Concept idea & Lo-Fi Prototype

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Problem Statement

Young People in Europe need a way **to travel anytime to anywhere** with flexibility and in at affordable way because they **value their independence and privacy and wish to connect to others conveniently.**

Research

We wanted to understand what mobility issues young people faced so we conducted a survey. We found that people who owned their own transport had the highest ratings for their mobility experience and those who took public transport had rated their transport experience as average.

Through surveys, we understood that there are high possible changes expected in life styles, locations and work related transitions for the majority of the young population.
We also gathered that there were painpoints of inconvenience, heavy unreliance on public transportation systems and problems of crowdedness for those who took public transport.
On the contrary, people who owned their own transport reported feelings of autonomy and high satisfaction.

Next we conducted 5 interviews and 1 contextual inquiry. Then with affinity mapping we learned that young people value their need of independence and individuality in all aspects of their daily lives, which makes owning transportation vehicles extremely important to them.

Meet **Maria,**

Aged 25, Student
Single without a partner
Takes public transport
Rates travel experience at 2.8/5

She is currently a Masters student studying in The Netherlands, which is not her home country.

During Covid, she was unable to return home and due to loneliness, went through feelings of fear and depression.

Her hobbies are travelling, listening to music and sharing her life with her friends.

> I'm so reliant on public transportation and its schedules. I wish I had a choice.

Needs

- Low-cost transport
- Efficient and reliable transportation
- Safety

Goals/ Aspirations

- To have choices in transportation
- To have her own vehicle at some point in life

Dislikes

- Relying on a schedule
- Service disruptions
- Crowds

Likes

- Independence
- Freedom
- Convenience

Maria
Masters Student | 25 years

Journey goal: *Arrive at destinations at anytime, anywhere safely and at low-cost.*

Journey Step	I choose the housing location based on the mobility facility	Look for options to commute, so that i can meet my friends and family on a regular basis	Finds a housing which is affordable, however a bit far to reach public transport connectivity.	Start walk / bike for 10-15 mins on an average and reach public transportation	Public transport is not always reliable, there is a variation with the schedules.
Feeling	😀	🤔	🙁	🙁	😰
Thought	It's a critical part of life, and something to think about while making any life decisions.	I do not have resources such as license to drive a car, dislike biking. Hence public transport is the only viable option	I can walk or bike a reasonable distance and take the public transport to reach point B	My travel time has almost doubled due to added touch points to reach from point A to point B	Many a time I end up having a 3-4 times of the travel time with many touch points to reach from point A to point B
Improvement opportunities *What measures should be taken in this step from the service side?*	• Improved Infrastructure. • more accessible to remote locations	• Point A to Point B private mobility options. • Autonomous vehicles	• Last mile infrastructure • improved public transport infrastructure	• Faster mode of reaching Point A to Point B	• App alerts for public transportation. • Replan quickly and alternative options, public or private.

Value Proposition

Value Proposition 1

Giving users a sense of control

Value Proposition 2

Allow for meaningful connection to people

Value Proposition 3

Convenience and reliable transport

Idea

On-demand Booking System

Customisable Vehicle Configurations

Personalised travel Setting

AI-Enabled Smart Routing

A Subscriber's Journey

Booking — On-demand Booking System
- App-based
- Smartwatch booking

Hailing — Customisable Vehicle Configurations
- App-based Profile Customisations

Approach
- Light, sound signals
- App-based
- Syncs with Smartwatch

Boarding
- App-based
- AI Chat Assistant

Travelling — Personalised travel Setting
- App-based
- AI Chat Assistant
- Phone based Augmented Reality

Emergency
- Designated emergency button and human operator access
- App-based
- AI Chat Assistant
- Phone based Augmented Reality

Arrival
- LCD screen
- App-based
- AI Chat Assistant

Payment — Personalised travel Setting
- App-based
- AI Chat Assistant

Exit — AI-Enabled Smart Routing
- Light, sound signals
- App-based
- AI Chat Assistant

Legend:
- Also available on partner platform / app
- Related to AV manufacturer

Human Factors Analysis

On-demand Booking System
Booking
- App-based
- Smartwatch booking
- **Respect Familiarity**
- Foster Perception

Customisable Vehicle Configurations
Hailing
- App-based Profile Customisations
- Reduce Cognitive Load

Approach
- App-based
- Syncs with Smartwatch
- **Respect Familiarity**
- Foster Perception

Light, sound signals

Boarding
- App-based
- AI Chat Assistant
- **Sense of Control**
- Foster Perception

Personalised travel Setting
Travelling
- App-based
- AI Chat Assistant
- Phone based Augmented Reality

Sense of Control
- Reduce Cognitive Load
- Respect Familiarity
- Foster Perception

Emergency
Designated emergency button and human operator access
- App-based
- AI Chat Assistant
- Phone based Augmented Reality
- **Sense of Control**
- Reduce Cognitive Load
- Respect Familiarity
- Foster Perception

Arrival
LCD screen
- App-based
- AI Chat Assistant
- **Respect Familiarity**
- Foster Perception
- Reduce Cognitive Load

Payment
Personalised travel Setting
- App-based
- AI Chat Assistant
- **Hook Effect**
- Spur desired behaviour / Variable Rewards

Exit
AI-Enabled Smart Routing
Light, sound signals
- App-based
- AI Chat Assistant
- Priming

Legend:
- Also available on partner platform / app
- Related to AV manufacturer

Voice Chat Design - Product Brand

On-demand Booking System

Customisable Vehicle Configurations
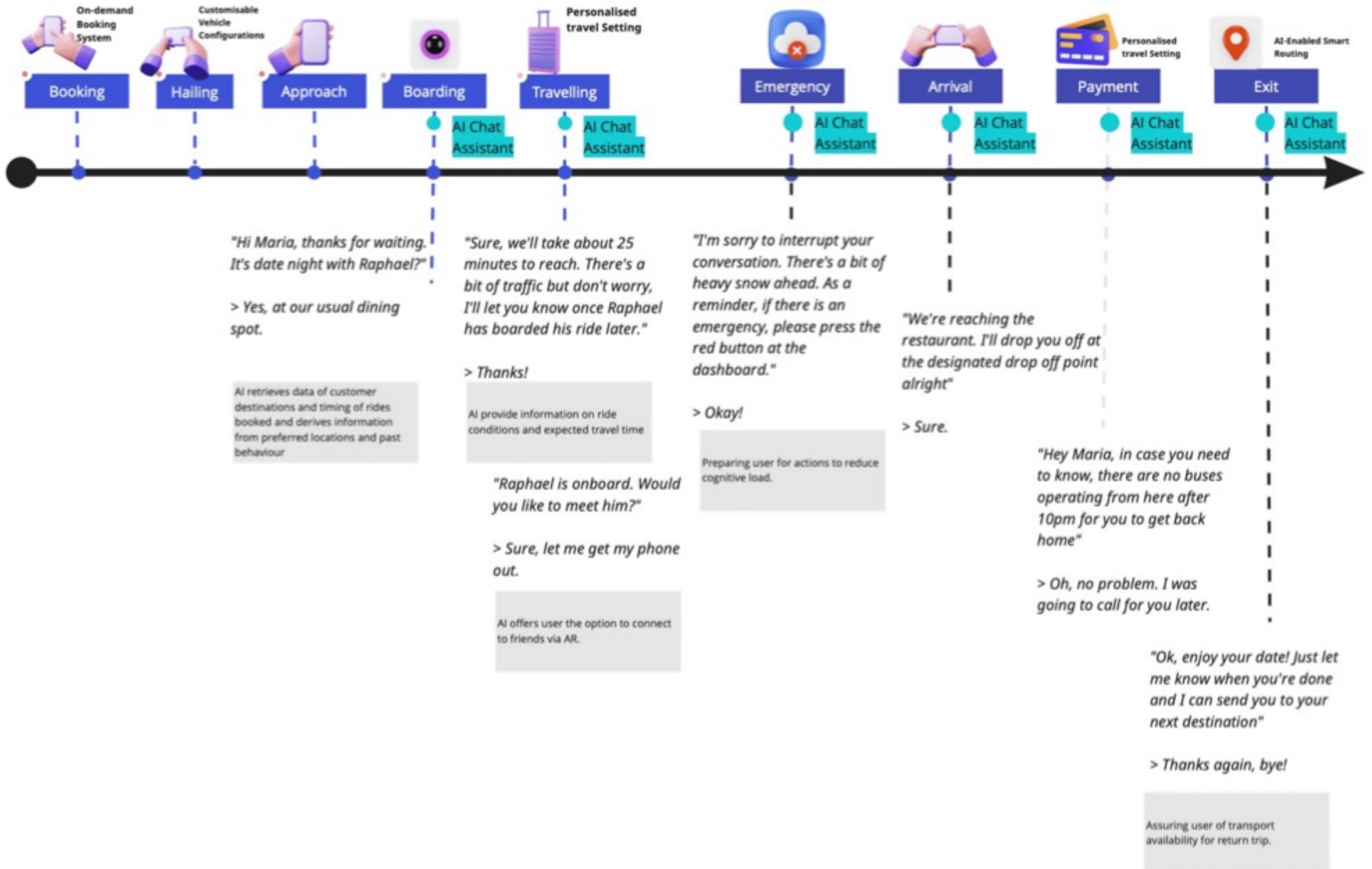
Personalised travel Setting

Personalised travel Setting

AI-Enabled Smart Routing

Booking	Hailing	Approach	Boarding	Travelling	Emergency	Arrival	Payment	Exit

AI Chat Assistant (Boarding)

AI Chat Assistant (Travelling)

AI Chat Assistant (Emergency)

AI Chat Assistant (Arrival)

AI Chat Assistant (Payment)

AI Chat Assistant (Exit)

Approach:
"Hi Maria, thanks for waiting. It's date night with Raphael?"

