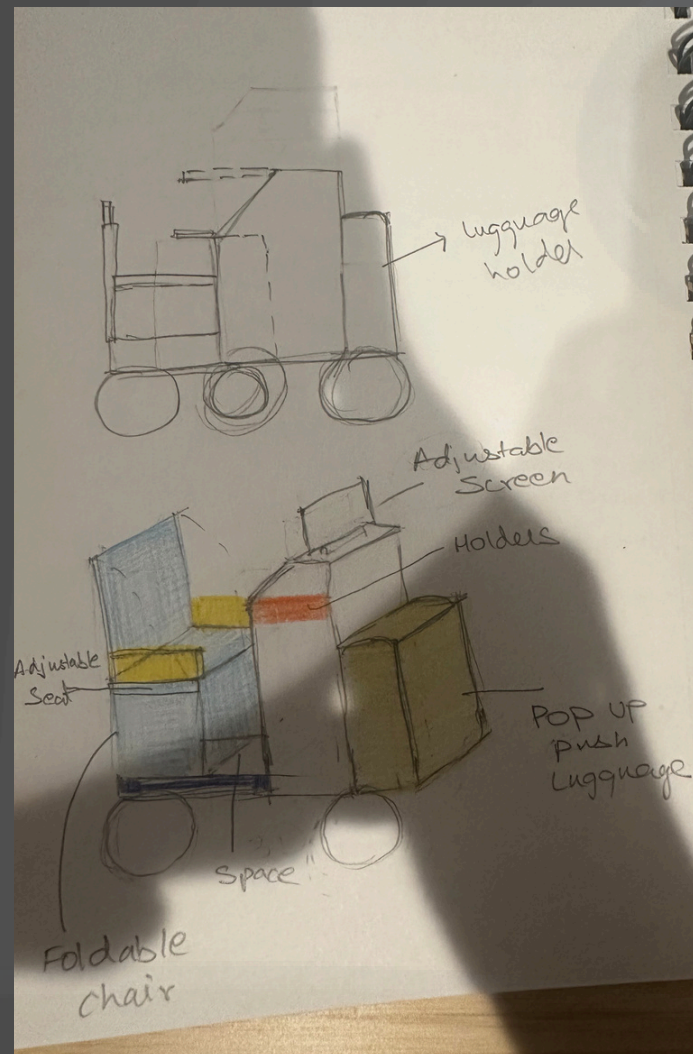
My design journey began with simple hand sketches that captured my initial vision for an innovative mobility solution combining functionality with user-centered design.

- I started with basic concept drawings exploring luggage storage integration and essential structure
- My early sketches examined pop-up seating mechanisms that could disappear when not needed
- I incorporated adjustable screen mounting options to ensure optimal viewing for all users
- My iterative process allowed me to refine compartment placement for balanced weight distribution
- I explored various handle configurations to accommodate different grip preferences

These preliminary sketches helped me visualize the relationships between components before moving into 3D modeling, ensuring my design would meet both practical and ergonomic requirements.

PHASE 3: SOLUTION TESTING

Rough Hardware 3D Model Sketches



Our design journey began with exploratory sketches that captured key functionality requirements while exploring innovative form factors.

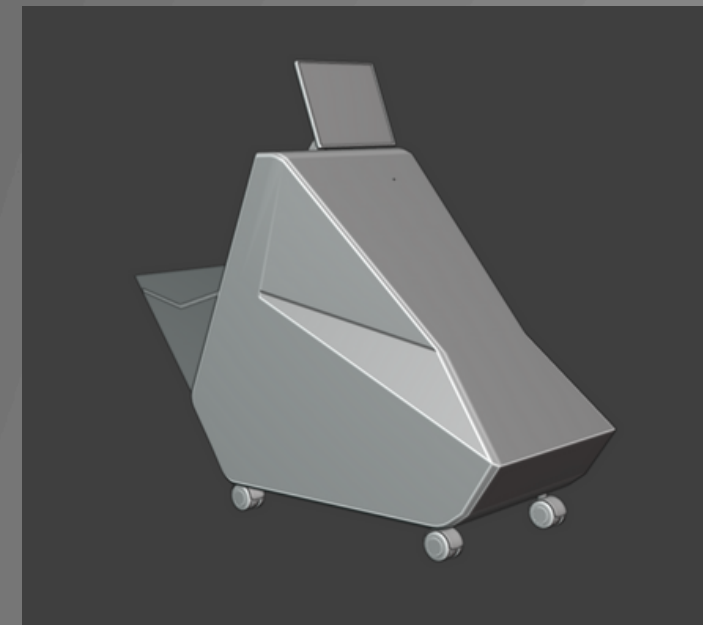
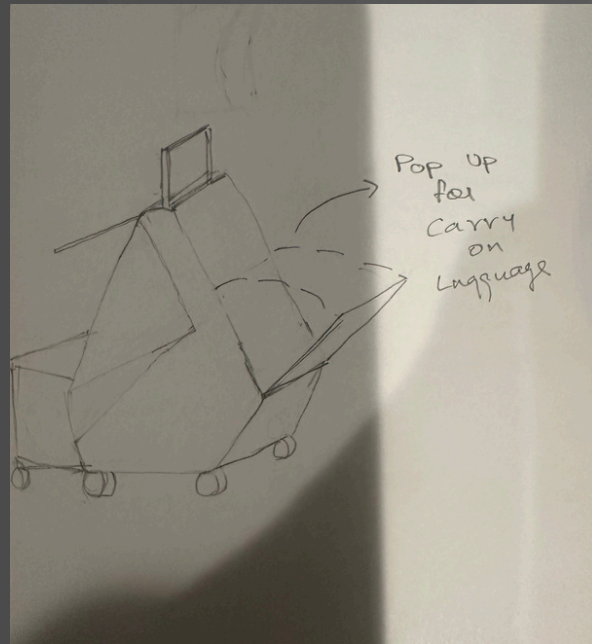
Key Development Points

- Initial concepts focused on integrating luggage storage with mobility features
- Adjustable screen mounting options were prioritized for universal accessibility
- Pop-up seat mechanisms designed for discrete storage when not in use
- Modular component organization established clear relationships between features
- Split-level sketching explored optimal placement of user interface elements

These conceptual sketches laid the groundwork for our technical specifications, balancing aesthetic appeal with practical functionality.

