Redefining the mobile user experience of the next gen Nissan EV

The Opportunity

Redesign existing mobile app experience + create innovative ideas by adding EV vehicle ecosystems and more broadly with OEM services by providing high value customer experience

The Brief

The project came up as a strategic initiative from the CDO level on how we can redesign a user centric mobile application compatible with the new flagship Nissan Ariya due for release later that year.

Team & Expectation

A squad of 3 was selected from the larger UX Team reporting directly to the COE head was formed to execute this project.

As part of this squad tasked to come up with futuristic concepts and ideas for the next generation EV vehicles.

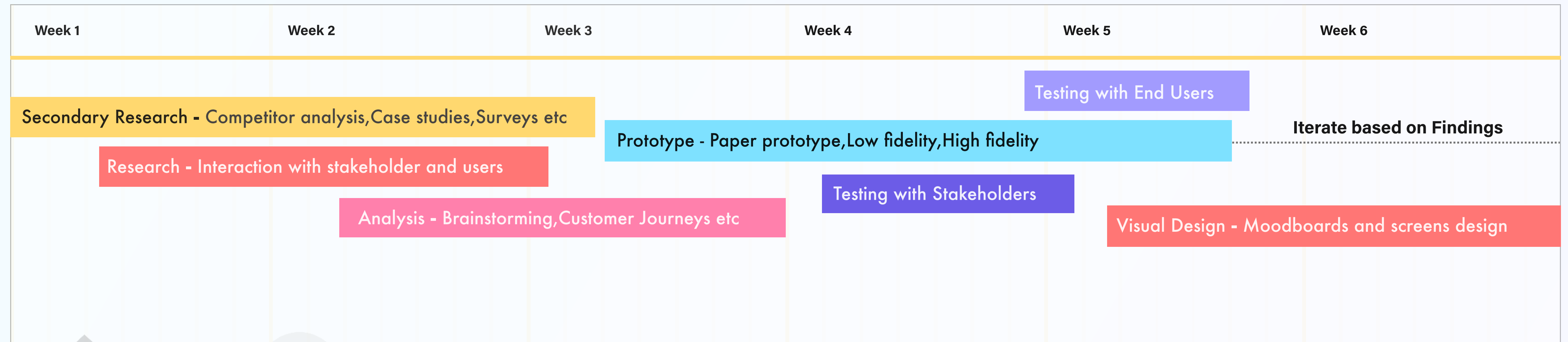I was responsible for collaborated research, analysis, prototypes etc.I also oversaw the visual design process
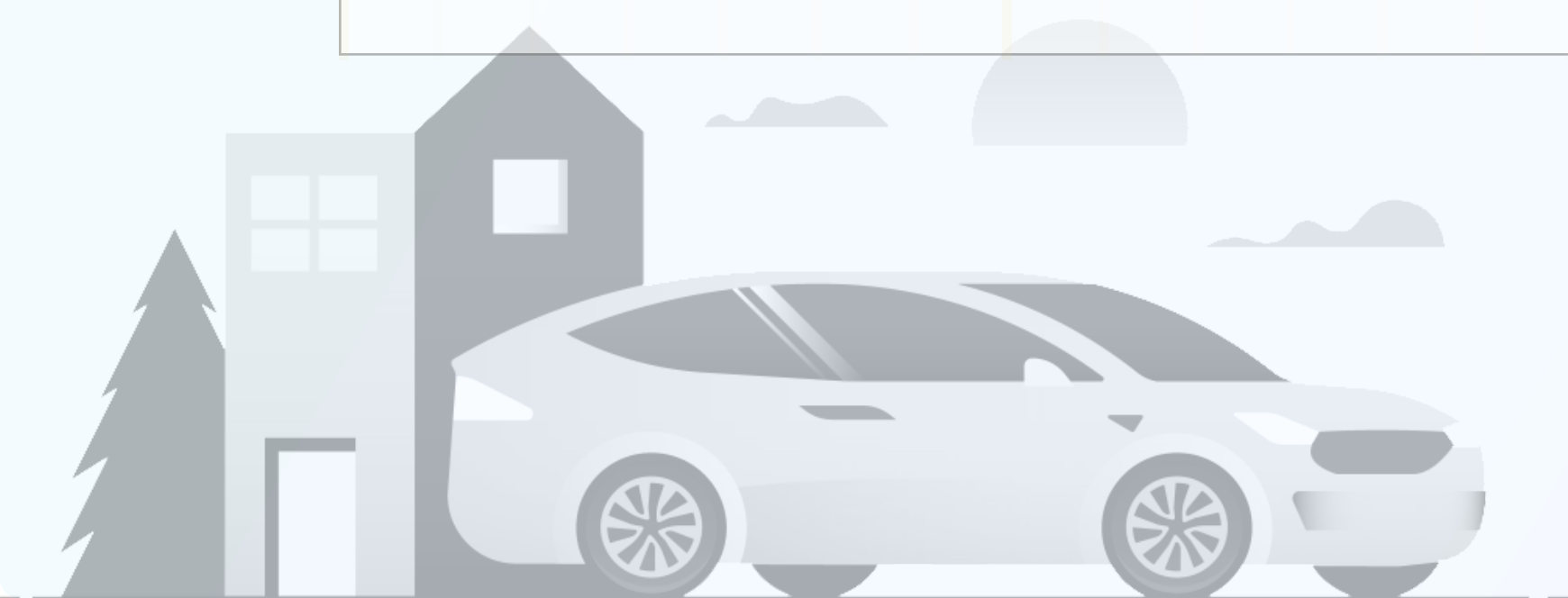
My Role & Process

Project Name	Project Type	Duration	My Role
EV PLUS	Service Design	2 Months	UX Designer

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6

Testing with End Users

Secondary Research - Competitor analysis,Case studies,Surveys etc

Prototype - Paper prototype,Low fidelity,High fidelity

Iterate based on Findings

Research - Interaction with stakeholder and users

Testing with Stakeholders

Analysis - Brainstorming,Customer Journeys etc

Visual Design - Moodboards and screens design

Project Roadmap

Screenshot of Nissan Connect Mobile App for Android

Current Offerings

Below are the current offerings for the as is/new users in the Nissan Connect mobile application.

Lock & Unlock

Climate Control

Bettery Level

Fuel Level

Door Status

Car Location

Service Data

Alerts

Competitors	Personal intelligent assistant	Driver assistance systems	Biometric System	Advanced Automated Driving Technologies
Tesla	✓	✓	✗	✓
Mercedes	✓	✓	✓	✓
Audi	✓	✗	✓	✗
BYTON	✓	✓	✓	✓
GM	✓	✓	✓	✓
BMW	✓	✓	✓	✓
Ford	✗	✓	✗	✓
Jaguar	✓	✓	✓	✓
Toyota	✓	✓	✓	✓
Rolls-Royce	✓	✓	✓	✓

Competitor Research

Looks at a defined range of competitors within the Nissan operating areas.

This is to ensure the Nissan meets a parity of customer experience within the entire marketplace.

The competitor analysis also helped us to uncover certain data points that do not exist in our application currently.

Primary Research

Interview with SME's & Stakeholders

We set out to understand the domain through interactions with business stakeholders, domain experts and SMEs

Electric vehicles
& its background

Knowledge transfer
from other projects

Expectations
and timelines

Gather insights
& best practices

Primary Research
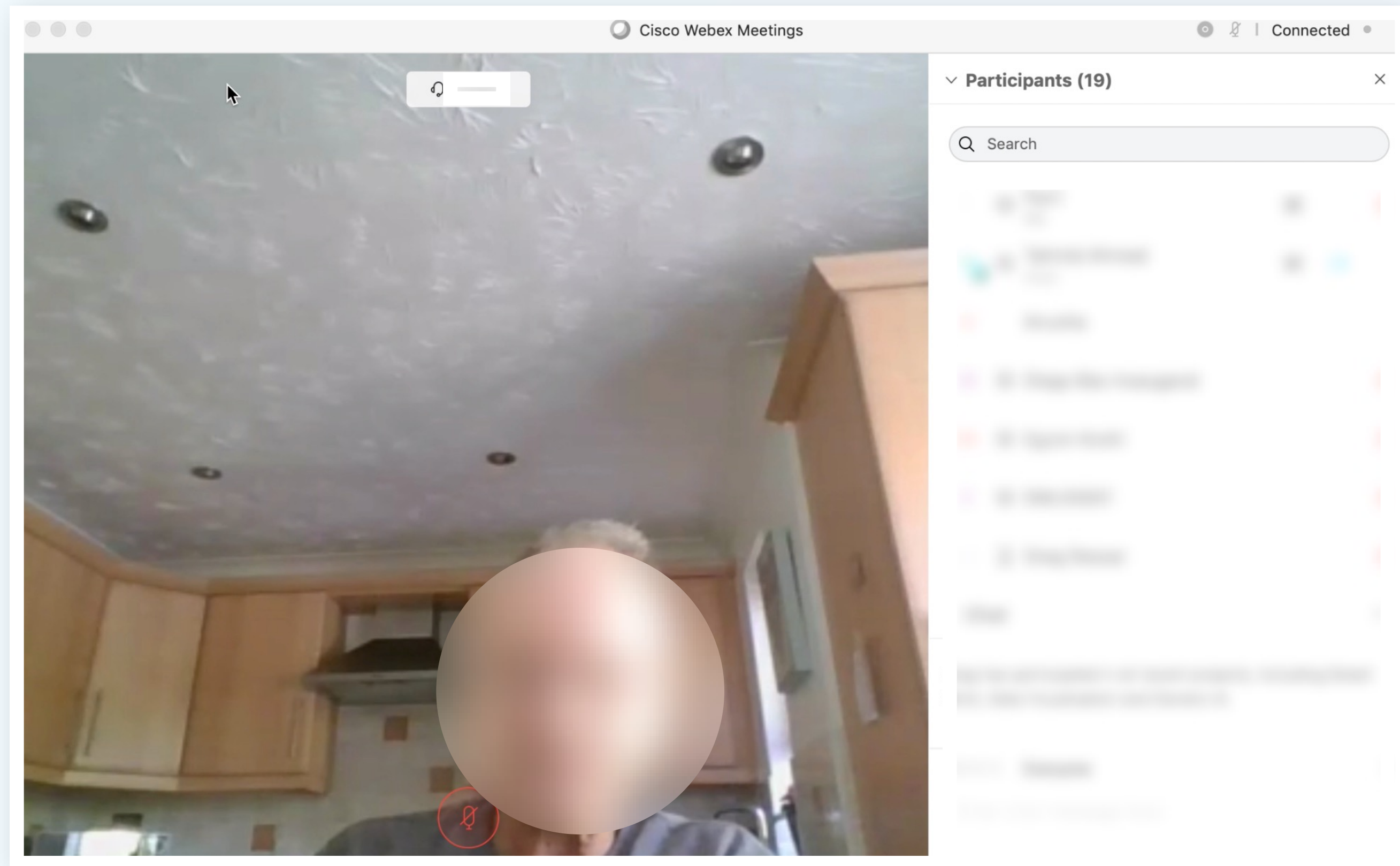
User Interviews

We conducted interactions with end users along with a UK based vendor research agency

Expectations Towards Mobile App	Needs, Priorities & Painpoints
Understanding Challenges	Day in a Life & Journey
Identify Personas	
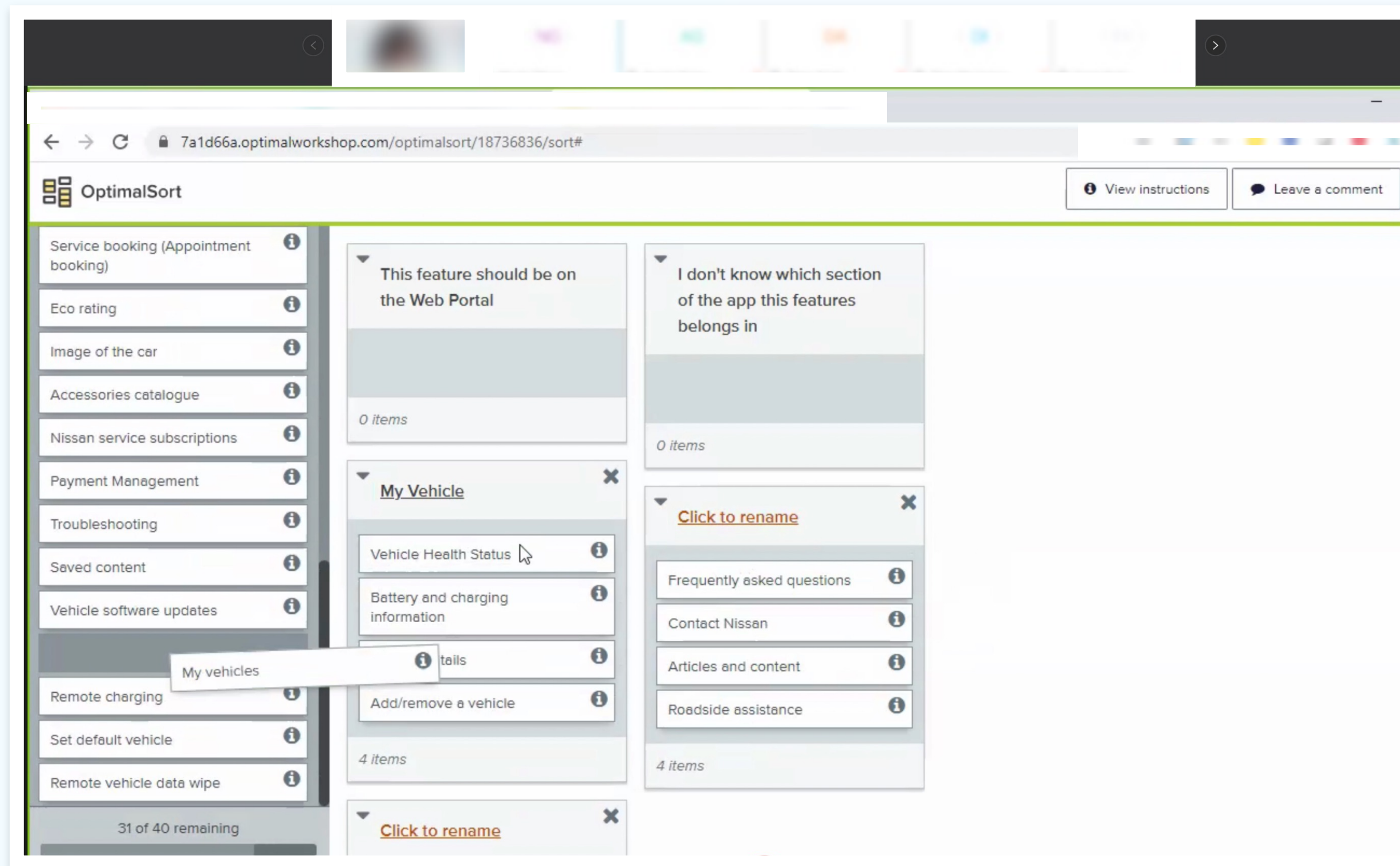
Card Sorting

We Used Card Sorting Methods to identify the key data points the customer is looking for in their app and their relative importance

Priorities Existing
Data Points

Understand
User Mental Model

Define high level
Information Architecture

Primary Research

Existing App Customer Reviews

We have examined 150+ customer reviews in App Store, google play store and various blogs and forums.

