

Designing a Porsche bike for the year 2050

Pratyush Negi

18U130023

Guide

Prof. Sugandh Malhotra

Index

Declaration	2
Approval	3
Acknowledgement	4
Motivation and Goal	5
Abstract	6
Introduction	7
Research	8-17
Context	18
Persona	19
Scenario	20-25
Design Brief	26
Exploration	27-32
Ideation	33-39
Final Concept	40
Detailing	41-43
Packaging	44
Final Models	45-50
Conclusion	51
References	52

Declaration

I declare that this written document represents my ideas in my own words and where others' ideas or words have been included, I have adequately cited and referenced the original sources. I also declare that I have adhered to all principles of academic honesty and integrity and have not misrepresented or fabricated or falsified any idea/data/fact/source in my submission.

I understand that any violation of the above will be cause for disciplinary action by the Institute and can also evoke penal action from the sources, which have thus not been properly cited, or from whom proper permission has not been taken when needed.

Pratyush Negi | 18U130023

Approval

The project titled “Designing a Porsche bike for the year 2050” by Pratyush Negi, is approved for partial fulfillment of the requirement for the degree of ‘Bachelor of Design’ at Industrial Design Centre, IIT Bombay.

Guide:

Chairperson:

Internal Examiner:

External Examiner:

Date: 25th November 2021

Acknowledgement

I am extremely grateful to Prof. Sugandh Malhotra for guiding me throughout the project and for his continuous support and patient guidance throughout the course of this project.

I am also thankful to my panel Prof. Arun Mascarenhas, Prof. Raja Mohanty, and Prof. Avinash Shinde for their inputs and valuable feedback.

Motivation

I have always been very interested in cars and bikes, particularly in their design and aesthetics. Having a passion for cars, bikes and their brands I was motivated to do an automotive design project for my P1.

Goal

The goal of the project was to study, analyse and understanding the design language of the Porsche brand and applying it to create a unique product for the brand while still retaining the brand language and aesthetics.

The goal was to use Porsche DNA and Design Philosophy to make a concept electric bike for year 2050.

Abstract

In this project I try to understand what makes the Porsche brand Porsche by studying and analysing Porsche Design DNA and Design Philosophy. Then applying that understanding in creating a concept bike for Porsche for the year 2050. Creating a scenario for the 2050 world, a user persona and a bike fitting the user needs while also capturing the spirit and essence of the brand Porsche.

Introduction

In this project I have attempted to design a bike for a car manufacturer. A challenge to create a bike for company that has never made a motorbike and in this case Porsche. Being inclined towards cars more I have been sketching cars more than bikes. For my PI I wanted to do something interesting hence I chose to design a bike which I knew would be challenging and fun.

The project begins with the study and analysis of the brand Porsche.

Dr.-Ing. h.c. F. Porsche AG, usually shortened to Porsche (German pronunciation: [ˈpɔʁʃə]), is a German automobile manufacturer specializing in high-performance sports cars, SUVs and sedans, headquartered in Stuttgart, Baden-Württemberg, Germany.

In this explorative creative project I create a scenario where a Porsche bike is being used in Mubai 2050. I use my understanding of Porsche design to try create a bike capturing the essence and spirit of the brand.

Research

Understanding Porsche

Trying to understand Porsche through Porsche design language and philosophy analysis.

Fig 1



Design Philosophy

Optimize Function

Reducing to Essentials

Overcoming Familiar

Porsche Design follows a clear design philosophy: **optimize function**. Reduce the form right down to the essentials. Overcome the familiar to continually discover new and exceptional solutions. The vision that inspired founder Professor Ferdinand Alexander Porsche to create the legendary Porsche 911 is built on the same principles that have driven Porsche design since its inception

PORSCHE DESIGN PHILOSOPHY



"IF YOU
ANALYZE THE
FUNCTION OF
AN OBJECT,
ITS FORM
OFTEN
BECOMES
OBVIOUS"
- F. A. PORSCHE

Design Features

Analyzing Porsche 911



Analysing Porsche 911 dimensions over the years. Undoubtedly the most iconic Porsche ever built. Main proportions have not changed much. Wheelbase dimensions have remained fairly same in respect to cars overall proportion. Only significant change has been in the rear and the roof as the rear has gotten much higher than the downward sloping rear of the first 911 and the roof line has gotten much lower making the the car stance more aggressive and the overall car more sportier.

Porsche 911 key lines in comparison to other iconic GTs

TOP TO BOTTOM:

MERCEDES AMG GT S

CHEVROLET CORVETTE STINGRAY

DODGE VIPER SRT

FERRARI F12 BERLINETTA

PORSCHE 911

Highlights the simple lines of Porsche 911 making it easy to remember and an iconic car



Lights Evolution

Front lights have become more complex. Recent addition of 4 DRLs (Daytime Running Lamps) has become a signature now.

Rear lights have remained fairly simple.

Changed from two separate tail lamps to a continuous single rear LED bar.

Fig 5



Analysing other models

Same design characteristics define other Porsche models as well. Curved front, tapering hood lines, pronounced fenders, 4 cluster headlamps and a sloping roofline.



Porsche Design Future Direction

Porsche is gearing towards electrifying its entire lineup and so the design language has taken some changes. Since electric batteries are range limited the focus was to make the cars more efficient. Taking inspirations from their old sports cars and current Le Mans cars the design has introduced more smoother curves and air scoops for minimum drag. Lights becoming more slimmer, and Porsche defining their front lights with 4 dots and rear with a single bar.



Design Features

Main Porsche design features found from the research

- Flat hood and pronounced fenders
- Dynamic tapering of the lines in the front
- The typical Porsche fly line – the basis for the sportscar in every segment
- The sculpture of the rear fenders and the pronounced shoulders
- Four cluster headlamps and Horizontal Connected rear lights

Target & Positioning

Selecting bike type

Selecting the bike type and positioning of Porsche in the bike market based on the type of cars they offer.

PORSCHE 911

Grand Tourer

A grand tourer is a type of sports car that is designed for high speed and long-distance driving, due to a combination of performance and luxury attributes.

CRUISE + SPORTY

Speed and handling

Fig 7



Analysing different types of motorbikes and their rider angles.

Based on the analysis selecting the bike type providing the right amount of PERFORMANCE, COMFORT and HANDLING.

Selecting CRUISER bike for the reason mentioned above. Providing the right balance of the three.

Fig 8 ADVENTURE



OFF-ROAD ADVENTURE



NAKED



RETRO



CRUISER



CAFE RACER



TOURER



SPORTS TOURER



SPORTS



Cruiser bikes

low seat-height with

better seat cushions

ride comfort and handling

decent cornering ability



Fig 9

Context

MUMBAI 2050

Mumbai city 2050 is a densely packed city. Overpopulation and lack of space has increased the city's problems and density. However high economic development has allowed implementation of suitable technologies for remedification of city's problems.

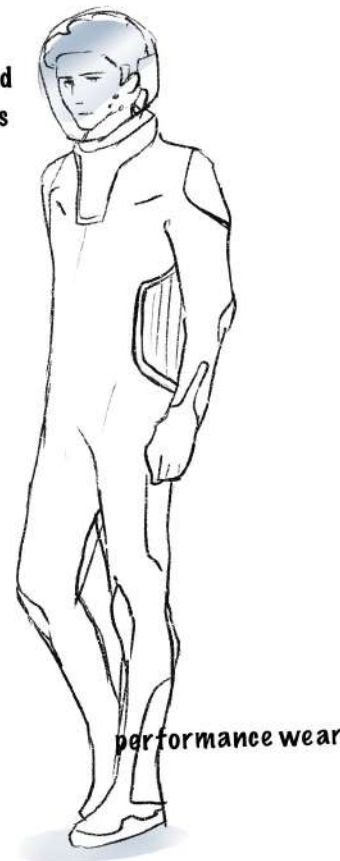
It's a city highly connected with IoTs(Internet of things). Autonomous Mobility is in full function. Pollution level is at dangerous levels due to rapid development requiring people to wear special gears made out of smart fabrics and a high tech helmet that lets them interact with digital and physical world. People live in a mixed reality. The helmet has obsoleted the use of carry devices for communication and other purposes and allowed people to live in a new world of mixed reality where people interact with physical reality along with the augmented reality. Ride sharing and autonomous public transport has replaced the personal vehicles. People yearn for more raw and visceral experiences.

Persona

Sid a 35 year old male, businessman lives in Mumbai. He stays busy during the week and only gets time for himself in the weekends. He is an avid automobile enthusiast and owns a car and bike collection. Being in Mumbai he likes to cruise around in a bike. Being a passionate Porsche fan he is excited to experience the bike in Mumbai. He is a Passionate, Sophisticated and an Adventurous man. His aspirational and experiential needs are: unique experience, excitement, emotion and connection. The porsche bike should suffice these needs to satisfy the user.

