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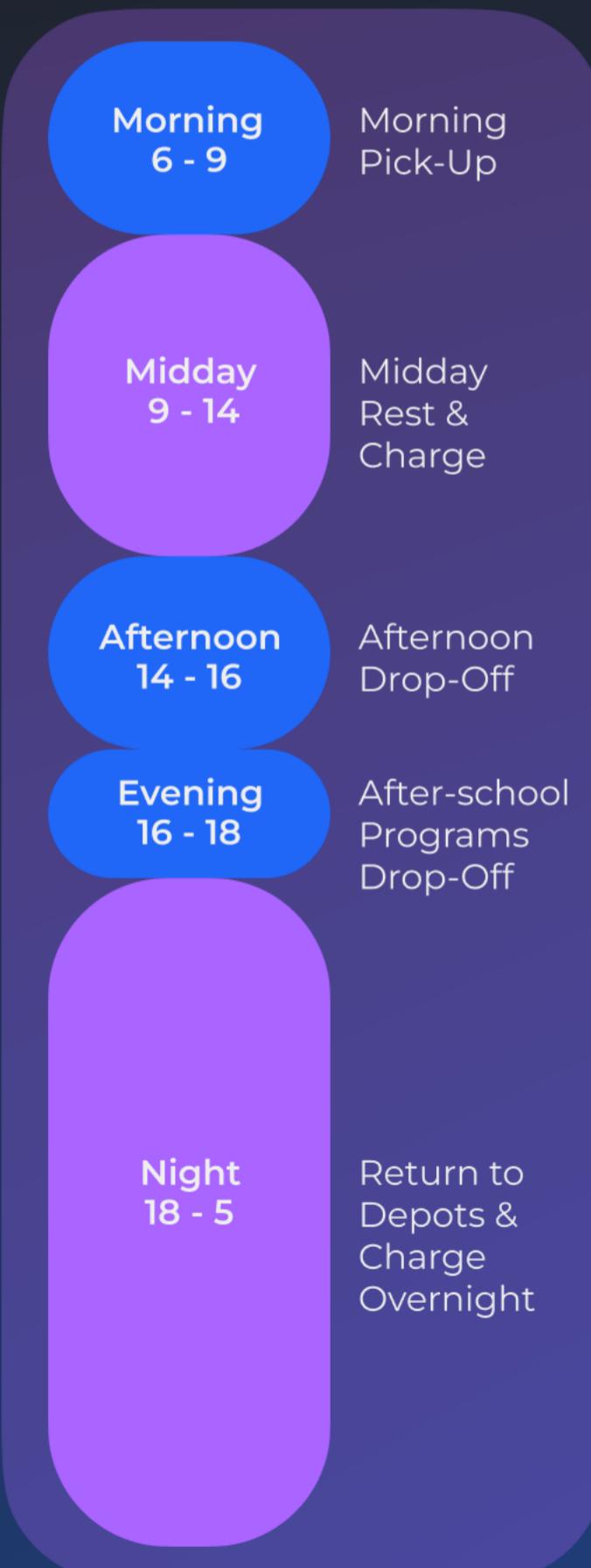
Magic School Buses

A system designed to reduce energy waste and encourage sustainable use by reusing electricity in the local school bus system.

Service Design - Sustainability / Energy
UIUX Design



About EV School Bus



1. Schedules

- School buses have **highly consistent** and **predictable operating schedules**. They primarily run during the morning and afternoon hours for student pickup and drop-off.

- Between these peak times and during the night, buses typically remain idle, providing **substantial periods for other potential uses**, such as charging or serving as backup energy storage.

3. Energy Storage Potential

Battery capacity per bus about **250 kWh**

$$100 \times \text{bus icon} = 25,000 \text{ kWh}$$

- During peak electricity demand, this could provide power to **approximately 10,000 households for 1 hours**, assuming an average peak consumption of 2.5kWh per household per hour.

2. Extensive Coverage in NYC



- New York has a large number of school buses, **widely distributed**, covering various power demand points across the city.

Background

New York, a city that never sleeps, faces growing energy challenges as clean energy advances and electricity demand rises. During peak summer times, power outages are a risk.

Meanwhile, thousands of school buses, especially electric ones, sit idle most of the day.....

The subway relies on stable power; any outage delays trains and impacts thousands of passengers.

Subway Operator
Long Island City, New York

We need Wi-Fi, lights, and computers—without them, the company can't function.

Office Worker
Bay Ridge, Brooklyn

Electricity is essential for everything—from registers to refrigeration.

Supermarket Cashier
Harlem, New York

I rely on electricity for my cart, but rising charges are a challenge.

Street Vendor
Tribeca, New York

Electric buses have low utilization outside of working hours.

Bus Driver
Flushing, Queens

A blackout is my worst fear—no lights, no signals, and everything could turn into a disaster.

Uber Driver
Astoria, Queens

Electricity Use in NYC

Annual Electricity Use by City Offices and Public Buildings (in Megawatt Hours)

NYC Housing Authority	1,200,000
City Offices	1,040,000
Education	887,000
City Universities, Libraries, Cultural Institutions	645,800
Department of Environmental Protection	640,900
Transportation	390,100
Health and Hospitals Corporation	378,600

Source: Ascher, Kate. *The Works: Anatomy of a City*. Penguin Press, 2005.

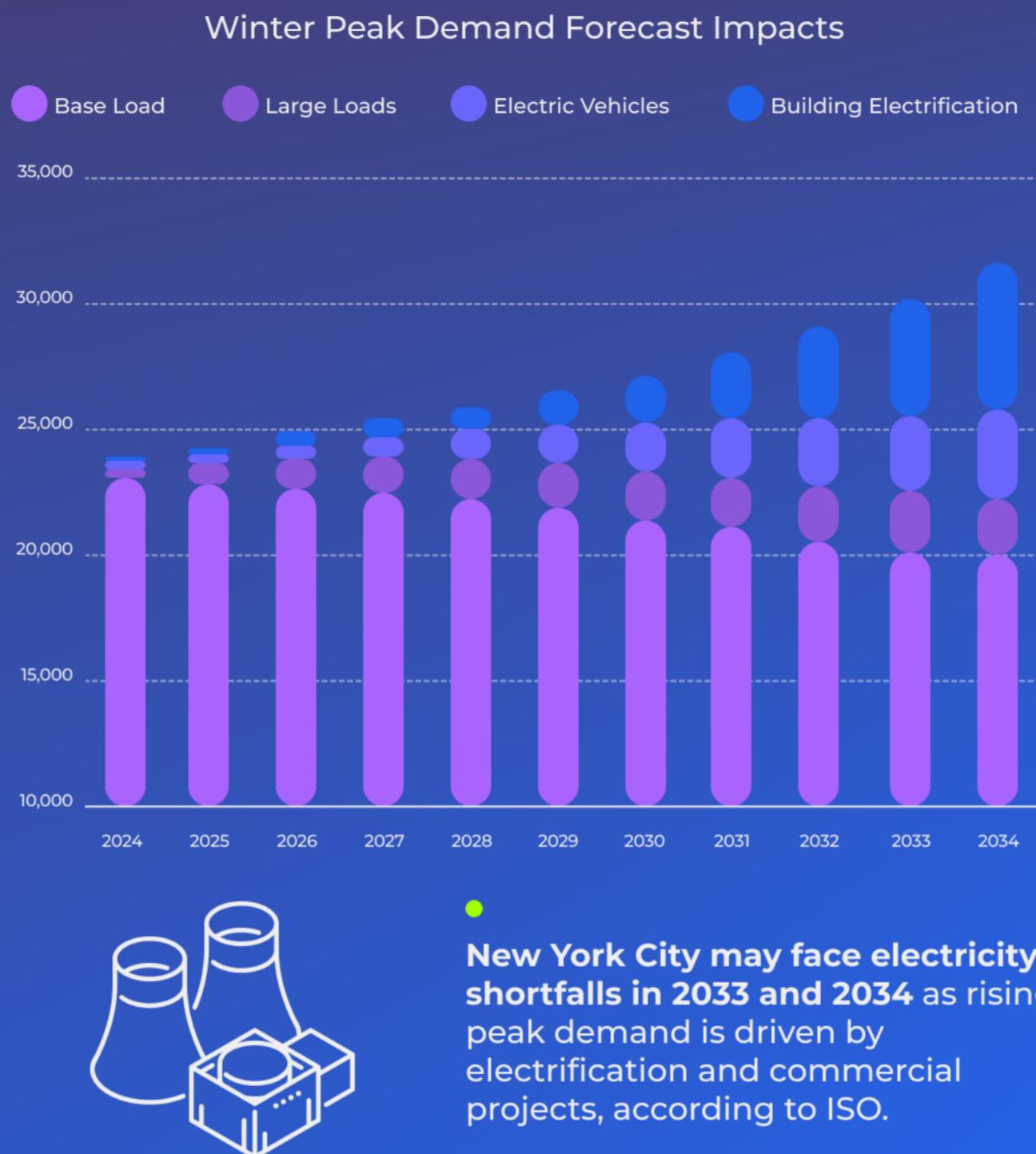
Voices of New Yorkers

Household Power Demands

The usage of computers, phones, and televisions has steadily increased, and although the energy efficiency of individual devices has improved, their rapid proliferation far outweighs the energy savings brought by manufacturing advancements.



Potential Electricity Resource Shortfalls



Electricity Purchasing Methods in NYC

1. Traditional Utility Providers (Con Edison)

Most New Yorkers purchase electricity through utility providers like Con Edison, with prices set by the local government and typically based on usage.

2. Time-of-Use (TOU)

These plans offer varying rates based on when electricity is used, with lower prices during off-peak hours and higher rates during peak demand times.

3. Community Solar and Clean Energy Programs

Residents can join community solar or opt for clean energy plans supporting renewable sources like wind or solar at fixed rates or with energy credits.

Insights

1. High demand for electricity in daily life

People's daily dependence on electricity is increasing across various sectors, making reliable energy supply essential for daily activities.

2. Rising electricity costs

As electricity demand grows, the cost of electricity continues to rise, placing a financial burden on individuals and businesses.

3. School Bus Potential

Electric school buses could store energy during off-peak hours when electricity is cheaper and sell it during peak times for profit. This makes use of the buses' idle time, supporting grid efficiency and creating potential economic benefits.

4. Decentralized Electricity Buying

This enables consumers to optimize costs and improve energy efficiency by responding to dynamic pricing, reducing reliance on centralized providers. This approach enhances sustainability and gives individuals greater control over their energy usage.

Managing The Peaks

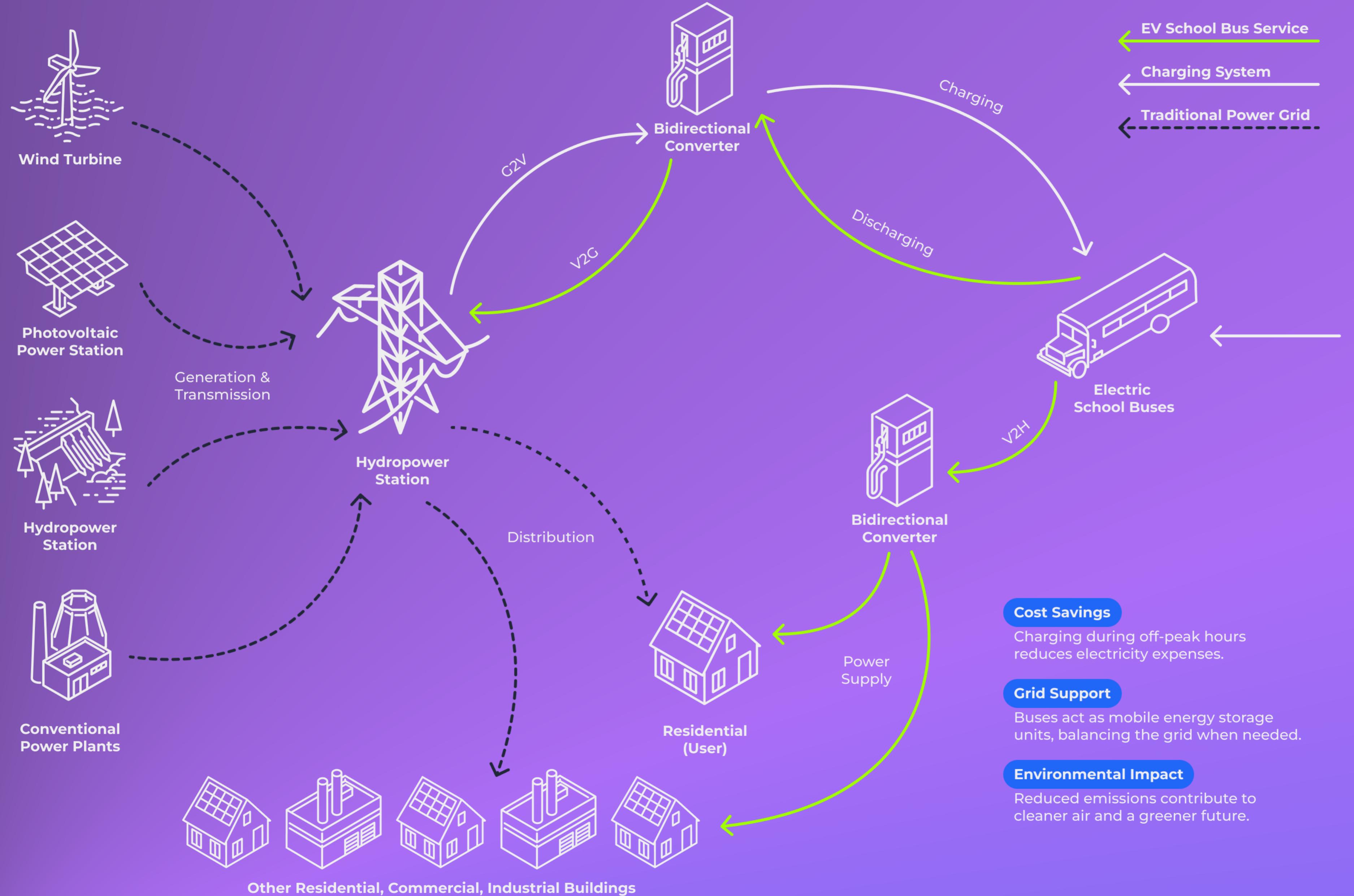


Scenario Setup: A heatwave triggers a sudden spike in air conditioning usage, increasing electricity demand.

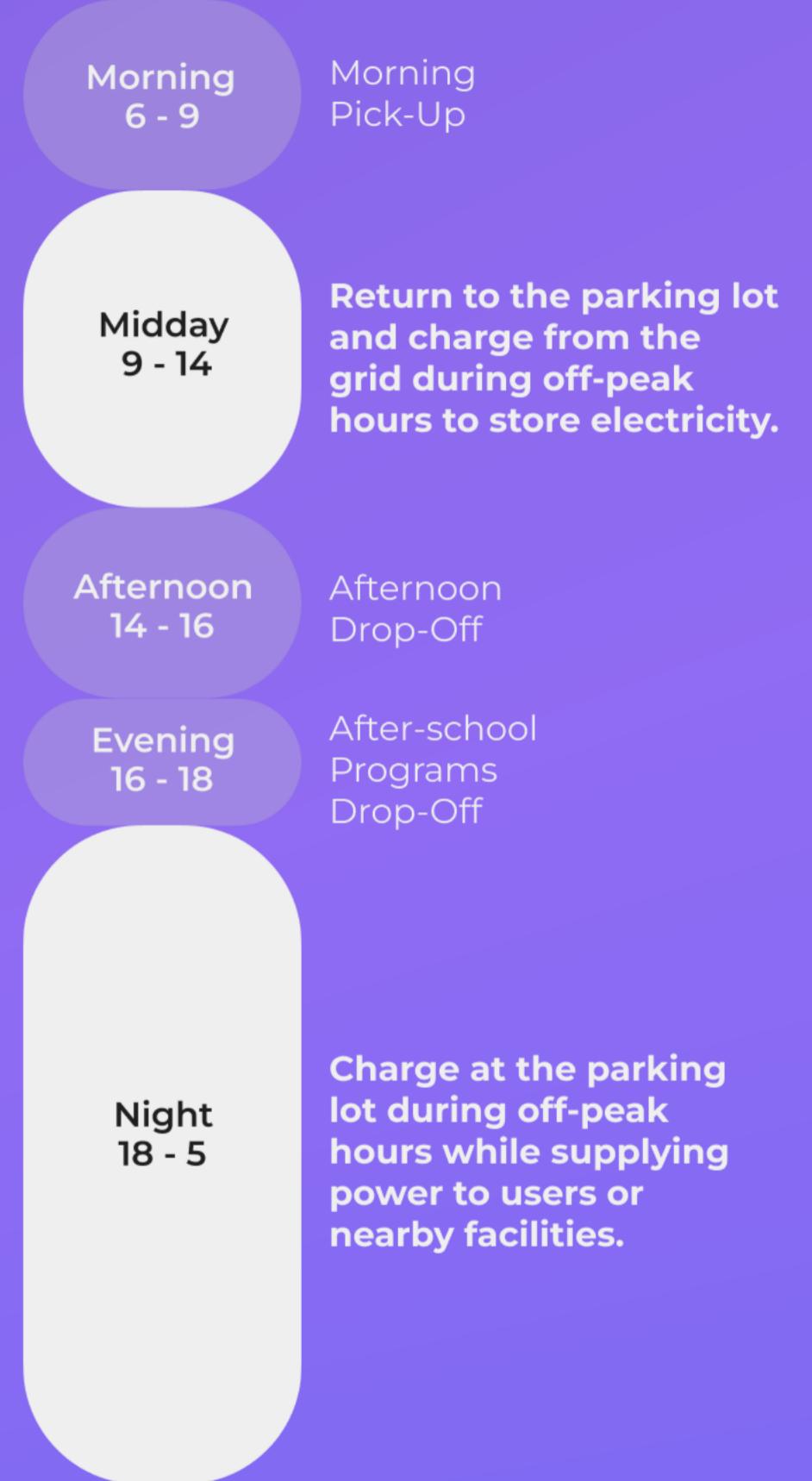


- NYISO operators train with simulations to prepare for grid issues like transmission failures. They practice responding to alarms, adjusting power flows, and coordinating with utilities and generators to maintain grid stability and prevent disruptions. This training provides critical experience for real-world challenges.

Service System Ideation

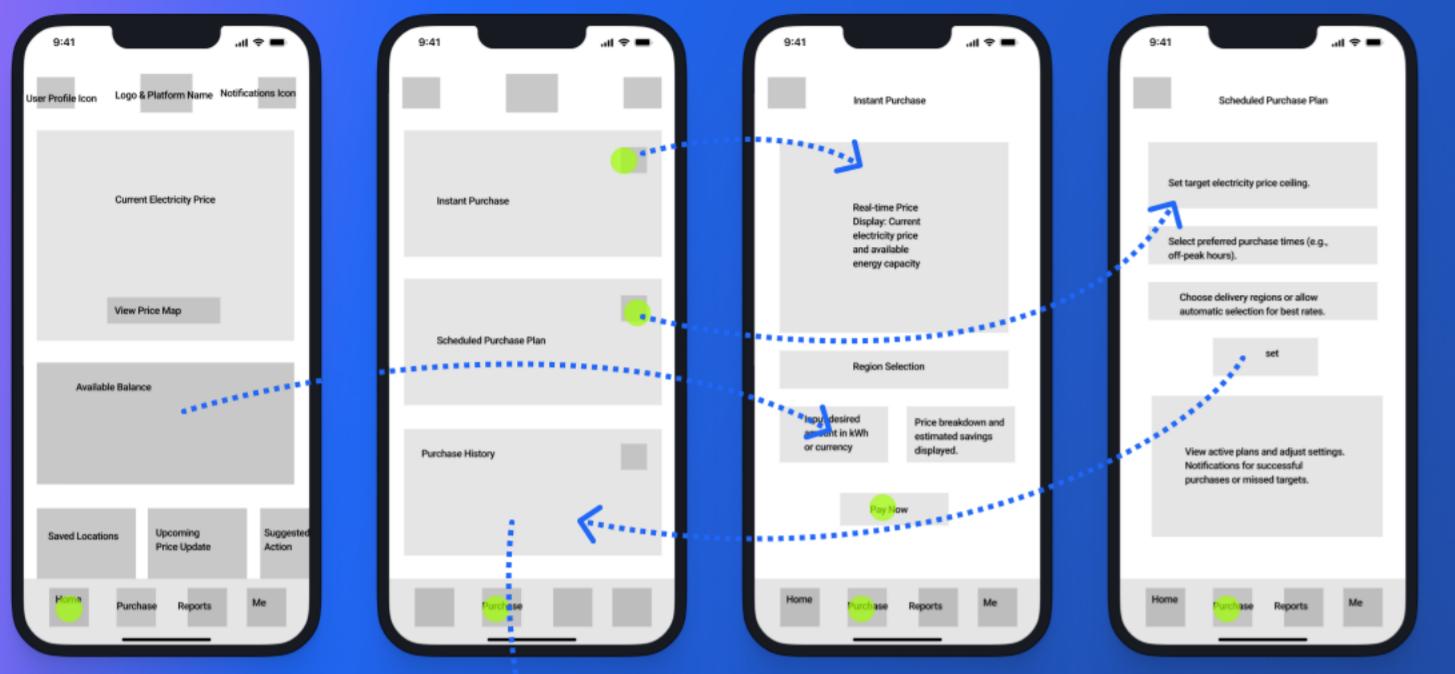


A Day of a E-School Buses: Off-Peak Energy Storage



Electric school buses store **low-cost electricity** during **off-peak periods** when **demand and prices are low**. During peak hours, they **sell** electricity at **reduced rates**, helping to ease grid pressure.

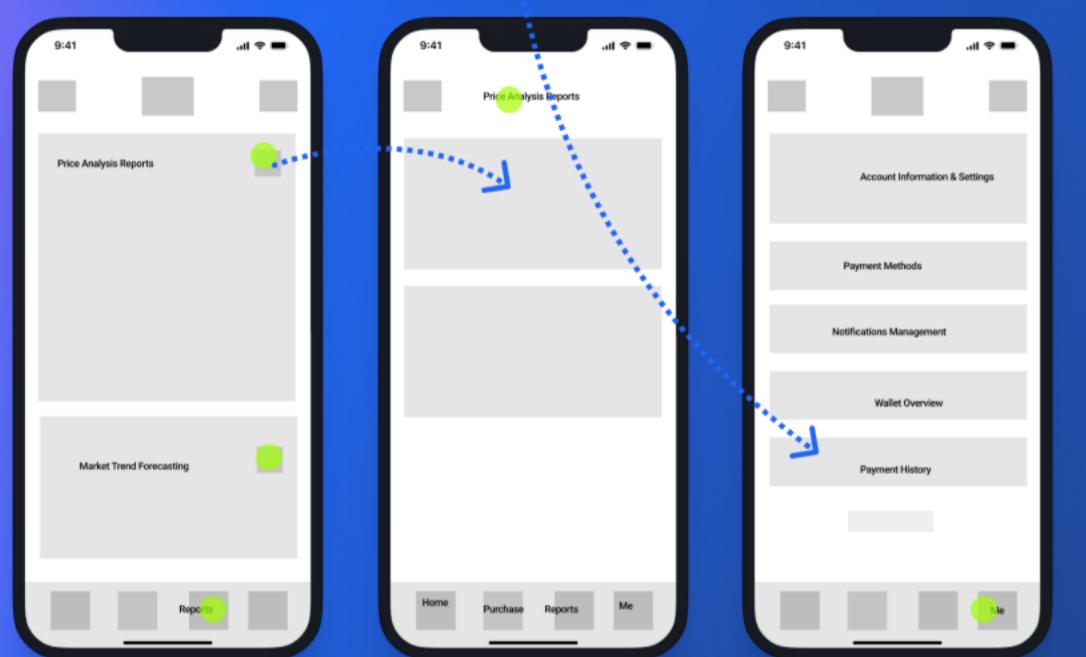
Low-Fi Wireframe



Home Page

Provide users with real-time electricity prices and an interactive price map for location-specific insights.