Goals

Customer Paint Points	Improvement Areas	Feedback
Customer Expectation	Current Technical Challenges	
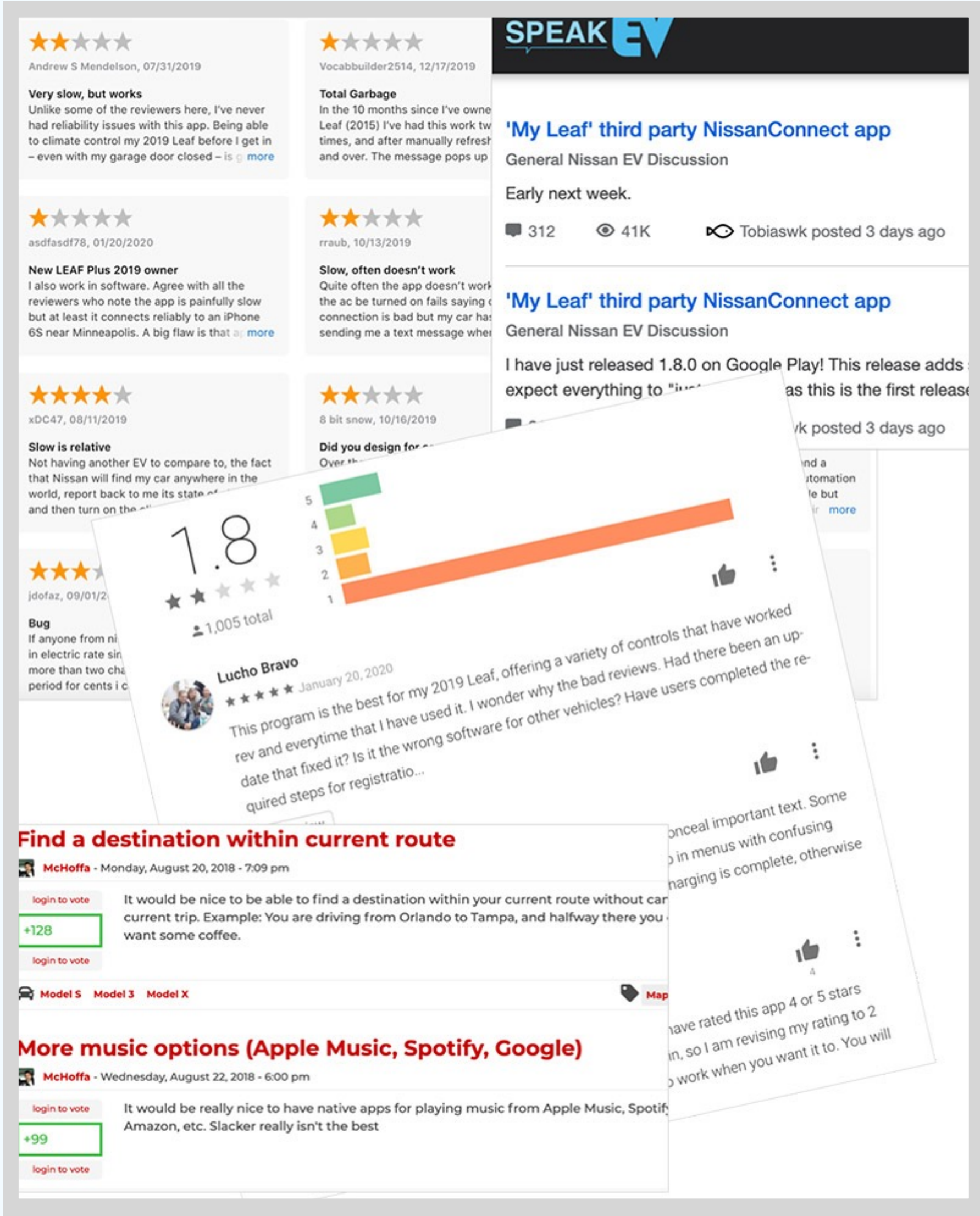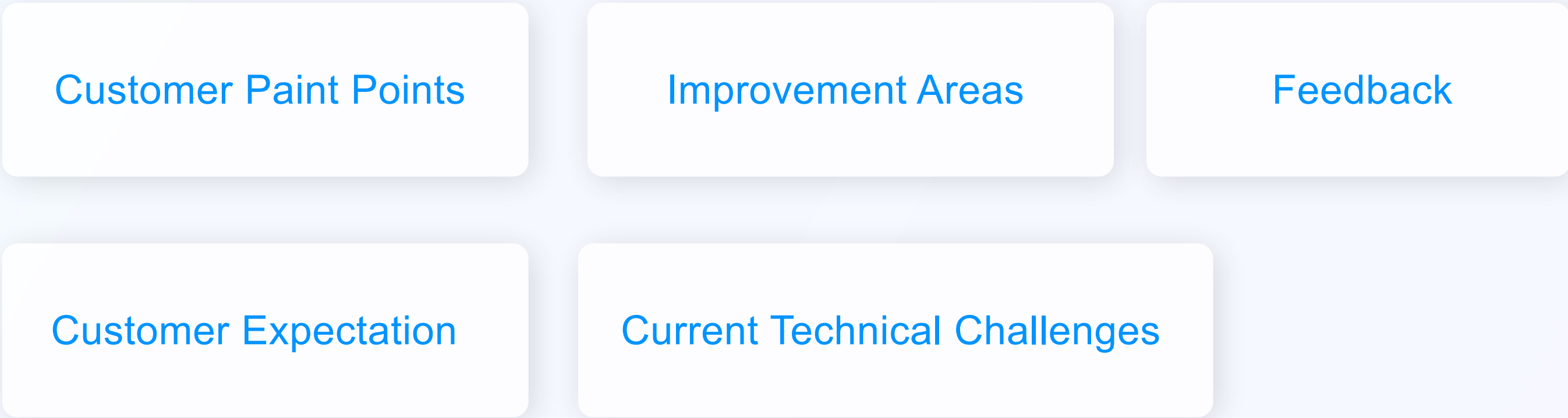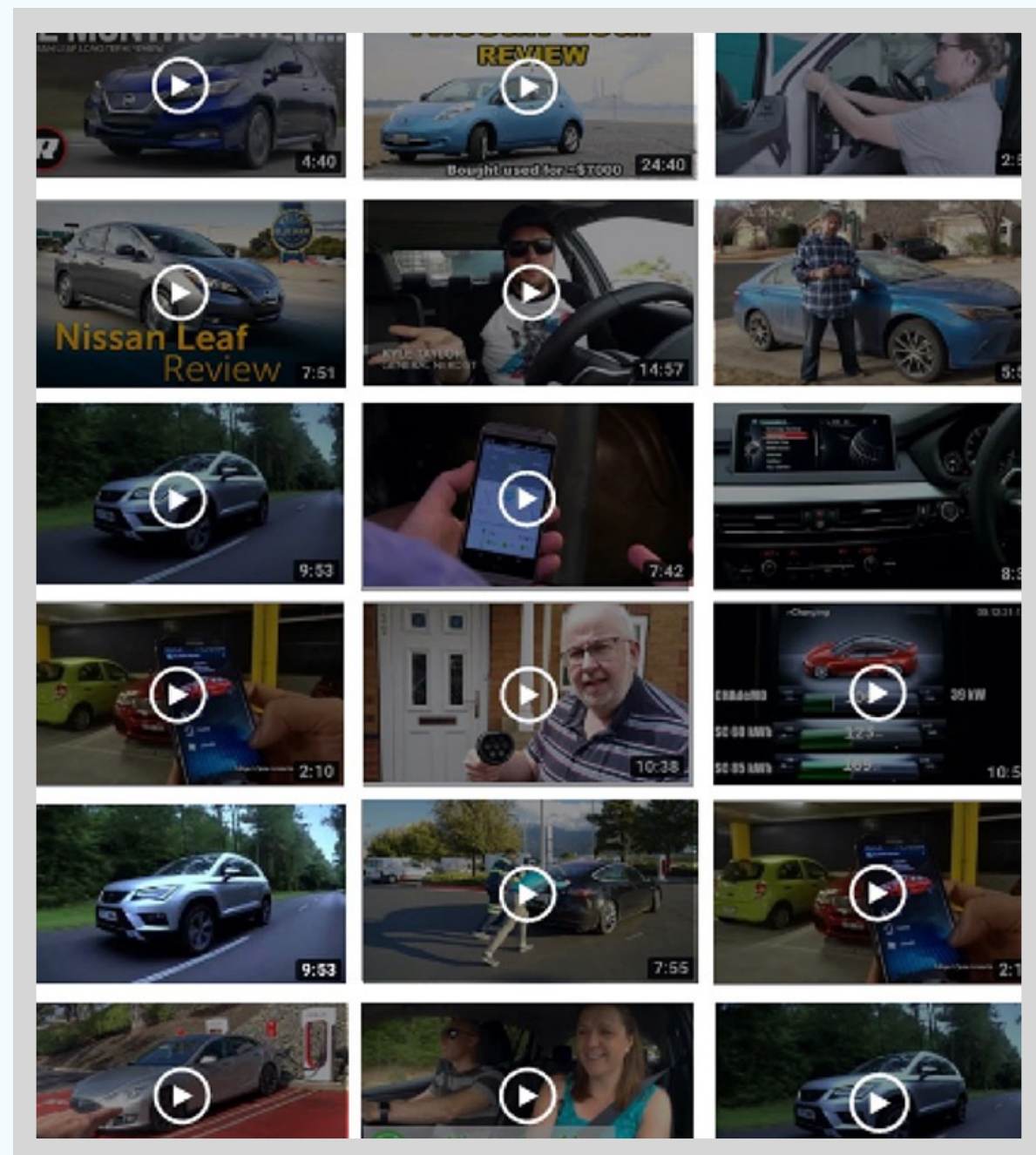
Primary Research

150+ Videos from different sources.

50+ research papers, case studies, white papers etc.

Secondary Research

The Secondary Research we conducted in parallel helped us cross verify our primary research data with existing data found in the open source

Focus

Fresh & Lateral User Review

Change Behaviour

Human Motivation

Psychology Towards EV

Gamification Principles & Techniques

Analysis Phase

Decluttering the findings

Brainstorming

Team discussions with peers and SMEs helped us bring all our findings together on to the table and everybody in one page

Affinity Diagrams

Affinity diagram helped us structure and bring together the key focus areas within these findings

What kind of data do respondents believe important

Most of the data which constitutes to **range anxiety** ranked top as extremely important data point for the interviewed respondents
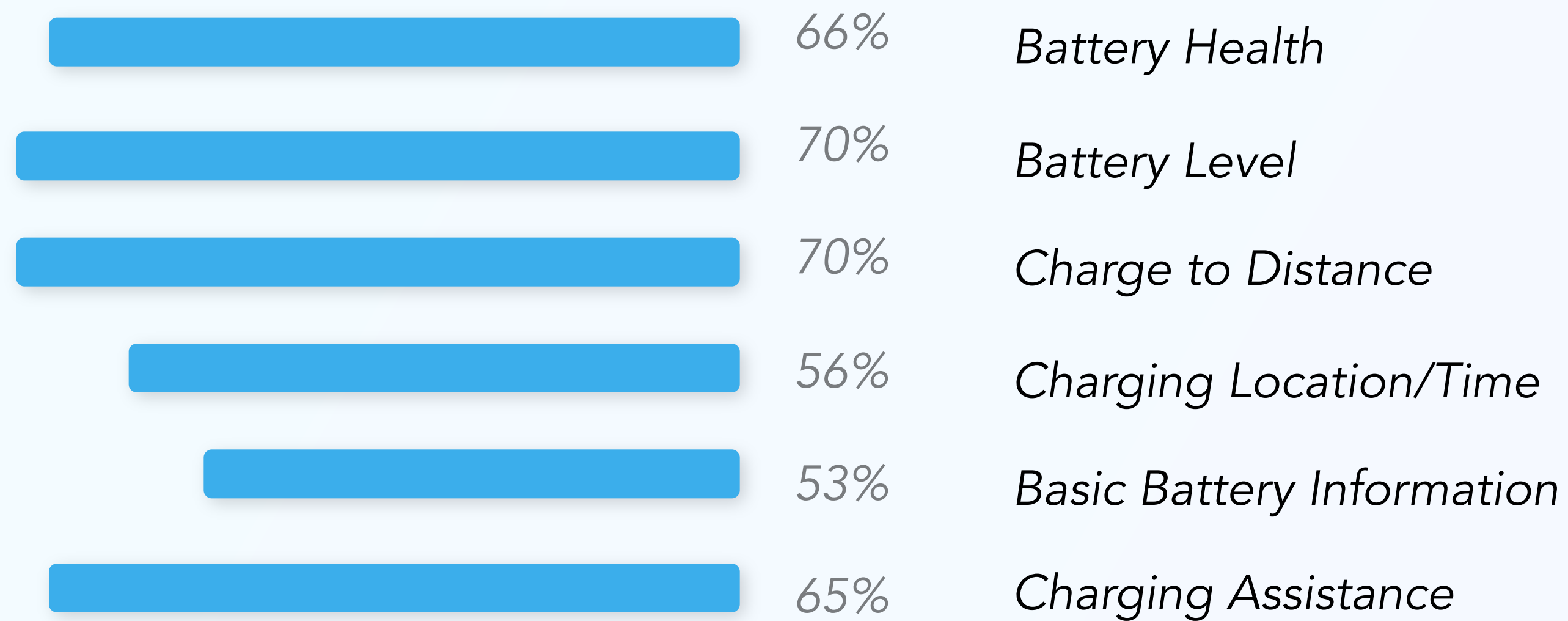
USA/UK

Japan

	USA/UK		Japan
Battery Health	66%		61%
Battery Level	70%		66%
Charge to Distance	70%		57%
Charging Location/Time	56%		42%
Basic Battery Information	53%		58%
Charging Assistance	65%		70%

"I think all items were really important and they should be an option inside the app.But for me everything related with battery and charging,maintenance and alert are really important"
- Susan,USA

"Considering this is an electric vehicle the current car condition especially battery left is most important"
- Saiko,Japan

Analysis phase
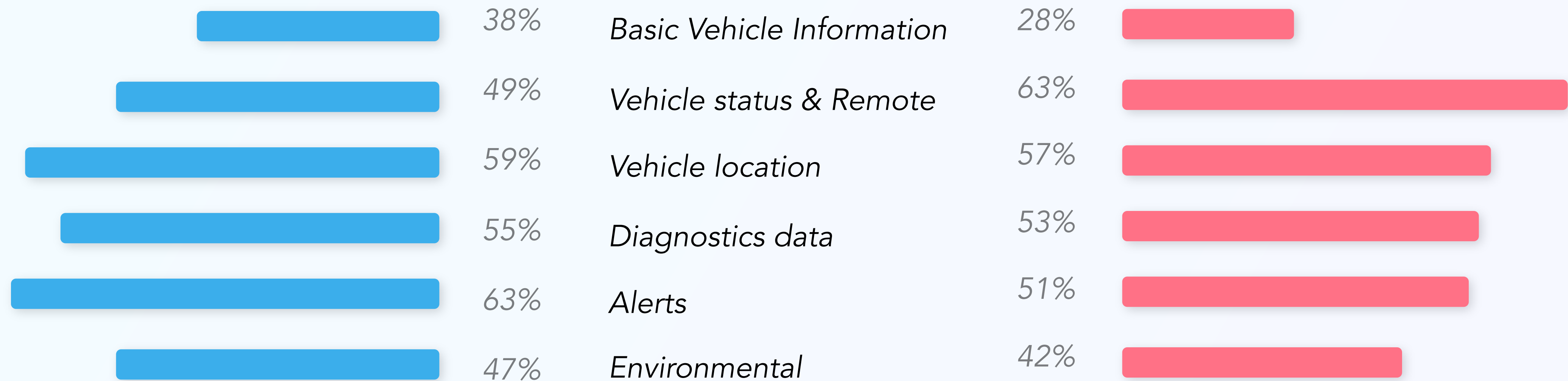
What kind of data do respondents believe important

Most respondents wished to see the **vehicle status** and **safety** related data upfront as well

	USA/UK			Japan
	38%	Basic Vehicle Information	28%	
	49%	Vehicle status & Remote	63%	
	59%	Vehicle location	57%	
	55%	Diagnostics data	53%	
	63%	Alerts	51%	
	47%	Environmental	42%	

"I think it will be good for us to customise the Home Screen with information that we deem useful"
- Robert,UK

"It is important to know that the vehicle is safe to drive on a daily basis"
- Akio,Japan

Analysis phase

Attitude Towards Data Being Utilised For Personalisation

5 scenarios were presented to the user on how data will be utilised proactively.The scenarios included proactive recommendations around driving & vehicle status, calendar sync, driving improvements, maintenance and social media.

Percentage of customers who rated 'very favourable' and 'most favourable'

63%
USA/UK

69%
Japan

Analysis phase
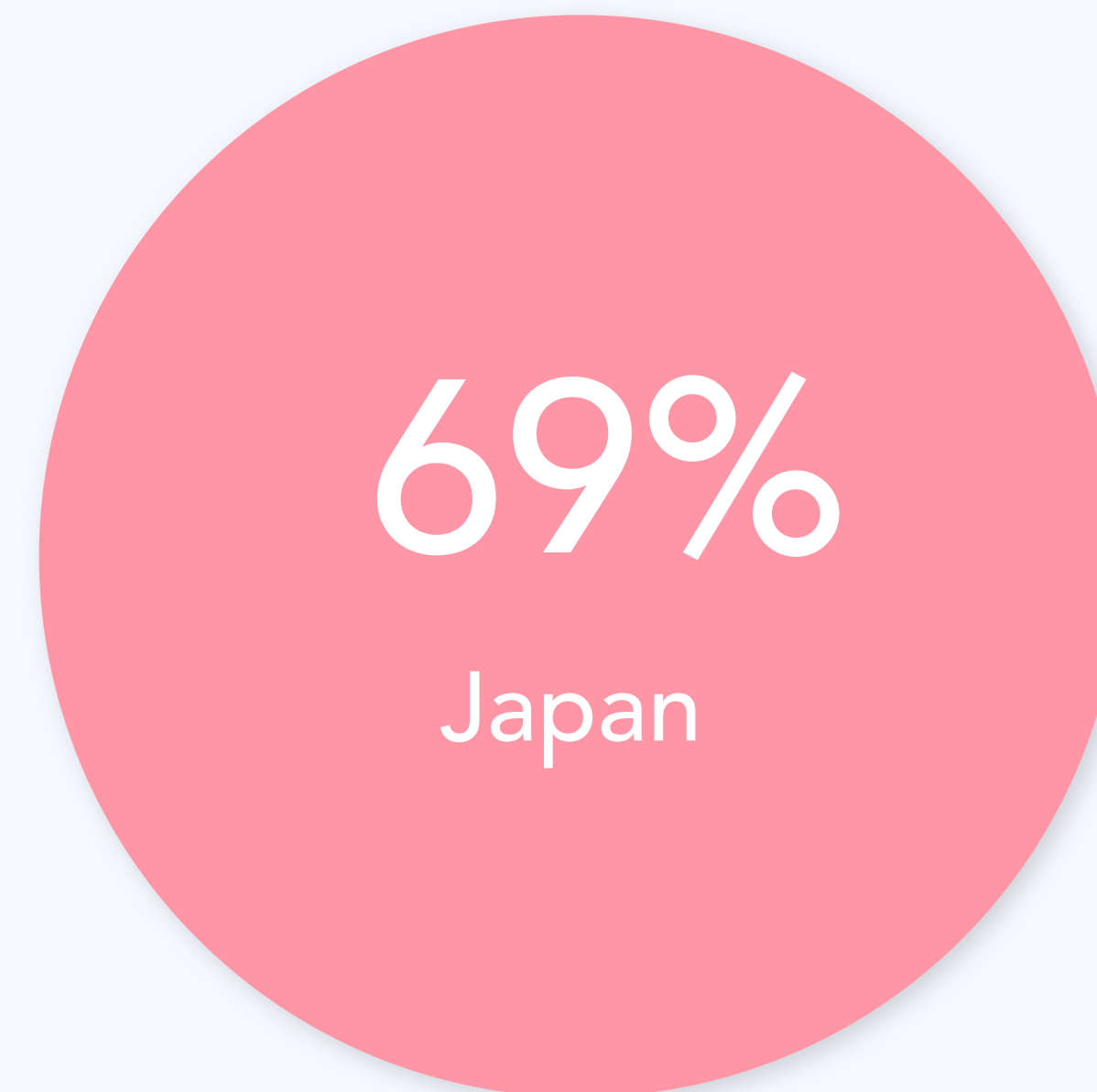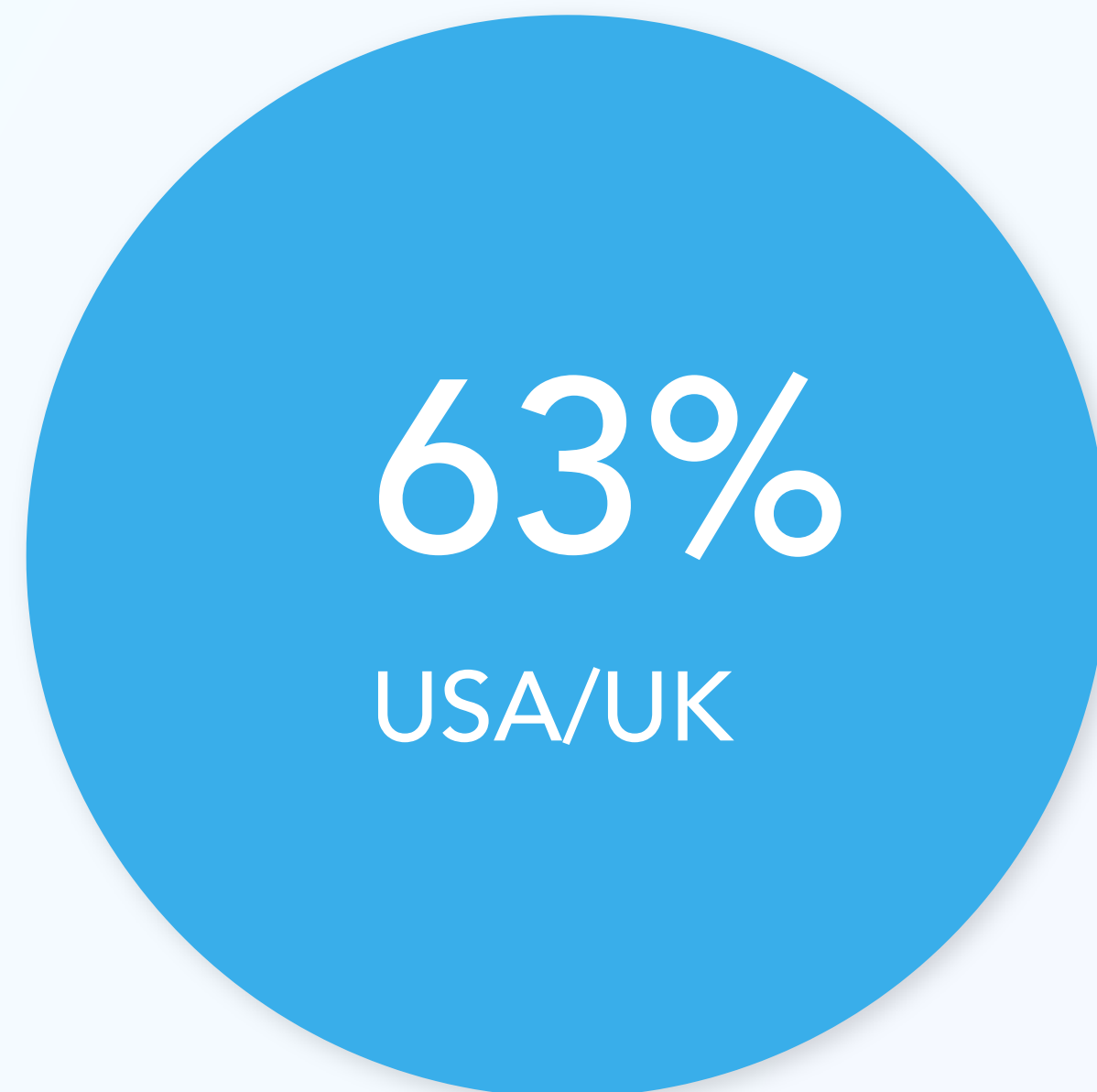
What Data Customer Found Less Relevant/Duplicated

