

Project Report

Low-footprint personal mobility



Guide: Prof. Nishant Sharma

Aditya Kansal

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Section 1

Motivation

- The need for personal mobility
- Current usage patterns & solutions
- Existing gap & scope for intervention

Aim of this section

To get an initial understanding of where does the need of a smaller personal vehicle arise from, what are the current general issues and where can an intervention be made

Tools/Practices Used

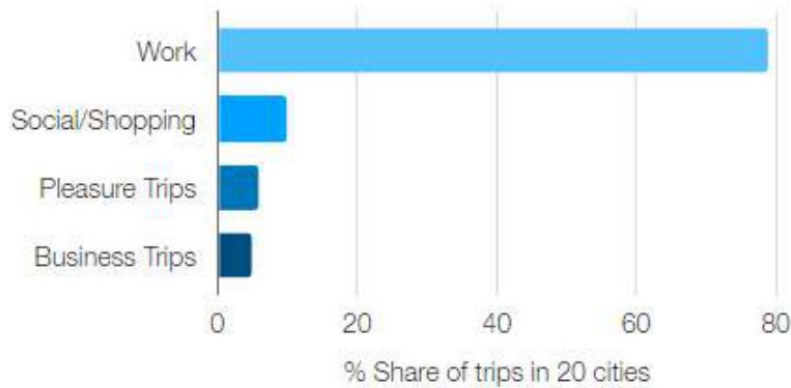
Secondary research from internet sources

1.2 Current usage patterns & solutions



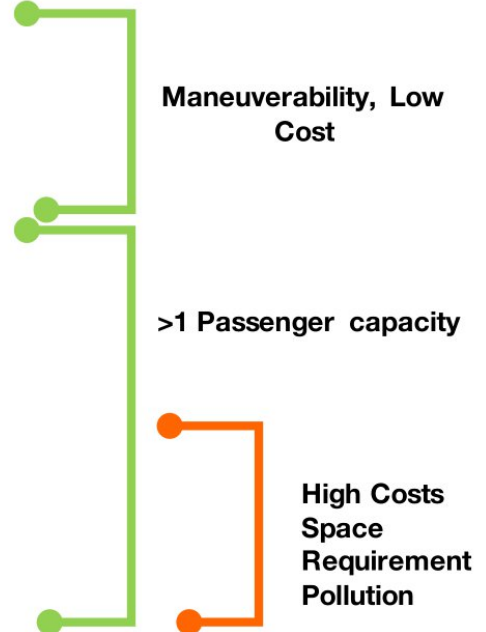
Average 4W Occupancy in Metros is only 1.15 – 1.35 ³

Vehicles, majorly cars are used well below their capacity¹



Use share of private vehicles ⁴

Most trips are for point-to-point to workplace leading to huge congestion. (Indicated national average of 20 cities)



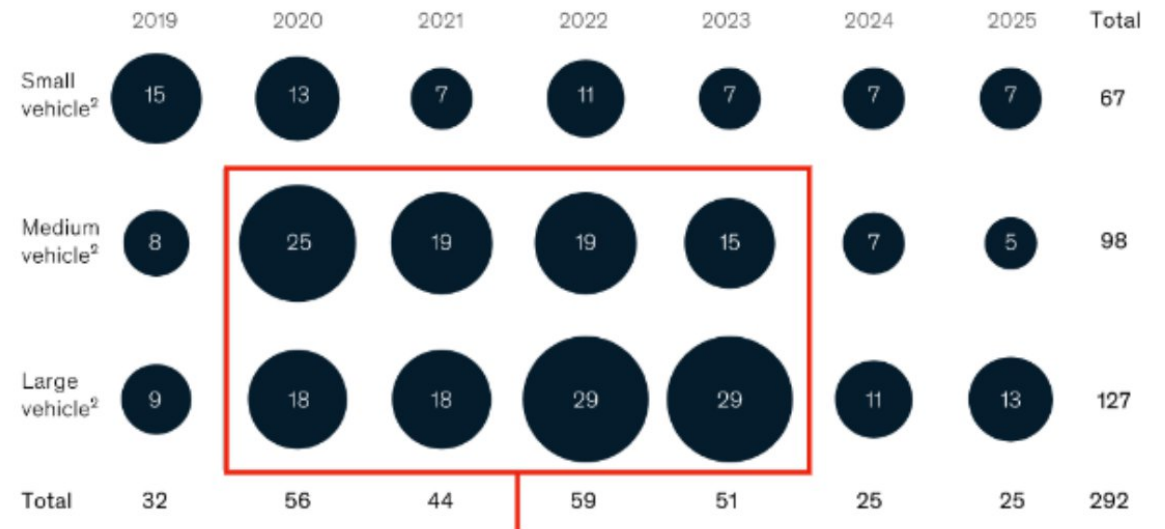
No Solution giving Low costs, high maneuverability, comfort, safety and requiring less space

1.3 Existing gap & scope for intervention

How we are misaligned to address the future needs responsibly

2x
Working population with the need to travel set to double by 2030 ⁵

170%
Average projected congestion in Delhi, Mumbai, Chennai & Kolkata in 2022 ⁶



Car launch date and size for India⁷

Strong need of space saving mobility solutions



Strong focus on medium to large sized vehicles

Section 2

Background Study

- Changing car usage and ownership patterns
- Inferences

Aim of this section

Gaining an informed view on how people are adapting their vehicles to fast changing needs and external factors

Tools/Practices Used

Secondary research from internet sources

2.1 Changing car usage and ownership patterns

Car usage patterns in our country are deeply affected by an inherent lack of space, infrastructure and inefficiencies in our public transport system. Consequences such as heavy traffic congestion in all major city centers, and subsequent increasing travel times are compelling people to look elsewhere than owning a car. These trends have also been observed in the global landscape and are now being adopted in our country as well. Ride-hailing, ridesharing, leasing for temporary durations of time are beginning to take a significant place in travel patterns.

Here, we look at a few real examples and assess the magnitude of change that is happening in the usage of personal vehicles, mainly cars, by the users

Example 1



Shephalee Sharma
40
Gurgaon

She used to drive a Corolla and then shifted to a seemingly economical option of i20. Car to her was never about a status symbol.

8

‘ Seeing the hassle of finding parking spots, she now uses her car, metro, bicycle, and ride-hailing services to meet her needs. ’

2.1 Changing car usage and ownership patterns

Example 2

Car Journey

Passionate about cars, he stretched a bit to bring home a Mercedes C-Class in 2012. But sold it off in 2016 and retains his old SX4, which is barely driven

"Parking is such a mess that Ola/Uber and trains are the best way to travel within Mumbai"



Dhruv Chopra

29

Mumbai

Using his car for his commute to office mainly, he saw his 15 km commute time increase from 45 minutes to 75-90 minutes.

He says, "Owning a car was always about my comfort and utility and not a status symbol. I struggle a lot due to traffic but don't want use buses due to overcrowding".⁸

Example 3



The working couple are parents to a boy (10 years) and a girl (5 years)

Car Journey

The Vento owners do their weekday commute on bicycles, cabs, public transport and using car-pooling app QuickRide. The car is mostly used for long weekend drives

Swathi & Ashish

Kulkarni

32, 36

Bangalore

Ashish and his wife bought a Santro in 2004 and upgraded to a Vento as both loved to drive and go for trips.

' After seeing their daily commute of 25 kms take more than 2 hours, they shifted to cycling, ride-hailing and sharing for their weekday trips and reserved their personal car for weekend trips. ' ⁸

2.1 Changing car usage and ownership patterns

Example 4



Sangeeta Menon

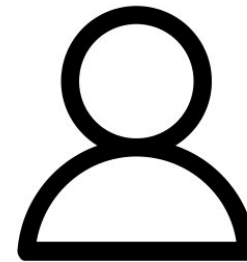
44

Mumbai

She works as a senior executive of an ad agency and has a household of 5 people. Traffic congestion made her give up even her small car Zen Estilo.

‘ She has now upgraded to a Jeep Compass for weekend family trips and uses ride-hailing or sharing to travel on weekdays. ’⁸

Example 5



Snigdha Lal

26

Gurgaon

Recently graduated and placed in a well-paying job, she decided from the onset that there were better solution than conventional car ownership.

‘She relies on a combination of ride-hailing and sharing for weekdays and likes to use rental services like Zoomcar for her weekend trips with friends ’⁹

2.2 Inferences from background study

Moving away from status symbol association - The notion of owning a car as a symbol of success and status is losing its value among the people, especially younger generation.

Recognizing different needs require different solutions - People seem to have identified their needs are different on weekdays and weekends. To solve these they are also seeing a lot of solutions from bicycle to ridesharing to rental services.

Giving up or Repurposing personal vehicle - People living in cities and experiencing travel and parking hassles are being forced to give up their cars and therefore compromising on comfort, convenience and safety in most cases.

More flexible and dynamic lifestyles emerging - Millennials, more than 400 million in India, lead a flexible life and want their vehicle to easily adapt to their needs.

2 types of potential users are emerging - Those who own a car and yet had to compromise into using multimodal transport of cabs/metro/cycle and reserved their car for family or weekend trips; and the young generation of millennials who are looking for alternative forms of transport that give them flexibility and convenience.

Section 3

Primary Research

- Approach
- Objectives
- Hypotheses
- Methods – Surveys, Interviews & Layout Study
- Results & highlights

Aim of this section

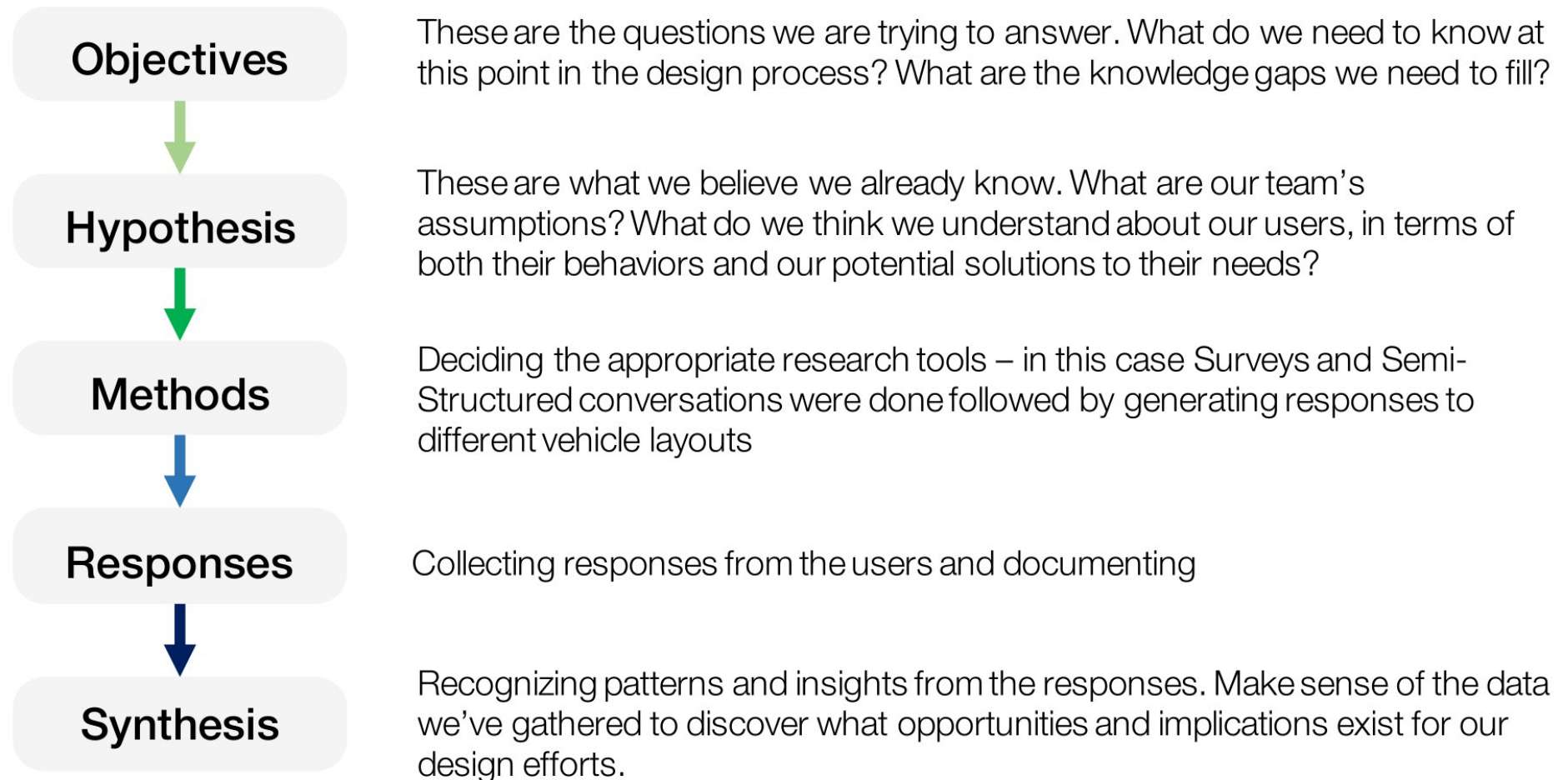
Interacting with people who represent the potential user groups. Thereafter synthesizing useful data from their responses to form guidelines for further stages

Tools/Practices Used

Surveys – Google Forms, Telephonic interviews, empathy mapping, persona development

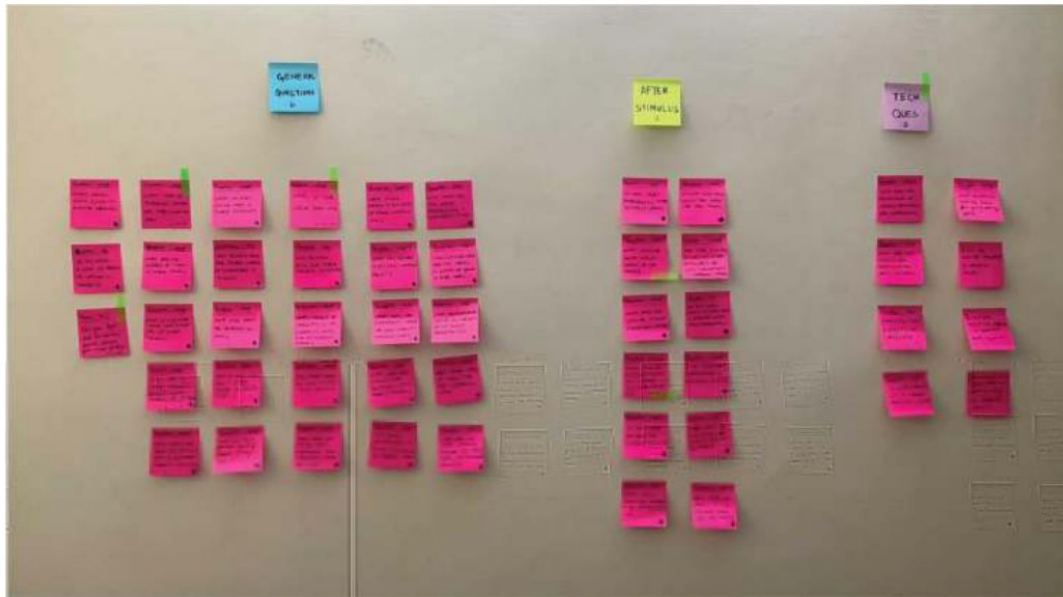
3.1 Approach – Planning the research

The research phase was planned carefully after studying researches and survey planning in similar domains of studying car usage patterns of users. The main learning was to point the research in direction of clearing the gaps in knowledge. This was done by focusing on the context of Indian users and their car usage patterns specifically.



3.2 Objectives

To generate a lot of question covering every aspect of our problem, the method of 5W1H was followed and in total 54 questions were formed. After forming these, they were clustered into 3 categories - General questions, Usage specific questions, and Technical questions.



Generating questions and clustering

Themes for General Questions

- Attitude towards ownership and sharing
- Attitude towards other alternatives
- Mobility services they use and their perceptions towards them

Themes for Usage specific Questions

- For what purposes do they use their vehicle
- Where and with whom do they use their vehicle
- Concerns/ Pain points related to different situations

Themes for Technical Questions

- Technical limitations of smaller vehicles
- Materials that can be used or can provide advantage
- Challenges that may arise due to smaller size

3.3 Hypotheses

To capture the information gathered through secondary research in prior phases and the perceptions or notions that might be there, a set of 20 statements was collated.

- People drive their own vehicles because of added comfort, flexibility, sense of safety and convenience
- People who are forced to give up their own vehicles in favor of other modes feel a lack of viable options in the market
- People do recognize the practicality of a smaller car in weekday trips but might not take it for weekend trips with family or friends
- Newer ways of using a car – ridesharing etc. will be quite popular in younger generation people
- Users recognize the need for purpose-built vehicles or services like Zoomcar and thus would be willing to shift to them
- Users treat their trips as separate – dedicated work, shop or entertainment trips.
- Users would feel differences in a smaller space but would be acceptable seeing the benefits
- Users would accept an electric powertrain readily
- Millennials or younger generation will be more readily accepting of trying out smaller layouts
- People might feel more comfortable in using rear seat area for storage than boot space
- They will feel more comfortable in a 4-wheel setup rather than 3-wheel due to notions of stability and safety

3.4 Methods – Surveys & Interviews

Here's how the survey population is distributed

Age Group



Gender Distribution



Work Distribution



Vehicles Used

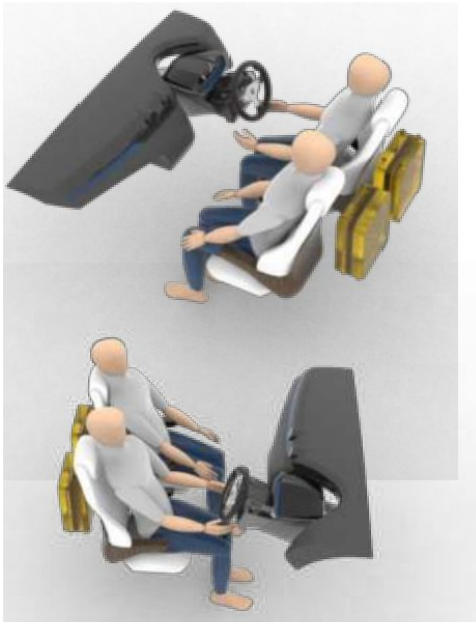


Semi – Structured survey questions for telephonic interviews

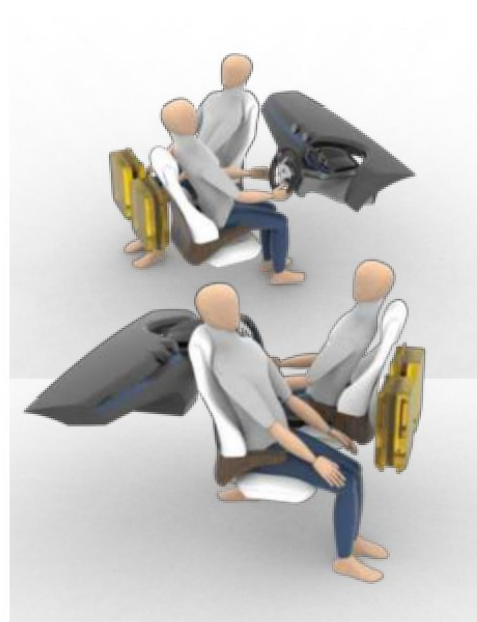
- What mode of vehicles do you currently use for your major travel needs?
- Please give a glimpse into your typical journey with your vehicle including products/services you may use.
- What are the attributes you appreciate and what are some points of concern in your current mode of travel?
- In what situations do you need extra space in your vehicle for other than yourself?
- Were there some scenarios in which you had to suffer difficulties specifically due to the size of your vehicle?
- When some fellow passengers might be travelling along in your vehicle, where do you prefer them sitting?
- How do you tend to store your regular luggage or belongings while travelling?
- What could be your dream experience?
- What are your priorities while traveling? Would you be willing to change your current vehicle for a solution that would help you get more closer to your priorities?
- What are your concerns on moving to a smaller vehicle?

3.4 Methods – Layout Study

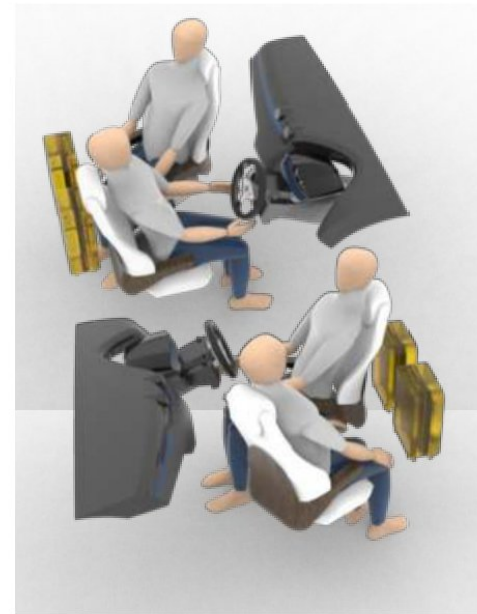
8 types of seating and luggage layouts were conceptualized and shown to users for their review. These included a lot of unconventional layout to get the sense of shock and willingness to experiment with a new layout.



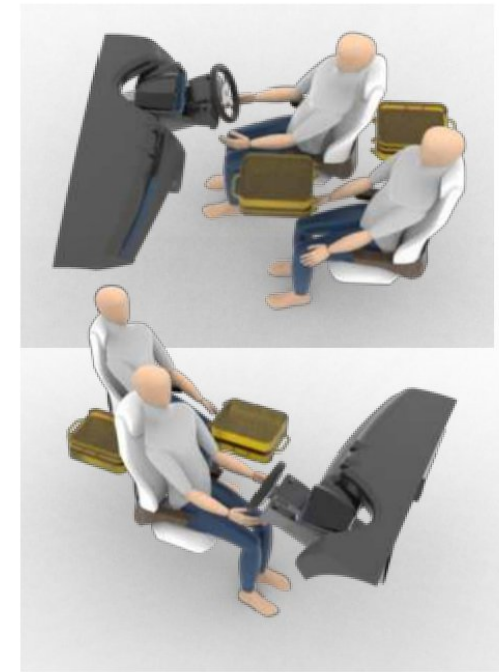
Layout 1 – Conventional Side by Side Layout



Layout 2 – Opposite Facing Passenger Seat

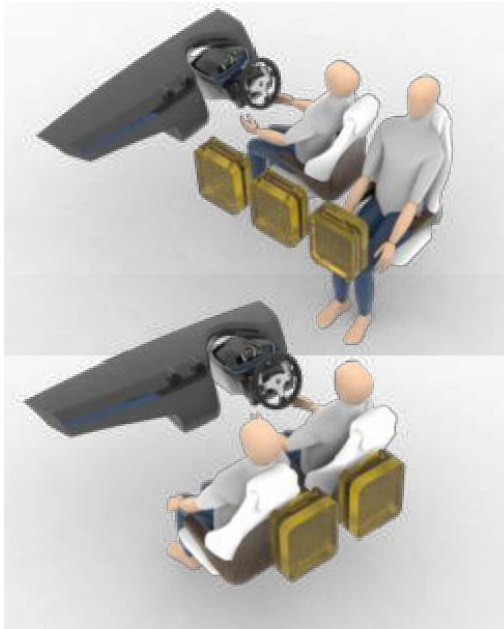


Layout 3 – Angled Passenger Seat

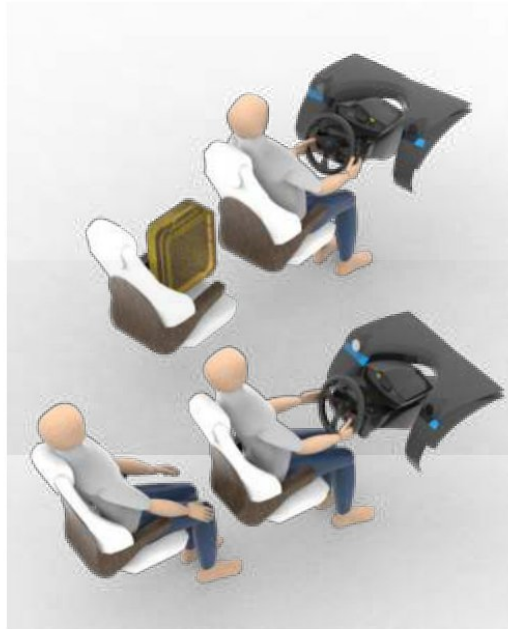


Layout 4 – Rear Sliding Passenger Seat

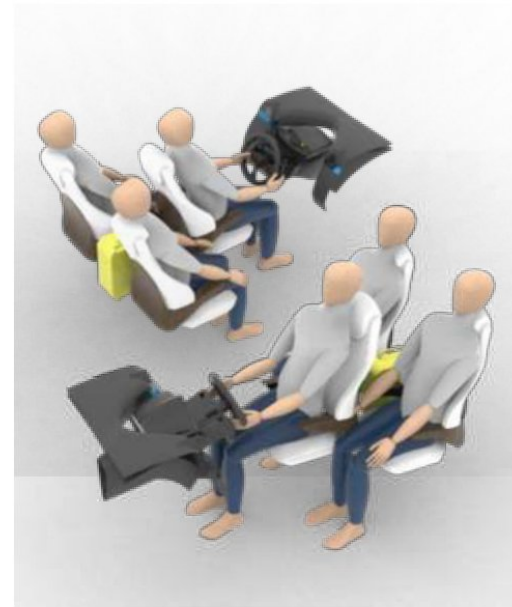
3.4 Methods – Layout Study



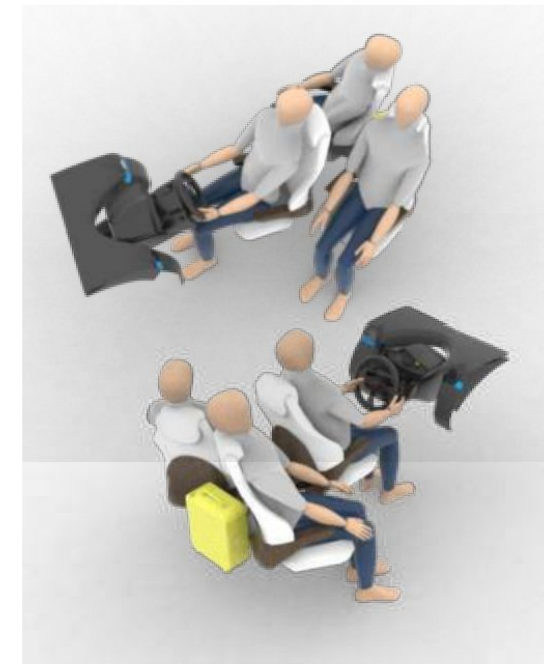
Layout 5 – 90 deg turning passenger seat



Layout 6 – Back to Back narrow layout

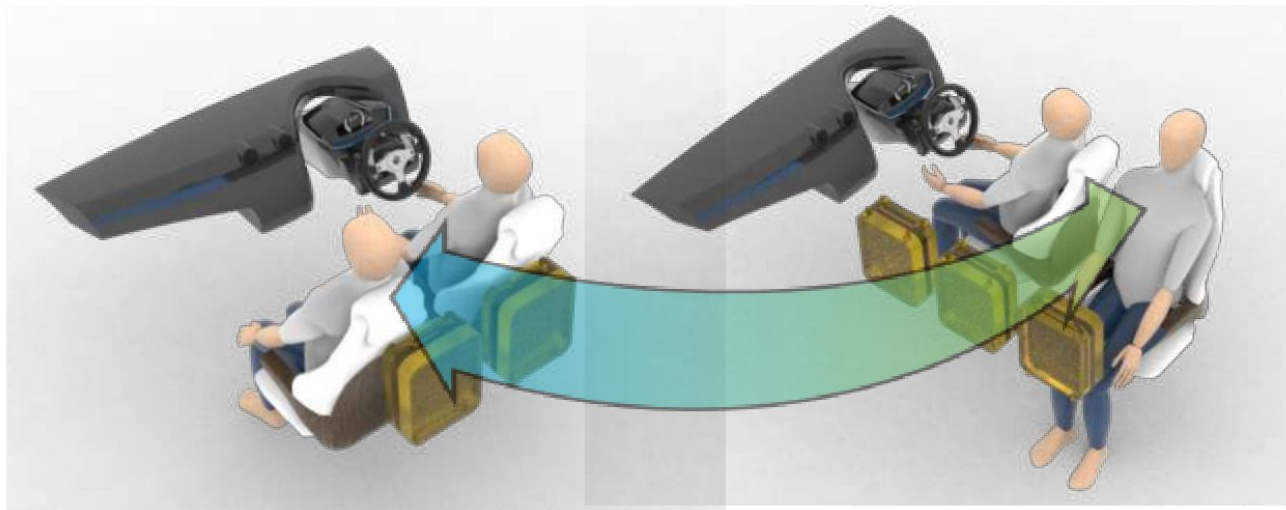


Layout 7 – Straight Oriented Rear Seats



Layout 8 – Outwards Angled Rear Seats

3.4 Methods – Outcome Sample for Layout Study



Seating Optimized Layout

Luggage Optimized Layout

Layout 5 – 90 deg turning
passenger seat

PROS

- I can carry bigger luggage from sites to office // *Shruti*
- I can completely customize the space for myself when riding alone // *Anurag, Aakriti, Renuka*
- I can imagine putting a pram inside the vehicle when we need to accommodate our child or when travelling with my wife we can sit normally // *Rohan*
- I can make space for shopping bags when needed, or for fellow travelers // *Anjali*

CONS

- It might be time-taking for me to shift layouts // *Anurag*

Willingness to Use



3.5 Results – Survey Highlights

Interview Highlights



**AAKRITI
KANSAL**

26
Architect
Delhi

Vehicles Owned
Hyundai Santro

Travel Routine & Experiences

Tried to switch away from personal cars in favor of cabs/metro but proved very inconvenient and sometimes costlier than car. Felt a lack of freedom and space and thus purchased a car.

Scenarios in which more space is needed

A colleague from work calls up for a ride or planned car-pooling - often
Impromptu plans with friends/colleagues in between or after work - often
Mom calls and asks to accompany her to market or for shopping - often

Pain points of current chosen mode - Car

Cost of running is too high for me
Must pay rents for parking spaces both at home and office
Can get stuck for hours in traffic jams on weekdays

Ideal Scenario

I tried to lower my costs with ridesharing services like Quickride but couldn't get many rides. However, I will pursue this. I would also like to switch to EV for lesser impact on environment

Proxemics

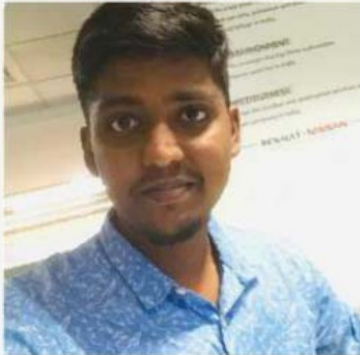
I always offer the front seat to anyone accompanying me. When i used ridesharing, once a person sat in the back himself. I felt conscious all the time. From then on, i used to tell people to come sit in the front only so my attention is not divided

Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me

3.5 Results – Survey Highlights

Interview Highlights



RAGHAVAN RAHUL

29
Systems Engineer
Chennai

Vehicles Owned
MS Swift
Duke 390

Travel Routine & Experiences

I usually travel to office in morning and back to home in evening. Sometimes, I need to travel to client meetings in the middle of the day. Used to travel in metro but now I use my personal vehicle(car/bike interchangeably) as I had to move away from my earlier home which was near to a station.

Scenarios in which more space is needed

A colleague from work calls up for a ride or planned car-pooling - rare
Visiting my hometown (long trip) - monthly
Going to shopping trips with wife - rare

Pain points of current chosen mode - Car

I have my workplace in a very tightly packed market, and it is a hassle for me to find parking. Therefore, end up using my bike on most days. Leads to a lot of exertion and tiredness with no protection from heat or rain.

Ideal Scenario

I would like to have a parking spot near my office as it is very convenient for me to drop my wife and continue to office in my car comfortably. Ideally, I would like for us to live really close to our workplace to remove this hassle of commuting.

Proxemics

Mostly I travel with wife only so space is never a problem. Rarely my parents come to visit, and we go to some tourist place in the car comfortably. I don't see the scope of services like ridesharing for me.

Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me

3.5 Results – Survey Highlights

Interview Highlights



KUMAR ANURAG

24
IT Employee
Bangalore

Vehicles Owned
MS Baleno

Travel Routine & Experiences

Due to unpredictable weather in Bangalore, I tend to use a car most of the times and rarely use my bike. I prioritize my time while going to office and while coming back I often drop off my friends from work to their homes or get a ride from ridesharing.

Scenarios in which more space is needed

While returning from office when some of my friends are joining - often

When using ridesharing - prefer only one person - often

While taking my mother for shopping on weekends - rare

Pain points of current chosen mode - Car

Cost of running is too high for me
Frequent breakdowns due to bad weather and condition of roads
Frequently stuck in traffic jams daily

Ideal Scenario

I would love to reduce my travel time as much as possible. Ideally, I would love to have a sub 30-minute ride at max and would love to live closer to my workplace.