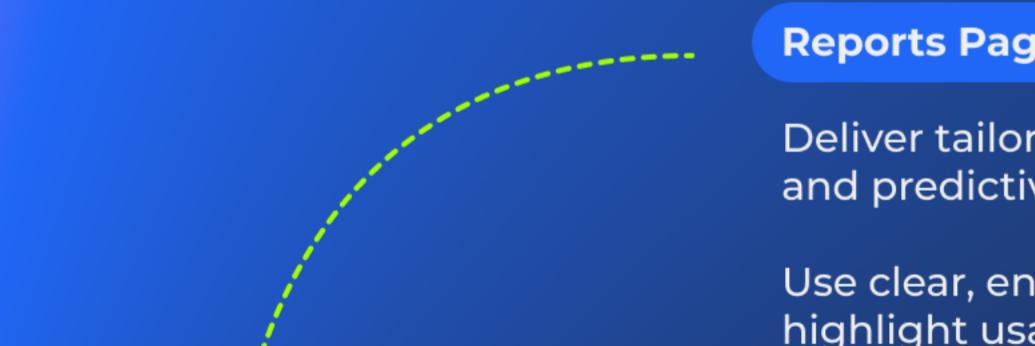
Use notifications for price alerts to encourage timely decisions.



Purchase Page

Enable instant and scheduled purchases with intuitive controls.

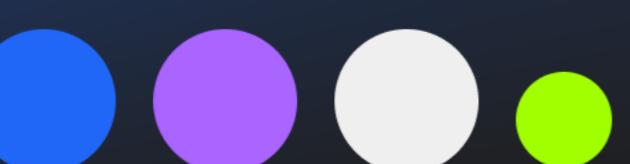
Allow users to set custom rules based on budget and usage patterns.



Final Product

WattUp's UI is clean, intuitive, and easy to navigate, focusing on clear, accessible data presentation. The UX ensures smooth, efficient interactions with simple workflows, real-time feedback, and personalized features for a seamless experience.

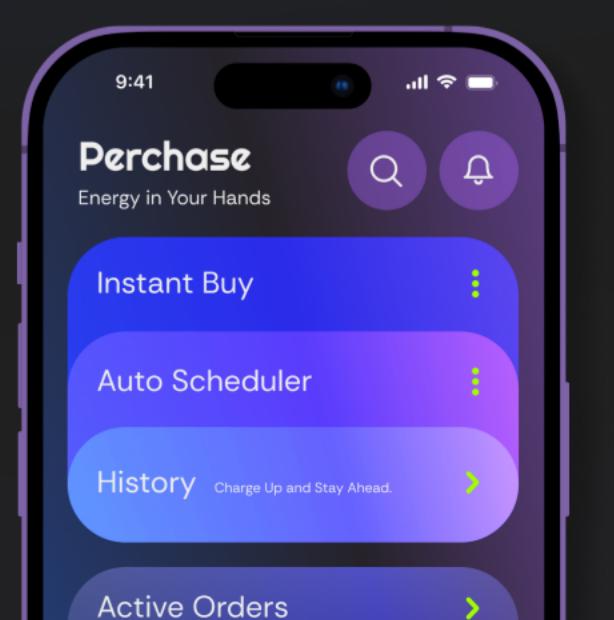
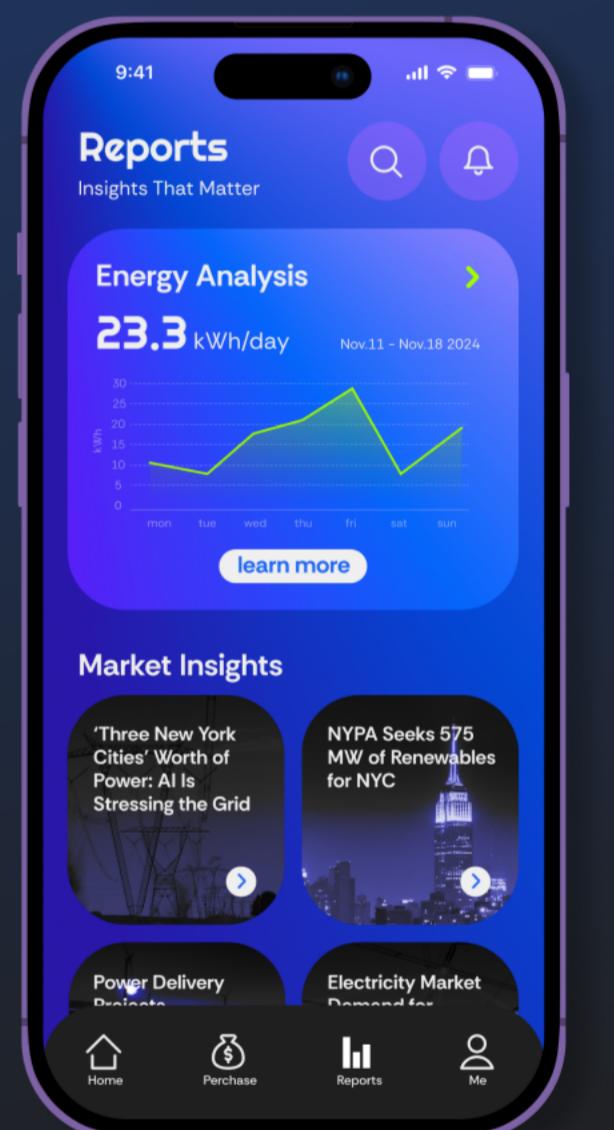
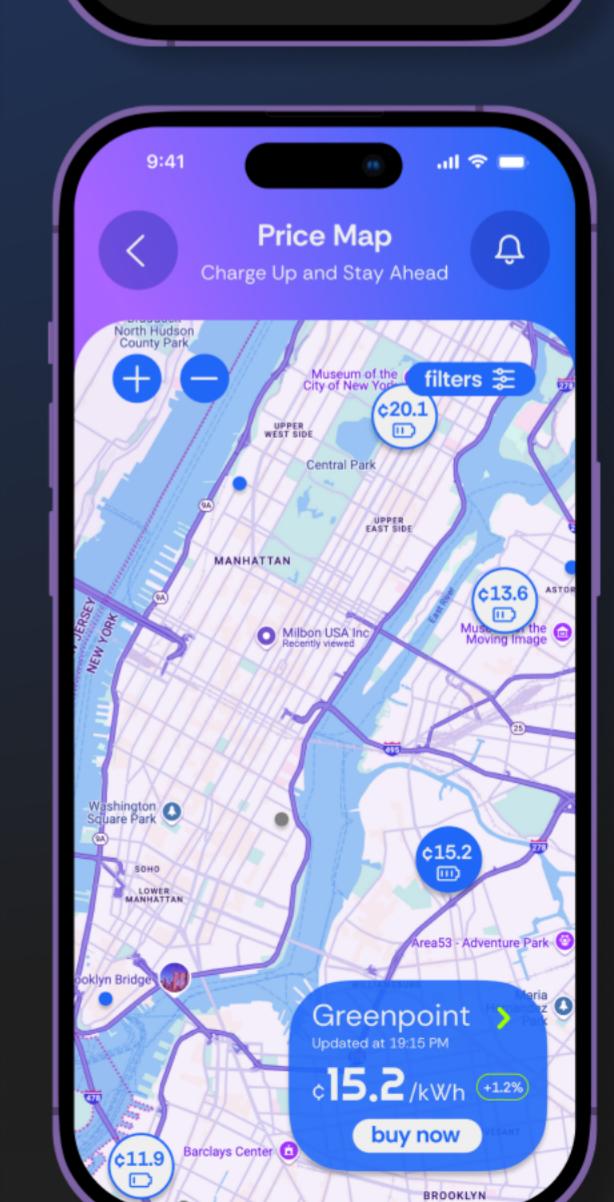
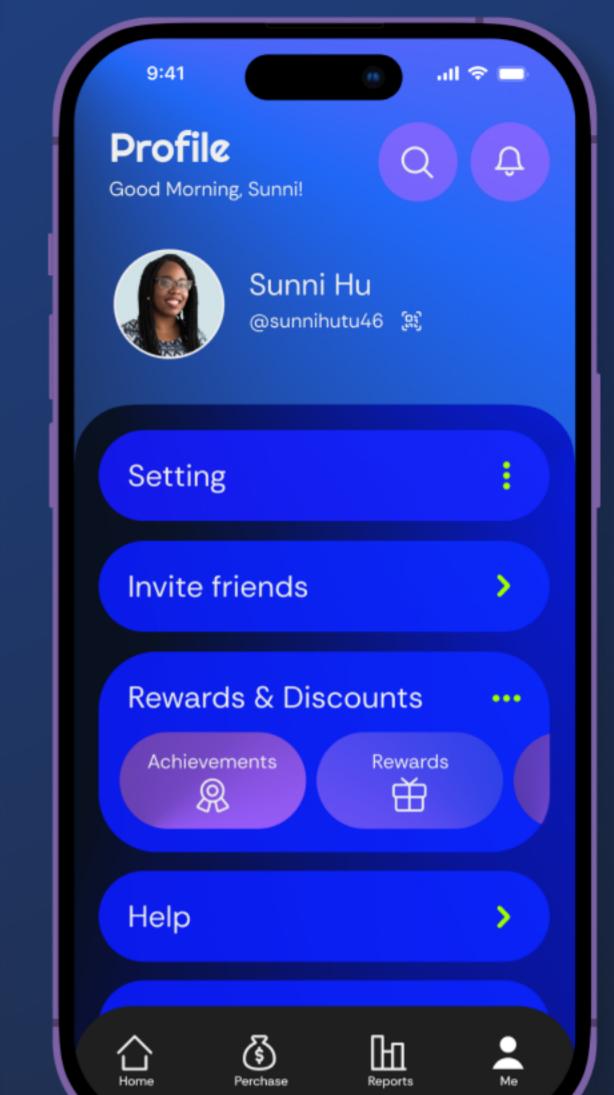
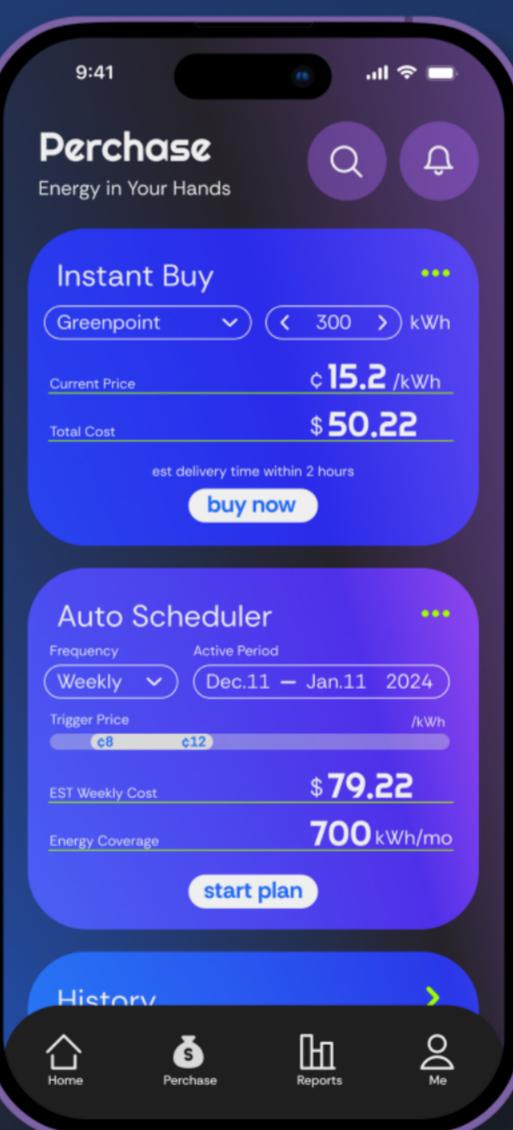
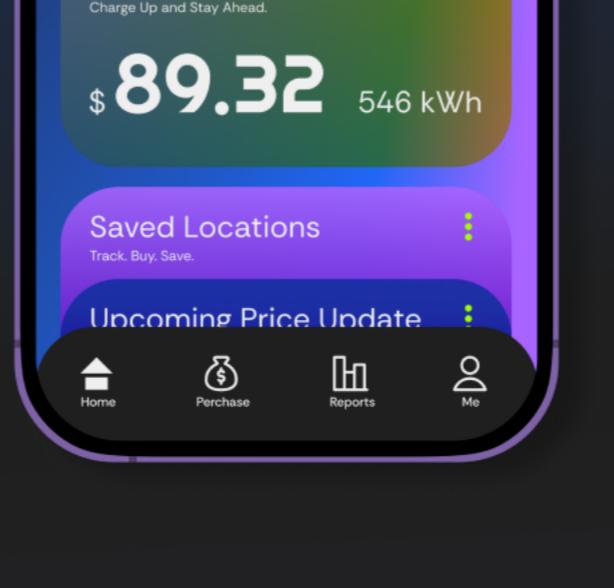
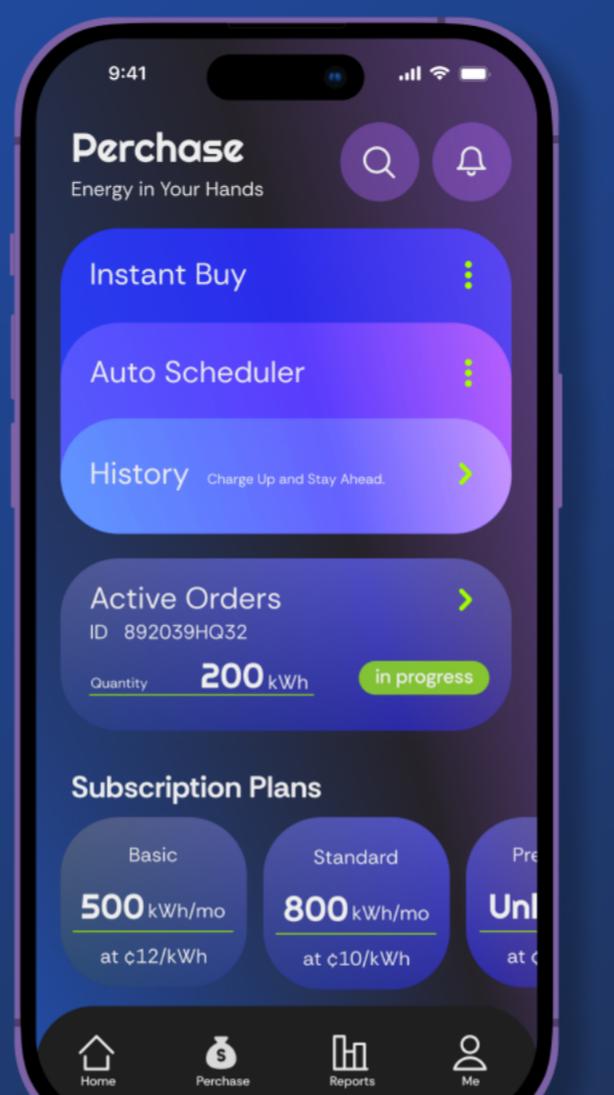
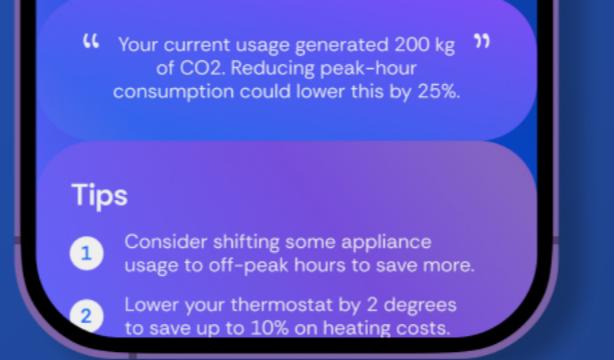
Color Palette



Profile Page

Offer personalized settings, payment management, and customizable notifications.

Gamify eco-friendly actions with badges and discounts.



Brand Touchpoints



Development Prospects Ahead

Community Engagement

Promotes user participation through competitions and social sharing, fostering a community-driven approach.



Business & Institutional Features

Expands the platform's reach to businesses and organizations, enabling large-scale energy management.

Smart Home Integration

Sync with smart thermostats, appliances, and EV chargers for automated energy management while adjusting home energy settings based on price fluctuations.



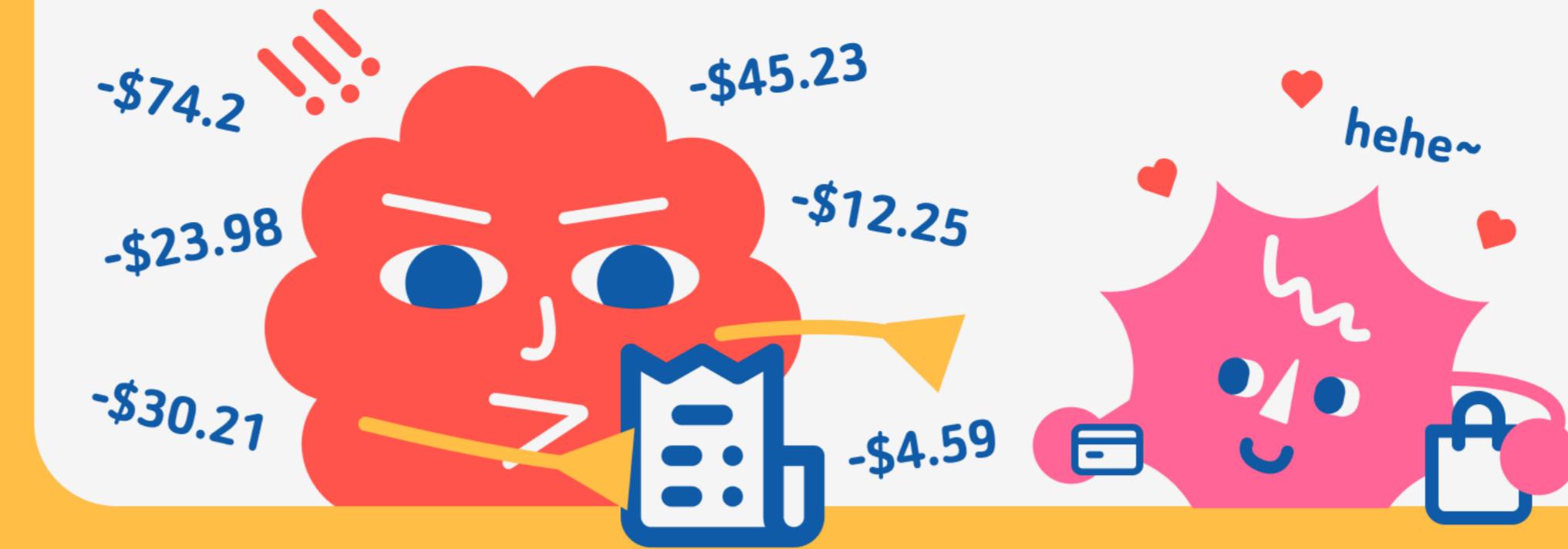
image source: "When Does Dyker Heights Christmas Lights Start?" My Christmas in New York, <https://mychristmasinnewyork.com/>.

02

Piggo

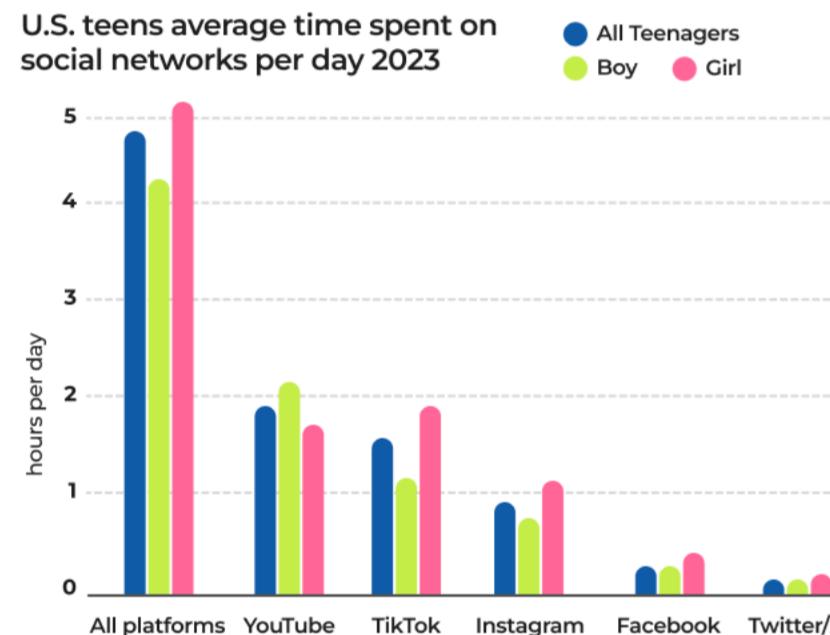
A smart piggy bank focused on enhancing financial literacy and promoting responsible spending for Gen Alpha through interactive experiences.

Product Design - Financial / Education Service Design, UIUX Design



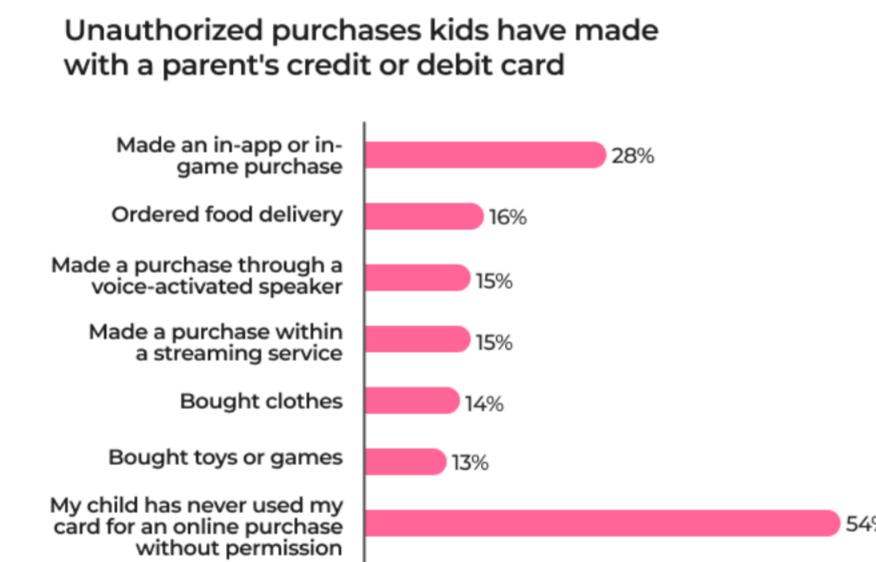
Data

- 1** In the United States, teenagers spend an average of 4.8 hours each day on social media platforms.



Source: Statista Research Department survey of 1,567 respondents aged 13 to 19 years, conducted in North America from June 26 to July 17, 2023.

- 2** 46% of parents report that their child has used their credit or debit card without permission.



Source: LendingTree survey of 1,051 parents with children under 18, conducted from January 11-14, 2022. Respondents could select multiple answers.

- 3** 65% of Gen Alpha lack formal money management education, yet most view financial literacy as key to their goals and are open to learning.

65% of Gen Alpha have been exposed to financial content through digital platforms but lack formal education on money management.

70% of high school students said they were not taught about personal finance in school.

93% of Gen Z and Gen Alpha teens believe financial literacy is essential for achieving life goals.

Financial Literacy for kids: Why it's so important?