We looked at data that consistently got ignored or valued low during the interview and card sorting sessions

"I can get this data elsewhere"

"Information such as insurance and the loan info are not really tied into car features.The finance aspects of a car is always separate in my mind
- Larry,USA

"I wouldnt want this all the time"

"Number of turns?It would drive me mad to see that data all the time"
- Candice,UK

Insurance Related Data	Number of Turns
Loan Interest	Number of Trips
Financial Information	Preferred Dealer

Analysis phase

Personas & Journeys

Identifying the Users and Mapping their Journeys
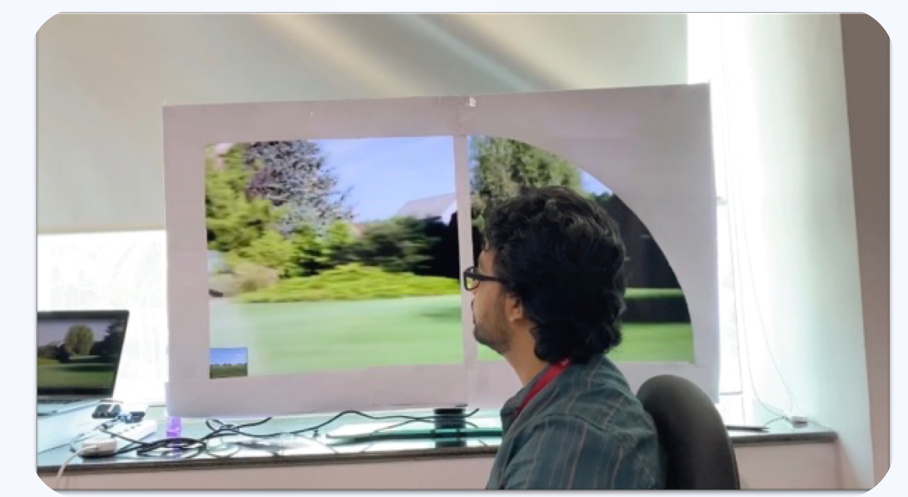

Modelings User Personas

Building personas as a key tool to understand & empathise with the EV user goals, motivation & behaviours etc
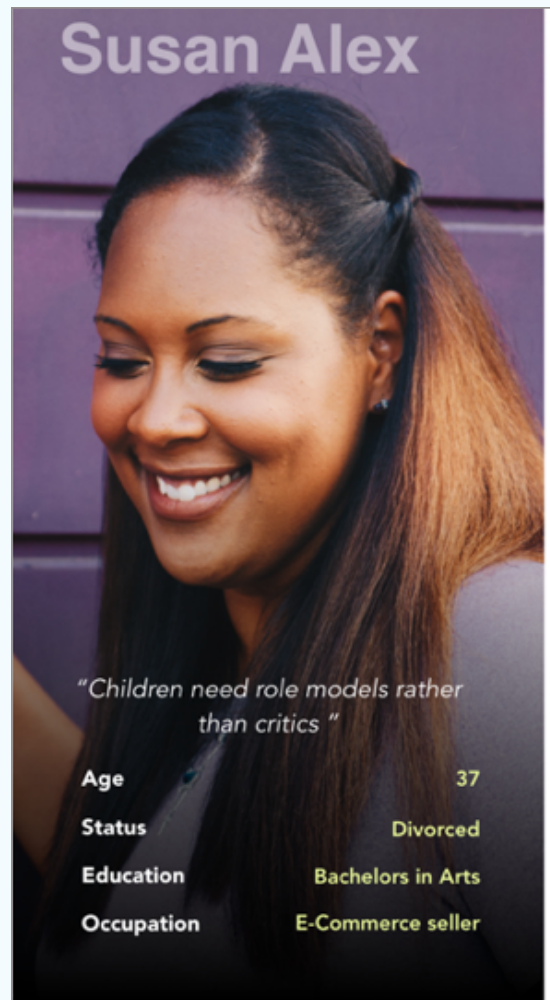

Bodystorming

Conducting the Bodystorming to imagine the place the app would be used

Business Origami

We have used the Origami to create a miniature model of the User Journeys

User Personas

Based on the our interview we have identified few personas which we will use to prioritise the features & design the new mobile app

Susan Alex

"Children need role models rather than critics"

Age: 37
Status: Divorced
Education: Bachelors in Arts
Occupation: E-Commerce seller

ABOUT
Susan is a divorced mother of 2 kids who is a successful e-commerce seller. She uses her EV on a daily basis for both her personal and professional needs.

GOALS
- Never run out of charge
- Well being and safety of her family
- Pickup and drop her kids to school on time
- Scheduled and unsuccessful travel
- Social life
- Save money

OPPORTUNITY
- Roadside Assistance/SOS
- Planner
- Budget saving tips/DIY
- Public and Private Charging
- Community and Gamification
- Diagnosis
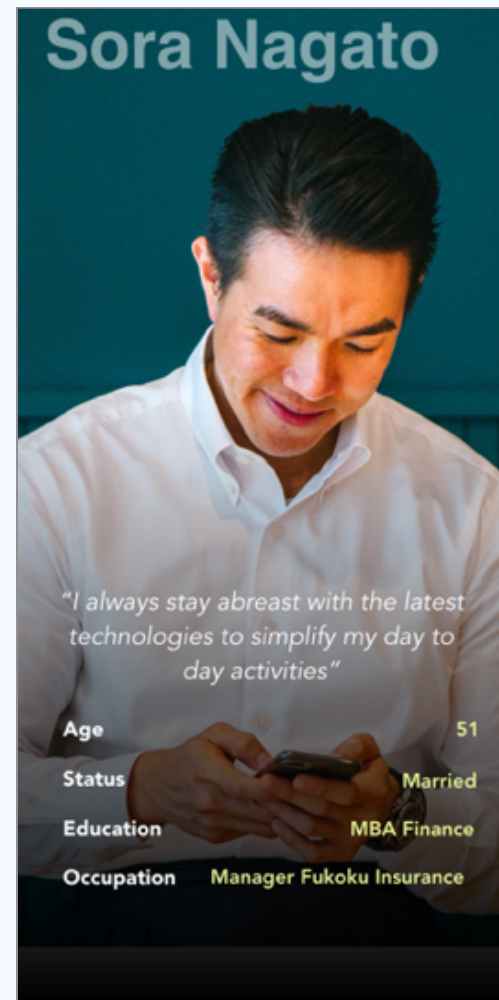- Kids mode/Pet mode/Custom mode
- Custom Widget

PAIN POINTS
- Connectivity
- Range Anxiety
- Safety
- Punctuality
- Support
- Charging Expenses
- Work life Balance
- Social Status

COMFORT WITH TECHNOLOGY
- Internet
- Connected Devices
- Mobile Apps
- Social Apps

Sora Nagato

"I always stay abreast with the latest technologies to simplify my day to day activities"

Age: 51
Status: Married
Education: MBA Finance
Occupation: Manager Fukoku Insurance

ABOUT
Sora is a busy individual who depends heavily on automation and voice controlled smart devices to make his life easier. On a daily basis, he has rarely time for his own fun activities.

GOALS
- Keep updated & well informed
- No Surprises
- Connected Life
- Shortcuts to save time
- Manage time efficiently
- Increase efficiency

OPPORTUNITY
- Contextual alerts
- Intelligent planning
- Zero UI
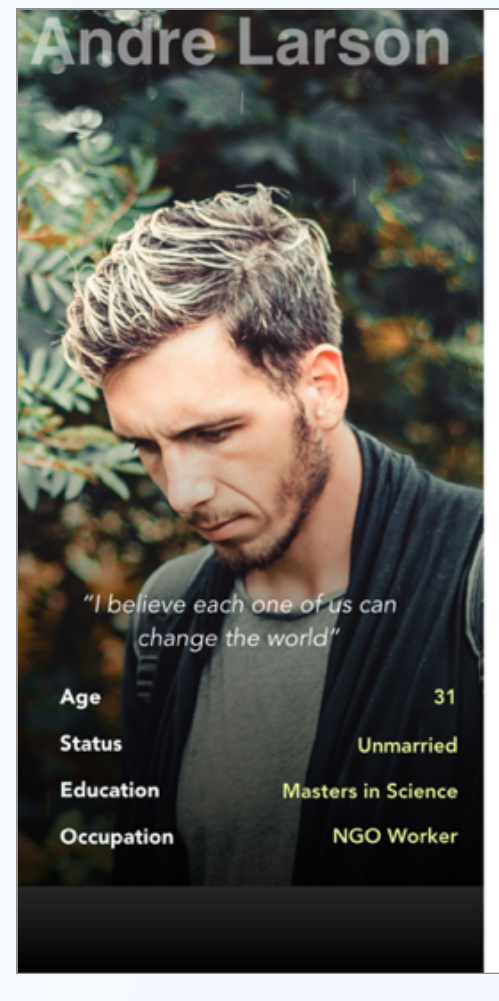- Status updates
- Quick access to modes
- Automation

PAIN POINTS
- Maintaining full charge
- Limited Superchargers
- Lack of time
- Frequently check status
- No Personalised Advices
- Irrelevant Notifications
- Range Anxiety
- Maintenance check
- Time Crunch

COMFORT WITH TECHNOLOGY
- Internet
- Connected Devices
- Mobile Apps
- Social Apps

Akio Tajiri

"Share your car empty seats and cut down your commuting cost. I enjoy meeting amazing new people everyday"

Age: 20
Status: Single
Education: Bachelor's in Finance
Occupation: Student

ABOUT
Akio is a second year engineer student in Tokyo university He is quite popular among his peers and enjoy a flashy social life. He occasionally drives his family car.

GOALS
- Weekend gateway with friends
- Entertainment while driving
- Explore new Technologies
- Personalisation

OPPORTUNITY
- Cross Platform Experience
- Helps & Tips Battery Saving
- Entertainments
- Social Connectivity
- Driving Score
- DIY
- Sharing car & make money

PAIN POINTS
- Maintaining full charge
- Limited Superchargers
- Lack of time
- Frequently check status
- No Personalised Advices
- Irrelevant Notifications
- Range Anxiety
- Maintenance check
- Time Crunch

COMFORT WITH TECHNOLOGY
- Internet
- Connected Devices
- Mobile Apps
- Social Apps

Andre Larson

"I believe each one of us can change the world"

Age: 31
Status: Unmarried
Education: Masters in Science
Occupation: NGO Worker

ABOUT
Andre is an environmental activist working with an international NGO. He travels across the country in his EV spreading the message of green future.

GOALS
- Protect the environment
- Motivate himself to keep going
- Sharing his achievements with communities
- Motivate Public to eco friendly
- Positively impact society & planet.
- Create an Environment friendly approach for commuting

OPPORTUNITY
- Planner for long travel
- Charging Stations & recreation centre
- Navigate to 360 view
- Green Score & STG
- Gamification & rewards
- Share & Connect
- Stats, Usage patterns & Predictions
- Entertainment
- Road Assistance & Safety
- Public & Private charging
- Custom mode & Widget
- Cross Platform Experience

PAIN POINTS
- Planning his travel
- Irregular work life
- Manage Expenses
- Motivating others to follow
- Limited Superchargers
- Park car in unknown areas
- Range Anxiety

COMFORT WITH TECHNOLOGY
- Internet
- Connected Devices
- Mobile Apps
- Social Apps

Analysis phase

Areas Identified

Tackling Range Anxiety

Quick Access & Customisation

Hyper Personnalisation

Analysis phase
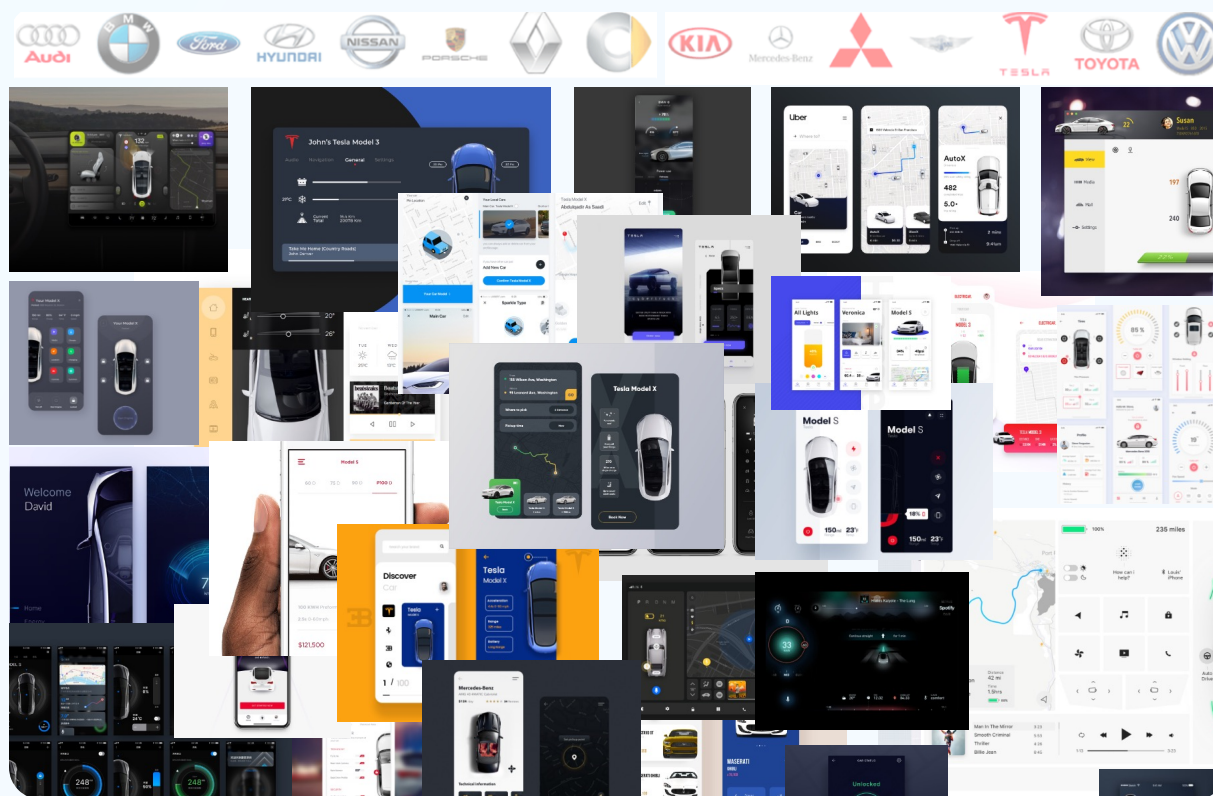
Collecting & Creating

Crazy 8

This exercise released our divergent thinking and creative juices to bring about fresh and new ideas. We have sketched 8 distinct ideas in 8 minutes & voted on each ideas by all team members and shortlisted 4 of them.


Moodboarding

We have used this to convey a general idea or feeling about the topic. Looked through all the major competitor and also concepts developed by other designers in a competitor review and mood boarding exercise.