Proxemics

Being a frequent user of ridesharing services to cut on costs, I'm very comfortable in having people as co-passengers. I always ask them to sit in front as they are mostly employees of similar organizations and we end up having good conversations on the way.

Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me

3.5 Results – Survey Highlights

Interview Highlights



RENUKA CS

38
IT Employee
Bangalore

Vehicles Owned
MS Zen

Travel Routine & Experiences

I use a car for most of my travel needs comprising mainly of trips to workplace. I feel very much at peace during the journey and value it as my personal space. It usually takes me an hour in the morning as well as evening but as long as comfortable I don't mind the commute

Scenarios in which more space is needed

While returning from office when some of my friends are joining - rare
Taking kids or family for shopping or leisure - rare
Going to visit my hometown - rare

Pain points of current chosen mode - Car

Cost of ownership and maintenance are a little concern for me but I now use a host of apps for instant service in case of need.
I also struggle with finding a parking space at my home for the car

Ideal Scenario

I would love to make my travel as comfortable as possible with no parking issues. I would like to continue using a personal vehicle due to safety and privacy.

Proxemics

I'm not too comfortable with the idea of ridesharing to reduce costs as that would the number of stops in my trip. I would also have to be more attentive rather than relaxed during the journey.

Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me if they give me similar privacy

3.5 Results – Survey Highlights

Interview Highlights



**RAJESH
KUMAR**

54
Businessman
Delhi

Vehicles Owned
Skoda Rapid

Travel Routine & Experiences

I use my personal car for most of my travel as the distances are large between points and I feel it is the most comfortable option available. Suffered an ankle problem due to extensive driving and thus I want a very easy to drive and convenient solution. I still need to travel to 3-4 different places sometimes in a single day.

Scenarios in which more space is needed

People from work or colleagues joining in - rare
Trips to marketplace with his wife - often
Weekend trips with family - rare

Pain points of current chosen mode - Car

Cost of ownership and maintenance is high
Though it feels comfortable, I feel the practicality of the car in different places is low

Ideal Scenario

I would like a very cost-efficient and easy to drive solution for my needs. Also, I tried metro for my trips to Delhi, but the journey was tiring so I would love for it to improve. I'll change my mode of travel to metro if it does that for my trips to Delhi

Proxemics

I usually travel alone but whenever my wife/family members or office staff is travelling with me, I always ask them sit in front as it is more comfortable for them.

Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me

3.5 Results – Survey Highlights

Interview Highlights



**SHRUTI
MODI**

27
Architect
Delhi

Vehicles Owned
Hyundai i20

Travel Routine & Experiences

I had access to a personal car since my college days and I've been using one since then. Traffic has increased in my usual routes but since I have to shuffle between studio and site visits, I prefer to travel by my car.

Scenarios in which more space is needed

A colleague from work calls up for a ride or planned car-pooling - rare
Visiting my hometown (long trip) - monthly
Going to shopping trips with wife - rare

Pain points of current chosen mode - Car

Getting stuck in traffic and finding parking spots
Sometimes difficult to maneuver in tight under construction places which I visit often
Running costs are also a concern but not of highest priority

Ideal Scenario

I just need a covered and safe vehicle that can also adapt to my dynamic needs. If possible, I would like to live just on the top of my studio, so I won't need to drive there!

Proxemics

I offer the front seat to my friends and family travelling with me. Sometimes other staff or people from work must ride along and they tend to sit in the back as I usually keep my handbag in the front seat. I'm open to the idea of ridesharing if it has accountability and is manageable without changing my route.

Views on ownership

I like the flexibility and comfort it gives to me, so I plan on owning or using a personal vehicle

3.5 Results – Survey Highlights

Interview Highlights



RAGHAVAN RAHUL

29
Systems Engineer
Chennai

Vehicles Owned
MS Swift
Duke 390

Travel Routine & Experiences

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Pain points of current chosen mode - Car

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Ideal Scenario

I would like to have a parking spot near my office as it is very convenient for me to drop my wife and continue to office in my car comfortably. Ideally, I would like for us to live really close to our workplace to remove this hassle of commuting.

Proxemics

Mostly I travel with wife only so space is never a problem. Rarely my parents come to visit, and we go to some tourist place in the car comfortably. I don't see the scope of services like ridesharing for me.

Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me

3.5 Results – Survey Highlights

Interview Highlights



SANOBER KHAN

26
Architect
Noida

Vehicles Owned
Honda Amaze

Travel Routine & Experiences

I usually travel to office in morning and back to home in evening. Sometimes, I need to travel to client meetings in the middle of the day. Used to travel in metro but now I use my personal vehicle(car/bike interchangeably) as I had to move away from my earlier home which was near to a station.

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Proxemics

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Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me

3.5 Results – Observational Images

Observational Images – Pain Points and Concerns



Observational Images – Space Usage



3.5 Results – Empathy Mapping

SAYS

- I use my car only when workload is high, and I have to stay back
- I feel it is practically impossible for me to take my bike due to humidity and pollution
- It is heavy on my pocket to use cars and therefore I try to use local train
- I have convenient access to train network but the frequency of trains is less
- I love travelling and exploring and therefore I take my bike for long rides sometimes very early in the morning

- When should I travel to face the least traffic?
- I am missing a way to travel freely with my wife in evening
- I am forced to take my car for longer rides
- Carpooling and ridesharing do waste a lot of time in waiting and changing routes
- Services like Zoomcar are highly inconsistent and not dependable for rides with family

THINKS

DOES

- I use my car only when workload is high, and I have to stay back
- I feel it is practically impossible for me to take my bike due to humidity and pollution
- It is heavy on my pocket to use cars and therefore I try to use local train
- I have convenient access to train network but the frequency of trains is less
- I love travelling and exploring and therefore I take my bike for long rides sometimes very early in the morning

- Unsatisfied with the space of a hatchback while travelling to hometown and thus travels light
- Independent when he uses in his own vehicle
- Wasteful on the fuel and money he puts in while taking his car to office
- Uncomfortable and Unsafe when travelling in train but feels no alternative
- Excited towards using EV due to significant savings

FEELS



3.5 Results – Persona



**RAGHAVAN
RAHUL**

29, Chennai

“ I feel travelling by car is currently very heavy on my pocket but sometimes I have no other option. ”

Context

Rahul recently got married and shifted to Chennai due to shift in his job. He currently lives 40 kilometers away from his workplace and 10-15 kilometers away from shopping centers. He goes to his office 5 days a week and prefers to mostly use local train as it is both time and cost efficient than his car. But when, he knows that it'll be a long day at work, he takes his car for his convenience.

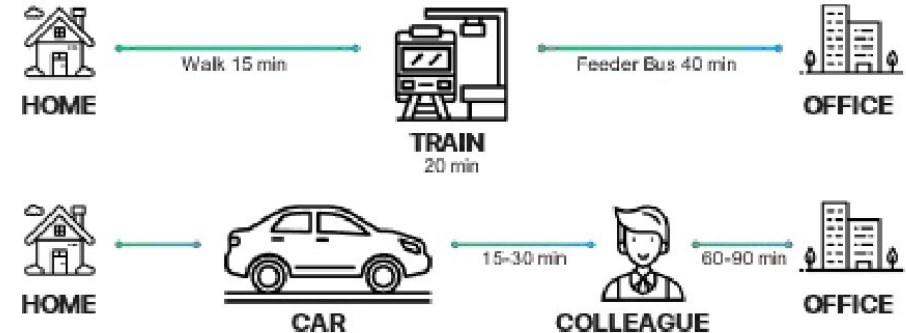
Goals

- Reducing his cost of travel
- Travel freely without worrying about safety
- Spend more time at home with family

Motivations to use a car

- Freedom to start, halt and end his journey according to his will
- Comfort while travelling long distances which make up majority of his trips
- Safety of himself and his own belongings while in his car

Typical Daily Journey



Challenges

- Very high disparity of costs between train and his car (20-30 Rs for a round trip by train and 600-700 for a round trip by car.
- Lack of any comfort or safety while travelling by train
- Faces high traffic both during onward and return journey from work leading to exhaustion

Attributes related to his travel

Lengthy
Arduous
Uncomfortable

3.5 Results – Persona



**SHRUTI
MODI**

27, Delhi

“ I worry the most about how dangerously I have to park my vehicle most of the times everyday. ”

Context

Shruti works as a senior architect in a Delhi based firm. She usually meets with clients or go to sites across Delhi-NCR with a colleague or solely. She uses her vehicle mostly for work related purposed with a few trips to entertainment or shopping centers with friends occasionally. She prefers carpooling while going to office to share costs but is apprehensive of using ridesharing services due to uncertainty in her travel behavior.

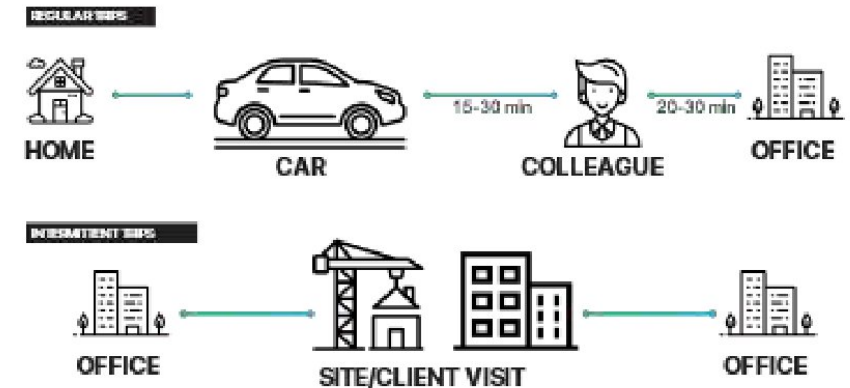
Goals

- Find safe & reliable parking spots across the city
- Visit nearby local markets to a lot of sites she visits without worrying about parking or bad roads
- Conscious of the energy she spends on her travel and wants to reduce it along with costs

Motivations to use a car

- Freedom to start, halt and end his journey according to his will
- Comfort while travelling long distances which make up majority of his trips
- Safety of himself and his own belongings while in his car

Typical Daily Journey



Challenges

- Lack of safety of the car when parked randomly
- Major added expense of maintenance due to travelling on bad roads
- Tried using cabs for lowering her responsibility but ended up having more expense and increased wait times

Attributes related to her travel

Spontaneous
Dynamic

3.5 Results – Persona



**RAJESH
KUMAR**

54, Delhi

“ I need to travel to up to 3-4 far off places sometimes in a single day and a car lets me do it comfortably ”

Context

Rajesh is a businessman and has to frequently shuffle between Delhi and Noida for work purposes. Sometimes, when home early, he goes for grocery or shopping trips with his wife usually in the vicinity of up to 5 kms. Prioritizing comfort and compromising on costs, he prefers to travel by car for most of his trips. He rarely has trips with family in his car.

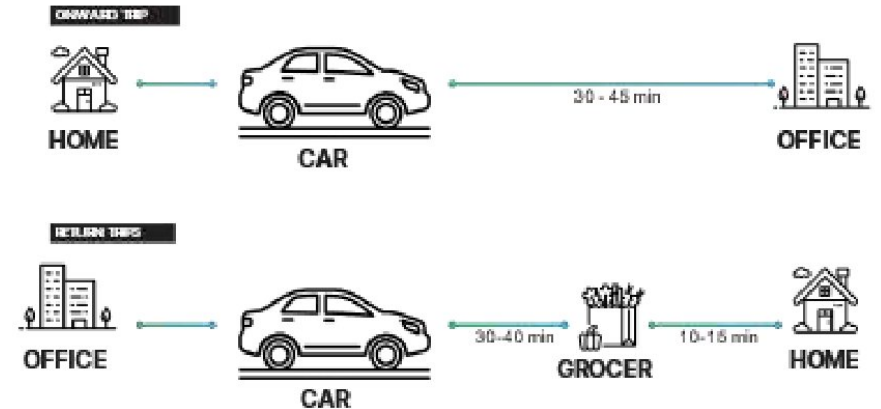
Goals

- Comfortable and inexhaustive driving experience
- Lowering his costs of running and maintenance
- Getting comfortable in using services like rentals for some purposes and reduce the dependence on his car

Motivations to use a car

- Autonomy of route planning. Using a car gives him flexibility in this regard
 - It gives him is a safe space to conduct office calls while driving and a space for his valuables while going to multiple places.
 - Covering long-distance work-related trips in comfortable and relatively cost-effective way as compared to taxis.

Typical Daily Journey



Challenges

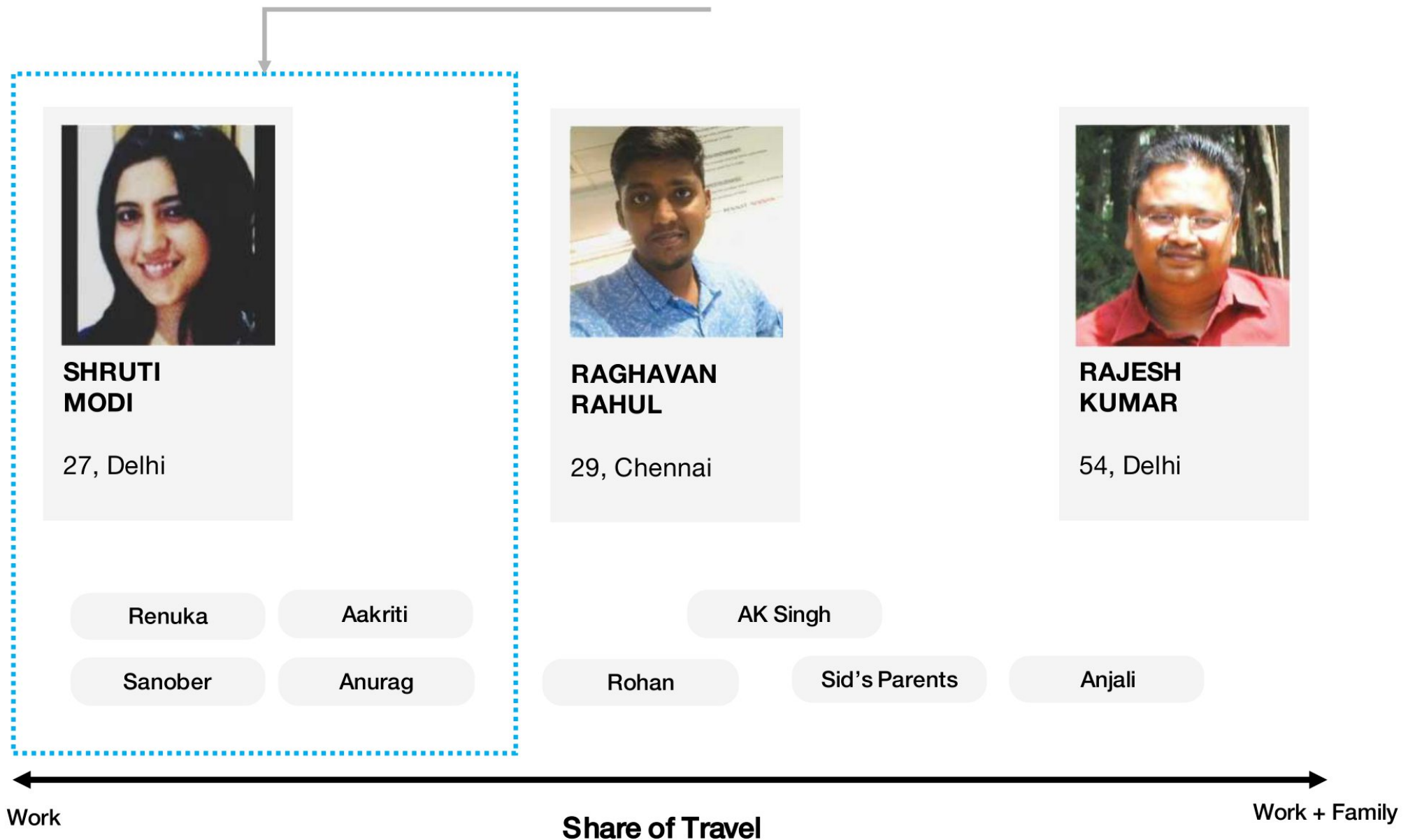
- Can't carpool or rideshare due to his dynamic routes
- Lack of good quality roads and parking spaces in many places he must visit due to work
- Threat of safety of valuables from mugging

Attributes related to his travel

Exhaustive

Balanced between work and other trips

3.5 Results – Finding Primary Personas



Section 4

Technical Research

- EV vs Conventional Fuel
- Comparable Products

Aim of this section

Generating answers and insights to technical questions related to the powertrain, structure, materials etc. Also, collating a list of unique and comparable products in this domain

Tools/Practices Used

Secondary Research through online sources

4.1 EV or Conventional fuel?

For countries like ours, which are at a nascent stage of EV adoption, there's another issue along with range anxiety, **Charge Anxiety** – the fear of whether the electric vehicle will find a charging station in the first place.¹²

250 **2500+**

Charging Stations set to increase multi-fold between now and 2025¹³

8-10x

Cost of operation is 8 to 10 times cheaper for an EV as compared to other vehicles in India¹⁴

~60km

Average distance between public charging station in cities of Delhi, Pune and Bangalore¹⁴

Considering the significant savings in costs of operation and running (a major pain point for all users) in an EV, and an ever-improving charging and service infrastructure, an EV is preferred over conventional fuel vehicles for this project. Since the hybrid system usually require a lot of space, add weight and costs to the vehicle, therefore, purely electric propulsion is chosen.

4.2 Comparable Products



Citroen Ami One

Propulsion

Electric

Seating Layout

Side by Side for 2 people

Range

80 kms

Salient Features

Interchangeable parts – front & rear bumpers, entry doors, rear view mirrors, headlamps & tail lamps are all swappable

4.2 Comparable Products



Toyota Me.We Concept

Propulsion

Electric

Seating Layout

Side by Side for 2 people

Range

80 kms

Salient Features

Interchangeable expanded polypropylene body panels which are ultra resilient and ultra light material makes up the body, including doors, wings, bonnet and bumpers and is 100% recyclable.

4.2 Comparable Products



Renault Twizy

Propulsion

Electric

Seating Layout

Back-to-Back for 2 people

Range

150 kms

Salient Features

Gives either luggage space with seating for another passenger in a narrow configuration

4.2 Comparable Products



Eli Zero

Propulsion

Electric

Seating Layout

Side by Side for 2 people

Range

100 kms

Salient Features

Has no door or window with special aluminium structure for added safety

4.2 Comparable Products



Honda NeuV

Propulsion

Electric

Range

150 kms

Seating Layout

Back to Back for 2 people

Salient Features

Unique door integrated with side panels to increase ease of ingress/egress

5. Key Takeaways & Insights

Key Insights and Takeaways

People are willing to trade the space for other passengers in favor of increase in fuel economy and their comfort

People prefer to use boot space in case of bigger luggage rather than rear seats due to stability. **They indicate more importance for boot space than rear seats for luggage.**

In case of sitting with either family/friends or a stranger for ridesharing, they tend to be more comfortable in giving them front seats. Thus they are less concerned about their proxemics to others. **They also say it is easier to monitor a stranger in front seat than in rear.**

A good proportion of the return trips of the users from their workplaces require them to have extra space – for passengers or for luggage. They tend to stop for groceries or give their friends a ride back. **Thus a purpose-built single person carrier dedicated for work trips won't suffice for our needs.**

People are **open to accepting new interior seating layouts** to gain more luggage space or increase their comfort levels. They however also wanted a level of familiarity – side by side layout still preferred.

People are now also ready to shift to EV for their next vehicle for savings in running costs even after acknowledging the low availability of infrastructure in India currently. **~80% of the survey population said yes to this shift instantly.**

Most worrying factor for a smaller vehicle is of **security, followed by comfort and then luggage space.**

Section 6

Detailed Specifications

- Exterior Specifications
- Interior Specifications
- Component Specifications

Aim of this section

Finalizing the set of specifications related to dimensions and components based on functional and ergonomic requirements

Tools/Practices Used

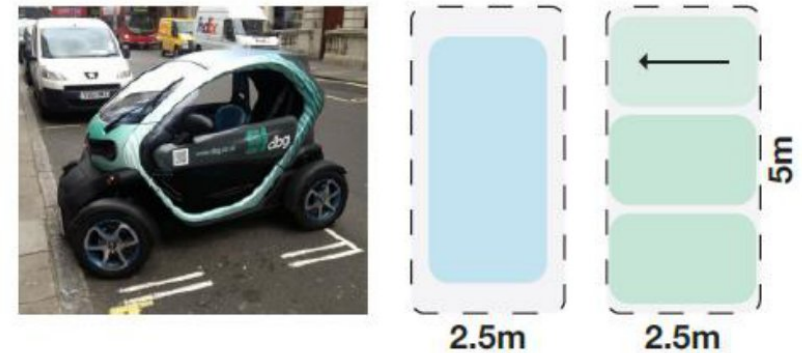
Primary and Secondary Research,
Benchmarking

Exterior Specifications

Dimensions such as the overall length, width, ground clearance, wheelbase etc. have been carefully decided with insights from research and ergonomic considerations: -

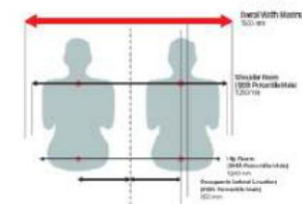
Overall Length – 2470 mm

The standard parking slot in India is 5 m long and 2.5 m wide. This concept is made for easy parking in dense urban conditions where irregular parking scenarios create safety concerns for people as well as eat up on road space. Thus the ability to park the vehicle sideways into a regular slot can give a lot of freedom to the users.



Overall Width – 1600 mm

The lateral packaging of two occupants requires a minimum space of 1250mm. Considering the space required for doors and sufficient movement room, the width was kept at 1600mm. This was also cross checked with some benchmarked vehicles.

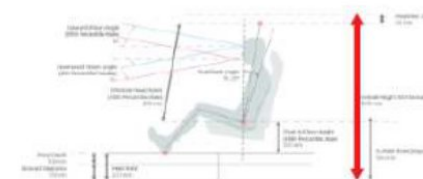


Overall Width for Benchmarked Vehicles

MS Celerio - 1600mm
Hyundai Santro - 1645mm
Renault Kwid - 1570mm
Tata Tiago - 1650mm

Overall Height – 1575 mm

Maximum height of the vehicle was decided based on the space required for correct ergonomic posturing of occupants, packaging of components in floor, ground clearance and consideration for roof structure. This was again cross checked with benchmarked vehicles.



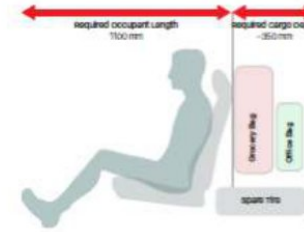
Overall Height for Benchmarked Vehicles

MS Celerio - 1540mm
Hyundai Santro - 1560mm
Renault Kwid - 1490mm
Tata Tiago - 1550mm

Exterior Specifications

Wheelbase - 1650 mm

To maximize cabin volume for passengers and cargo, the wheelbase is maximized in the concept. Requirements related to occupants and cargo are at a minimum of 1450 mm. Additional length is taken for providing extra interior space. Wheelbases for similar benchmarked vehicles are also comparable.



Wheelbase for Benchmarked Vehicles

Eli Zero - 1600mm

Smart ForTwo - 1873 mm

Baojun E200 - 1600mm

Citroen Ami One - 1550mm

Wheel Size - 155/80 R13 (F & R)

Bigger wheels provide more stable ride over bad road conditions. Keeping in reference the segment leading performance for small cars in India, the reference has been chosen as Renault Kwid.

Track Width - 1520 mm - Front & Rear

Since the profile of tires is same for front and rear, an equal track is achievable in the concept. This ensures good traction at both ends.

Ground Clearance - 170 mm

The reference for this was again benchmarked small vehicles which are known for their good performance over bad roads.

Ground Clearance for Benchmarked Vehicles: -

MS Ignis - 180 mm Renault Kwid - 175 mm

Hyundai i10 - 165 mm Ford Figo - 168 mm

Overhang Length - 435 mm - Front, 385 mm - Rear

Overhang length at both front and rear is kept to a minimum in line with maximizing wheelbase and thus cabin volume. Small overhangs contribute to better handling also.

Exterior Specifications

Doors & Closures

3 Doors – 2 for passengers (Hinged) and 1 for boot (Split). This configuration is helpful in giving easy access to boot space without the need of opening full tailgate. It can be especially useful for this concept as people will be able to access boot space in tight opening areas and when needed, heavier luggage could be placed or lifted from a lower point than single liftback doors.



Angle of Approach and Departure

20 - A, 38 - D

The reference for this was again benchmarked small vehicles which are known for their good performance over bad roads

MS Ignis - 20°, 38° Renault Kwid - 24°, 38°

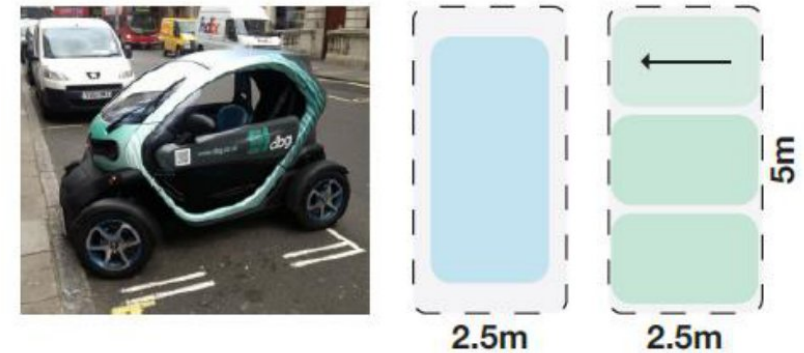
MS Espresso - 23°, 40°

Interior Specifications

Dimensions such as the overall length, width, ground clearance, wheelbase etc. have been carefully decided with insights from research and ergonomic considerations: -

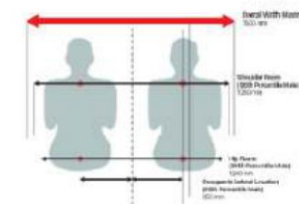
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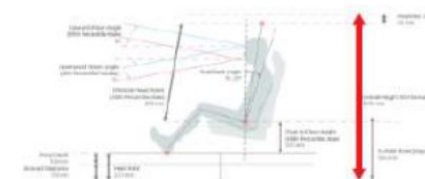


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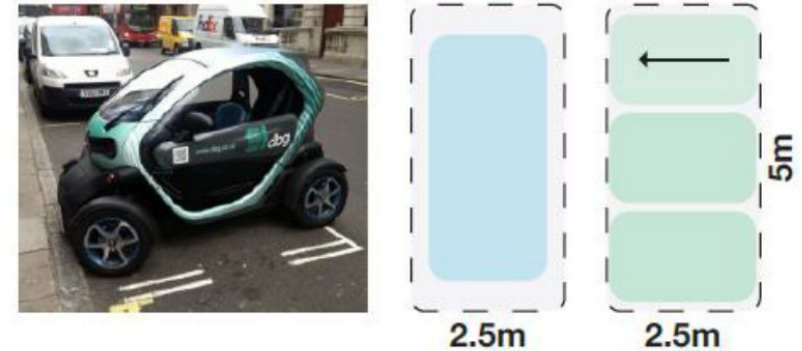
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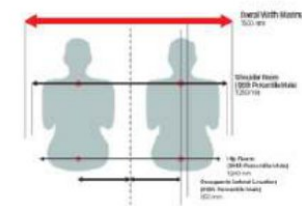
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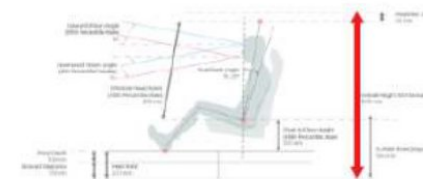


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Section 7

Aesthetic Preferences

- Insights from Users

Aim of this section

Gathering insights related to emotional and aspirational desires of the users.

Tools/Practices Used

Survey

Insights from Users

1. People want a confident and athletic stance. They think cuteness can convey weakness. Most preferred attribute they wanted their vehicle to have was of Lion(Confident/Bold/Fearless) and Horse(Agile/Athletic)



2. They prefer to be seen as a Goal-Oriented/Competitive person with Supportive/Approachable being the second most preferred trait.



3. People were very critical of boxy looking designs and appreciated the more conventional 2 box designs of Kwid and Smart ForTwo. They associated safety, comfort and usability with the designs.



Insights from Users

4. People like to have a feeling of Calm while travelling alone and a feeling of Energy and Freshness when with friends or colleagues. The feeling that a user wants is thus dependent on the use case and not singular.

5. Wood and Textile were the most preferred materials people like to be around. Glass was also included by a few.



6. Matte surface finish was more preferred than glossy. Natural grain finish was also liked but people associate high maintenance with that.



7. People associated brighter shades of yellow, blue, red and orange with 'Fun', 'Energy', 'Unique', neutral tones of grey and brown as 'Comforting', and black, grey and blue with 'Practical' and 'Futuristic'



Fun, Energetic, Fresh, Vibrant, Unique



Comforting



Futuristic, Practical

Section 8

Design Brief

- Brief and Specifications

Aim of this section

Synthesizing the motivational, functional, aspirational aspects of the design into a statement

Brief

Designing a microcar for two people to be used in urban environments with focus on giving freedom to customize their interior space. Its value proposition will be to provide a 250L of boot space for luggage and standard comforts in a low cost and practical package of a microcar. Younger generation with a mix of travel needs with major share of work-related trips shall be the primary users due to their highly personal nature of usage.

The vehicle will employ electric power, give multiple seating configurations, be capable of handling bad roads and yet be small enough to park sideways in a standard parking slot.

Confident and athletic in its appearance, it will resonate with the dynamic and agile usage patterns of a personal vehicle. Capable of creating calm and peaceful environments to an energetic and vibrant one, it will be one's own cocoon around them. An interplay of conscious materials, textures and finishes will try to increase the sense of spaciousness even in an ultra compact 2-box package.

Specifications

Exterior

Length - 2470mm
 Width - 1500mm
 Height - 1575mm
 Wheelbase - 1625mm
 Wheel Size - F13
 Ground Clearance - 170mm
 Doors & Closures - 3 Door Hatch back
 with Split Boot Door
 Overhang Lengths - 435mm Front
 and 385mm Rear
 Track Width - 1500mm Front & Rear
 Angle of Approach and Departure -
 20° & 33° respectively

Interior

Seating Capacity - 2 Adults In 1 Row
 Passenger Volume - ~45 Cubic Feet
 Seating Layout - Drive - Limited
 Movement & Co-Passenger - Dynamic
 H-Point - 880mm
 Effective Head Room - 875mm
 Leg Room - 880mm
 Shoulder Room - 1250mm
 Hip Room - 1000mm
 Reach - ~700mm
 Seatback Angle - 15° - 20°
 Vision Angle - 15° Upwards - 85°
 15° & 15° Downwards - 85° Female
 Cargo Volume - ~250L

Components

Motor - 25KW Integrated with Control
 Unit & Differential
 Battery & Range - 13KWh In 12-6 Split
 Layout Range - ~200Km
 Drive Layout - Front Motor Front Drive
 Layout
 Spare Tire - Space Saver Spare Tire
 Steering System - Steer-By-Wire
 System
 Chassis - Lightweight Monocoque
 Suspension System - McPherson
 Strut - Front & Torsion Beam - Rear

Section 9

Mood Boards

- Exterior Board
- Interior Board

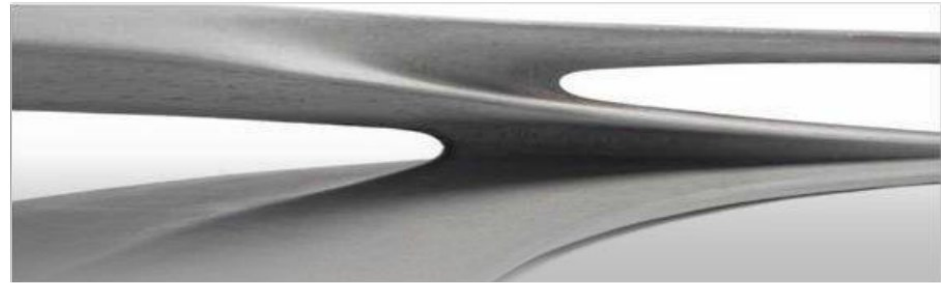
Aim of this section

Capturing the feeling and emotions to be inspired for further ideation phase

Tools/Practices Used

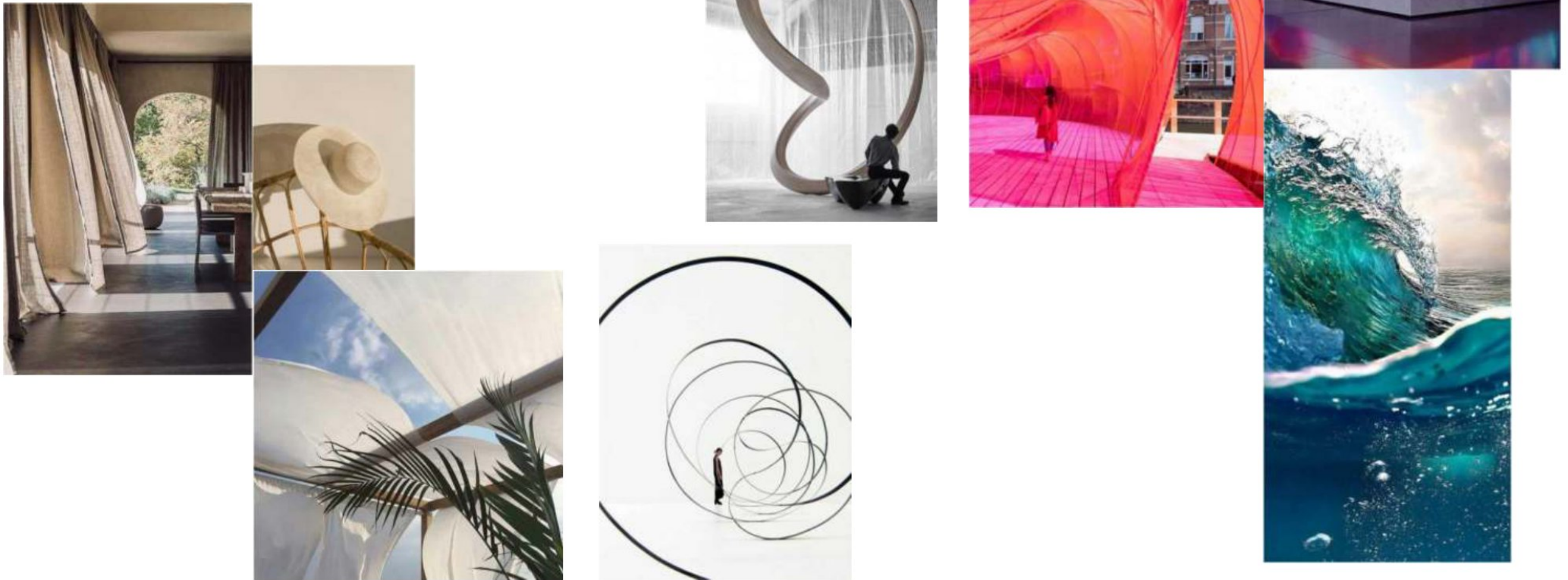
Secondary resources from web

Exterior Board



Keywords – Agile, Athletic, Lively

Interior Board



Direction – Flow between Calm and energetic environments

Section 10

Ideations

- Final Package
- Volumes and Stance
- Concepts – Exterior
- Concepts - Interior

Aim of this section

Finding out such volumes which can convey the desired traits of confidence and agility. Then they shall be refined to arrive at concepts

Tools/Practices Used

Sketching

10.1 Final Package

As per the specifications, all the components such as Chassis, Suspension, Steering, Powertrain, Seating and Interiors were assembled and placed as shown in images below.