PHASE 3: SOLUTION TESTING

Rough Hardware 3D Model Sketches



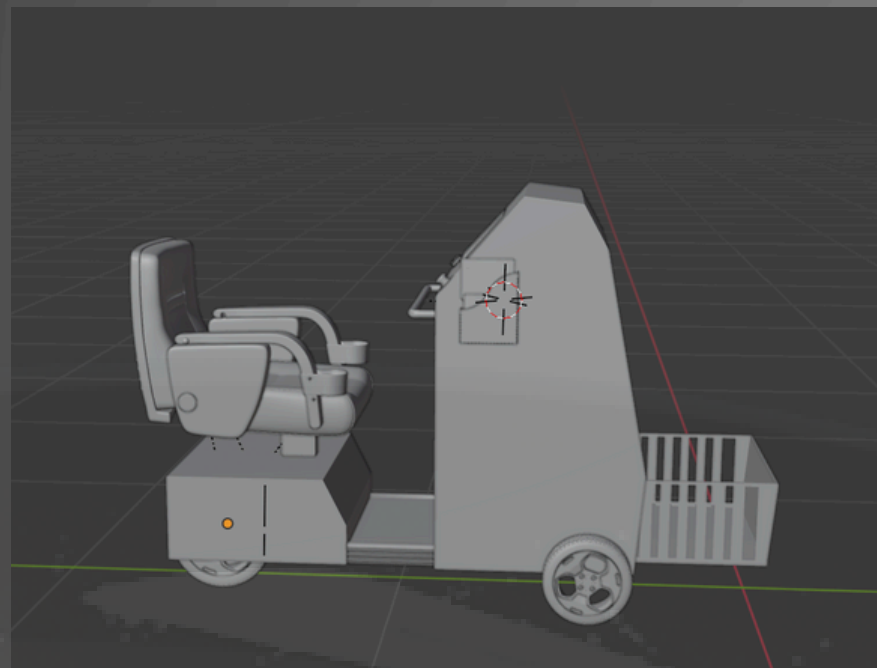
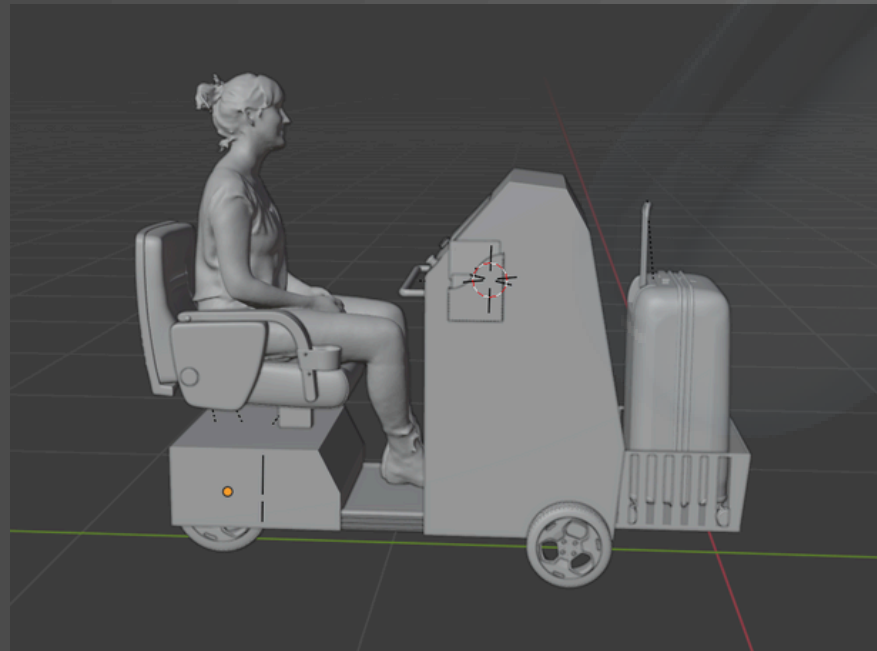
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PHASE 3: SOLUTION TESTING

Rough Hardware 3D Model Sketches



My 3D modeling phase transformed conceptual sketches into detailed virtual prototypes, allowing us to validate ergonomics and functionality in a simulated environment.

Key Development Points

- Integrated seating design with proper ergonomic proportions validated with human model
- Retractable seat mechanism shown in both deployed and stowed positions
- Luggage storage integration with optimal placement for balance and accessibility
- Streamlined housing design prioritizing aerodynamics and visual appeal
- Three-wheel configuration for enhanced stability and maneuverability

These 3D models enabled detailed engineering validation of our design concepts before committing to physical prototyping, ensuring both form and function align with user needs.