Design Phase
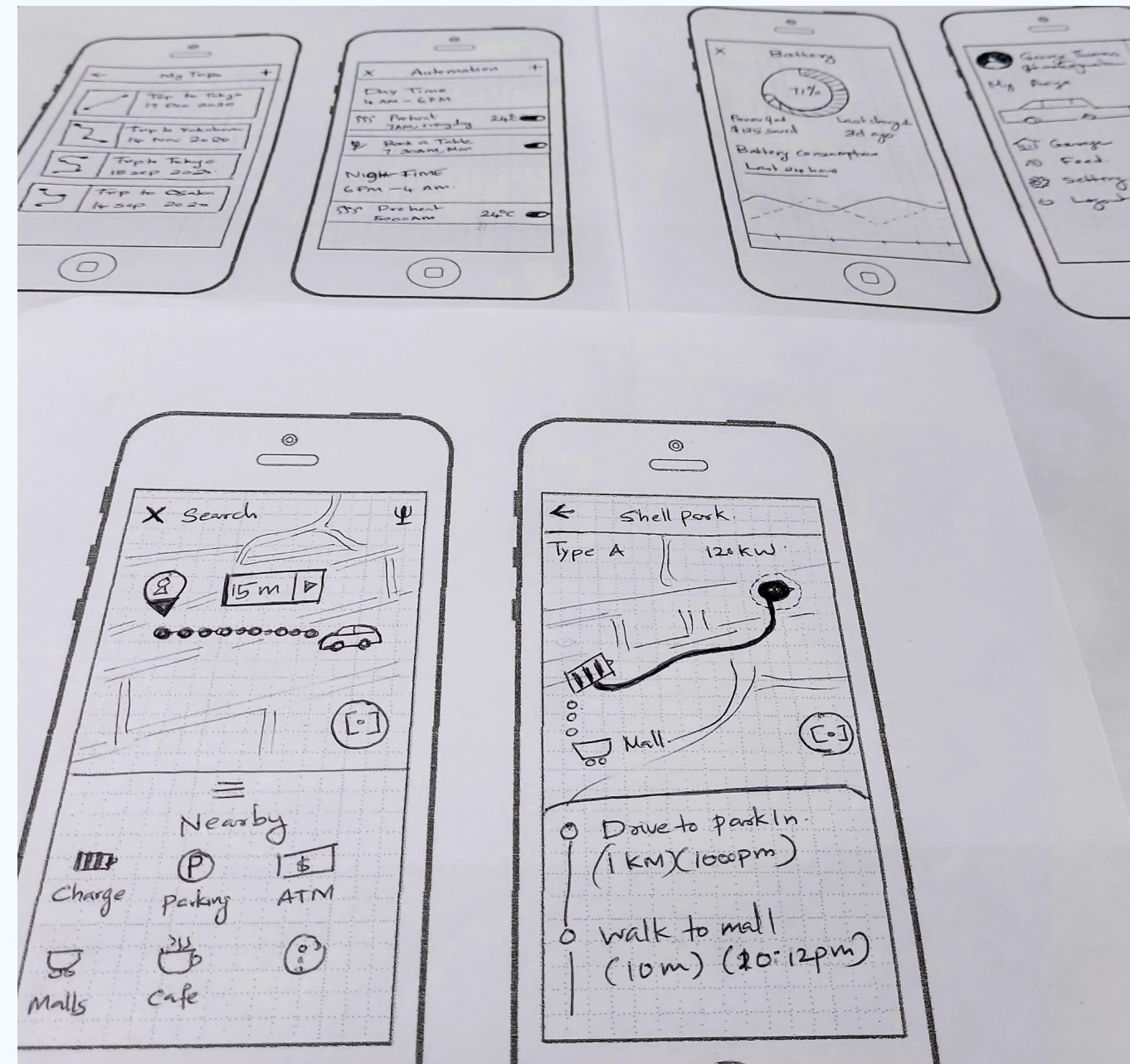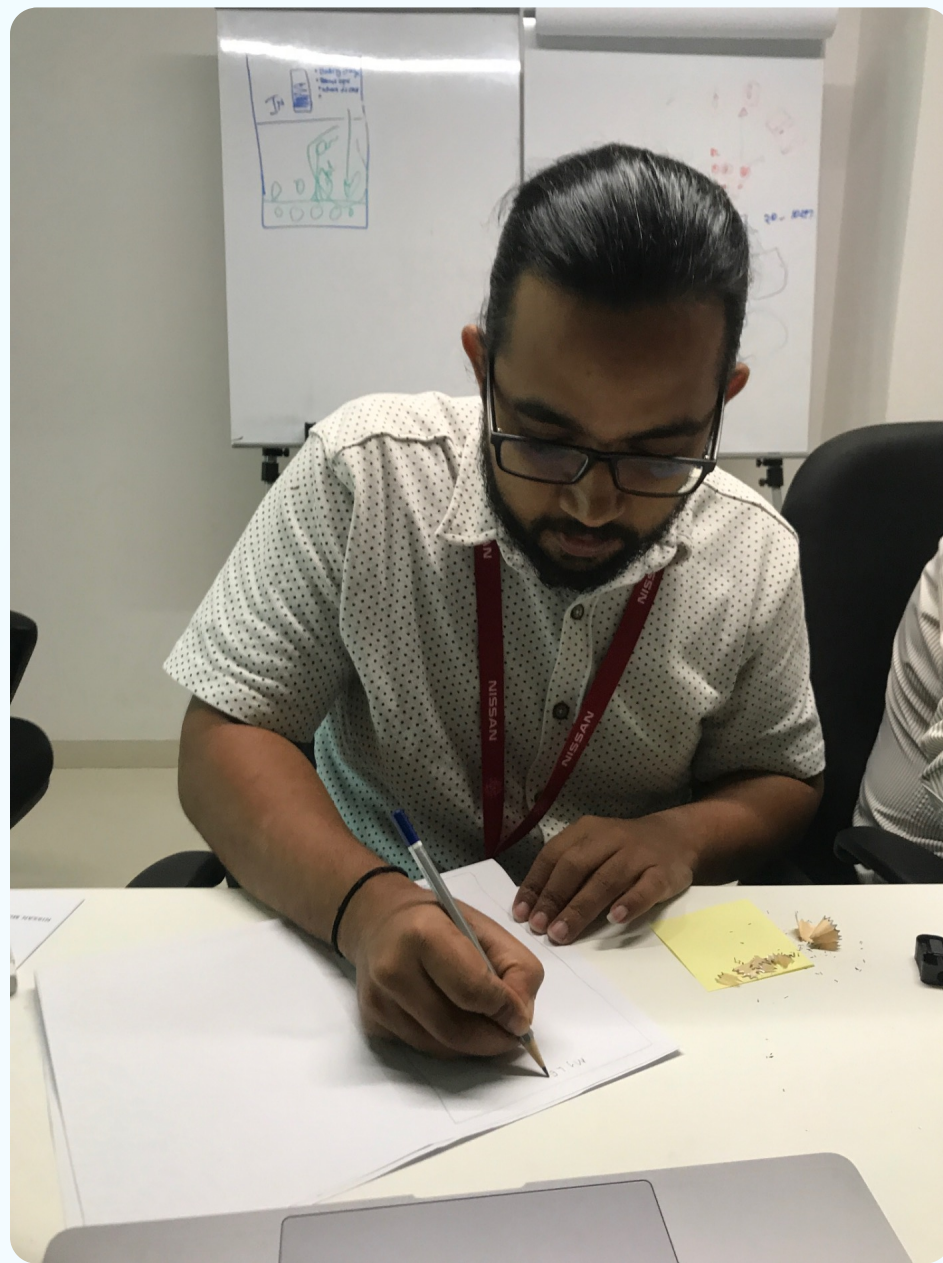
Prototyping

We first created low fidelity paper prototypes and iterated the changes after brainstorming.

Once the paper prototypes are finalised we digitalised and linked them in xd primed for use testing.
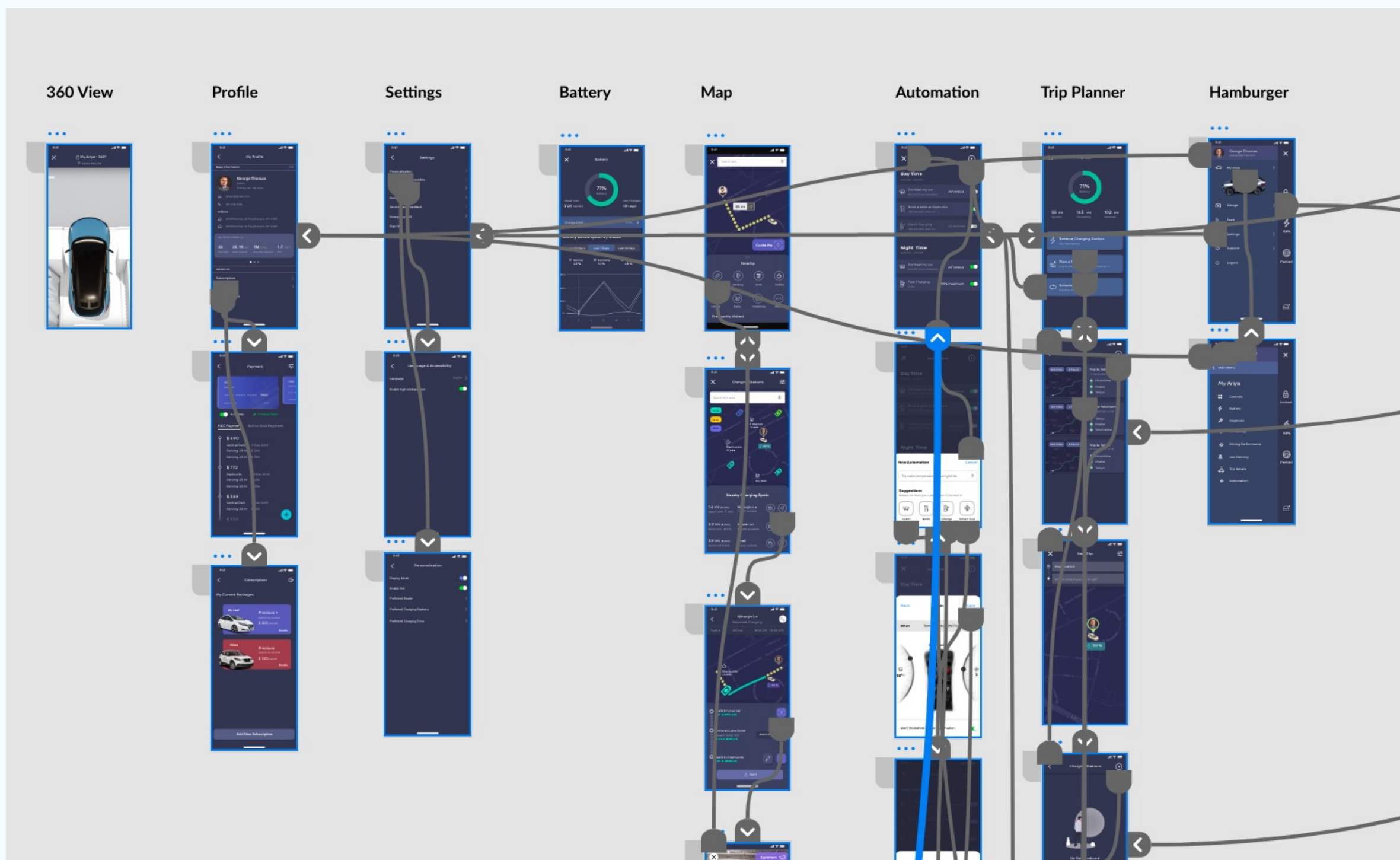
Objectives

○ Low fidelity paper prototypes

○ High fidelity prototypes in XD

○ Navigated and animated for user testing

Design Phase

Option 1
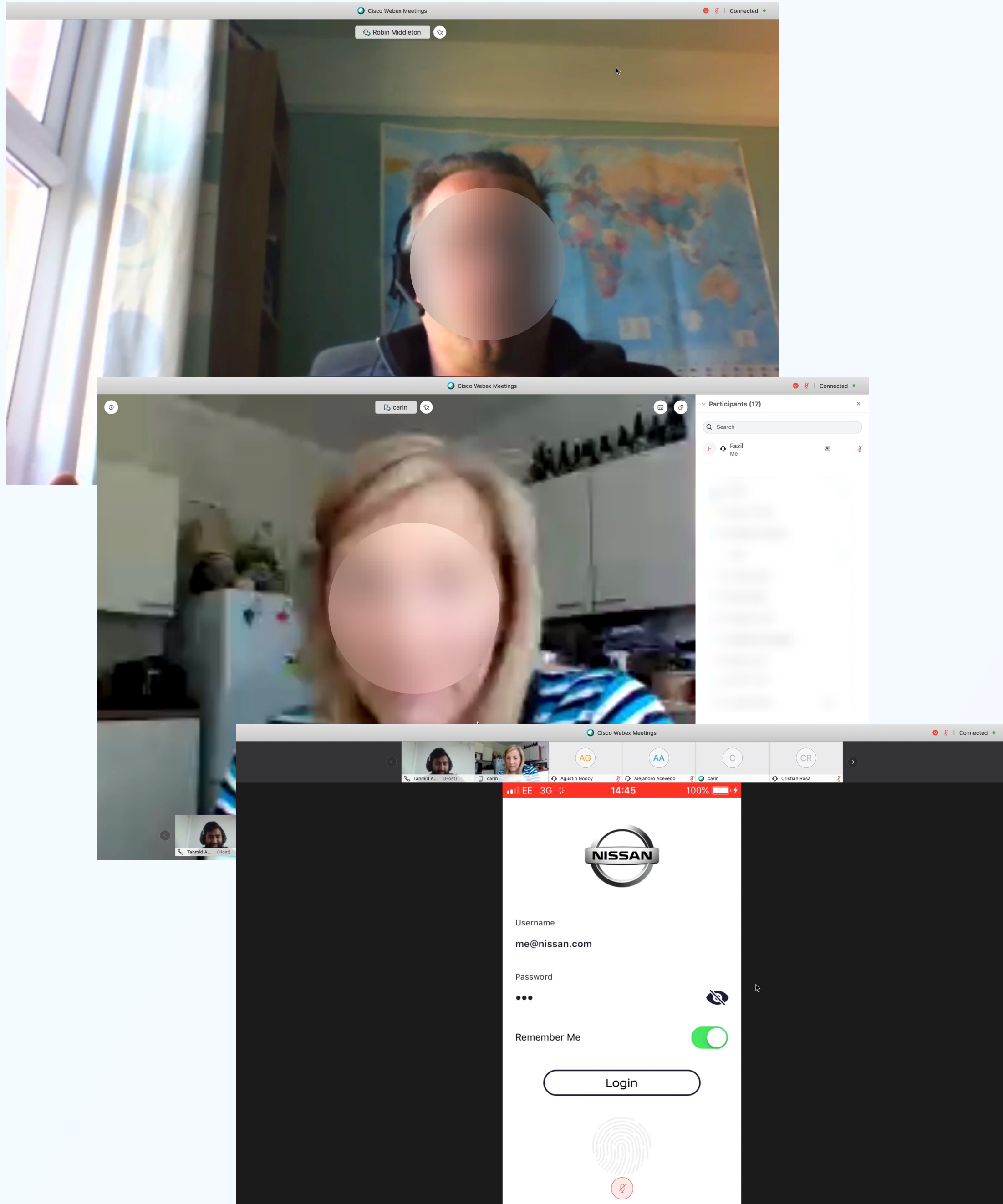
Small Description

Option 2

Small Description

Turn Table

Small Description

Story of Home Page

We designed a number of different home page options to measure success but also to test our assumptions based on what was uncovered as key customer needs.

Design Phase

User Testing Sessions

We tested out our designs with the end users.Here we asked the users to complete various flows under different scenarios and employed 'think aloud protocol' to get to know what their thought process and opinions are as they are completing these tasks.

Testing phase

Gestures - Developed Concepts

This Feature Is Currently Enabled In Some Android Apps. We Have
Seen Similar Functionality Implemented In Jailbreaked Ios Apps.
Need More Exploration
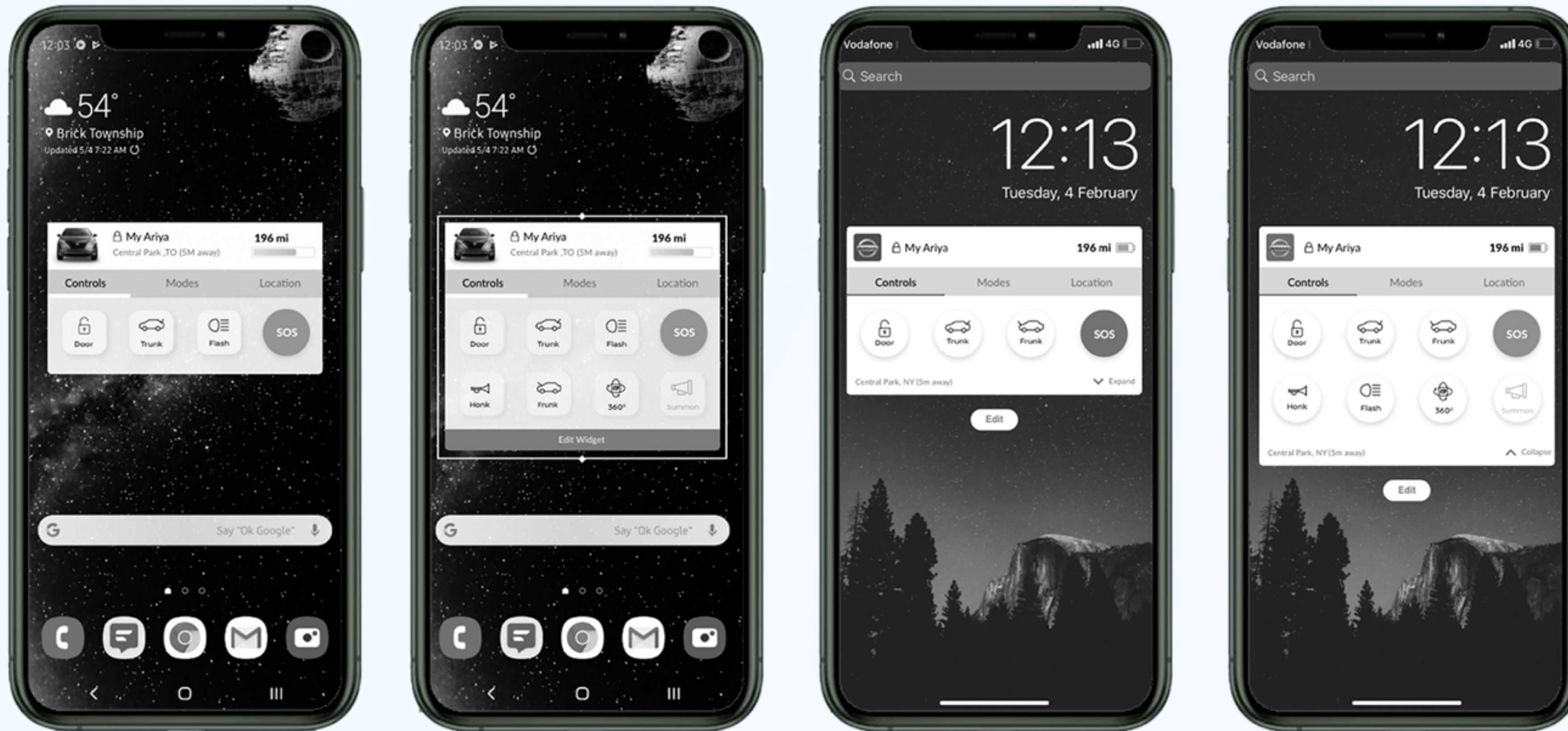
Quick Access & Customisation

Gestures

Mirrors user's experience in the real world to make the user feel natural and require neither interruption nor an additional device

Quick Access & Customisation

Quick Access - Developed Concepts

Android Screens

iOS Screens

Quick Access - Developed Concepts

Storyboard showing how widget will help persona 1 and 2

With Widgets, Sora toggles Valet mode and leave the driving instructions without opening the NissanX app

During late night drives, Susan frequently uses Safety mode which enables her to share live information with friends and family.