10.2 Volumes and Stance

Our primary users use the vehicle for a mix of uses. Sometimes in a single trip!

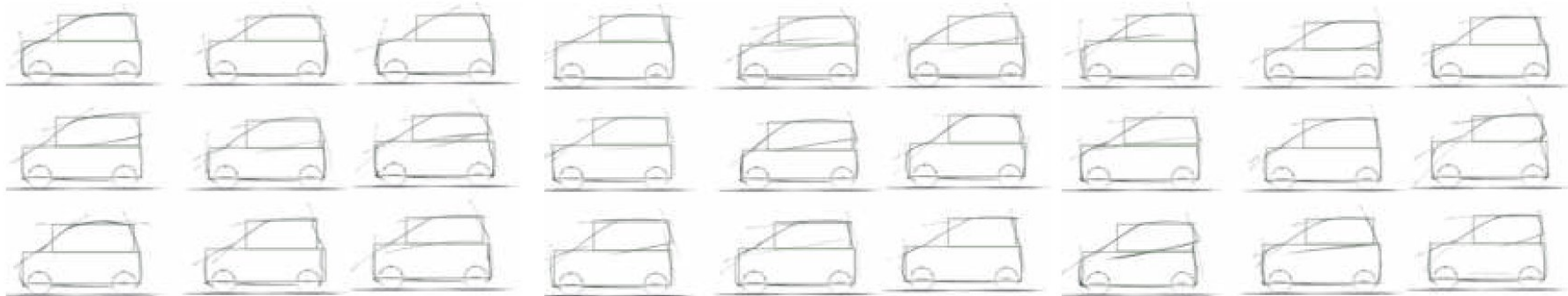


What should the volumes for the vehicle reflect?

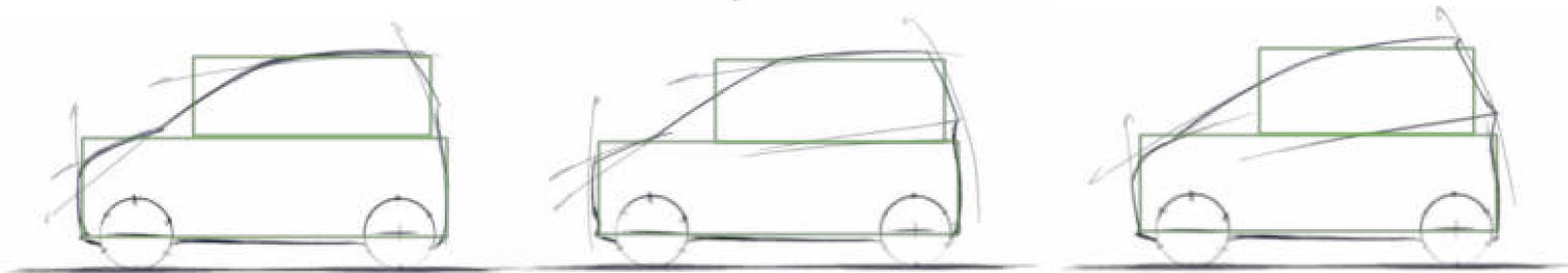
The volumes for this vehicle will resemble the attitude of the people this is aimed at – ***the ‘ready-for-anything’ young adults who comprise our primary personas!***

The primary personas lead a very dynamic and diverse lifestyle full of new challenges. This gets translated to their use of vehicles – trips to work can suddenly become trips with friends if they are carpooling or could also become shopping related trips as soon as they remember to pick up groceries on the way back to home. It is this spontaneous and agile nature of their car usage that need to shown in the volumes – ***not planted or stable, but active and agile.***

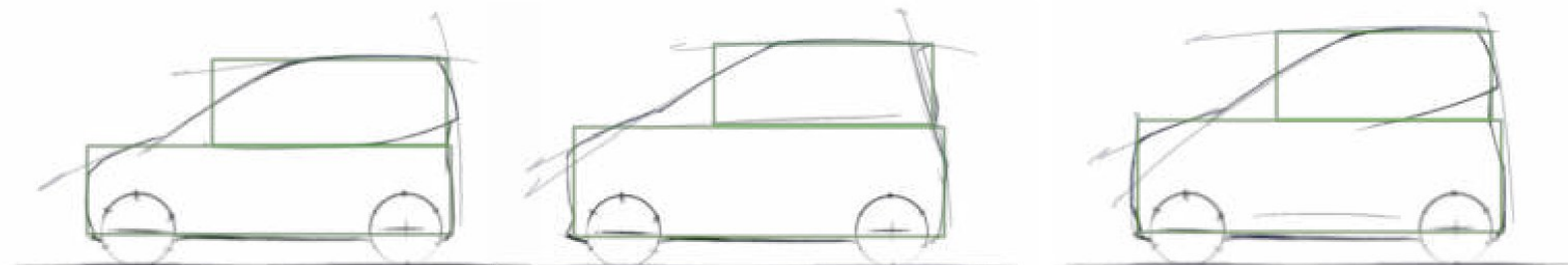
10.2 Volumes and Stance



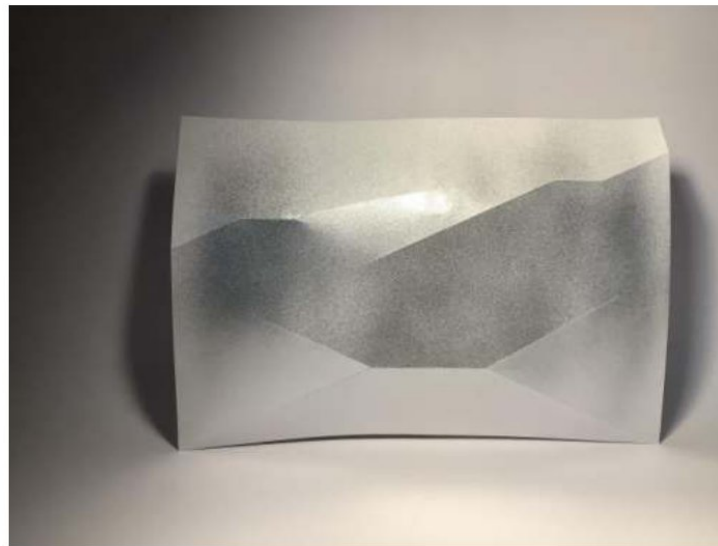
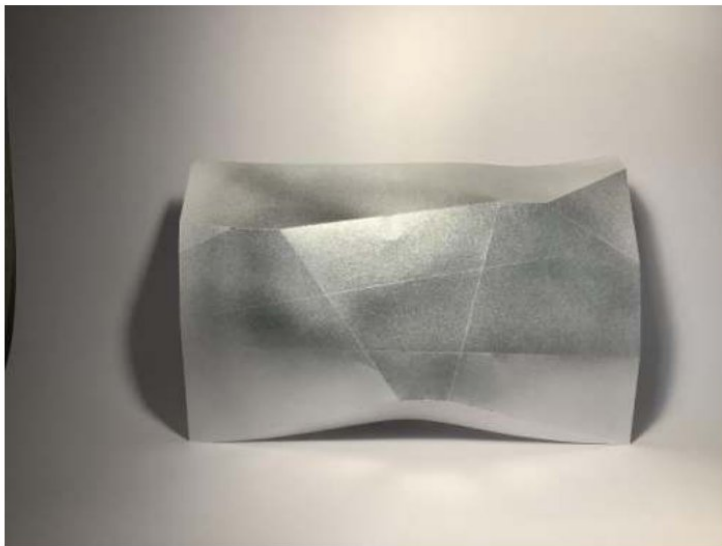
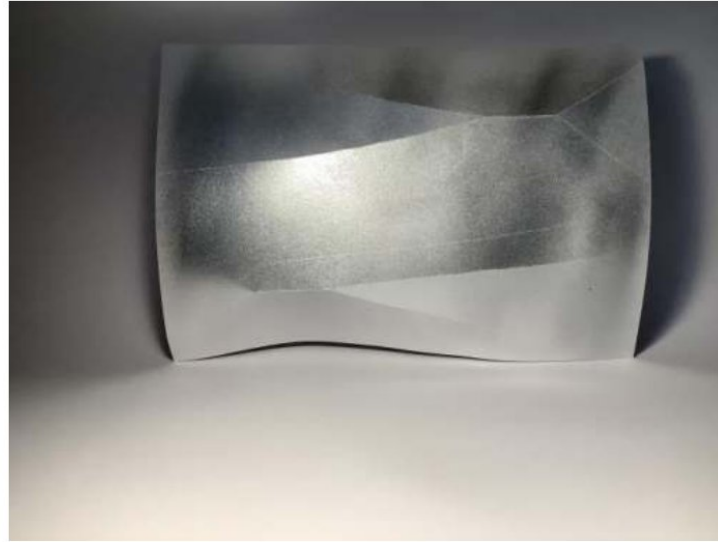
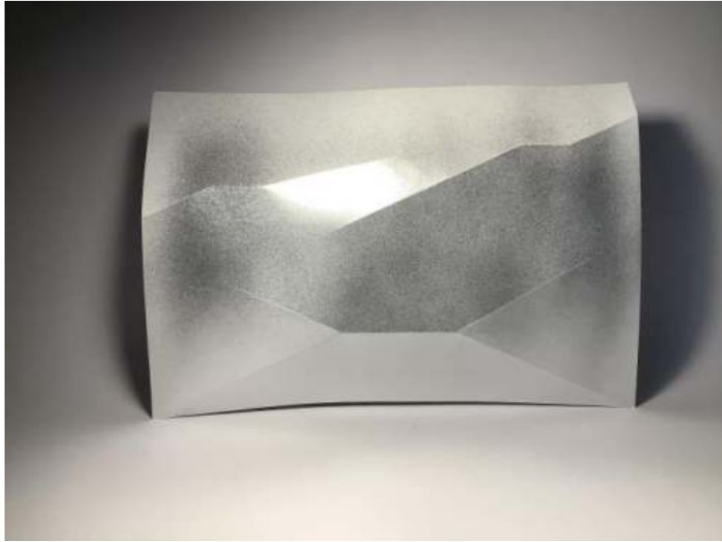
Volumes like the following were taken further for refinement



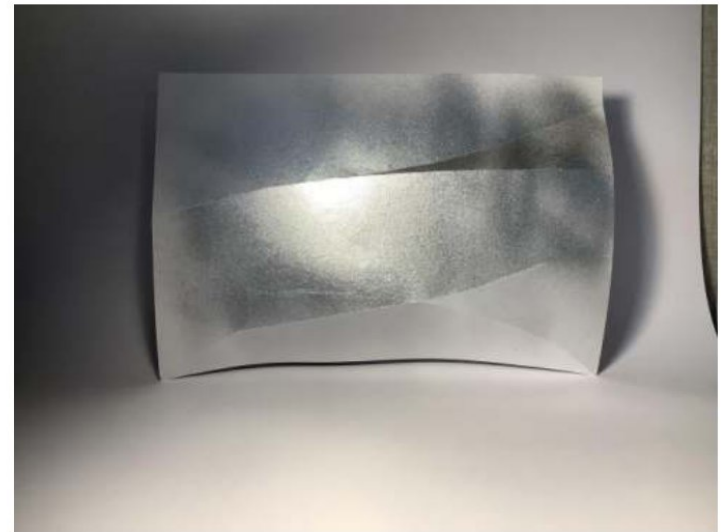
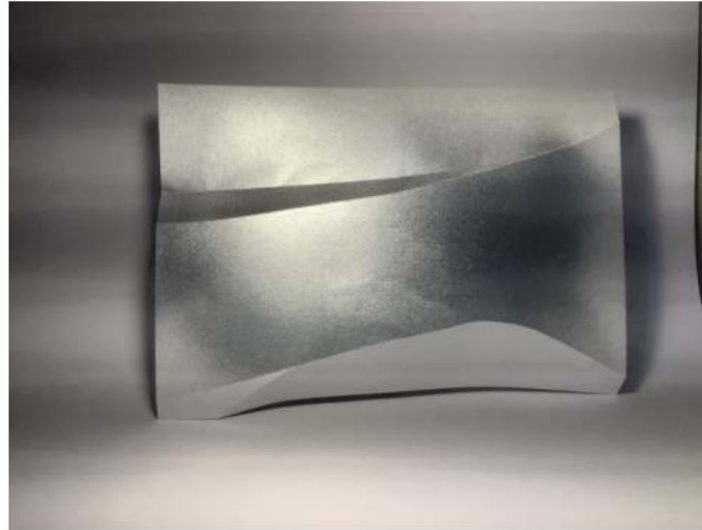
Volumes rejected due to lesser forward surging stance



10.2 Surface Study



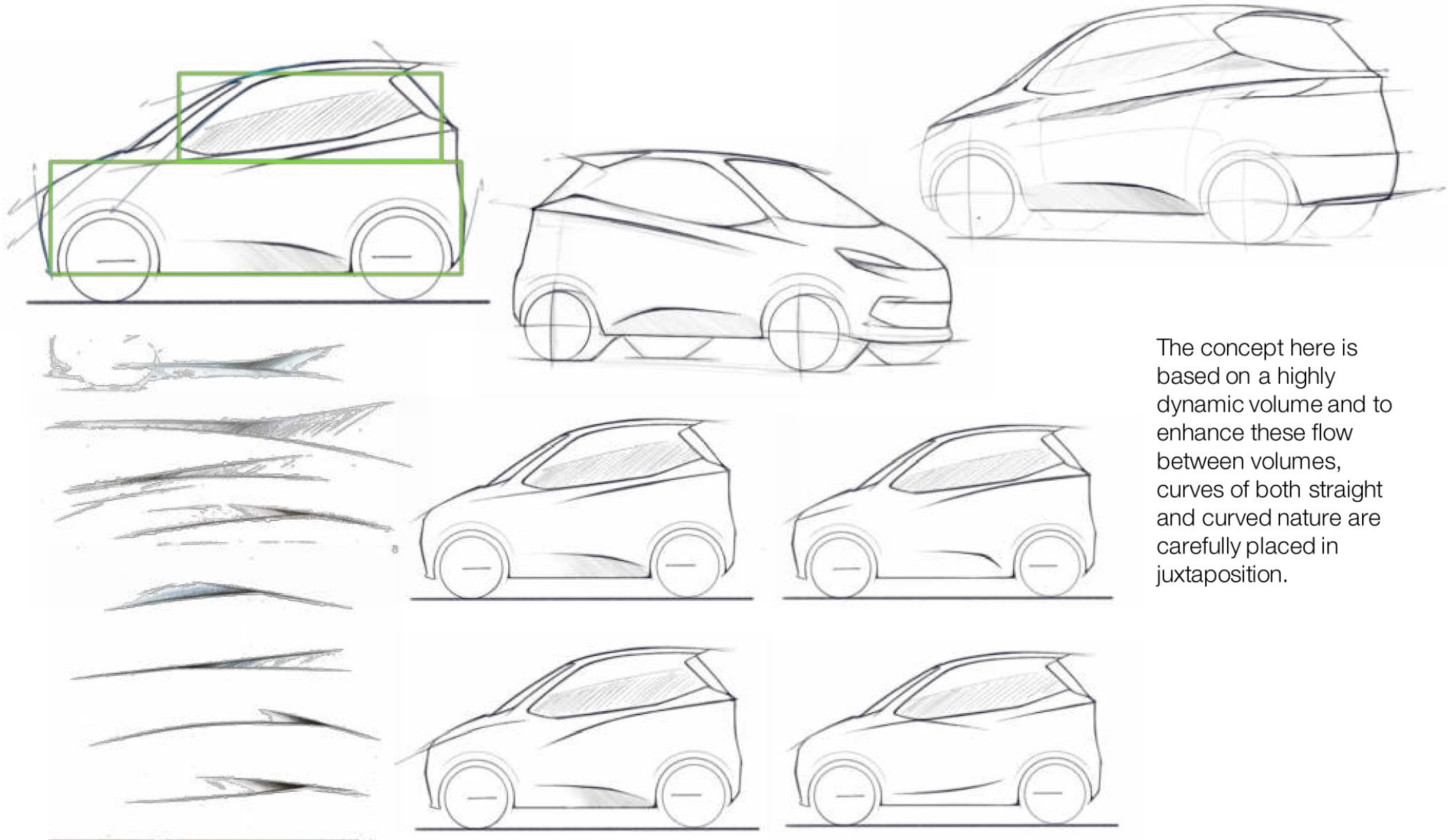
10.2 Surface Study



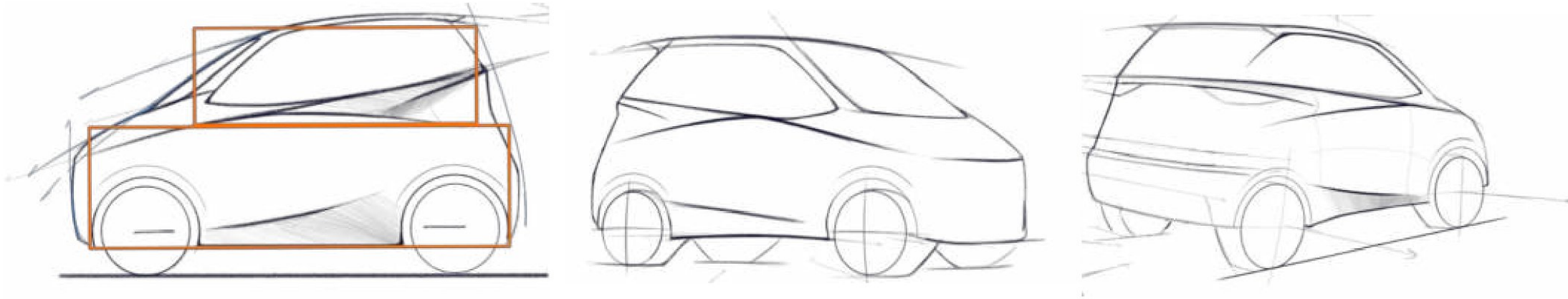
10.2 Surface Study



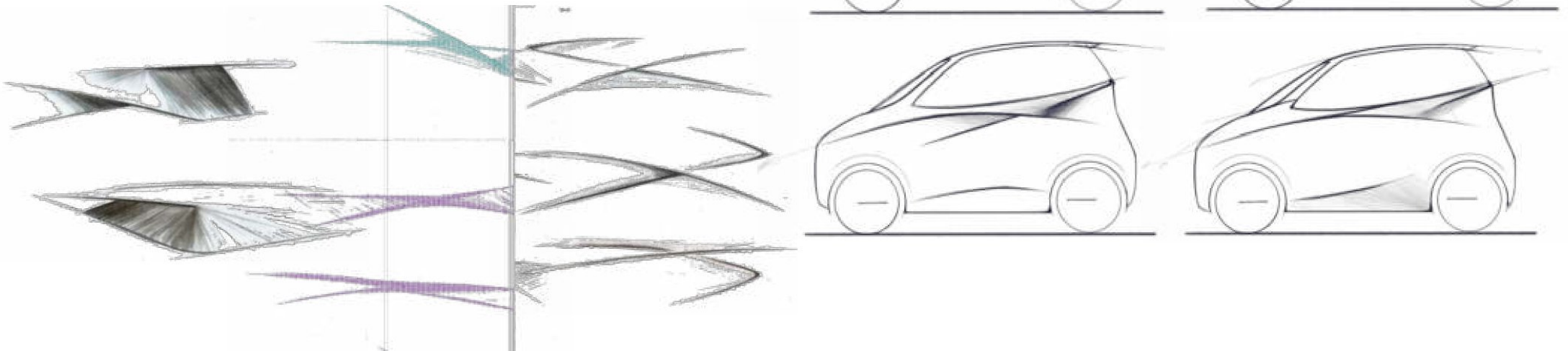
10.3 Concept 1



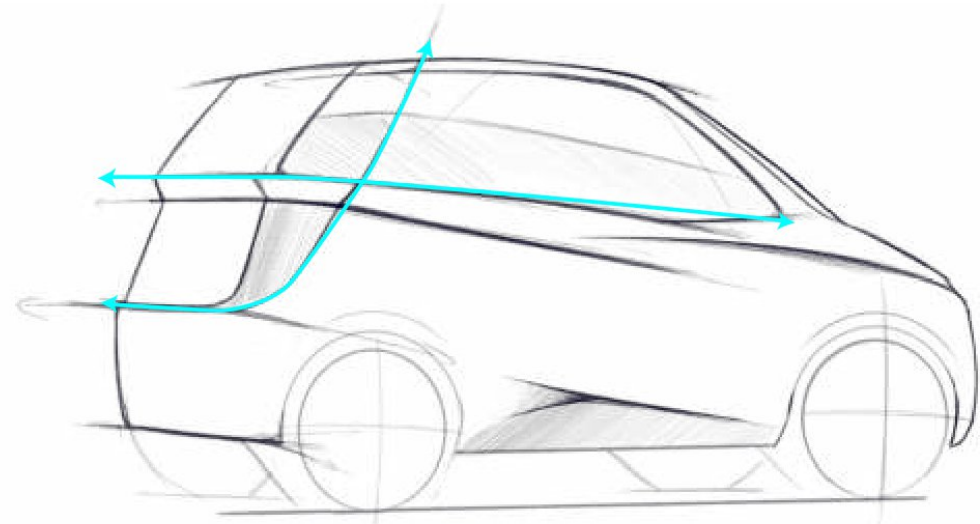
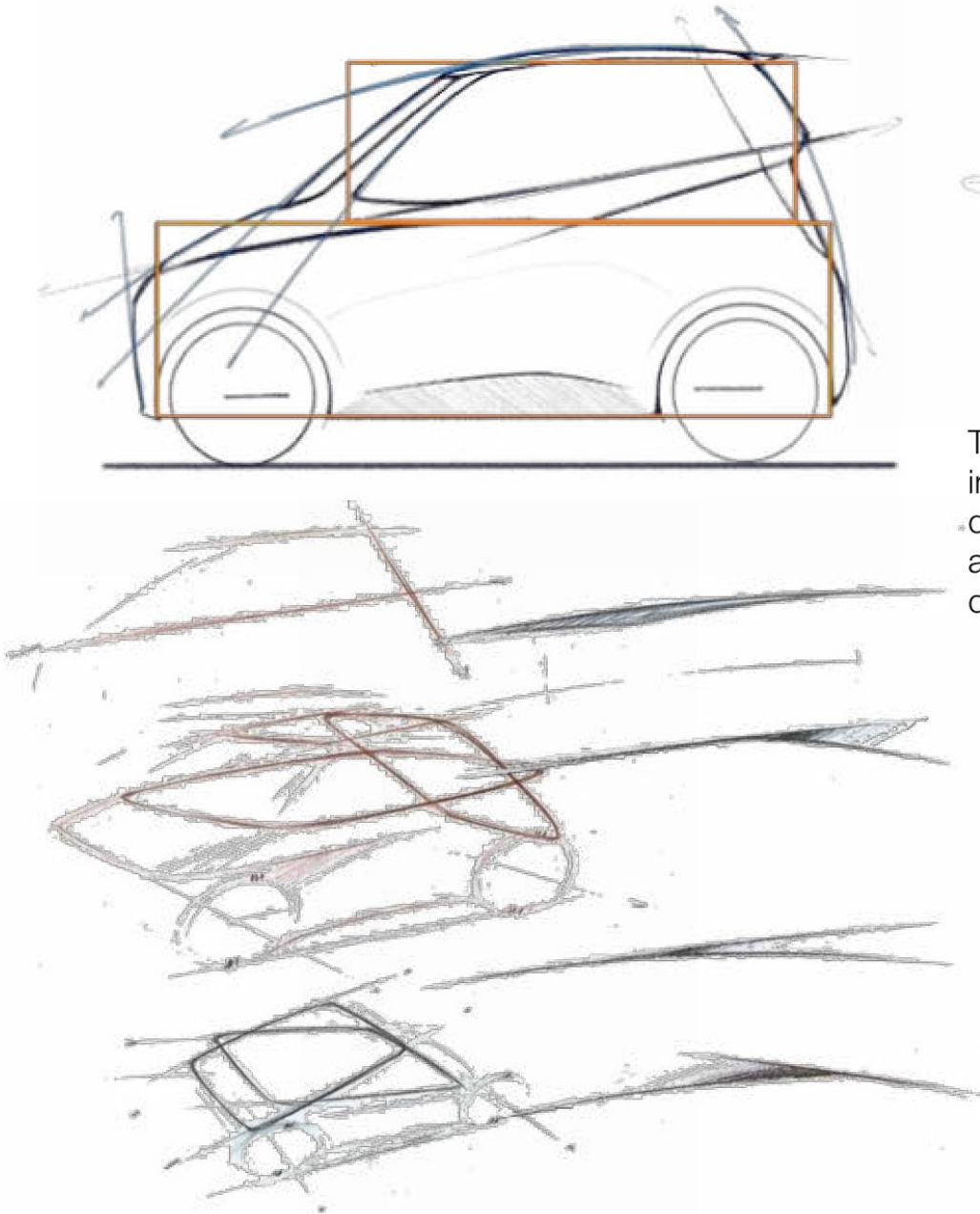
10.3 Concept 2



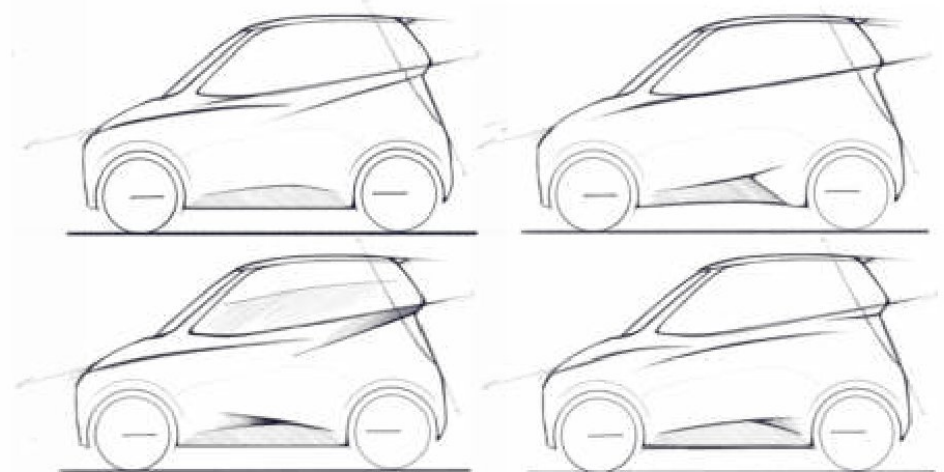
The idea behind this concept was to depict the dynamic usage of the vehicle through the intersections of straight and curved feature lines – the same way as the usage of the vehicle gets intersected by work and casual commitments by the intended users.

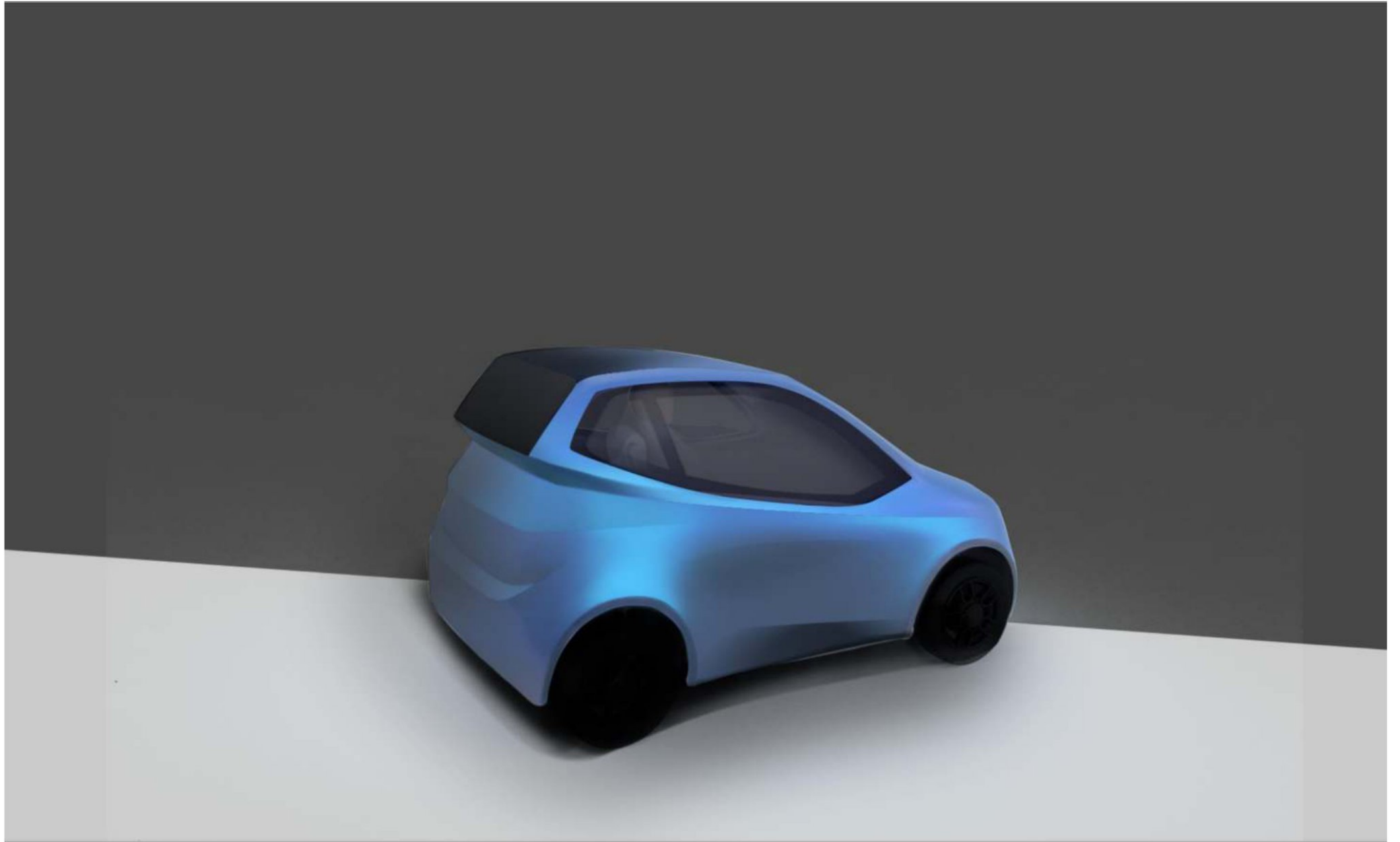


10.3 Concept 3



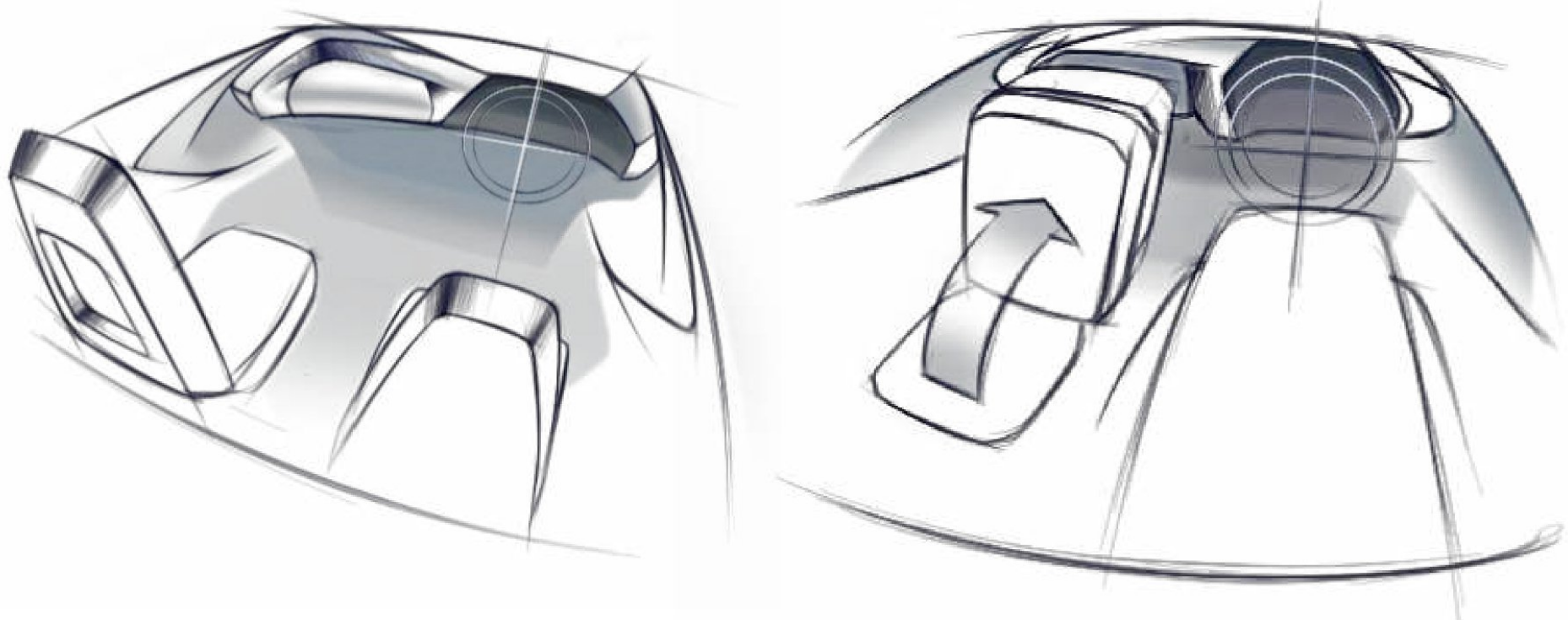
This concept interprets the lives and vehicle usage of the users in the form of two intersecting loops – one (horizontal) loop depicting the formal and work-related usage and the other loop a vertically inclined one and closer to the driver, showing the dynamic personality of the user





10.3 Concepts - Interior

To maximize the overall volume inside the vehicle in every mode of operation – single, dual, heavy luggage, ideas were generated on how to create space when needed. This concept of foldable co-passenger seat and easily clamped on the dash was one such iteration.