> Yes, at our usual dining spot.

AI retrieves data of customer destinations and timing of rides booked and derives information from preferred locations and past behaviour

Boarding:
"Sure, we'll take about 25 minutes to reach. There's a bit of traffic but don't worry, I'll let you know once Raphael has boarded his ride later."

> Thanks!

AI provide information on ride conditions and expected travel time

"Raphael is onboard. Would you like to meet him?"

> Sure, let me get my phone out.

AI offers user the option to connect to friends via AR.

Emergency:
"I'm sorry to interrupt your conversation. There's a bit of heavy snow ahead. As a reminder, if there is an emergency, please press the red button at the dashboard."

> Okay!

Preparing user for actions to reduce cognitive load.

Arrival:
"We're reaching the restaurant. I'll drop you off at the designated drop off point alright"

> Sure.

Payment:
"Hey Maria, in case you need to know, there are no buses operating from here after 10pm for you to get back home"

> Oh, no problem. I was going to call for you later.

Exit:
"Ok, enjoy your date! Just let me know when you're done and I can send you to your next destination"

> Thanks again, bye!

Assuring user of transport availability for return trip.

Exercises

We asked users to organise a series of labelled cards and sort them into groups that they think are appropriate.

We also gave to 2 participants a set of components and asked to sort them into a dashboard screen that they would like to see in such a product.

Objective

The card sort was conducted to understand how users might navigate our app this will help to shape the information architecture for the app.

Participants

There were 10 participants recruited for the exercise. All 10 participants completed the card sorting exercise.

Methodology

There were 35 cards and the participants organised the cards into categories that they would expect to find on an app providing ride subscriptions. They then labeled each category. The cards were randomised for each participant.

Analysis

Based on the exercise, these are our key findings:

- Gen Z personas are similar in approaching the process.
    - 1. They think about broad values
    - 2. Understand and get information
    - 3. Are slower to commit to payment as they do so after understanding the product value
- Gen Z thought processes are clear and straightforward.
- Gen Z keenly recognise what 'Extras' are and place them as after-thoughts if they wish to at all engage with it.
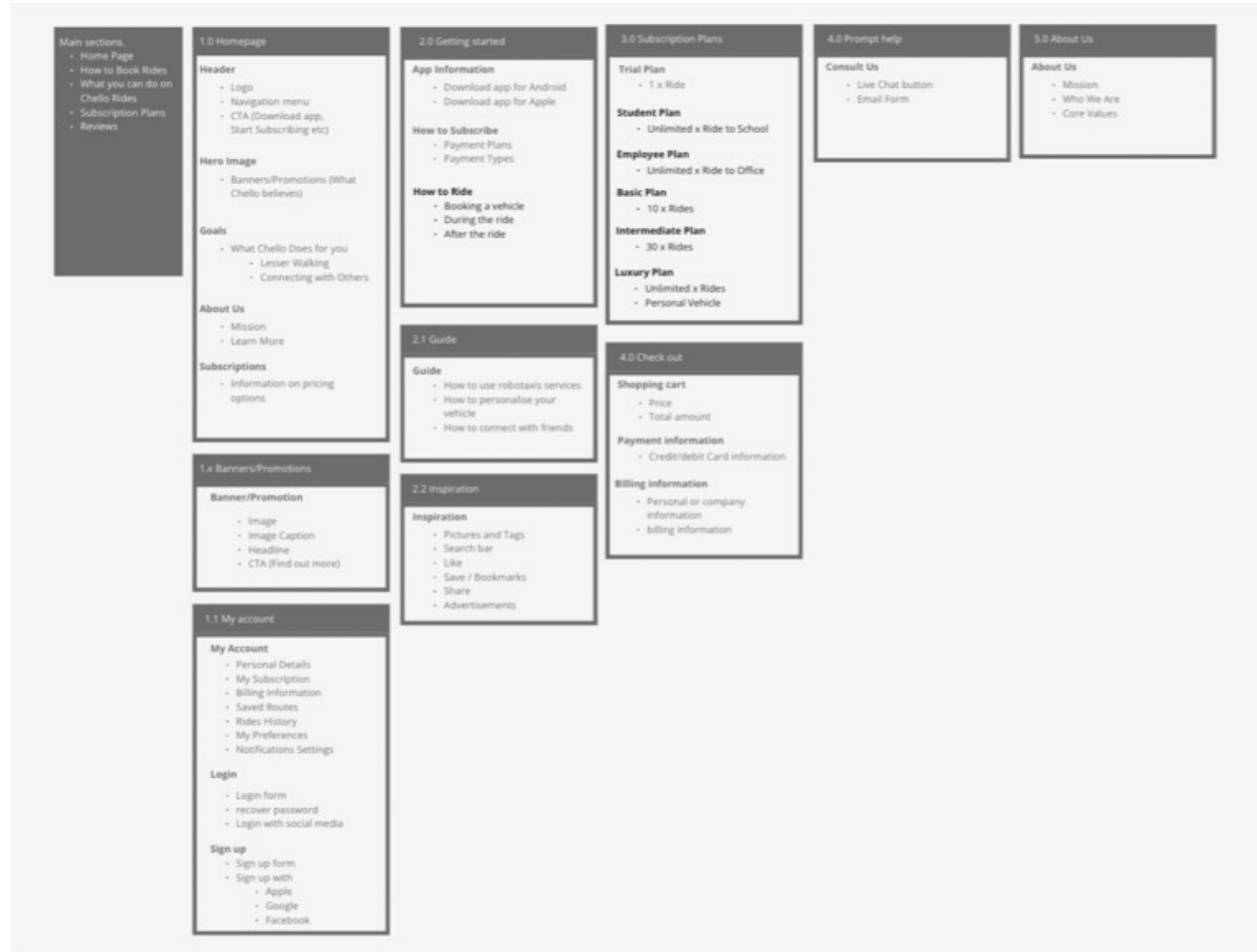
Diagram

Based on the exercise, we were able to generate this diagram
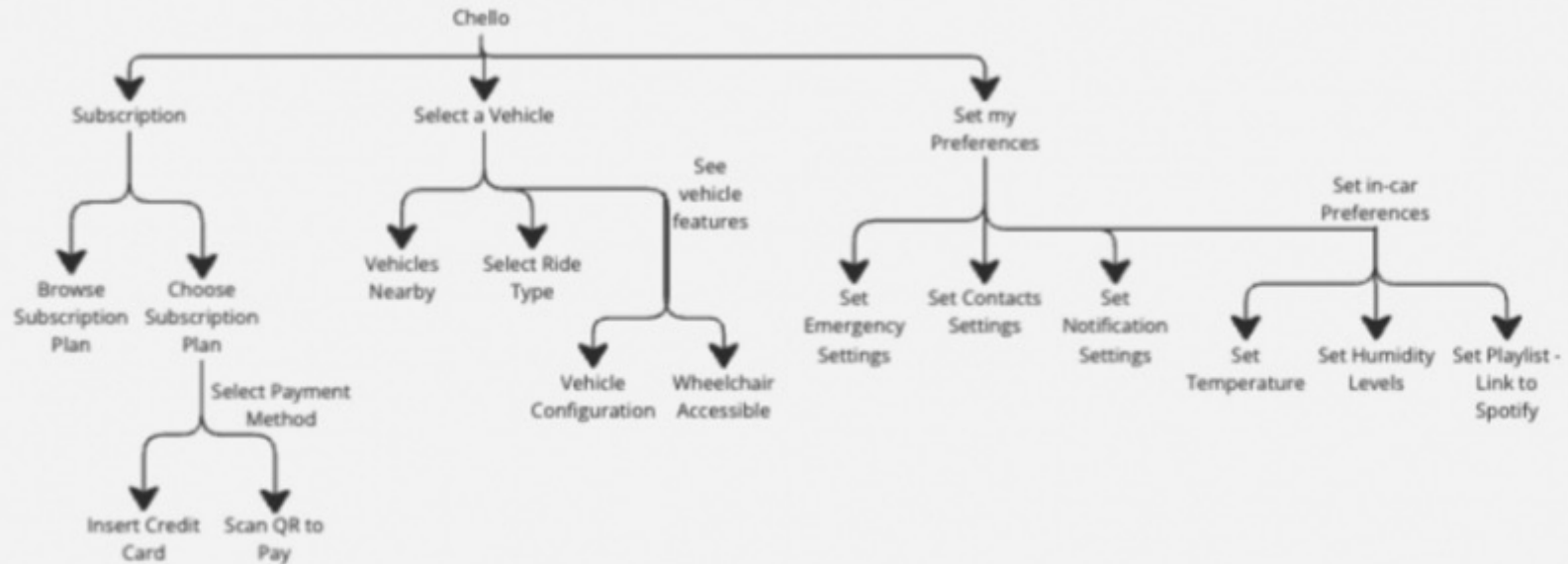
Information Architecture

The card sorting exercise revealed the mental models users go about for getting rides and subscribing to the service. The following information architecture is proposed.