PHASE 3: SOLUTION TESTING

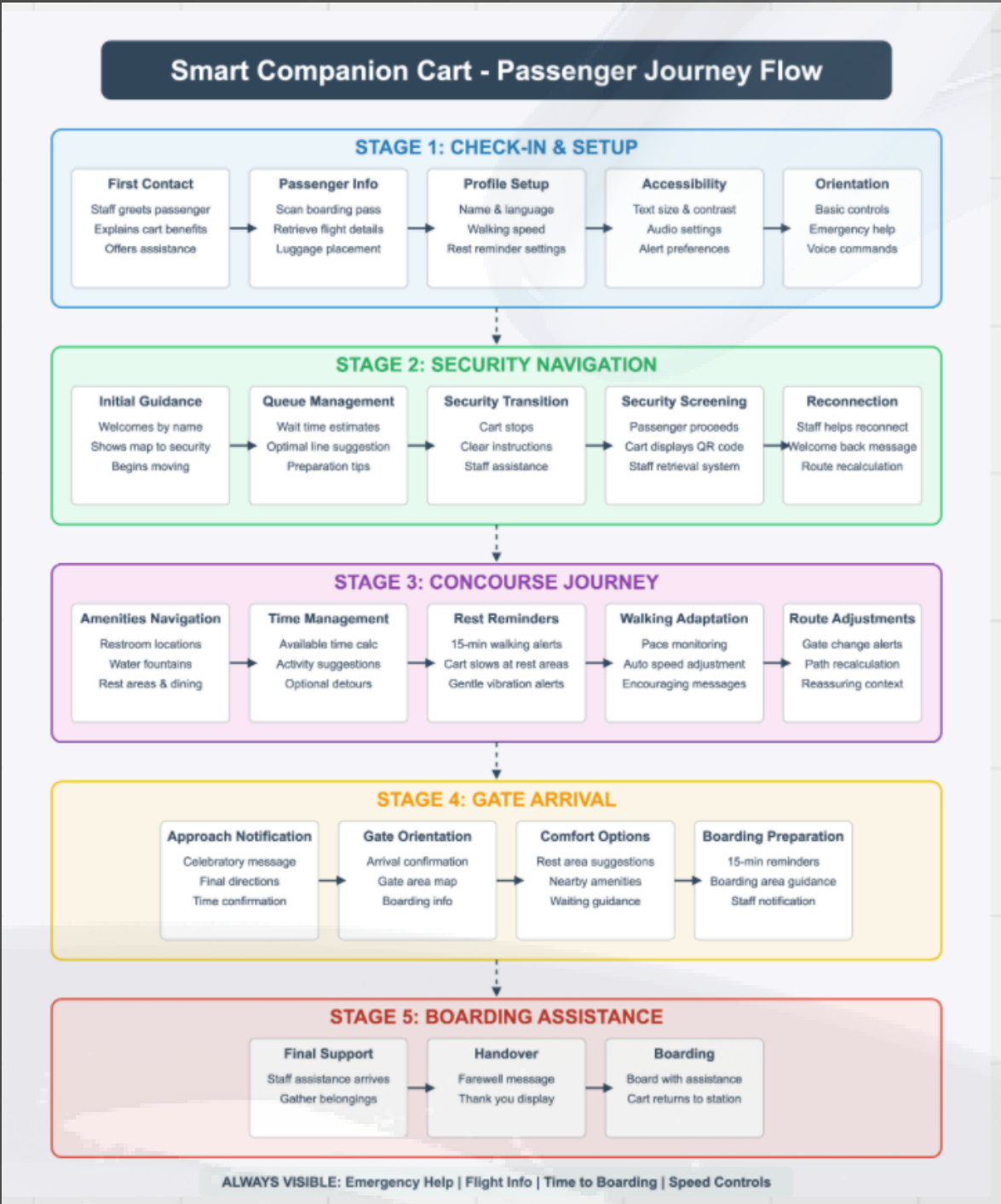
Digital Experience

Our Smart Companion Cart creates a seamless passenger journey through five integrated stages, each designed to provide contextual support exactly when needed.

Key Journey Stages

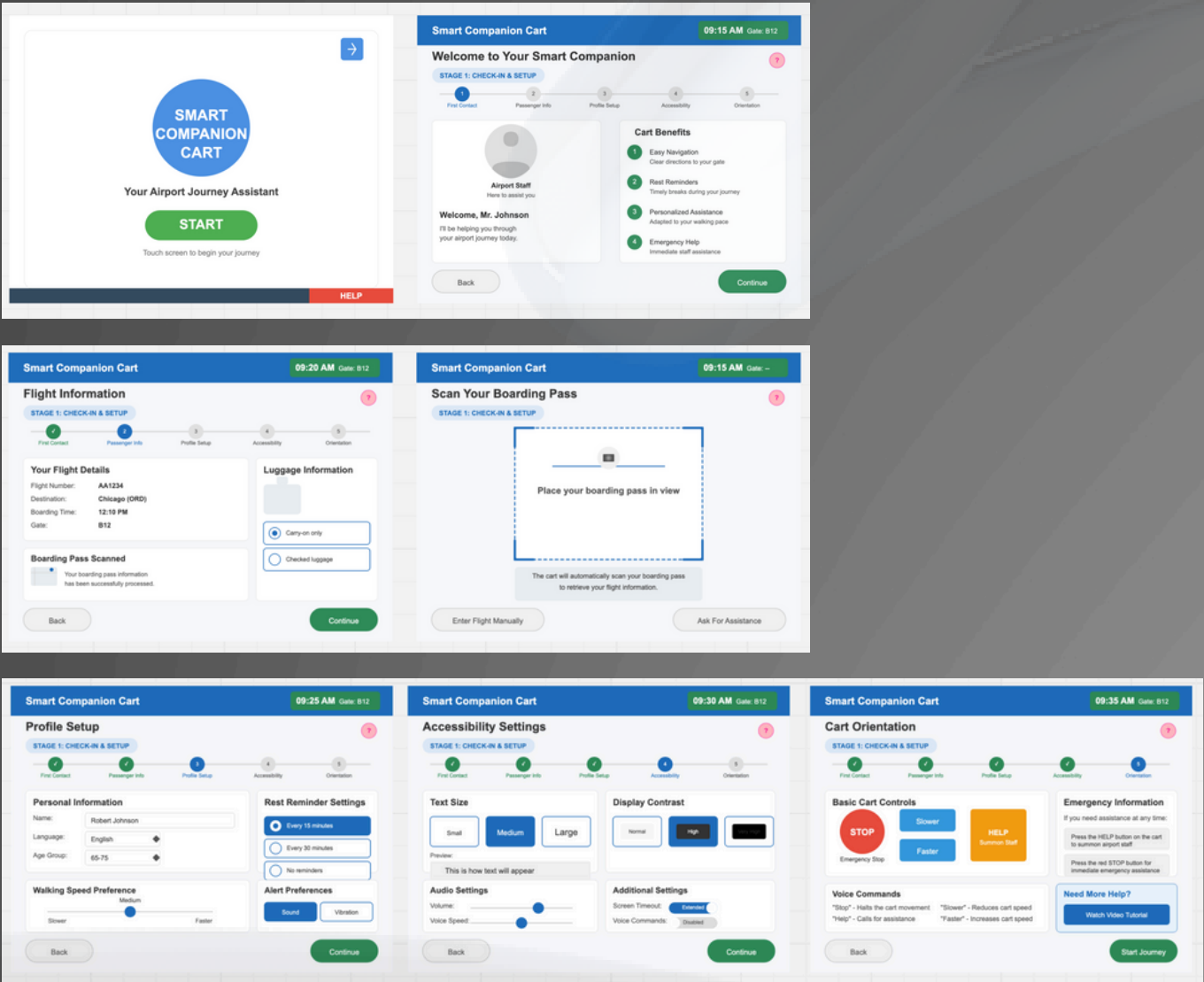
- Stage 1: Check-in & Setup - Personalizes the experience through user profile creation with accessibility preferences and walking speed settings
- Stage 2: Security Navigation - Guides passengers through security checkpoints with queue management and transition assistance
- Stage 3: Concourse Journey - Enhances the airport experience with amenities navigation, rest reminders, and adaptive walking pace controls
- Stage 4: Gate Arrival - Provides timely notifications, rest area suggestions, and boarding preparation guidance
- Stage 5: Boarding Assistance - Offers final support with staff handover and boarding assistance

Critical information including emergency help, flight details, and time to boarding remains visible throughout the journey, ensuring passengers feel supported at every step.



PHASE 3: SOLUTION TESTING

Stage 1 of Digital Experience



The Check-in & Setup stage establishes a personalized foundation for the entire journey, with an intuitive onboarding process that adapts to individual preferences and needs.

Key Interface Elements

- Welcome Screen - Introduces key benefits and initiates the journey with a simple start button
- Passenger Information - Captures essential flight details and luggage information for contextual assistance
- Profile Setup - Customizes experience with personal preferences, walking speed, and rest reminder settings
- Accessibility Options - Offers text size adjustment, contrast settings, and audio preferences for inclusive design
- Cart Orientation - Provides clear emergency controls, voice command options, and basic navigation tutorial

This thoughtful setup process collects critical information while building user confidence, setting the stage for a seamless, personalized airport experience.