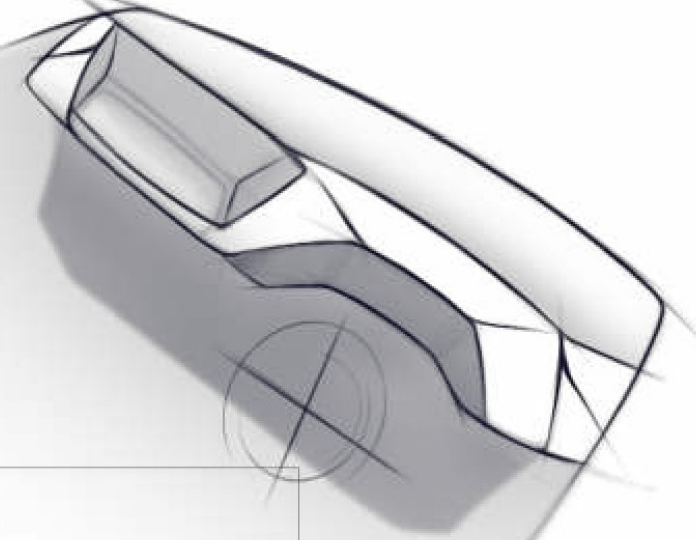
10.3 Concepts - Interior

In this concept, the steering wheel was made capable of sliding into a central position when in single riding mode to have more sense of space for the user.

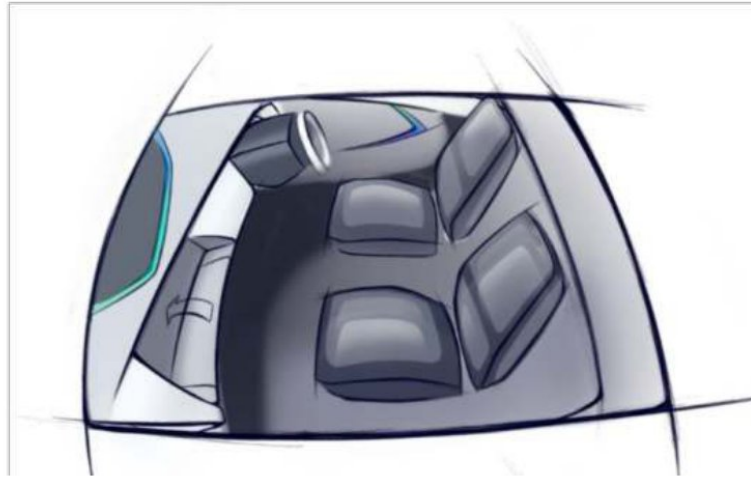


10.3 Concepts - Interior

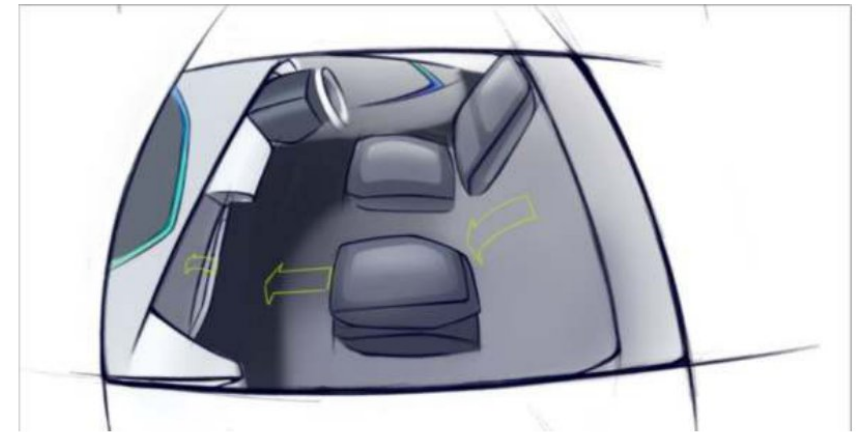
The concept for interior is informed by the multi-layered personality of our primary personas – **Young adults who don't want to have just a single kind of environment, rather an environment that is customizable according to its usage.**



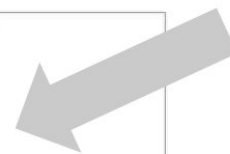
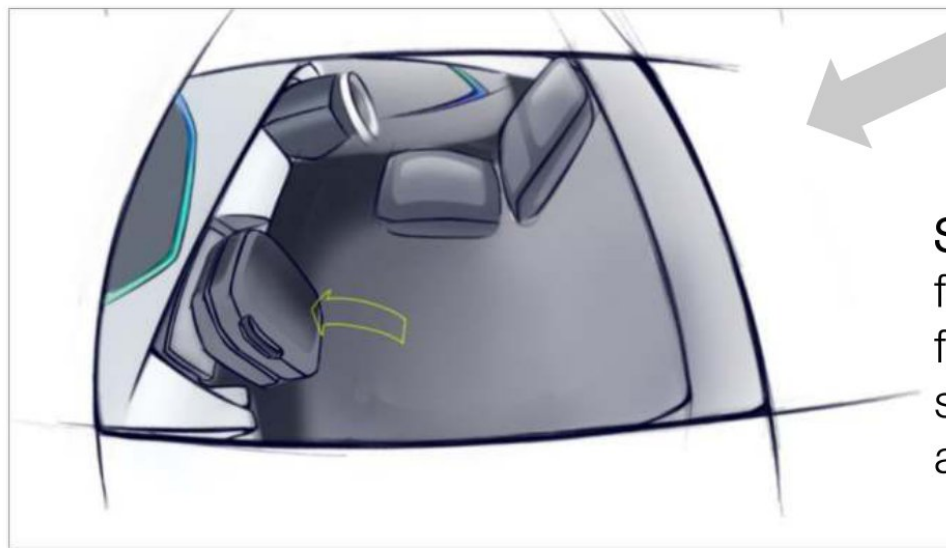
Interior – Space Optimization



Base Configuration – Side-by-Side seating for two, standard cargo space

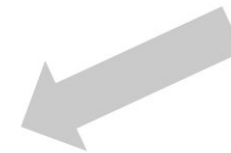
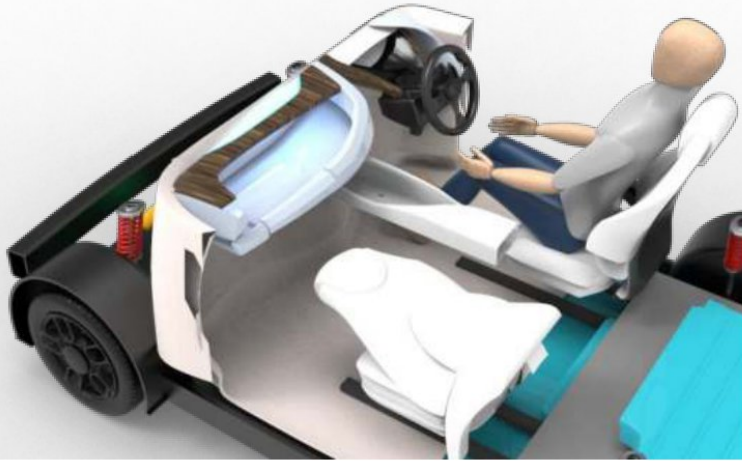


Transient Configuration – Co-Passenger seat could be folded flat when not in use and additional room for user and cargo is created



Single Configuration – Co-passenger seat is fully folded and clamped onto the dashboard. This frees up a lot of space for multiple use case scenarios like heavy luggage, shopping or just additional space!

Interior – Space Optimization



Section 11

CAD Model Development

- Iterative evolution
- Final Model

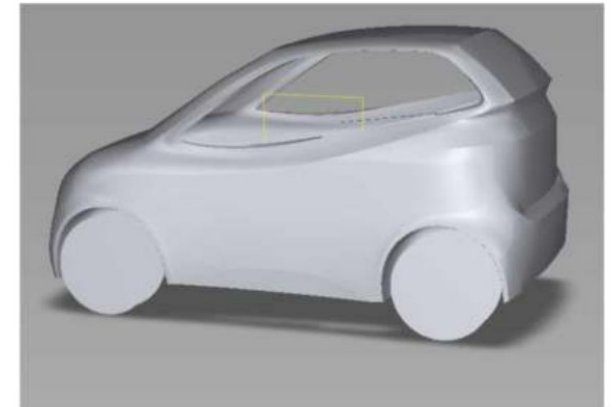
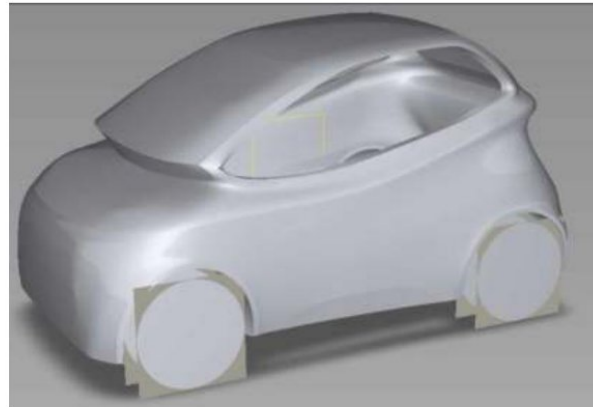
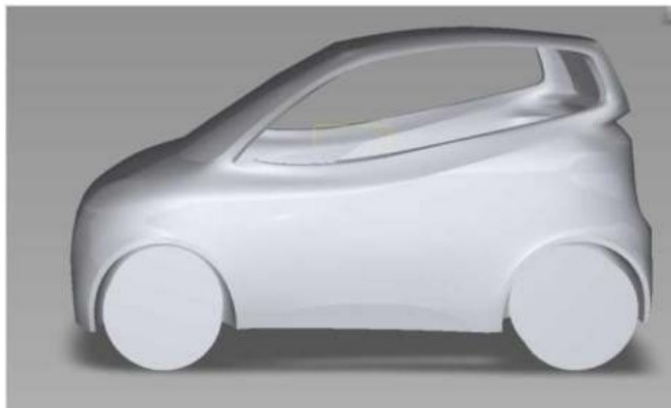
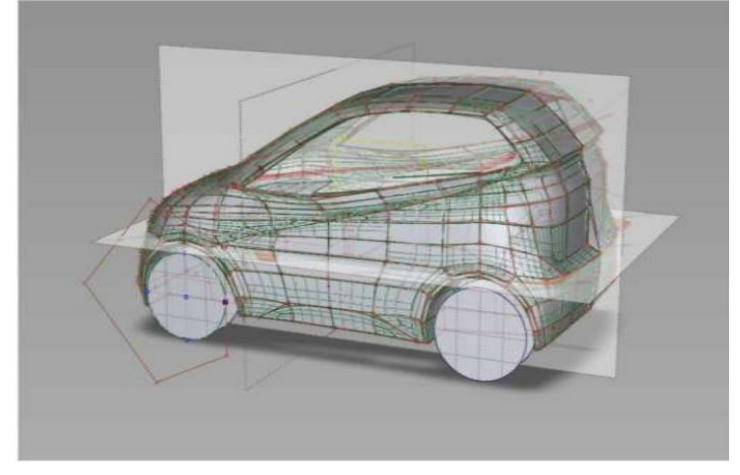
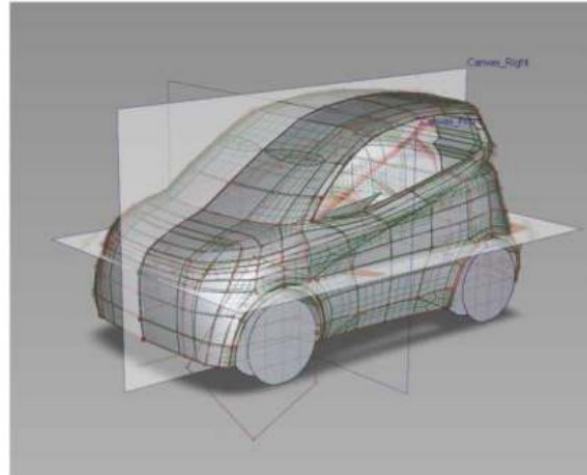
Aim of this section

Modeling the interior components and Exterior surface

Tools/Practices Used

Autodesk Alias, Solidworks

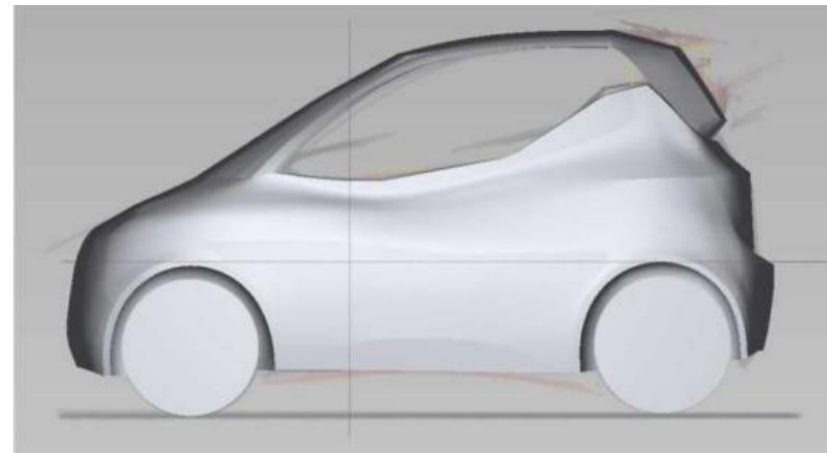
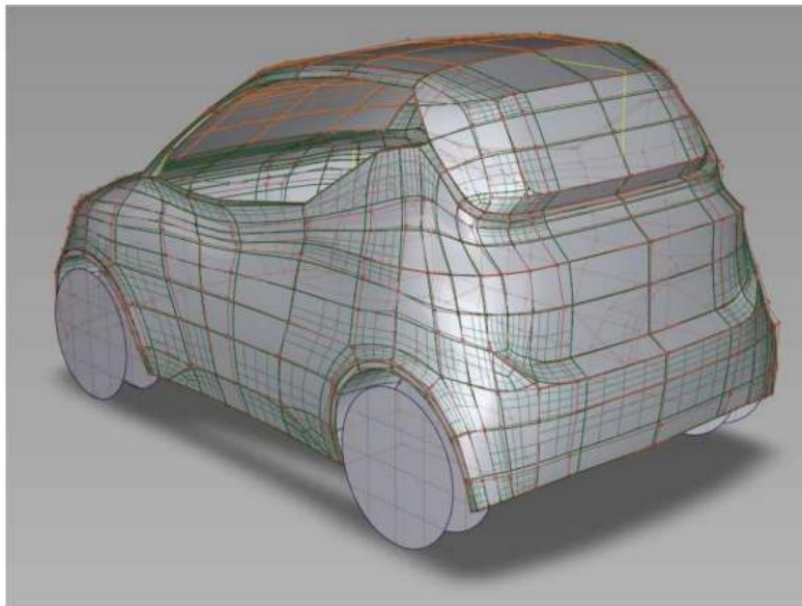
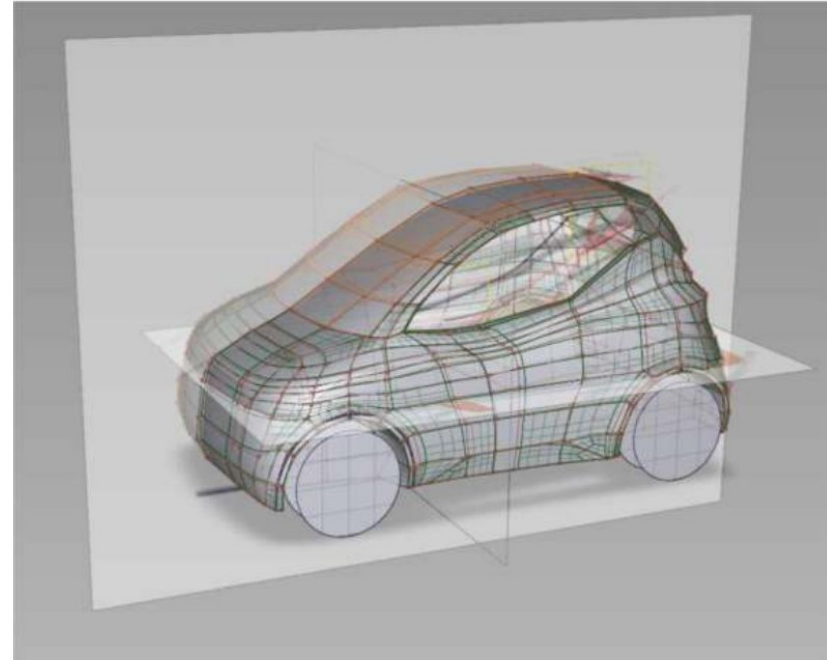
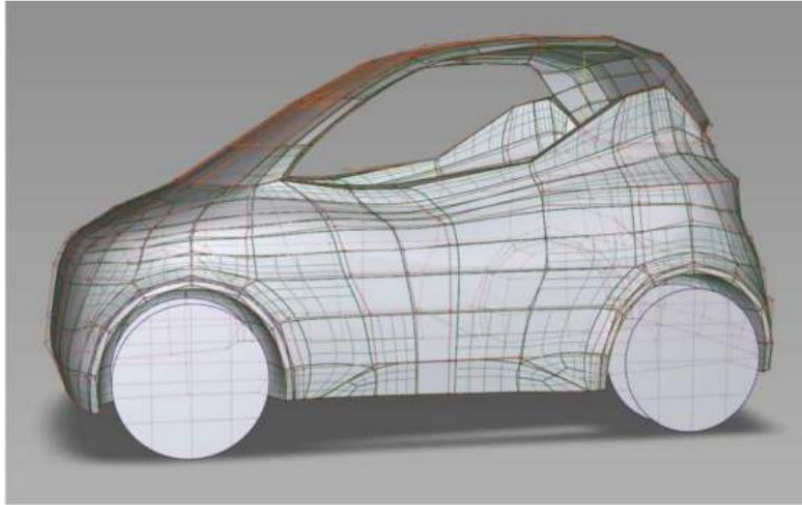
11.1 Iterative Modeling