Main sections.
- Home Page
- How to Book Rides
- What you can do on Chello Rides
- Subscription Plans
- Reviews

1.0 Homepage

Header
- Logo
- Navigation menu
- CTA (Download app, Start Subscribing etc)

Hero Image
- Banners/Promotions (What Chello believes)

Goals
- What Chello Does for you
  - Lesser Walking
  - Connecting with Others

About Us
- Mission
- Learn More

Subscriptions
- Information on pricing options

1.x Banners/Promotions

Banner/Promotion
- Image
- Image Caption
- Headline
- CTA (Find out more)

1.1 My account

My Account
- Personal Details
- My Subscription
- Billing Information
- Saved Routes
- Rides History
- My Preferences
- Notifications Settings

Login
- Login form
- recover password
- Login with social media

Sign up
- Sign up form
- Sign up with
  - Apple
  - Google
  - Facebook

2.0 Getting started

App Information
- Download app for Android
- Download app for Apple

How to Subscribe
- Payment Plans
- Payment Types

How to Ride
- Booking a vehicle
- During the ride
- After the ride

2.1 Guide

Guide
- How to use robotaxis services
- How to personalise your vehicle
- How to connect with friends

2.2 Inspiration

Inspiration
- Pictures and Tags
- Search bar
- Like
- Save / Bookmarks
- Share
- Advertisements

3.0 Subscription Plans

Trial Plan
- 1 x Ride

Student Plan
- Unlimited x Ride to School

Employee Plan
- Unlimited x Ride to Office

Basic Plan
- 10 x Rides

Intermediate Plan
- 30 x Rides

Luxury Plan
- Unlimited x Rides
- Personal Vehicle

4.0 Check out

Shopping cart
- Price
- Total amount

Payment information
- Credit/debit Card information

Billing information
- Personal or company information
- billing information

4.0 Prompt help

Consult Us
- Live Chat button
- Email Form

5.0 About Us

About Us
- Mission
- Who We Are
- Core Values

01

Participatory Design

To co-design with persona to identify design ideas and uncover preferences

Objective

The co-design session was conducted to understand ideas that the target group might have for the app design and how they intend to use Chello.

Participants

There were 2 participants recruited for the exercise. All participants completed the design session.

Methodology

A facilitator shared the design brief and idea and asked the participants to sketch or put together their ideas for the app and how they might use it. Some design components were pre-created to let participants piece together.

Co-design Artifacts

Driving Buddy

Subscribe now and drive into the future!

— • • •

X	X	X
Pricing	Features	FAQ

Choose your vehicle

X **Vehicle X**
Get the best value for your money

X **Vehicle Y**
For excessive use

X **Vehicle Z**
For your inner adventurer

Select Your Plan

Monthly   Yearly   Pay upfront

Add your preferences

Please Enter

Subscribe Now

Driving Buddy

X	X	X	X
Vehicle 1	Vehicle 2	Vehicle 3	Vehicle 4

Saved preferences

X **Preference 1**
AI assistant with *this* voice, larger tank, space fo...

X **Preference 2**
Call *number* while riding, tinted windows

X **Preference 3**
Lorem Ipsum

Add Preference

Saved routes
Lorem Ipsum

Route 1	Route 2	Route 3
Home	**Office**	**School**

Analysis

Based on the exercise, these are our key findings:

- Participants referenced their familiar travel applications, which was Uber.

- Participants were savvy with digital interfaces and gave a wide range of more fun and interactive design elements beyond simple buttons

- Participants liked to have information presented to them in ways they were familiar with.

02

Testing of Voice Chat Assistant

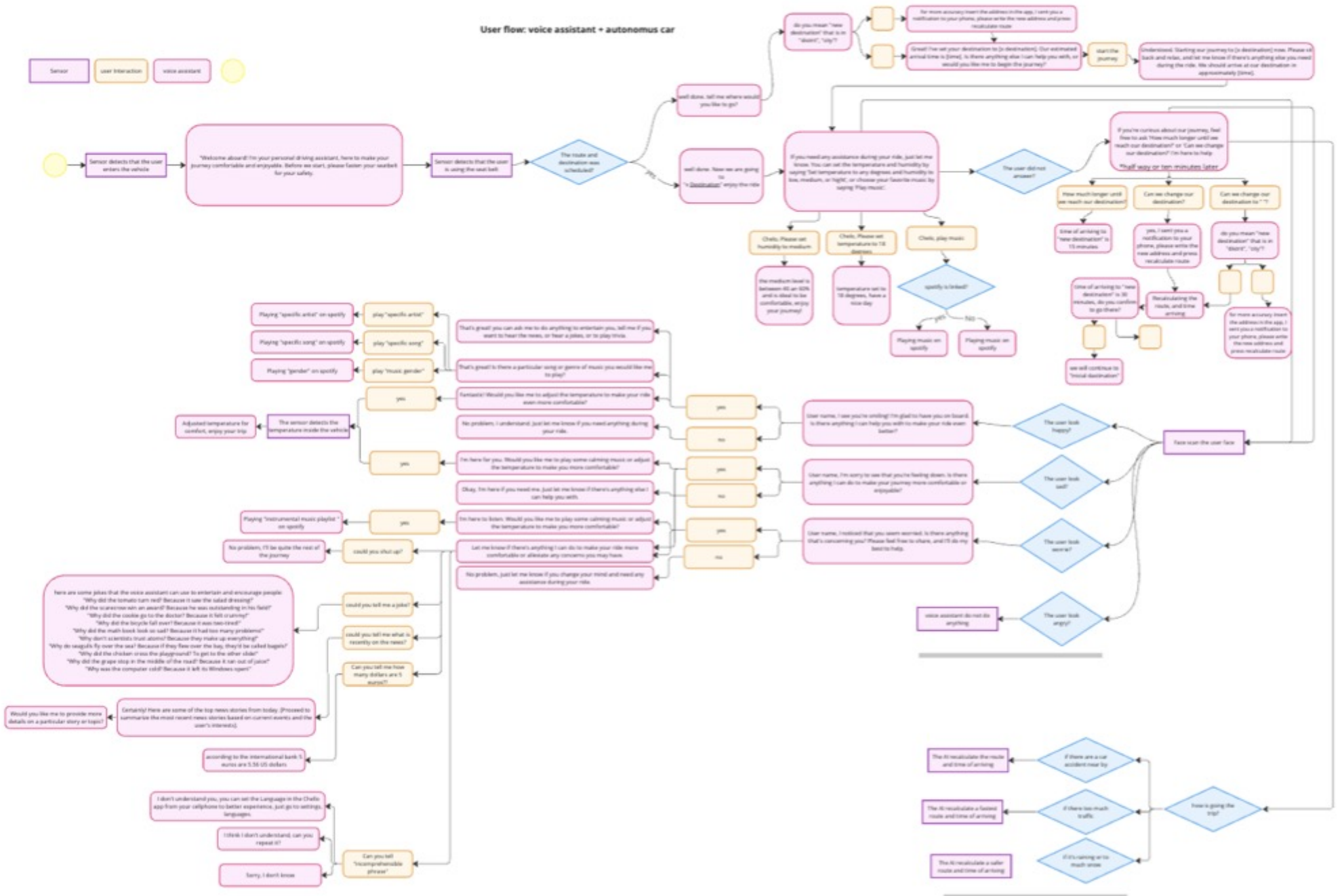To assess how users might interact with a voice chat assistant.

Analysis

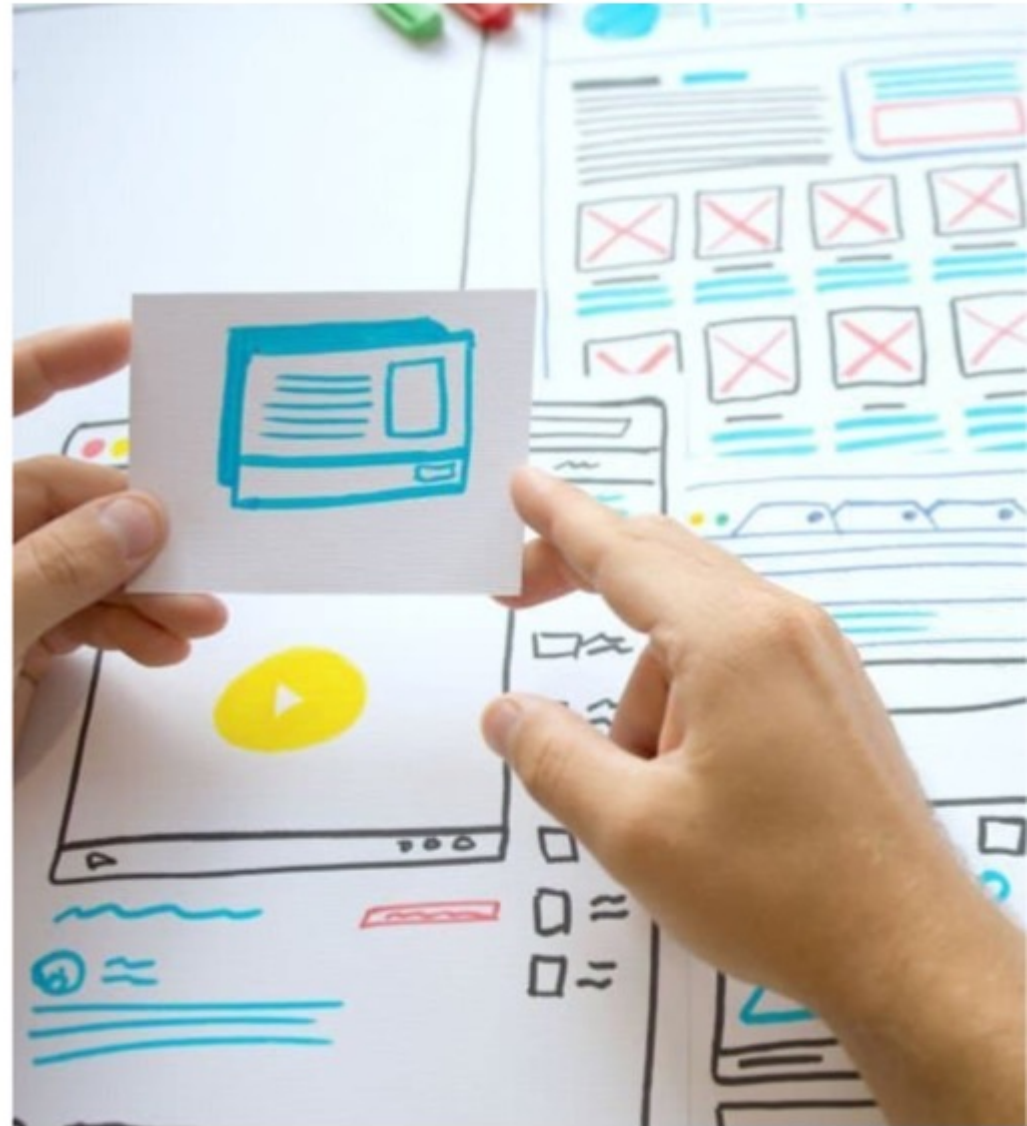Based on the exercise, these are our key findings:

- Participants preferred a more human-like natural tone

- Participants may have different requests at different junctures so it is best to understand the context to identify triggers that may facilitate 'orders' at the right timing.
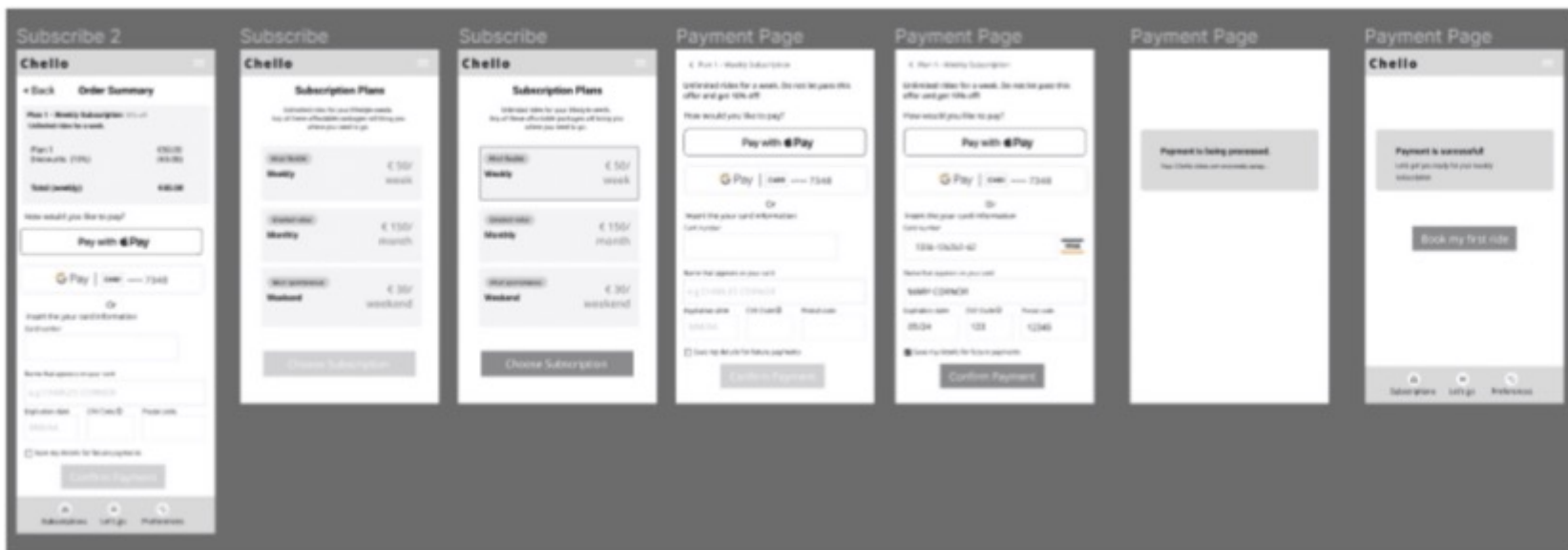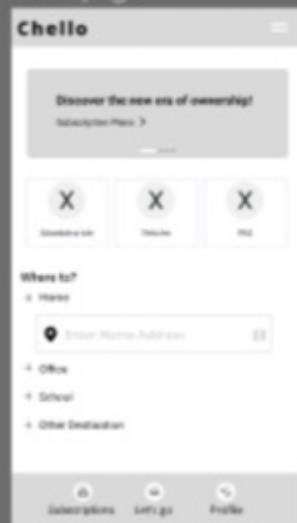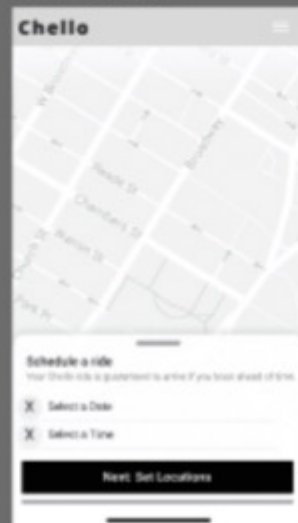
User flow: voice assistant + autonomus car

Legend: Sensor | user interaction | voice assistant

Sensor detects that the user enters the vehicle

"Welcome aboard! I'm your personal driving assistant, here to make your journey comfortable and enjoyable. Before we start, please fasten your seatbelt for your safety."

Sensor detects that the user is using the seat belt

The route and destination was scheduled?

- well done, tell me where would you like to go?
- well done. Now we are going to "x Destination" enjoy the ride

Do you mean "new destination" that is in "disem", city?

- for more accuracy insert the address in the app, I sent you a notification to your phone, please write the new address and press recalculate route
- Great! I've set your destination to [x destination]. Our estimated arrival time is [time], is there anything else I can help you with, or would you like me to begin the journey?

start the journey

Understood. Starting our journey to [x destination] now. Please sit back and relax, and let me know if there's anything else you need during the ride. We should arrive at our destination in approximately [time].

If you need any assistance during your ride, just let me know. You can set the temperature and humidity by saying 'Set temperature to any degree and humidity to low, medium, or high', or choose your favorite music by saying 'Play music'.

The user did not answer?

If you're curious about our journey, feel free to ask 'How much longer until we reach our destination?' or 'Can we change our destination?' I'm here to help

half way or ten minutes later

- How much longer until we reach our destination?
  - time of arriving to "new destination" is 15 minutes
- Can we change our destination?
  - yes, I sent you a notification to your phone, please write the new address and press recalculate route
  - Recalculating the route, and time arriving
- Can we change our destination to " "?
  - do you mean "new destination" that is in "disem", city?
  - for more accuracy insert the address in the app, I sent you a notification to your phone, please write the new address and press recalculate route

- Chelo, Please set humidity to medium
  - the medium level is between 40 an 60% and is ideal to be comfortable, enjoy your journey!
- Chelo, Please set temperature to 18 degrees.
  - temperature set to 18 degrees, have a nice day
- Chelo, play music
  - **spotify is linked?**
    - yes → Playing music on spotify
    - no → Playing music on spotify

- time of arriving to "new destination" is 30 minutes, do you confirm to go there?
  - we will continue to "inicial destination"

Face scan the user face

The user look happy?
User name, I see you're smiling! I'm glad to have you on board. Is there anything I can help you with to make your ride even better?
- yes — Fantastic! Would you like me to adjust the temperature to make your ride even more comfortable?
  - yes — play "specific artist" → Playing "specific artist" on spotify
  - play "specific song" → Playing "specific song" on spotify
  - play "music gender" → Playing "gender" on spotify
- no — No problem, I understand. Just let me know if you need anything during your ride.

That's great! you can ask me to do anything to entertain you, tell me if you want to hear the news, or hear a jokes, or to play trivia.

That's great! is there a particular song or genre of music you would like me to play?

The sensor detects the temperature inside the vehicle
- yes → Adjusted temperature for comfort, enjoy your trip

The user look sad?
User name, I'm sorry to see that you're feeling down. Is there anything I can do to make your journey more comfortable or enjoyable?
- yes — I'm here for you. Would you like me to play some calming music or adjust the temperature to make you more comfortable?
- no — Okay, I'm here if you need me. Just let me know if there's anything else I can help you with.

The user look worried?
User name, I noticed that you seem worried. Is there anything that's concerning you? Please feel free to share, and I'll do my best to help.
- yes — I'm here to listen. Would you like me to play some calming music or adjust the temperature to make you more comfortable?
- no — Let me know if there's anything I can do to make your ride more comfortable or alleviate any concerns you may have.
  - could you shut up → No problem, I'll be quite the rest of the journey
  - No problem, just let me know if you change your mind and need any assistance during your ride.

The user look angry? → voice assistant do not do anything

here are some jokes that the voice assistant can use to entertain and encourage people
"Why did the tomato turn red? Because it saw the salad dressing!"
"Why did the scarecrow win an award? Because he was outstanding in his field!"
"Why did the cookie go to the doctor? Because it felt crummy!"
"Why did the bicycle fall over? Because it was two-tired!"
"Why did the math book look so sad? Because it had too many problems!"
"Why don't scientists trust atoms? Because they make up everything!"
"Why do seagulls fly over the sea? Because if they flew over the bay, they'd be called bagels!"
"Why did the chicken cross the playground? To get to the other slide!"
"Why did the grape stop in the middle of the road? Because it ran out of juice!"
"Why was the computer cold? Because it left its Windows open!"