Overview of the Theories

The Three Pot System

Money is divided into three categories—savings, spending, and giving—to teach balanced financial management and responsibility.

Delayed Gratification

This theory encourages waiting for rewards by saving or working for them instead of giving in to immediate desires.

Teaching the Value of Work

Money should be earned through effort, fostering responsibility and self-reliance by linking work to income.

Source: Ramsey, Dave, and Rachel Cruze. Smart Money Smart Kids: Raising the Next Generation to Win with Money. Ramsey Solutions, 2014.

Personas



Allison Williams

Age: 38
Occupation: Teacher
Location: London
Income: 3850£ / mo



Jake Williams

Age: 9
Grade: 3rd Grade
Location: London
Income: 10£ / week



Emma Williams

Age: 7
Grade: 1st Grade
Location: London
Income: none

Motivations

- Raise financially savvy and independent kids.
- Help children understand digital finance basics.

Needs

- A dependable, engaging tool that simplifies money concepts for kids.
- Supports kids in learning money value and smart choices.

Interests



Frustrations

- Concerned digital spending makes money feel less tangible.
- Struggles to teach finance in a fun, engaging way for kids.

Goals

- Build strong financial habits and digital skills in kids.
- Foster fun, open family conversations about money.

Interests



Motivations

- Enjoy tech gadgets, particularly his smartwatch.
- Thrives on competition with his sister to reach goals and earn rewards.

Needs

- Needs engaging, interactive methods to save and learn spending.
- Seeks independence in financial choices with mom's guidance.

Interests



Frustrations

- Finds traditional piggy banks dull; unsure of savings amount.
- Struggles with patience for meaningful goals.

Goals

- Save for desired items, like games or sports gear.
- Feel empowered to make choices and track progress responsibly.

Interests



Motivations

- Loves watching Instagram reels to learn about makeup.
- Asks her mom to buy her makeup products from Sephora.

Needs

- Needs simple, visual methods to understand savings and spending.
- Requires family support and encouragement to stay motivated.

Interests



Frustrations

- Doesn't grasp why she can't buy everything immediately.
- Struggles to remember to save for larger goals.

Goals

- Save for a new Jellycat plush and mascara.
- Aim to impress her family by achieving goals independently and feel more grown-up like her brother.

Interests



Background

With the rise of social media and online shopping, many kids lack money management skills. Piggo's mom found Piggo using her credit card on live streams and Instagram, feeling frustrated and helpless, as the child had no concept of money and only enjoyed buying things.

Payment Behavior Analysis

	Best For	Parental Control	Pros	Cons
Digital Wallets	Teens, frequent purchases, family-introduced digital payments.	● ●	Teaches budgeting and saving, with parental controls for in-store and online flexibility.	Challenging for younger kids, requires a smart device, and may reduce cash awareness.
Prepaid Debit Cards	Kids learning budgeting through independent purchases.	● ● ●	Helps kids learn budgeting, with parental limits and monitoring, usable in-store or online.	Requires parental involvement for funding and monitoring, may be hard for younger kids to grasp balance concepts.
Parent's Card	Younger kids with occasional purchase needs.	● ● ● ●	Convenient for occasional purchases with parental guidance, teaching spending responsibility.	Frequent use may reduce spending responsibility and create reliance on parents for funds.
Cash	Younger kids learning through tangible cash use.	●	Helps kids grasp the value of money, simple and ideal for small purchases.	Easy to lose, not for online purchases, and unsuitable for larger amounts or complex budgeting.
Gift Cards	Kids with focused spending on favorite stores.	● ● ●	Restricts spending to specific stores, teaching kids to manage within a set budget.	Limited locations, inflexible, and potential disappointment when funds deplete.

Market Comparison	Pros	Cons
Educational Kid Banking Apps	<ul style="list-style-type: none"> Goal-Oriented Convenience 	<ul style="list-style-type: none"> Teaches Responsibility Integrated Learning No free ATM network Limited Appeal for Younger Kids Dependent on Parents Screen Time Concerns
Engagement-Driven Tools	<ul style="list-style-type: none"> Engaging Early Financial Literacy 	<ul style="list-style-type: none"> Motivational Limited Depth No Investing or Advanced Features Short-Term Interest
Budgeting Jars for Kids	<ul style="list-style-type: none"> Simple Concept Tangible Learning 	<ul style="list-style-type: none"> Customizable Teaches Balance Limited Features No Real-Time Applications Manual Tracking

How might we...



Help parents improve **communication** and interaction with their children in this digital age while instilling a **healthy money mindset**?



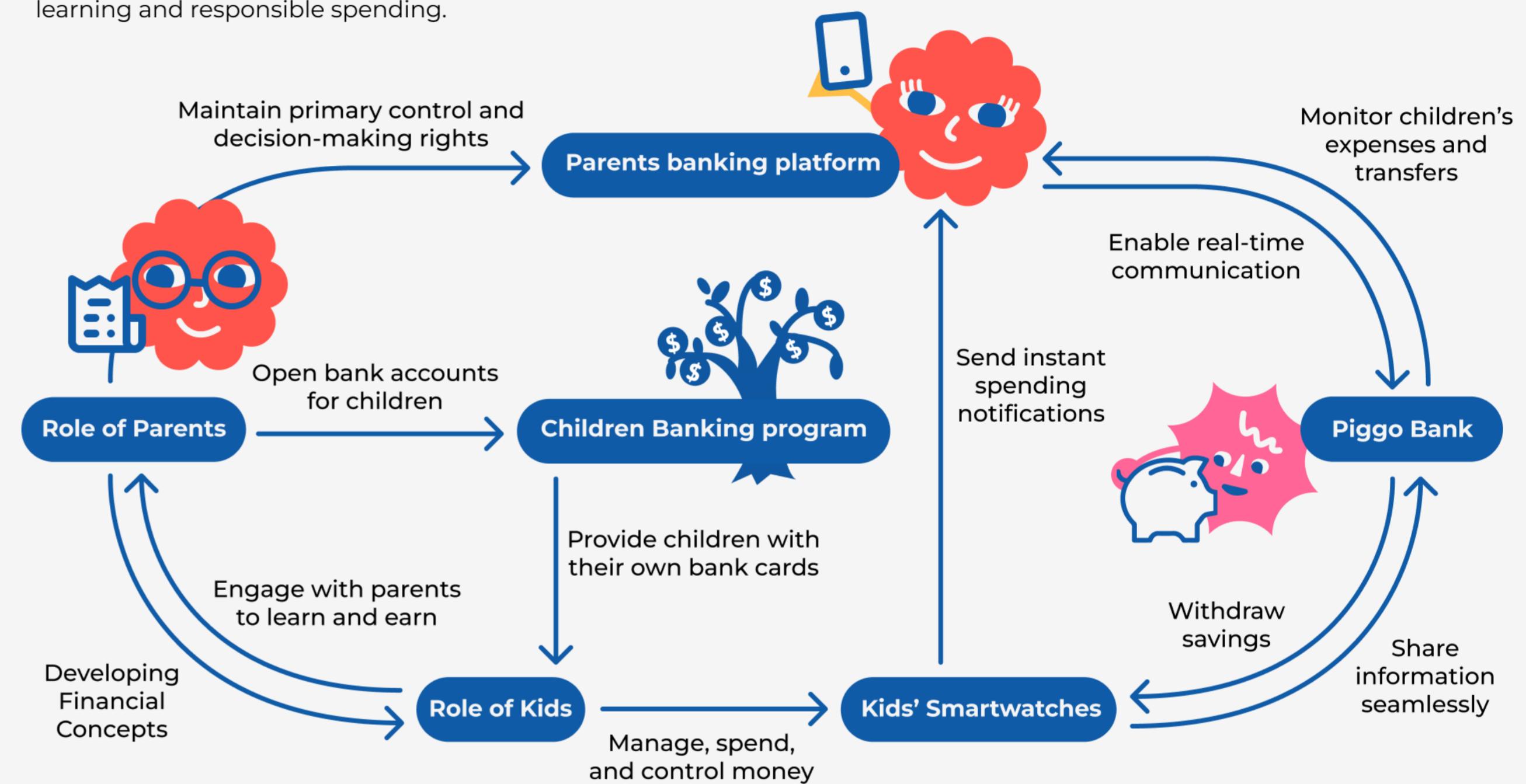
Provide children with more **practical opportunities** for money management to enhance their **financial literacy and experience**?



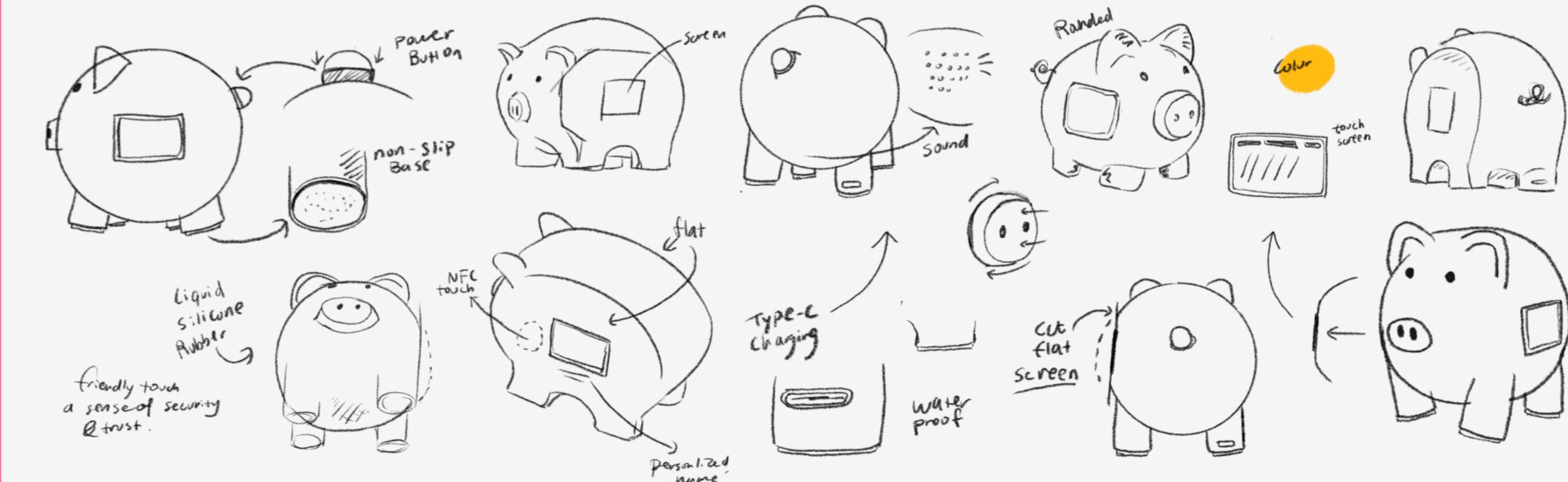
Ensure parents feel **confident** in their children's spending habits while **preparing** them for more complex financial tools?

System Map

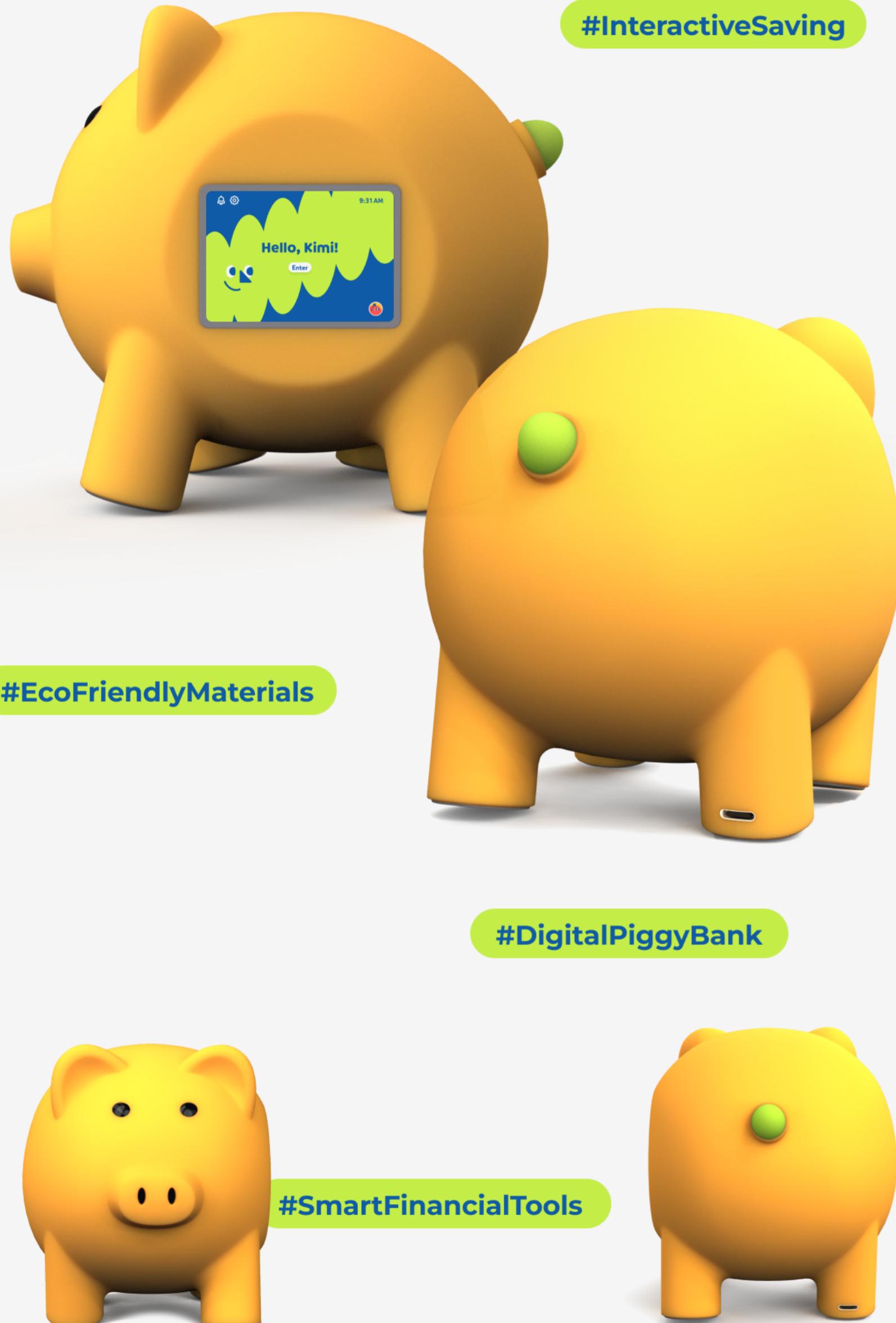
This system map shows how Piggo combines the Piggo bank, kids' smartwatches, the banking program, and a parent app to teach Gen Alpha children financial literacy through interactive learning and responsible spending.



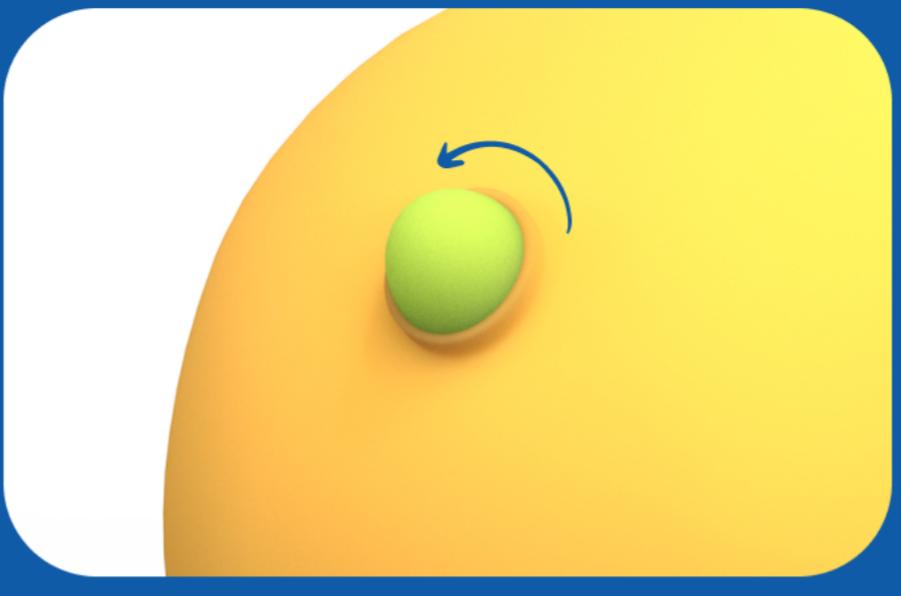
Concept Development



Introducing Piggo Bank



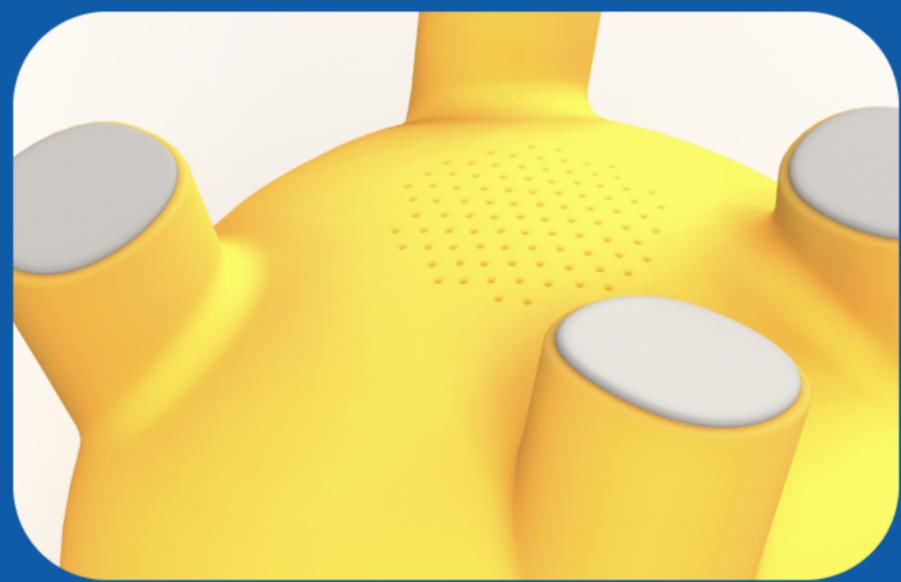
Product Details



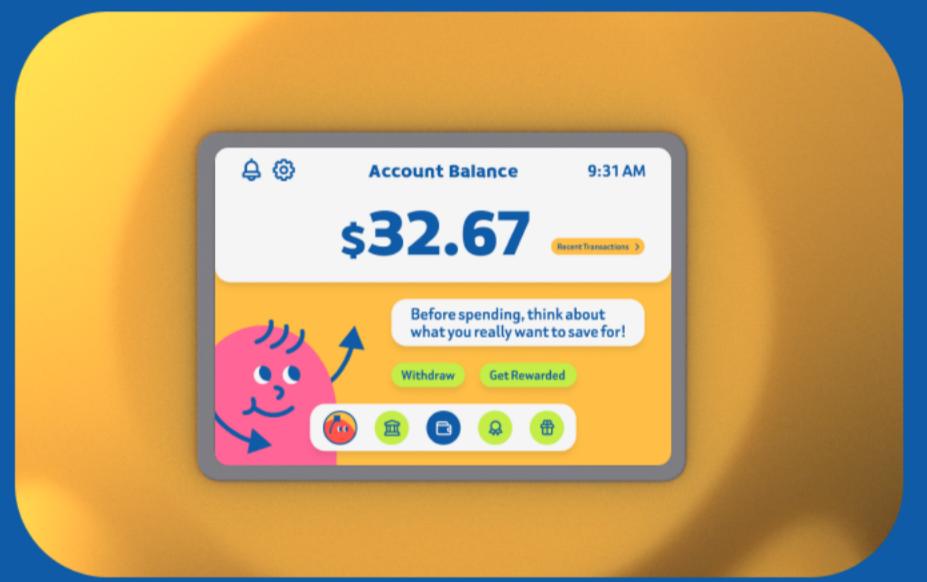
The piggo's tail serves as a **multifunctional control button**, which can be **pressed** or **rotated** for various interactive purposes, enhancing usability while navigating the screen.



The **Type-C charging port** is discreetly hidden on the piggo's leg, ensuring a sleek design while offering **fast charging** and **long battery life** for versatile use.



The piggo's belly houses a **built-in speaker**, delivering sound effects from within for an **immersive experience**.



A vibrant **touch screen** enables real-time interaction with children, fostering **engagement** and making learning more **enjoyable**.

Highlighted Features



NFC Interaction

Effortlessly enable seamless **deposit** and **withdrawal operations**, allowing children to complete transactions by bringing their **smartwatch close to the NFC area** on the screen.