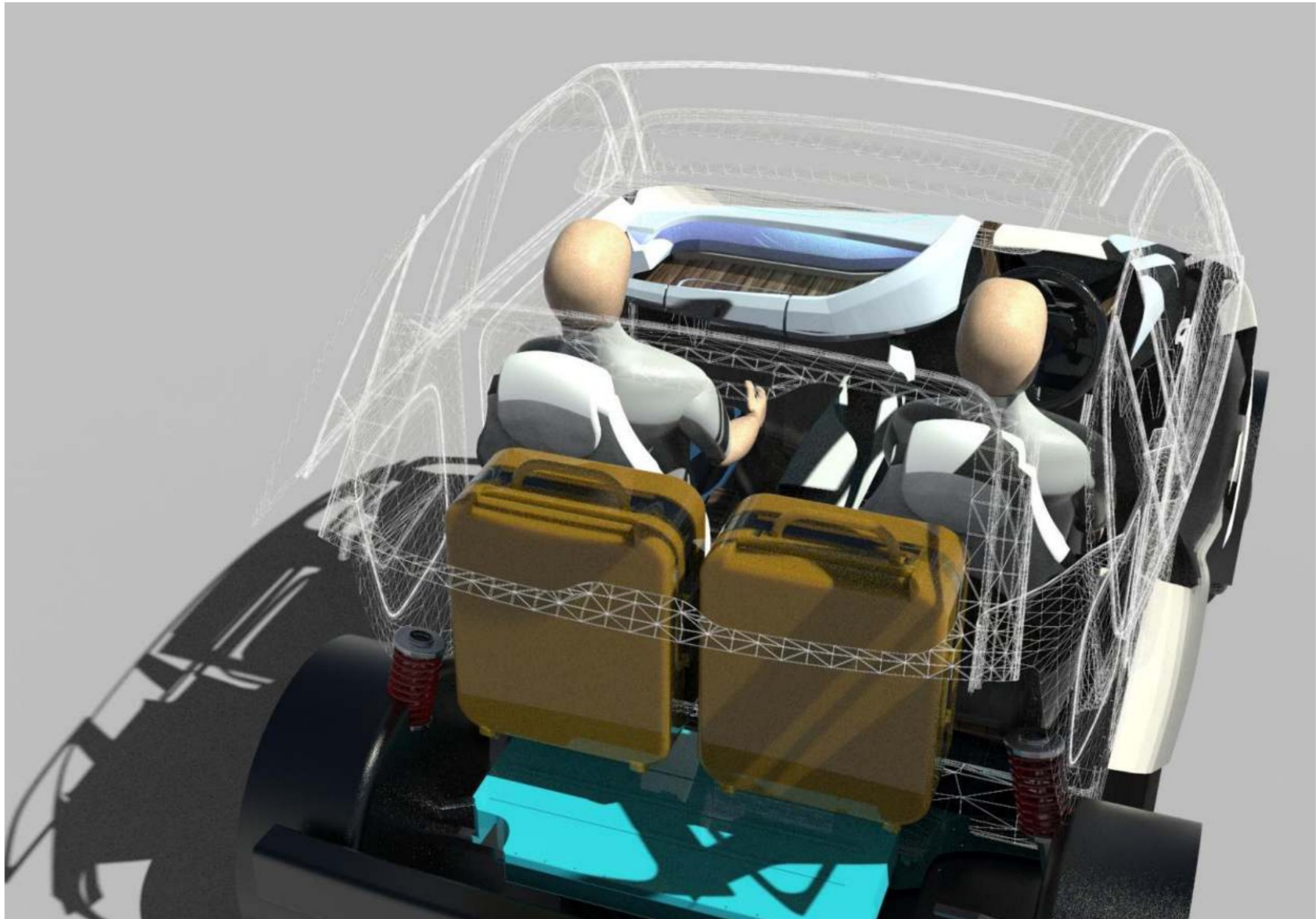
11.1 Iterative Modeling



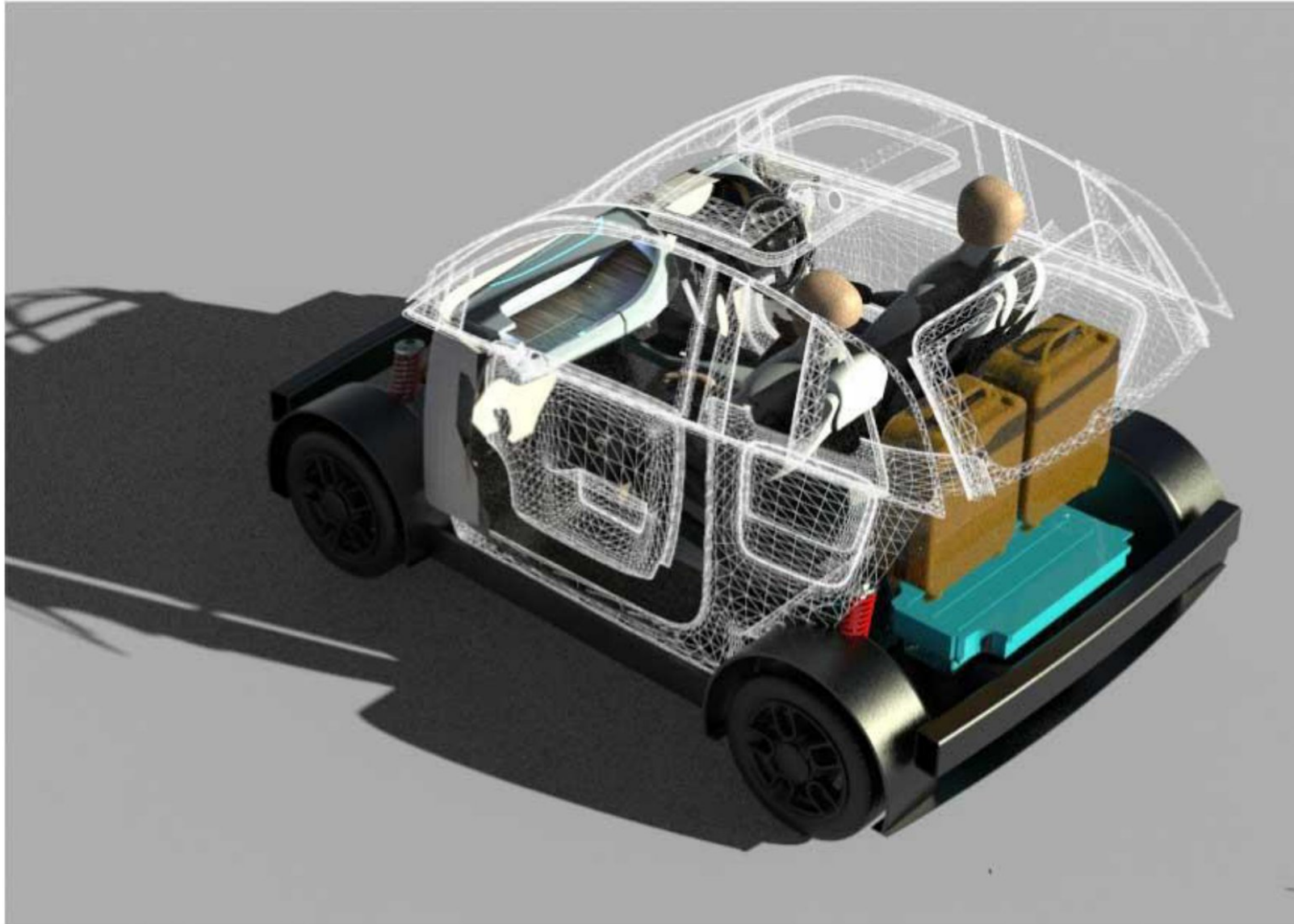
11.2 Final Model



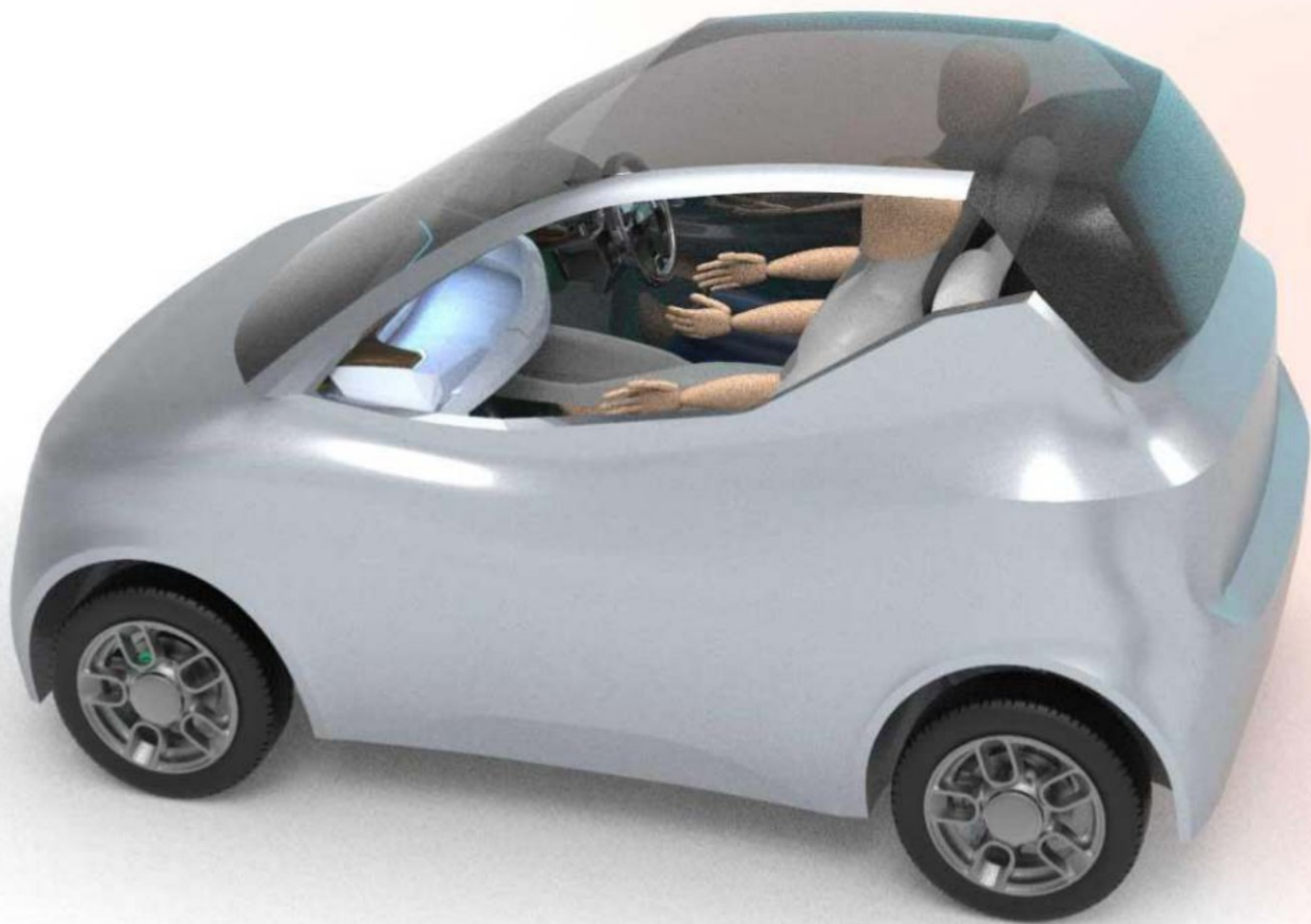
11.2 Final Model



11.2 Final Model







Section 12

Renders

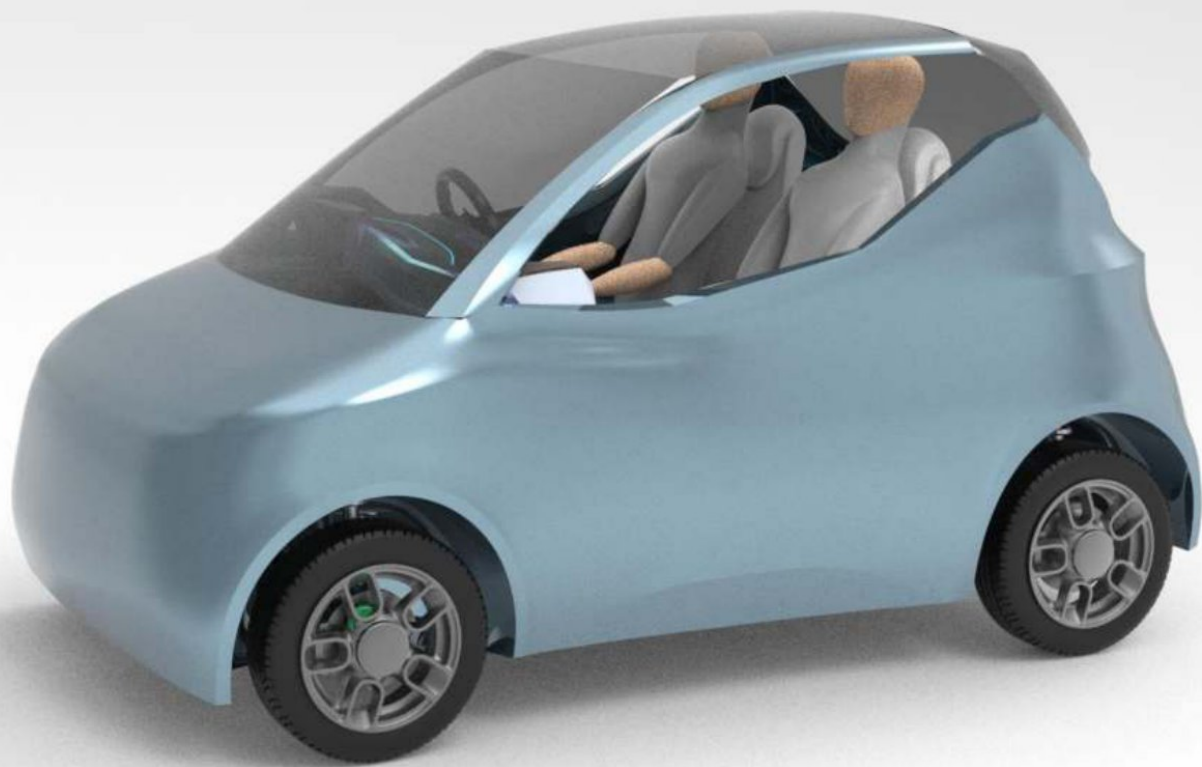
- Exterior Renders

Aim of this section

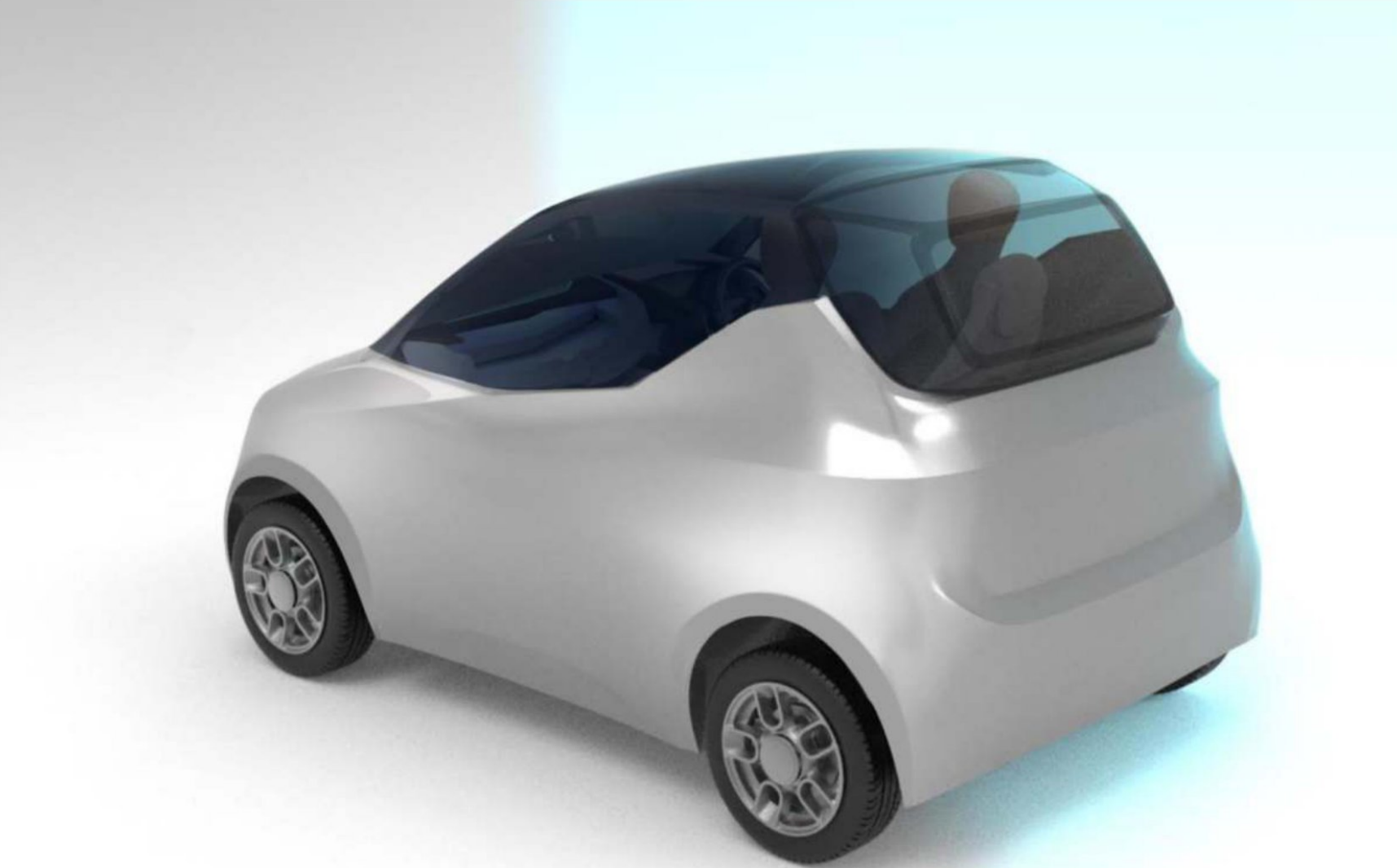
Photorealistic renders of the concept

Tools/Practices Used

Sketching, Software based rendering









Section 13

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Section 14

Appendix

- Surveys
- Empathy Maps
- Personas
- Layout Study Responses
- Sketches

Vehicle Usage Survey - I

Hi, this survey consists of a few questions aimed at gathering basic knowledge of your travel choices. Feel free to give feedback in the comment section provided after the last question.

* Required

General Thoughts

In this section, I would like to know about you and your general attitude towards different mobility solutions.

1. Please select your current status from the options given below *

Check all that apply.

- Student
- Employed
- Self Employed
- Others

2. In general, my feelings towards cars are *

Check all that apply.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
They are comfortable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They give convenience	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They allow one to travel safely	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They give freedom to go anywhere anytime	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They are expensive to own and maintain	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They allow one to show social status	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
They are environmentally friendly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. Please indicate your level of agreement to the following statements below *

Check all that apply.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Cars are essential and really add value to life	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
There's a social pressure to own a car in my society	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other modes of transport (public transport, bicycles, walking) are looked down upon	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think people should make less use of cars	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel guilty in using a car	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Travel Patterns and Choices

In this section, I would like to ask a few questions about your travel patterns and experiences.

4. What do you think about the current public transport in the place you live? *

Check all that apply.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I get annoyed by long waiting times at stops	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The vehicles are dirty	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I feel unsafe using public transport	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The service network covers my area well	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The service is convenient	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. Is it possible for you to take public transport for most of your trips? *

Check all that apply. Yes No

6. On average, please indicate the number of trips you make to your workplace in a week? *

7. While commuting for work.. *

Please consider the work trips you make

Mark only one oval.

- I usually travel alone
- I travel with family
- I travel with friends
- I travel with Colleagues

8. While commuting for work, I usually cover a distance of *

Please consider the work trips you make

Mark only one oval.

- Less than 1 km
- Between 1 - 5 km
- Between 5 - 10 km
- Between 10 - 15 km
- Greater than 15 km

9. While commuting for work, I use the following mode of transport *

Please consider the work trips you make

Mark only one oval.

- Car
- Bus
- Train/Metro
- 2 Wheeler
- Walk/Bicycle
- Other

10. On average, please indicate the number of trips you make to shop in a week *

11. While going to shop.. *

Please consider the work trips you make

Mark only one oval.

- I usually travel alone
- I travel with family
- I travel with friends
- I travel with Colleagues

12. While going to shop, I usually cover a distance of *

Please consider the work trips you make

Mark only one oval.

- Less than 1 km
- Between 1 - 5 km
- Between 5 - 10 km
- Between 10 - 15 km
- Greater than 15 km

13. While going to shop, I use the following mode of transport *

Please consider the work trips you make

Mark only one oval.

- Car
- Bus
- Train/Metro
- 2 Wheeler
- Walk/Bicycle
- Other

14. On average, please indicate the number of LEISURE trips you make in a month *

15. While going on a LEISURE trip. *

Please consider the work trips you make

Mark only one oval.

- I usually travel alone
- I travel with family
- I travel with friends
- I travel with Colleagues

16. While going on a LEISURE trip, I usually cover a distance of *

Please consider the work trips you make

Mark only one oval.

- Less than 1 km
- Between 1 - 5 km
- Between 5 - 10 km
- Between 10 - 15 km
- Greater than 15 km

17. While going on a LEISURE trip, I use the following mode of transport *

Please consider the work trips you make

Mark only one oval.

- Car
- Bus
- Train/Metro
- 2 Wheeler
- Walk/Bicycle
- Other

Towards Vehicle Ownership

In this section, I would like to know more about your aspirations and feelings towards vehicle ownership

18. Please select the types of vehicle you currently own from the list given below. *

Mark only one oval per row.

	Car	Motorcycle/Scooty	Bicycle	I currently don't own a vehicle
Vehicles I own	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

19. Please consider the worrying or annoying factors of your current vehicle and answer the following statements *

Check all that apply.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
My vehicle doesn't feel safe	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My vehicle doesn't have adequate storage space	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My vehicle has a high running cost	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I struggle to find a parking spot for my vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I usually feel comfortable while travelling with my vehicle	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

20. Please consider the following statements about model of vehicle ownership and rate them *

Check all that apply.

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I would like to own a vehicle in the next 5 years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have no issues sharing my vehicle when I don't need it	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can choose a purpose built vehicle for a specific need, for e.g. commuting to work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I want my vehicle to solve all my mobility needs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Optional Section - For those who use a personal car

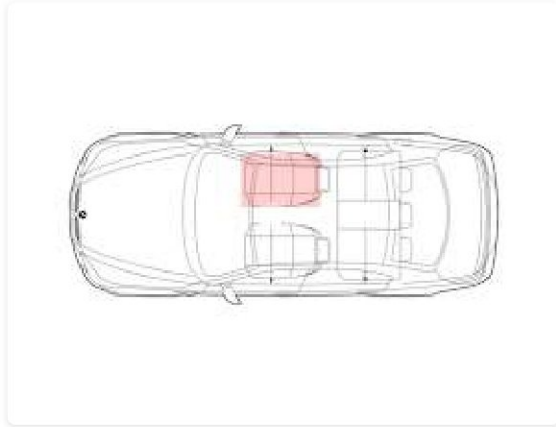
21. Please state the type of vehicle you own from the list given below.

Mark only one oval.

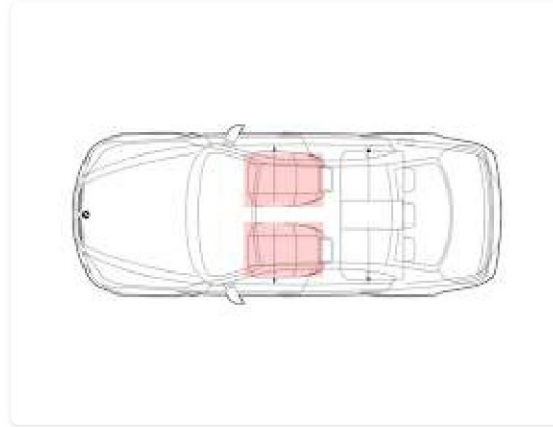
- Hatchback
- Sedan
- SUV
- Van/Others

22. Please select from the highlighted areas of the car you use the most while COMMUTING TO WORK. (Consider the space occupied by you, other passengers, luggage etc.)

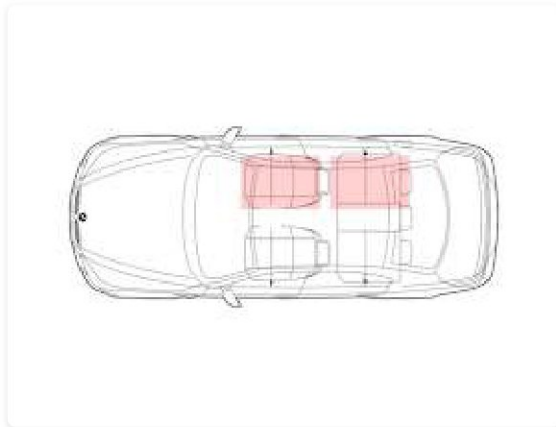
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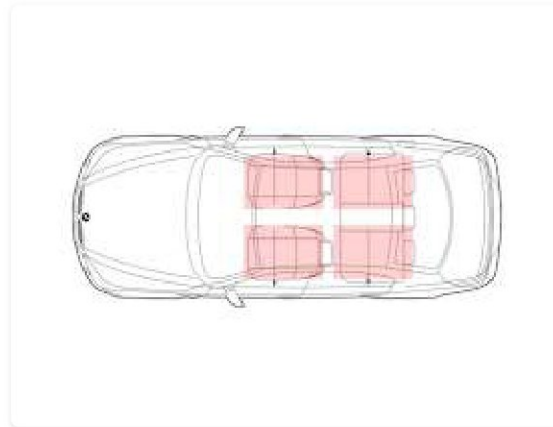
Option 1



Option 2



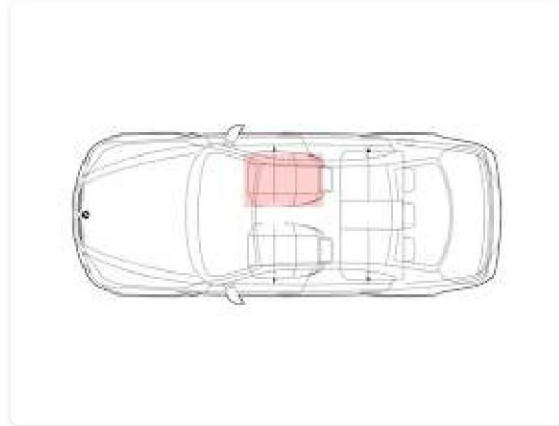
Option 3



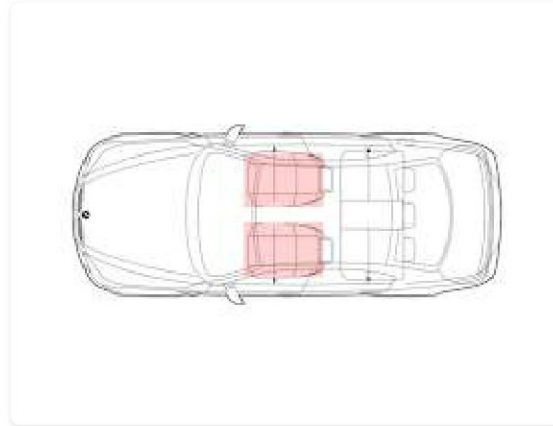
Option 4

23. Please select from the highlighted areas of the car you use the most while GOING FOR SHOPPING. (Consider the space occupied by you, other passengers, luggage etc.)

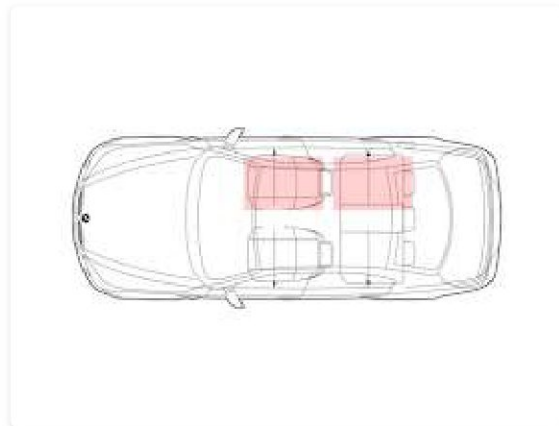
Mark only one oval.



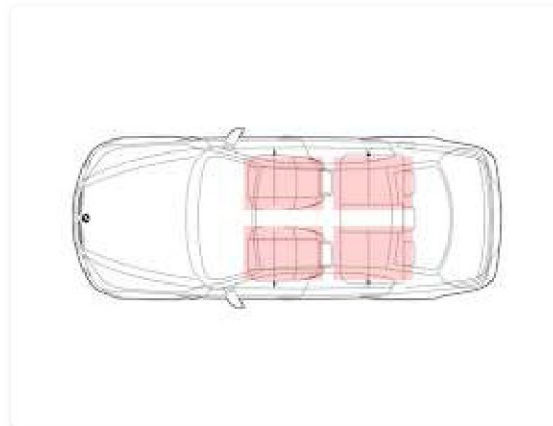
Option 1



Option 2



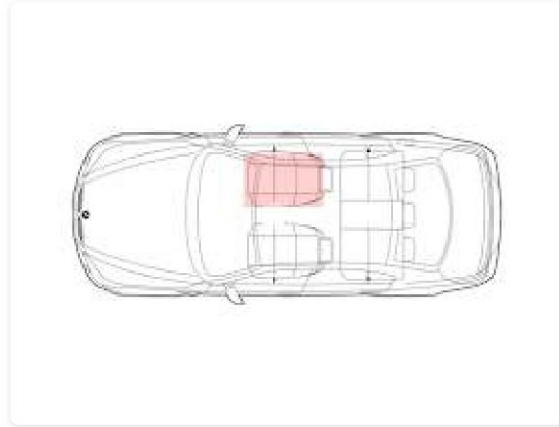
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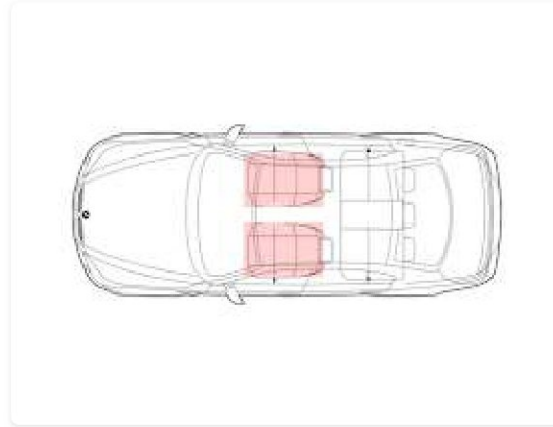
Option 4

24. Please select from the highlighted areas of the car you use the most while GOING ON LEISURE TRIPS. (Consider the space occupied by you, other passengers, luggage etc.)

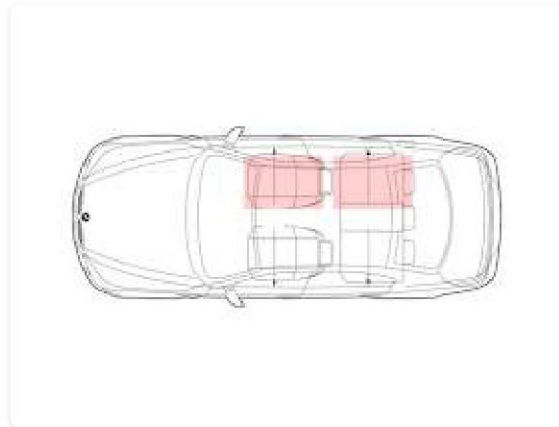
Mark only one oval.



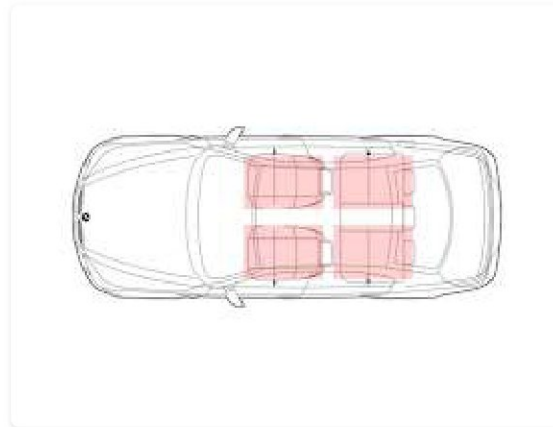
Option 1



Option 2



Option 3



Option 4

25. Would you consider giving up the space you're not using in your vehicle for a more compact vehicle? *

Mark only one oval.

Yes

No

Maybe

26. Please mention any feedback or additional comments you would like to give on your vehicle usage

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Google Forms

Vehicle Usage Survey

Hi, this survey consists of a few questions aimed at gathering basic knowledge of your travel choices. I'm trying to understand the choice of vehicles and their usage in different scenarios by you. Kindly supplement the answers with any of your experiences that you would like to share.

* Required

1. Please mention your name. *

2. Please select your current status from the options given below *

Mark only one oval.

- Student
- Employed
- Self Employed
- Others

3. Please indicate the type of vehicles you currently own. Also mention whether it is primarily used for your personal travel or is a shared vehicle among your family. *

Experiences and aspirations

In this section I would like to know more about your travel patterns, concerns and experiences. Please feel free to share as many relevant stories and experiences as possible!

4. What mode of vehicles do you currently use for your major travel needs? (For example - Car for commuting to work, public transport for shopping trips, car for long distance trips etc.) *

5. Please give a glimpse into your typical journey with your vehicle. You may give some interesting experiences that may have during your trips too. (For example - I take my car and with normal traffic I reach in about 30 minutes or when I use carpooling I tend to reach in 45 minutes.) *

6. What are the attributes you appreciate in your current vehicle? *

7. What might be some concerns you feel while travelling with your vehicle? (For example - lack of comfort, lack of safety features, high costs of running and ownership, difficulty to park etc.) *

8. Please share some scenarios in which you had to suffer difficulties specifically due to the size of your vehicle. (You may think of parking issues, difficulty in driving through traffic etc.)

9. In what situations do you need extra space in your vehicle for other than yourself? (For example - while carpooling, onboarding a colleague or using ridesharing apps like Quickride, or supermarket runs for grocery) *

10. When some fellow passengers might be travelling along in your vehicle, where do you prefer them sitting? This may vary for friends/colleagues/family etc. and for different purposes too! (For example I tend to have people sit in the front for easy communication or in the back for better privacy) *

11. How do you tend to store your regular luggage or belongings while travelling? (For example - keeping the office bag nearby in the front seat or back seat, storing shopping goods directly in the boot space.) *

12. Please describe what would your dream experience of travelling to work, going for shopping or for leisure trips might look like. Please don't consider that you have to use your current vehicle only and you may be as fictional as you want! *

13. Please rate the following attributes based on your priorities during work trips *

Mark only one oval per row.

	Low priority	Neutral	High Priority
Comfort	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Space for luggage	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cost of running	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Additional Seating - More than 2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

14. Would you be willing to change your current vehicle for a solution that would help you get more closer to your priorities you just mentioned? (For example - a vehicle that would be super economical or a vehicle that would be very small and practical and thus easy to drive and park!) *

15. If you feel that your current vehicle gives a bigger space than your majority of travel needs require, would you be willing to shift to a smaller vehicle? *

Mark only one oval.

- Yes
- No
- Maybe

16. If yes, then what you be most concerned about in a smaller vehicle than your current one? (For example I feel it wouldn't be comfortable on bad roads, it wouldn't give me as much safety or comfort as my current vehicle etc.) *

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Google Forms

EMPATHY MAP

Kumar Anurag // 24 // Bangalore

SAYS

- I feel very comfortable in my car but get tired anyways due to distance and traffic
- I see a sea of commuters stuck on flyovers every morning
- I have no access to metro and cabs are too costly
- I feel my car costs me moderate
- I like my personal space where I can interact with friends or colleagues

- What else can I do to reduce my costs?
- When can I shift to reliable public transport?
- Why do people waste so much time travelling alone to the same place?
- Will I be able to reach office on time today?
- Should I commute really early to avoid traffic?
- Shall I take part in formal carpools?

THINKS

DOES

- Drives solo in the morning to reach office fast but uses ridesharing to reduce costs while returning
- Offers ride to colleagues while returning
- Keeps his office bag in the front for easy access to cards and water
- Takes a longer route to avoid traffic but travels 1.5x distance more
- Keeps the car well serviced due to bad roads and rainy weather

- **Anxious** before starting his journey anticipating traffic
- **Prudent** when comparing options to save costs
- **Safe** and Relaxed in his own space inside the car
- **Annoyed** about the cabs and two wheelers who drive carelessly
- **Frustrated** about the state of roads and infrastructure

FEELS



EMPATHY MAP

Renuka CS // 38 // Bangalore

SAYS

- I love my personal space I get while travelling
- I also value the safety and privacy I get
- I get exhausted driving after hectic workdays

DOES

- Does not like to share her car too much
- Doesn't use ridesharing apps but is comfortable in carpooling
- Only uses car for point to point travel between home and office
- Customizes her car to her liking
- Sometimes parks vehicle outside society due to lack of availability



- Space inside the vehicle is critical and won't like to give up
- Of shifting nearer to workplace
- Of enjoying her drive and not concentrating just on the traffic
- Taking care of other needs of the household while returning

- **Peaceful** in her own space
- **Concerned** about the costs
- **Worried** about availability of parking space at home
- **Exhausted** after driving in traffic

THINKS

FEELS

EMPATHY MAP

Rajesh Kumar // 54 // Delhi

SAYS

- Smaller cars lack basic comfort features also that's why I bought a bigger car
- I am looking for a cheaper alternative that gives me same comfort levels. Thought about owning a smaller car
- I feel unsafe in parking without dedicated space
- I bought the car for comfortable long distance rides to sites but mostly end up using the car in the city itself
- I'm waiting for cheap electric cars due to their low cost

- Ways of reducing running costs
- Comfortable environment is main motivation to use cars for anyone
- A lot smaller cars are needed actually
- Rentals/Leasing might be a solution for specific and occasional needs but not daily needs

THINKS

DOES

- Drives in single occupancy for all work trips
- Visits many places during a single day
- Keeps his laptop bag in the boot for safety
- Visits grocery stores at least once a week

- **Comfortable** when travelling to many places in a single day by car
- **Worried** about the safety of his belongings when parked or in traffic
- **Excited** towards using EV to save costs
- **Disappointed** by the features in smaller cars

FEELS



EMPATHY MAP

Sanober Khan // 26 // Noida

SAYS

- I employed a driver due to long commutes and ride in the back seat
- I feel I have to spend a lot to move around - both money and resources wise
- I want something more easier to drive and less exerting
- I feel very unsafe in using metros or even cabs due to recent incidents

- How can the exhaustion be reduced while driving?
- I need to combine my comfort and safety
- Can't sacrifice on the space inside the vehicle

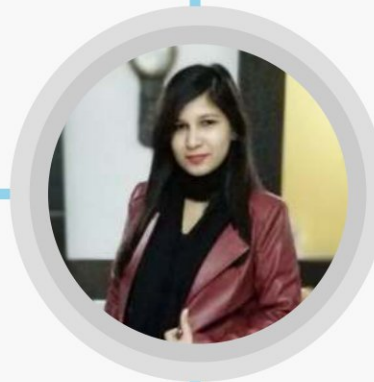
THINKS

DOES

- Travels very light in work trips and doesn't use boot space
- Uses carpooling occasionaly
- Prefers to walk to local market
- Takes special care for safety devices - carries pepper spray even when in car
- Ends up paying a lot of overtime to driver for long working hours

- **Conscious** about her safety a lot due to long commutes
- **Irritated** by the cost of her travel
- **Dependent** on people for travel
- **Comfortable** with the space she has in her car

FEELS



EMPATHY MAP

Aakriti Kansal // 26 // Delhi

SAYS

- I love my personal space I get while travelling
- I also value the safety and privacy I get
- I get exhausted driving after hectic workdays

DOES

- Does not like to share her car too much
- Doesn't use ridesharing apps but is comfortable in carpooling
- Only uses car for point to point travel between home and office
- Customizes her car to her liking
- Sometimes parks vehicle outside society due to lack of availability



- What else can I do to reduce my costs?
- When can I shift to reliable public transport?
- Why do people waste so much time travelling alone to the same place?
- We harm the environment with our travel choices
- About moving her home nearer to workplace to avoid long commutes

- Peaceful in her own space
- Concerned about the costs
- Worried about availability of parking space at home
- Exhausted after driving in traffic

THINKS

FEELS

EMPATHY MAP

Shruti Modi // 27 // Delhi

SAYS

- Smaller cars lack basic comfort features also that's why I bought a bigger car
- I am looking for a cheaper alternative that gives me same comfort levels. Thought about owning a smaller car
- I feel unsafe in parking without dedicated space
- I bought the car for comfortable long distance rides to sites but mostly end up using the car in the city itself
- I'm waiting for cheap electric cars due to their low cost

- How can I reduce my costs?
- Can I get a safer way to keep my belongings while travelling?
- Smaller car might be unstable on bad roads I have to frequent
- Will I be able to reach office on time today?
- Should I commute really early to avoid traffic?
- Shall I take part in formal carpools?

THINKS

DOES

- Drives in single occupancy for all work trips
- Visits many places during a single day
- Keeps his laptop bag in the boot for safety
- Takes a longer route to avoid traffic but travels 1.5x distance more
- Keeps the car well serviced due to bad roads and rainy weather

- Anxious before starting his journey anticipating traffic
- Prudent when comparing options to save costs
- Safe and Relaxed in his own space inside the car
- Annoyed about the cabs and two wheelers who drive carelessly

FEELS



EMPATHY MAP

Rohan Modi // 32 // Delhi

SAYS

- I struggle a lot for finding parking spots near office
- I like to travel with my wife and drop her along my way as we get very little time otherwise
- I have no convenient access to metro

- How can I adopt a service which gives me flexibility with a kid also?
- We harm the environment with our travel choices

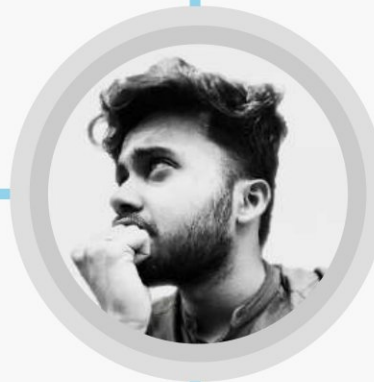
THINKS

DOES

- Drives solo in the morning to reach office fast but uses ridesharing to reduce costs while returning
- Offers ride to colleagues while returning
- Keeps his office bag in the front for easy access to cards and water
- Takes a longer route to avoid traffic but travels 1.5x distance more
- Keeps the car well serviced due to bad roads and rainy weather

- Anxious before starting his journey anticipating traffic
- Prudent when comparing options to save costs
- Safe and Relaxed in his own space inside the car
- Annoyed about the cabs and two wheelers who drive carelessly

FEELS



Interview Highlights

Travel routine and experiences

Tried to switch away from personal cars in favour of cabs/metro but proved very inconvenient and sometimes costlier than car.
Felt a lack of freedom and space and thus purchased a car.

Scenarios in which more space is needed

A colleague from work calls up for a ride or planned car-pooling - often
Impromptu plans with friends/colleagues in between or after work - often
Mom calls and asks to accompany her to market or for shopping - often

Pain points of current chosen mode - Car

Cost of running is too high for me
Have to pay rents for parking spaces both at home and office
Can get stuck for hours in traffic jams on weekdays

Ideal Scenario

I tried to lower my costs with ridesharing services like Quickride, but couldn't get many rides. However, i will pursue this. I would also like to switch to EV for lesser impact on environment

Proxemics

I always offer the front seat to anyone accompanying me.
When i used ridesharing, once a person sat in the back himself. I felt conscious all the time. From then on, i used to tell people to come sit in the front only so my attention is not divided

Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me



Aakriti Kansal
26, Architect
Delhi

Santro
>25 kms

“ I am just not comfortable with the amount of resources I use to travel.”

Everyday Activities

Starts her day with Music and Yoga
Spends most of the day at the studio with occasional site visits
Ventures out with colleagues and friends frequently in between work
Likes to come back and relax with good movies or baking
Has occasional trips to market with family

Vehicle Usage and Approaches

Uses personal car for trips to office and local markets. Metro for trips to shopping or exploring trips on weekends.
Is very open to idea of ridesharing to cut down on costs.
Is also open to the idea to using services like Zoomcar for other than her personal travel.