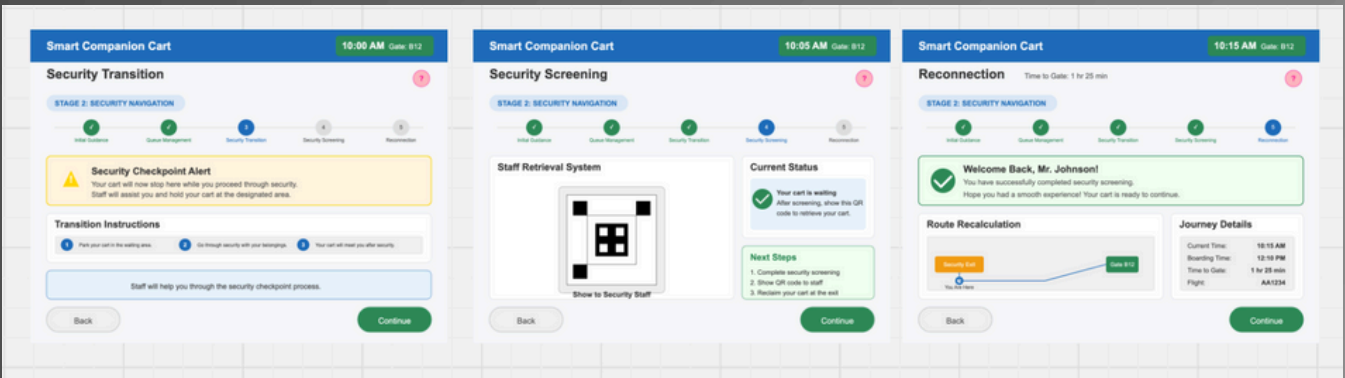
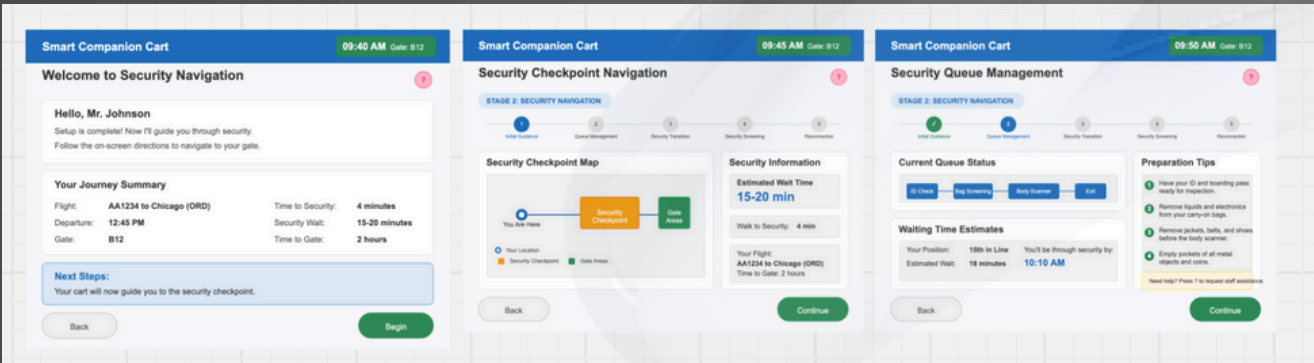
PHASE 3: SOLUTION TESTING

Stage 2 of Digital Experience

The Security Navigation stage guides passengers through one of the most stressful parts of the airport journey with real-time information and personalized assistance.

Key Interface Elements

- Initial Guidance - Welcomes users by name and provides journey summary with time estimates to gate and departure
- Checkpoint Navigation - Displays interactive security map with clear checkpoint locations and directional guidance
- Queue Management - Shows current wait times and position in line with preparation tips for a smoother process
- Security Transition - Offers step-by-step instructions for moving through different security checkpoint phases
- Screening Assistance - Provides visual guidance for staff retrieval system and current status indicators
- Reconnection - Confirms successful security clearance with route recalibration and updated journey details



This supportive guidance system transforms the typically stressful security experience into a manageable process, reducing anxiety while ensuring compliance with all requirements.