Sid 35

Passionate
Sophisticated
Adventurous



Needs:
Experience
Excitement
Emotion
Connection

2050

Fig 11

Scenario

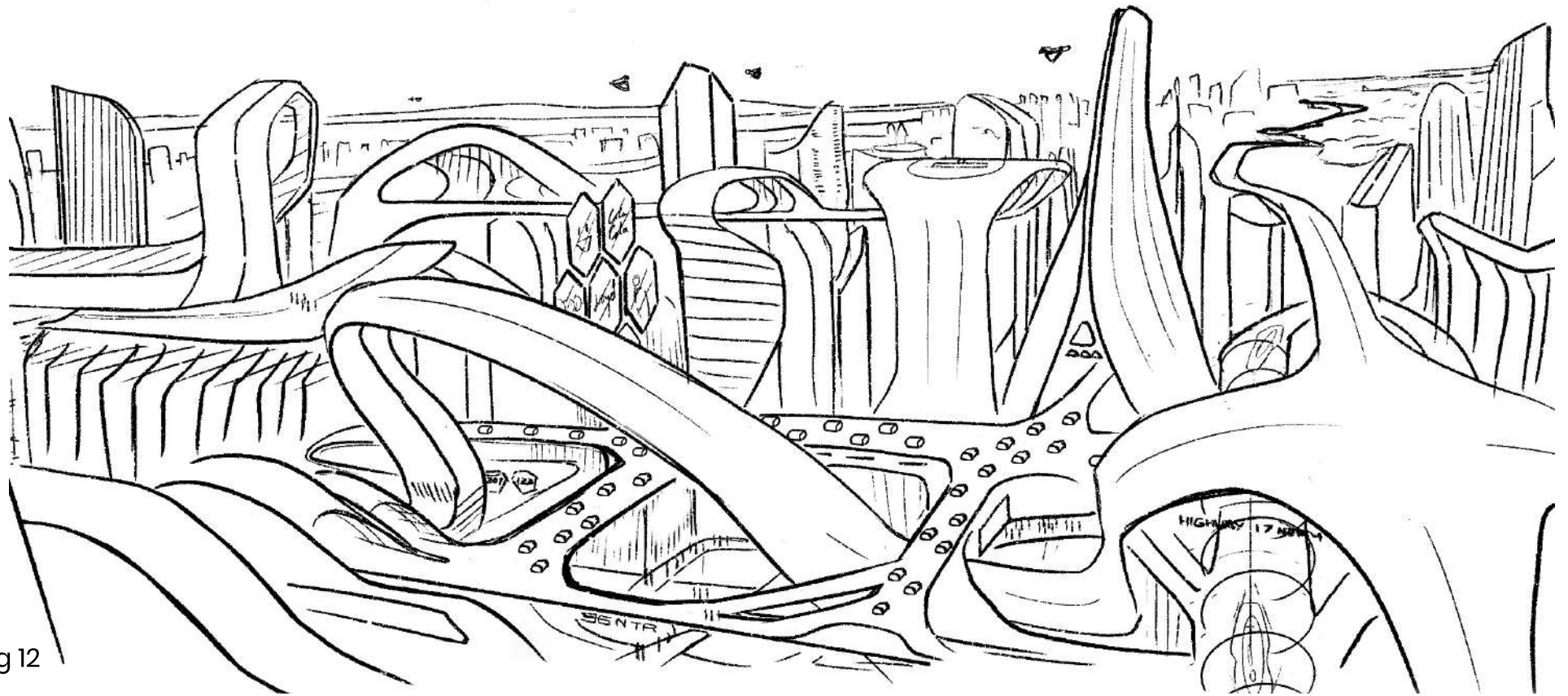


Fig 12

Mumbai 2050. A densely packed high tech city.

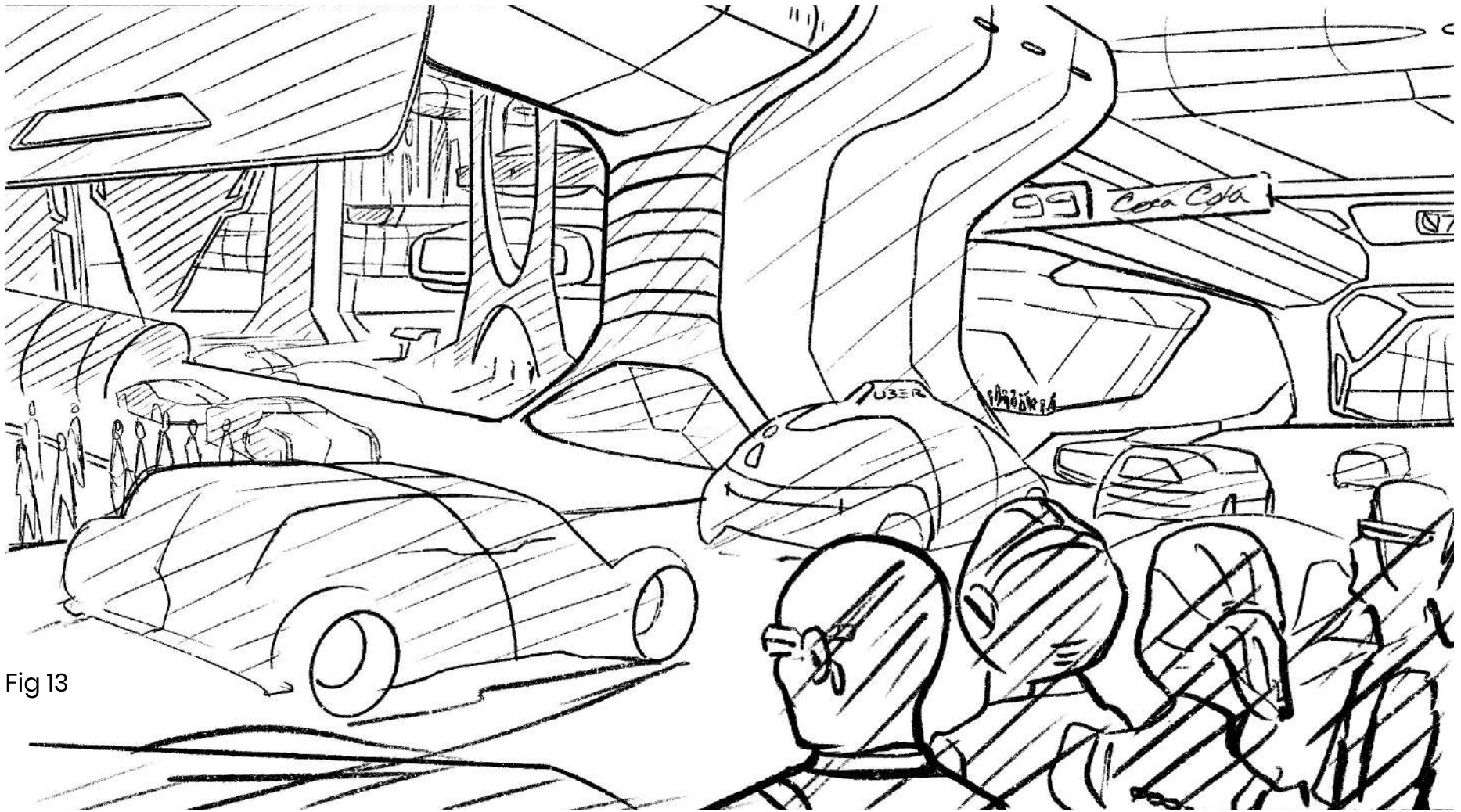


Fig 13

A city with numerous overlapping highways and link roads making a web of roads leaving the bottom part often without sunlight.

Sid lives higher up in the Mumbai skyscrapers and lives a fairly luxurious but busy life.

He wakes up early and gets ready for work by 8 a.m.

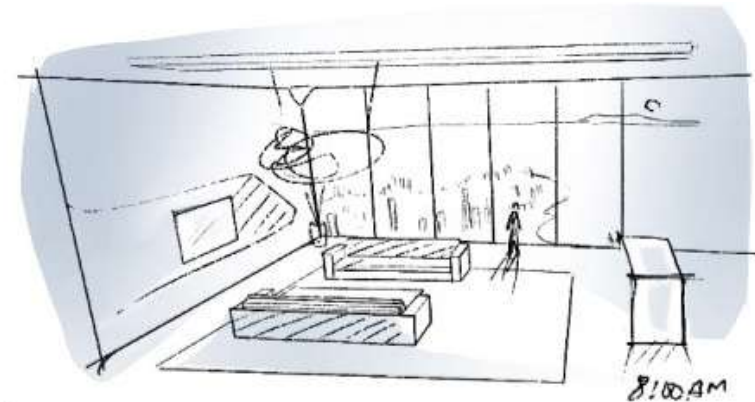
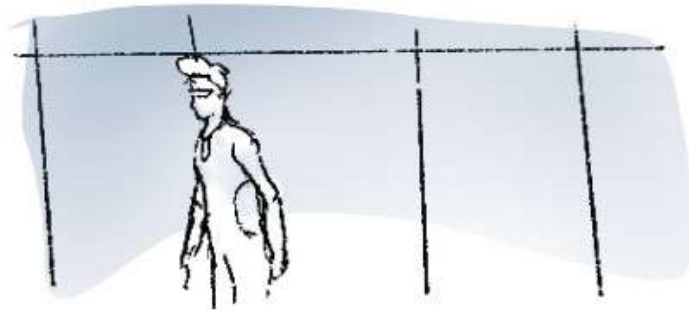
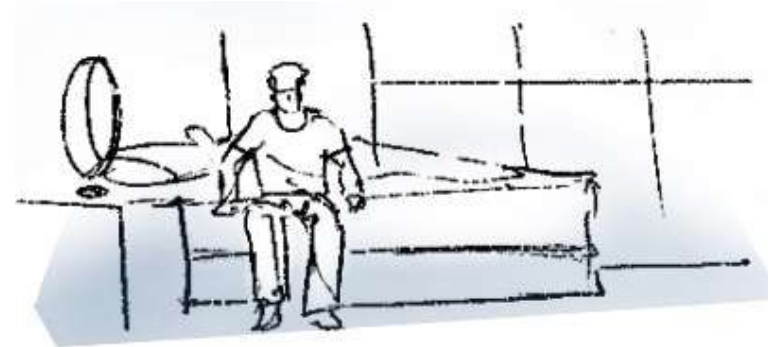


Fig 14

His home assistant reminds him of a meet in Pune at 9 a.m. He asks the assistant to book an Uber air and reaches to the meet on time. These are pretty much his daily working days, filled with meetings and quick travels around the city in shared transportation.

