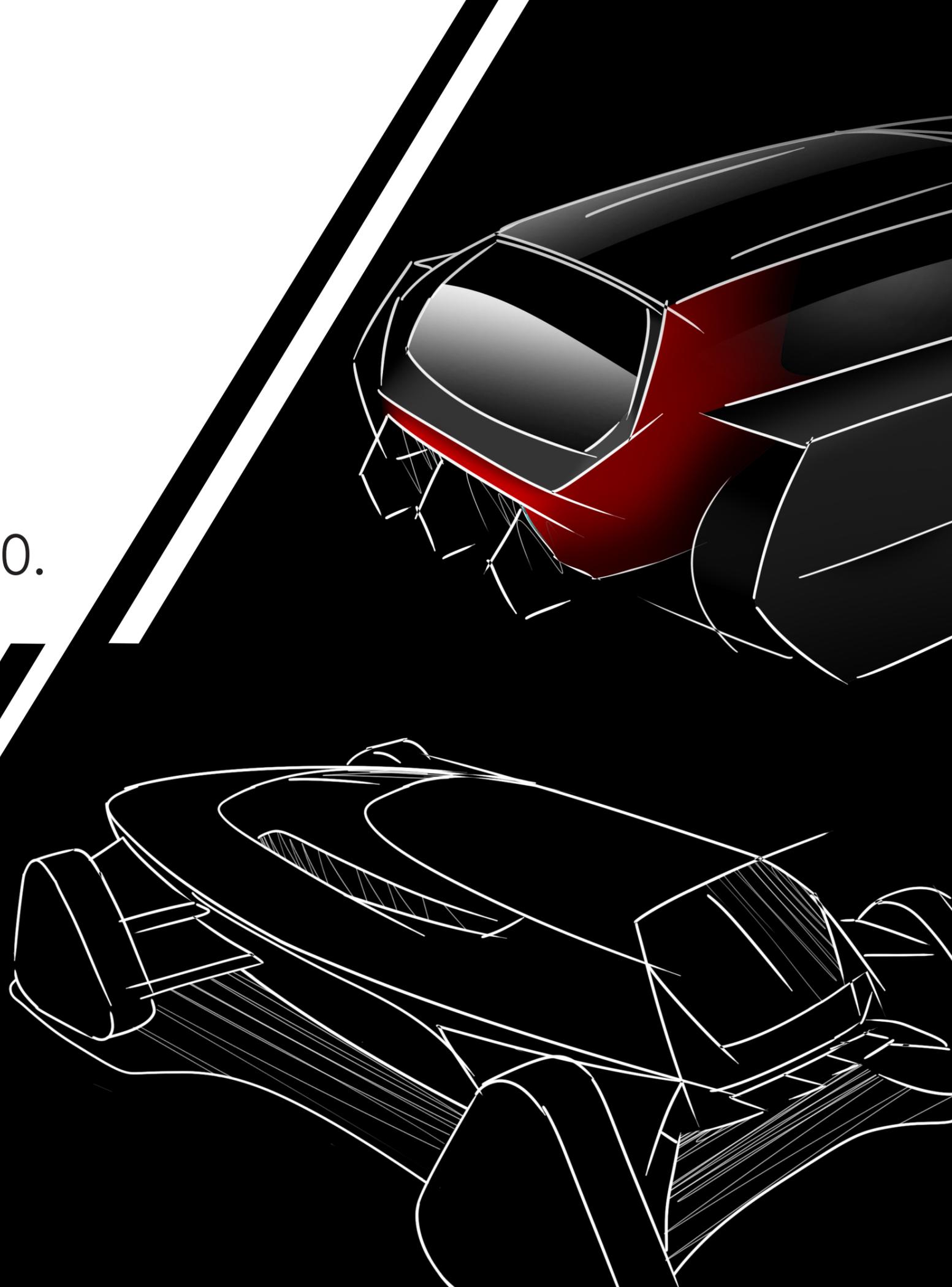


# Modular Lifeguard Vehicle 2030.

Marc Towell



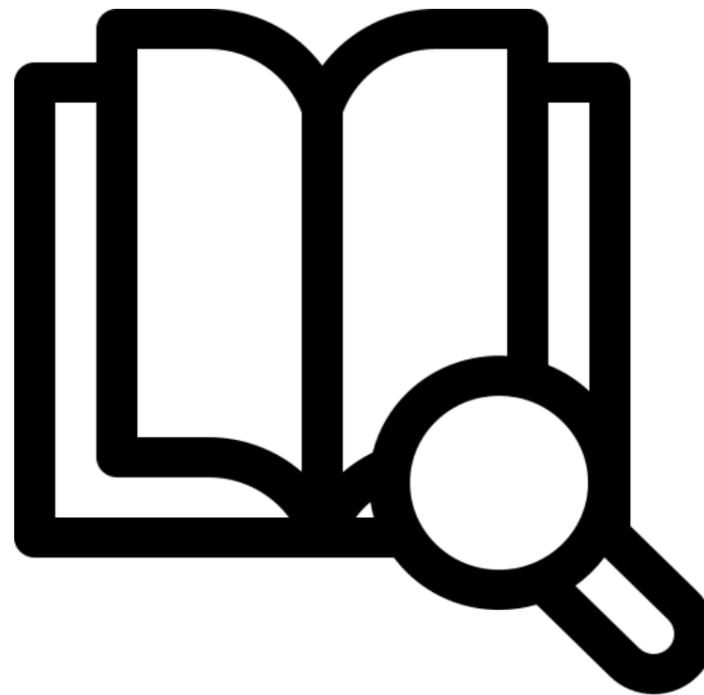
# Design Research

In my FMP, I want to create an all-terrain emergency services vehicle. After researching the different routes I could go down, I settled on marine rescue, focusing on surfers and water sports enthusiasts in relative close proximity to the shore.