- could you tell me a joke?
- could you tell me what is recently on the news?
  - Certainly! Here are some of the top news stories from today. [Proceed to summarize the most recent news stories based on current events and the user's interests].
    - Would you like me to provide more details on a particular story or topic?
- Can you tell me how many dollars are 5 euros?
  - according to the international bank 5 euros are 5.56 US dollars

- Can you tell "incomprehensible phrase"
  - I don't understand you, you can set the Language in the Chello app from your cellphone to better experience, just go to settings, languages.
  - I think I don't understand, can you repeat it?
  - Sorry, I don't know

How is going the trip?
- If it's raining or to much snow → The AI recalculate a safer route and time of arriving
- If there too much traffic → The AI recalculate a fastest route and time of arriving
- If there are a car accident near by → The AI recalculate the route and time of arriving

Prototype

Low-fi Prototype
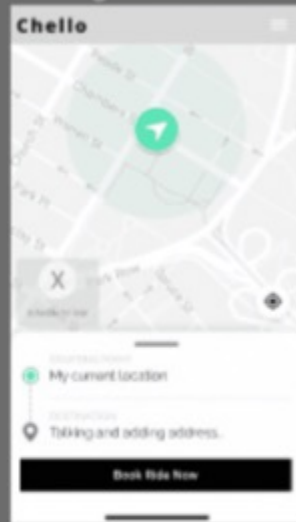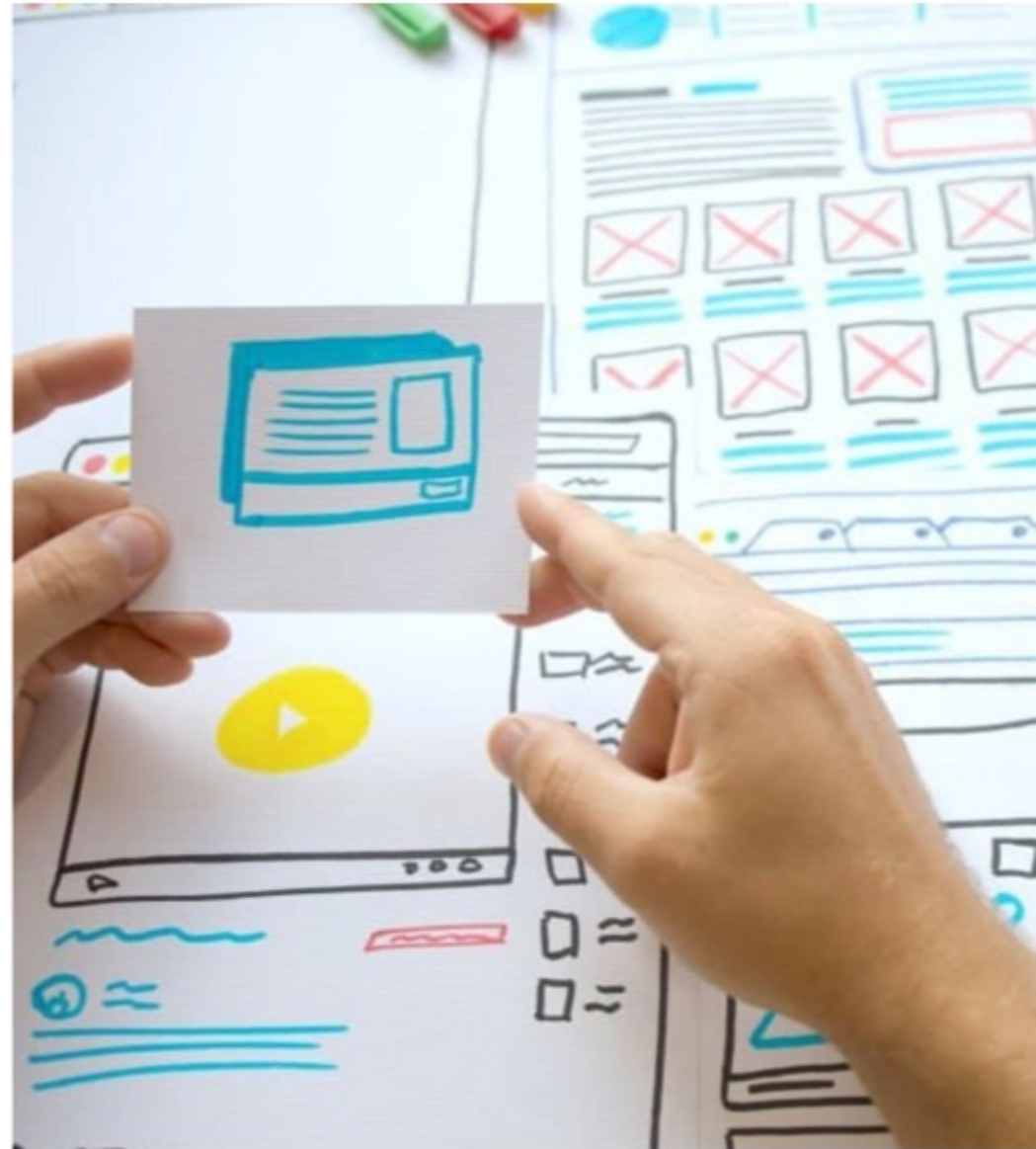
Conclusion

- Users had difficulty navigating Main screen before logging in/registering needs different layout
- Show screen of vehicle coming to pick up during booking phase

Prototype

Mid-fi Prototype

1- Create an account or Login

Chello
Lets Go !

Own your mobility!
Make travel worry-free

Unlimited rides start
from €5.00/day

Check out our Subscription Plans Now!

New to us? Get a 1-day Free Trial

Learn More   Sign Me Up

Log In

Chello
Lets Go !

Log in with

[Facebook] [G] [Apple]

Or

Email

Password

I forgot my password

Log In

I don't have an account

Chello
Lets Go !

Log in with

[Facebook] [G] [Apple]

Or

Email
eduardo@email.com

Password
●●●●●●●●●●●●

I forgot my password

Log In

I don't have an account

Chello
Lets Go !

We take you where ever you want. Only
complete a few steps and Lets go!

[Facebook] [G] [Apple]

Or

Name this is to know how you want we to call you

Email

Password

Create Account

Do you have an account? Login

Chello
Lets Go !

We take you where ever you want. Only
complete a few steps and Lets go!

[Facebook] [G] [Apple]

Or

Name this is to know how you want we to call you
Eduardo

Email
eduardo@email.com

Password
●●●●●●●●●●●●

Create Account

Do you have an account? Login

2- Subscription
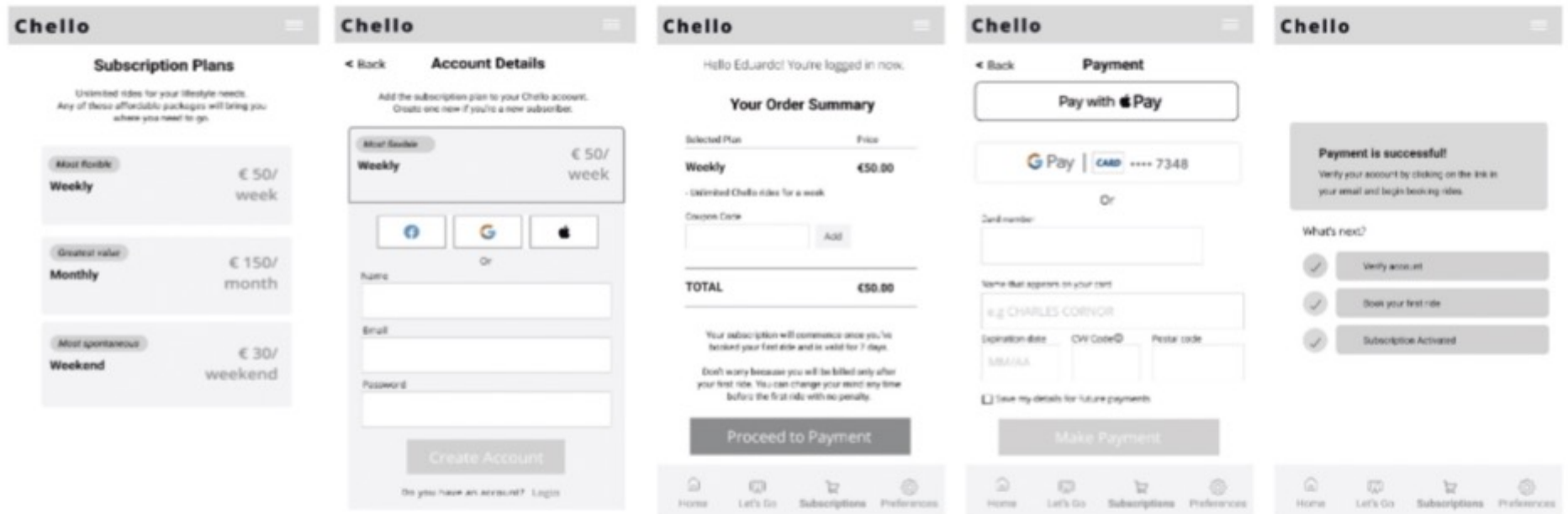
Users are price sensitive and they have had bad experiences with the transport system.
We made sure to assure users about payment every step of the way.
We created packages and processes that are generous and assuring.

2- Book a ride - Flow with Schedule
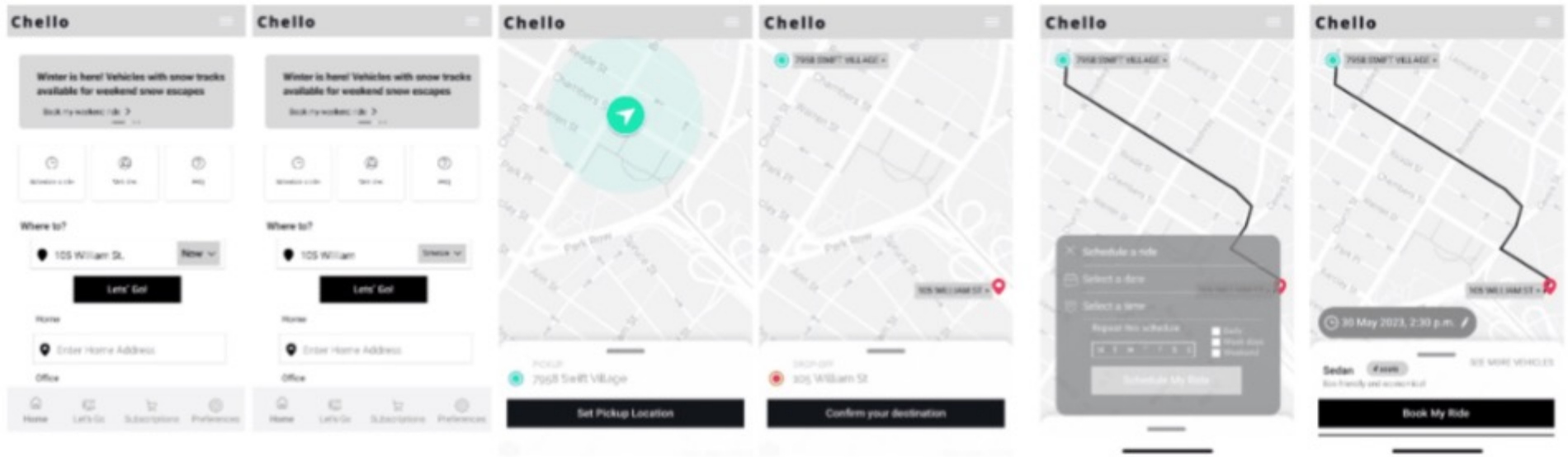
We referenced our persona's favourite applications and how they often use them.
We created those flows to design for familiarity.