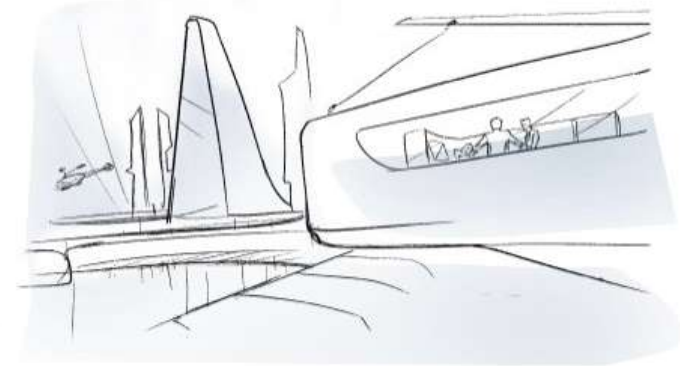
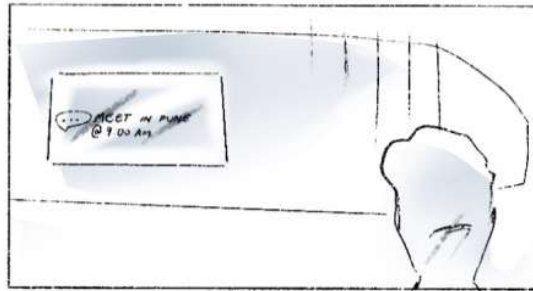


Fig 15

It's Friday and after the meetings and work done he visits a local Porsche store in Pune with some of his friends to enjoy a quick ride in the newly launched Porsche city cruiser bike.

Porsche store provides transportation and storage of it's special customers bikes store to store.

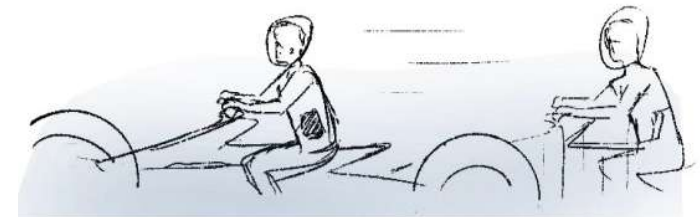
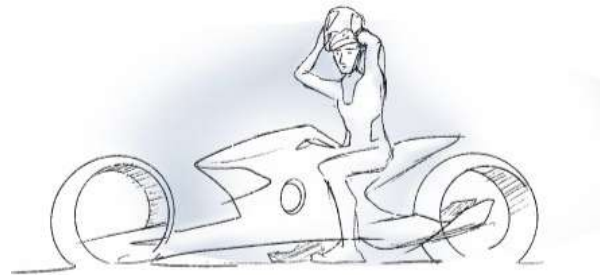
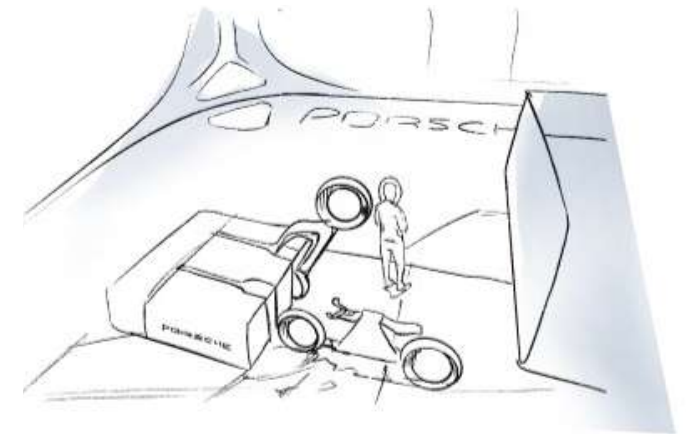
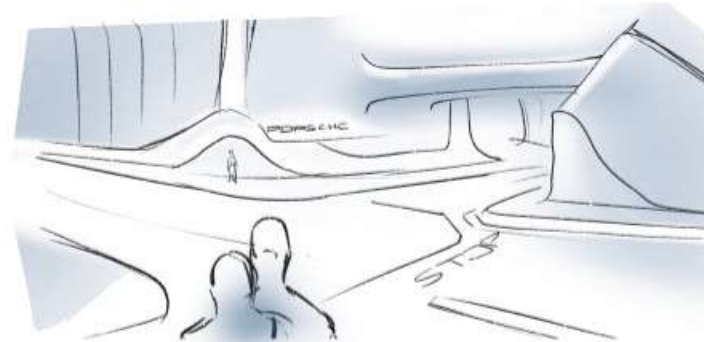


Fig 16

He rides the bike around the city in a special highway dedicated for non autonomous vehicles. He enjoys the freedom and thrill of riding and taking back control of his transportation vehicle. He enjoys city rides often around the weekends with his friends.

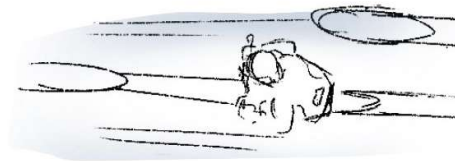


Fig 17



Design Brief

Mumbai city 2050 is a city highly connected with IoTs. Autonomous Mobility is in full function. People live in a mixed reality. Where people interact with physical reality along with the augmented reality. People yearn for more raw and visceral experiences.

In the year 2050 Porsche has decided to make an electric bike, to provide a unique experience for its customers. Just like their iconic porsche 911 gt cars they have decided to offer a similar experience in a bike form.

Sid a 35 year old male, businessman lives in Mumbai. He stays busy during the week and only gets time for himself in the weekends. He is an avid automobile enthusiast and owns a car and bike collection. Being in Mumbai he likes to cruise around in a bike. Being a passionate Porsche fan he is excited to experience the bike in Mumbai. He is a Passionate, Sophisticated and an Adventurous man. His aspirational and experiential needs are: unique experience, excitement, emotion and connection. The porsche bike should suffice these needs to satisfy the user.

Inspiration



Fig 18

Exploration

Initial exploration

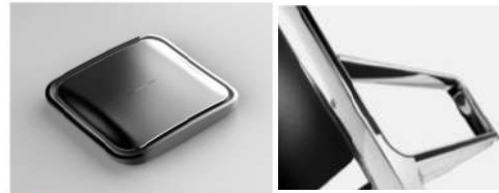
In the exploration stage I wanted to explore freely without worrying much about the functionality. In this stage I made three concepts exploring three different design directions. The idea was to have fun in exploring and finding limits.

Thus mainly at this stage most of the concepts are just early concepts and lack details.

Aim was to find one interesting design direction and then detailing it further.

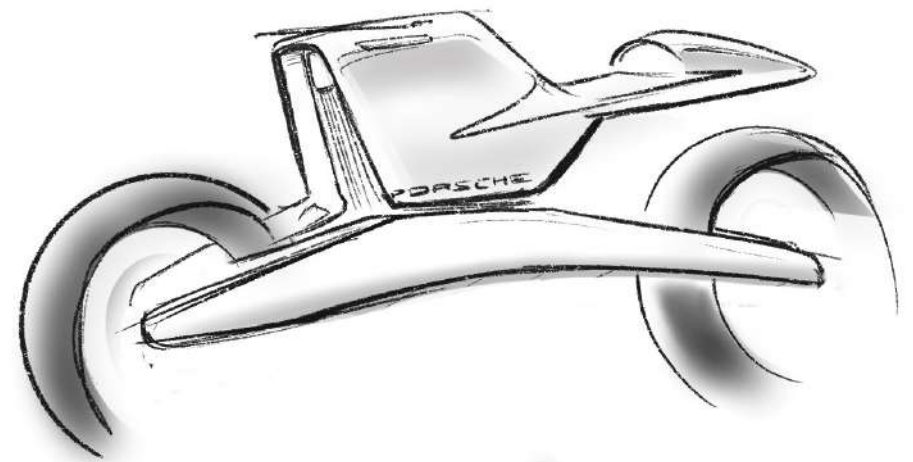
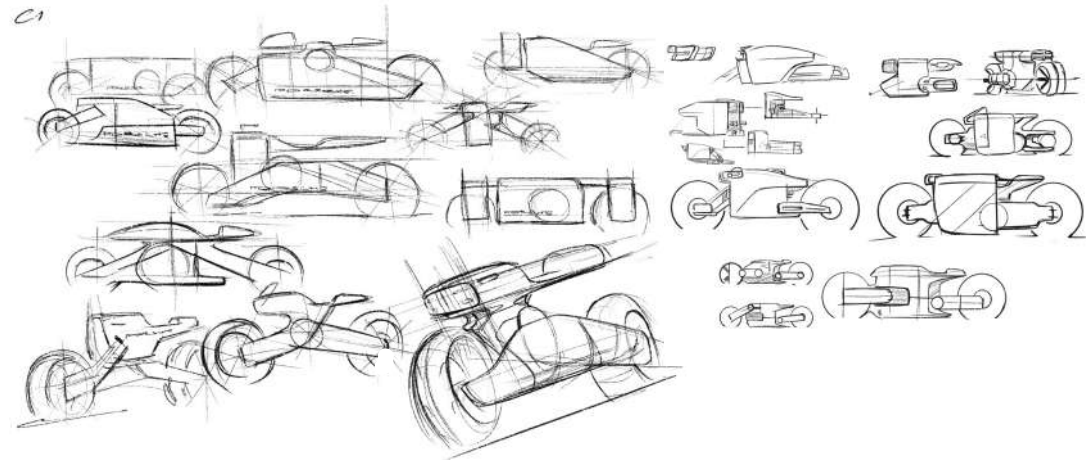
Concept 1