Possibility of Los Angeles sea levels rising by **9 feet** by the year **2100**.

The Santa Monica Beach attracts **8.4million** tourists annually.

**PM2.5** concentration in the air in Los Angeles is **2.9 times more** than the WHO guideline.



**53%** of hospital admissions from surfing injuries suffer from **head and neck injuries**.

In peak season there are **700-800 lifeguards** in Santa Monica.

By the year **2050**, it is predicted that **68%** of the world's population live in urban areas.

# User Personas

## Bradley



Note. From (lacounty.gov, n.d)

**Age:** 32

**Occupation:** Los Angeles County Lifeguard

**Salary:** \$40,000 per annum

**Relationship Status:** Long-term girlfriend

"Summer here at Santa Monica gets so busy. It can make it difficult to respond quickly to an emergency when there are so many people here so having the right equipment is essential."

Interests:



## Emma



Note. From (Gonclaves, 2016)

**Age:** 24

**Occupation:** Waitress

**Salary:** \$30,000 per annum

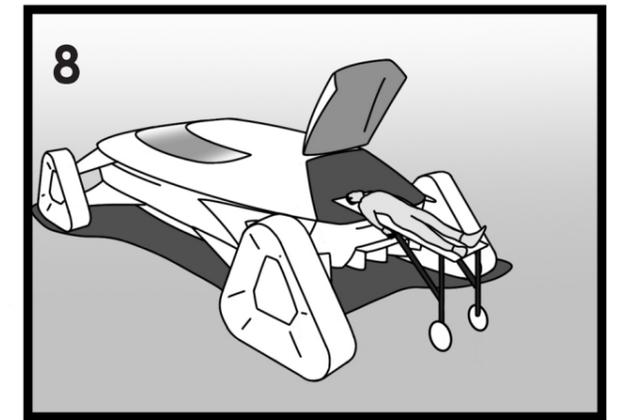
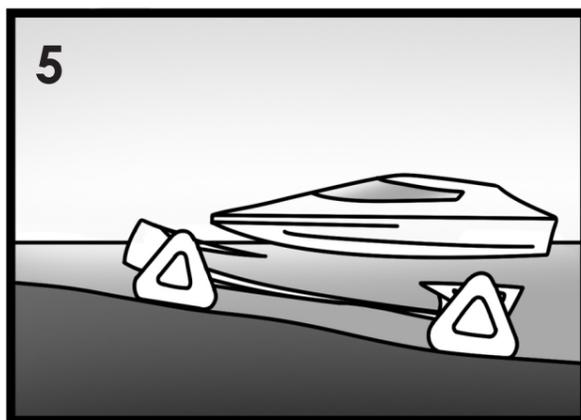
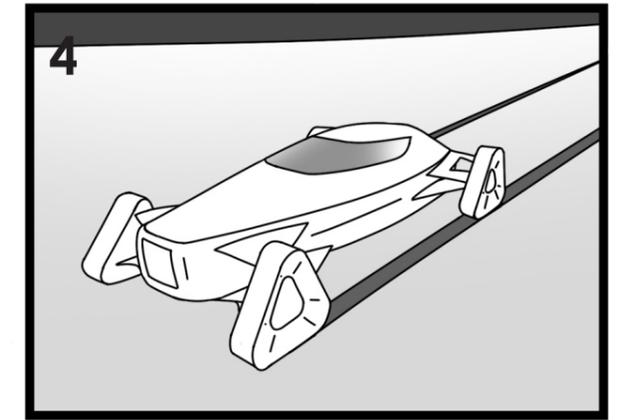
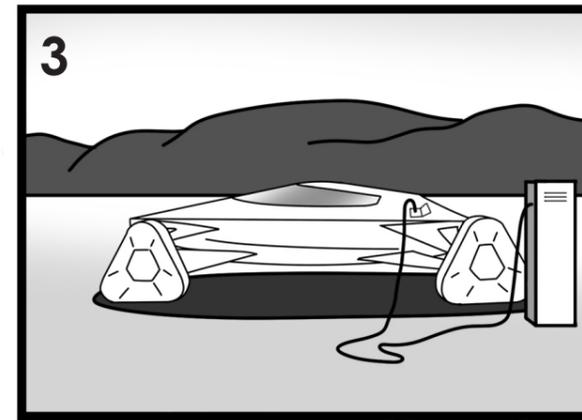
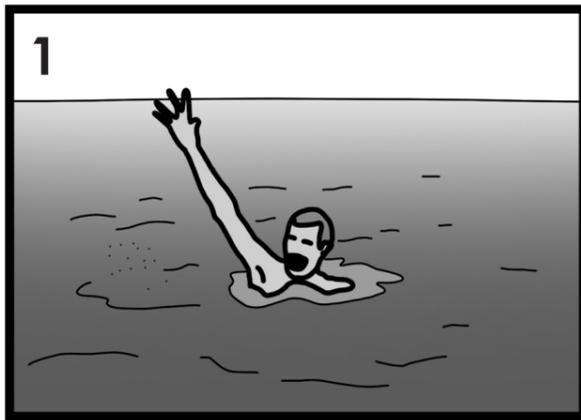
**Relationship Status:** Engaged

"Surfing has gripped me ever since the trips to the beach I took with my parents when I was younger. I always found it amazing how easy people made it look."