Frustrations

Always feels like wasting a major part of her earning on her transportation
Consciously thinks about the harmful effects of vehicles on environment. Thinks about the fuel she uses just for her travel
Has to pay separate rent at home and office for car. Had to convince family to shift to bigger apartment to get 2 parking slots.
Feels she wastes a lot of time in traffic and gets too tired to do anything productive after coming back home.

Motivations to use personal vehicle

Sees a gap in public transport network in being not accessible, convenient and safe for her. Using ride-hailing was too costly and based on chance of availability.
Has a busy and flexible lifestyle. Needs to travel mostly come up on the go.
Can travel with family members and friends with freedom.

Goals and Needs

Sees her personal vehicle as her personal safe space. Would want it to be more economical and practical too.
Wants a solution for her dynamic needs - impromptu plans with friends, shopping trips with family, trips to local villages etc.
Looking to use newer models like ridesharing to share her work trips and save costs
Needs a comfortable space for herself and fellow passenger along with sufficient luggage

Takeaways

Would require a comfortable space for herself and co-passengers(mostly one at most of the times)
Requires a sufficient luggage capacity to store grocery shopping from trips to market.
Prefers to have everyone from known people to rideshare users sit beside so that comfortable conversations can happen
Highly dynamic needs and thus need to park at various places safely. Also, additional expense for parking space seems as extra burden
Expects a major saving in running and ownership costs in her next vehicle

Interview Highlights

Travel routine and experiences

Due to unpredictable weather in Bnagalore, I tend to use a car most of the times and rarely use my bike. I prioritize my time while going to office and while coming back I often drop off my friends from work to their homes or get a ride from ridesharing.

Scenarios in which more space is needed

While returning from office when some of my friends are joining - often
When using ridesharing - prefer only one person - often
While taking my mother for shopping on weekends - rare

Pain points of current chosen mode - Car

Cost of running is too high for me
Frequent breakdowns due to bad weather and condition of roads
Frequently stuck in traffic jams daily

Ideal Scenario

I would love to reduce my travel time as much as possible. Ideally, i would love to have a sub 30 minute ride at max and would love to live closer to my workplace.

Proxemics

Being a frequent user of ridesharing services to cut on costs, I'm very comfortable in having people as co-passengers. I always ask them to sit in front as they are mostly employees of similar organizations and we end up having good conversations on the way.

Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me



Kumar Anurag
24, IT Employee
Bangalore

Baleno
>40 kms

“ I tend to enjoy my travel experience - and love to drop my colleagues to enjoy company ”

Takeaways

Uses the vehicle mostly with one co-passenger from office or in ridesharing mode.
Sees the vehicle as his space to have comfortable conversation with similar people and even further his networking
Doesn't need too much luggage space but very comfortable cabin space

Everyday Activities

Starts his day with just enough time to get ready and reach office

Spends most of the day at the office and doesn't get time to venture out in between

Returns to home and relaxes with good podcasts and movies.

Likes to go out with friends to nearby sightseeing places on weekends

Doesn't like to go out to shop or to markets because of tired experience

Vehicle Usage and Approaches

Major usage scenario is travel to workplace only.

Uses it in single occupancy in morning and in ridesharing mode in evening to share costs and curtail boredom of travelling alone.

Frustrations

Getting stuck in traffic jams frequently which takes up a lot of my time

Going through the hassle of frequent maintenance and service checks

High fuel costs

Damage to the vehicle due to bad roads and bumper to bumper traffic

Motivations to use personal vehicle

Since the distance from home to work is high, and a very limited network of public transport in the city, always used a personal vehicle to travel

Sees the vehicle as a shared space and likes to know other people through his drives

Can alter his route due to dynamic traffic and not be stuck in a public transport like bus.

Goals and Needs

Needs a comfortable and enjoyable experience while travelling.

Not concerned too much about the costs, and thus comfort is placed in higher priority than other factors

Needs a relaxing space to have conversations comfortably

Doesn't need much luggage but would expect sufficient for 2 people

Interview Highlights

Travel routine and experiences

Using a covered vehicle due to bad roads and lots of rainy days

I usually travel for a short distance in my car. I've been using it for a long time and I'm quite comfortable with it. I travel during early morning and in afternoon so usually my route is traffic free

Scenarios in which more space is needed

A friend wants to join in to workplace - rare
Going to shopping with whole family - rare

Pain points of current chosen mode - Car

No particular point of concern right now but due to low running and bad weather sometimes can result in breakdown

Ideal Scenario

I would like the quality of roads to improve in my route so that i can experiment with bicycle. But i feel my present mode gives me comfort and adequate protection.

Proxemics

I don't see the need to onboard people as my travel distance is quite short. Other than that, I feel every passenger should have sufficient space for himself.

Views on ownership

I am happy with my current solution and would like to continue it further too

A K Singh
58, Air Force Personnel
Bangalore

Swift
<8 kms

“ I have never experienced the peak of traffic due to my travel times. Would anyways prefer a car for comfort”

Takeaways

Fairly satisfied and comfortable
Hasn't experienced the vehicles in peak hours or for long daily travel or has parking issues

Everyday Activities

Starts his day early with light meditation before leaving for office

Returns by afternoon and spends the rest of day at home

Ocassional trips by walking to nearby lake or to a friend's place in the evening

Avid follower of sports and watches on TV with family

Vehicle Usage and Approaches

Uses personal car for daily trips to office.

Feels the cost of ownership and running is comfortable.

Rarely takes out car for shopping trips with family

Has proper space for parking at both home and office

Frustrations

Likes to handpick vegetables and fruits but can't take his car to the local market as proper parking space not available

Wants to use his car more in the evening but is held back due to predictions of traffic

Motivations to use personal vehicle

Feels that comfort is his priority while travel and other modes like bus can't deliver on that

Can use the vehicle in case of emergencies.

Goals and Needs

Is quite satisfied with the current levels of comfort given by the car and if considering a new one, would look for additional comfort only

Doesn't need a lot of space for luggage or features.

Sees his needs solved by his bike also but due to weather prefers a covered vehicle

Interview Highlights

Travel routine and experiences

I use a car for most of my travel needs comprising mainly of trips to workplace. I feel very much at peace during the journey and value it as my personal space. It usually takes me an hour in the morning as well as evening but as long as comfortable I don't mind the commute

Scenarios in which more space is needed

While returning from office when some of my friends are joining - rare
Taking kids or family for shopping or leisure - rare
Going to visit my hometown - rare

Pain points of current chosen mode - Car

Cost of ownership and maintenance are a little concern for me but I now use a host of apps for instant service in case of need.
I also struggle with finding a parking space at my home for the car

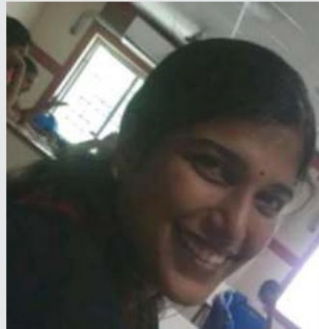
Ideal Scenario

I would love to make my travel as comfortable as possible with no parking issues. I would like to continue using a personal vehicle due to safety and privacy.

Proxemics

I'm not too comfortable with the idea of ridesharing to reduce costs as that would the number of stops in my trip. I would also have to be more attentive rather than relaxed during the journey.

Views on ownership



Renuka C S
38, IT Employee
Bangalore

Zen
>40 kms

“ I love the alone time I get in my journey. It's the most relaxing phase of my day ”

Takeaways

Values the vehicle space as her own personal time and space.
Not very keen on ridesharing but has co-passengers from work once in a while
Would like a very comfortable and customizable cabin

Everyday Activities

Has to start her day quite early to prepare for herself, 2 kids and her husband

Most of the day spent in office and leaves at night after 8-10 hours

Returns home fully exhausted but likes to read before going to bed

Generally rests on weekends and has to take leaves to go on family trips

Occasional shopping trips for grocery on weekends

Vehicle Usage and Approaches

Uses a car to travel to workplace most of the time in single occupancy mode with seldom trips with friends or colleagues

Likes to keep the vehicle customized to her liking

Is not too keen on the idea of sharing or leasing vehicles as she sees it as a personal space

Frustrations

Morning traffic in bangalore is her biggest source of frustration.

Parking spot at home not guaranteed. Open parking and not sufficient slots for all residents there

Motivations to use personal vehicle

Due to long distance and low accessibility of public transport in the city, has always had to use a car for commuting

Now, likes to spend time in it between hectic life at home and work

Though occasional, a colleague tags along for drop or pickup along the route and her car gives her flexibility to alter her route

Goals and Needs

Wants to make her travel less affected by traffic and more peaceful than current state

Doesn't feel uncomfortable with running costs

Wants a solution for her parking constraints

Interview Highlights

Travel routine and experiences

I usually travel to office in morning and back to home in evening. Sometimes, I need to travel to client meetings in the middle of the day. Used to travel in metro but now I use my personal vehicle(car/bike interchangeably) as I had to move away from my earlier home which was near to a station.

Scenarios in which more space is needed

A colleague from work calls up for a ride or planned car-pooling - rare
Dropping off my wife to her workplace - often
Going to shopping trips with wife - often

Pain points of current chosen mode - Car

I have my workplace in a very tightly packed market and it is a hassle for me to find parking. Therefore, end up using my bike on most days. Leads to a lot of exertion and tiredness with no protection from heat or rain.

Ideal Scenario

I would like to have a parking spot near my office as it is very convenient for me to drop my wife and continue to office in my car comfortably. Ideally, I would like for us to live really close to our workplace to remove this hassle of commuting.

Proxemics

Mostly I travel with wife only so space is never a problem. Rarely my parents come to visit and we go to some tourist place in the car comfortably. I don't see the scope of services like ridesharing for me.

Views on ownership

I would love to explore other options such as leasing/sharing as i currently feel this as a very big expense for me



Rohan Modi
32, Accountant
Delhi

i10
<20 kms

“I would like to get more value from my car. Sometimes, i have to leave it at home fearing for parking space”

Takeaways

Recognizes the value of a personal vehicle for his and his partner's travel journey but is limited by the constraints of parking space near his office

Is open to use leasing/renting for occasional trips with family

Everyday Activities

Starts his day and likes to follow news

Spends his day till evening in the office and doesn't find time to venture out

Returns to home with his wife and likes to relax and go to bed early

Has to go for frequent shopping trips for household items

Has very occasional trips to tourist places with family

Vehicle Usage and Approaches

Uses personal car for his own and his wife's trip to office if possible. Otherwise takes his bike and his wife takes the car.

Is open to exploring services like ridesharing for his commute but irregular availability stops him from shifting completely

Frustrations

Wants to travel comfortably to office with his car but is constrained by the low number of parking spots available

Feels he is not getting enough value out of the car due to low usage

Gets very exhausted after riding bike to work in hot weather

Motivations to use personal vehicle

Recently shifted to a place further away from the metro station and thus using metro becomes a lengthy and cumbersome experience

Can sync with his wife's office timings and use the same trip for both of their commute

Can occasionally support the need to travel with parents to different places

Goals and Needs

Wants to solve his and his wife's commuting needs with one vehicle comfortably.

Worried about the parking issues at his workplace and considers this to be the only issue preventing him from using his car daily

Occasionally when travelling with parents, requires comfortable and adequate luggage space for all four people.

Interview Highlights

Travel routine and experiences

We both have pretty similar travel routines. We have to go to separate schools in the morning and thus we leave in different vehicles. After that one of goes in the smaller car to get milk and groceries. (Uncle) I use the 2 wheelers to go anywhere in the afternoon or evening. It is a fairly small town so our commute distances are small and comfortable

Scenarios in which more space is needed

Going to gurgaon to meet family members - once a month
Travelling with any family member in the town itself - often

Pain points of current chosen mode - Car

No pain point experienced as such and we can suit different options (Car, Bike, Scooter) to our needs very comfortably. We rarely find any traffic whatsoever and never experience parking issues

Ideal Scenario

As such we are very comfortable in our current cars and would not want anything changed. Further, if school distance for both of us could be less then our journeys would get even shorter

Proxemics

Having only family members on board as co-passengers, we are pretty comfortable with them sitting in any configuration. We are not very keen on ridesharing, leasing etc. because our town doesn't yet need it and we like the concept of own customized car. Renting out other's cars will deliver the same experience for us.

Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me

Siddharth's Parents
School Lecturers
Dadri

Vitara Brezza, Alto,
Scooter, Bike
>20 kms

“ Personal cars are giving us adequate comfort and freedom. We are quite satisfied”

Everyday Activities

Start their day pretty early and leave for school

Return by afternoon have the whole rest of the day for other activities

We like to finish up getting groceries and milk, meeting our friends in that time - separate journeys

Occasionally we visit our family or go for shopping to gurgaon with 3 to 4 people

Vehicle Usage and Approaches

Major usage scenario is travel to school only

Long distance trips to Gurgaon (Nearest metropolitan) are made by bigger car for additional space and passenger comfort

Also use two wheelers for local travel within the town

Frustrations

Aunty - Not very keen on driving to school daily but don't encounter any issues

Uncle - Sometimes had to negotiate bad roads or steep inclines for work and was worried about the health of the car.

When going to city, slight traffic can be encountered

Motivations to use personal vehicle

Affords them freedom and different travel routes in a place where not much public transport is present

At this age, comfort is the primary factor and can get adequate comfort in their own cars

Goals and Needs

Very satisfied with current vehicle usage they have and would just want to add on to comfort levels if possible

Takeaways

People in smaller towns have ample space to move around and use their vehicles in. They enjoy the personal space and freedom given to them by their personal vehicle and value it for that

Interview Highlights

Travel routine and experiences

We both have pretty similar travel routines. We have to go to separate schools in the morning and thus we leave in different vehicles. After that one of goes in the smaller car to get milk and groceries. (Uncle) I use the 2 wheelers to go anywhere in the afternoon or evening. It is a fairly small town so our commute distances are small and comfortable

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Views on ownership

I would love to explore other options such as leasing/sharing as I currently feel this as a very big expense for me



Sanober Khan
26, Architect
Noida

Amaze
~60 kms

"I feel other modes of transport don't work for me because of comfort and safety"

Takeaways

People in smaller towns have ample space to move around and use their vehicles in. They enjoy the personal space and freedom given to them by their personal vehicle and value it for that

Everyday Activities

Start their day pretty early and leave for school

Return by afternoon have the whole rest of the day for other activities

We like to finish up getting groceries and milk, meeting our friends in that time - separate journeys

Occasionally we visit our family or go for shopping to gurgaon with 3 to 4 people

Vehicle Usage and Approaches

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Motivations to use personal vehicle

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At this age, comfort is the primary factor and can get adequate comfort in their own cars

Goals and Needs

Very satisfied with current vehicle usage they have and would just want to add on to comfort levels if possible

LAYOUT 1

Side-by-Side Seating Position

PROS

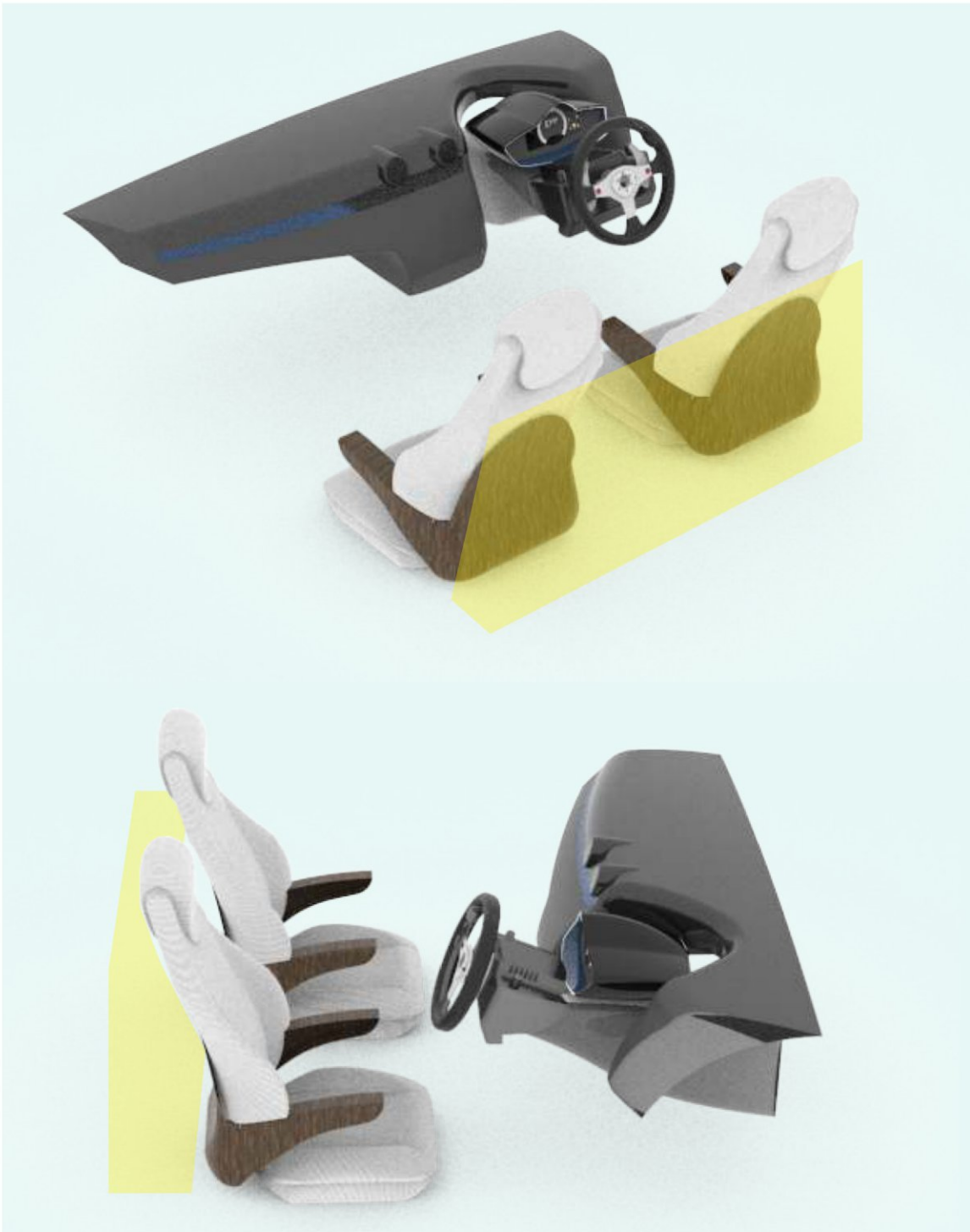
- It will be very familiar to use // *Anurag*
- It maintains my current status quo // *Shruti*
- I won't have to change my current usage // *Renuka*

CONS

- Might feel closed if in a car that just ends behind the seats // *Rajesh*

Willingness to use

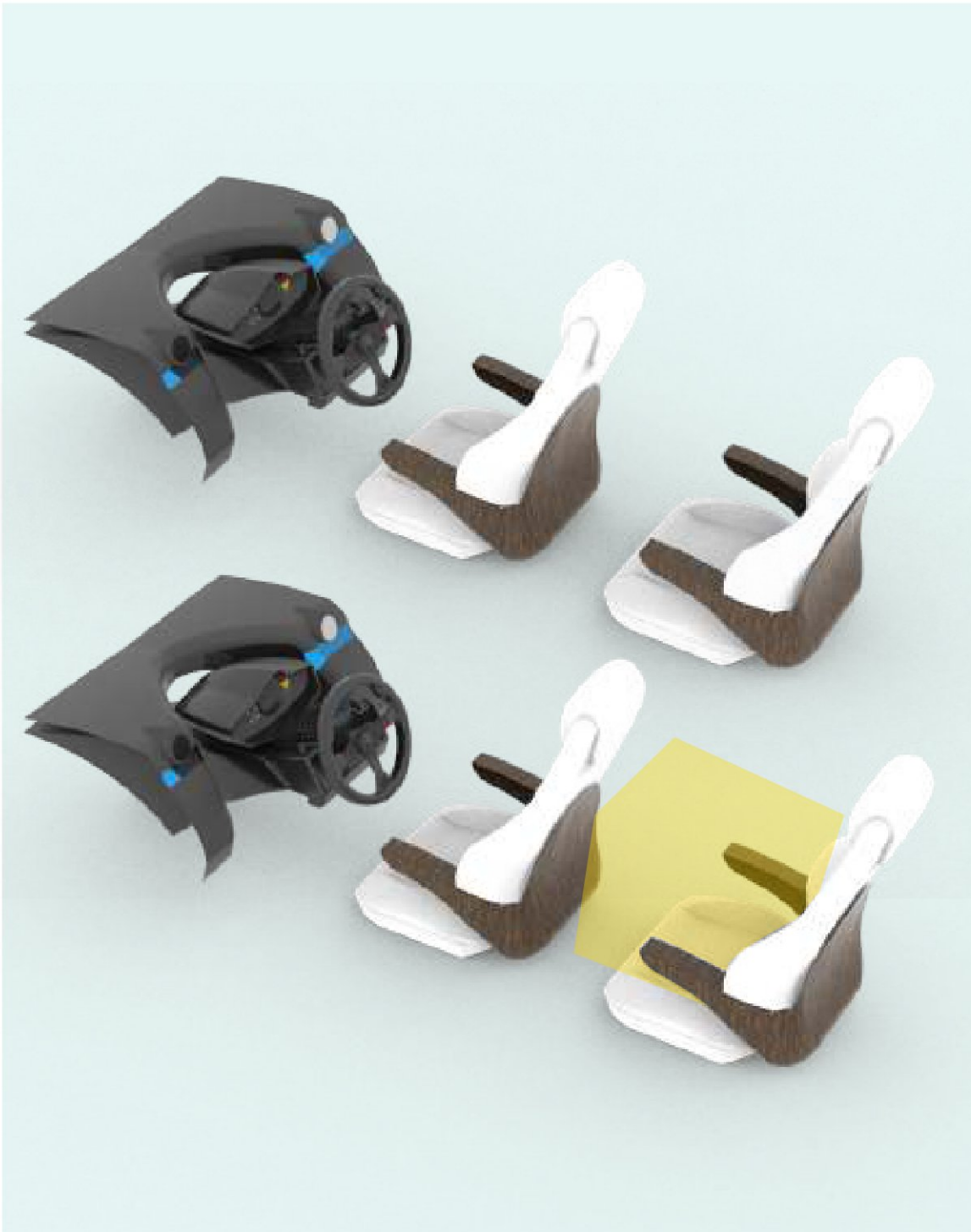
9



Space for Luggage

LAYOUT 2

Back-to-Back Seating Position



PROS

- It might be more fun to drive // Anjali
- It might be easier to find parking for this // Shruti, Sanober

CONS

- I will use my bike instead of this // Rahul
- I won't get space to even stretch in this // Anurag
- It might be very difficult to access my bag while travelling // Aakriti
- It will be very difficult for me to talk to my wife while travelling // Rohan
- I feel it will be less safer in cases of mugging // Rajesh

Willingness to use

1

8



Space for Luggage

LAYOUT 3

Opposite Face-to-Face Seating Position

PROS

- Talking to friends or family might be more engaging // *Aakriti*
- The co-passenger will be able to look out for environment behind the car // *Anurag*

CONS

- I will be more distracting for me - *Rahul, Renuka, Shruti, Sanober*
- The passenger seat will hinder my vision // *Rajesh*
- It will lead to motion sickness for slightly longer rides // *Anjali*

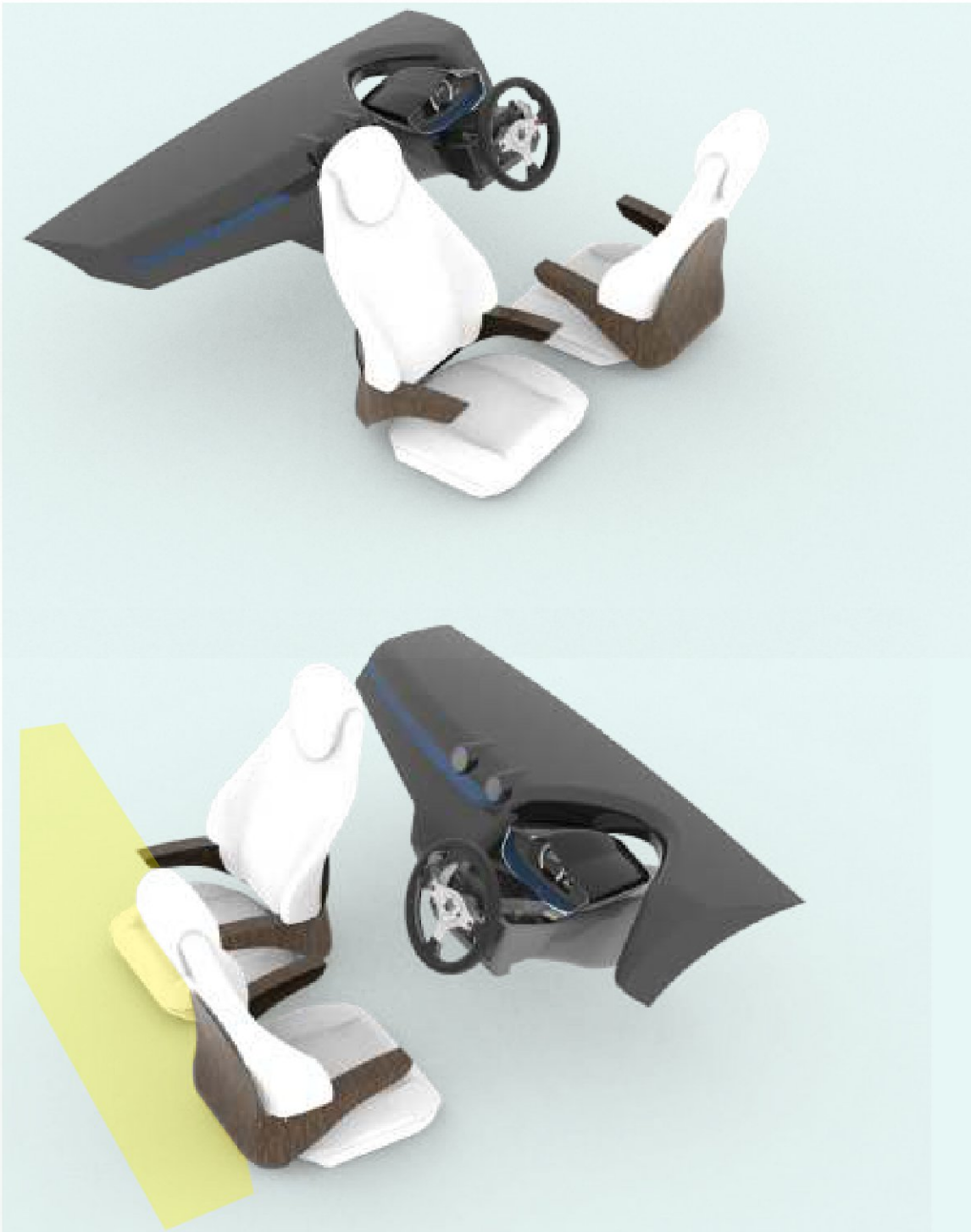
Willingness to use

2

7

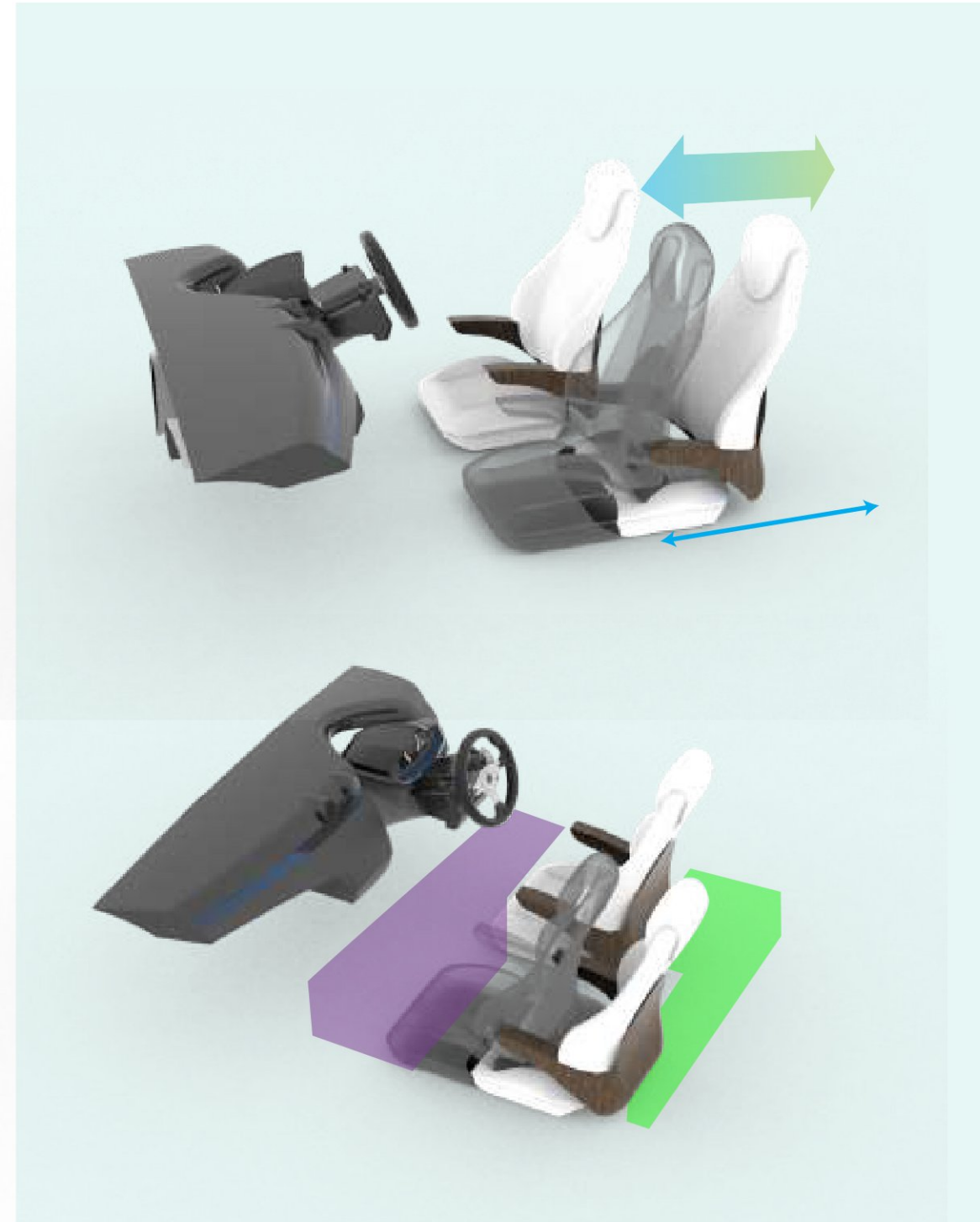


Space for Luggage



LAYOUT 4

Passenger Seat Sliding Position



PROS

- Depending on the relation, I can customize the space // *Sanober, Shruti*
- I can slide the passenger seat back while travelling alone to get more space // *Renuka, Rahul*
- More customizable than the usual side by side layout // *Rohan*

CONS

- I will feel like a chauffeur if someone sits diagonal to me // *Aakriti, Anurag*

Willingness to use

8

1



Space for Luggage



Accessible Space for Driver



Accessible Space for Passenger

LAYOUT 5

90° Sliding Passenger Seating Position

PROS

- I can carry bigger luggage from sites to office // *Shruti*
- I can completely customize the space for myself when riding alone // *Anurag, Aakriti, Renuka*
- I can imagine putting a pram inside the vehicle when we need to accomodate our child or when travelling with my wife we can sit normally // *Rohan*
- I can make space for shopping bags when needed, or for fellow travellers // *Anjali*