Fig 19



Smooth

Mechanical



Concept 2

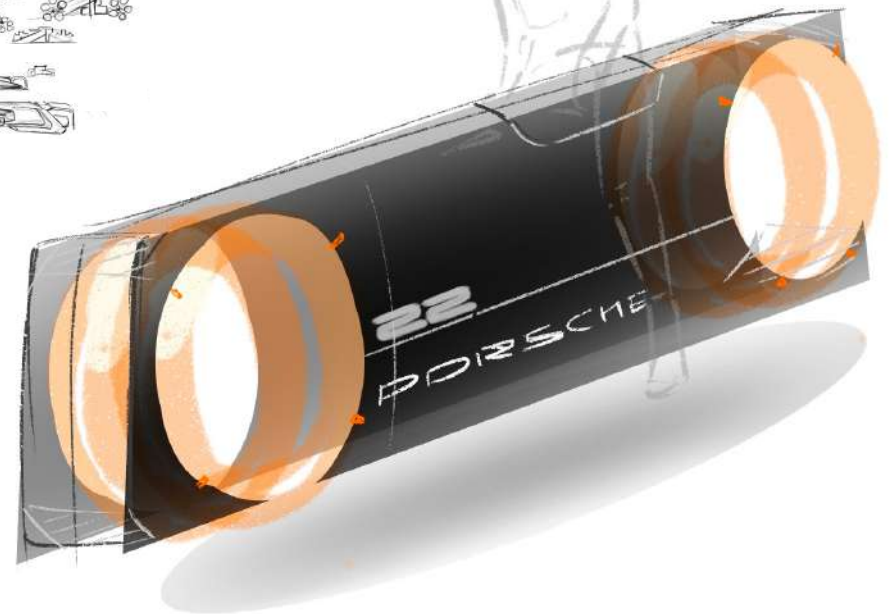
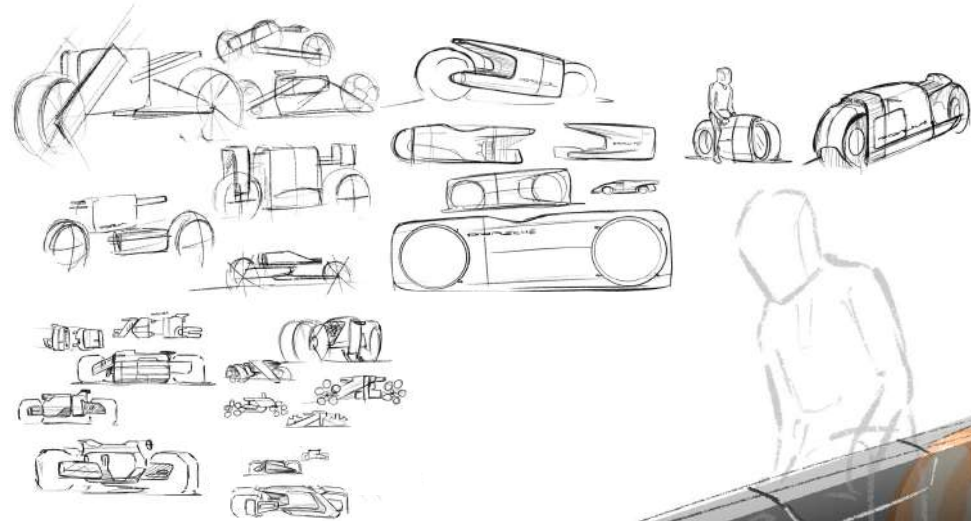


Strong



Basic

Fig 20



Concept 3



Car-like

Fig 21



Ideation

Based on the feedback on my explorations, the concepts of the exploration stage I began the ideation process of further developed and more refined concepts. In this stage I defined and picked 2 design directions to make concepts and made 3 concepts from them.

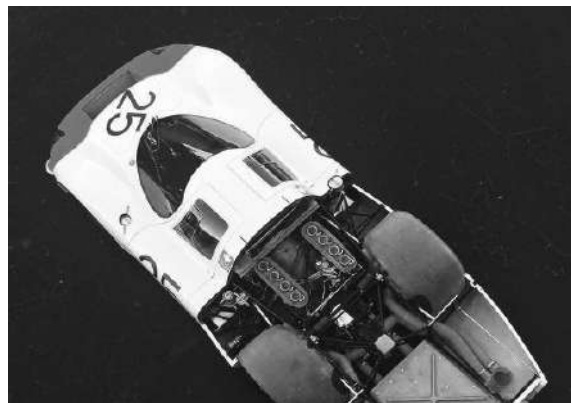
The problem with the earlier concepts was that the concepts were a little too extreme. This time I had to re-look at the Porsche design philosophy and Design DNA to make better concepts which were not at the extreme ends of the spectrum. The goal was to make believable and refined concepts reflecting the Porsche design philosophy and capturing the Porsche design DNA and spirit.

Further the aim was to find and select one interesting design direction and then take it to the detailing stage.

Direction 1



Smooth



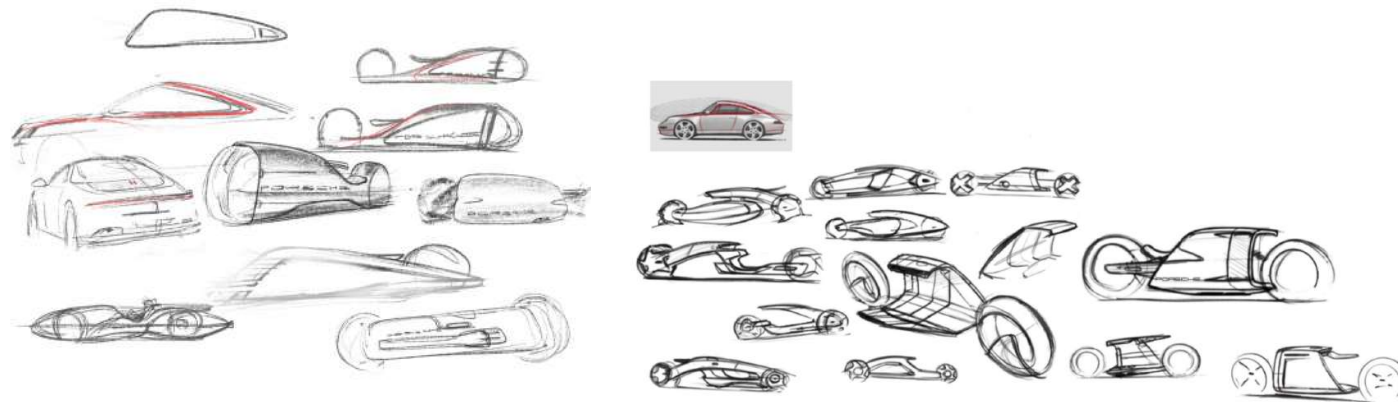
Mechanical



Solid

Fig 22

Concept 1



Inspired by porsche iconic roofline, I have tried to create a lightweight concept for Porsche also taking inspirations from the porsche e bikes.