Interests:



# Storyboard



# Design Moodboard



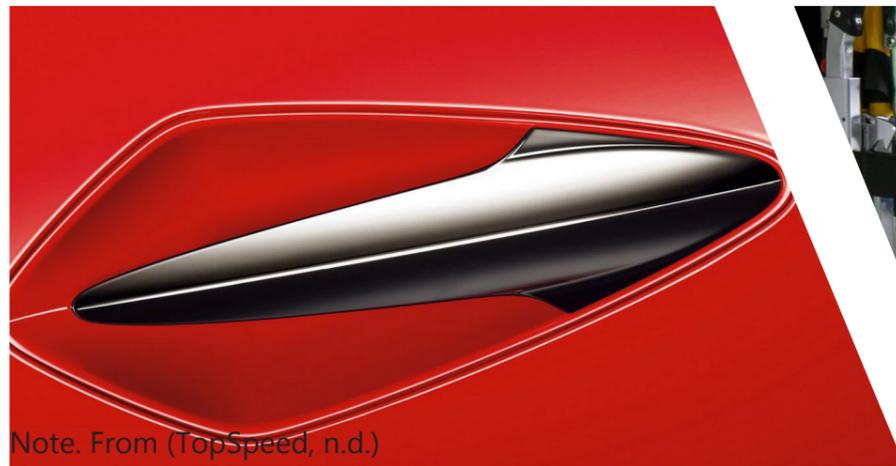
Note. From (Somodevilla, 2017)



Note. From (cornishbirdblog.com, n.d.)



Note. From (pinterest, n.d.)



Note. From (TopSpeed, n.d.)



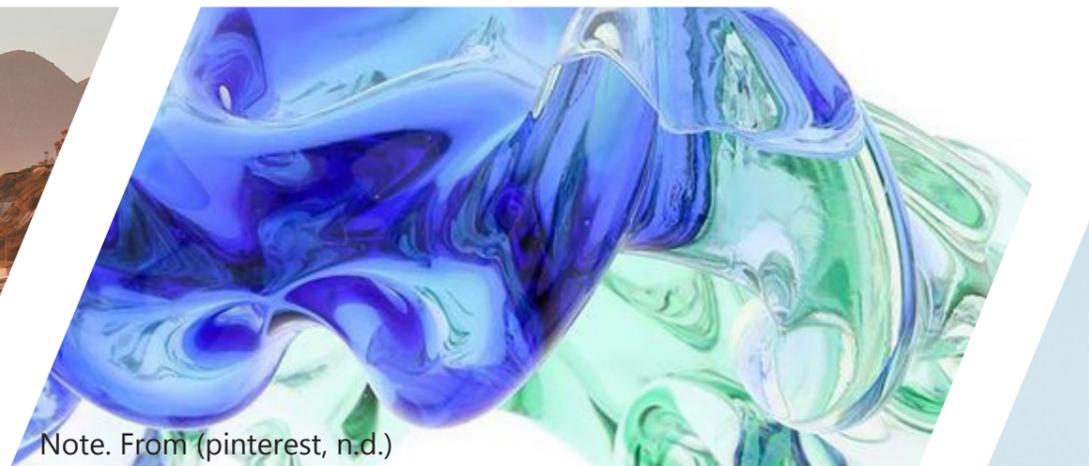
Note. From (Worlds, 2020)



Note. From (pinterest, n.d.)



Note. From (Mott, 2022)



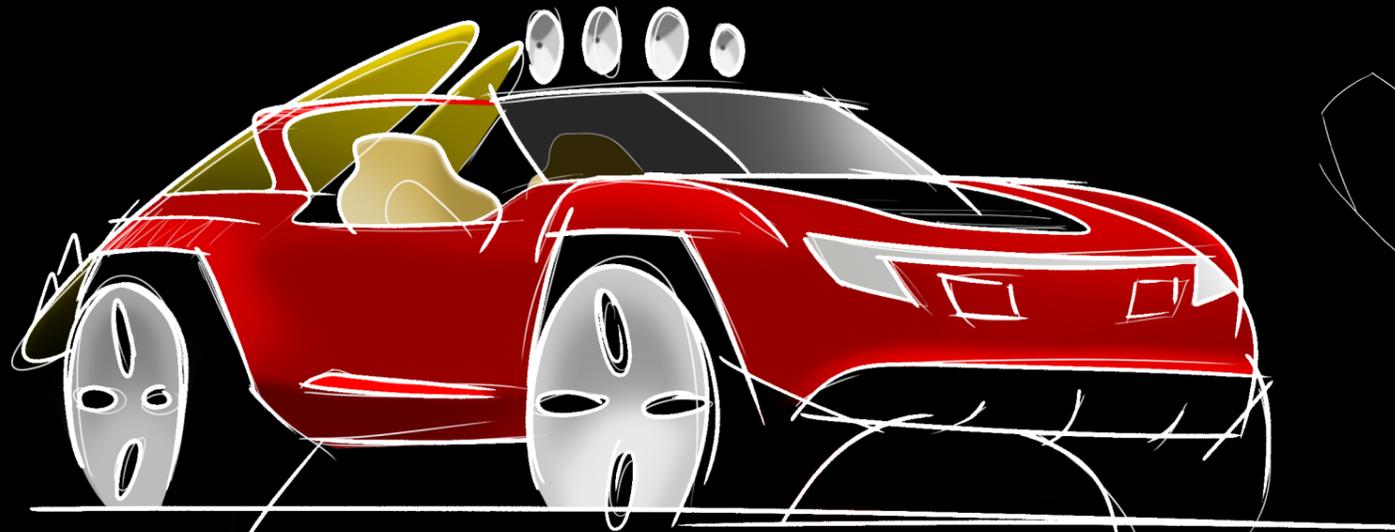
Note. From (pinterest, n.d.)