- Sora (Persona 01)

" I may not find the app and get into it every-time.I need other ways in which the app can interact with me "

" I would rather see how the recommended modes work first and then only think of creating my own "

" I am leaving the Valet Instructions in the cup holder. It would be great if I can add instructions to the car screen via my app when I activate Valet Mode "

- Akio (Persona 04)

" I will be very excited to hear what the vehicle wants to tell me……..I am drawn to smart devices like Alexa and like connecting my home devices to it. "

- Susan Alex (Persona 02)

" Templates with regards to mode will provide me with an useful introduction to the modes and see if I find it beneficial rather than think up my own things "
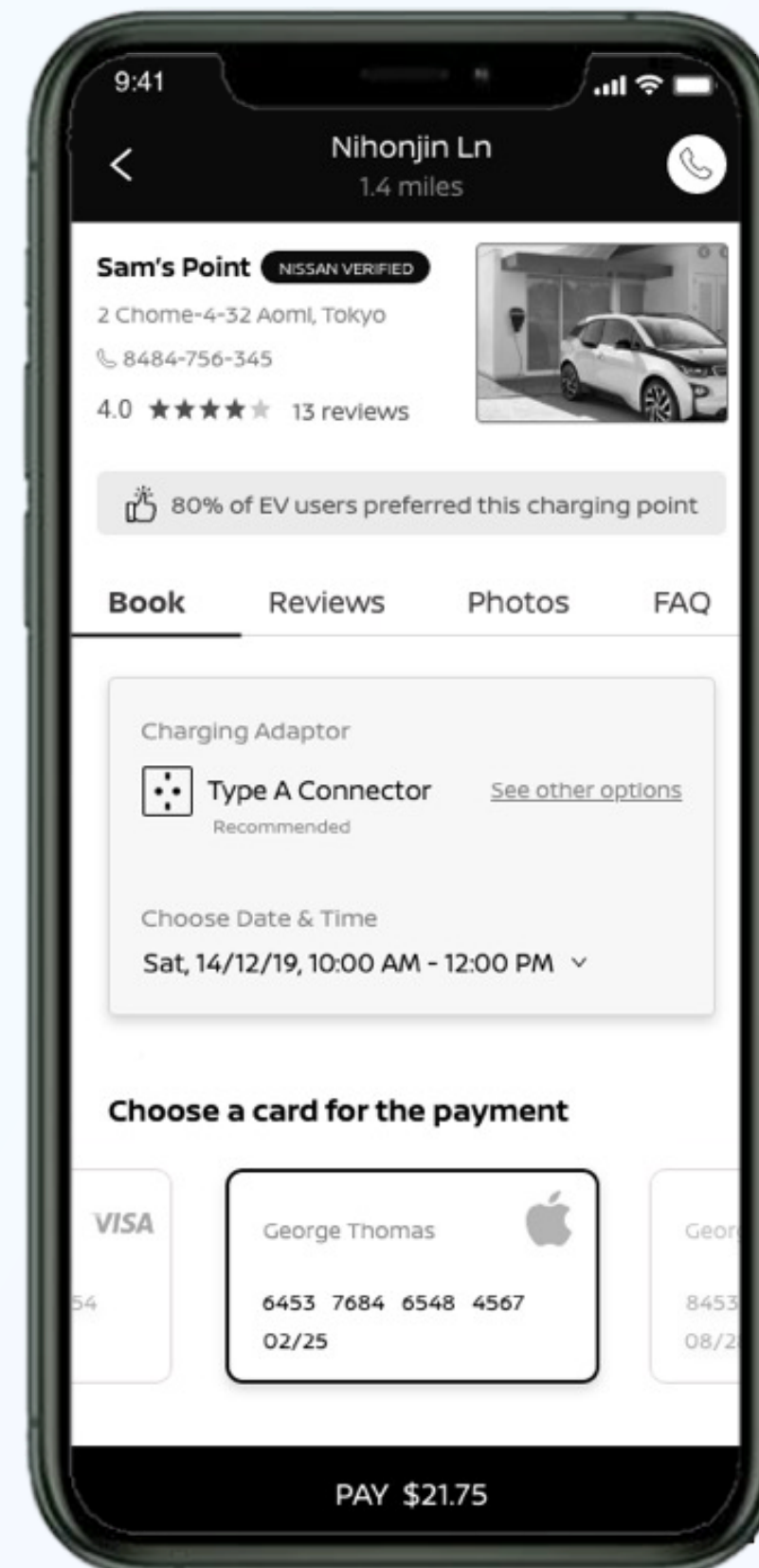
Quick Access & Customisation

Creating an individualized experience that is relevant to and targeted towards a user's needs. Also tied up are the methods to give them the privilege to quick access to information they prefer to have handy
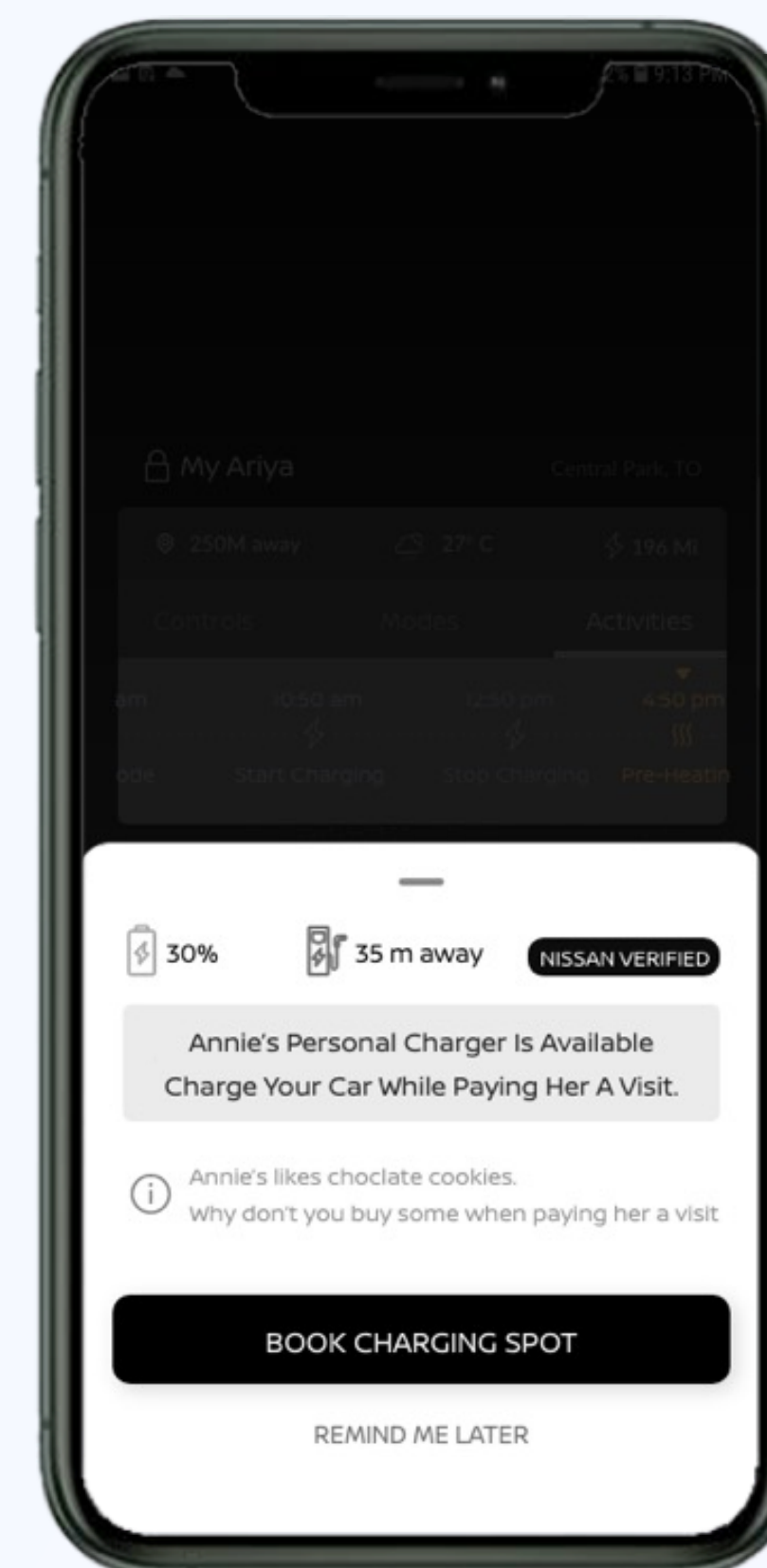
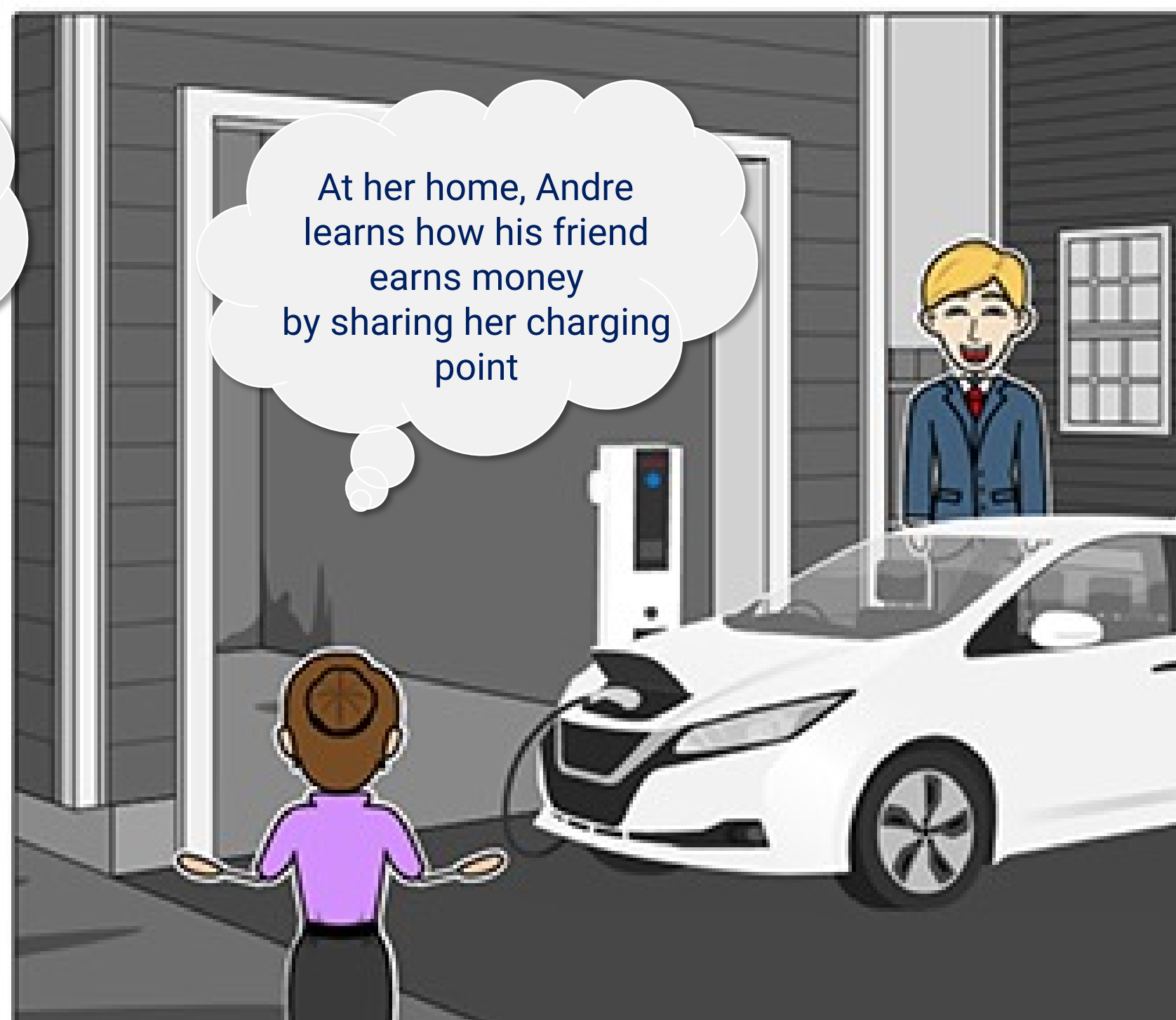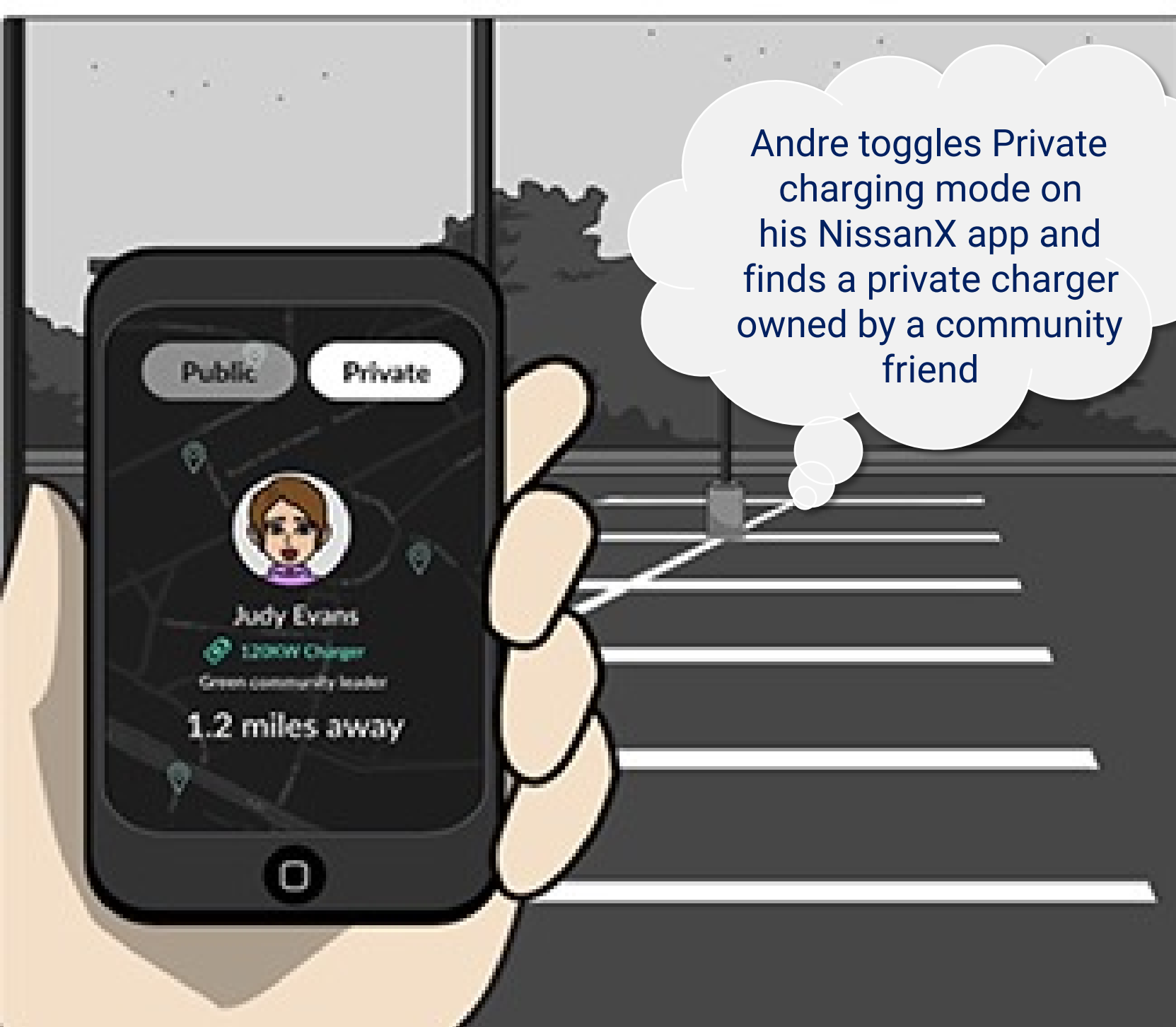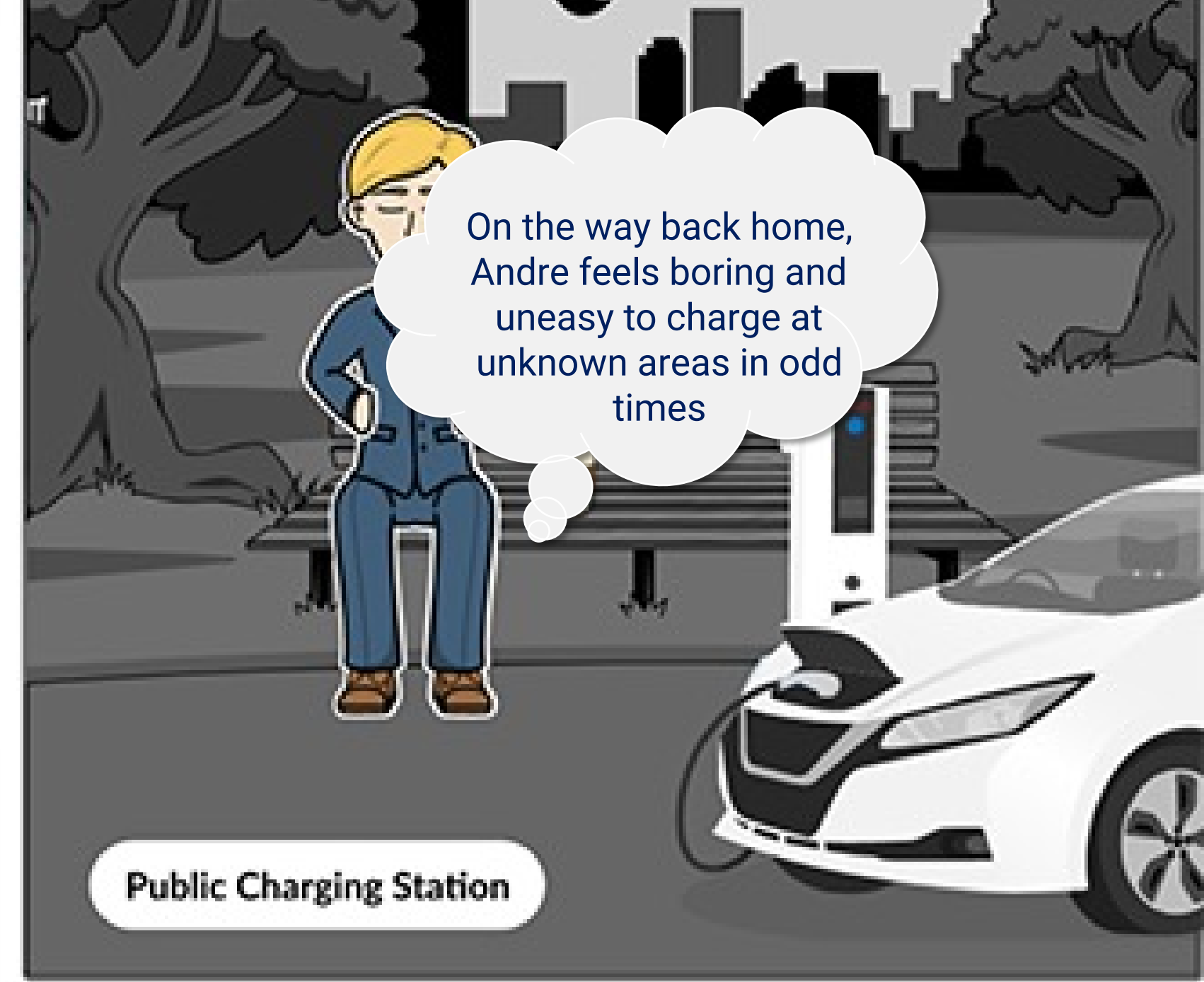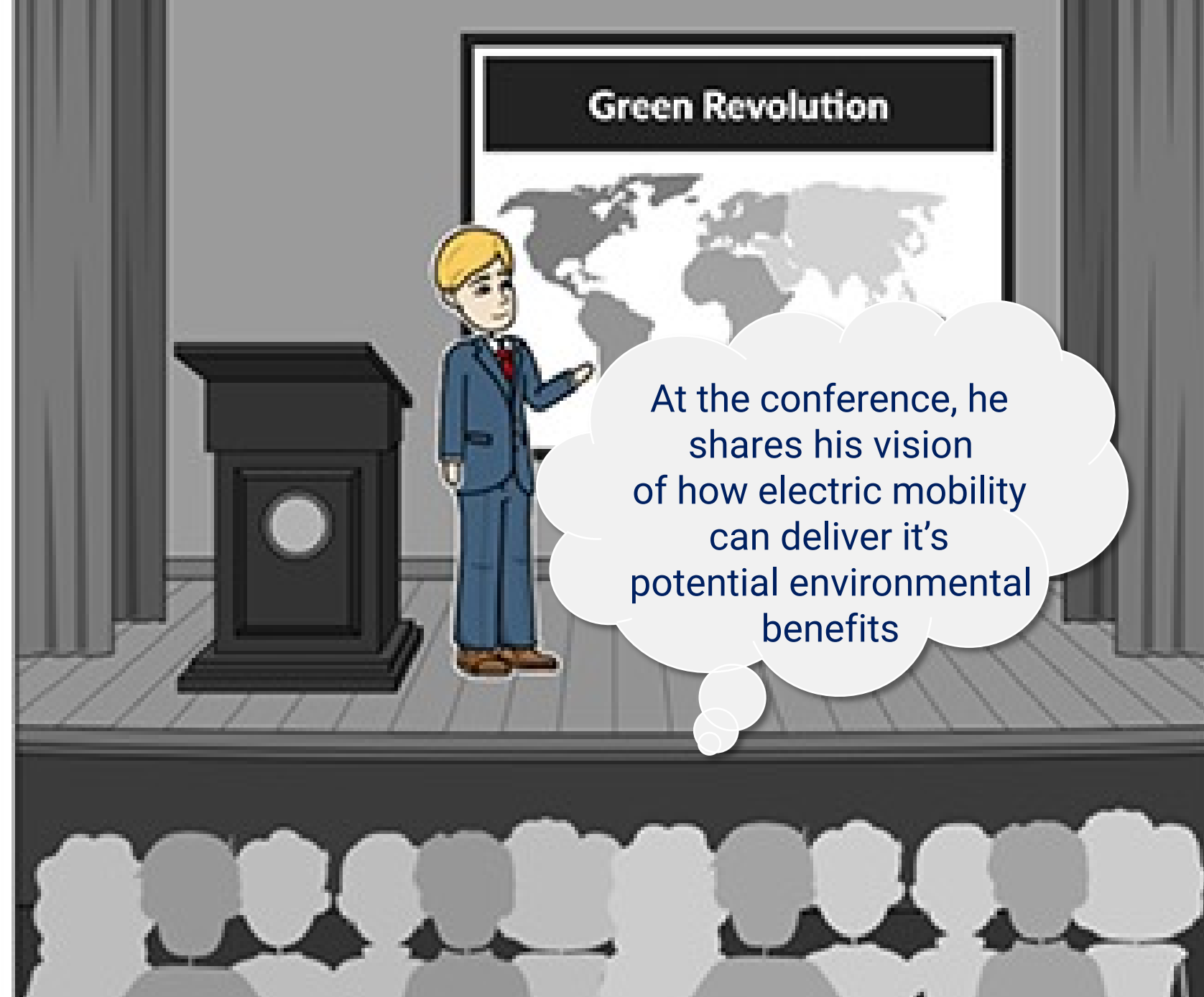# Private Charging - Developed Concepts
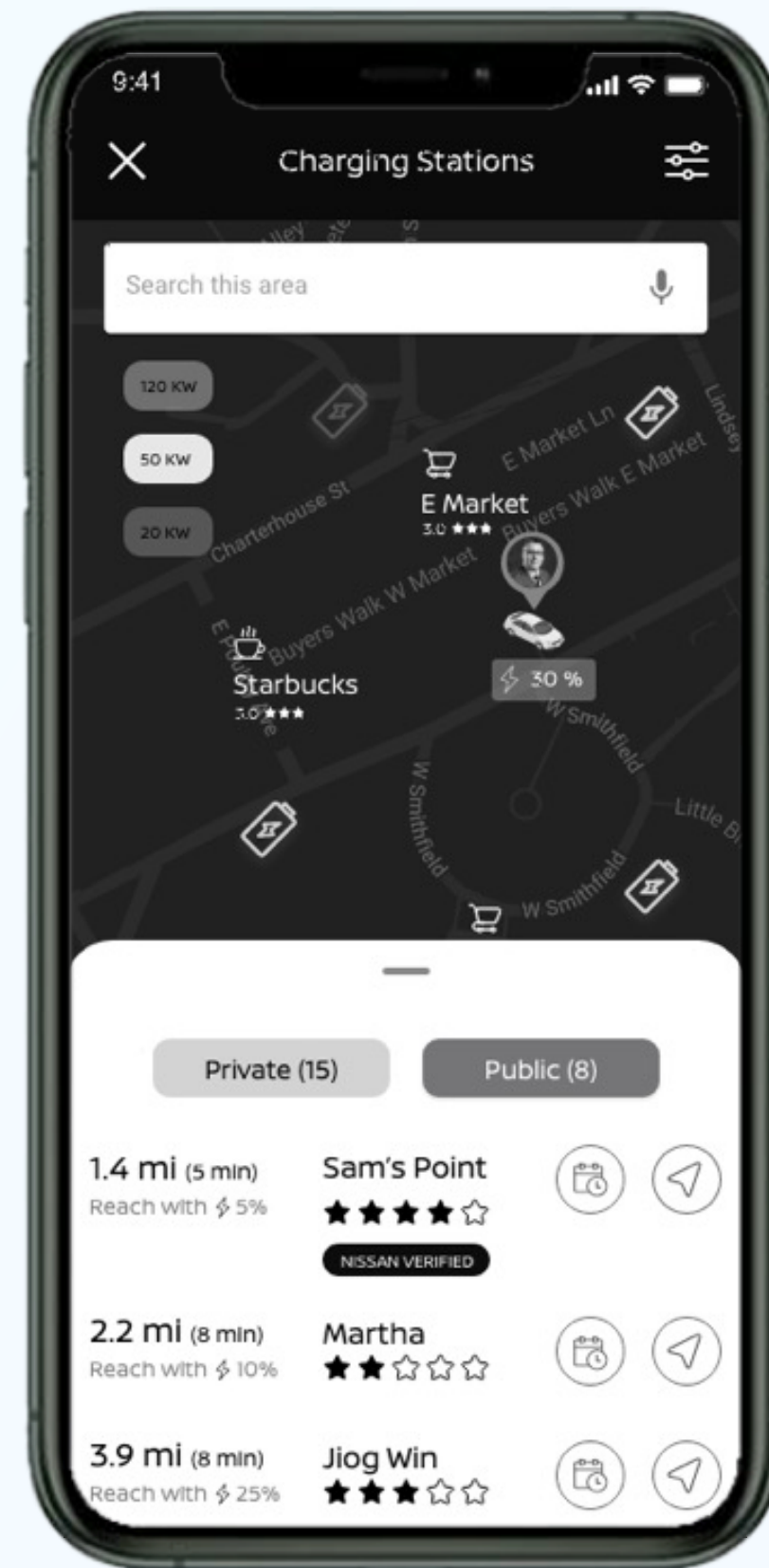
Book charging slots