2- Book a ride - Flow without Schedule
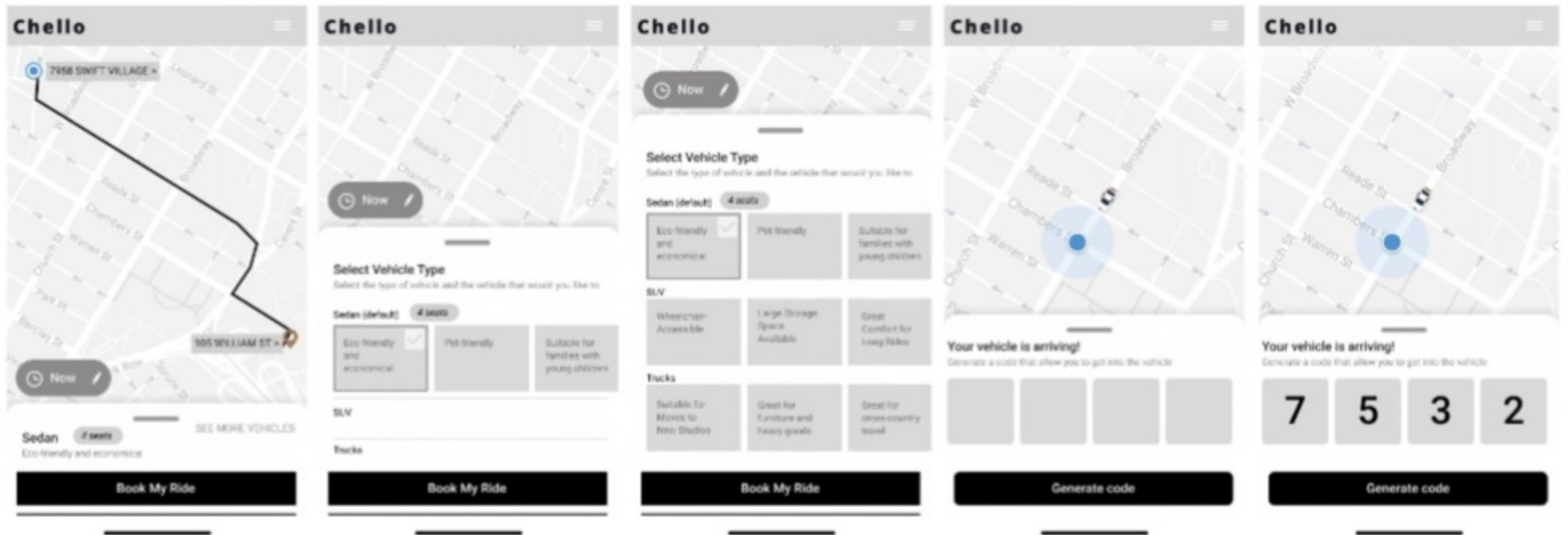
We minimised options and simplified actions on each page.
If more options were required, they could be disclosed upon being clicked.

Prototype

Usability testing results

Objective

The usability test was conducted to understand If the proposal matches the user's mental model if it is friendly and collects feedback to improve it..

Participants

There were 9 participants recruited for the exercise.

Methodology

We have moderate and unmoderated sessions, we use the tool Maze to gather metrics, and we asked to participant to think aloud to know what the was thinking while thy interact with the prototype.
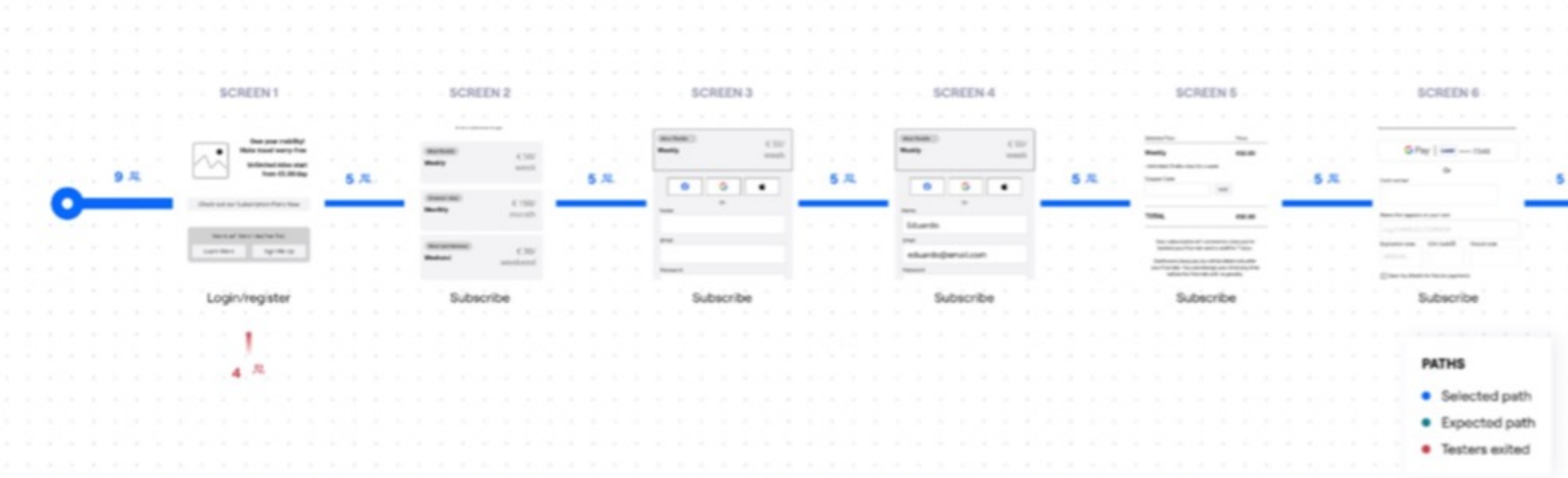
Imagine that you wish to get a weekly subscription and create an account

Please, could you show what you would do to get there?

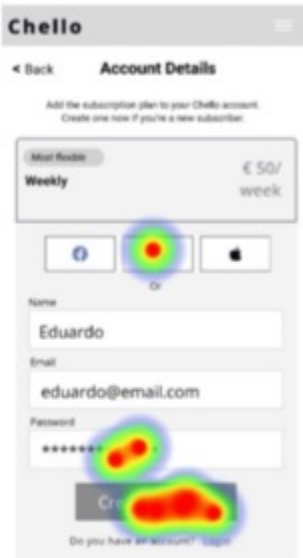|				
55.6%	**44.4%**	**9**	**69.9%**	**59.2s**
Direct success	Mission unfinished	Total testers	Misclick rate	Avg duration

Mission's paths

Click on a path to analyze the results for that path.

SCREEN 1   SCREEN 2   SCREEN 3   SCREEN 4   SCREEN 5   SCREEN 6

Login/register   Subscribe   Subscribe   Subscribe   Subscribe   Subscribe

PATHS

● Selected path
● Expected path
● Testers exited

Chello
Lets Go !

Own your mobility!
Make travel worry-free

Unlimited rides start
from €5.00/day

Check c...

New to us? Get a 1-day Free Trial

| Learn More | Si... |

Log In
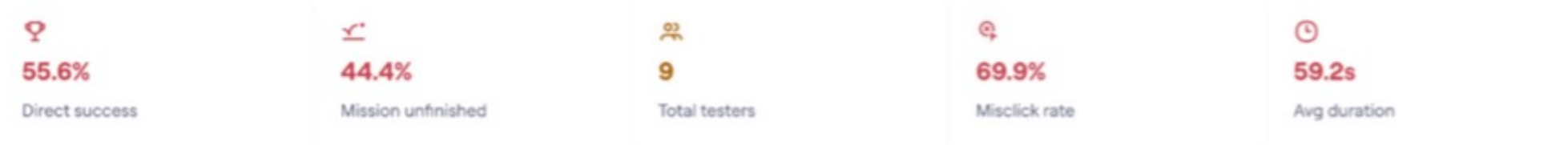
The tests show that it was not too intuitive to see the option to subscribe, according to the mental model of 4 out of 9 users, they first logged in or created the account and thus deviated from the path we had traced.
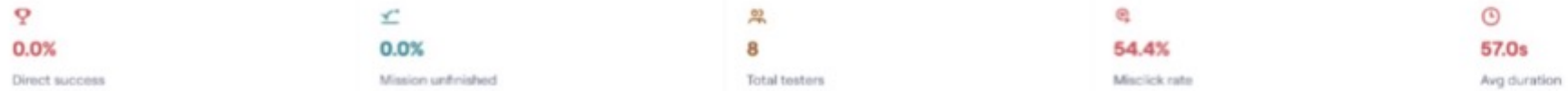
Some users model was more like:
Login / create account > Subscriptions

Chello

Subscription Plans

Unlimited rides for your lifestyle needs.
Any of these affordable packages will bring you
where you need to go.