Parental Oversight

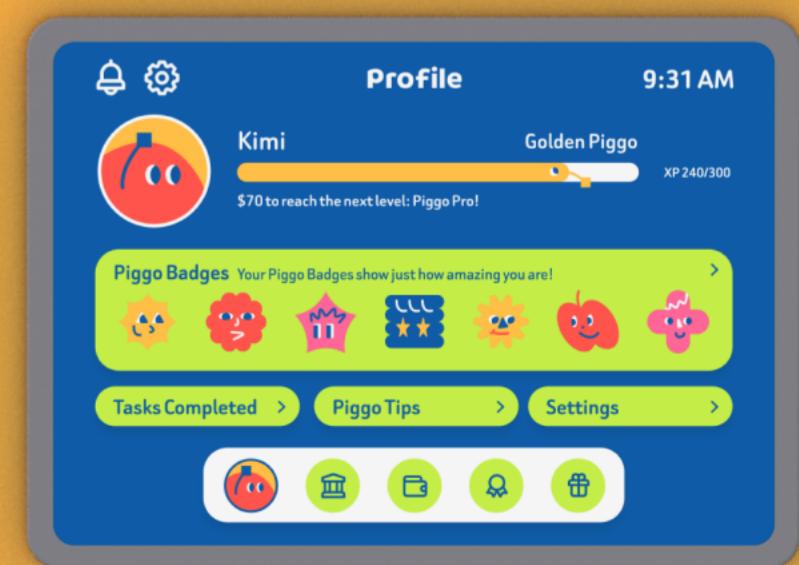
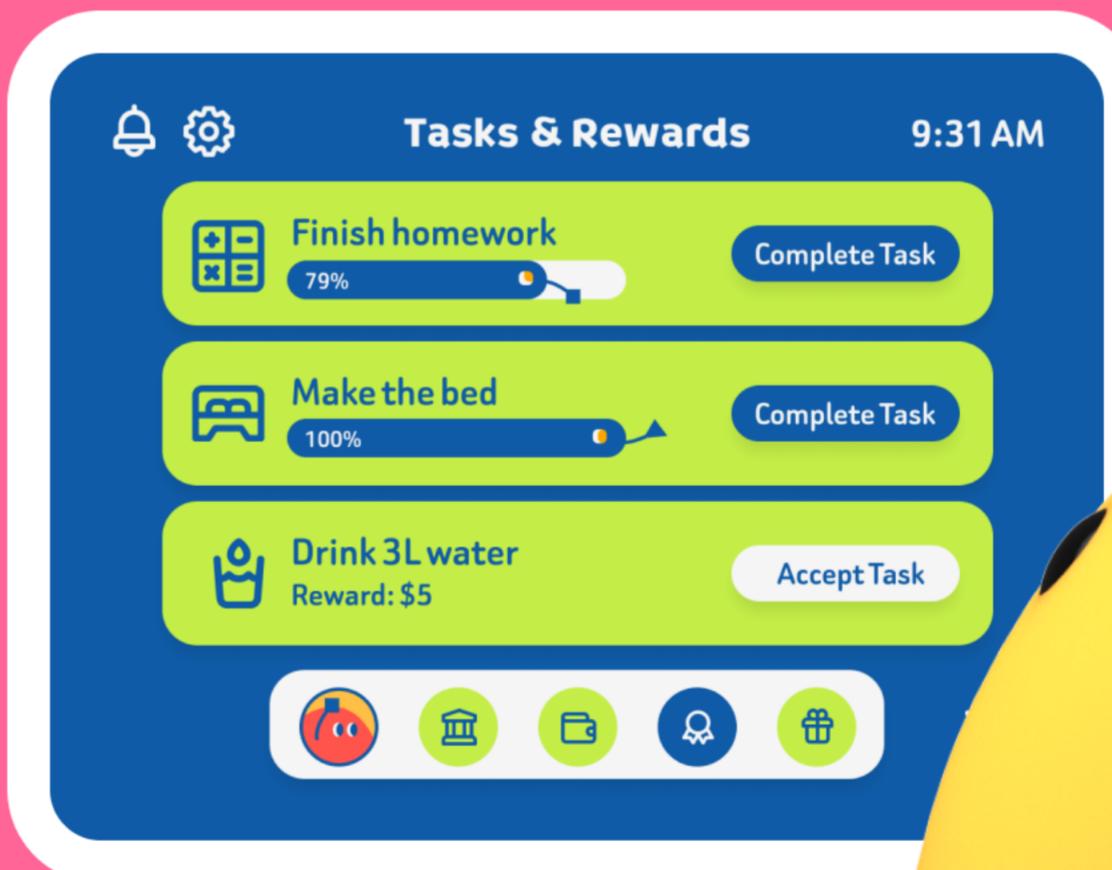
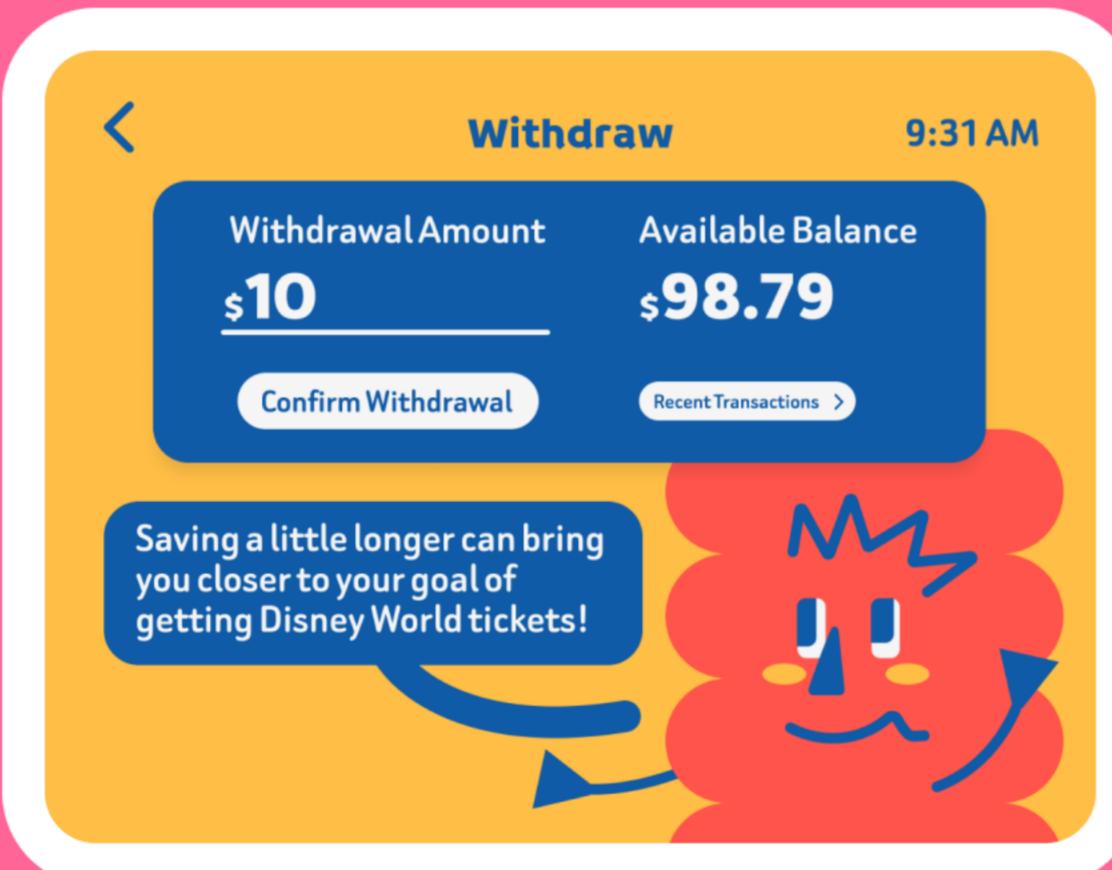
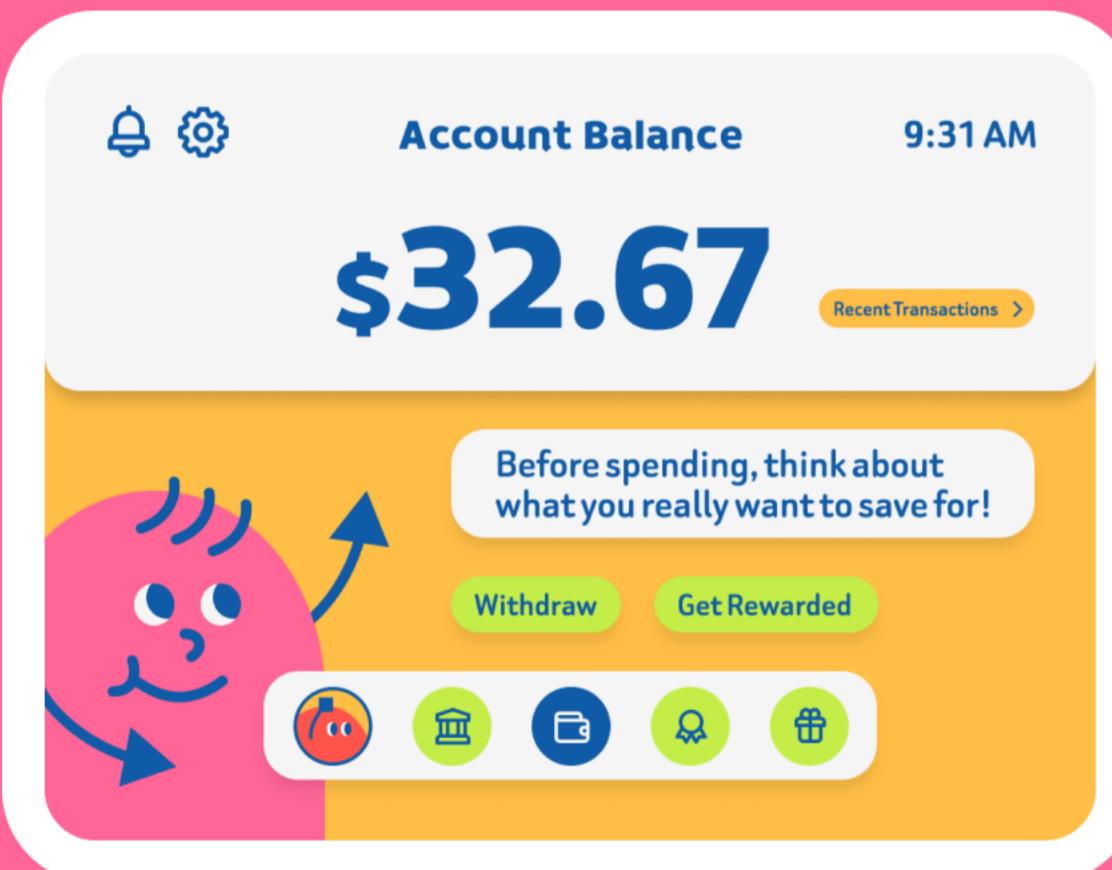
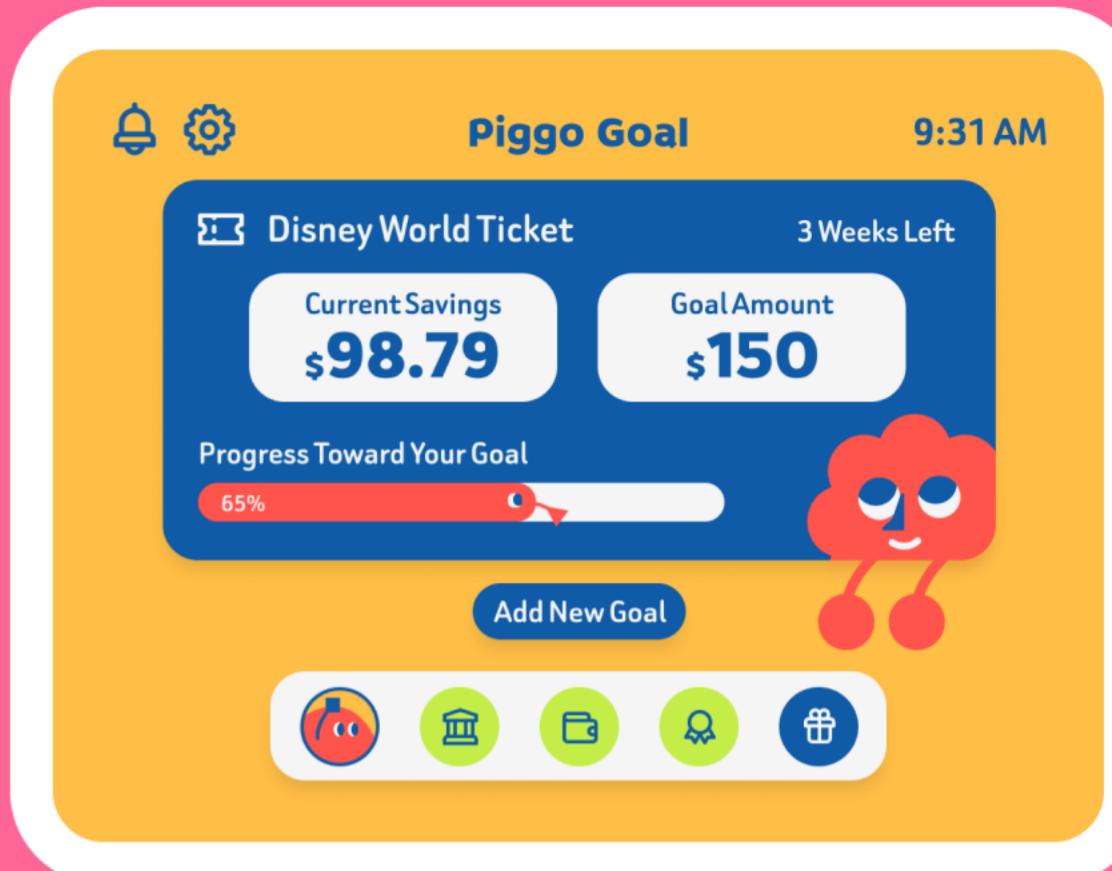
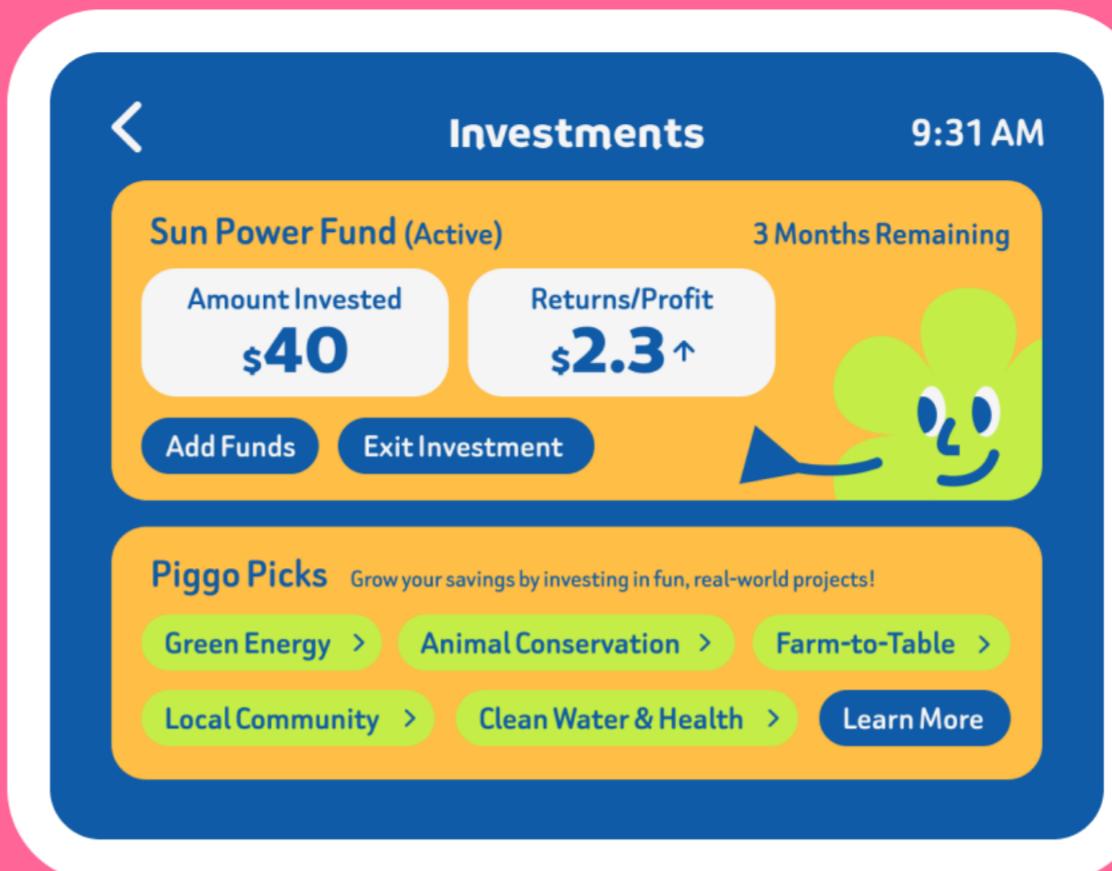
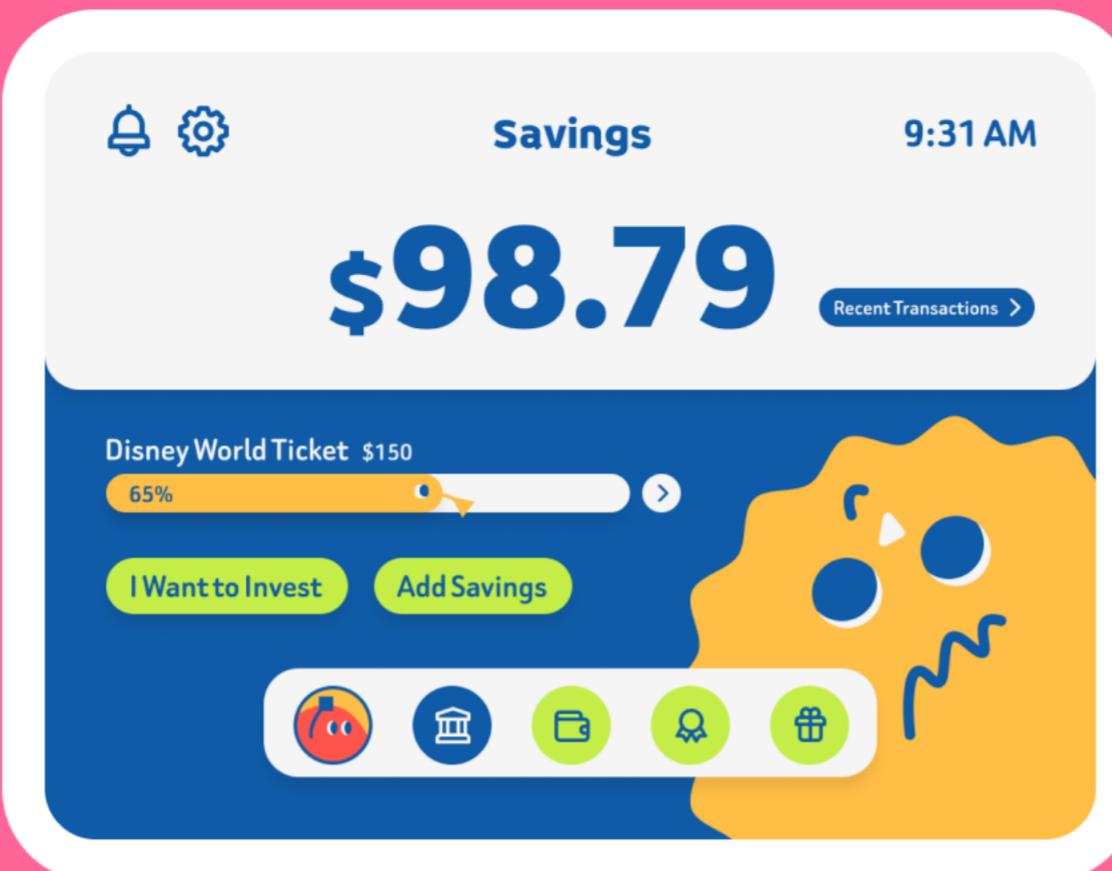
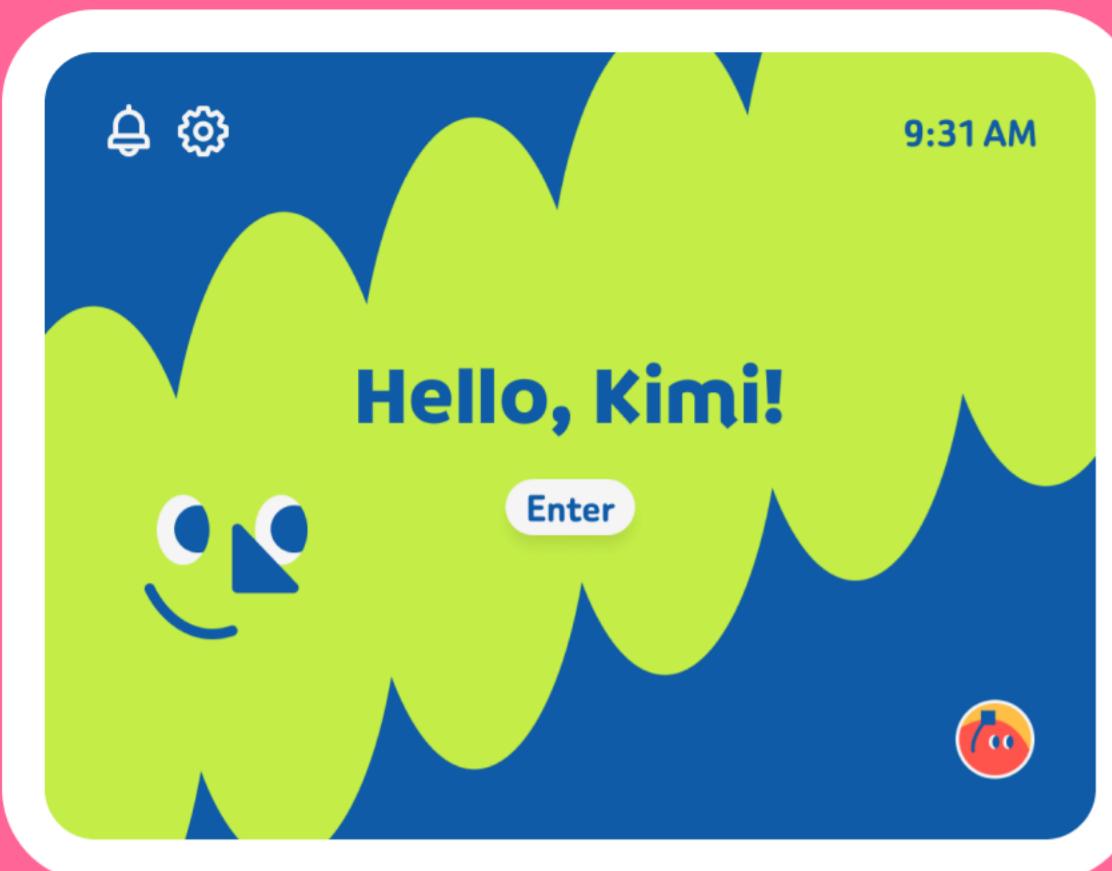
Parents can **manage** and **monitor** their child's **deposits**, **withdrawals**, **spending records**, and task rewards through the mobile app, while also engaging in **communication** with the child.



Kids' Personal Bank

Functions as a **home-based financial system**, securely storing savings while enabling children to manage and access discretionary funds via a smartwatch app.

Screen Interface



What's Next: Enhancing the Design Ecosystem

Smartwatch Experience for Kids

Design an intuitive **smartwatch app for kids** to track balance, spending, milestones, and interact with Piggo bank to spend withdrawn money.