Charging slots Details

Contextual Alerts

Tackling Range Anxiety

Tackling Range Anxiety

Private Charging

Private charging helps make charging easy, enjoyable, and safe. Nissan verified personal chargers and listings, maintain a smart messaging system, so charging unit owners and customers can communicate with certainty, and manage a trusted platform to collect and transfer payments.

- Reduce charge anxiety
- Increased Connectivity
- Security
- Social Connect
- Economic benefits to Business and Consumers
- Expand Nissan Customer base
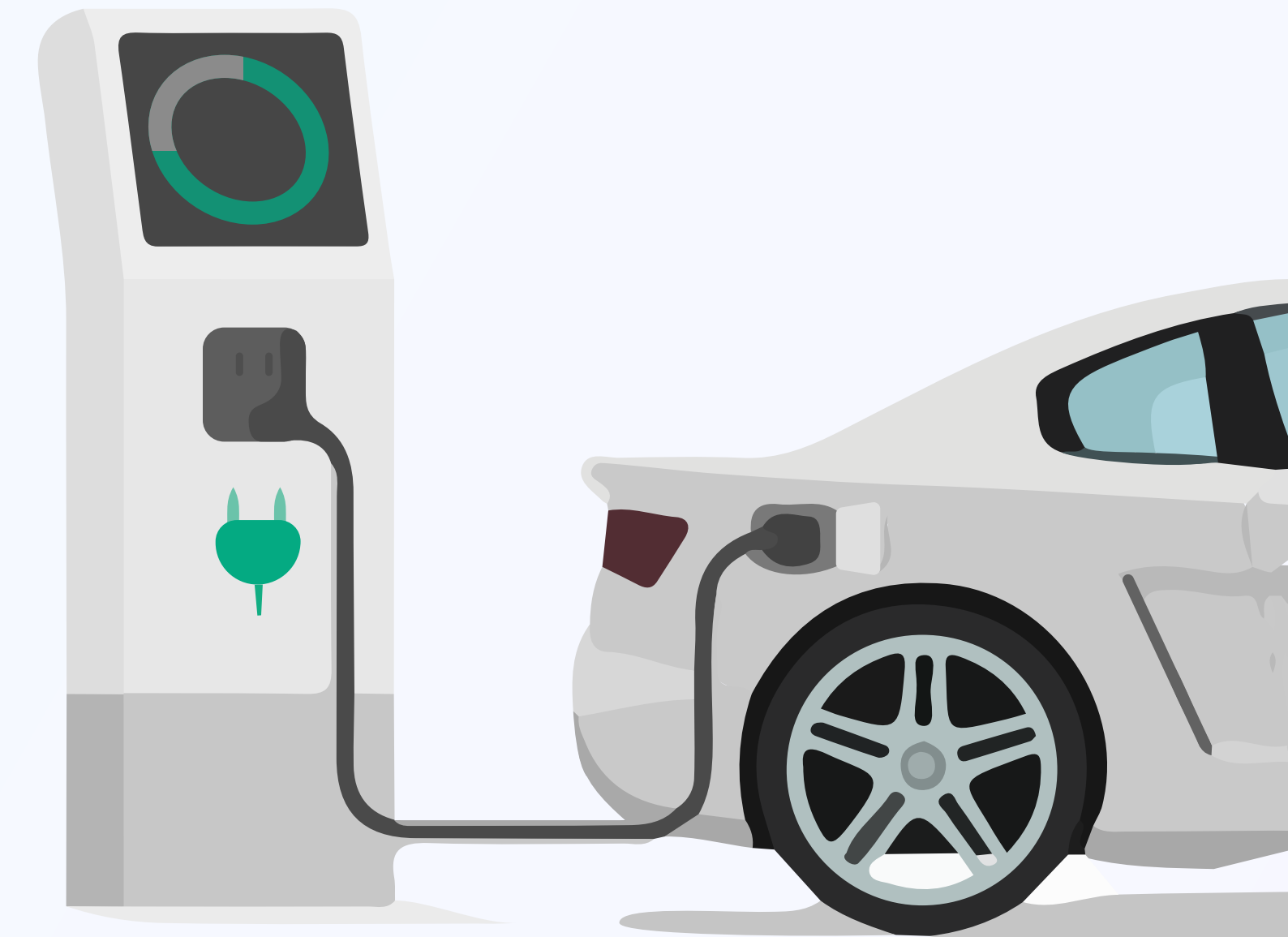
Improvement In App Based On User Testing

Home Screen

The prominence of the charge section in the home screen is increased

Charging Screen

Highlighting nearby attractions and opportunities for the user while the car charges

Tackling Range Anxiety

- Susan Alex (Persona 02)

"Low charge panics and terrifies me, the feeling is similar to what we feel if the phone charge is low when outside and the thought is to take immediate action.It would be nice if the app alerted me proactively and gave me more opportunities for charging"

"Charging and related details are the most important thing for me.May be its got to do with some of my insecurities but that what I want to be highlighted the most"

"If it takes too long to charge I won't be very comfortable sitting inside the vehicle on the road"

- Andre Larson (Persona 03)

"I am one of those people who likes to know the battery level on my vehicle at all times and sometimes even a touch anxious"

- Sora (Persona 01)

"Battery and related details is the most important detail for me.I always want to know the battery levels before I leave home in the morning so that I can plan my day"

Tackling Range Anxiety

Defined as the negative feelings related with the limited range and stronger dependency on charging stations

How To Proceed

Along with iterating the changes from the user testing we also thought on ways to bring in experience level ideas and models to bring out better customer experience and sustainable user acceptance

Tackling Range Anxiety

○ Private Charging

○ Charging Stations

Quick Access & Customisation

○ Widget & Gestures

○ Custom Modes

○ Cross Platforms

Hyper Personnalisation

○ Channel Mix

○ Contextual Alert

Analysis phase

Highlights

The created mobile app was well received in general by the user.The users wanted an expereince upgrades in some areas and improvements in some confusing flows

Key areas of needing further focus

- Battery & charging concerns ranked highest
- Like better integration and access
- Personalisation as tool to regain focus

Good to have

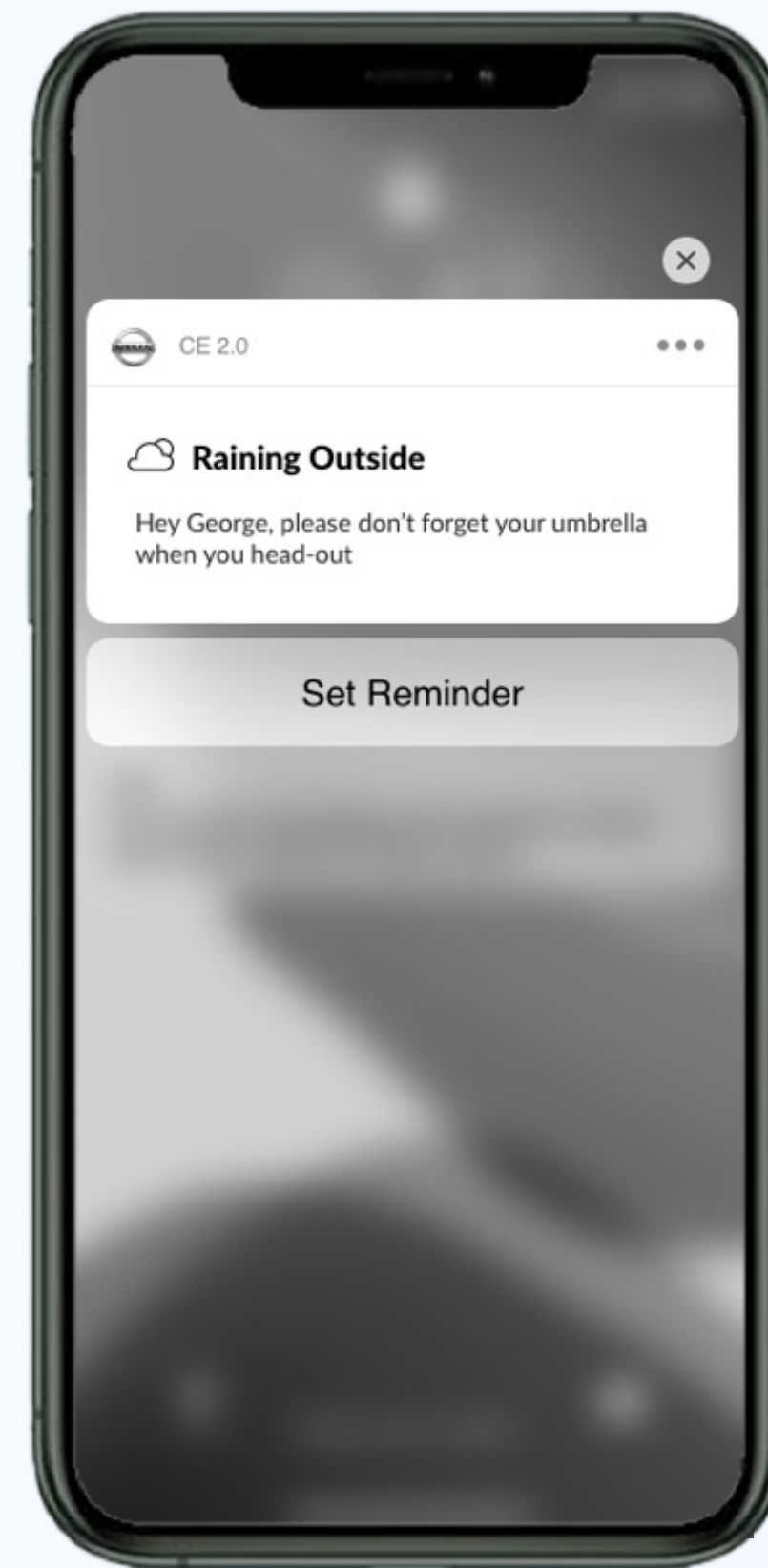- Reenforcement that they made the right Choice by picking an electric vehicle