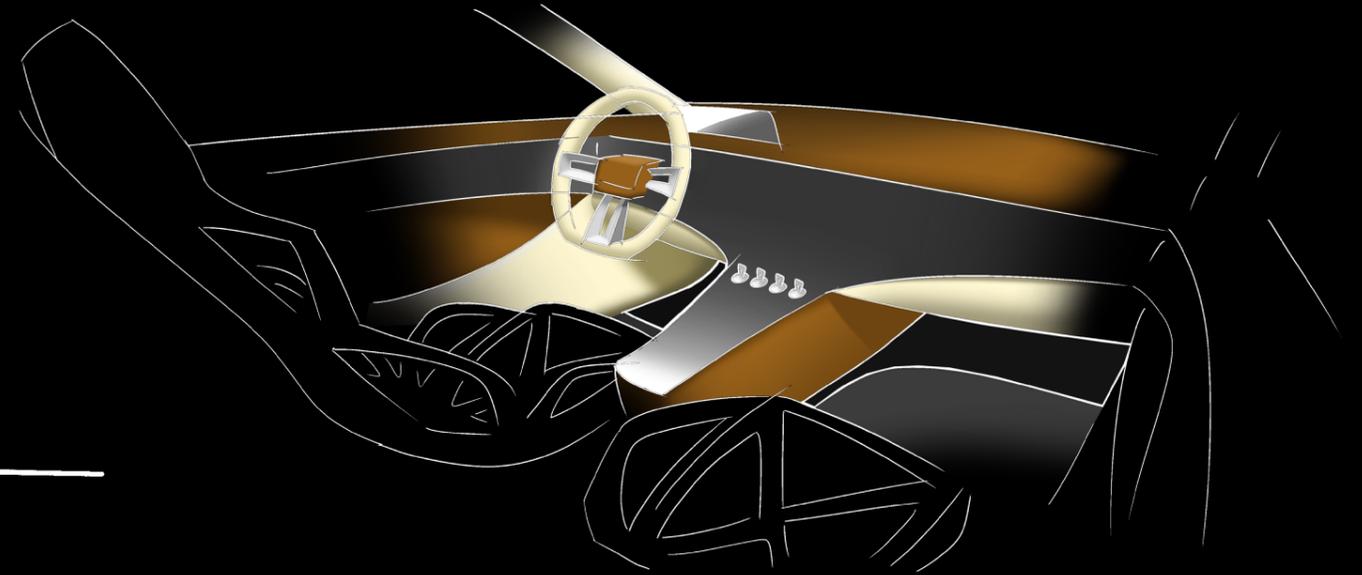
Note. From (Shoemondo, n.d.)



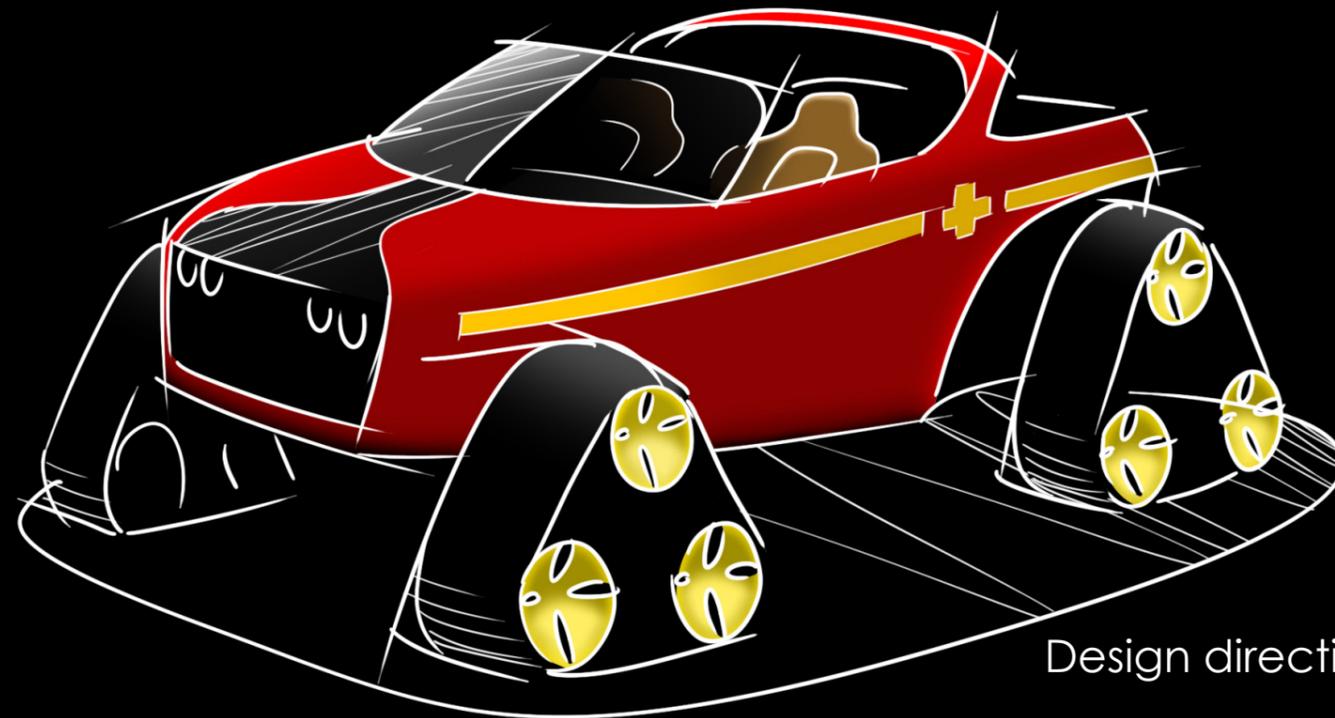
# Design Development



Design direction 1.