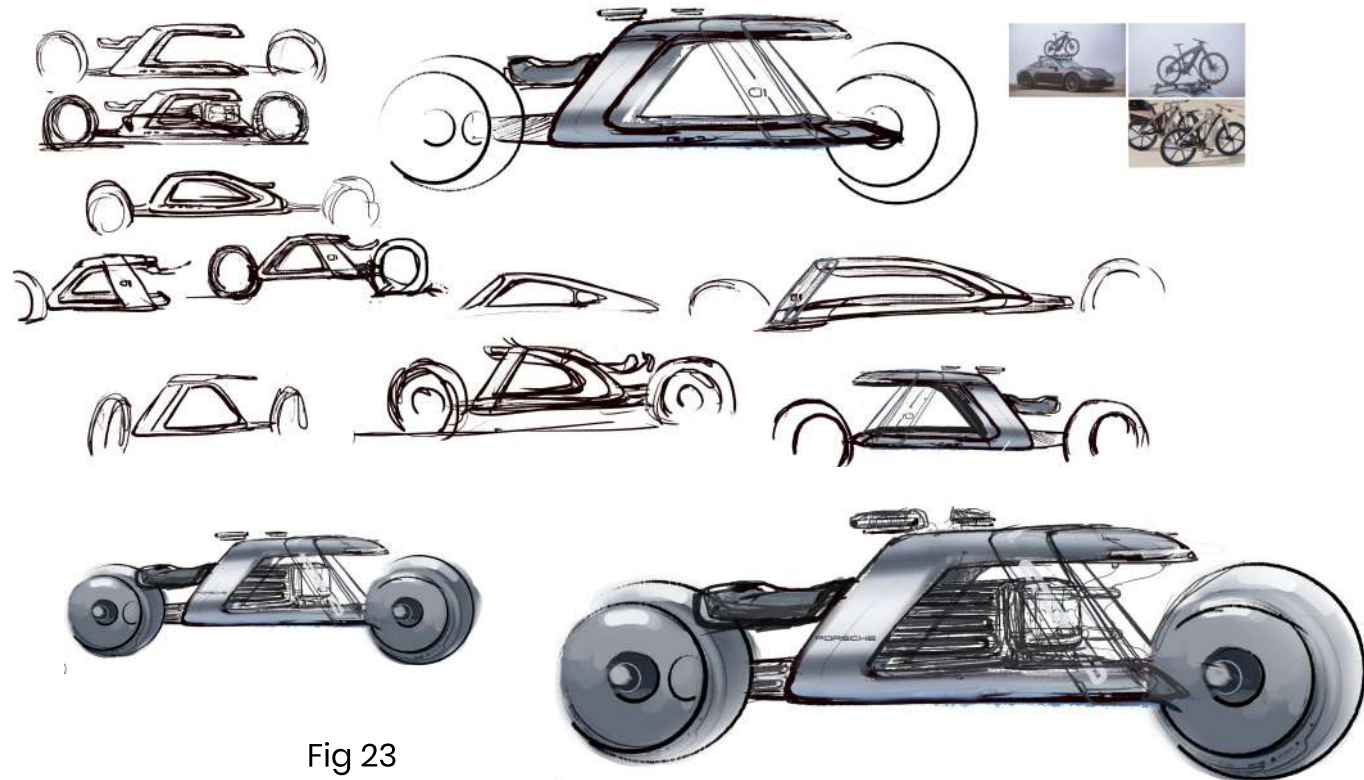


Fig 23

Direction 2

Fig 24



Smooth



Contrast



Clean

Concept 2

Inspired by the curves of old and the pronounced fenders of the Porsche Taycan this concept provides a very sporty and aggressive cruiser. With adjustable handlebars and seat it allows for aggressive and relaxed riding.

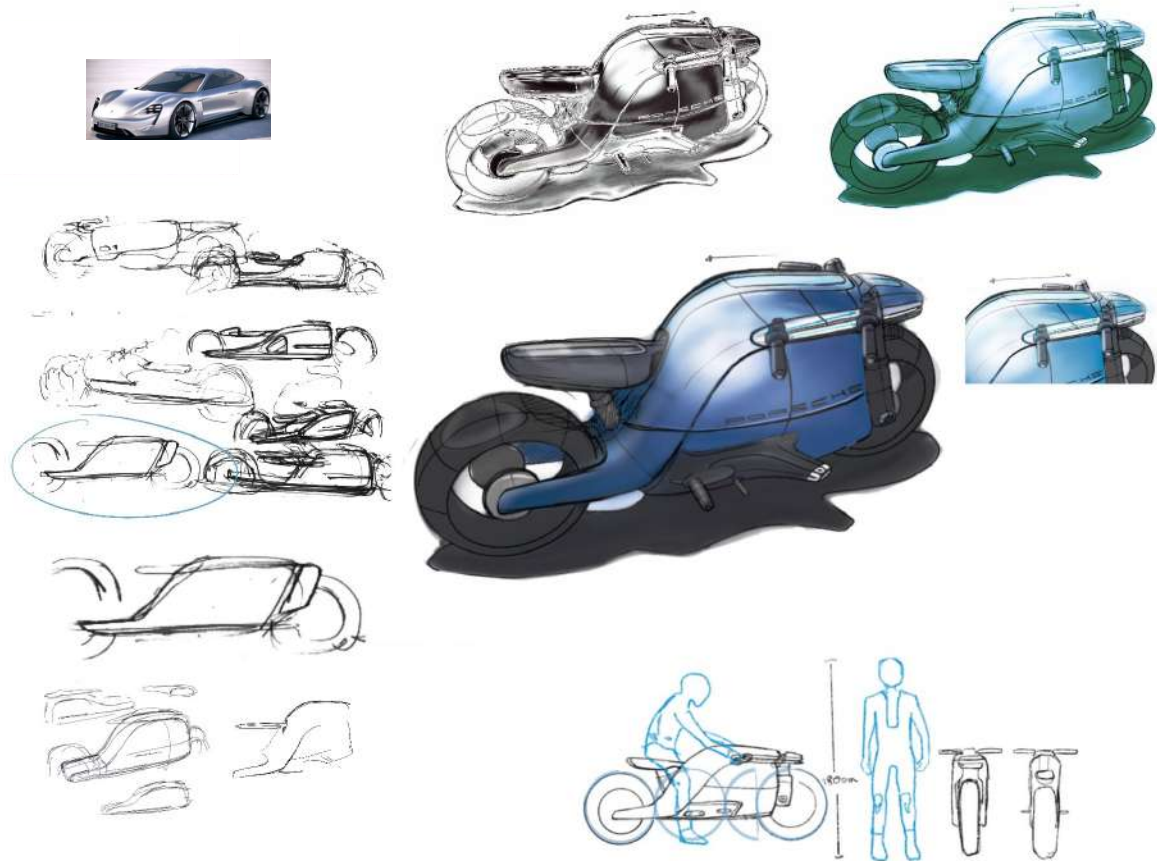


Fig 25

Further developed the same concept. Inspired from pronounced Porsche curves and made more sleeker and longer for more calmer approach.

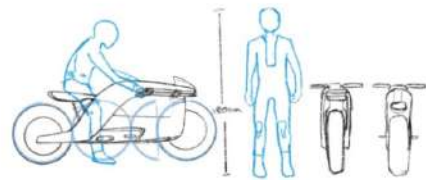
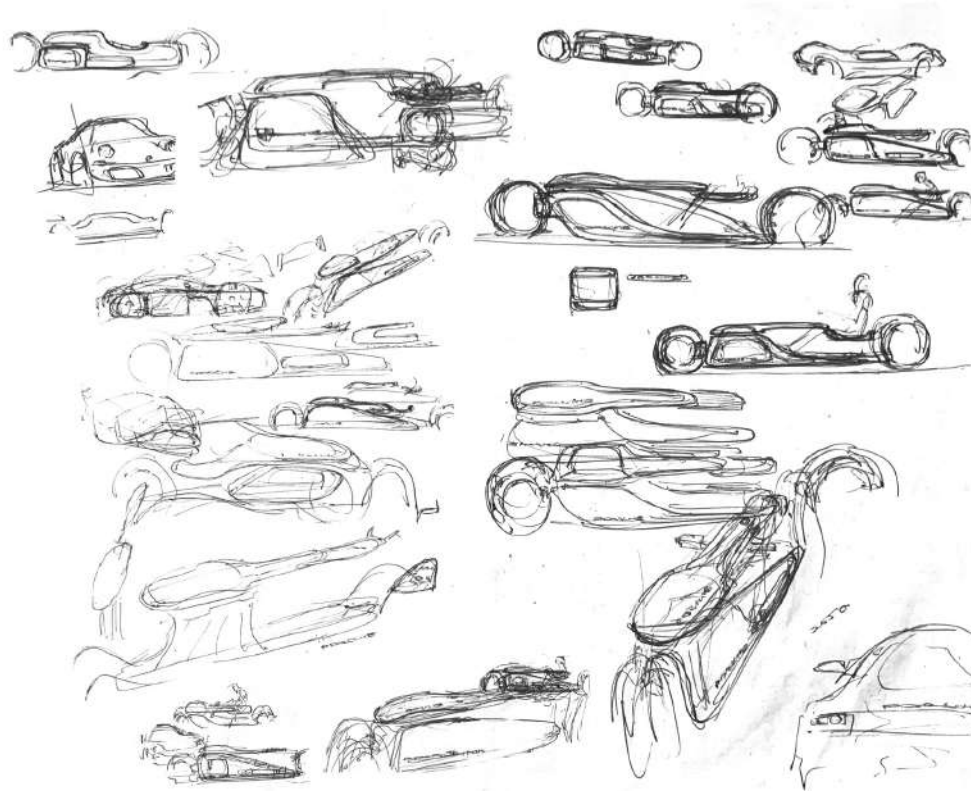
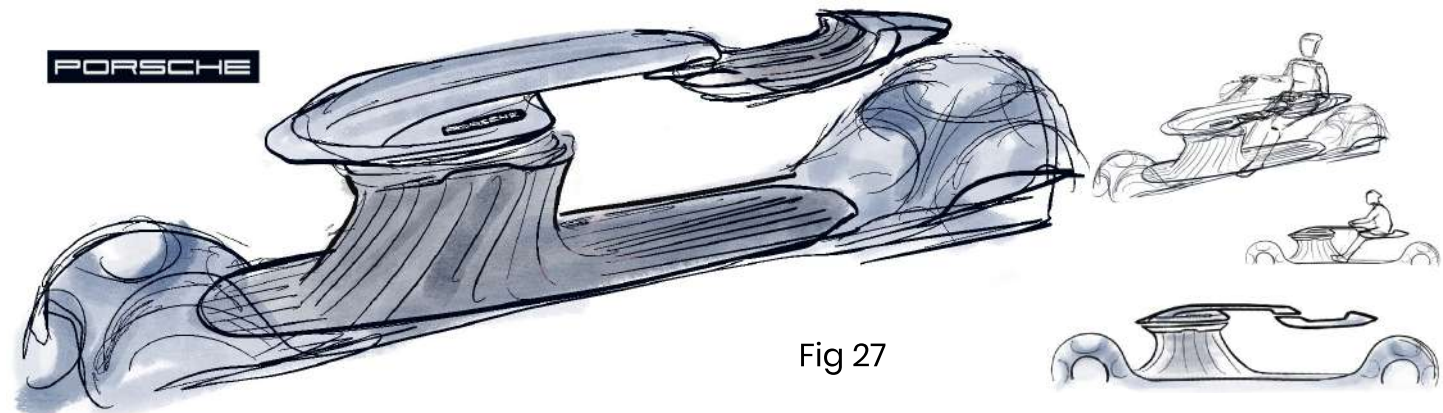


Fig 26



Concept 3

Inspired from iconic porsche curves and organic forms. This concept is a bit more futuristic and grand. Supposed to be a grand tourer.