CONS

- I might be time taking for me to shift layouts // *Anurag*

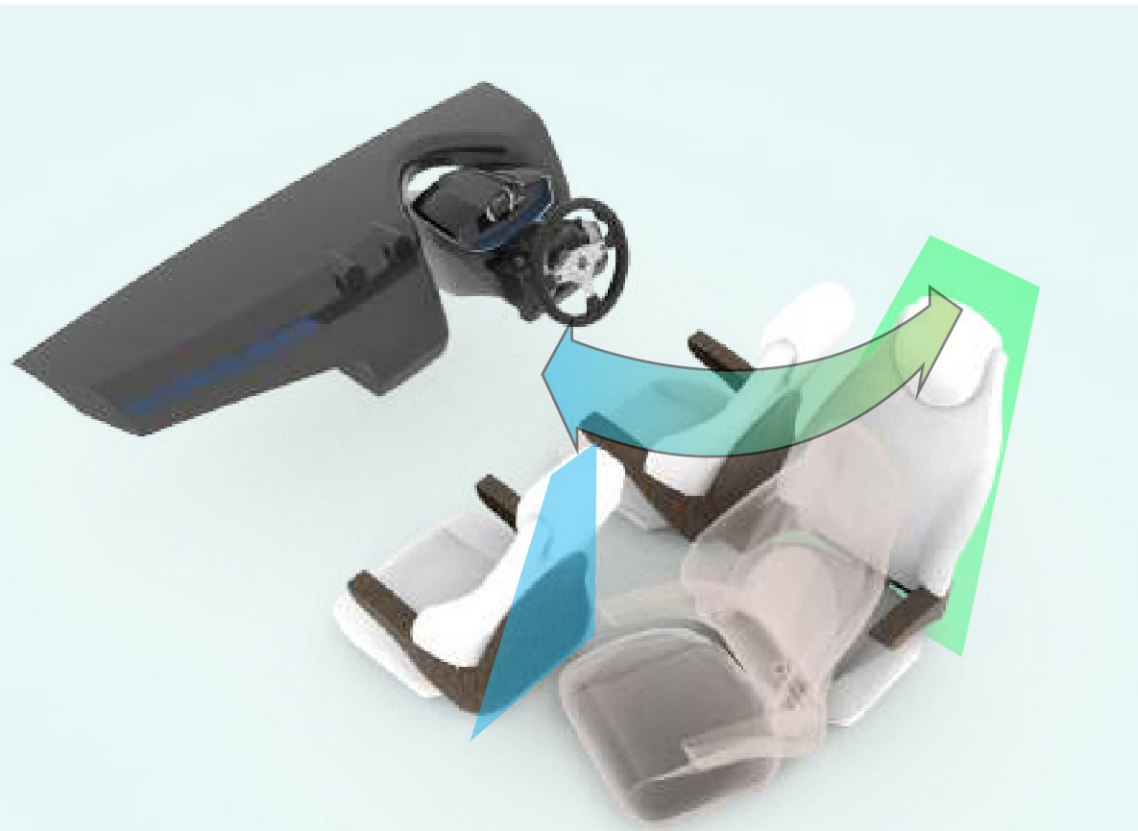
Willingness to use

8

1



Space for Luggage



Luggage optimized layout

Co-Passenger optimized layout

LAYOUT 6

Opposite Angled Seating Position

PROS

- Similar to opposite facing layout, co-passenger might get more legspace //

Aakriti


CONS

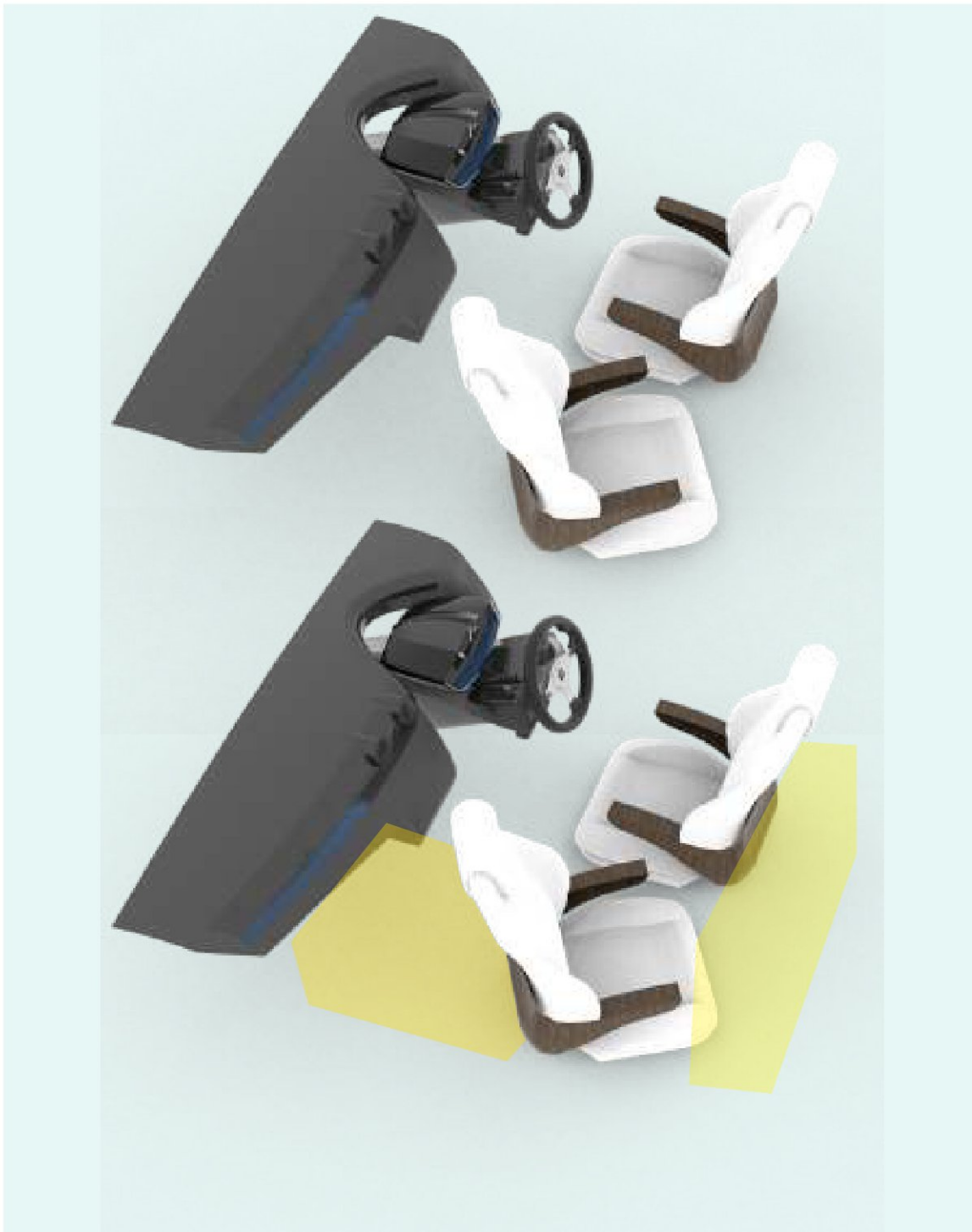
- Might feel weird sitting in this angle as the passenger will be facing me all the time //
- Anurag, Aakriti, Sanober, Rahul*
- Hand movement space for driver will be compromised //
- Rajesh, Renuka*
- I might feel difficulty in engaging hand brake or change gears //
- Shruti*
- I can't use the space ahead of the passenger seat or in the side. I think this will be difficult to use //
- Anjali*

Willingness to use

1 8



 Space for Luggage



LAYOUT 7

2 Passengers Angled Out Seating Position

PROS

- I get a full rear seat and can seat 3 if needed // *Shruti, Rajesh*
- Can accommodate 3 people nicely // *Rohan*


CONS

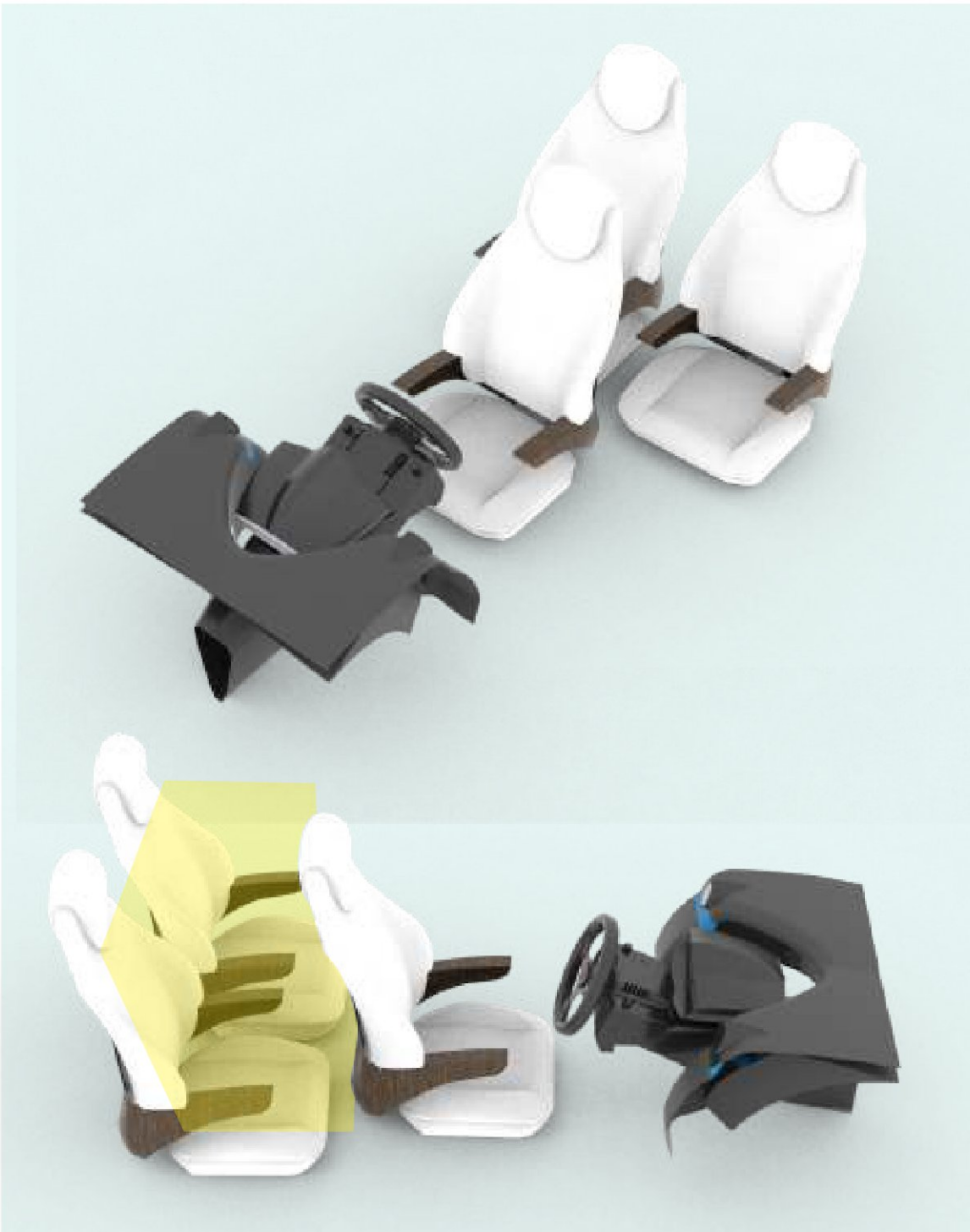
- Feel concerned about legspace for rear passengers // *Rohan, Rajesh*
- If passengers stretch legs, it might distract the driver // *Anurag*

Willingness to use

1 8



 Space for Luggage





LAYOUT 8

2 Passengers Back Seating Position

PROS

- Give a lot of space in single occupancy // Anurag, Shruti
- Can accomodate 3 people nicely // Rohan

CONS

- Feels like driving an auto rickshaw // Rajesh, Anurag, Renuka
- Travelling with co-passengers is very difficult to imagine in this // Rahul
- Might feel weird looking at an angle outside // Shruti
- All passengers might feel disconnected from each other // Sanober
- More suited to cabs in my opinion // Aakriti

Willingness to use

2 7



 Space for Luggage

Attributes you associate to!

This is a short form designed to understand what qualities and attributes you associate yourself with. There are no correct or incorrect answers in this form.

* Required

1. Let start with your name! *

2. Identify from the following the most appropriate attribute you would want your vehicle to show. *

Mark only one oval.



Confident/Bold/Fearless



Playful/Joyful/Carefree



Cute/Caring/Tender



Rapid/Speedy/Swift



Strong/Assertive/Tough



Agile/Athletic/Nimble

3. In which of the following images of personalities do you see the most of yourself?
*

Mark only one oval.



Enthusiastic/Outgoing/Social



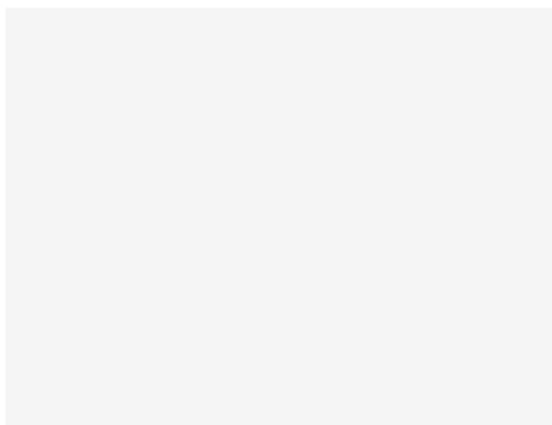
Adventurous/Competitive/Goal Oriented



Prudent/Logical/Prepared



Supportive/Stabilizing/Calm



Others

4. From the following vehicle, please tell what you like and dislike about it. It could be anything from the overall way it looks to a certain feature! *



5. From the following vehicle, please tell what you like and dislike about it. It could be anything from the overall way it looks to a certain feature! *



6. From the following vehicle, please tell what you like and dislike about it. It could be any-thing from the overall way it looks to a certain feature! *



7. From the following vehicle, please tell what you like and dislike about it. It could be anything from the overall way it looks to a certain feature! *



8. From the following vehicle, please tell what you like and dislike about it. It could be anything from the overall way it looks to a certain feature! *



A place you'd like to be in!

9. Please highlight the feeling or environment you would like to have while using your car. *

Mark only one oval.

- Warm & Comforting
- Calm and Peaceful
- Energetic & Fresh
- Modern & Futuristic

10. Would this choice of environment change when travelling with friends or family?

*

Mark only one oval per row.

	Warm & Comforting	Calm and Peaceful	Energetic & Fresh	Modern & Futuristic
Travelling Alone	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travelling with Friends	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Travelling with Family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

11. Which of the following materials do you like in your surroundings? *

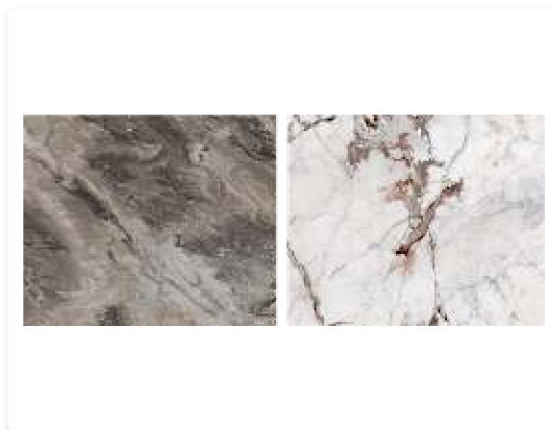
Mark only one oval.



Wood



Metal



Stone



Textile



Synthetics - Plastics/Glass etc.

12. Which of the following surface finishes do you prefer on your products or in your surroundings? *

Mark only one oval.



Smooth/Satin Finish



Glossy Finish



Matte Finish



Natural/Grain Finish

Preference
on Colors!

Here are some colors along with a number corresponding to them. Please mention these numbers against the emotion you relate these color to. There are no right or wrong answers here!

Please mention these color against the emotions you feel they show in the following drop downs!



13. Which colors from the above show convey - "Fun" *
You can have multiple color options here for a single emotion

14. Which colors from the above show convey - "Freedom" *

You can have multiple color options here for a single emotion

15. Which colors from the above show convey - "Comfort" *

You can have multiple color options here for a single emotion

16. Which colors from the above show convey - "Unique/Different" *

You can have multiple color options here for a single emotion

17. Which colors from the above show convey - "Vibrant/Energetic" *

You can have multiple color options here for a single emotion

18. Which colors from the above show convey - "Modern/Futuristic" *

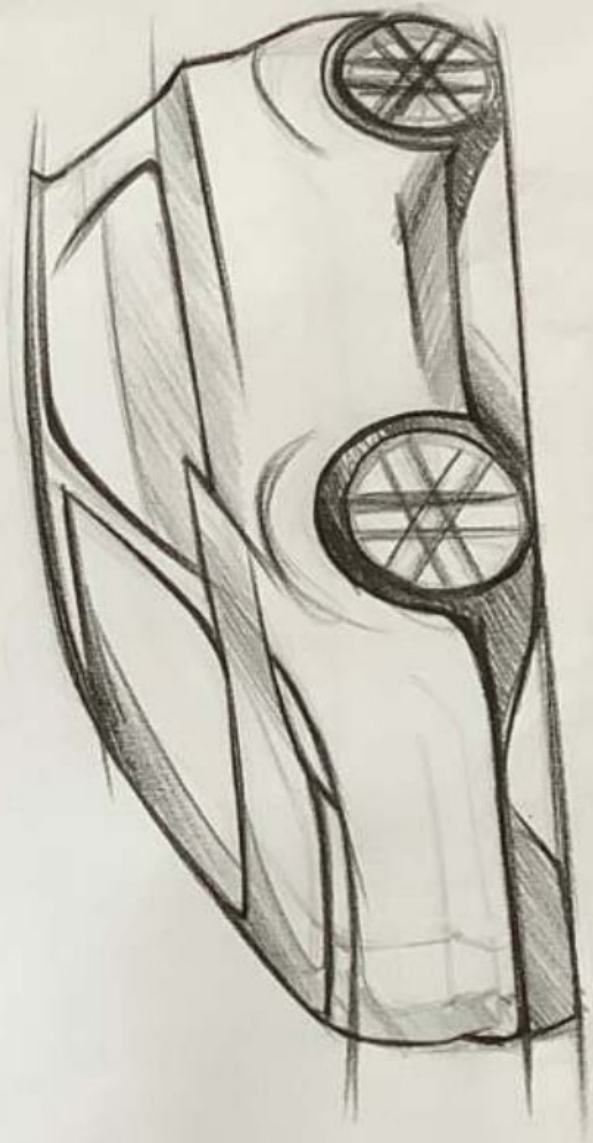
You can have multiple color options here for a single emotion

19. Which colors from the above show convey - "Conscious/Practical" *

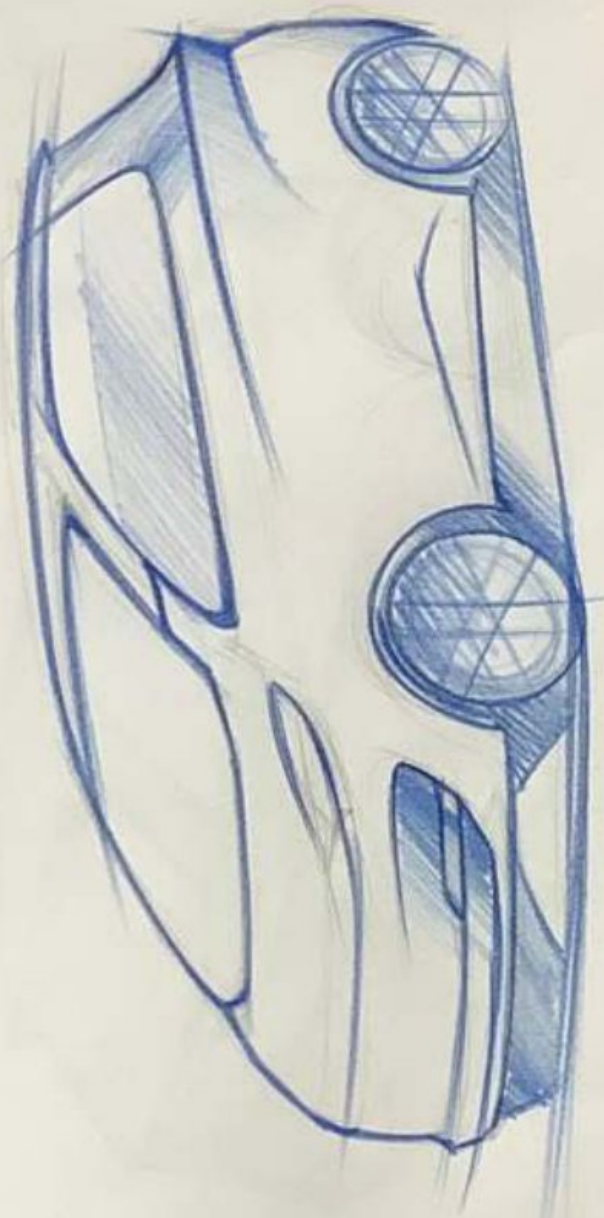
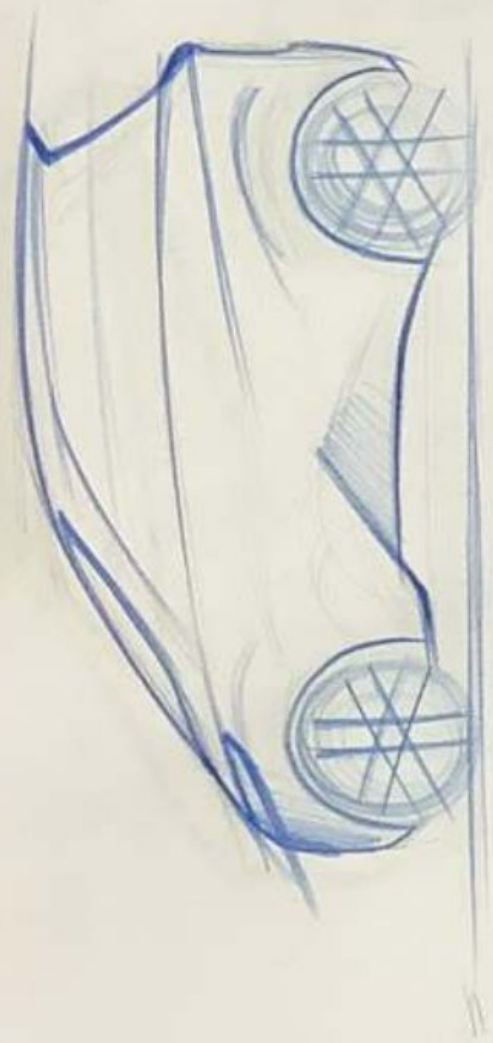
You can have multiple color options here for a single emotion

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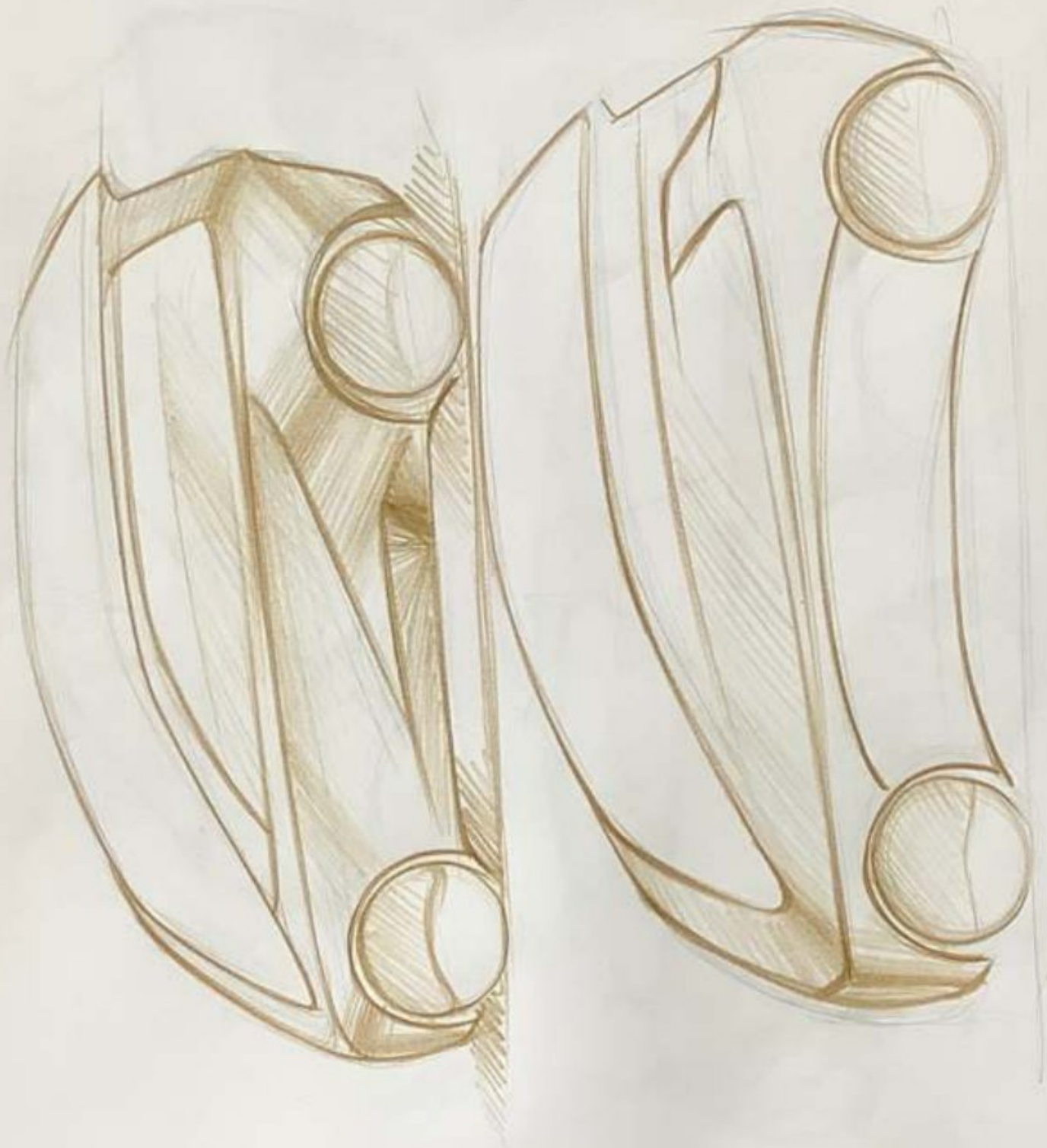


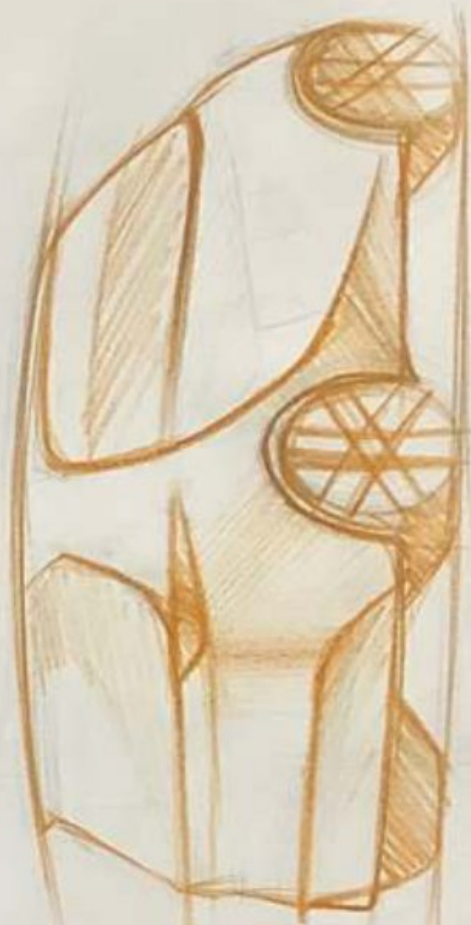
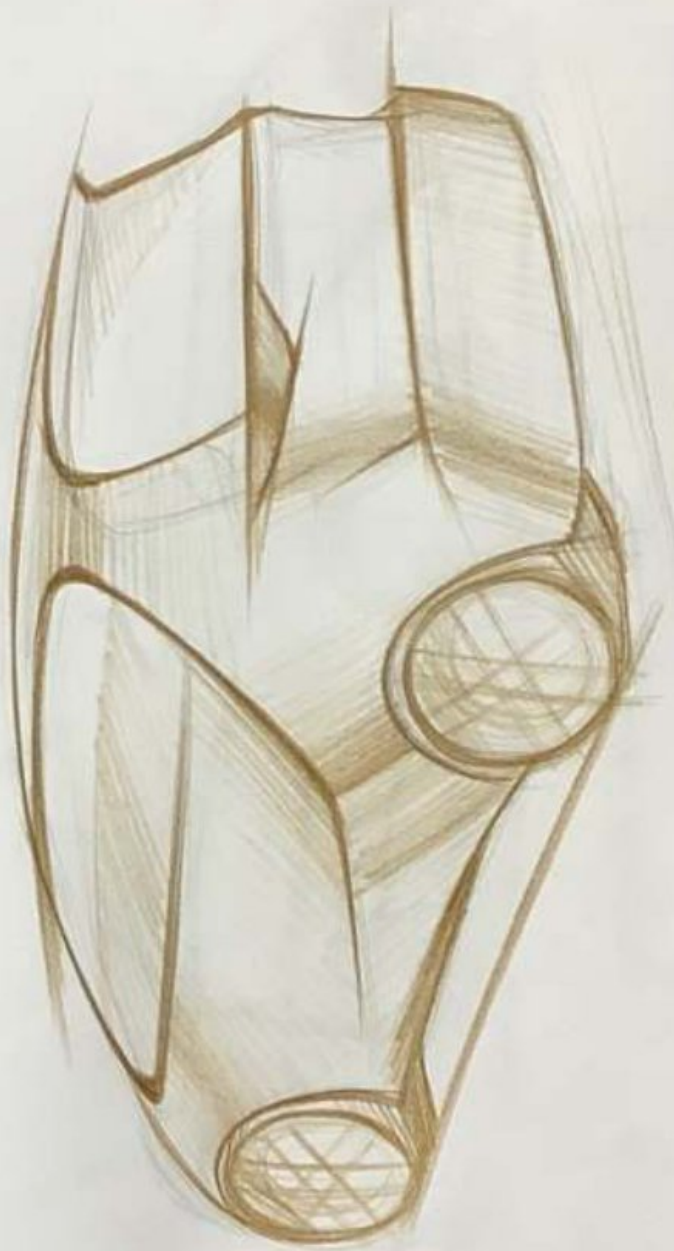




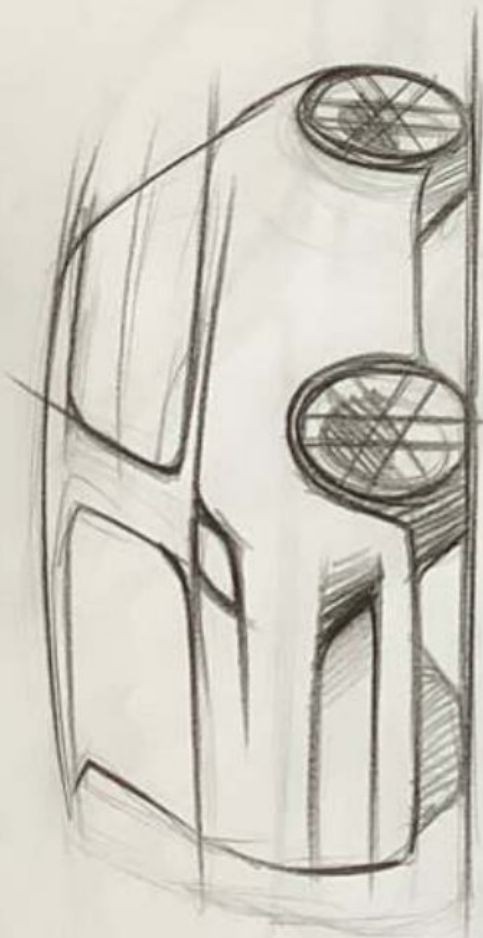








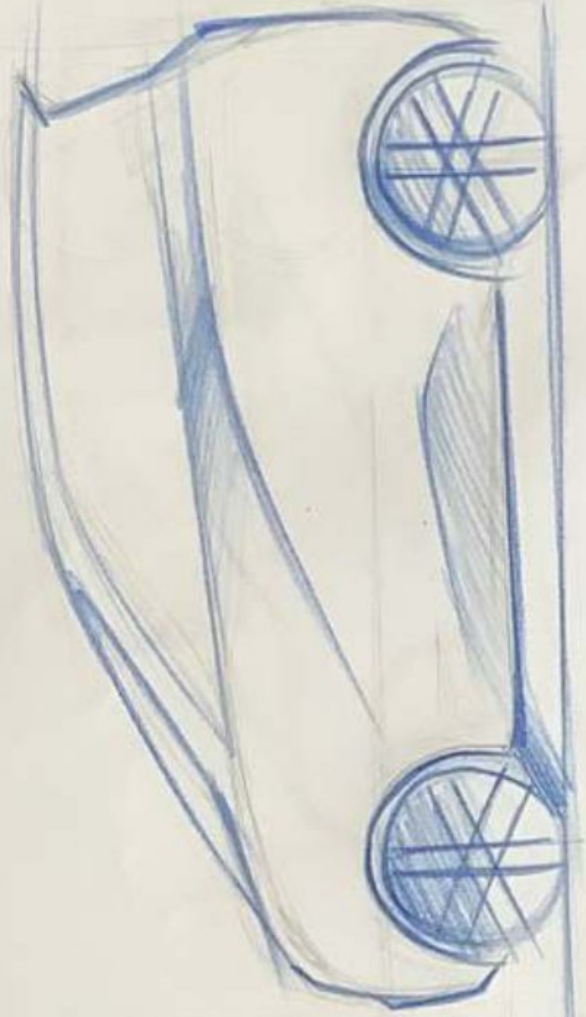
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4