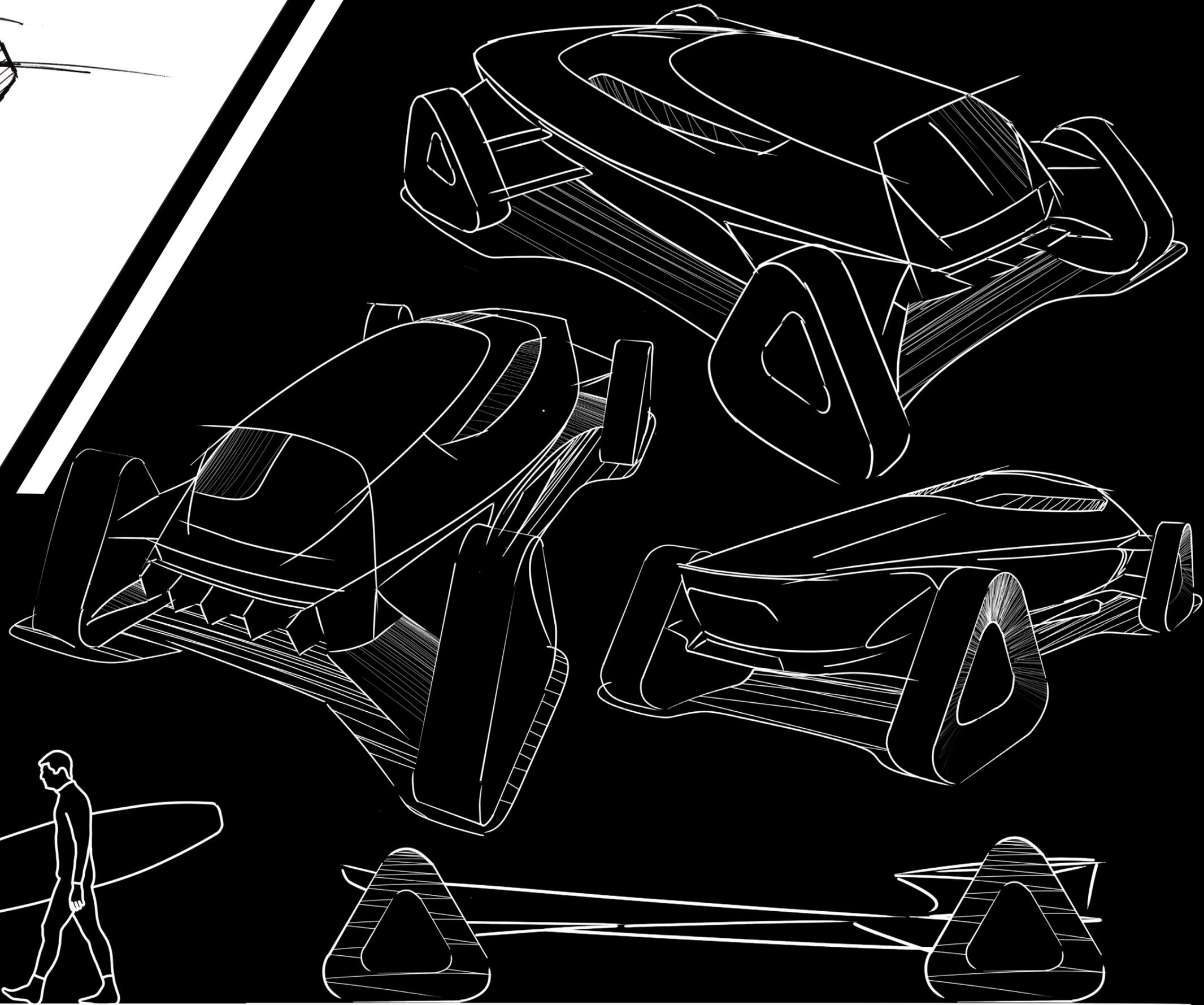
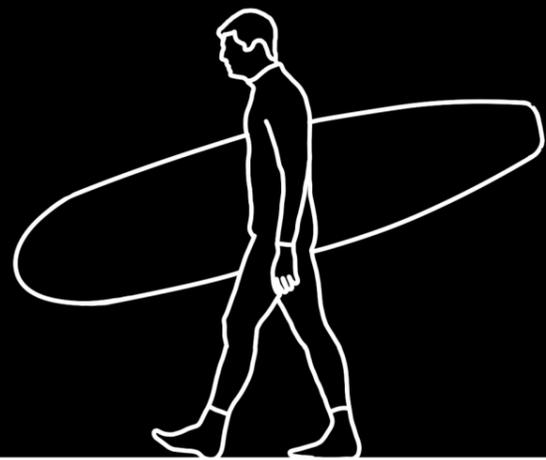
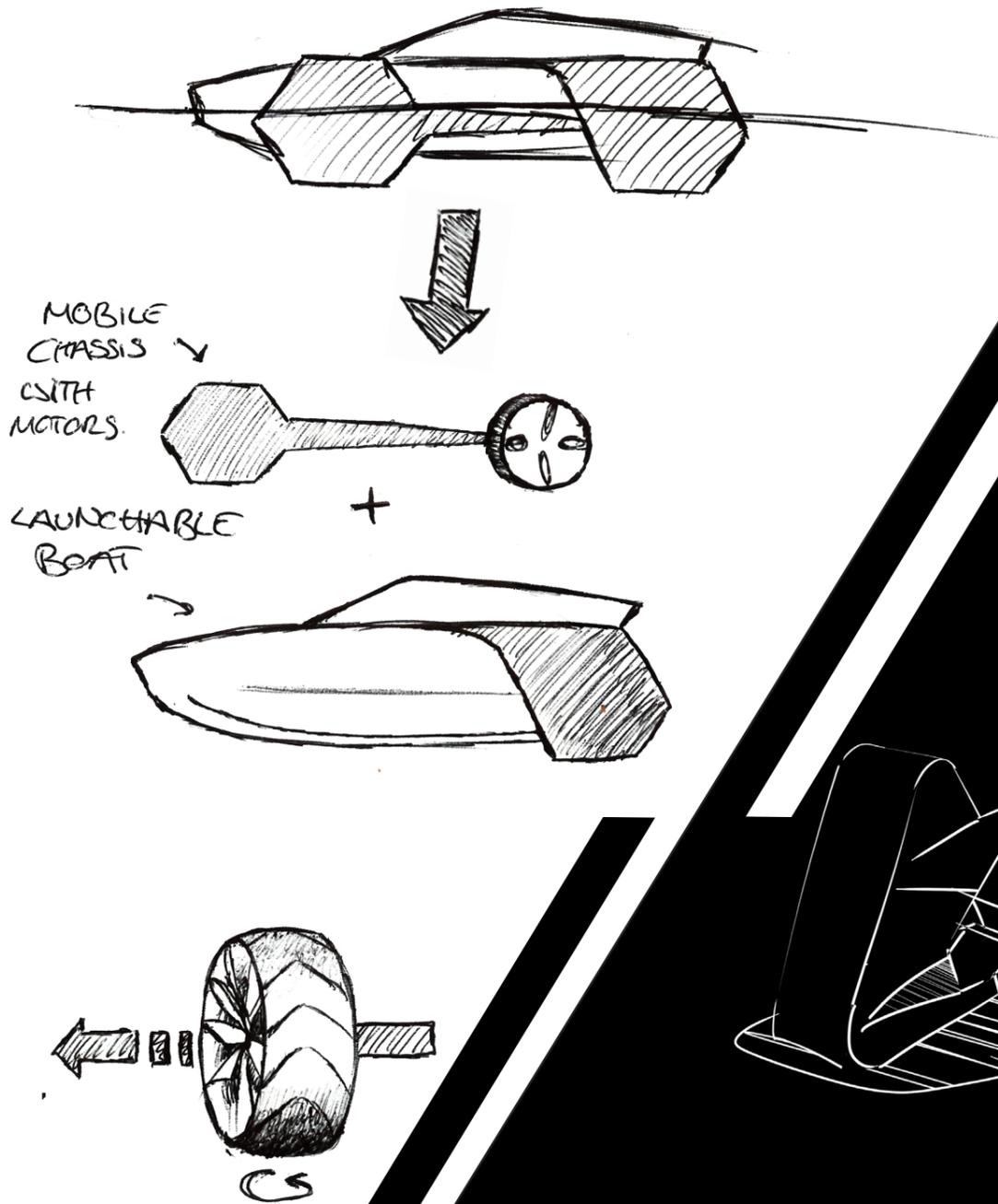