Further developed the same concept. Simplified the form and used less organic and more geometric shapes to represent the Porsche functional design.

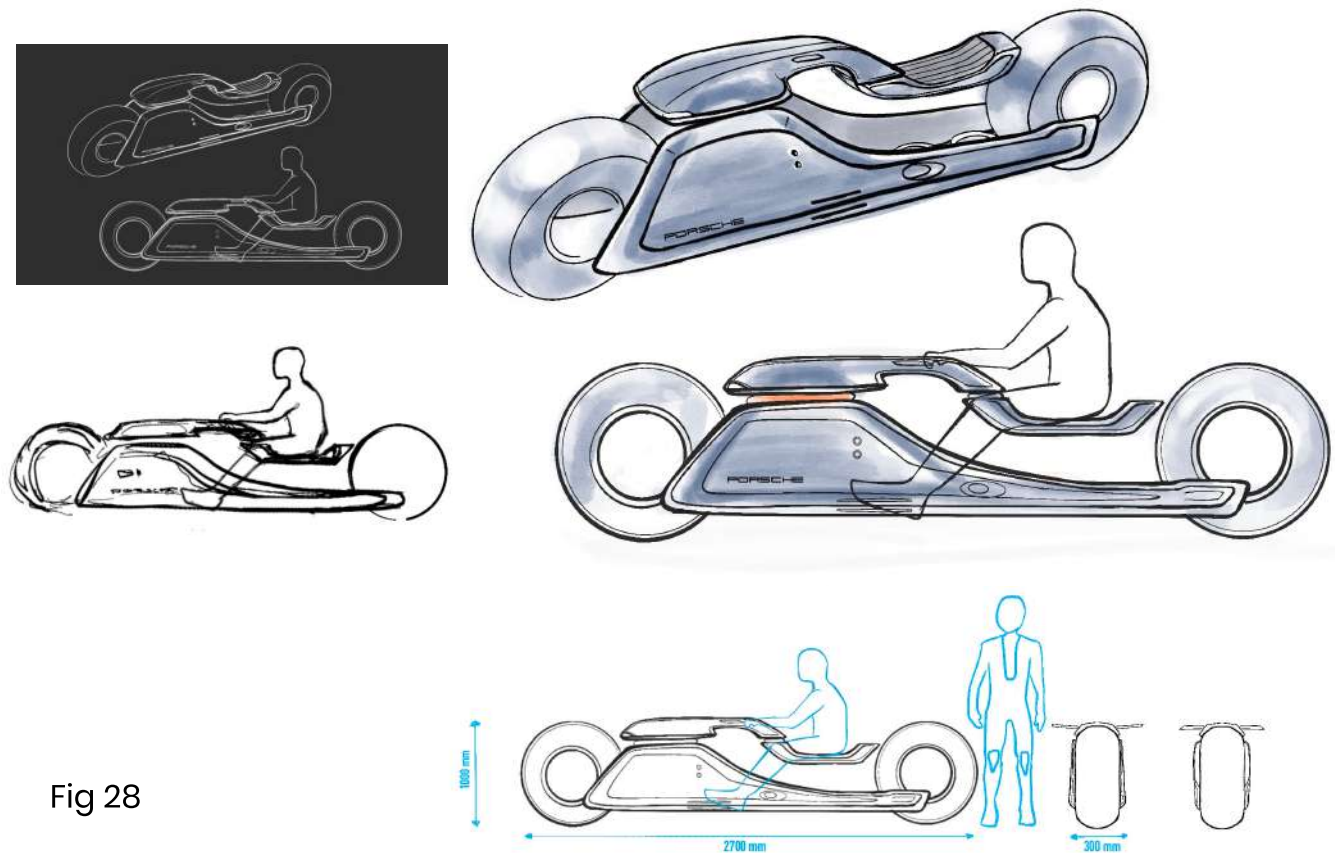


Fig 28

Final Concept

Final concept is a bit refinement and alteration of concept 2. Using curves and shapes more Porsche defining. The top is inspired from the iconic porsche sloping roofline capturing the Porsche spirit.