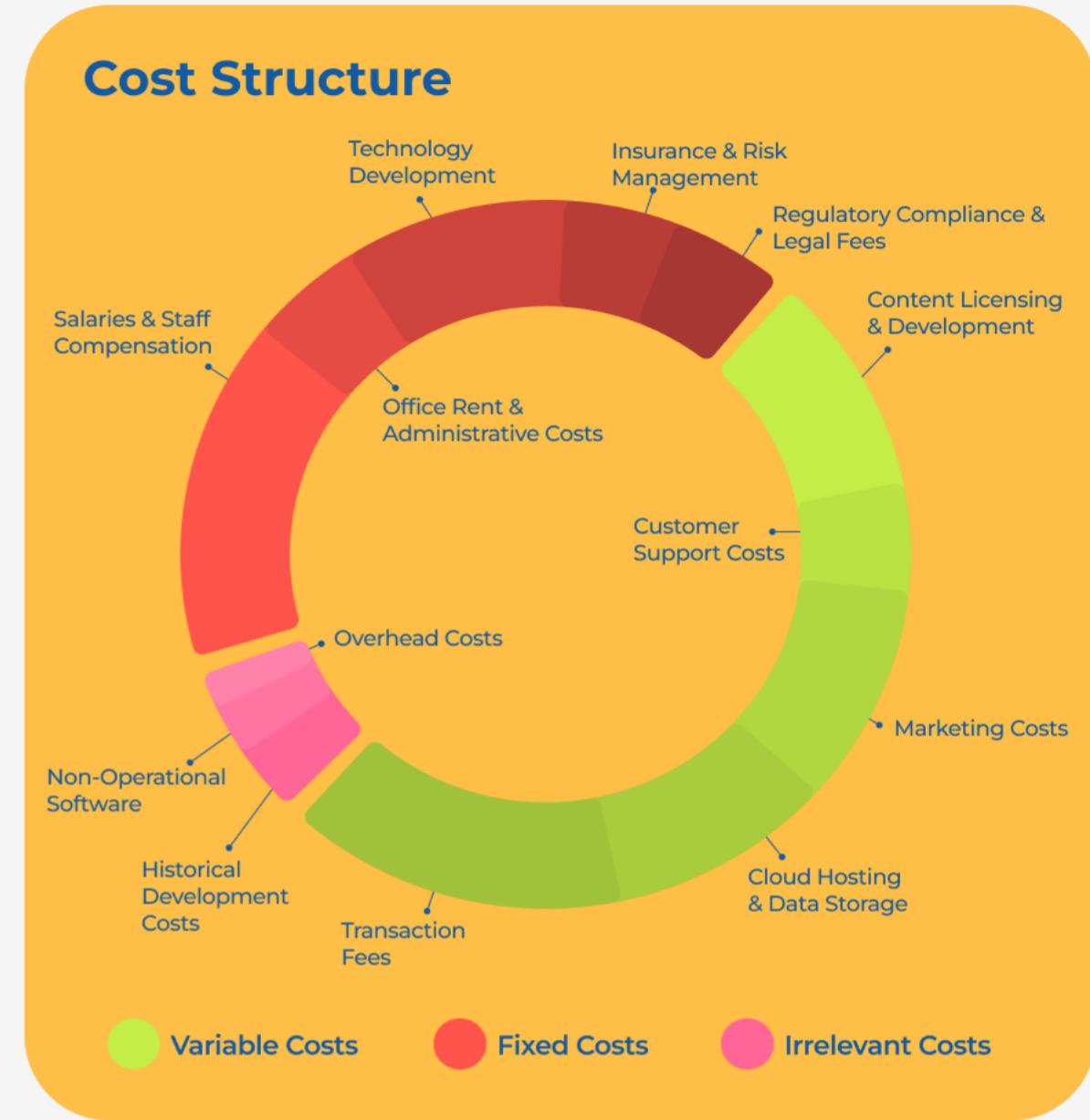
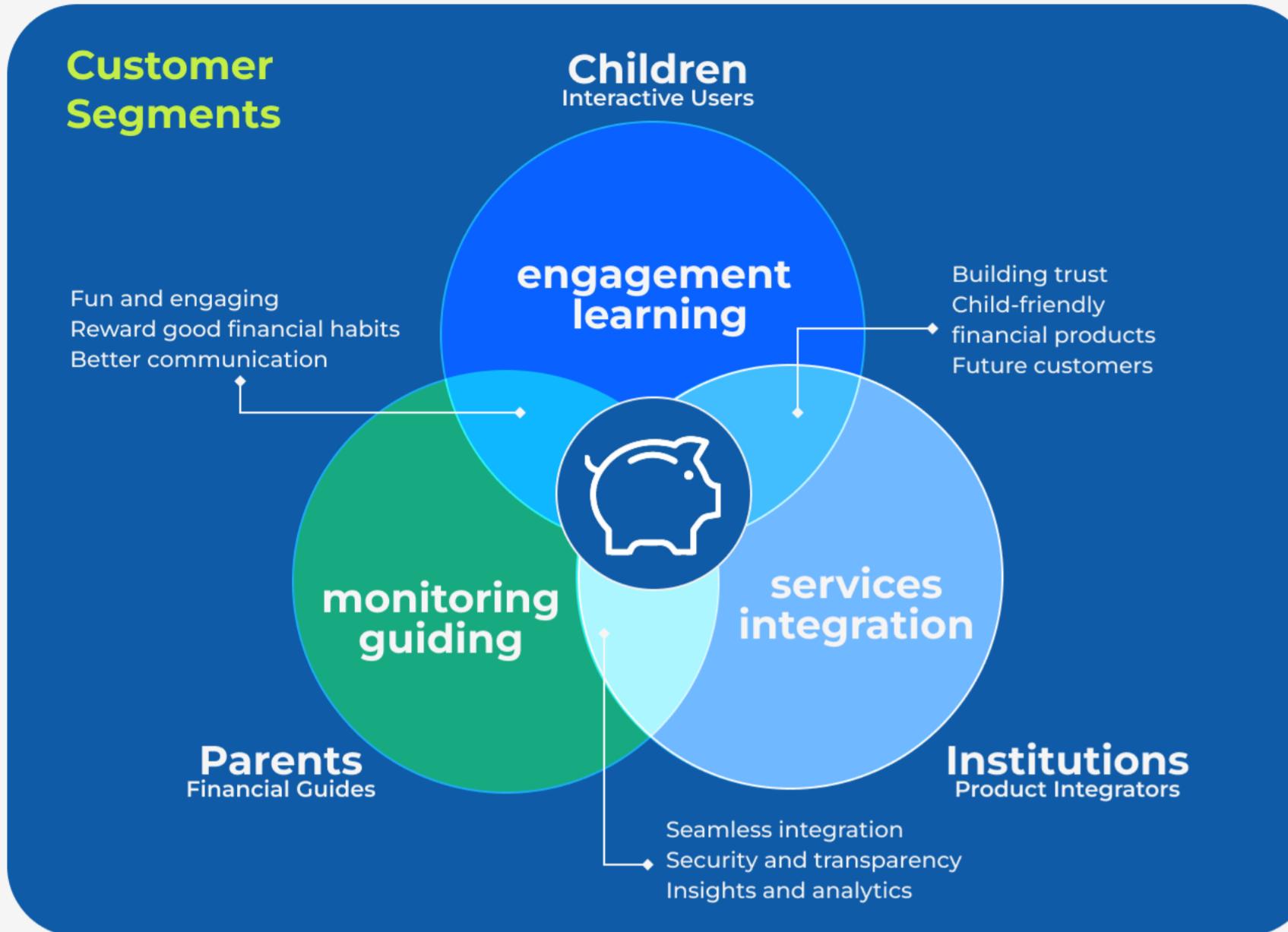
Cross-Platform Integration

Ensure **seamless syncing**, consistent design, and intuitive interactions across the piggo bank, smartwatch, and **parent's app**.

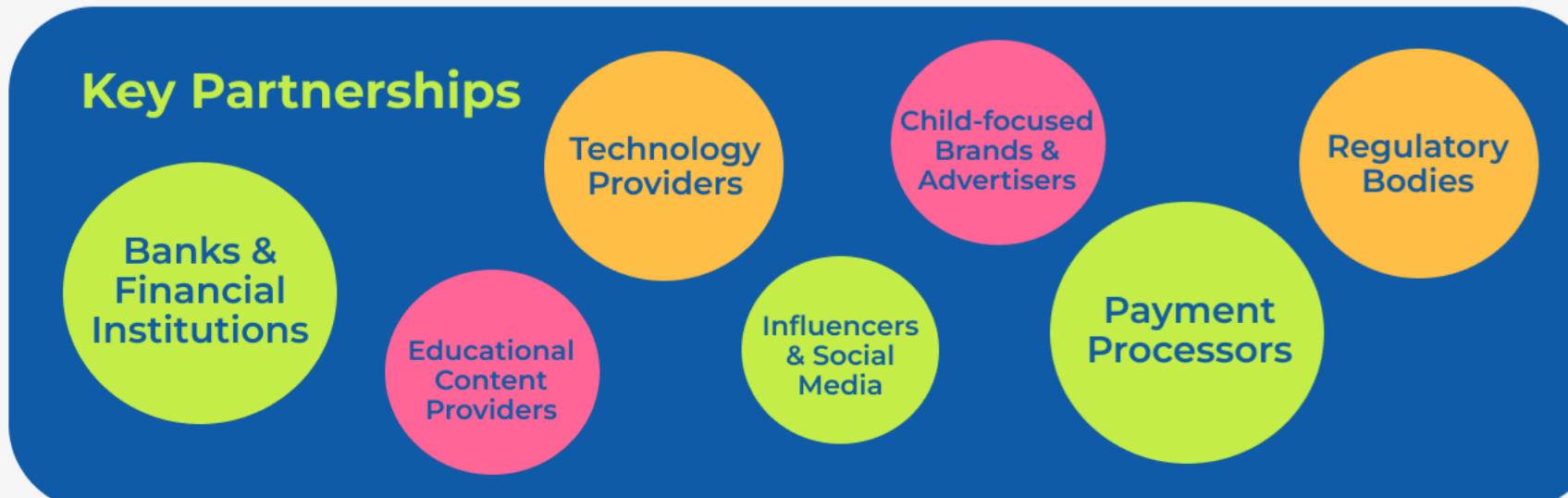
Personalized Interactions

Offer tailored **insights** for kids and actionable **recommendations** for parents to foster healthy financial growth.

Business Model Canvas



Value Propositions	Products & Services	Pain Relievers	Gain Creators
Children	<ul style="list-style-type: none"> Lets kids save money and set goals. Smartwatch for fun, easy saving and learning. 	<ul style="list-style-type: none"> Piggo gamifies finance, making learning fun and tangible. 	<ul style="list-style-type: none"> Piggo offers rewards for reaching financial goals, motivating kids to save.
Parent	<ul style="list-style-type: none"> Parental controls to set limits and approve transactions. Tools for parents to track and guide kids' finances. 	<ul style="list-style-type: none"> The app provides real-time monitoring, secure approvals, and reports to track kids' finances. 	<ul style="list-style-type: none"> Piggo enhances parent-child communication about money, making budgeting and saving fun and interactive.
Banks	<ul style="list-style-type: none"> Savings accounts and debit cards linked to Piggo. Co-branding for banks to personalize the platform. 	<ul style="list-style-type: none"> Piggo offers secure, child-friendly financial products, ensuring easy access and long-term relationships. 	<ul style="list-style-type: none"> Offers early engagement, building brand loyalty and trust with future long-term clients.



03

Mindful Meals

A health plugin intended to provide personalized diet insights, encourage mindful eating, and promote healthier eating habits.

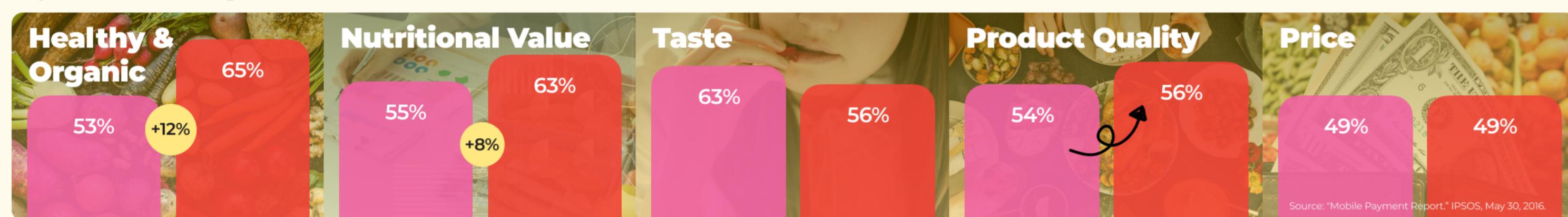
Service Design - Digital Health Solutions
User Experience Design

Project Context

- As the popularity and **reliance on food delivery** increase, especially after the pandemic, convenience is clear, but **concerns about health** are also rising.

Research

Top 5 food & Beverage Attributes Consumers Seek



- Post Covid, there's increased demand for **healthier, more nutritious, and higher-quality food**.

Chinese Dietary Pagoda

- East Asians typically consume a diet **higher in carbohydrates**, which are quickly converted into **glucose** in the body, leading to **elevated blood sugar levels**.



Type 2 diabetes incidence rate among 20-35 year olds (per 100,000 people)

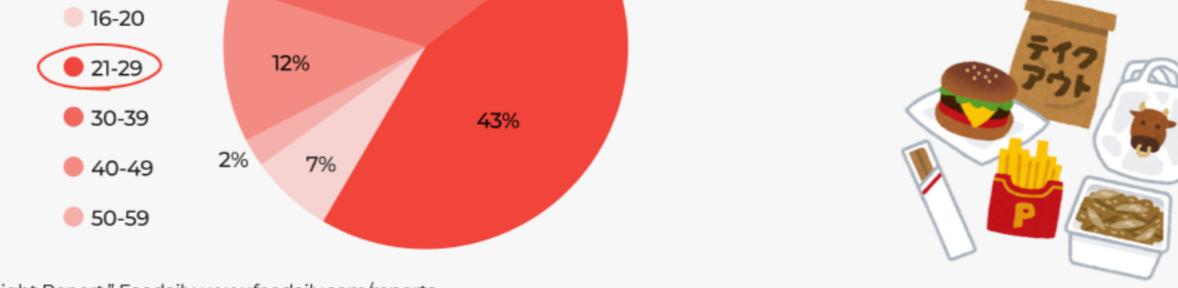
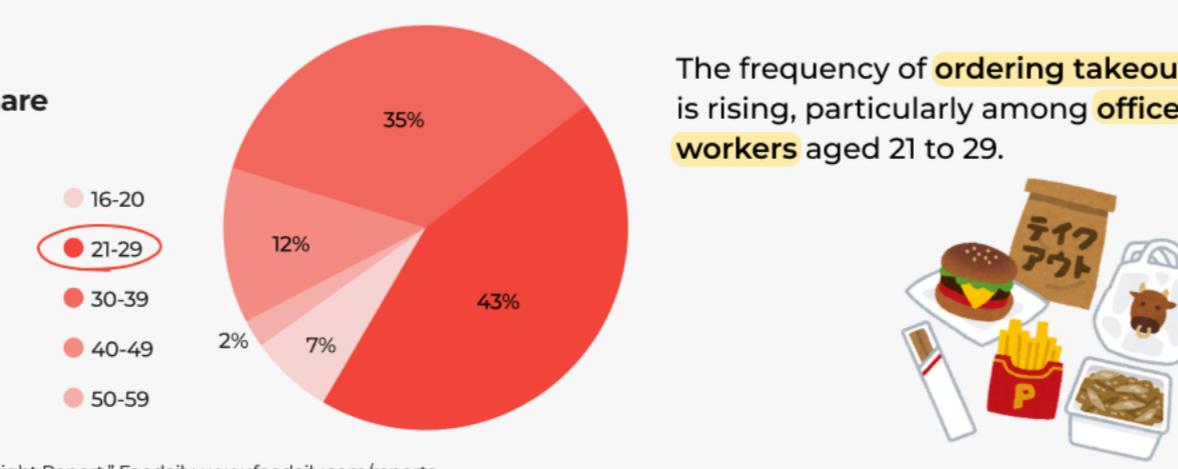
- The onset of diabetes is becoming younger, with a significant **increase in the incidence rate of young diabetic patients** in China over the ten years.

Source: "National Diabetes Statistics Report." Centers for Disease Control and Prevention, www.cdc.gov/diabetes.

Online Takeout Payment User Share in China By Age

- Using food delivering apps became a **way of life**.

Source: "2023 Food Trend Insight Report." Foodaily, www.foodaily.com/reports.



Luke's Journey

Interview with Luke, a food lover who has lived with **Type 2 diabetes for 5 years** and is striving to improve his health condition.



"After I was diagnosed, I really started to be afraid."

Newly Diagnosed - 220 lbs
Concerned by others' struggles with diabetes, Luke began losing weight and managing his own condition more actively.



Post-Stabilization - 180 lbs
Luke maintained a consistent lifestyle with regular sleep, occasional low-calorie snacks, and mostly stable blood sugar fluctuations.



Overweight - 266 lbs
Luke used to be a total **foodie**, often indulging in excessive amounts of food and drink without concern for health.

Blood Sugar Stabilization - 180 lbs
Luke took his medication on time, exercised, tested his body's reaction to different foods to understand his dietary needs, and monitored his blood sugar levels.

Current Stage - 185 lbs
Luke is working to stop his medication through lifestyle changes, having reduced gaming and social activities.

A Typical Day in Luke's Life

7 AM	Sleep	6 hr
8 AM	Eat breakfast, take medicine	1.5 hr
9 AM	Commute to work by e bike	1 hr
10 AM	Work	0.5 hr
11 AM	Ordering takeout online	0.5 hr
12 PM	Work	1.5 hr
1 PM	Eat takeout, take medicine	0.5 hr
2 PM	Walk	1 hr
3 PM	Work	1.5 hr
4 PM	Afternoon tea	0.5 hr
5 PM	Work	2.5 hr
6 PM		
7 PM	Commute to home by e bike	1 hr
8 PM	Make & eat dinner, take medicine	1.5 hr
9 PM	Rest	0.5 hr
10 PM	Workout	0.5 hr
11 PM	Rest	0.5 hr
12 AM	Sleep	6 hr
1 AM		
2 AM		

Luke usually has noodles with vegetables and eggs for breakfast, but when short on time, he grabs McDonald's and tries to resist the hash browns he likes.

Luke usually orders small but **energy-dense foods** like burgers, sandwiches, or wraps, avoiding complex ingredients so he knows exactly what he's eating.

Luke takes a 40-minute walk around noon every day, preferring to break his exercise into manageable sections to make it easier to maintain.

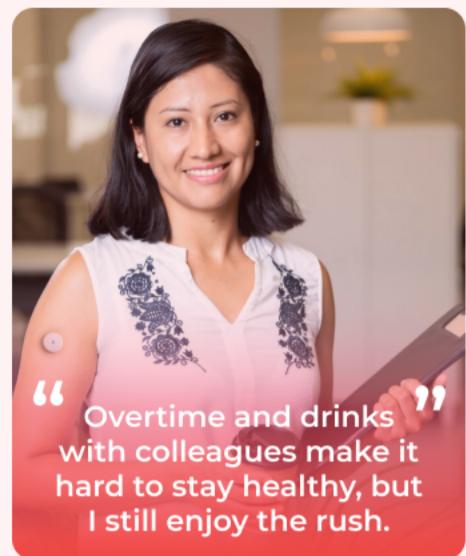
After work, Luke usually has **homemade meals**, like stir-fried vegetables with a fist-sized portion of rice, which are low in oil, salt, and sugar.

Luke usually watches movies or builds Legos after working out, before going to bed on time.

I sometimes catch Luke **snacking on cookies and ice cream**, which aren't great for him. He always has a fried chicken leg for lunch, claiming it's just for protein, hmm.



User Persona



Emma Wang

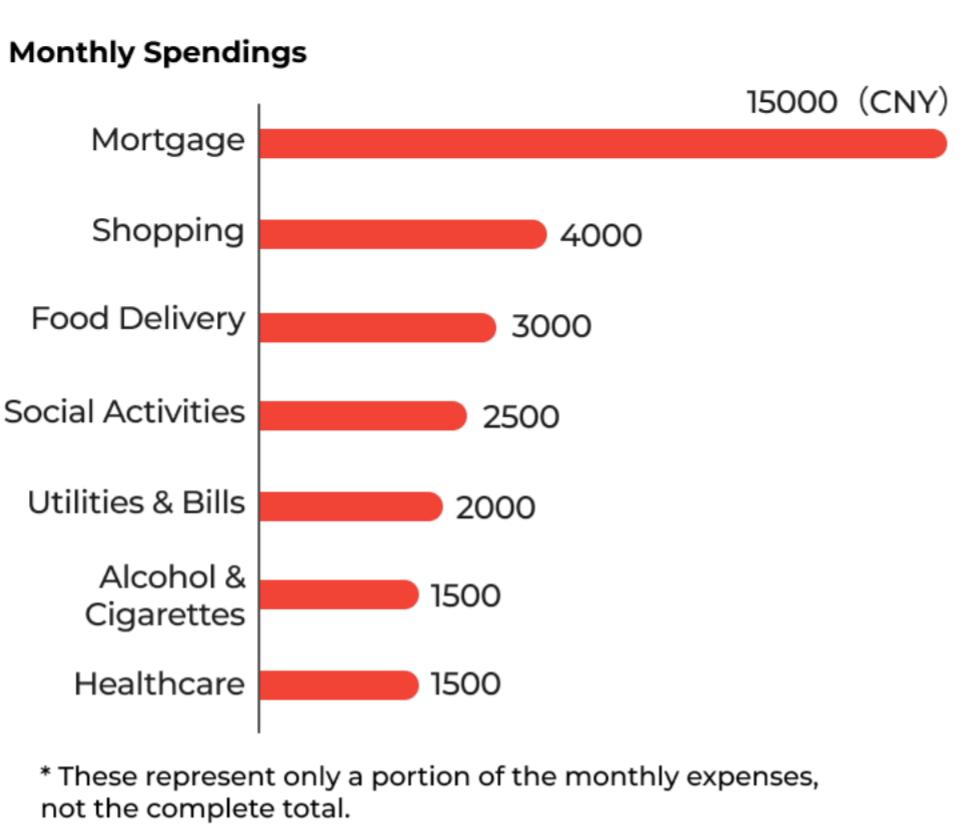
27, 5'11, Senior Architect, Shanghai

Favorite Brands: Uber Eats, COS, Apple, HEYTEA, PlayStation, Herman Miller, Asahi

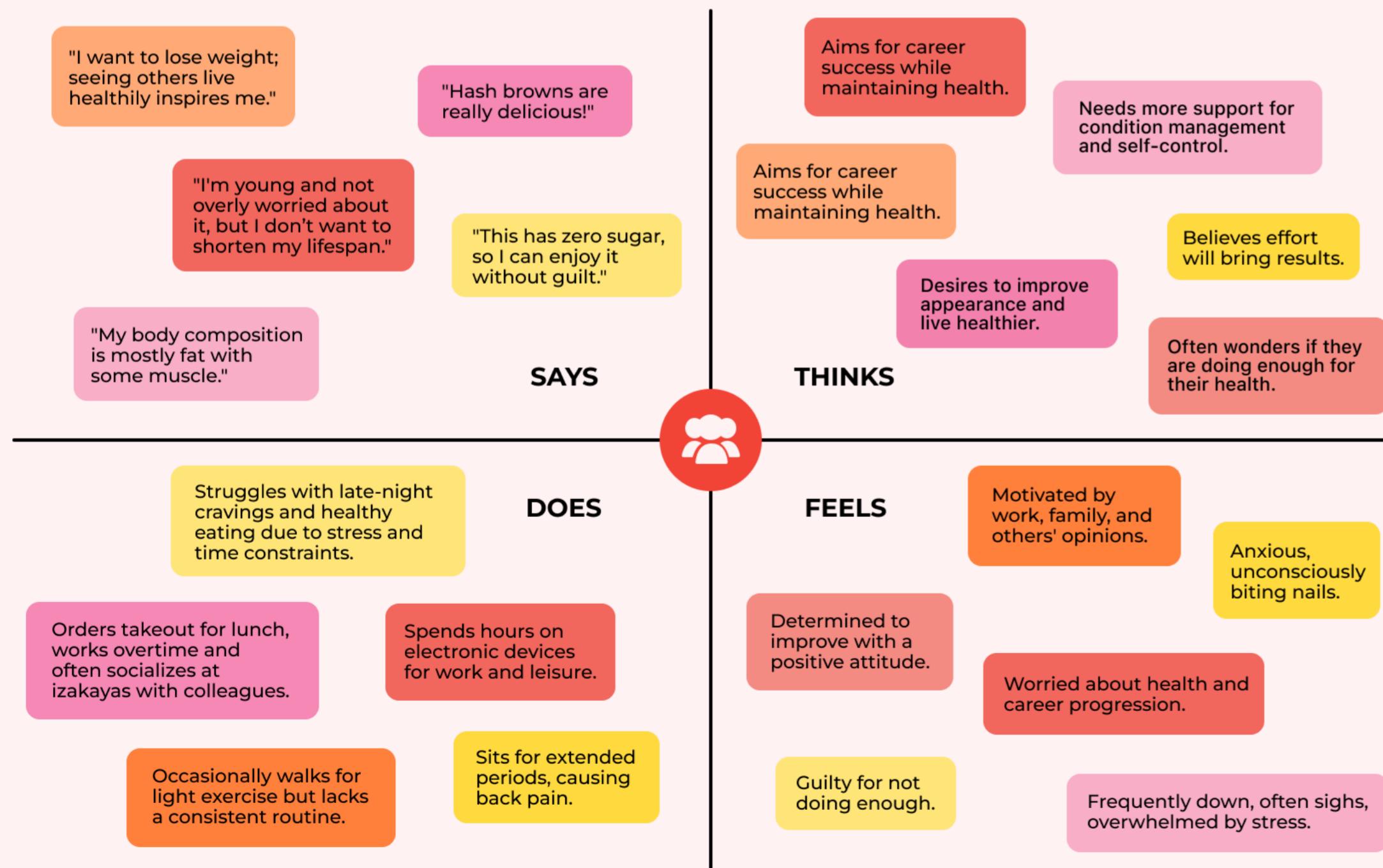
"Overtime and drinks with colleagues make it hard to stay healthy, but I still enjoy the rush."

My Fear:
I fear health issues or accidents might stop me from achieving my goals—life feels like a game, and I want to beat the final boss.

Life Goals of Mine:
Live healthily without medication, build a sustainable farmhouse, cherish family life, and enjoy a loyal dog in peaceful countryside.