Interior ideation.

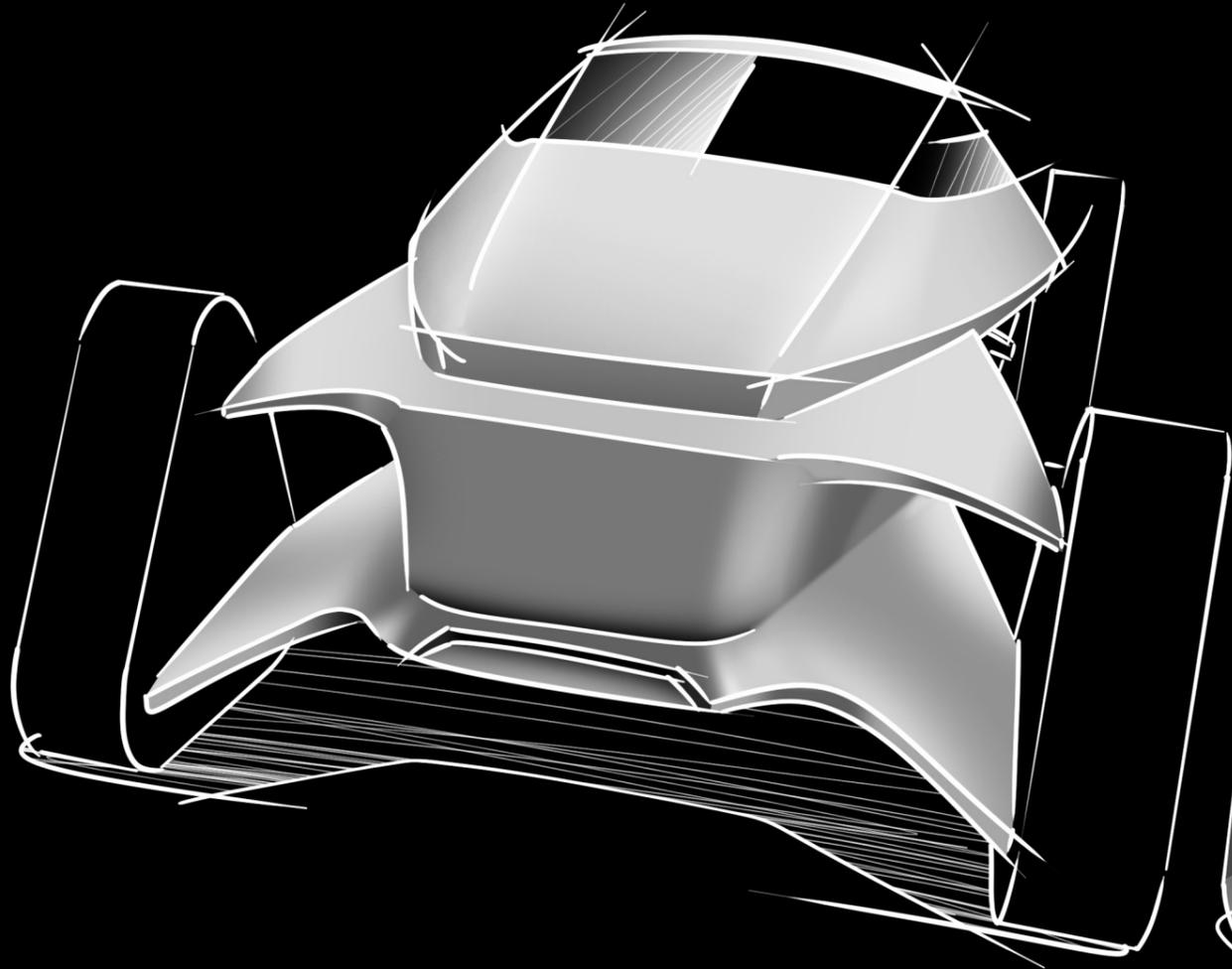


Design direction 2.