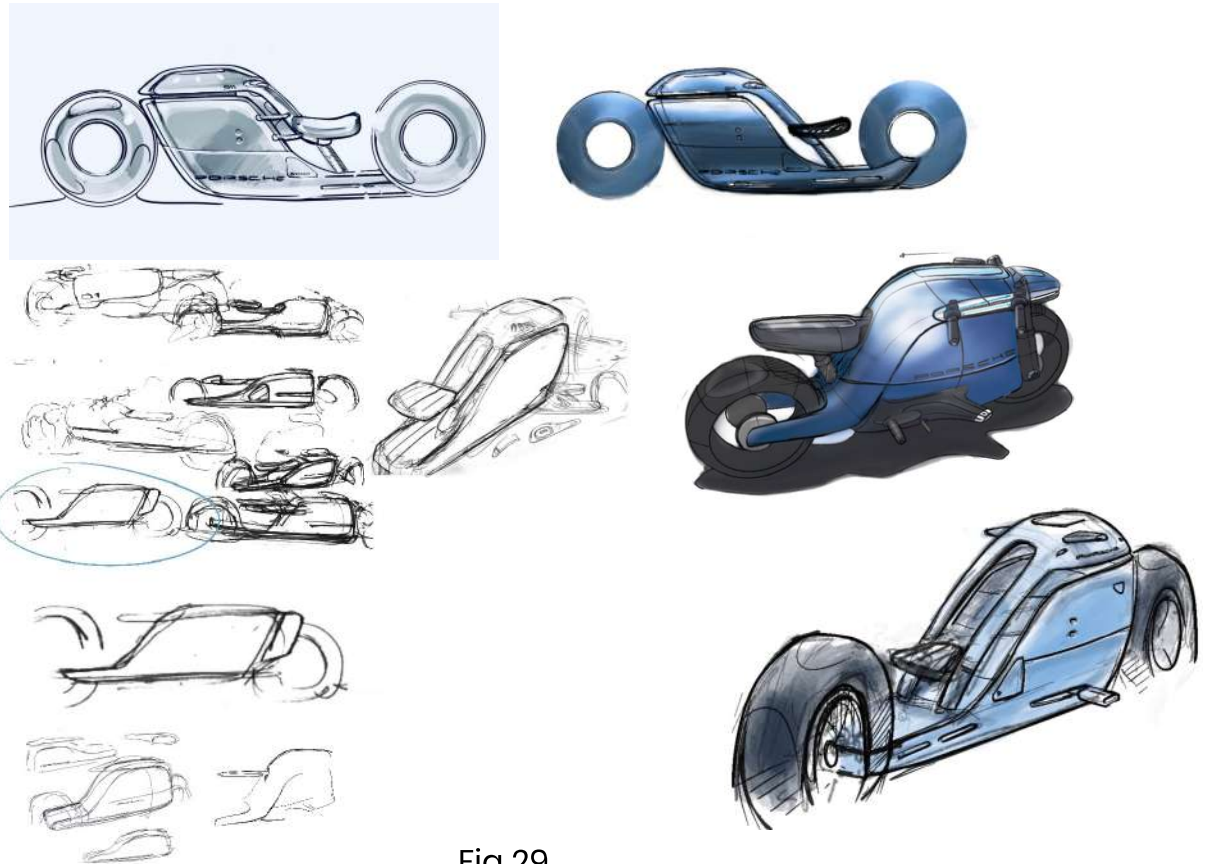


Fig 29

Detailing

3D Modeling

Quick 3D modeling to get the 3D form

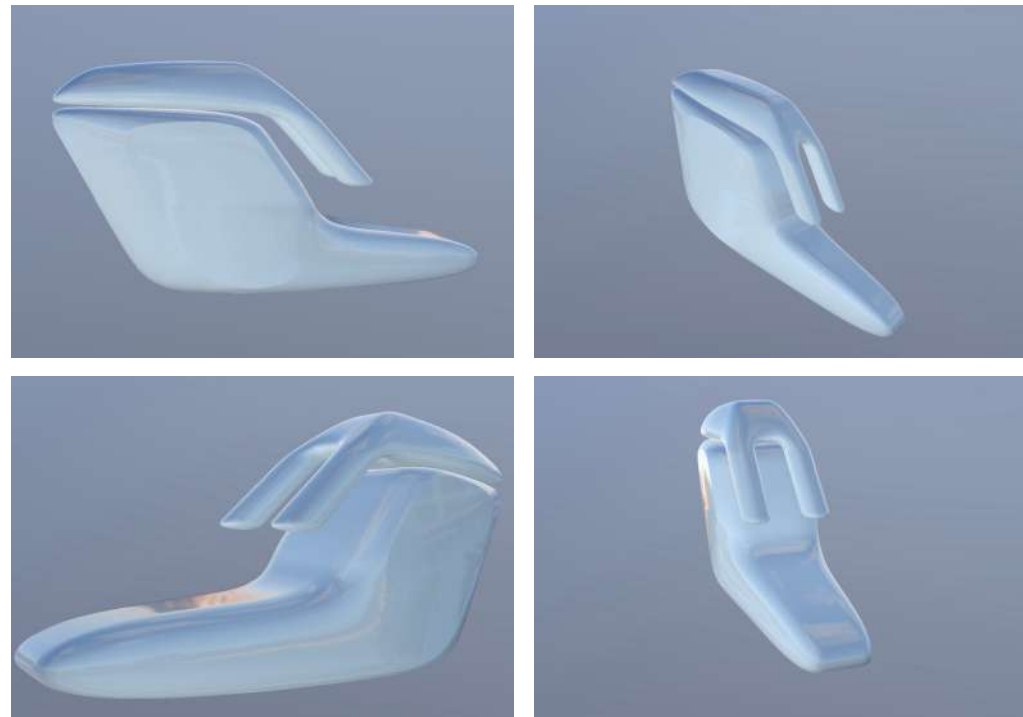


Fig 30

3D Modeling

3D form taking shape
Adding details
Low poly Model

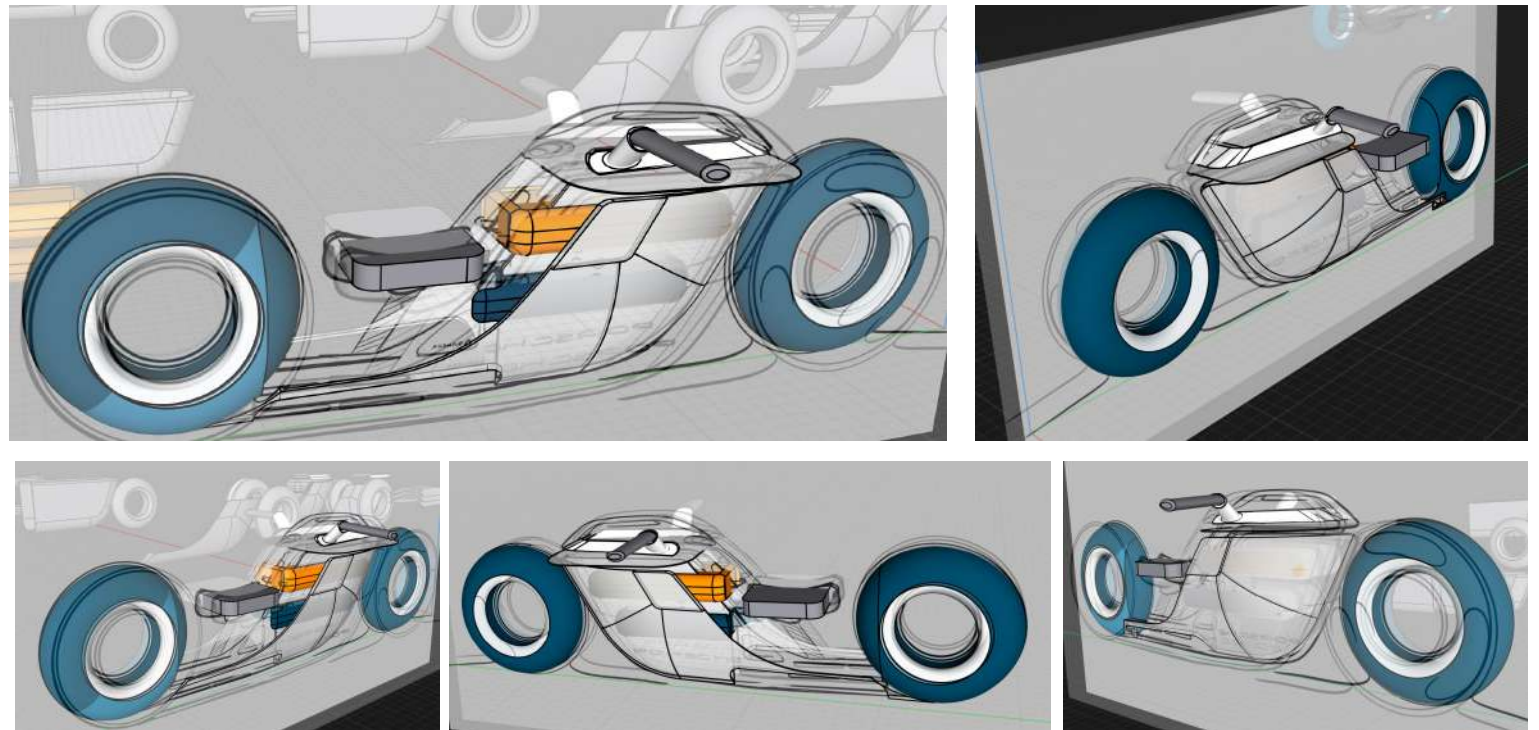


Fig 31

3D form taking shape
Low poly Model
Adding details
Refining form

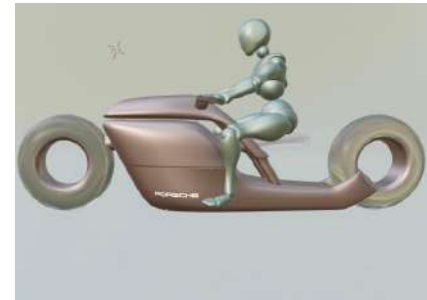
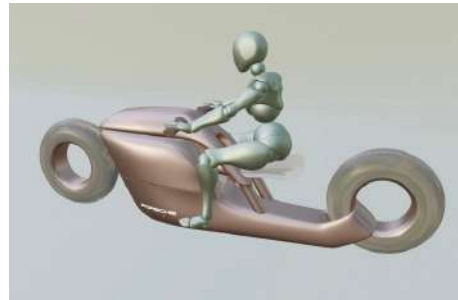
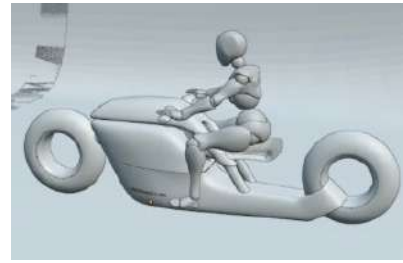


Fig 32



Package

This bike is powered by an electric engine at the back (similar to 911 engine placement) connected with a chain that controls traction. Adjustable Magnetic suspensions in the wheels hub. Wirelessly charging electric batteries placed in the front.

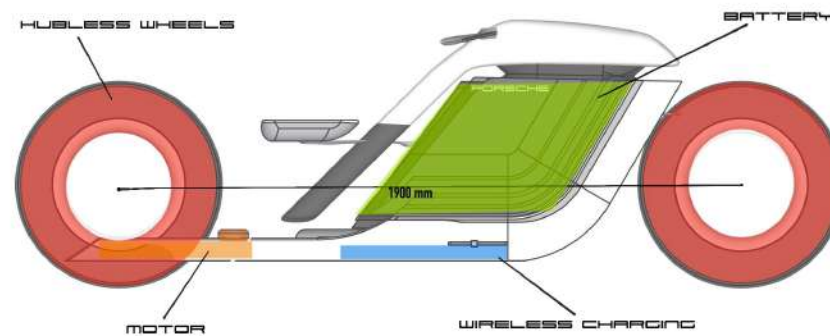
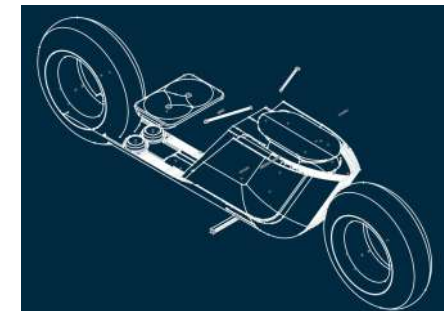
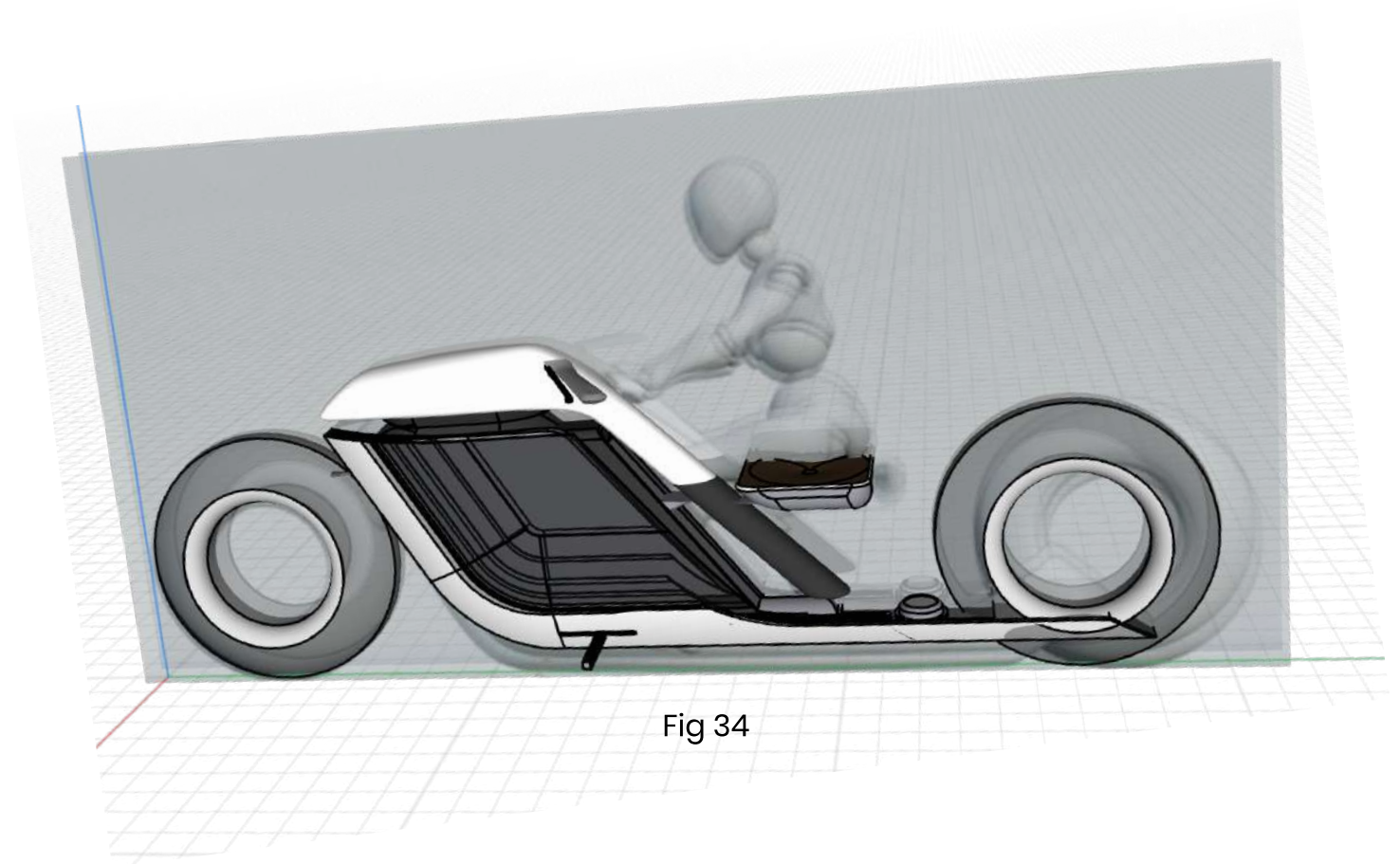