PHASE 3: SOLUTION TESTING

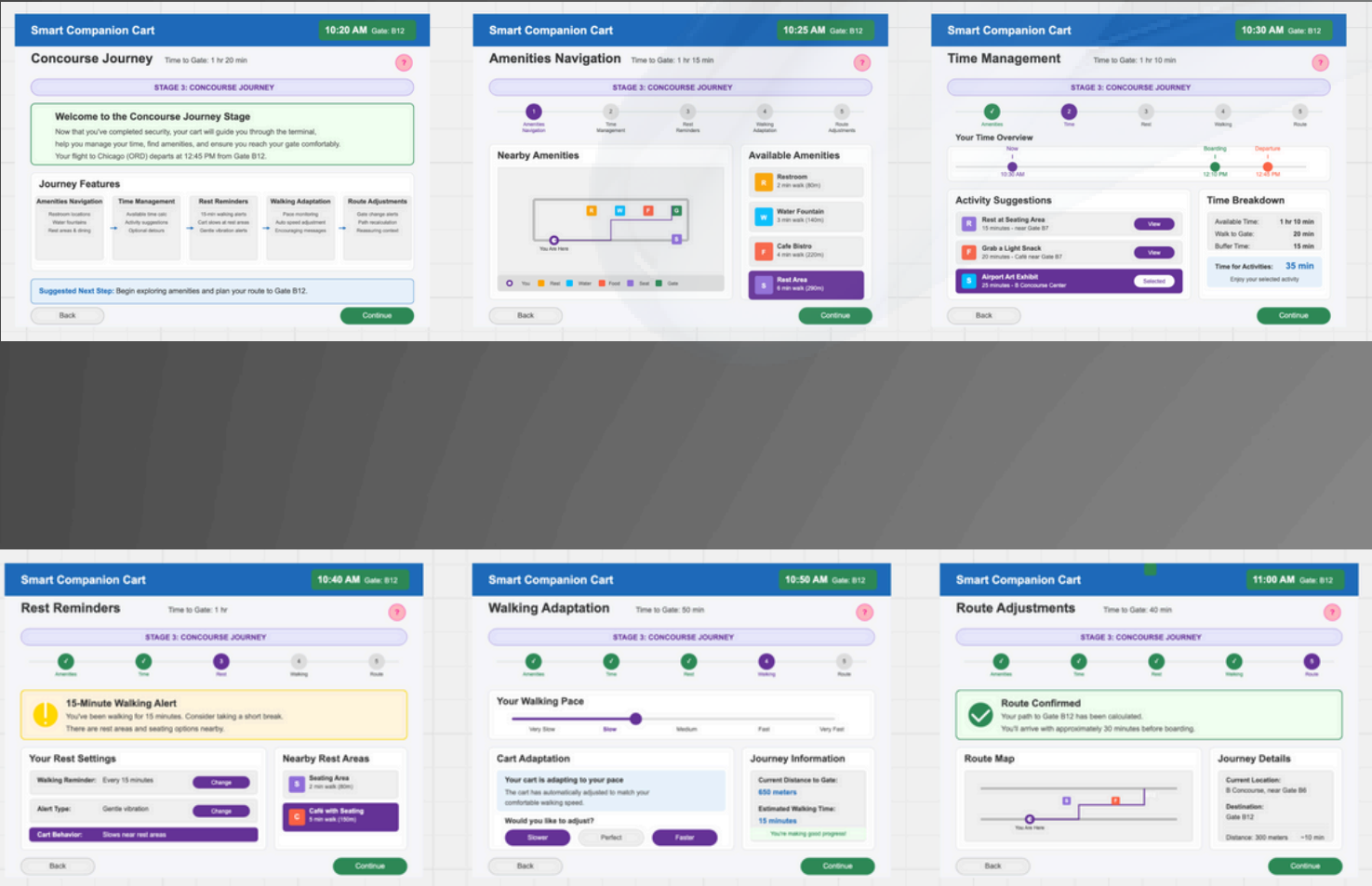
Stage 3 of Digital Experience

The Concourse Journey stage transforms airport transit time into a personalized experience with amenity discovery, adaptive support, and intelligent time management.

Key Interface Elements

- Journey Overview - Introduces available features with a summary of the remaining airport journey
- Amenities Navigation - Maps nearby facilities and services with interactive location markers and category filtering
- Time Management - Provides visual timeline with activity suggestions based on available time before boarding
- Rest Reminders - Delivers timely alerts for scheduled breaks with nearby rest area recommendations
- Walking Adaptation - Monitors pace and fatigue with adjustable speed controls and personalized support options
- Route Adjustments - Updates path planning with gate change alerts and optimal route recalculations

This stage transforms potentially stressful airport navigation into an opportunity for comfort and discovery, adapting dynamically to changing conditions while ensuring timely gate arrival.



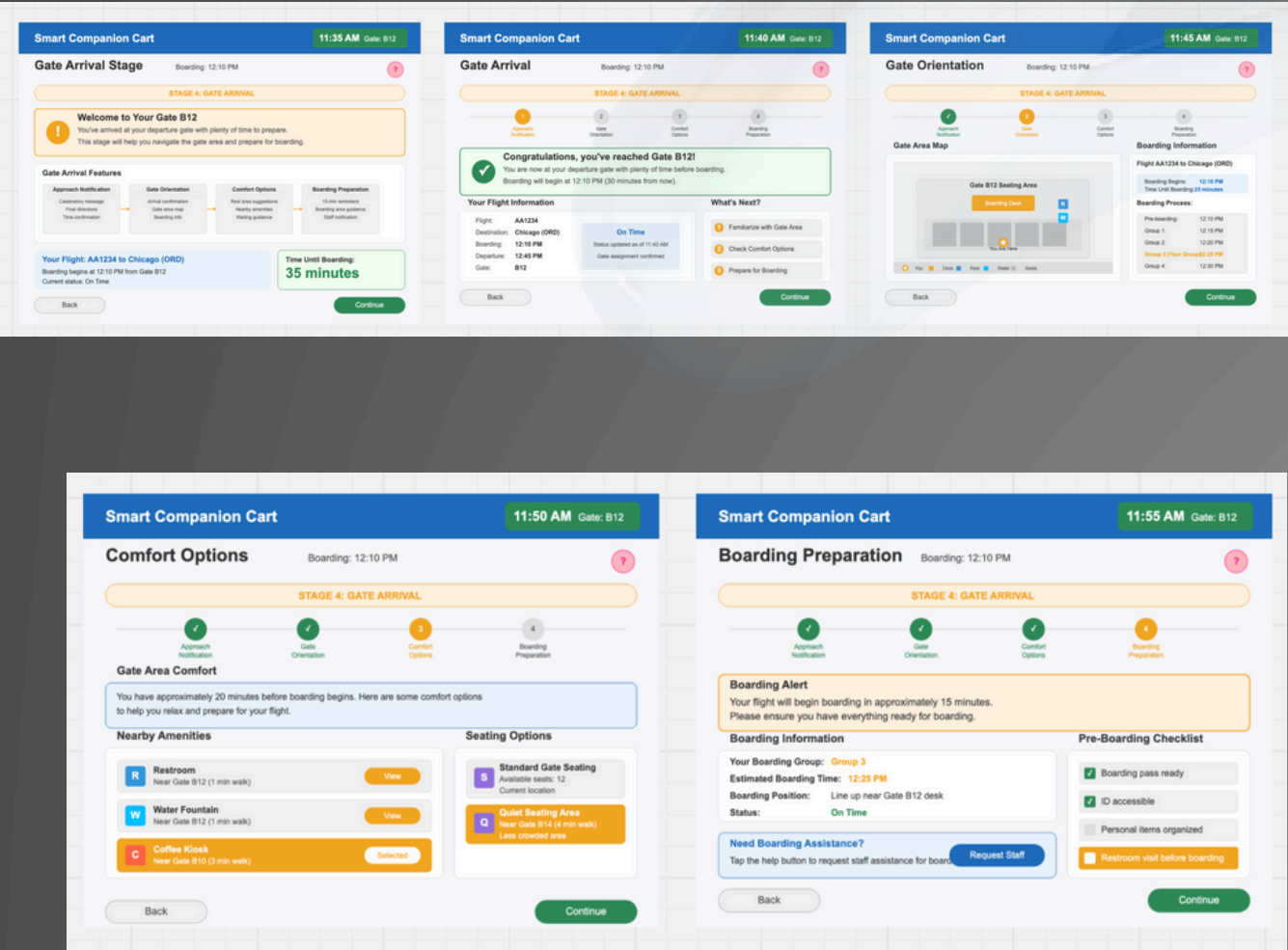
PHASE 3: SOLUTION TESTING

Stage 4 of Digital Experience

The Gate Arrival stage ensures a smooth transition from concourse navigation to boarding preparation with timely information and comfort options during the pre-boarding period.

Key Interface Elements

- Arrival Notification - Celebrates reaching the destination gate with confirmation of flight details and remaining time
- Gate Orientation - Provides detailed gate area map with boarding zone visualization and process timeline
- Comfort Options - Suggests nearby amenities for pre-flight relaxation and displays seating options with availability
- Boarding Preparation - Offers countdown timer with interactive pre-boarding checklist and personal items reminder
- Assistance Request - Enables one-touch staff request for boarding assistance with clear confirmation



This final pre-boarding stage transforms typically stressful waiting time into a managed experience that ensures passengers are comfortable, prepared, and confident as they approach the boarding process.