Development into modular design  
with detachable boat.

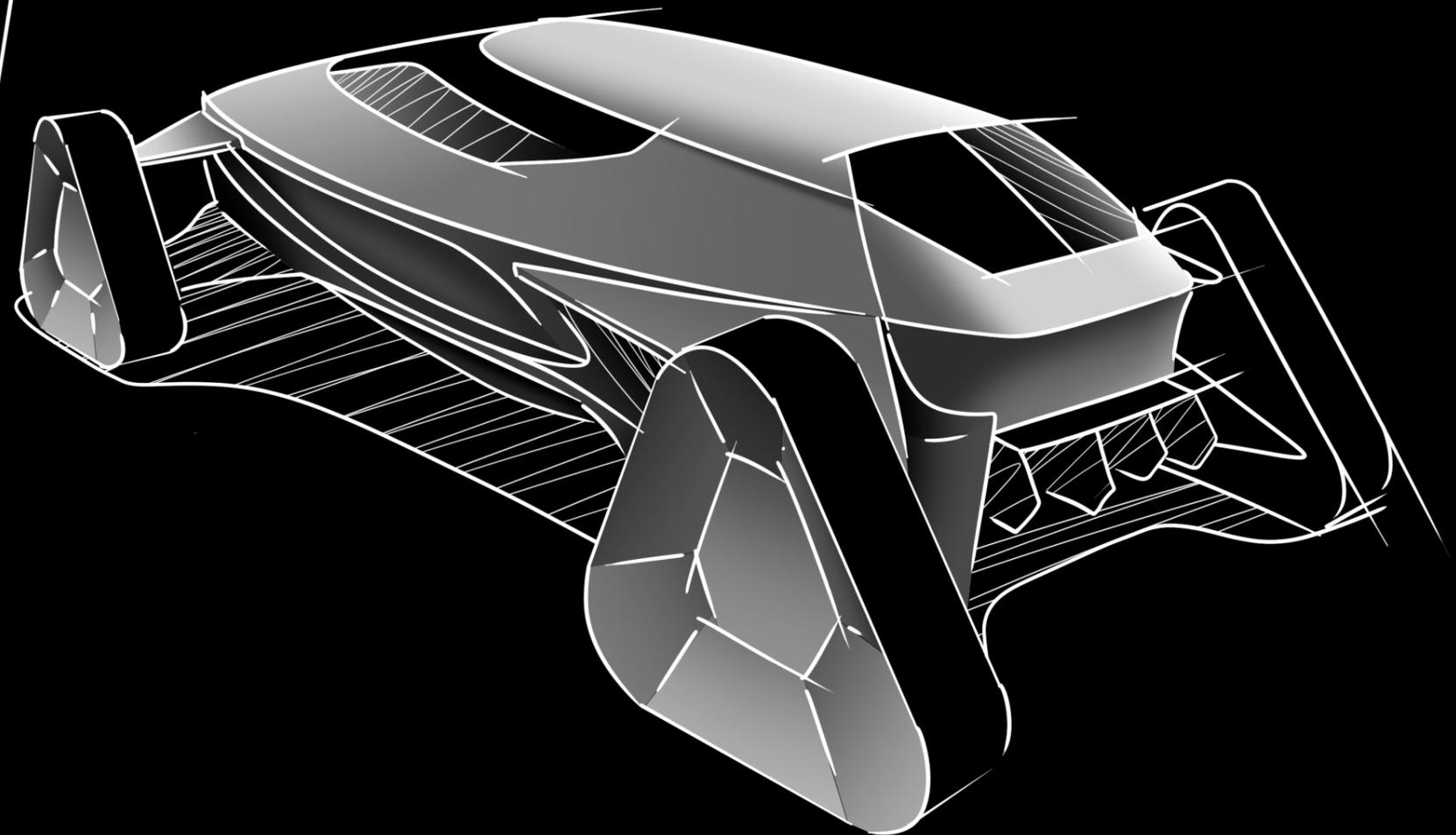


# Finalised Design Direction

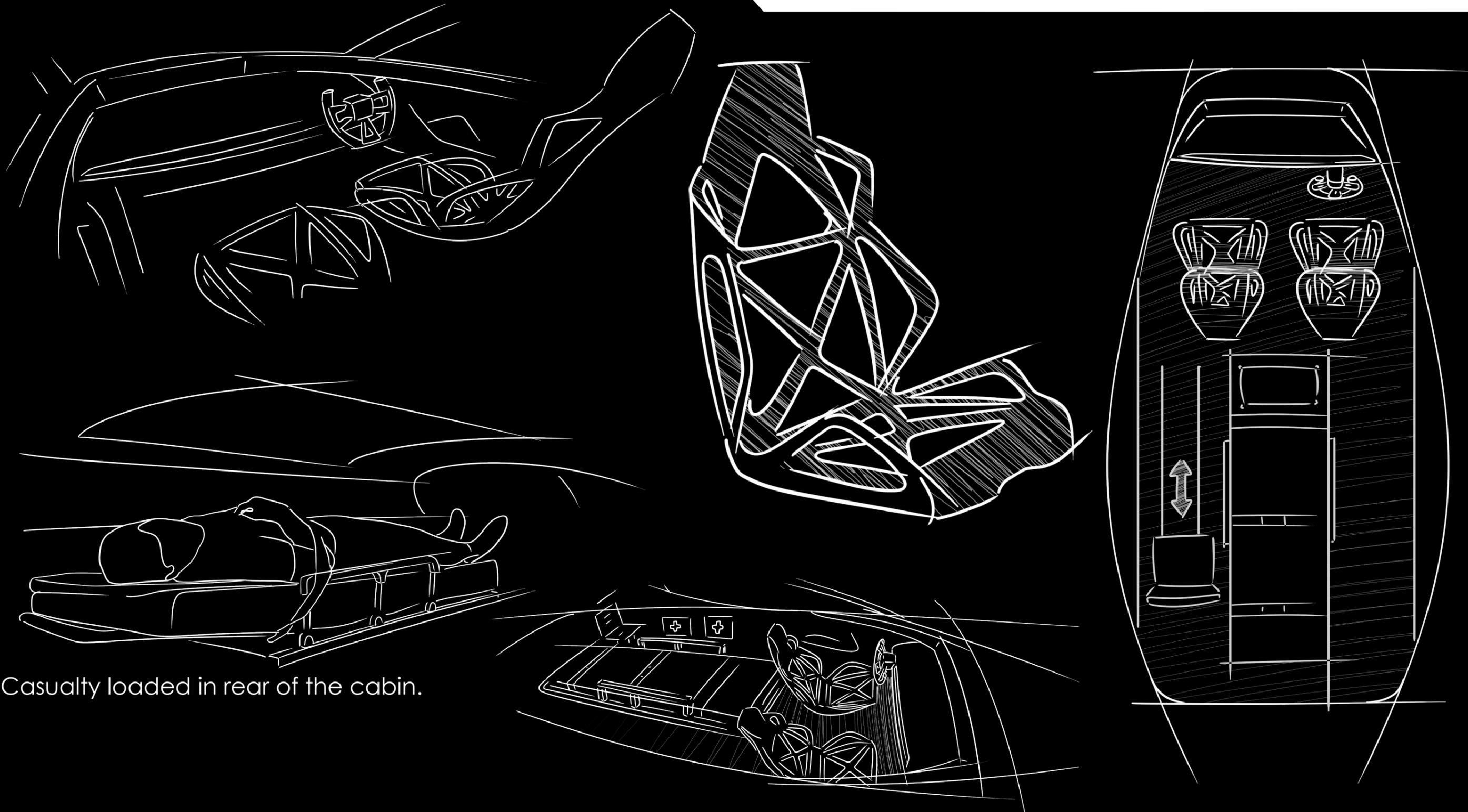


The overall form of the body has gained a great deal of dynamism, while also allowing for further space inside the cabin.

The tracks have become a much more prominent feature of the design, supported by a fin structure, attaching to the land-based chassis.