Flows that troubled users

- Setting up the primary vehicle
- Finding my Vehicle location
- Creating smart modes
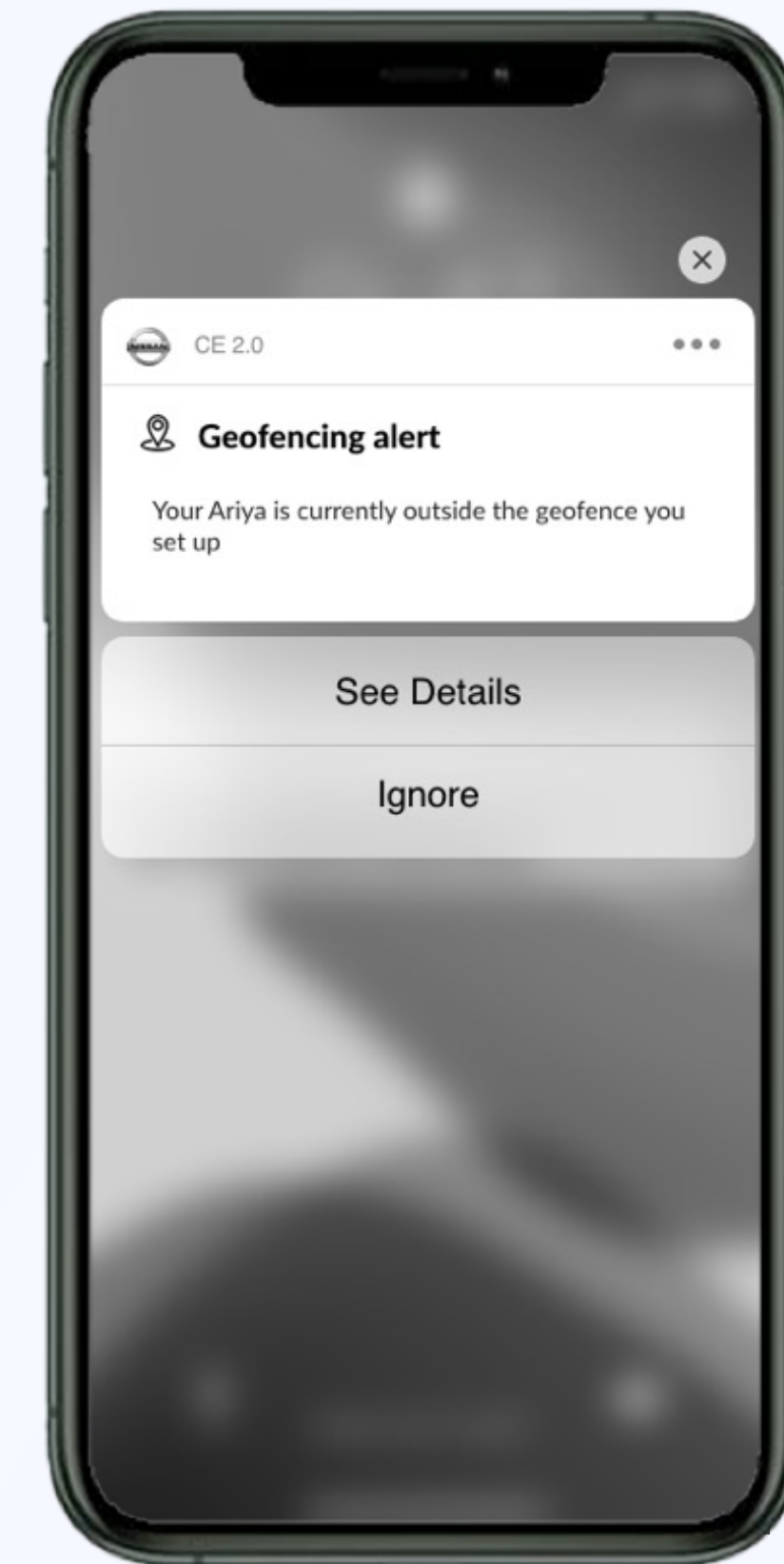
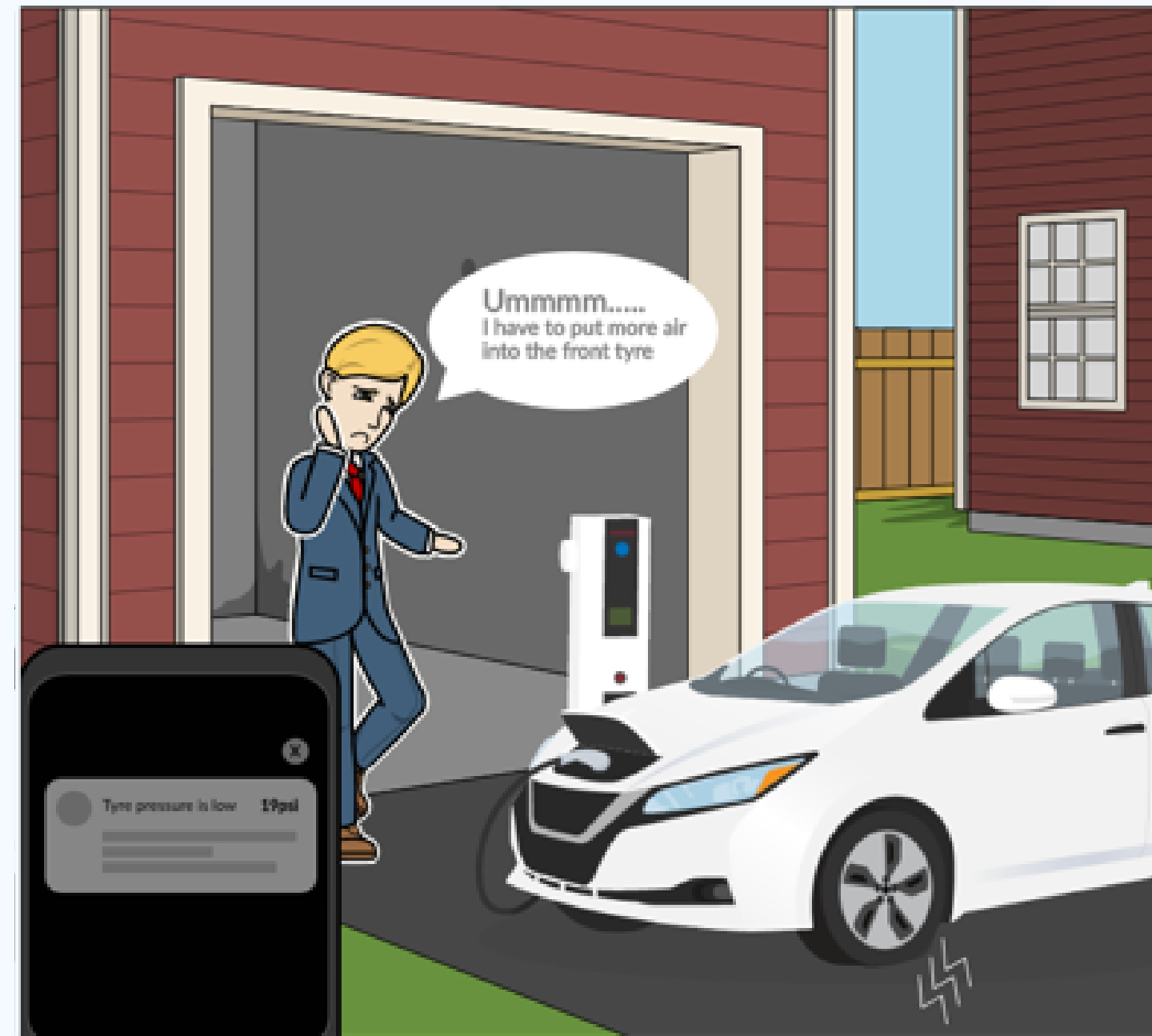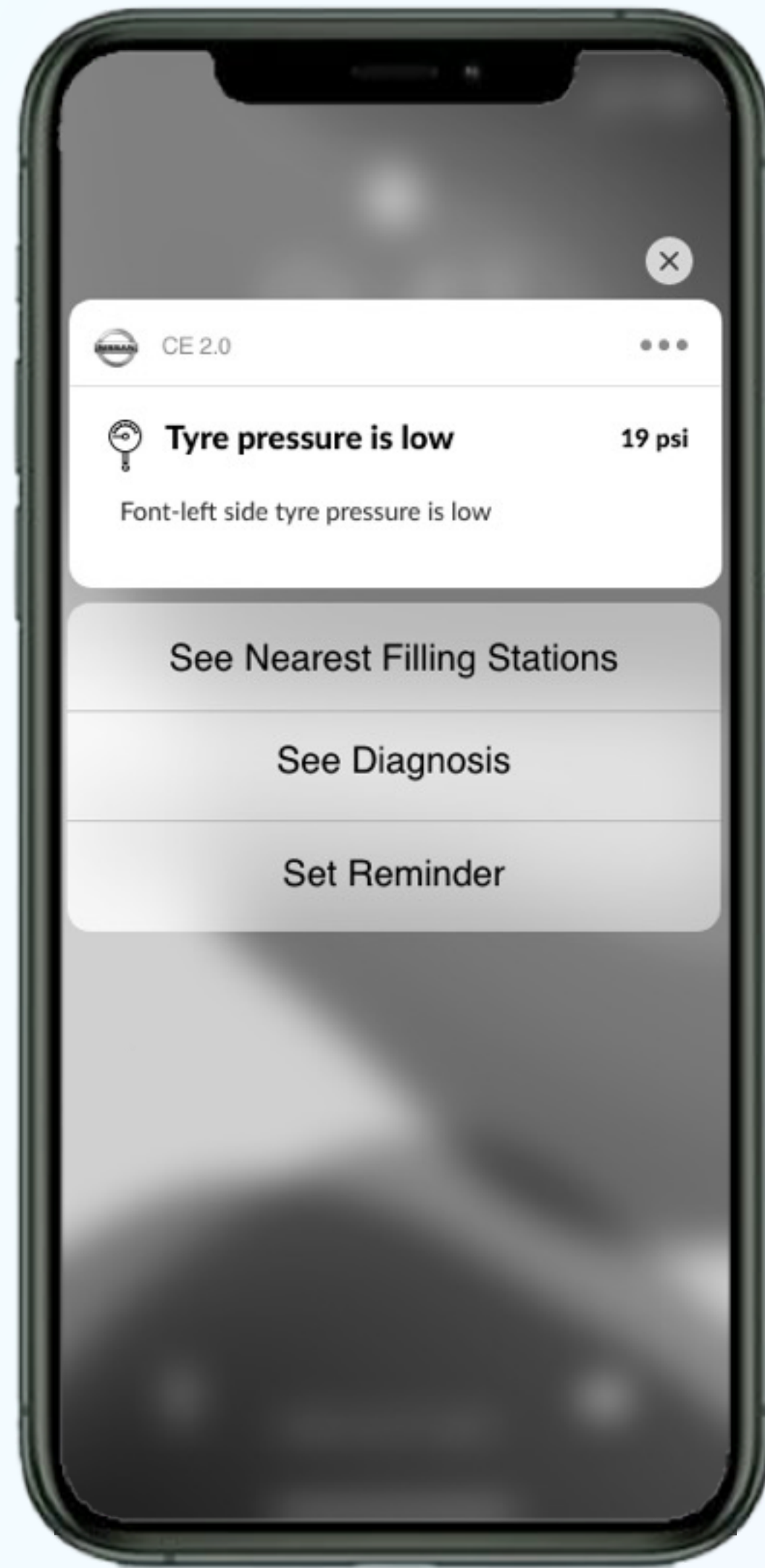# Notification Examples

Lock & Summon

Prediction

Collision Alert

Geofencing

Contextual Notification - Concepts

How Andre Solve the above problem

Andre received a notification just before his departure to office about the low tire pressure on one of the rear tire. John can check and fix a filling station on the way to his office.

Hyper Personnalisation

Contextual Notification

An Instant feedback model on critical actions at the right time and location.

Hyper Personnalisation

- Susan Alex (Persona 02)

" Personalisation should be meaningful rather than gimmicky.It would be great if the car notifies me of low charge or health than me going and checking in the application "

- Andre Larson (Persona 03)

" I am a big fan of these personalised things, whether its climate or personal updates.These are the kind of things that makes me come back to the app "

" I travel a lot both long and short distance alone and any issues with regard to car health needs to be notified so that I can take corrective measures. I hate those nasty surprises. "
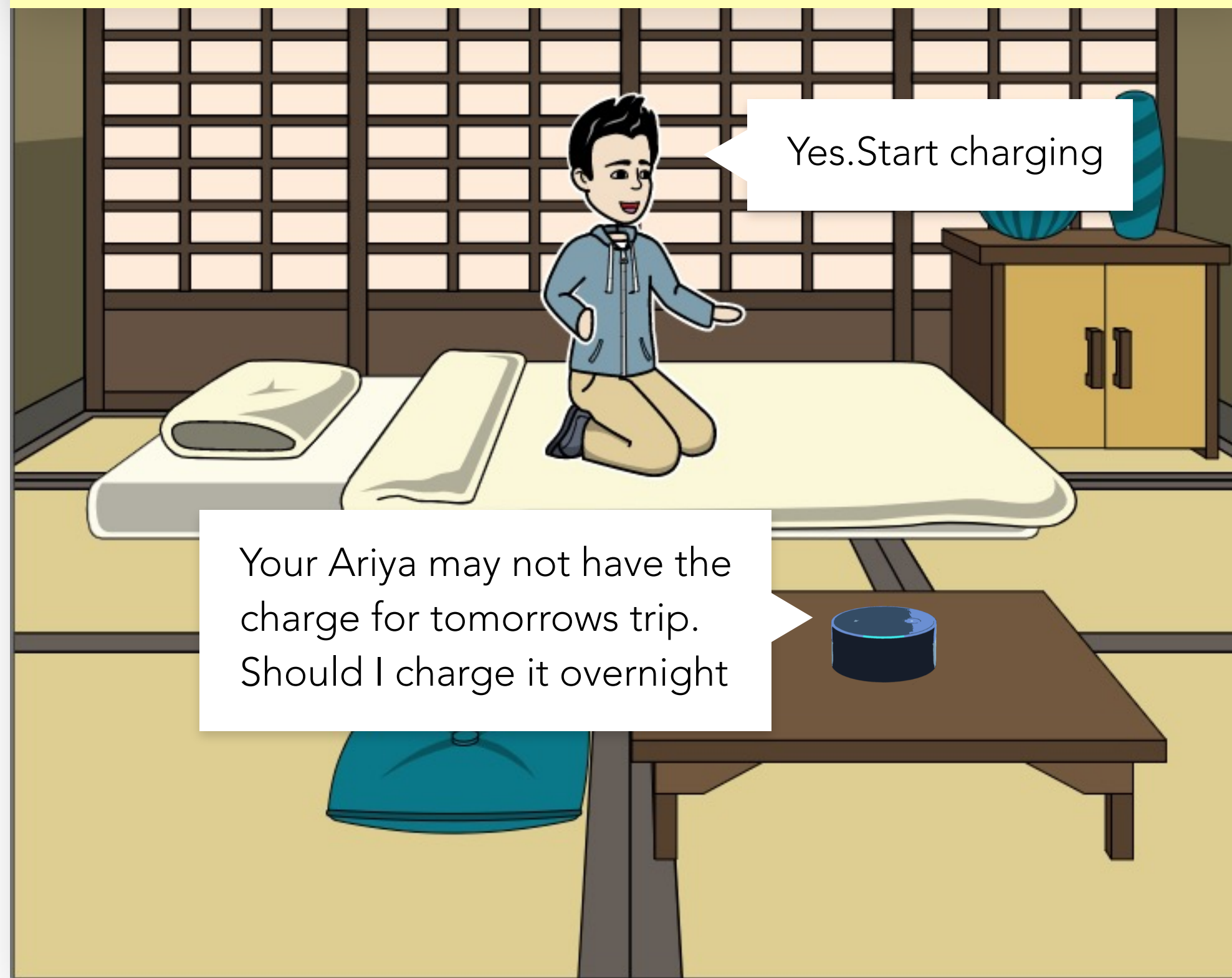
- Sora (Persona 01)

" I wife and me both use this application, so personalisation for me should also include my family as well "

Hyper Personnalisation

Hyper Personnalisation

User can utilize different pre-loaded modes to quickly complete a task. They can also create different modes as per their requirements

Voice - UI - Developed Concepts

Quick Access & Customisation

Wearables - Developed Concepts

Sora gets a notification while he is at the gym that the battery is low and will have to leave early so that he can charge on the way.
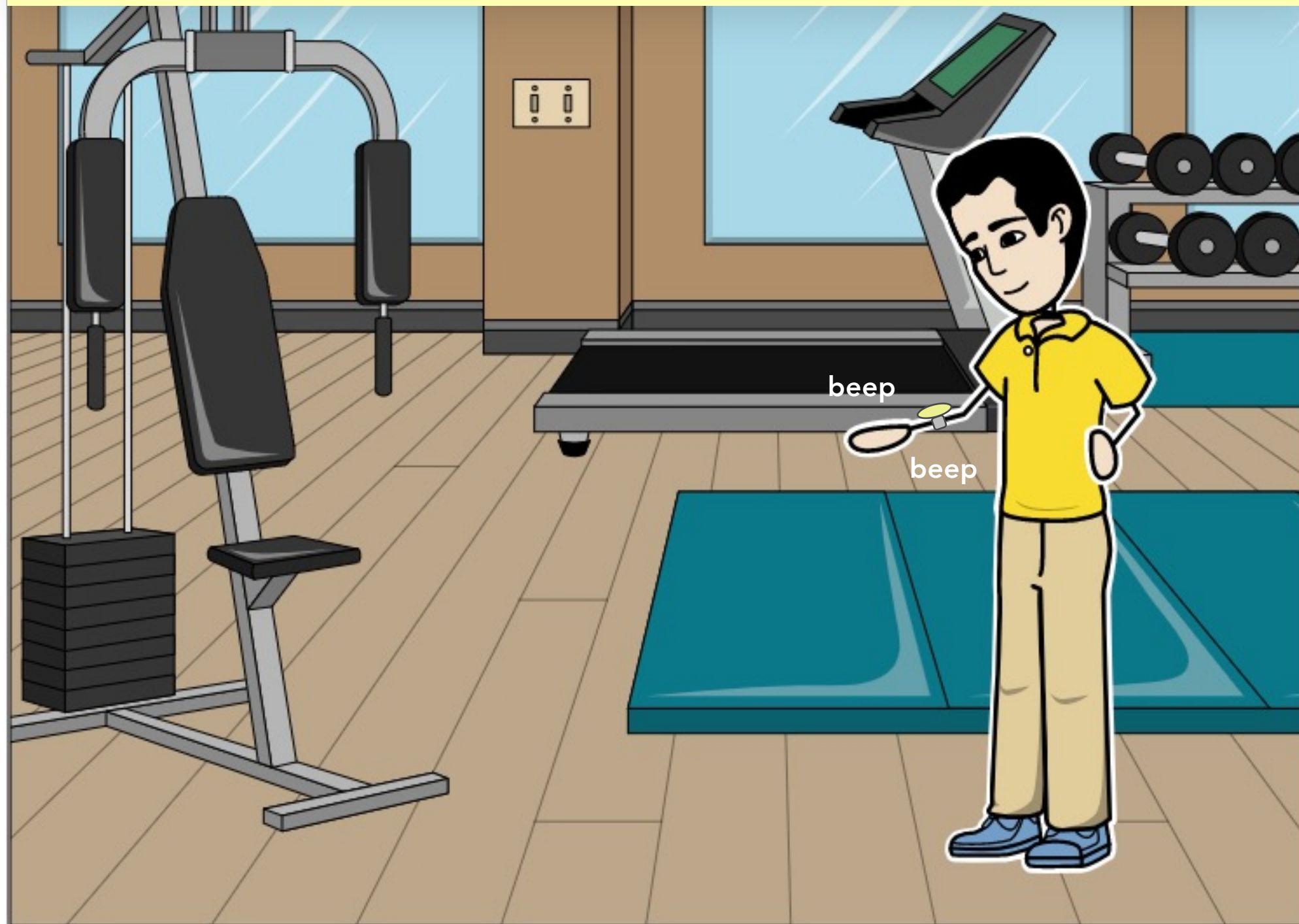
App Landing