PHASE 3: SOLUTION TESTING

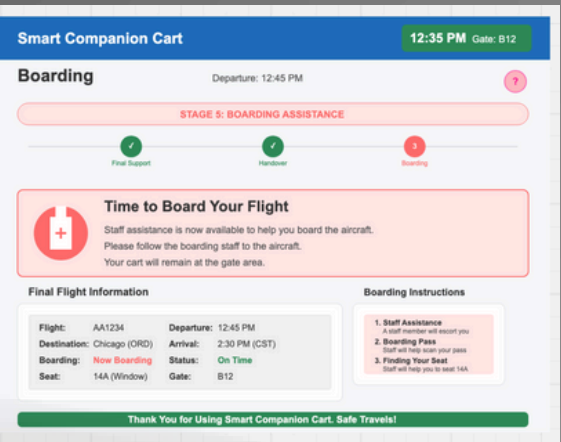
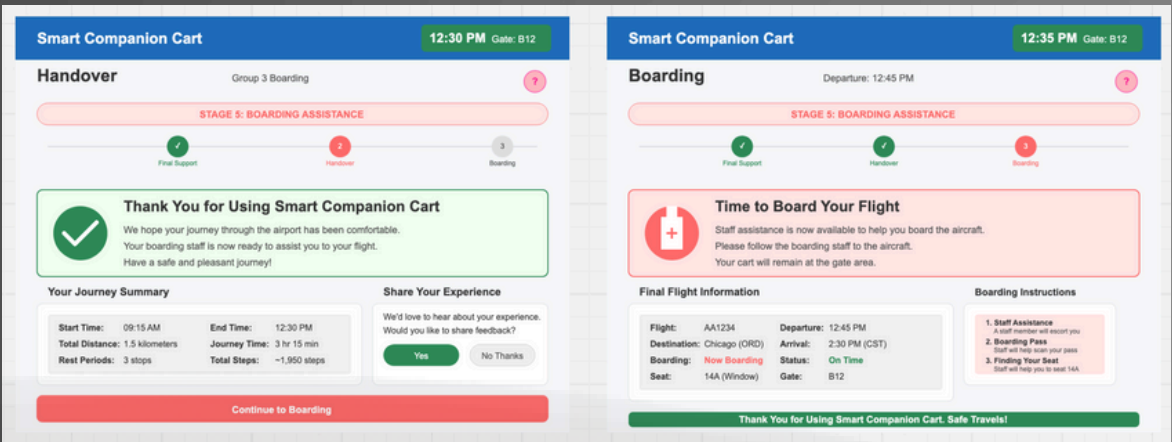
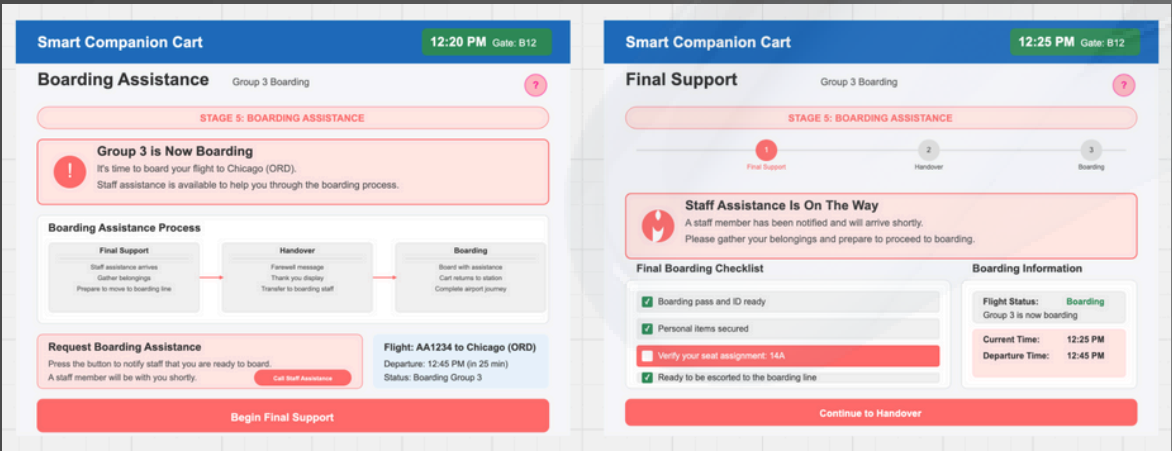
Stage 5 of Digital Experience

The Boarding Assistance stage provides a seamless transition from the waiting area to aircraft boarding with coordinated staff support and final journey information.

Key Interface Elements

- Boarding Alert - Notifies when boarding group is called with clear staff assistance availability
- Final Support - Confirms staff arrival with boarding checklist and preparation guidance
- Handover Process - Provides journey summary with distance traveled and rest periods taken
- Boarding Instructions - Delivers clear step-by-step guidance for the final boarding process
- Completion Screen - Offers final flight information with departure and arrival details
- Feedback Option - Requests experience rating to improve future journeys

This final stage completes the digital experience with a graceful conclusion to the airport journey, ensuring passengers reach their aircraft with confidence and all necessary assistance.



PHASE 3: SOLUTION TESTING

We-A- GO



Personal Mobility for Aging with Ease

Airports present significant challenges for Aging travellers navigating vast terminals, complex pathways, and experiencing sensory changes. My design approach focuses on understanding these travel experiences. Our mission is to reimagine mobility solutions that restore confidence and preserve dignity.

The WE-A-GO cart embodies a philosophy where "WE" represents the partnership between the cart and traveler, "A" symbolizes aging as continued engagement, and "GO" celebrates mobility and independence. This companion adapts to individual needs, preserving dignity throughout the airport journey.

Convertible Companion

Adapting to Aging Needs with Dignity and Independence



The Integrated Storage

- Integrated storage compartment with one-button access
- Secure space for carry-on items and personal belongings
- Illuminated interior visible in all lighting conditions

Accessibility Buttons



Emergency Stop

The Smart Touch Screen

- Large, high-contrast touchscreen with simple navigation
- Dedicated physical controls for essential functions
- Emergency stop button for immediate halting
- Accessibility controls for users with varying abilities

Convertible Companion

Adapting to Aging Needs with Dignity and Independence

Dynamic Mobility System

- Self-balancing wheels that analyze terrain
- Intelligent speed adaptation matching user's pace
- Strategic sensors for surroundings awareness and safety
- One-touch deployment between mobility modes

The Ergonomic Seat

- Ergonomic seat with adjustable height
- Gentle assistance for sitting down and standing up
- Padded surface with stabilizing frame for security
- 180° rotation system for easy transitions