Understand The Users



Insights

Lack of Nutritional Transparency in Food Delivery

Many young diabetics are unsure of their calorie intake when ordering takeout.

Young Diabetics Struggle with Dietary Discipline

Many young diabetics are unsure of their calorie intake when ordering takeout.

Healthier Trends Emerging in China's Food Market

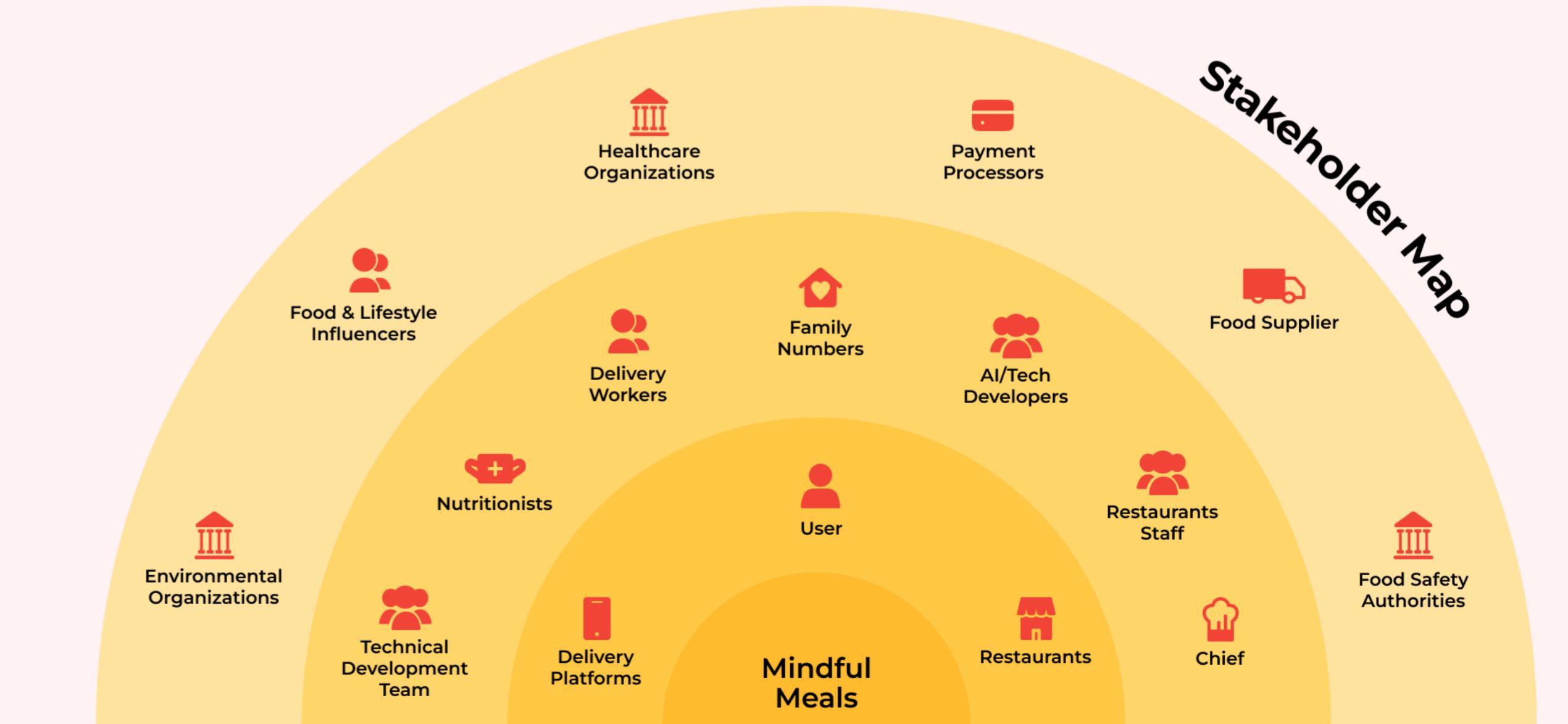
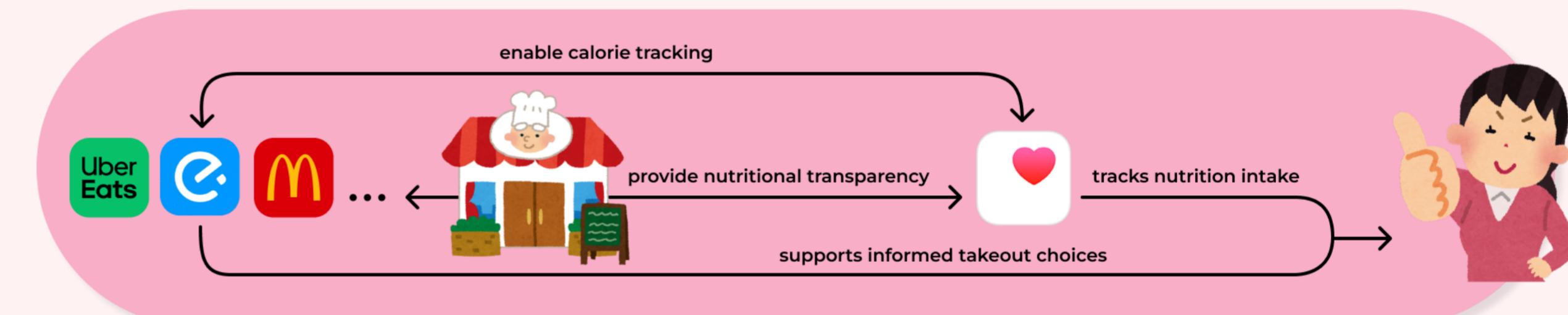
Beverages and snacks reflect the shift towards healthier options in China.

Nutritional Information Remains Opaque in Processed Foods

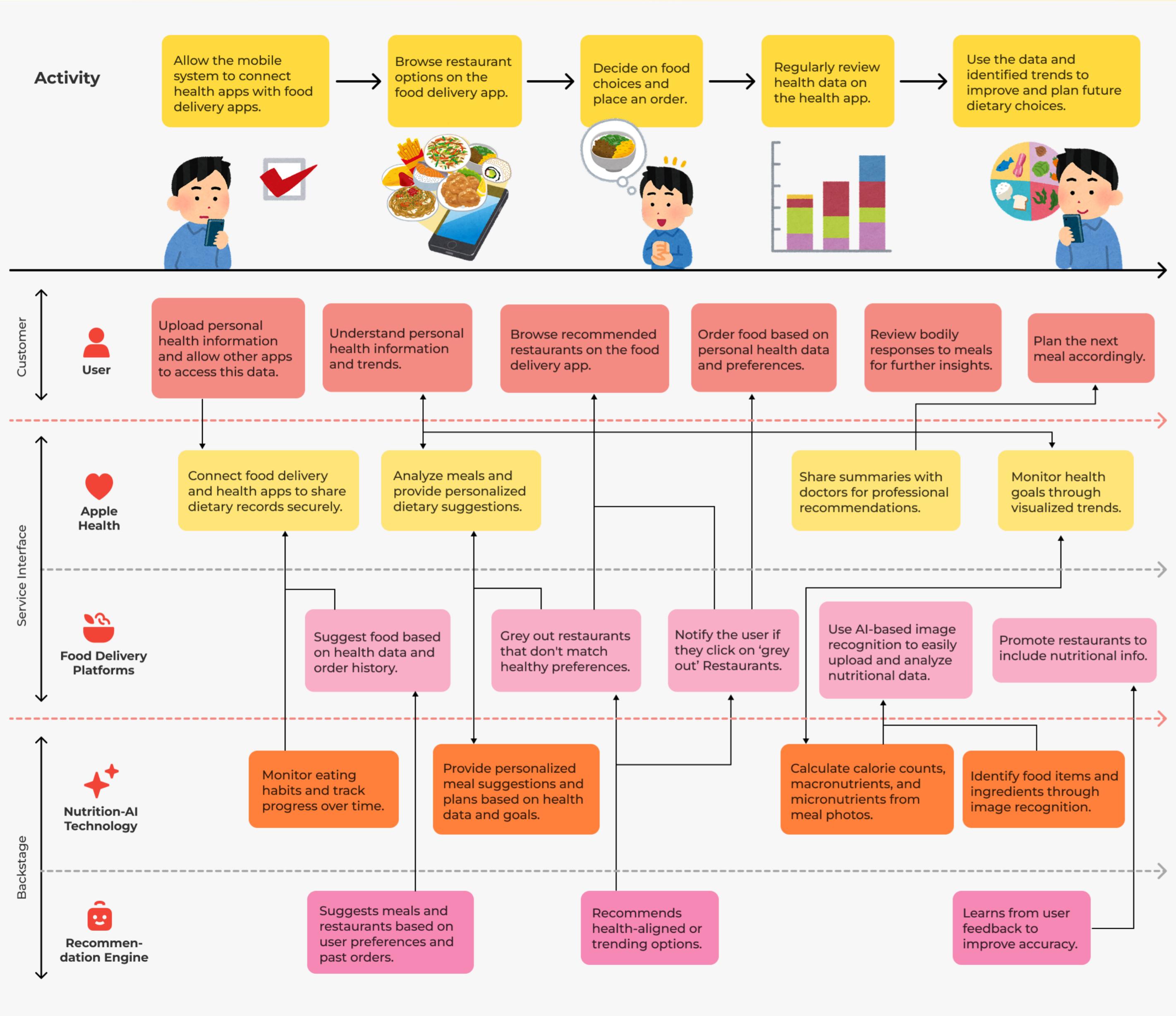
Pre-made meals lack clear nutritional data, despite the feasibility of improvement.

HMW

- Integrating third-party food delivery apps with Apple Health and collaborating with restaurants on these platforms can enhance nutritional transparency for dishes, enabling consumers to make informed choices?
- This approach would support young diabetics in tracking their calorie intake when ordering takeout and promote healthier food trends in China's market, addressing the growing demand for nutritious options?

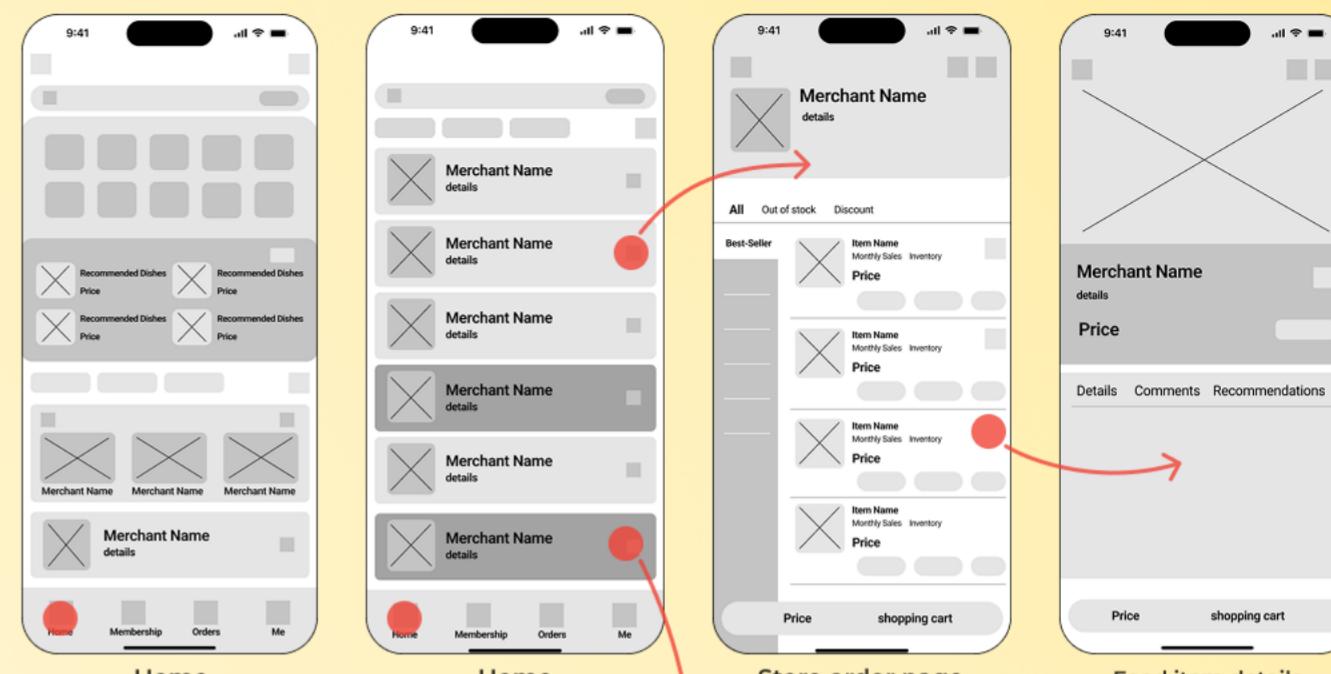


Service System Navigation

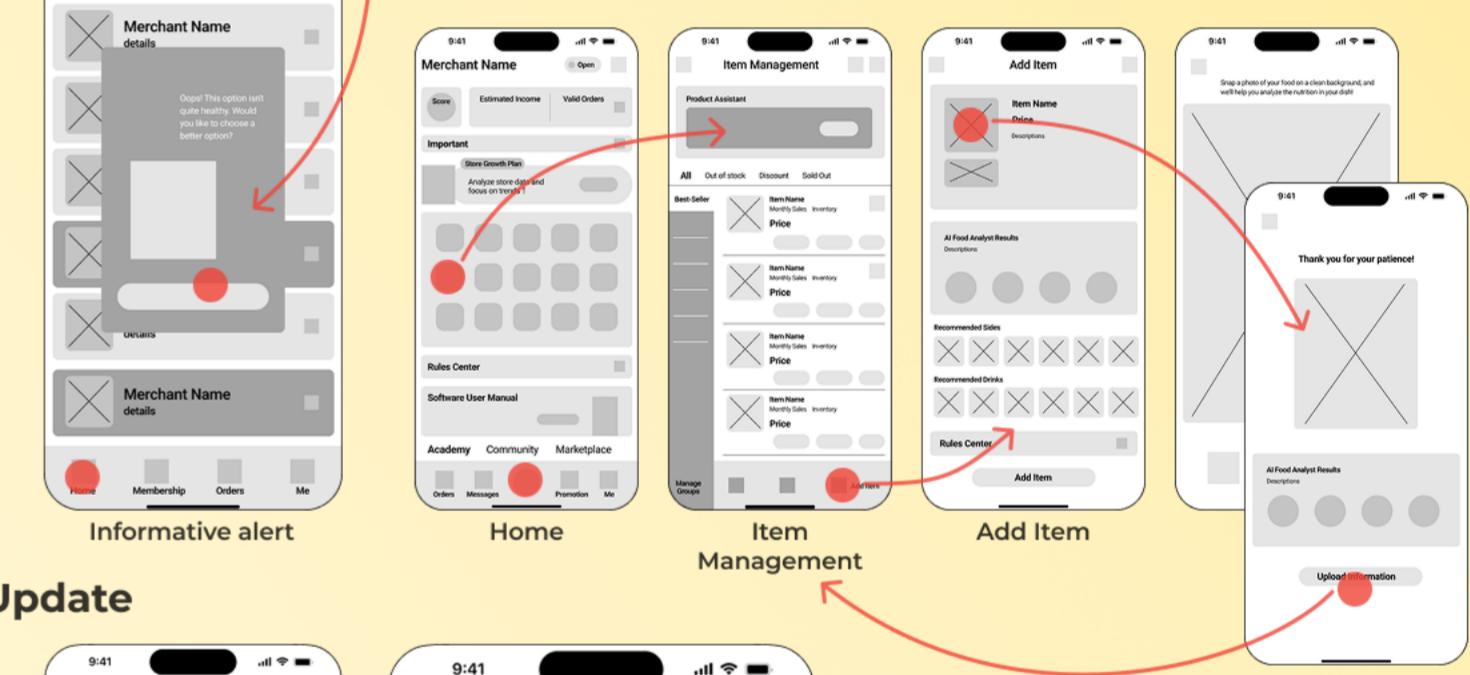


Low-Fi Interface

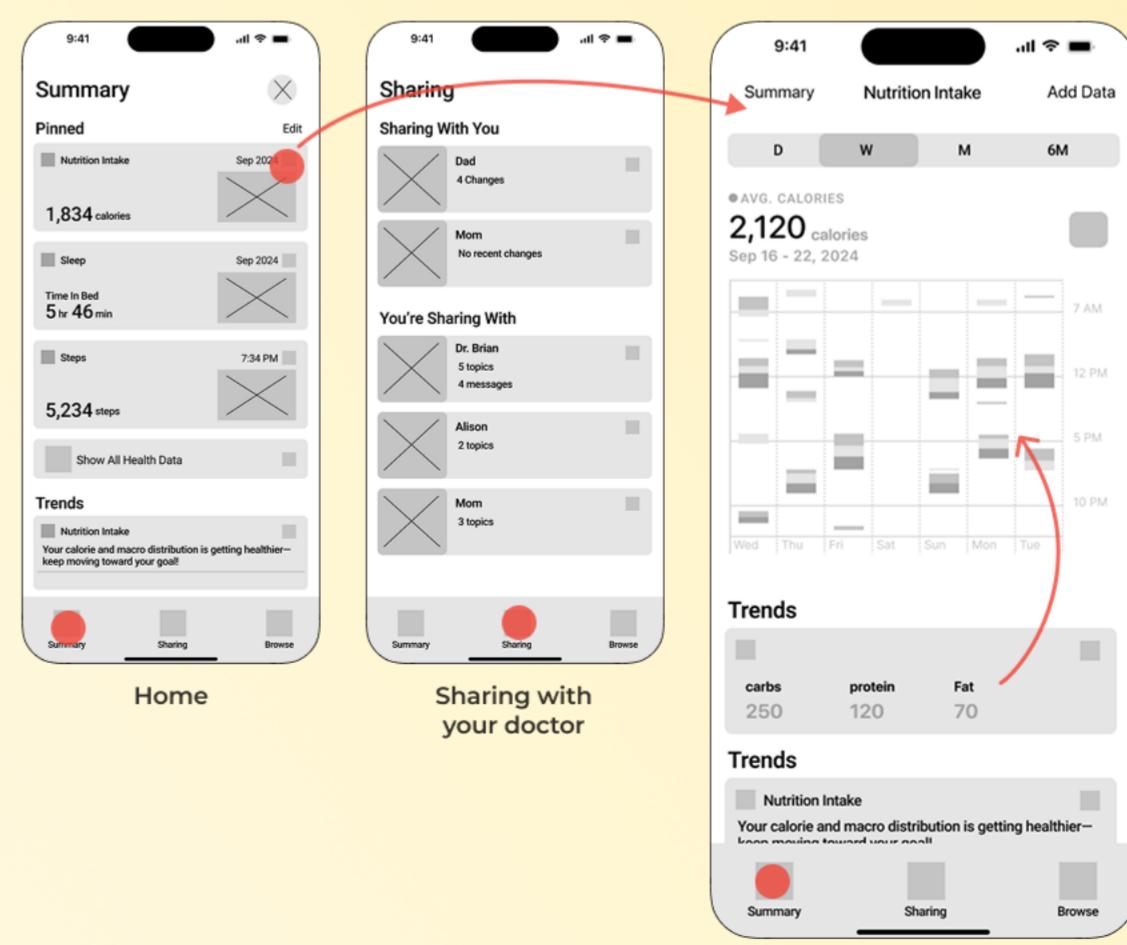
Delivery App User Interface



Delivery App Merchant Interface



Apple Health Update



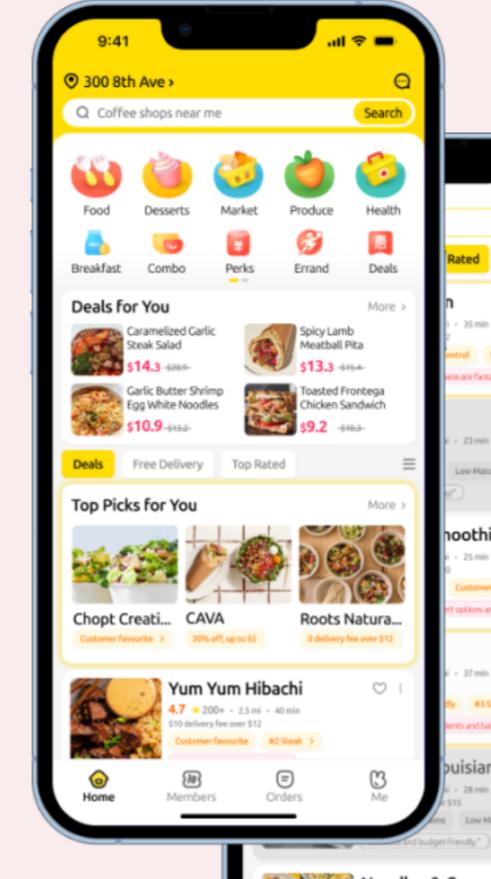
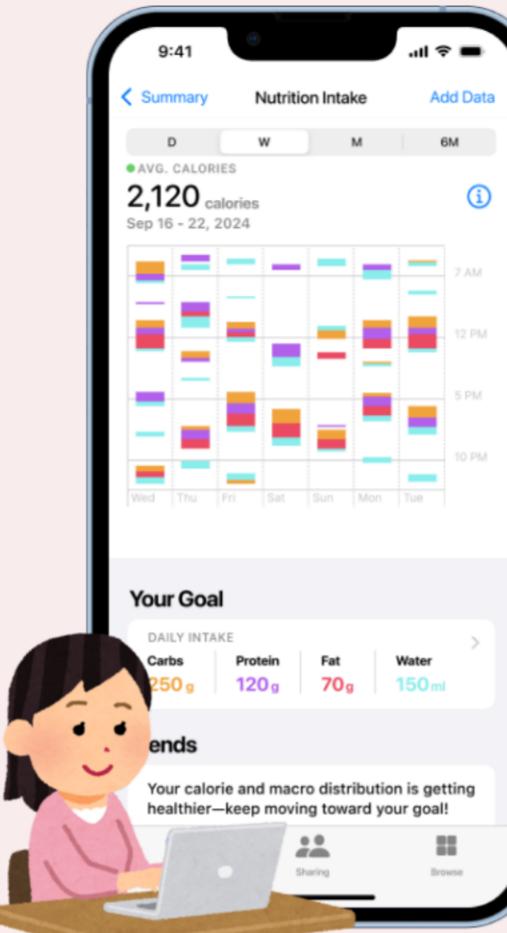
the new "Nutrition Intake" feature



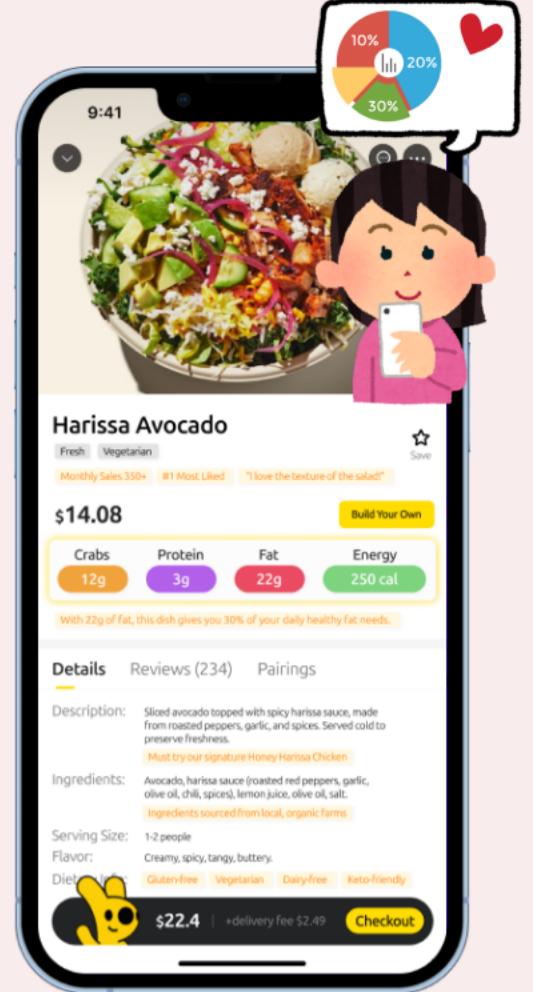
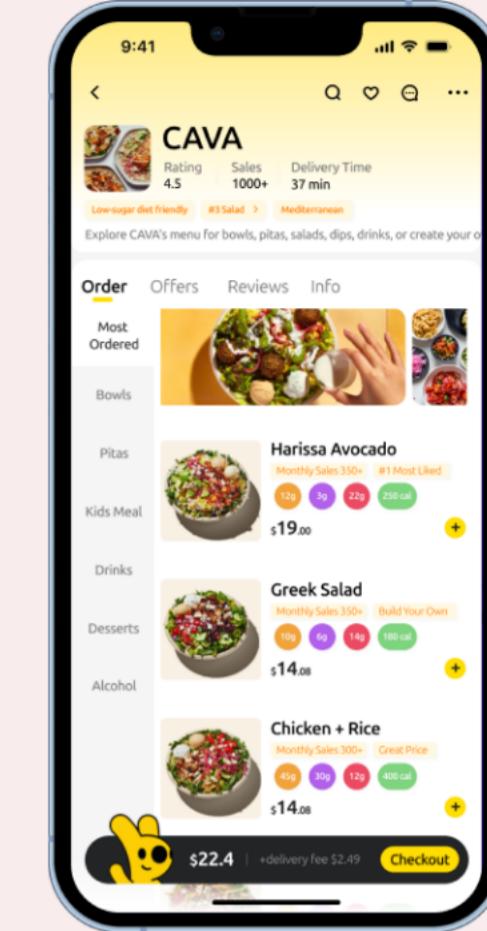
Usage Scenarios

Visible Service — User Side

Health-Based Suggestions
Suggests meals based on Apple Health data and doctor recommendations.