Low Battery
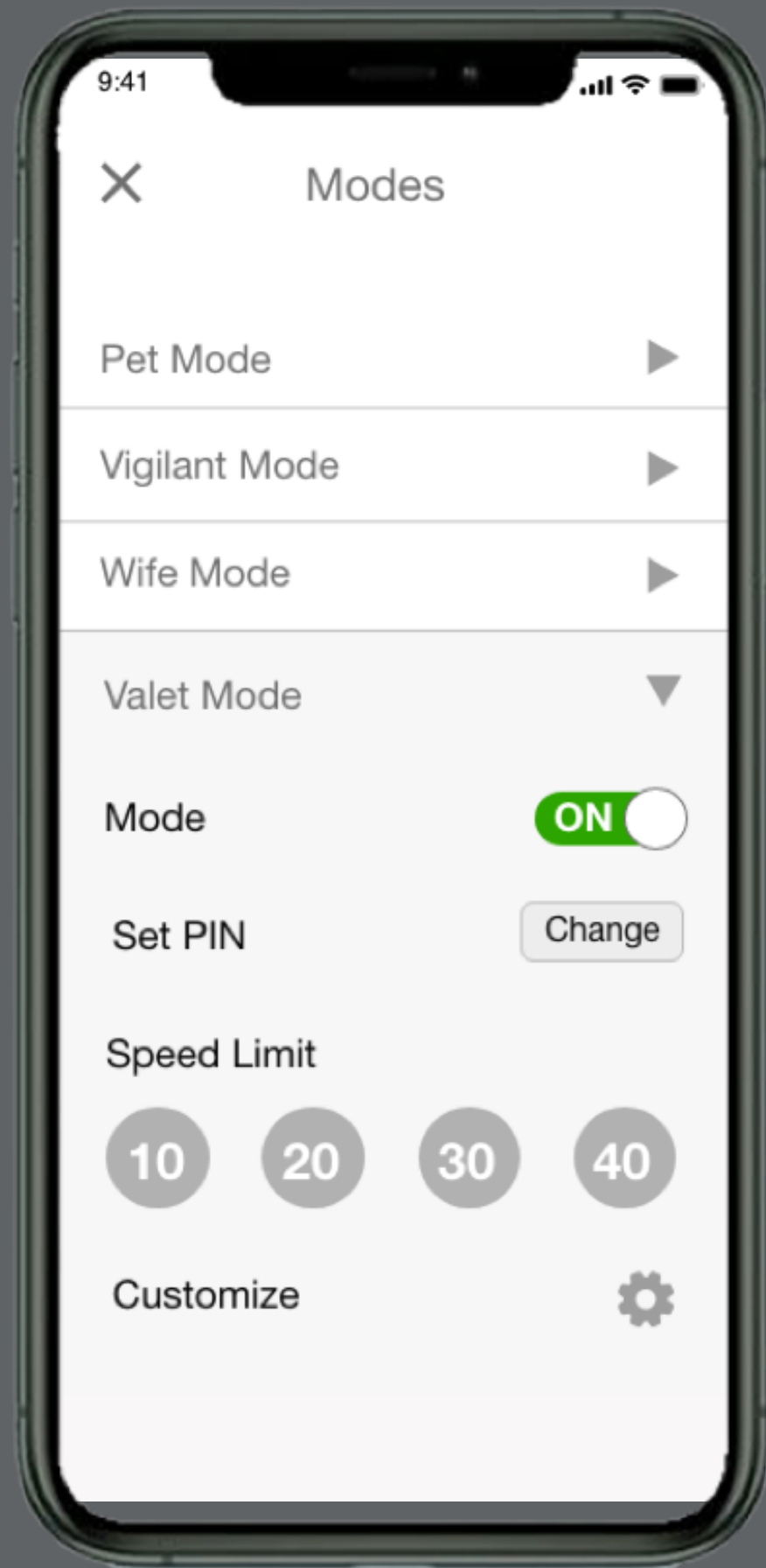
Quick Access & Customisation

Multi Device Integration

Virtual assistants & wearables allows for effortless user interaction with the application.

Customizing Default Modes - Valet Mode

Default Modes

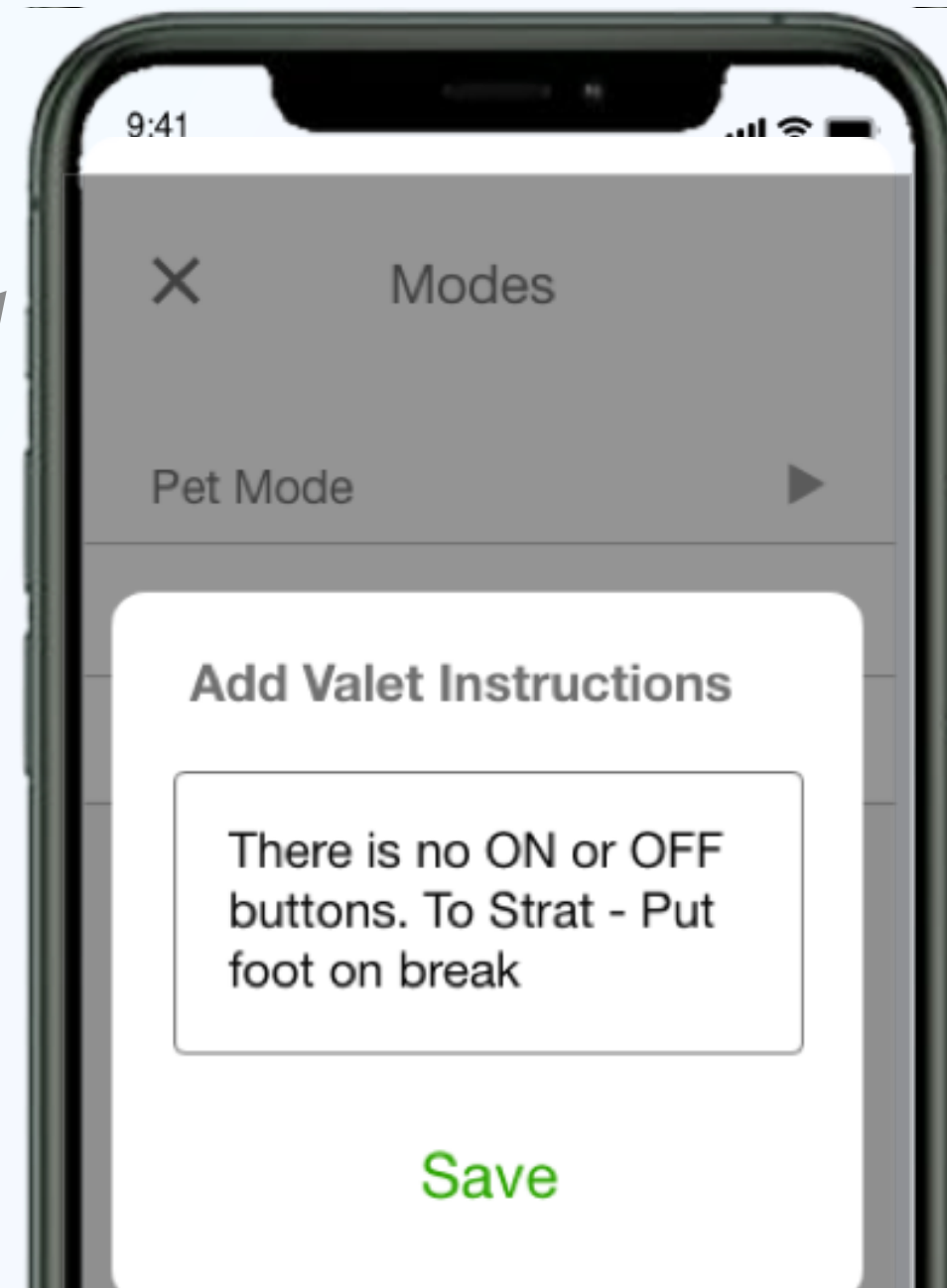There are number of default modes will available for a quick & predefined actions.

> " I am leaving the Valet Instructions in the cup holder. It would be great if I can add instructions to the car screen via my app when I activate Valet Mode. "

- Sora Nagato(Persona 01)

✅ Opportunity

When the Valet mode is activated, user can add custom instructions through mobile app which will be reflected in the car dashboard

Modes (app screen)

9:41

✕ Modes

Pet Mode ▶

Vigilant Mode ▶

Wife Mode ▶

Valet Mode ▼

Mode ON

Set PIN Change

Speed Limit

10 20 30 40

Customize ⚙

Second screen

9:41

✕ Modes

Pet Mode ▶

Add Valet Instructions

There is no ON or OFF buttons. To Strat - Put foot on break

Save

There is no ON or OFF Buttons. To Start – Put foot on break.

Quick Access & Customisation

Custom Modes

User can utilize different pre-loaded modes to quickly complete a task. They can also create different modes as per their requirements

Quick Access & Customisation

Channel Mix

What if we integrate different passengers' interests into a private broadcast
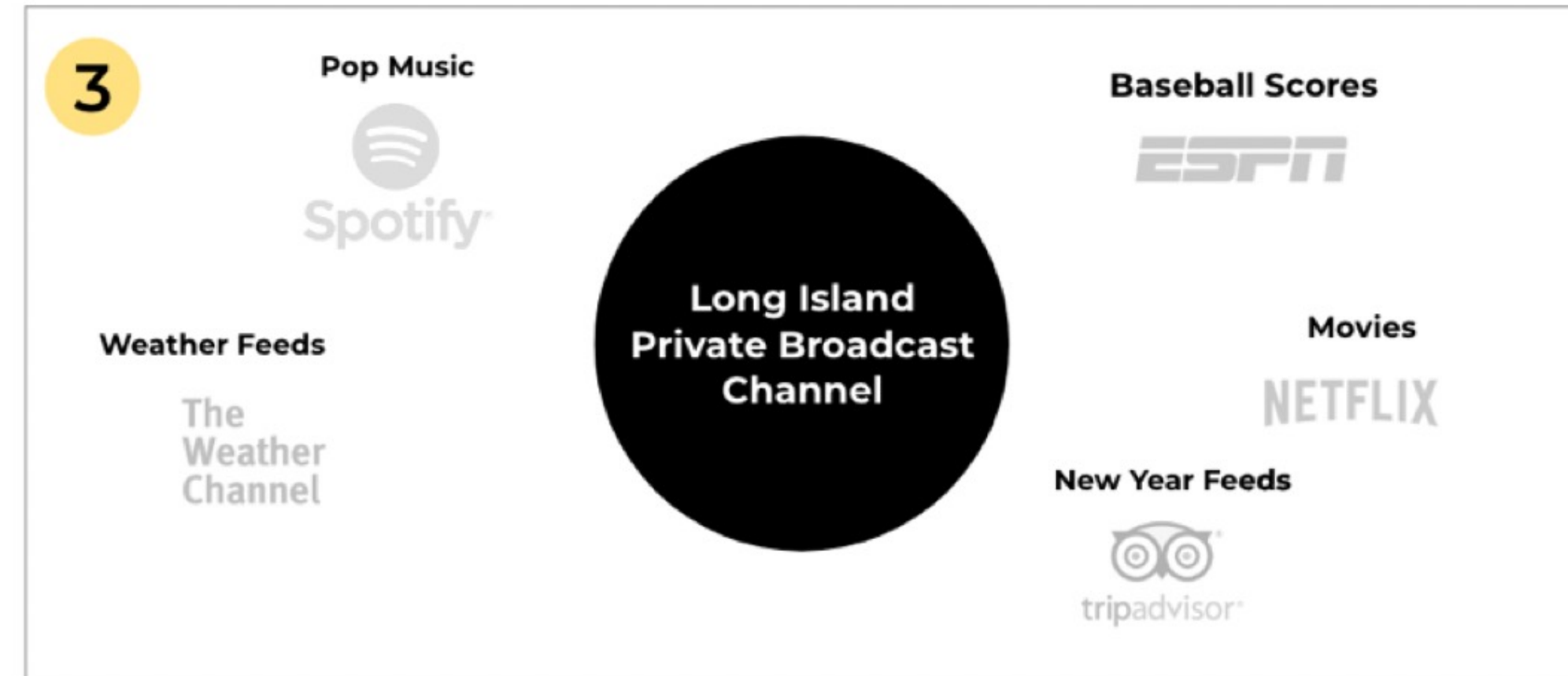
Hyper Personnalisation

Channel Mix - Developed Concepts

Riya and Ben, a lovely couple going to Long Island in their Nissan Ariya to celebrate New years eve

Being frequent riders, Nissan AI learns that Riya is into pop music and Ben is an adherent baseball fan.

AI integrates this knowledge to create a private broadcast channel for this trip with content and programs tailor made from Riya and Ben's preferences.

When the ride starts, the AI personalises the IVI with the private broadcast content. It starts off playing the track they both love

After each track, the channel keeps Ben engaged giving a quick flash alert of the current match situation

IVI gives them frequent weather updates & also guides them to never-to-be-missed new year events and activities

Towards the end of the journey, their excitement just started to flourish

Results & Impacts

The concepts that were created for this inception phase were decided to consider and included in the future design release.
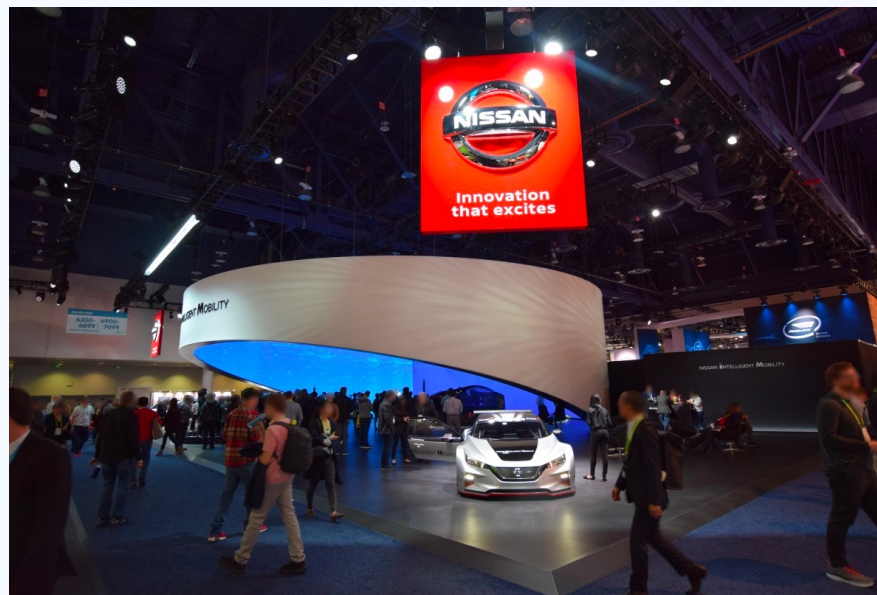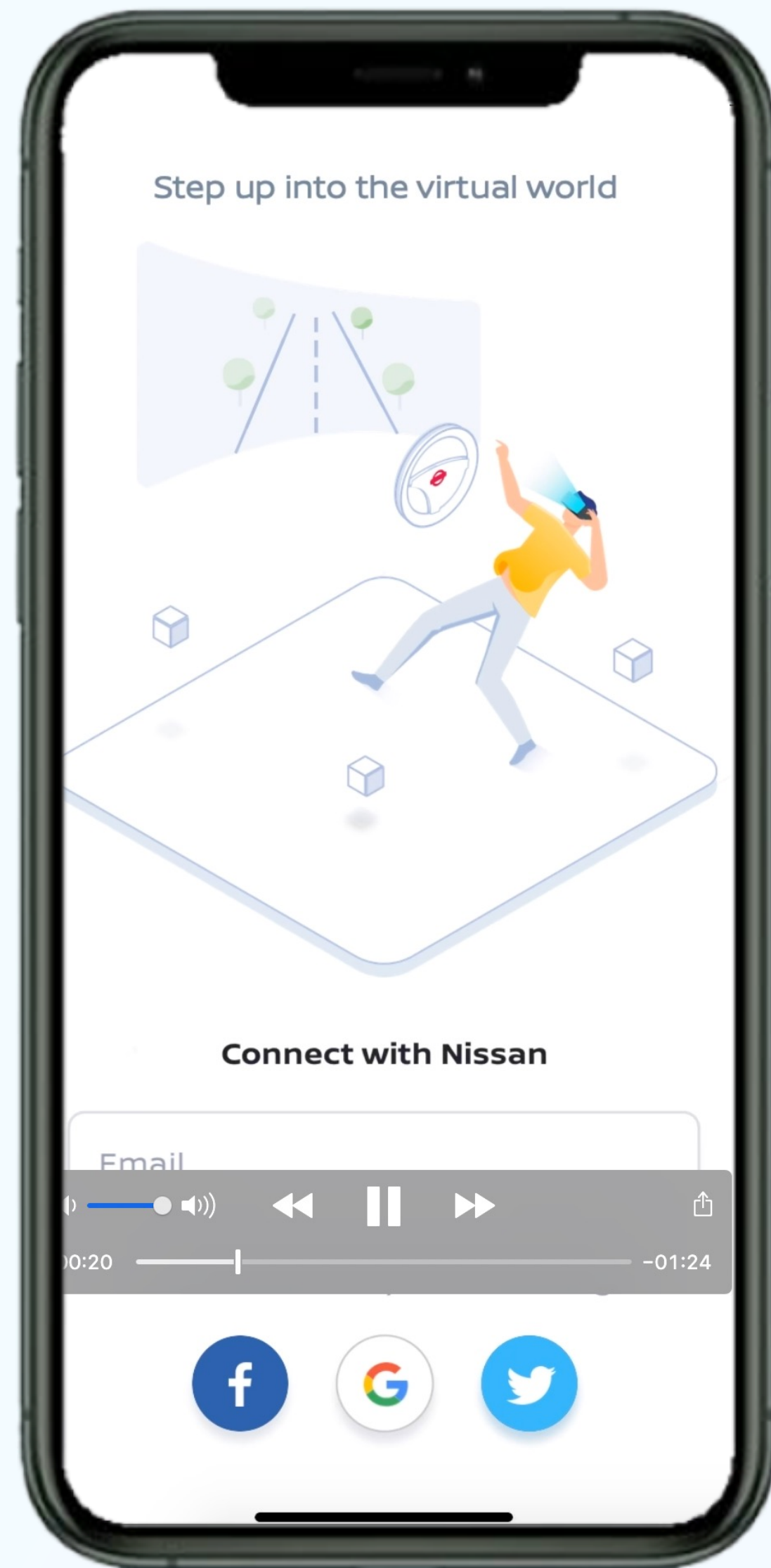
Our team managed to demo this concept with Nissan higher management and stakeholders

We got overwhelmed response when presented this concept at 2019 CES in US

Thank You for Scrolling!