Most flexible
Weekly   € 50/
                                             week

Greatest value
Monthly   € 150/
                                             month

Most ...
Weekend   We...

Chello

< Back   **Account Details**

Add the subscription plan to your Chello account.
Create one now if you're a new subscriber.

Most flexible
Weekly   ...0/
                                             week

Name

Email

Password

Create Account

Do you have an account? Login

Chello

< Back   **Account Details**

Add the subscription plan to your Chello account.
Create one now if you're a new subscriber.

Most flexible
Weekly   € 50/
                                             week

Or

Name
Eduardo

Email
eduardo@email.com

Password
••••••••

Cr...

Do you have an account? Login

For this first mission, the user had to create an account to be able to subscribe, most opted for the fastest way with social networks, although for the purposes of the test that part was not clickable, so the percentage of wrong clicks was high.
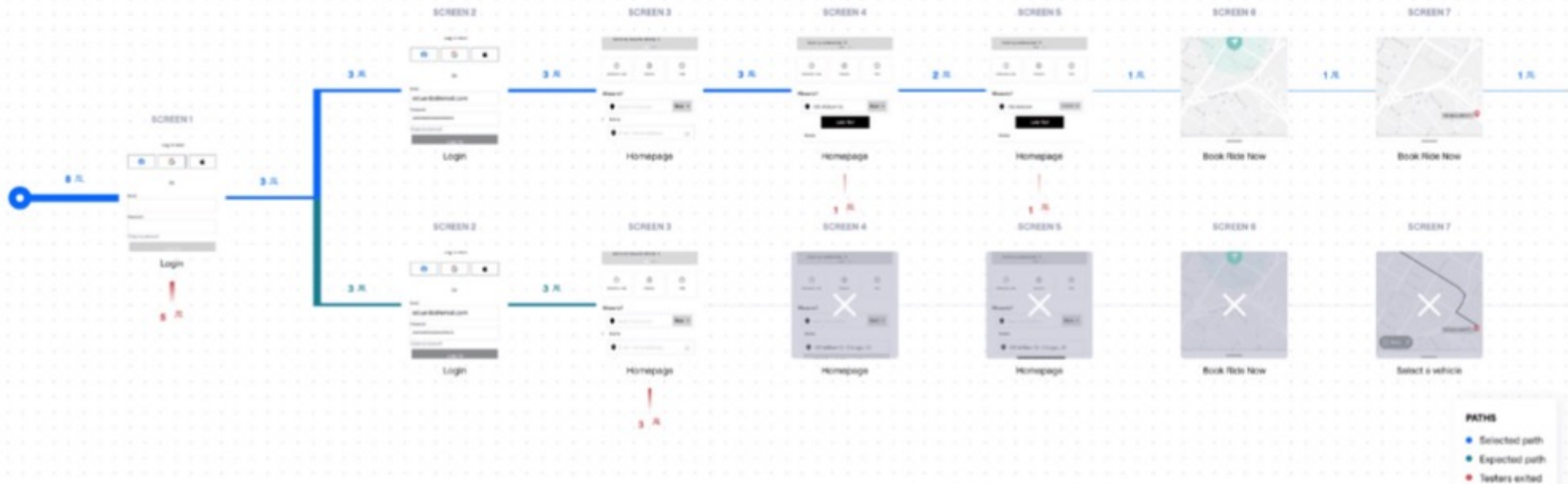
Now Book a ride. You can do it to get a ride at the moment or schedule it for later

Imagine you will head home after your meeting ends on 30 May, 2.15 pm. Schedule a booking for a ride back home on that day and time. Or you can imagine that you are leaving work and want to go home.

0.0%	**0.0%**	**8**	**54.4%**	**57.0s**
Direct success	Mission unfinished	Total testers	Misclick rate	Avg duration

Mission's paths
Click on a path to analyze the results for that path.

PATHS
- Selected path
- Expected path
- Testers exited

Difficulty Scale

From 1 to 5, how difficult do you find the taks?
Opinion Scale

Five is very easy, and one is too difficult

| | 8 Responses | 4.6 Average |

| 0% 0 A | 0% 0 A | 0% 0 A | 38% 3 A | 63% |

| 1 | 2 | 3 | 4 | 5 |

Too difficult · Very easy

Interactivity Scale

How much did you like the experience in the app?
Opinion Scale

One is you don't like it at all, and five is you like it a lot.

| | 8 Responses | 4.4 Average | ••• |

| 0% 0 A | 0% 0 A | 25% 2 A | 13% 1 A | 63% |

| 1 | 2 | 3 | 4 | 5 |

Don't like · Like a lot

Final Thoughts

QUOTES

"Easy to use, the UI is friendly and accomplish to let me schedule rides too"

Tester #162486874 · May 11th 2023, 3:16:49 pm

"Awesome app and easy to use"

Tester #162536945 · May 11th 2023, 3:14:45 pm

"Excellent idea"

Tester #162535323 · May 11th 2023, 3:10:33 pm

"None "

Tester #162535154 · May 11th 2023, 3:04:12 pm

Users, despite the fact that not everything was clickable, understood how they worked. For example, after setting the date and time, they tried to use other options, such as making it recurring, since that would allow them to go home from work every day at the same time. without re-requesting the trip every day of the week.

In the case of trips that were made at the moment, the users understood the flow, and realized that since the car is autonomous they had to use that code to enter the car.
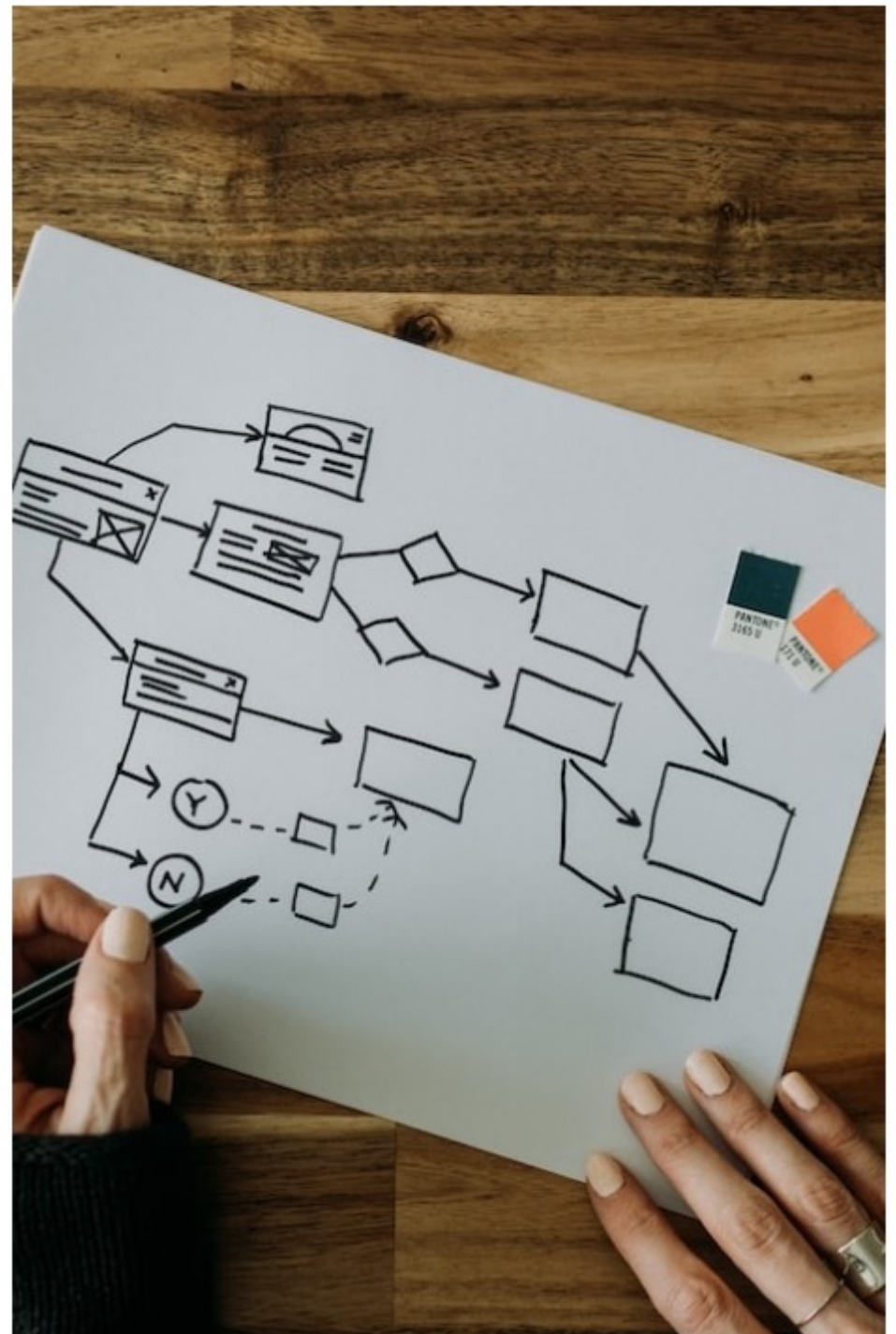
Conclusion