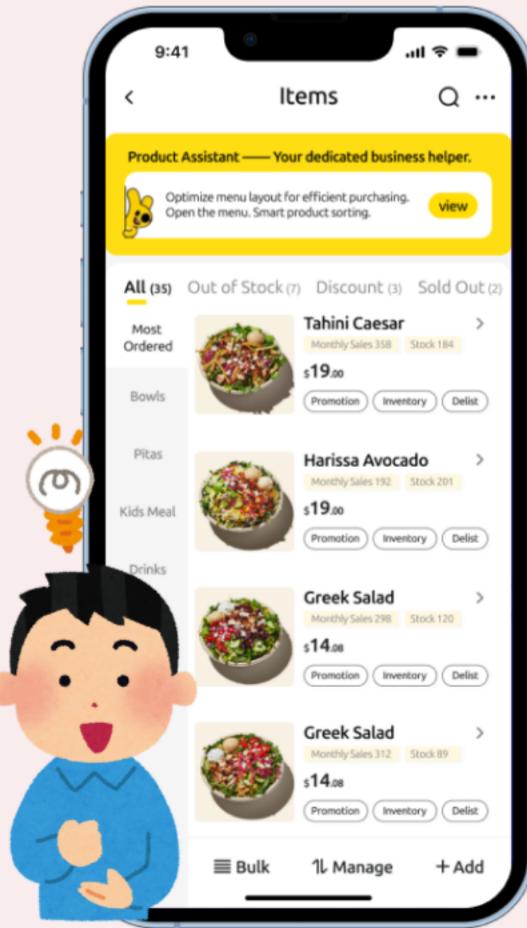
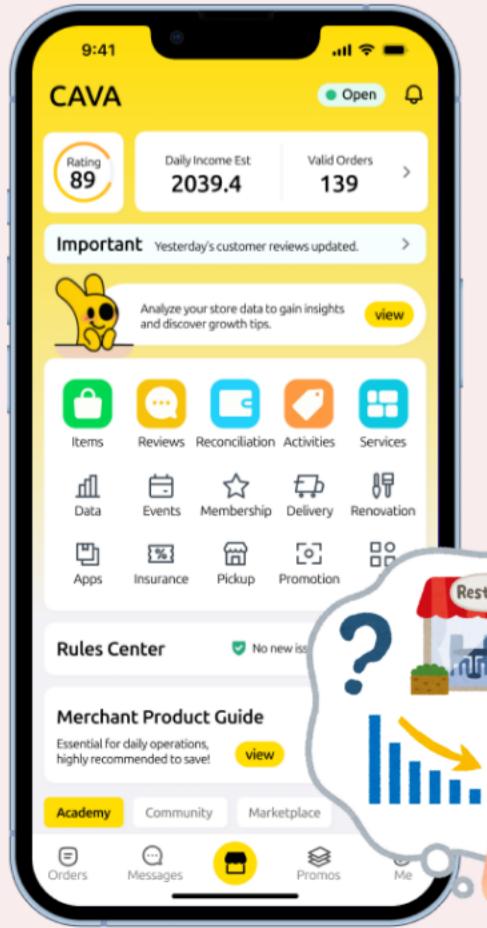
Nutritional Alerts
Grays out non-compliant restaurants, with warnings for selections.



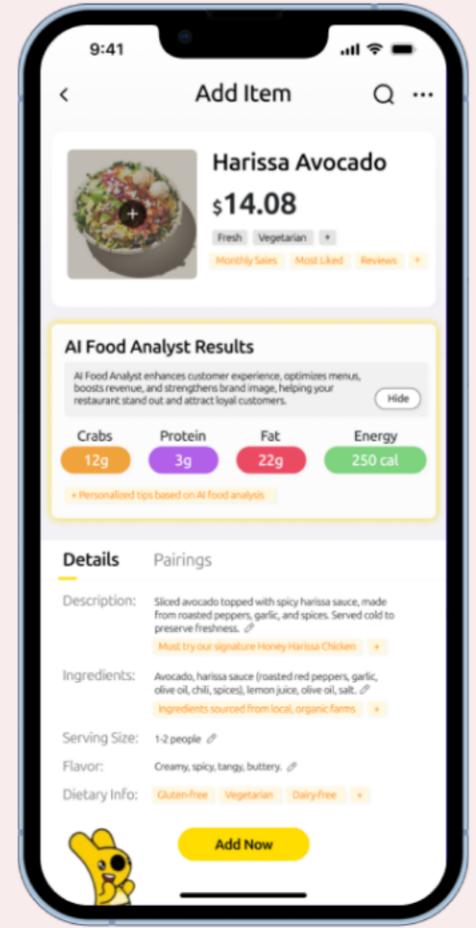
Informed Choices
Provides detailed nutritional info from restaurants for better decisions.

Invisible Service — Merchant Side

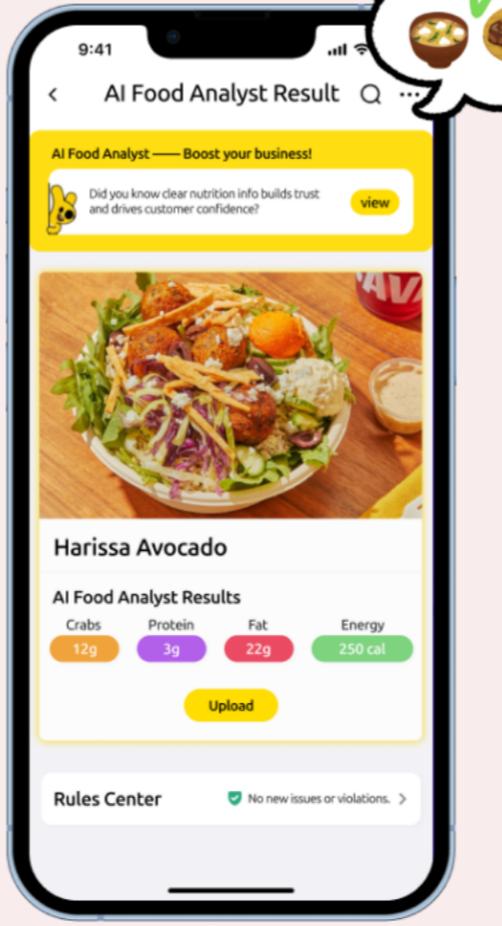
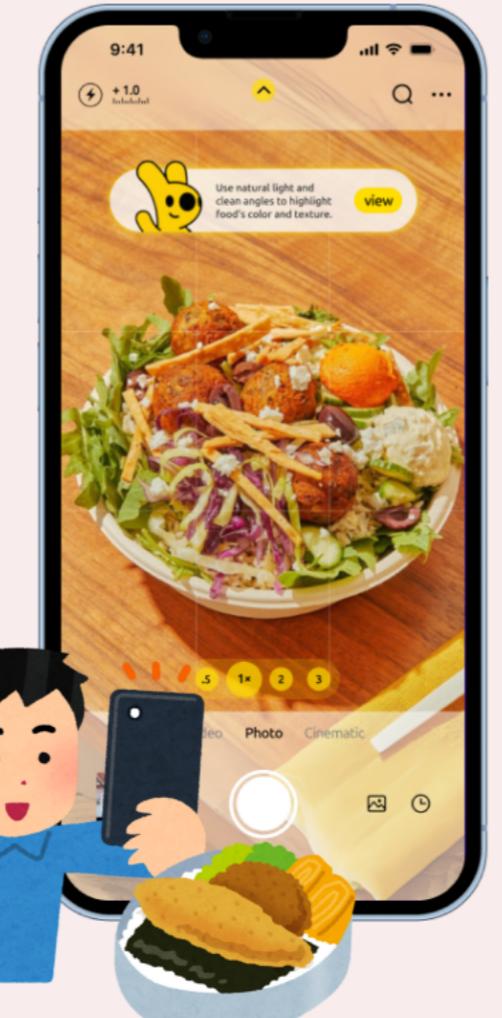
Boost Sales
Merchants looking to increase sales can leverage platform tools.



Enhanced Listings
Upload detailed nutritional info and video content to attract customers.



AI-Assisted Uploads
Use the platform's AI photo food analysis tool for quick and easy content uploads.



04

balenX



A support exoskeleton engineered to enhance stretcher stability.

My Role: Designer, Researcher

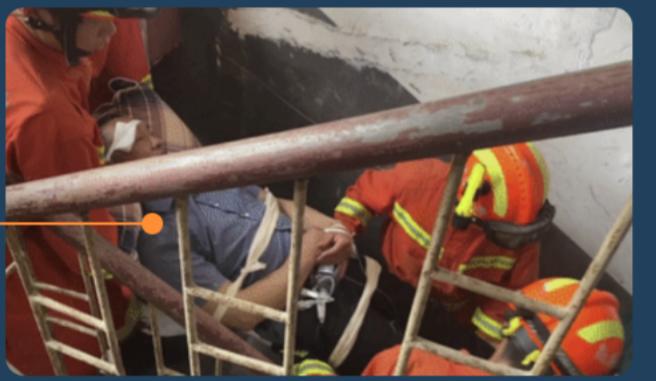
Team: Linchuan Shen, Liuliu Zhang, Jiayu Hu, Han Mo, Yunchu Sun
Product Design - Aids / Prosthetics

Breaking News

This news reports an incident where an injured person in a narrow hallway of an old, **elevator-less building** faced the risk of **further injury during transport** and had to contact commercial emergency services for rescue.



Feng Wanling, "Emergency: A Man Fell from a Three-Meter-High Rooftop and Was Rescued by Firefighters and Medical Staff," Guizhou Radio and Television Station.



Environmental Research

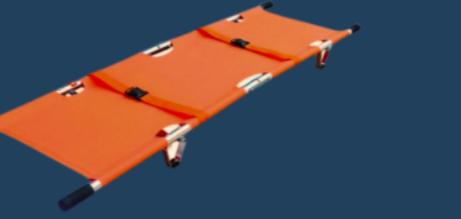


- Tokyo's 23 wards house over **14 million people** with an average density of **6,158 people/km²**, though this varies in older residential areas due to zoning and historical factors.

Source: "Tokyo's History, Geography, and Population." Population of Tokyo - Tokyo Metropolitan Government, www.metro.tokyo.lg.jp

- Shanghai's older buildings, often 50–70+ years old, are typically home to **elderly residents** in neighborhood communities. They lack elevators, have **narrow, enclosed hallways, steep, worn stairs, and cluttered passageways**.

Rescuer Behavior



Unfold the stretcher, support the injured, place gently, secure, and lift.



Instruct the assistant to secure the straps firmly and tuck any excess beneath to ensure the injured person's stability.



preparation

lift method

head direction

body stabilization

process

Handle gently and swiftly, minimizing pain. Secure the injured on the stretcher.



Secure head supports, chin, and forehead to prevent movement during transport.



Maintain equal height and consistent pace with staggered steps to prevent excessive movement.

Risks During Transport

Why keep the body level?



Interviews

"Secondary injuries worsen our condition, delay recovery, and bring complications we can't afford. A stretcher that provides a smooth, stable experience isn't just helpful—it's essential."

Adam, 35
Patients with secondary injuries
Dr. Shi, 41
7 years of pre-hospital emergency experience

"The stretcher needs better fixation, as Velcro straps lose adhesiveness, separate tools require setup, and loose straps pose tripping hazards."

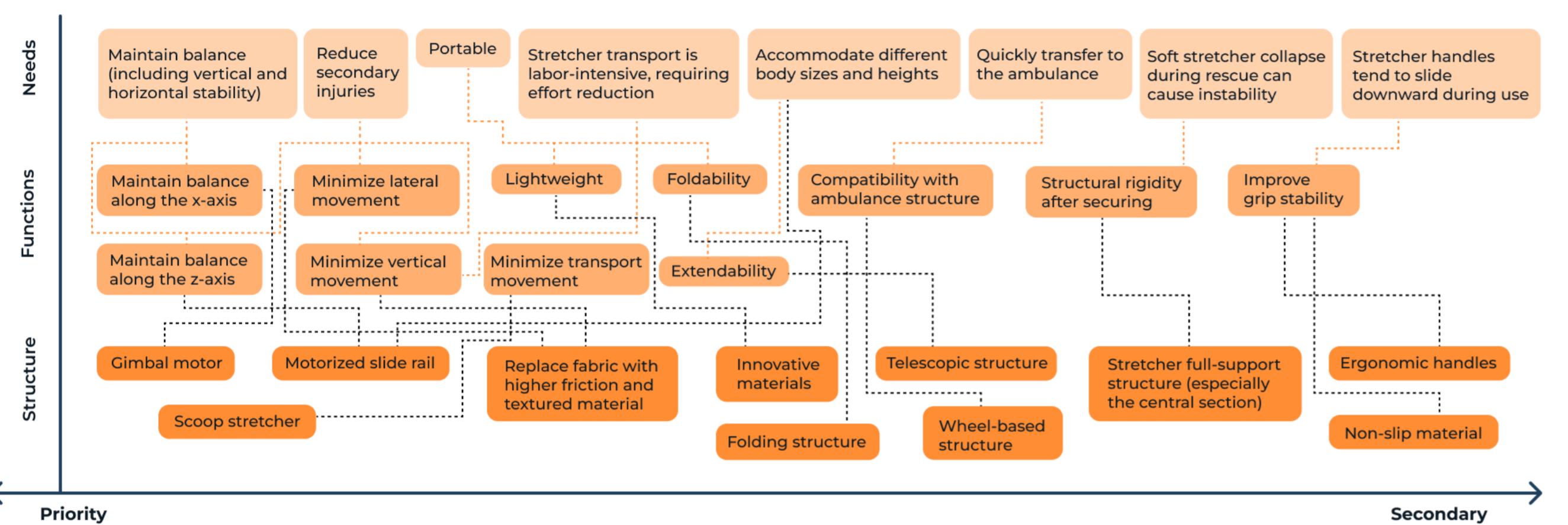
"We prioritize cost-effective, user-friendly stretchers to simplify volunteer rescue training. If only they could be lighter and more durable, that would be helpful."

"Traditional stretchers on narrow stairs? It's a workout, and the patient feels every bump! I really wish they were adjustable."

Benny, 25
Rescue Team Volunteer

Alex, 32
Rescue Worker

Function Form Block

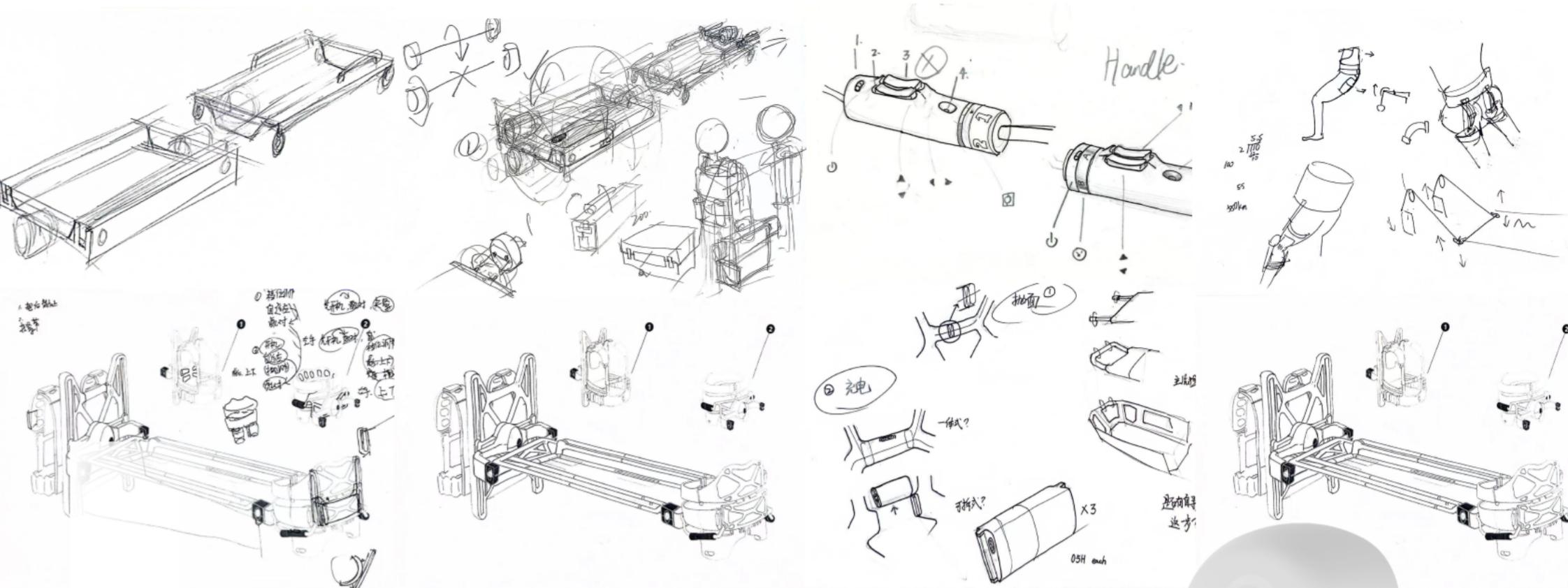


User Experience with Existing Stretchers

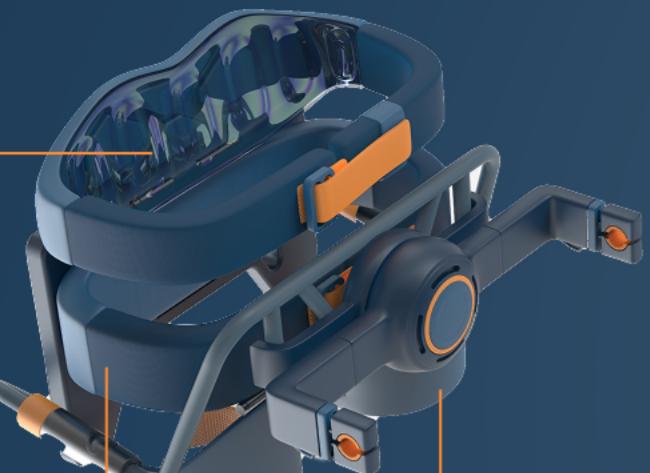


- 
 - 1 Reduce the physical effort required by transport personnel during patient handling?
 - 2 Minimize the risk of secondary injuries and other safety hazards for transport personnel when handling the stretcher?
 - 3 Design handles to be more slip-resistant for better grip and safety?
 - 4 Design a foldable, portable rigid stretcher that ensures speed and safety in narrow hallways?

Sketches & Ideation



CMF



- Constructed from **ultra-light, high-strength materials**, including titanium alloy and engineering plastics, it offers **comfort** with liquid rubber and air cushion protection. Nylon woven straps ensure **flexibility**, while the brushed metal finish and polyester fiber protective layer enhance modern aesthetics and **wear resistance**.



Air Cushion



Engineering Plastic



High-Strength Titanium Alloy



- The product features **Navy Blue** for professionalism and durability, symbolizing **trust, stability, and reliability**. **Orange** accents are used for **visibility and urgency**, drawing attention to **critical elements** like buttons, handles, and warning labels, evoking a sense of action and alertness.

balenX Navy

#21405C
R33 G64 B92
C64 M30 Y0 K64
PANTONE 7546 C

balenX Orange

#FF8D3
R255 G141 B51
C0 M45 Y80 K0
PANTONE 1585 C



Liquid Rubber



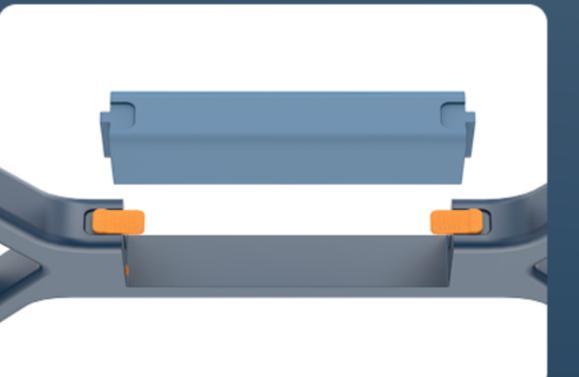
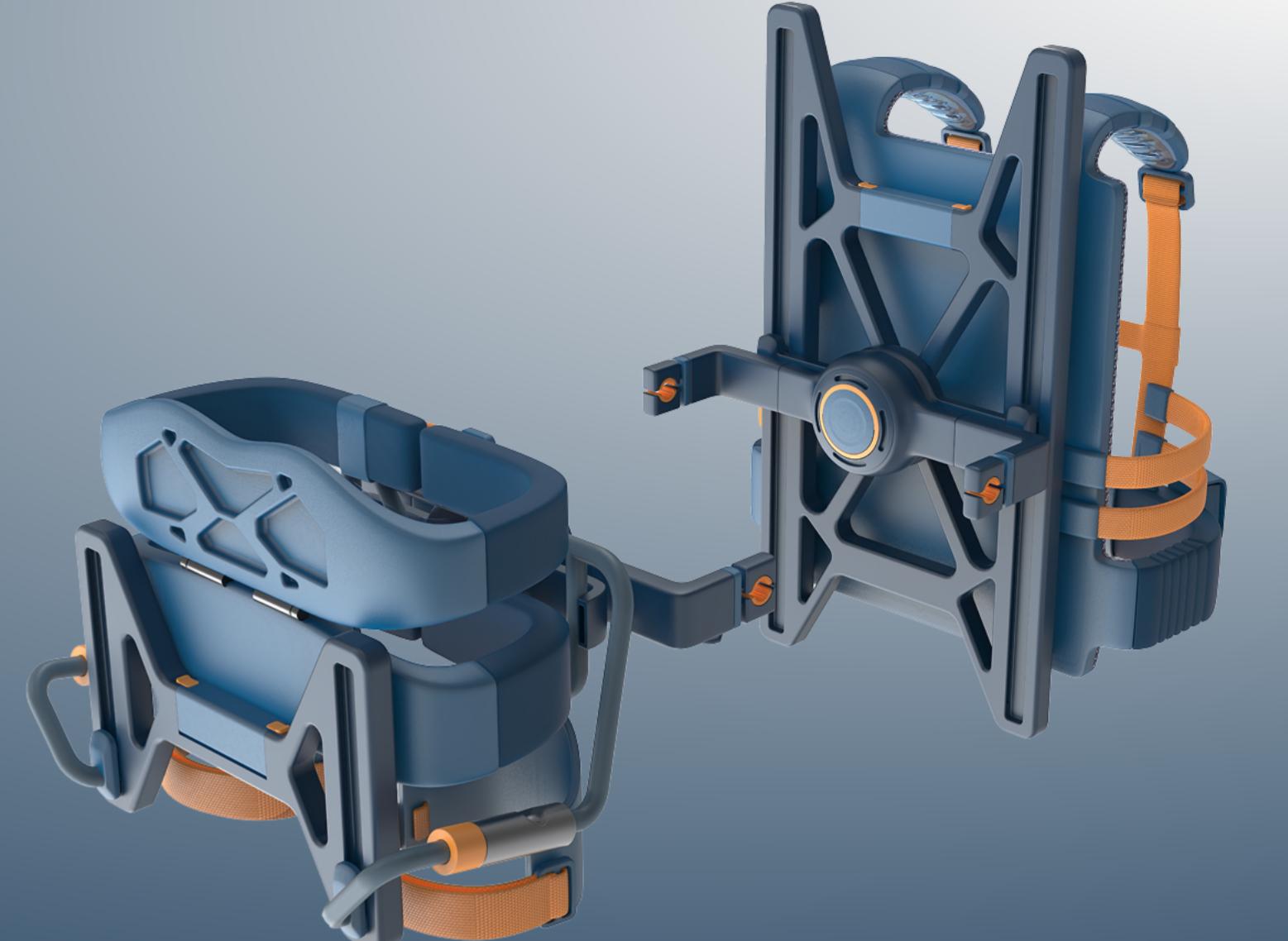
Polyester Fiber Nylon Woven Strap



Nylon Woven Strap

Product Details

- The balenX exoskeleton kit is designed to **enhance the stability of traditional stretchers**. It consists of front and rear **backpack-style stabilizers** and a **Bluetooth controller**. Equipped with **laser technology**, the balenX ensures rapid and **accurate installation and seamless alignment** with various stretchers.