Interface

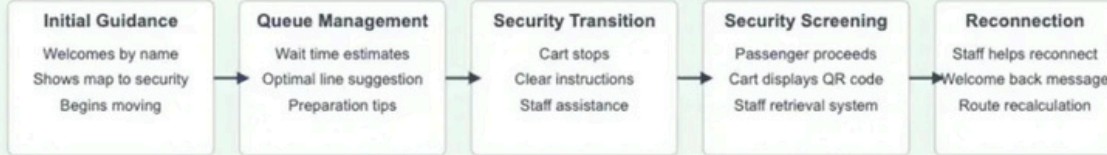


Smart Companion Cart - Passenger Journey Flow

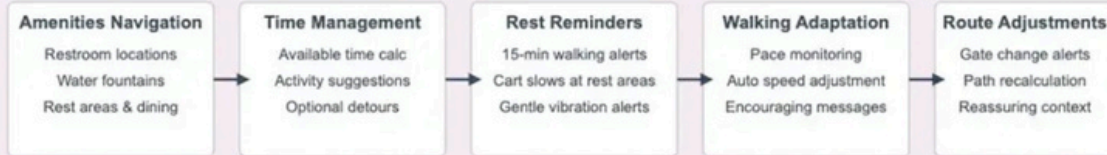
STAGE 1: CHECK-IN & SETUP



STAGE 2: SECURITY NAVIGATION



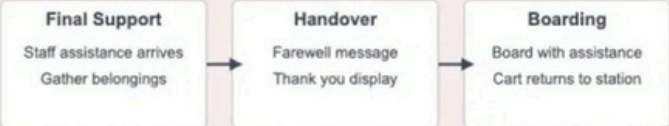
STAGE 3: CONCOURSE JOURNEY



STAGE 4: GATE ARRIVAL



STAGE 5: BOARDING ASSISTANCE



PHASE 3: SOLUTION TESTING

Interview Insights



Sarah, 68
Elderly Traveler with Hearing
and Sight Issues
Travel Frequency: 1-2 times per
year (Family Visits)

The 180° rotating seat would make such a difference—I wouldn't have to choose between standing when I'm tired or being pushed in a wheelchair when I can still walk.



RAJ, 72
International Wheelchair User
Travel Frequency: Annual trips
to India (Family Visits)

I want to navigate independently but safely. A system that matches my natural walking pace while helping with directions would give me my freedom back.



MARGARET, 75
Walking Stick User Travel
Frequency: Occasional Traveler

Being able to access my belongings without bending down would eliminate so much stress. At my age, that simple thing would preserve my dignity.

PHASE 3: SOLUTION TESTING

Sarah Interview Insights

- Personalized assistant feeling will help navigate through "airport chaos"
- Color-coded stages will make journey tracking easier for vision-impaired users
- Large text options will be essential for comfortable screen reading
- Voice commands will create independence even in busy environments
- Rest reminders will be crucial as elderly travelers often forget breaks
- Screen position at proper height will accommodate bifocal use
- Weight concerns suggest need for lighter design for manual movement

Sarah's Feedback (68, Elderly Traveler with Hearing and Sight Issues)

General Interface Experience

"Using Aira felt like having a personalized assistant who could guide me through the airport chaos."

"The voice commands and real-time agent support made me feel independent, even in a busy

"I appreciated how each stage was color-coded, making it easier to know where I was in the journey."

"The text size options were essential for me to read the screen comfortably."

"I sometimes got overwhelmed with too much information on one screen."

Stage 1: Check-in & Setup

"The profile setup with language and text size options addressed my needs immediately."

"I liked that the cart explained its benefits upfront."

"The walking speed setting was thoughtful - I always need to move slower."

"I wish the audio settings had a test function to check if I could hear clearly."

Stage 2: Security Navigation

"The wait time estimates helped manage my anxiety about security lines."

"Security checkpoint map was somewhat confusing with too many colors."

"The staff assistance feature gave me confidence that help was available."

"I wish there was an option to get audio directions for the security process."

Stage 3: Concourse Journey

"Rest reminders were essential - I often forget to take breaks."

"The amenities navigation helped me locate accessible restrooms easily."

"Time management suggestions were helpful but sometimes stressful."

"Walking adaptation didn't account for crowded areas where I move even slower."

Stage 4: Gate Arrival

"Celebratory message made me feel accomplished after navigating the terminal."

"Gate orientation with clear map helped me understand where to sit."

"Boarding preparation countdown was helpful for timing restroom breaks."

"Font size for some boarding information was still too small even on large setting."

Sarah's Feedback (68, Elderly Traveler with Hearing and Sight Issues)

Stage 5: Boarding Assistance

"Final support instructions were clear about gathering belongings."

"Staff assistance notification gave me time to prepare."

"The farewell message felt personal and caring."

"Would like the option to save my experience preferences for future trips."

3D Model Prototype Feedback

"The seated position seemed comfortable for someone my age."

"Screen position is at a good height and angle for reading with bifocals."

"Handle design looks sturdy enough to support me if needed."

"Concerned about the weight of the cart if I needed to move it manually."

Summary of Key Points

Positive Aspects:

• Personalized experience with voice commands

• Color-coded stages for better navigation

• Accessibility features (text size,

Areas for Improvement:

• Audio settings test function

• Simplify security checkpoint maps

• Audio directions option for security

• Better crowd adaptation for walking pace

"Overall, the Smart Companion Cart made me feel more confident about traveling alone. It addressed many of my concerns as an elderly person with hearing and sight issues."

"The combination of physical support and digital guidance makes this cart truly unique. I would definitely use this for all my future travels."

PHASE 3: SOLUTION TESTING

Raj Intervirew Insights

- Physical design will allow comfortable movement alongside mobility aids without interference
- Luggage storage area needs improvement for better accessibility with limited mobility
- QR code display for staff will reduce need to verbally explain mobility requirements
- Route adjustments will be crucial when gates change or for elevation information
- Walking pace monitoring should adapt for different mobility aid users
- Mobility aid-specific checklists needed for boarding preparation procedures

Raj's Feedback (72, International Traveler with Mobility Issues)

General Interface Experience

"Be My Eyes was incredibly easy to use, and the volunteers were always patient and helpful."

"The physical design allowed me to move alongside the cart with my walking aid comfortably."

"The height of the screen was perfect for viewing while standing with my mobility aid."

"I would prefer larger buttons for the emergency features."

"The map views should show accessible routes more clearly."

Stage 1: Check-in & Setup

"The luggage placement instructions weren't clear for someone with mobility limitations."

"Orientation section was helpful, especially emergency help features."

"Voice commands were intuitive and responded well to my accent."

"Would prefer an option to transfer settings from previous trips."

Stage 2: Security Navigation

"Security transition instructions were clear about proceeding with mobility aids."

"The QR code display for staff was excellent - reduced the need to explain my situation."

"Reconnection feature after security was reassuring."

"Would like more specific instructions for mobility aid screening procedures."

Stage 3: Concourse Journey

"Route adjustments feature was crucial when gates changed."

"Appreciated the cart slowing at rest areas automatically."

"Walking pace monitoring should be adaptable for different mobility aid users."

"Would like more information about elevation changes in the route."

Stage 4: Gate Arrival

"Comfort options with nearby amenities were very useful."