Fig 33



Final Models



*These models still need some work and need to be updated with better renders

Final Models

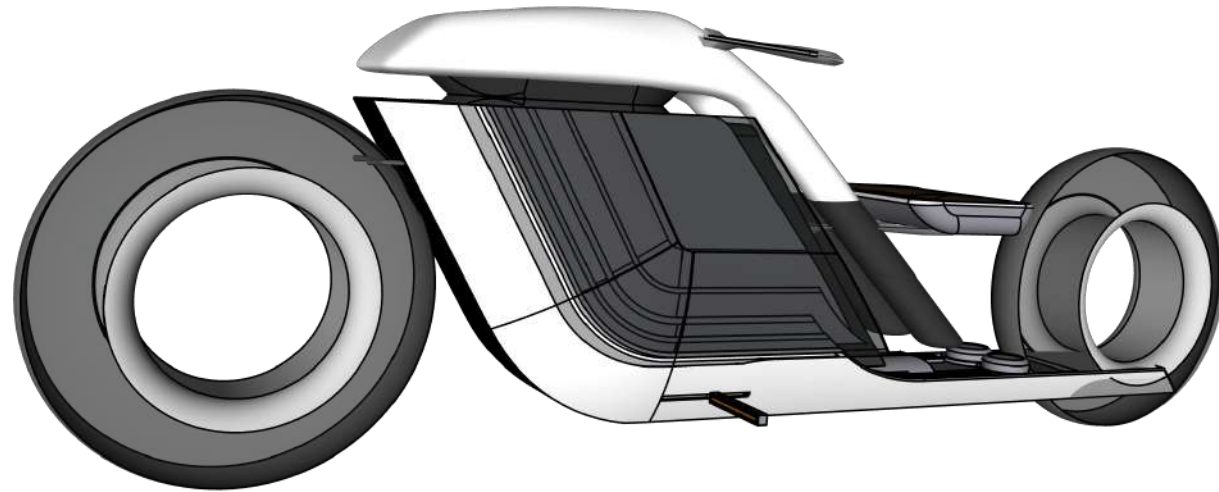


Fig 35

Final Models



Fig 36

Final Models

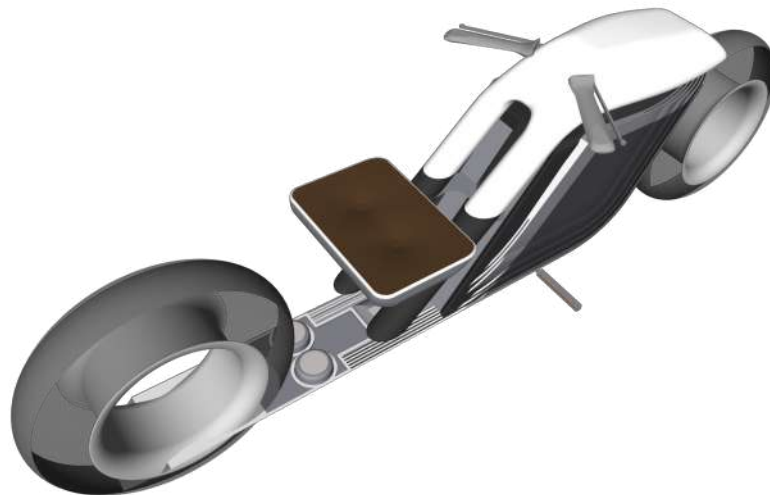


Fig 37

Final Models



Fig 38

Final Models

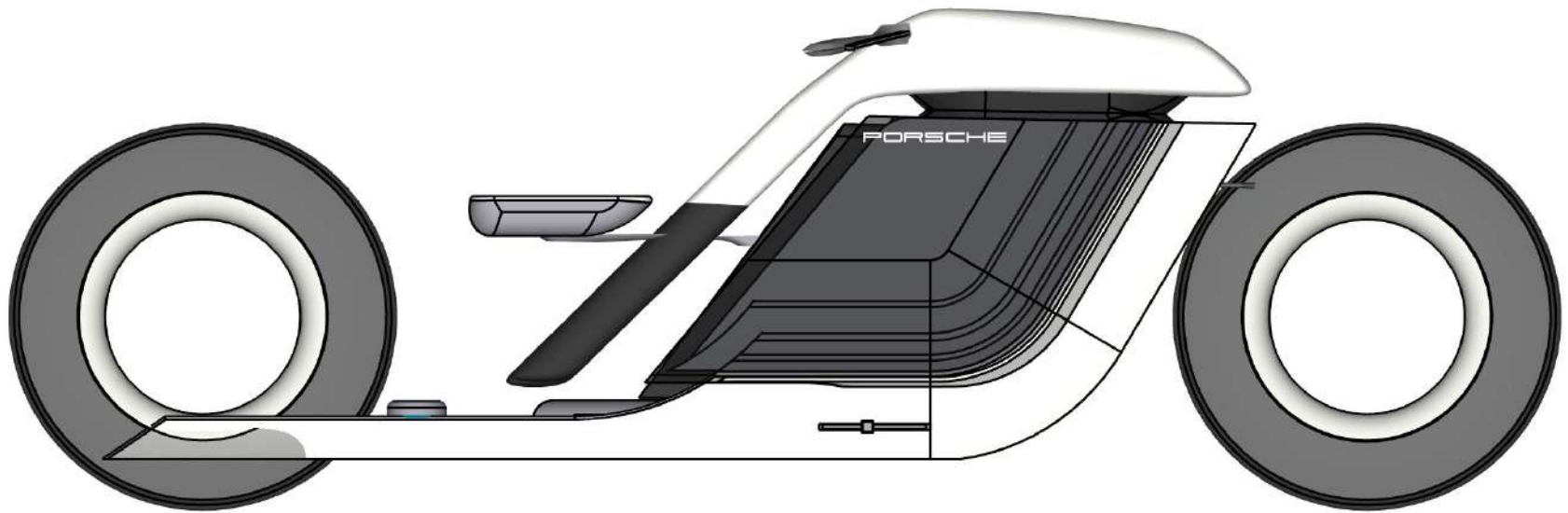


Fig 39

Conclusion

Being interested in cars and bikes it was natural for me to go ahead with an automotive design project. Being inclined towards cars more I have been sketching cars more than bikes. For my PI I wanted to do something interesting hence I chose to design a bike which I knew would be challenging and fun. However I must agree that I underestimated this challenge and it was quite a challenge. Especially making a bike for a car company and that too for a brand like Porsche which has a very subtle design language, was never going to be easy. Throughout this project I had bouts of frustration (not being able to get the results I want), lack of motivation because of the length of the project but nevertheless in the end I feel quite satisfied with the end result. Also I learnt how automobile design process works in a professional world thanks to this project.

References

<https://www.porsche.com/usa/aboutporsche/christophorusmagazine/archive/380/articleoverview/article13/>

<https://www.behance.net/gallery/41641753/PORSCHE-618-Two-Wheels-Project>