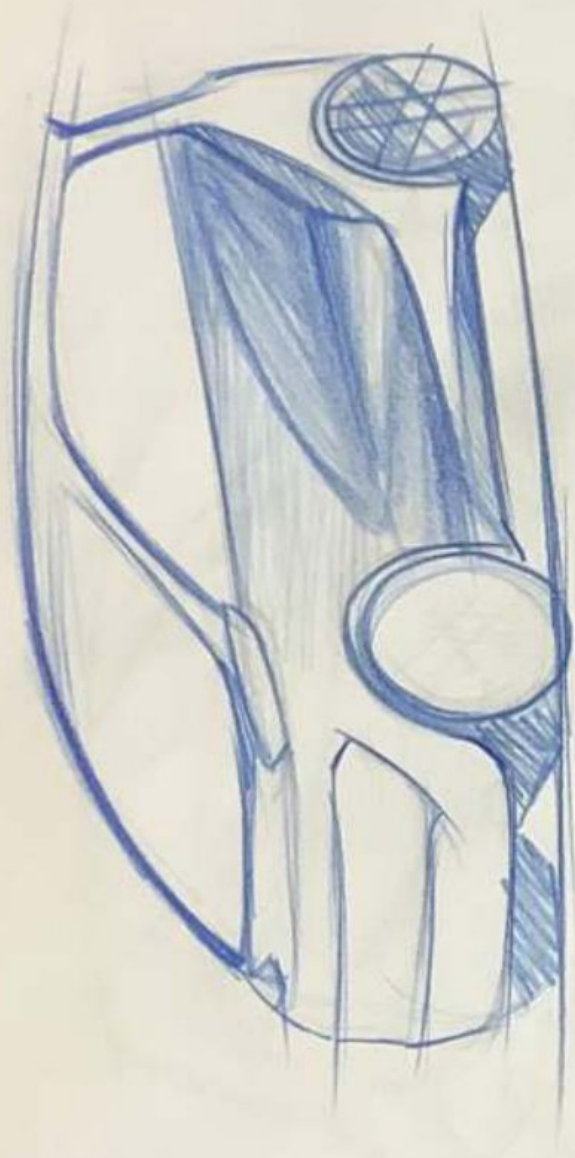




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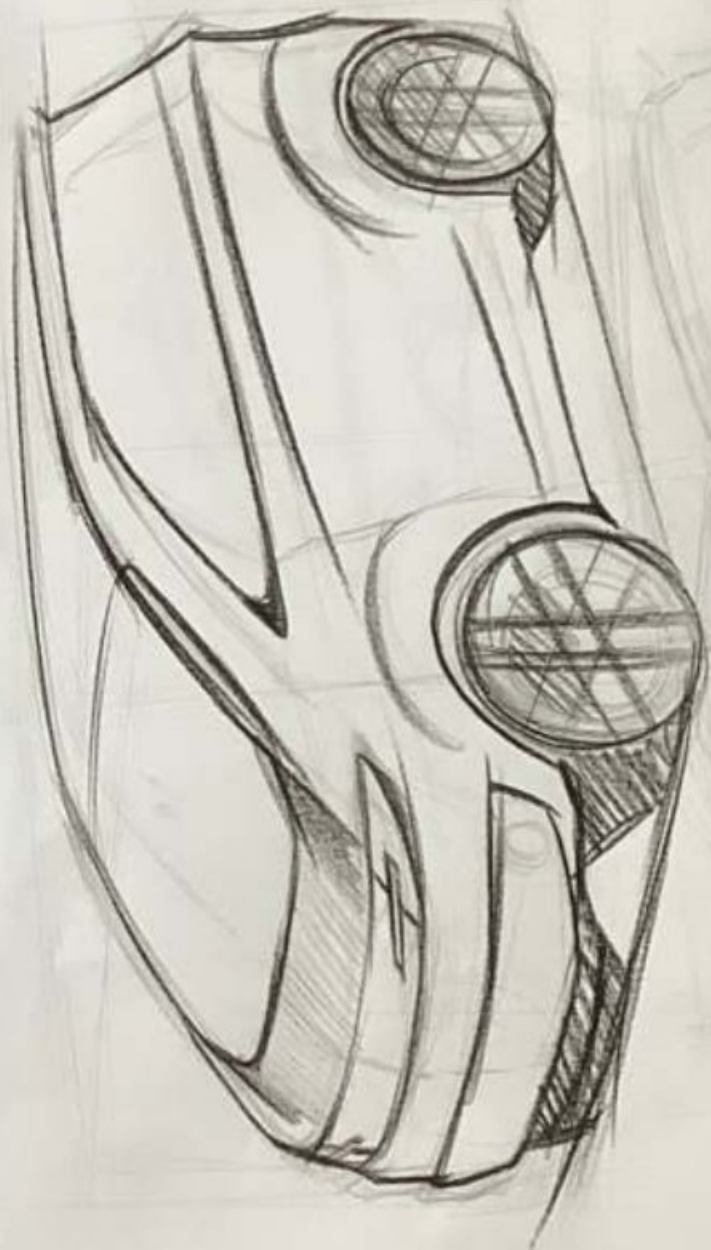














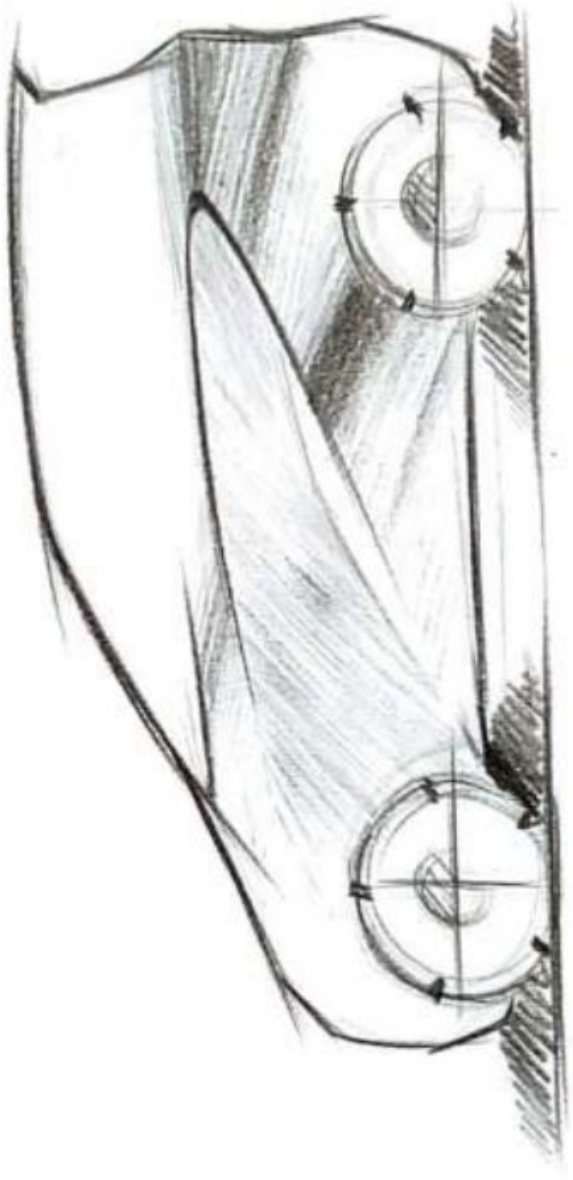






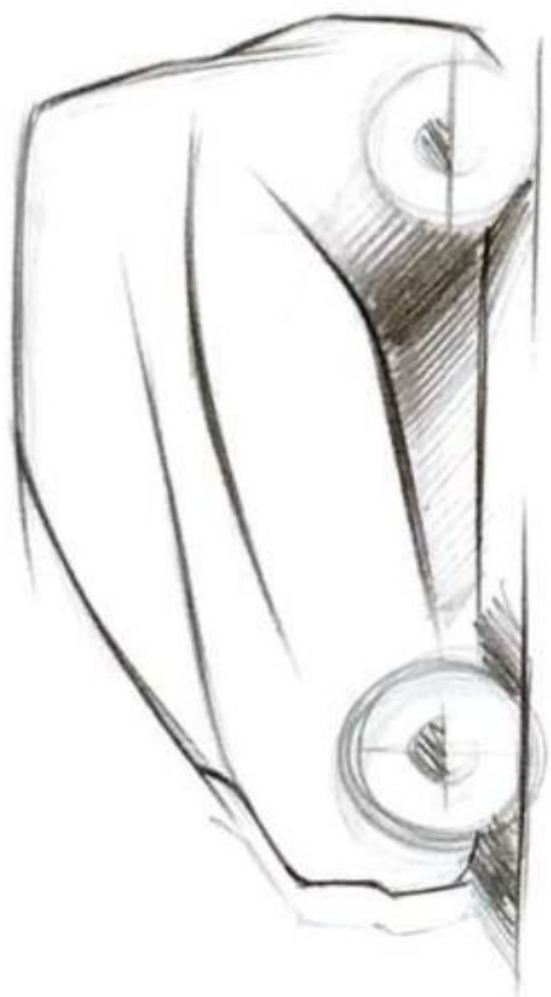


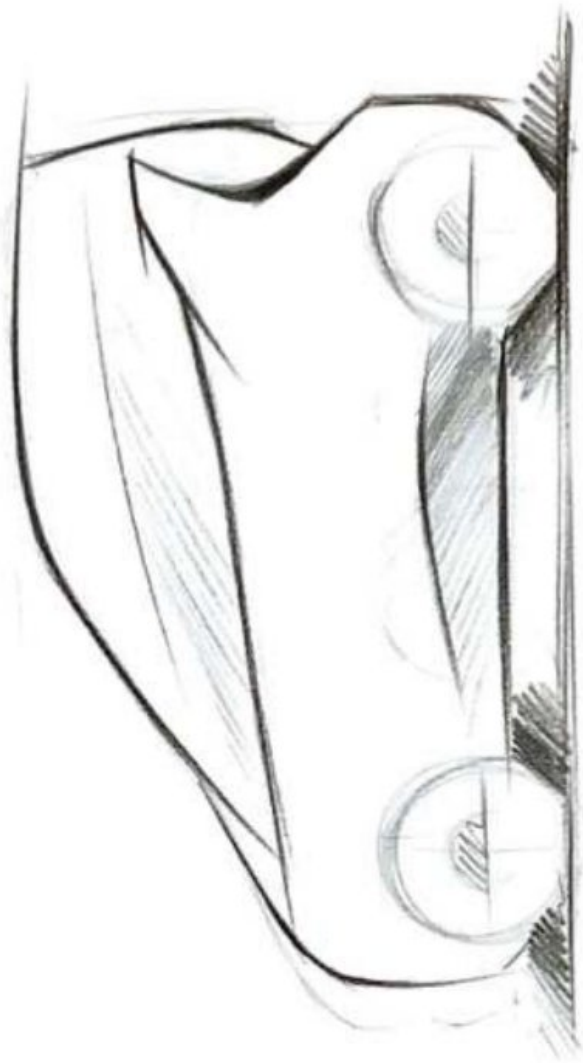
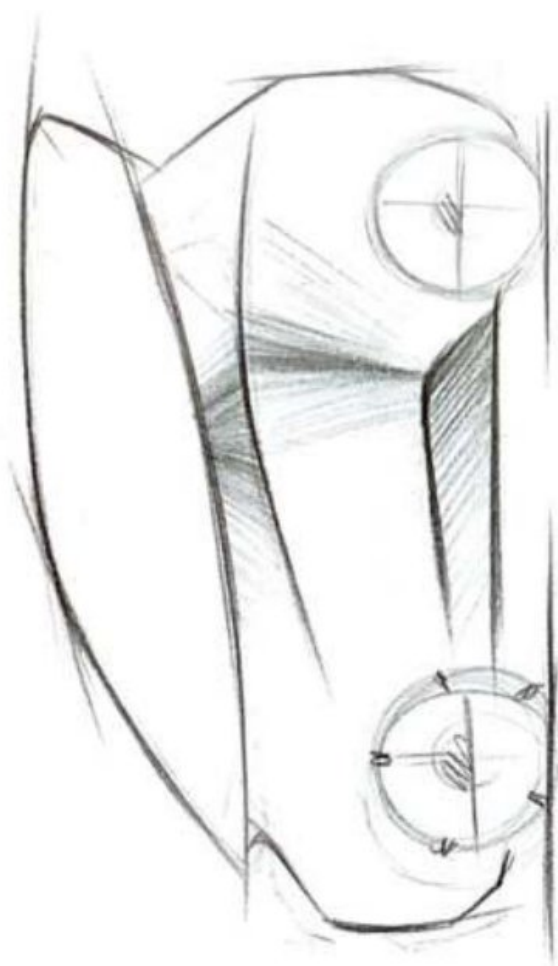
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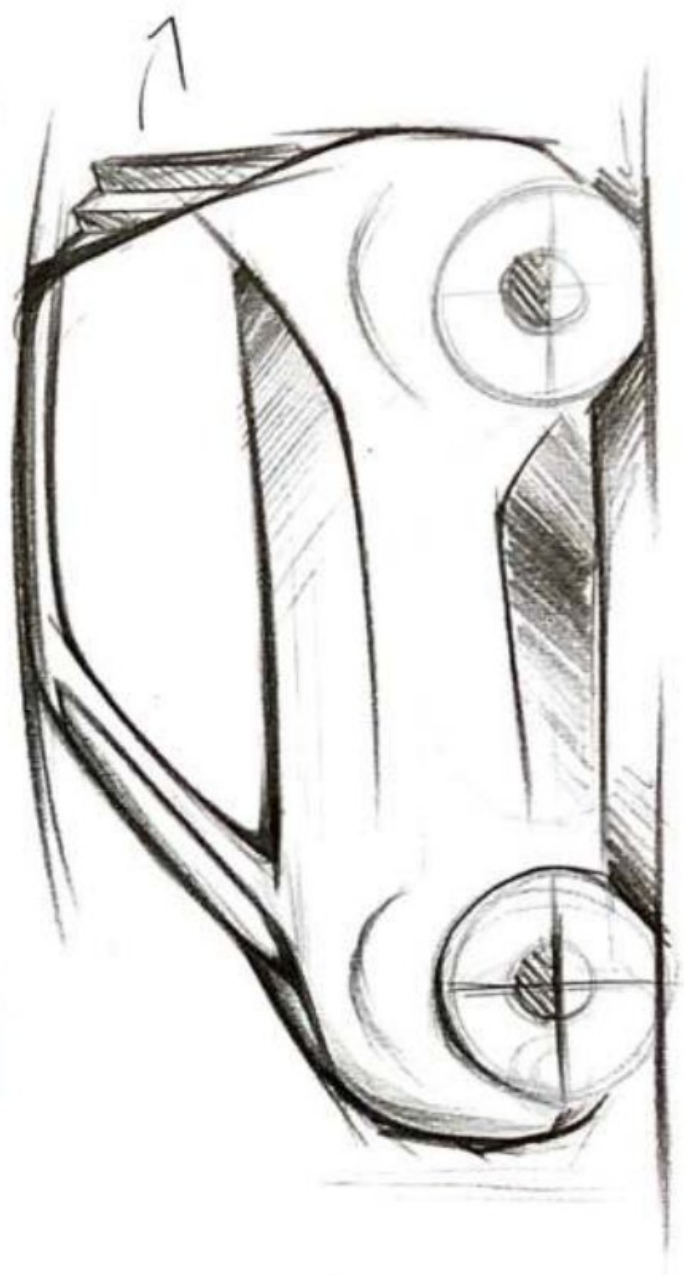


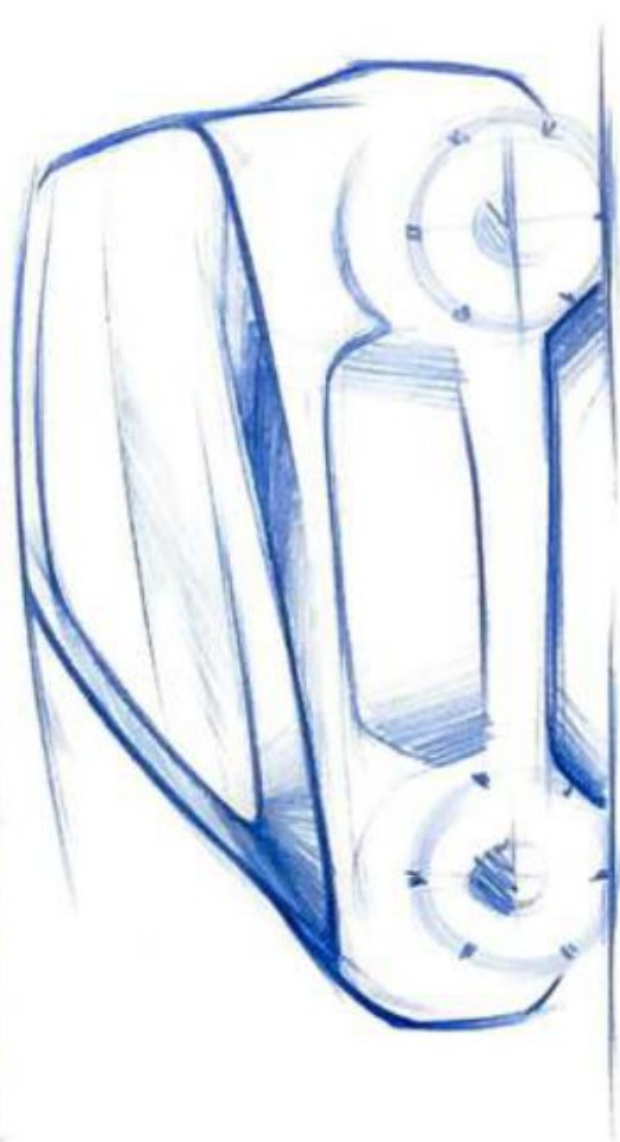
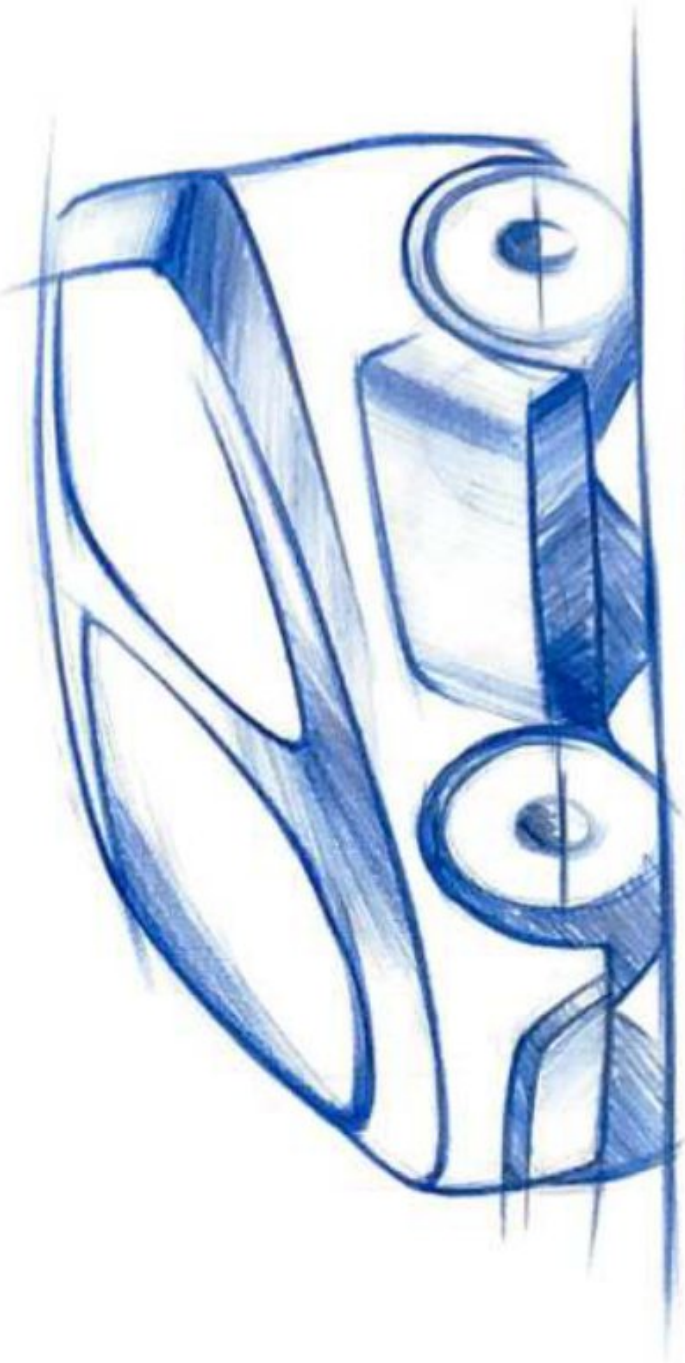
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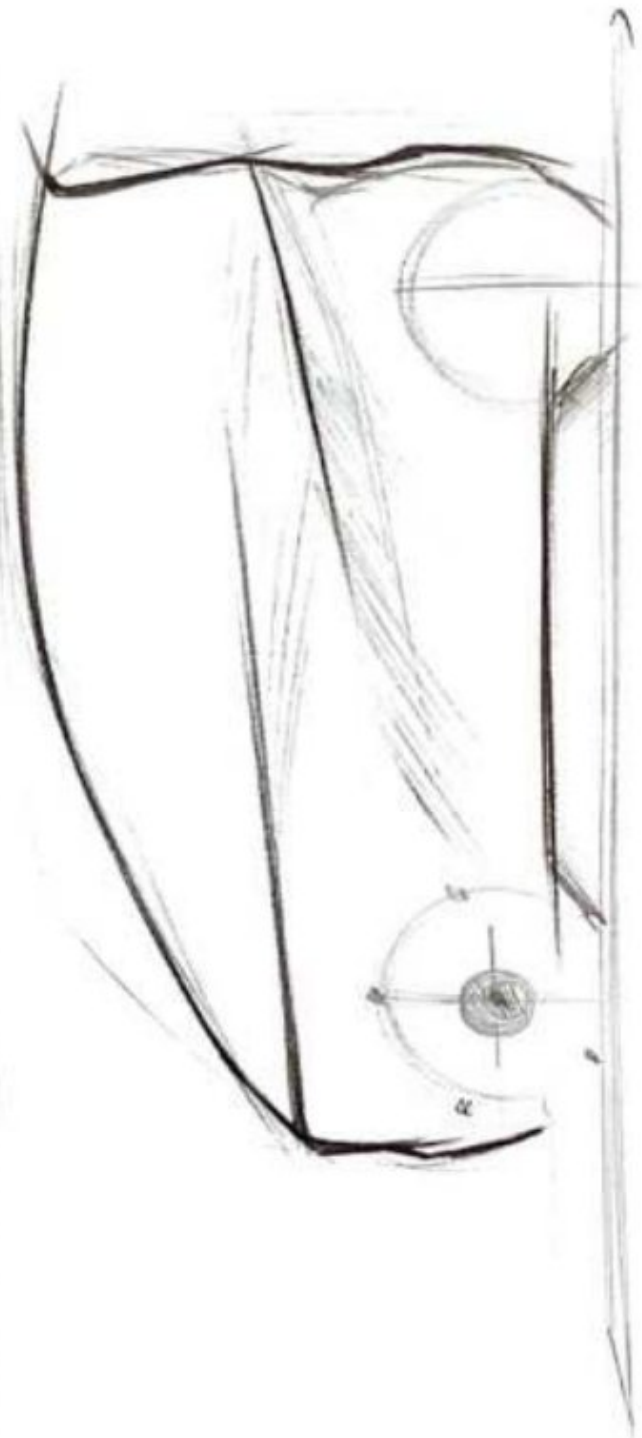
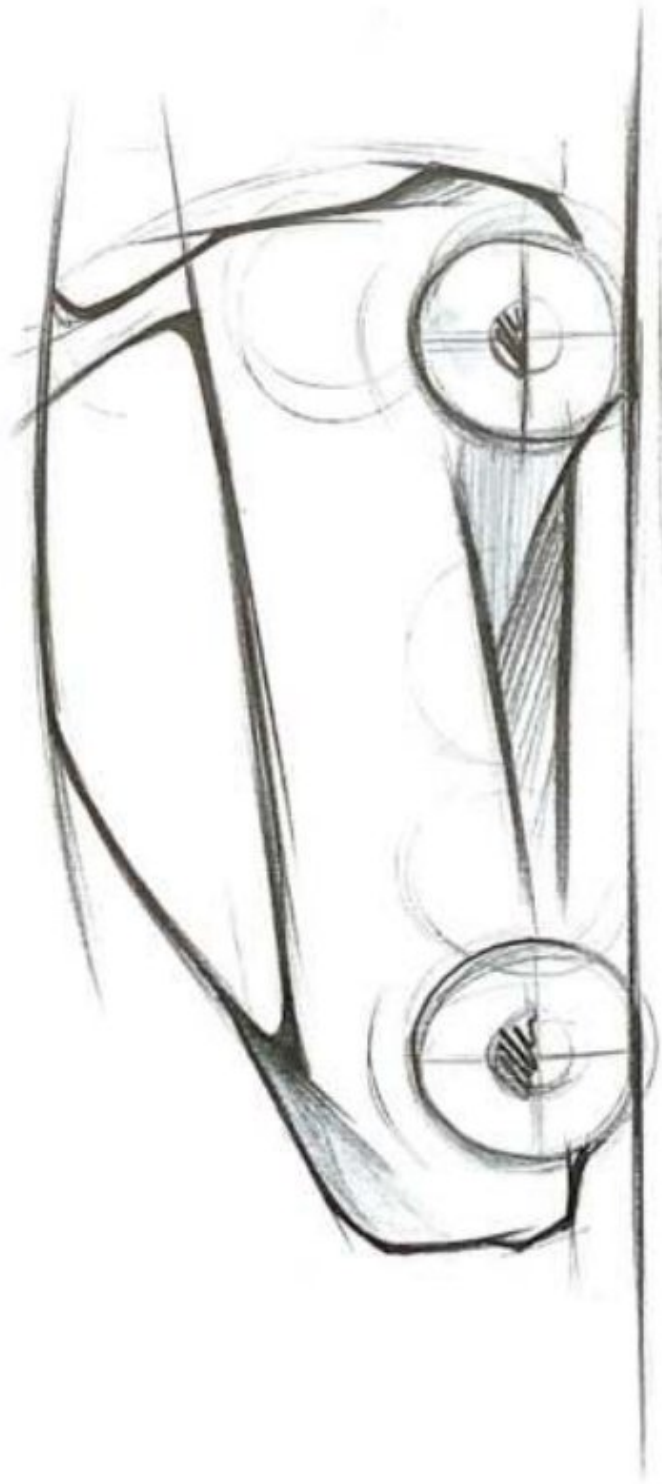
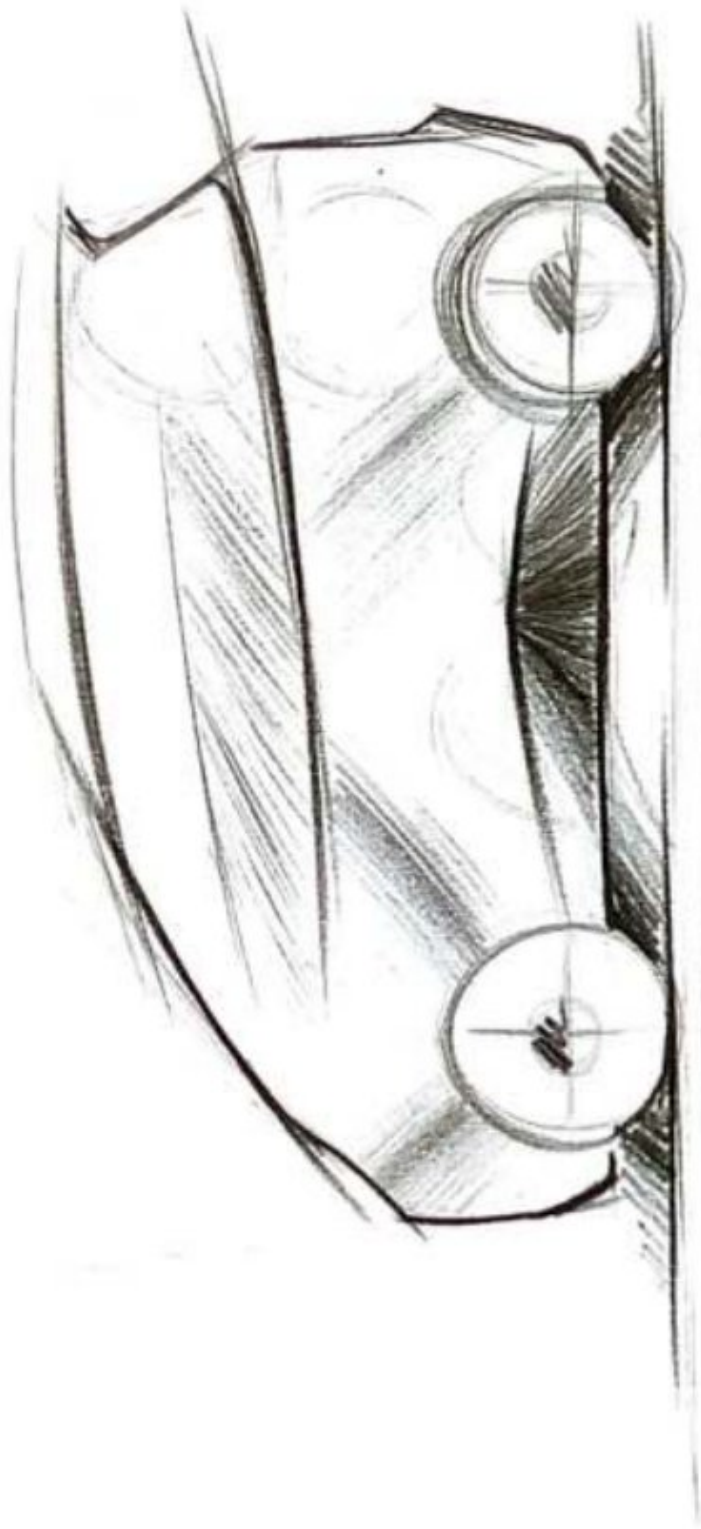


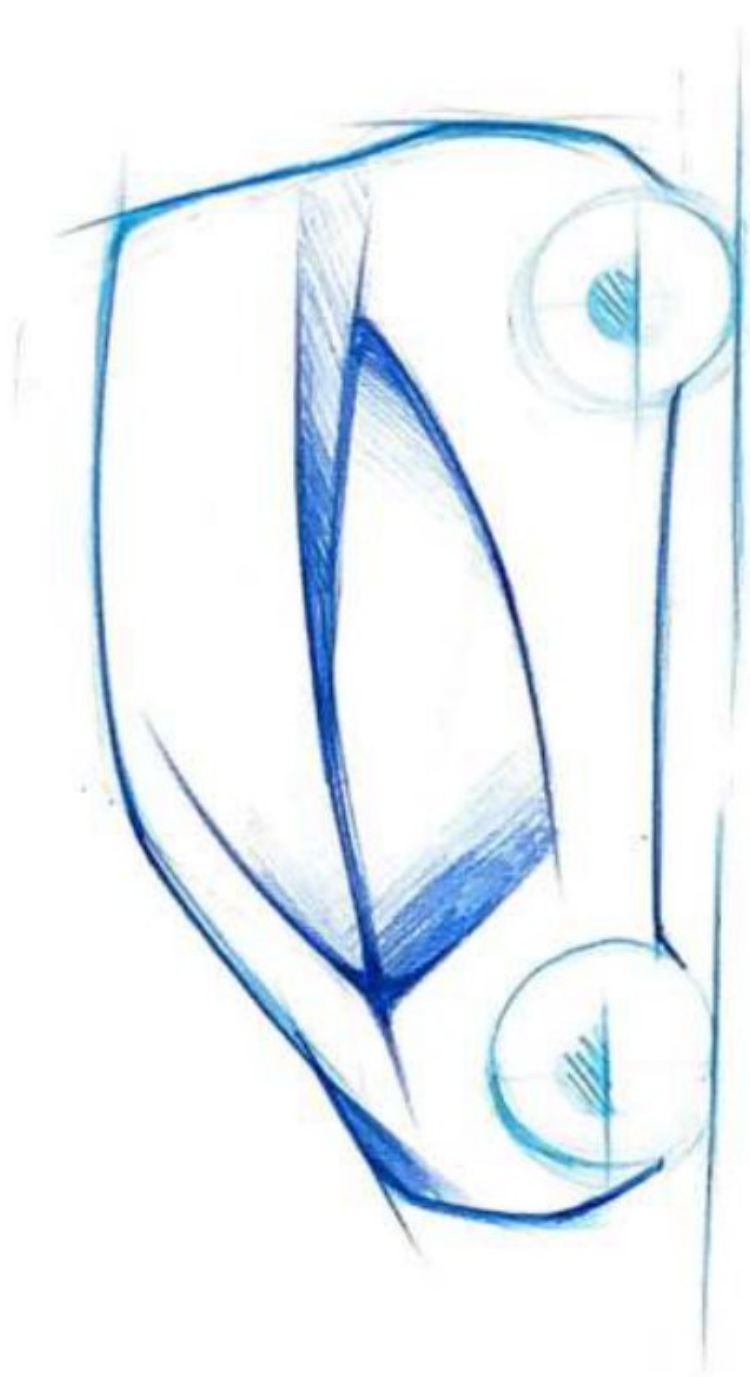












Side
Side
Rear
Rear