"Boarding preparation checklist didn't include mobility aid-specific items."

"Seating options highlighted accessible seating areas which was excellent."

"Would like notification of any ramp or lift requirements at the gate."

Raj's Feedback (72, International Traveler with Mobility Issues)

Stage 5: Boarding Assistance

"Handover process was smooth with clear instructions for staff."

"Boarding instructions didn't specify mobility assistance procedures clearly."

"Appreciated the journey summary with stats about distance traveled."

"Would like option to rate specific aspects of assistance received."

3D Model Prototype Feedback

"The design works well with my mobility aid - no interference."

"Luggage storage area seems difficult to access with limited mobility."

"Control placement looks convenient but buttons might be too small."

"Would need clearer indication of where to position mobility aid alongside cart."

Summary of Key Points

Positive Aspects:

• Volunteer assistance through Be My Eyes

• Physical compatibility with mobility aid

• QR code system for staff communication

Areas for Improvement:

• Clearer luggage handling instructions

• Better elevation change information

• Mobility aid-specific checklists

• Larger emergency buttons

• Specific boarding assistance

"Despite my mobility limitations, the Smart Companion Cart helped me maintain my independence throughout the airport journey, which is extremely important to me."

"The combination of physical support and informational guidance makes this cart perfect for older travelers like me who want to travel without always needing human assistance."

Reflection & Future Directions

What I Learned, What I Carry Forward

1. Empathy Must Be Practiced, Not Just Theorized

Empathy in design is not just about imagining how someone else feels. It is about being willing to slow down, test assumptions, and experience systems from a completely different body, mindset, and rhythm. Simulating vision loss or mobility strain taught me more than reading articles ever could.

2. Designing for Aging is Designing for Everyone

Every feature created for elderly users—larger buttons, clearer instructions, adjustable speeds—also benefits distracted parents, travelers recovering from surgery, or non-native language speakers. Inclusive design has a ripple effect.

3. Technology Needs Warmth

So much of the tech in airport navigation feels cold, robotic, or overwhelming. Through We-A-Go, I've learned how small decisions—like tone of voice, pacing, ambient lighting—can soften interactions and make a product feel human, not mechanical.

4. Prototypes Can Change Minds

Early conversations around my idea were sometimes met with skepticism—"Do they really need this?" But when I showed even rough versions of the cart to elderly users, their eyes lit up. Real people responded to real effort. That's the power of making ideas tangible.

Reflection & Future Directions

What's Next

Testing in Real Airport Environments

- Partnering with accessibility teams at SFO or similar facilities
- Observing real-world movement, feedback, environmental compatibility

Material & Manufacturing Exploration

- Studying weight, durability, and sustainability of materials
- Exploring foldable and collapsible formats

Interface Refinement & Expansion

- Integrating weather, terminal crowd data, rest spot suggestions
- Voice personalization and AI learning over time

Beyond Airports

- Adapting the We-A-Go system to other public spaces with similar navigation challenges
- Licensing the platform to accessibility organizations



Manifesto

Designing for Dignity

A manifesto is not just a declaration—it's a lens. It clarifies what I believe as a designer, what I stand for, and what I refuse to ignore.

This project began with a problem of navigation, but ended as a practice of restoration. It restored something too often overlooked in design for aging populations: dignity.

This is my manifesto, shaped by this journey, and by every elderly traveler I listened to, watched, and imagined walking alone through a loud and complicated world.

I believe accessibility isn't a checklist—it's a value, built in from the beginning. Aging is not decline.

It's wisdom, rhythm, and resilience. Good tools don't rush you. They wait, breathe, and guide with care.

Design should restore confidence, return ownership, and create space for joy.

No one should feel like a burden—not slower, not invisible, not left behind.

Quiet design is powerful. It earns trust, not attention. Airports should welcome movement—at every age, at every pace.

Appendix – Annotated Bibliography

Patricia Moore, “Disability by Design.”

Moore’s work laid the philosophical foundation for my project. Her approach to “experiential empathy” and design activism helped me frame We-A-Go as not just a product but a statement. Her insights made accessibility central, not secondary.

Kat Holmes, *Mismatch: How Inclusion Shapes Design* (MIT Press, 2018)

Holmes reframed the design process by introducing the idea of “exclusion by default.” Her frameworks directly influenced how I analyzed UI systems and avoided creating narrow user paths.

Sara Hendren, *What Can a Body Do?* (Riverhead Books, 2020)

This book challenged how I viewed disability—not as a limitation, but as a negotiation between body and environment. Hendren’s concept of adaptive design informed my cart’s flexibility and pace-matching features.

Liz Jackson, “The Disabled List.”

Jackson’s work helped me move beyond the charity model of accessibility. It reinforced the idea that disabled and aging bodies are design drivers, not problems to solve.

Appendix – Annotated Bibliography

Norman, Donald A. *The Design of Everyday Things*. Revised and Expanded Edition. New York: Basic Books, 2013.

A foundational text on user-centered design, Norman's principles of affordances and feedback directly informed how the We-A-Go interface was developed for clarity and ease of use.

Pullin, Graham. *Design Meets Disability*. Cambridge, MA: MIT Press, 2009.

Explores how design can challenge traditional perceptions of disability and aging, encouraging aesthetic and emotional engagement alongside functionality.

Wurman, Richard Saul. *Understanding Understanding*. Newport, RI: ESRI Press, 2017.

Wurman's focus on information anxiety helped frame the navigation confusion experienced by elderly users in complex airport settings.

Heylighen, Ann. "Sustainable and Inclusive Design: A Matter of Knowledge?" *Design Studies* 35, no. 6 (2014): 718–738.

Discusses how designing for inclusion requires more than empathy—it demands multidisciplinary knowledge and long-term thinking.

Appendix – Annotated Bibliography

Wang, Yi, et al. “Designing Navigation Systems for the Elderly: Needs and Preferences.” *Gerontechnology* 10, no. 4 (2011): 210–221.

Empirical research study directly related to elderly navigation preferences, reinforcing the importance of multimodal feedback.

Waller, Stephen, et al. “Improving the Accessibility of Public Transportation Through Inclusive Design.” *Transportation Research Part A* 82 (2015): 129–141.

Helped contextualize the cart within broader mobility infrastructure needs.

Bau, David, et al. “Artificial Intelligence in Assistive Design: Ethical and Practical Considerations.” *Design Issues* 38, no. 2 (2022): 28–43.

Supports discussions around trust in semi-autonomous systems like We-A-Go, especially for vulnerable users.

Blythe, Mark, and Elizabeth Buie. *Designing for Older Adults: Case Studies, Methods, and Tools*. Boca Raton: CRC Press, 2015.

Includes tools and real-world case studies about designing for elderly populations, offering insight into persona refinement.

Thank You

"We don't just age - we continue to go places."

A SJSU M.Des Thesis Project
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