Removable Battery

Provides power for stabilization and height-adjustment; easily replaceable or rechargeable for continuous use.



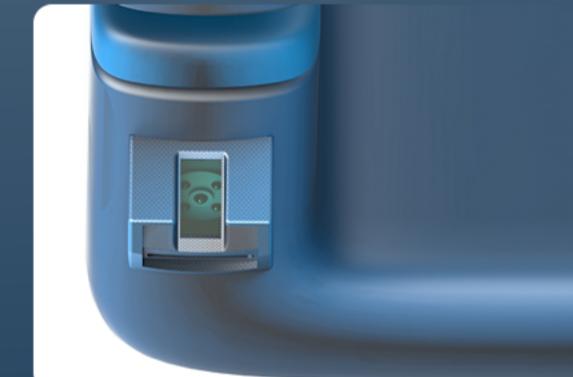
Power Button

Activates/deactivates the system for quick operation during critical moments.



Grab

Provides a secure grip for rescuers to stabilize and maneuver the stretcher during transport.



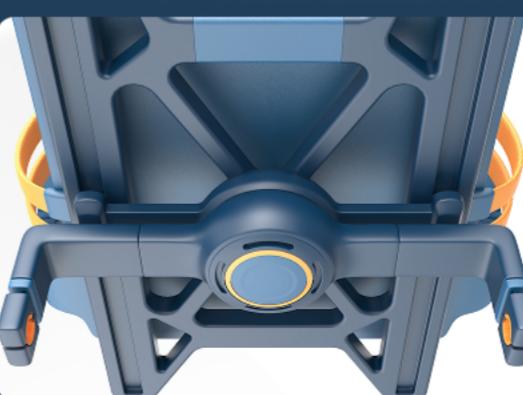
Rear Laser

A guiding aid to ensure smooth, precise movement through confined or low-light environments.



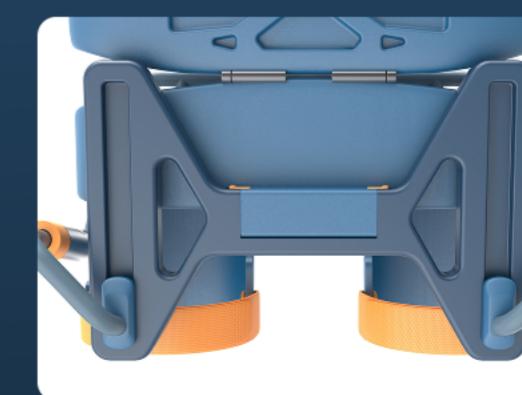
Spring-assisted System

Reduces strain by counteracting stretcher weight, minimizing fatigue and improving posture.



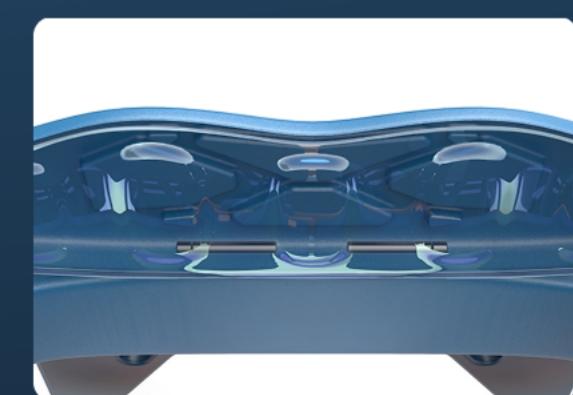
Front Guide Rail

Stabilizes and guides the stretcher, ensuring smooth movement and preventing tilting in narrow spaces.



Rear Guide Rail

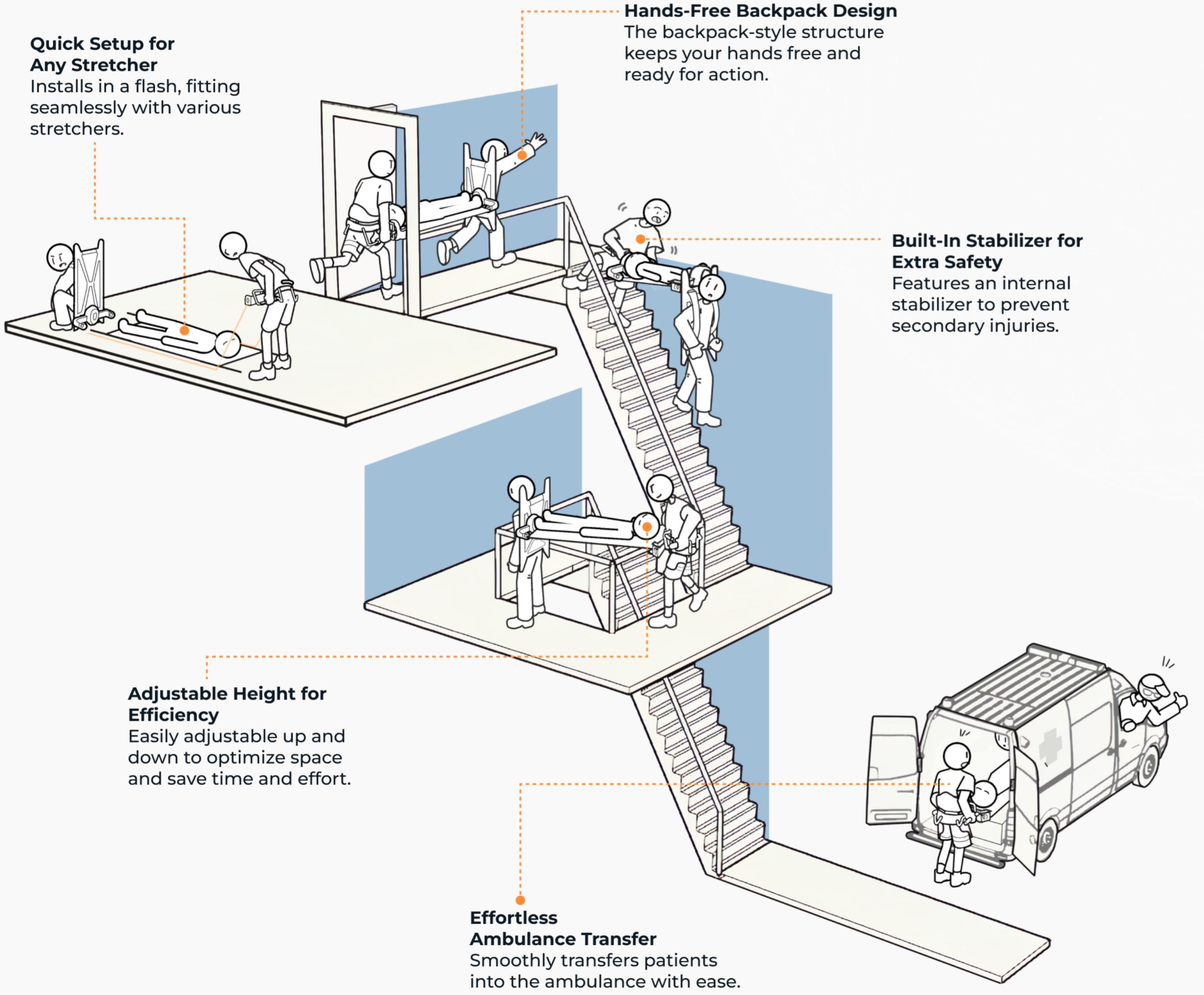
Provides stability and balance during transport, preventing the stretcher from tipping in uneven terrain.



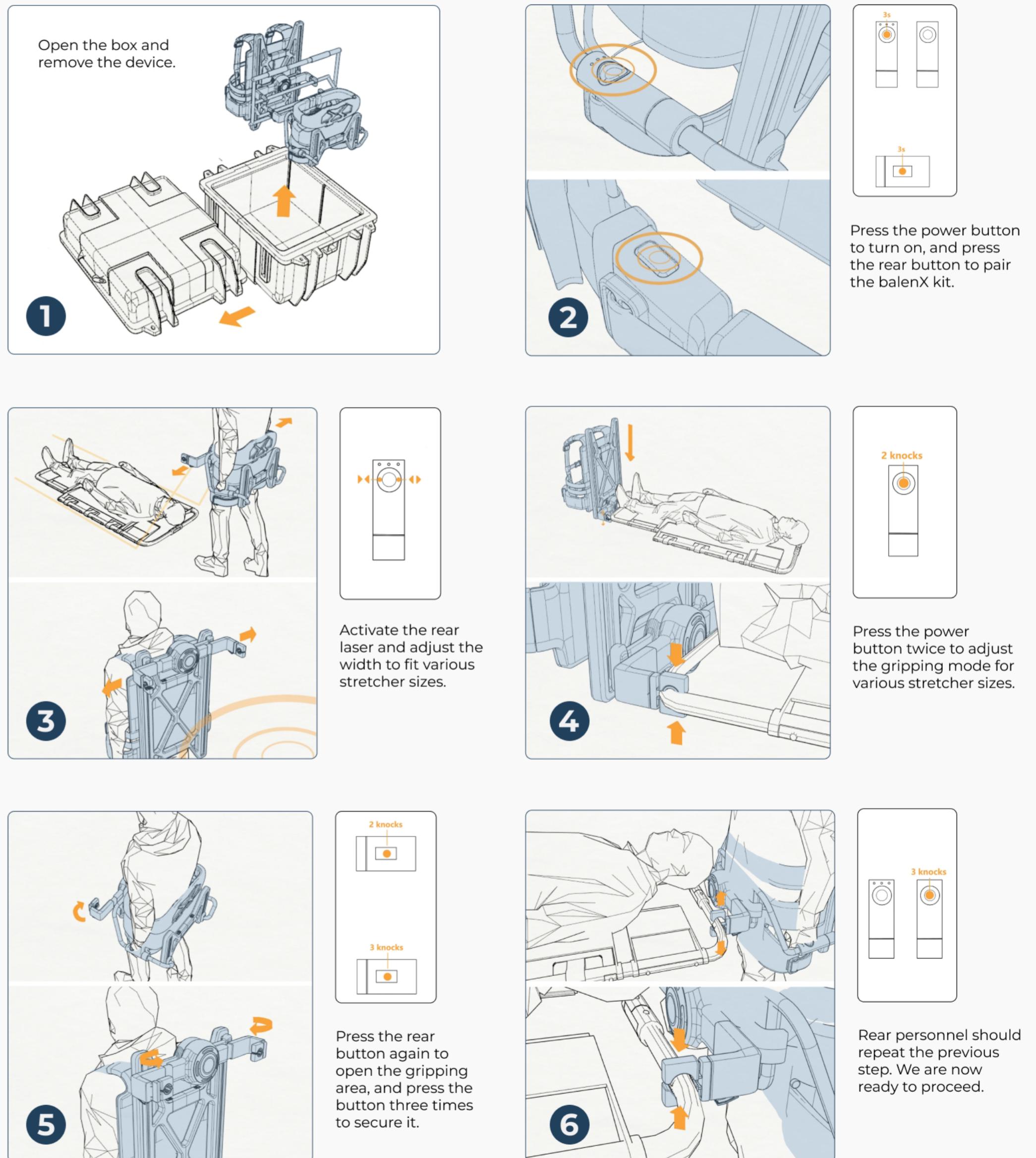
Air Cushion

Absorbs shocks and impacts, ensuring patient comfort and reducing injury risk during transport.

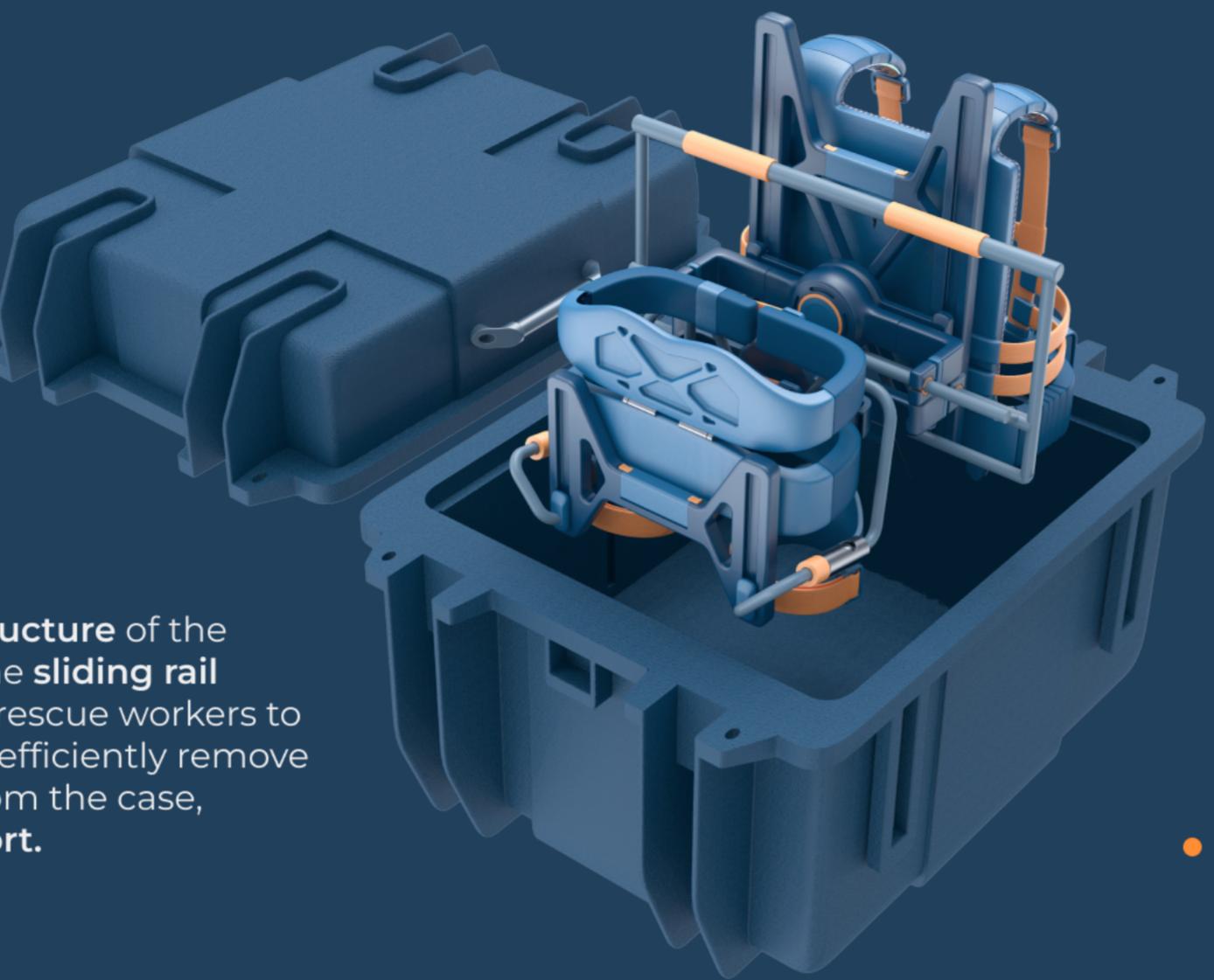
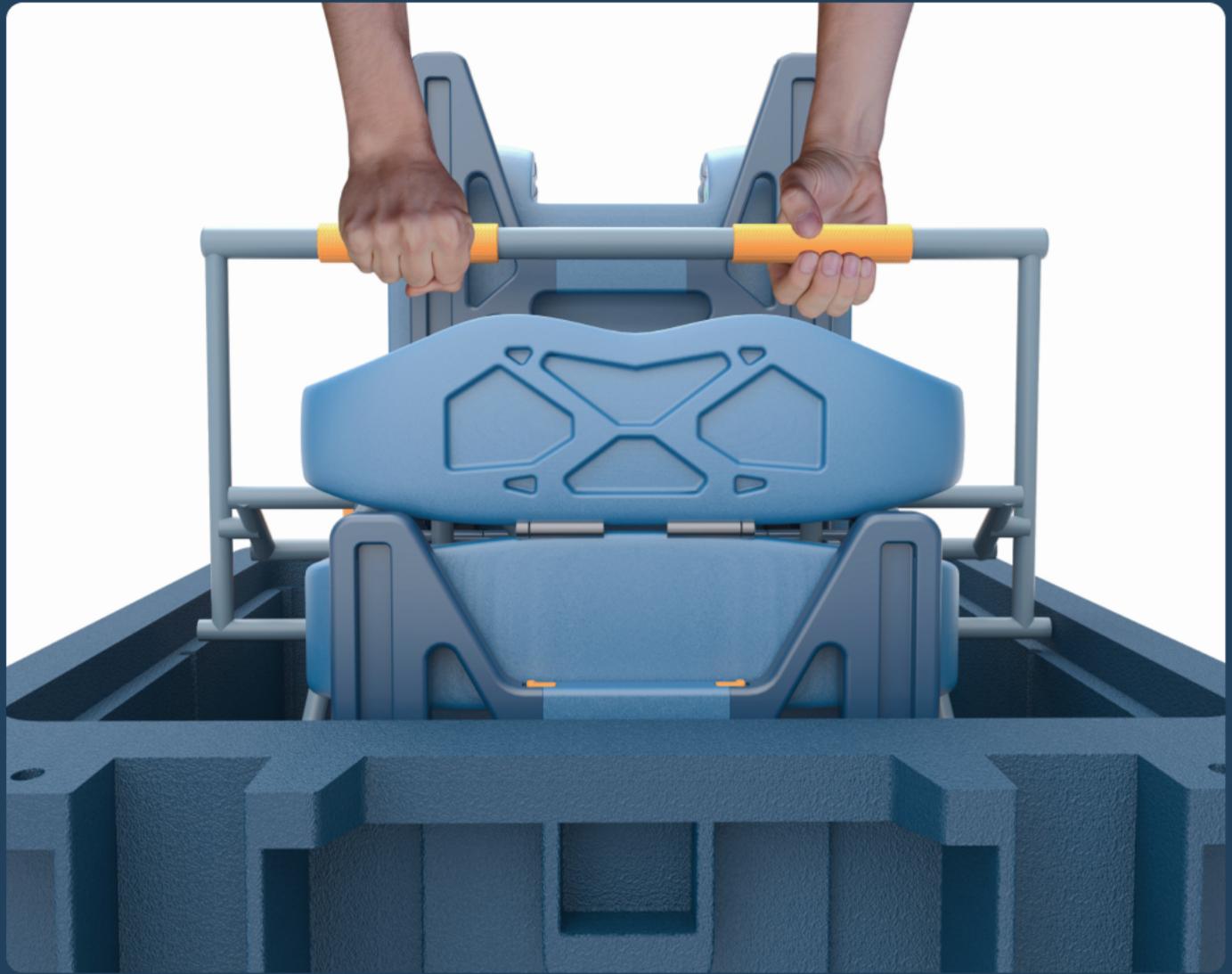
Function Display



User Guideline



Package Design



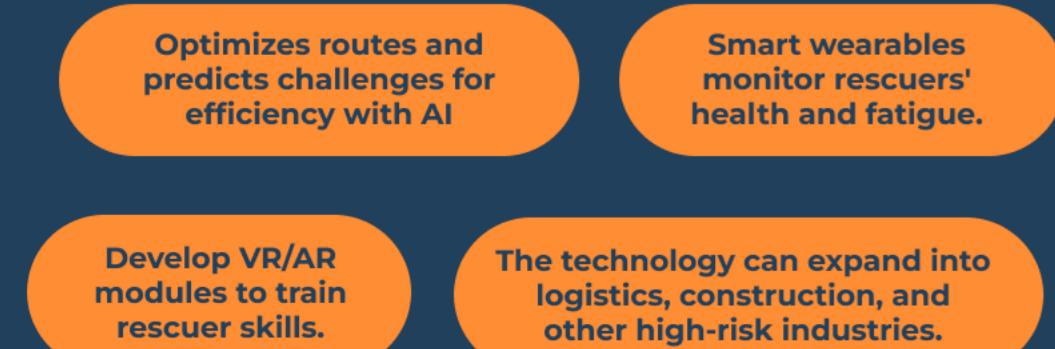
- With the **pull-out structure** of the extended handles, the **sliding rail system** enables two rescue workers to **simultaneously** and efficiently remove the balenX device from the case, **saving time and effort**.

- The balenX device is housed in a rectangular box designed for **stability**, featuring a **waterproof, corrosion-resistant, dust proof**, and shock-absorbing, **impact-resistant** construction.

Key Challenges



Future Potentials



Design Impacts

- The balenX exoskeleton kit features rotating motors for consistent stability, keeping the stretcher secure and balanced during transport. It resolves issues with traditional stretchers in buildings without elevators, **reduces the risk of secondary injuries, and simplifies training for rescue personnel**.



Shatz, Sallie Dean. "Keeping a Mountain Rescue Team on Its Game." The New York Times. The New York Times, 12 June 2012. www.nytimes.com/2012/06/12/us/in-aspen-colorado-keeping-a-mountain-rescue-team-on-its-game.html.



Orban, André. "Emirates Unveils Airbus A380 Premium Economy, Enhancements across All Cabins." Aviation24.be, 29 Dec. 2020, www.aviation24.be/airlines/emirates-airline.

- Additionally, it enhances rescue operations in challenging environments such as natural terrains, aircraft cabins, slopes, and confined spaces, **improving emergency response efficiency** through safe and reliable stretcher handling.