- Users could navigate easily
- Their experience varied from mid satisfaction to fully satisfied
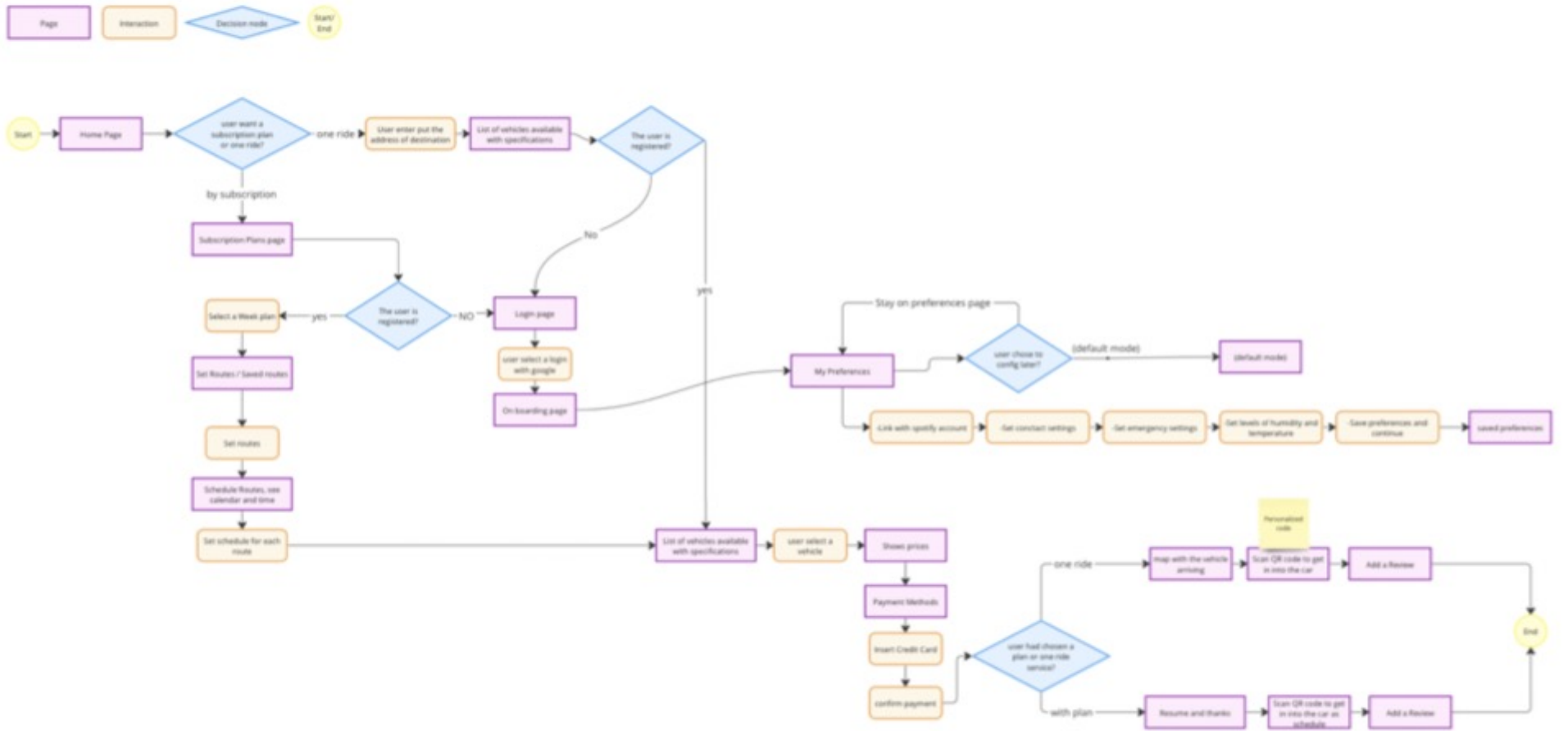
Moving Forward

- Use hierarchy and simplicity principles to elevate the design
- Use design aesthetics to make the experience of navigating fun

Updates to user flows

Flowchart

Legend: Page · Interaction · Decision node · Start/End

- Start → Home Page → user want a subscription plan or one ride?
  - one ride → User enter put the address of destination → List of vehicles available with specifications → The user is registered?
    - No → Login page
    - yes → List of vehicles available with specifications
  - by subscription → Subscription Plans page → The user is registered?
    - yes → Select a Week plan → Set Routes / Saved routes → Set routes → Schedule Routes, see calendar and time → Set schedule for each route → List of vehicles available with specifications
    - NO → Login page → user select a login with google → On boarding page → My Preferences
      - Stay on preferences page
      - user chose to config later?
        - (default mode) → default mode
        - Link with spotify account → Set contact settings → Set emergency settings → Set levels of humidity and temperature → Save preferences and continue → saved preferences

- List of vehicles available with specifications → user select a vehicle → Shows prices → Payment Methods → Insert Credit Card → confirm payment → user had chosen a plan or one ride service?
  - one ride → map with the vehicle arriving → Scan QR code to get in into the car → Add a Review → End
  - with plan → Resume and thanks → Scan QR code to get in into the car on schedule → Add a Review → End

(note: Personalized code)

Flowcharts after iteration

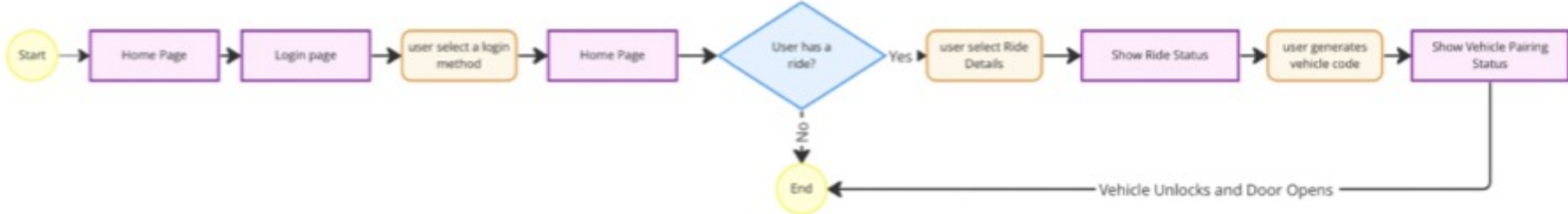## Service Subscription User Flow

Flowcharts after iteration

Vehicle Booking User Flow
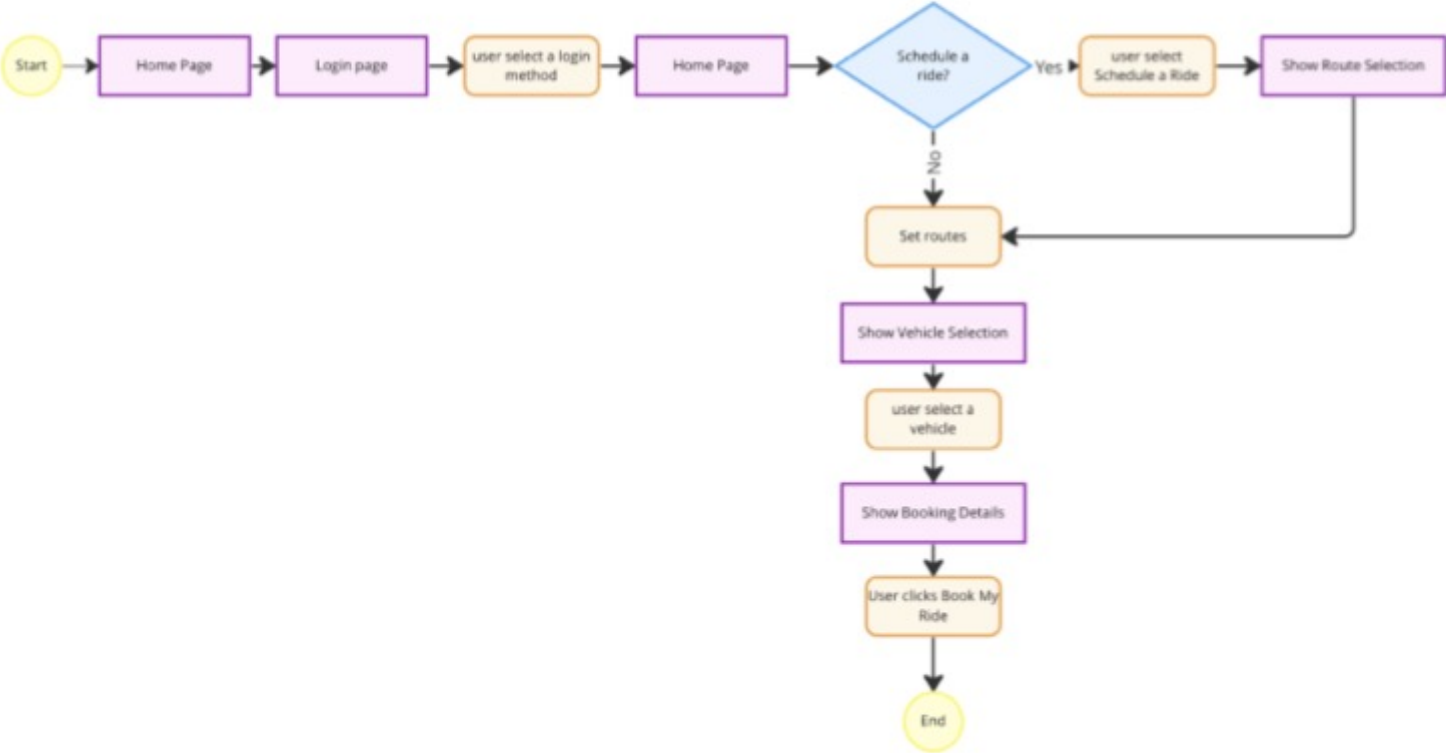
Flowcharts after iteration

Vehicle Unlock User Flow

Conclusion

- Users could navigate easily
- Their experience varied from mid satisfaction to fully satisfied

Moving Forward

- Use hierarchy and simplicity principles to elevate the design
- Use design aesthetics to make the experience of navigating fun

Thank you.