# Interior Exploration



Casualty loaded in rear of the cabin.

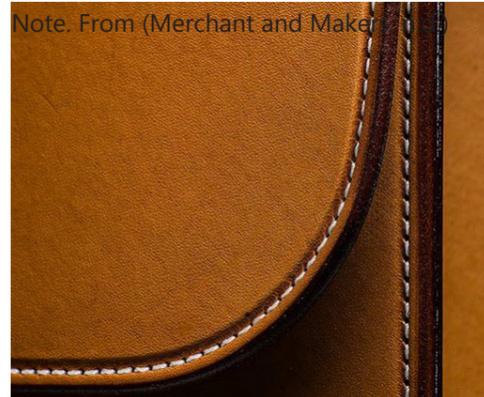
## Primary Interior Materials

Note. From (photohdx, n.d.)



Anodised Aluminium.

Note. From (Merchant and Maker)

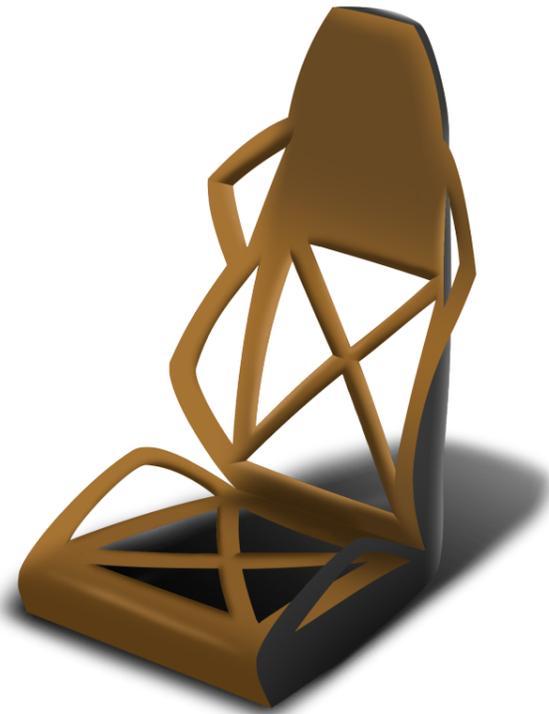
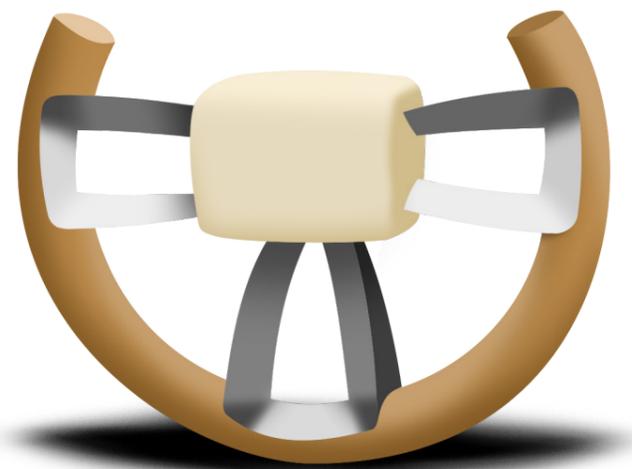


Silicone-based Leather Alternative.

Note. From (Amazon, n.d.)

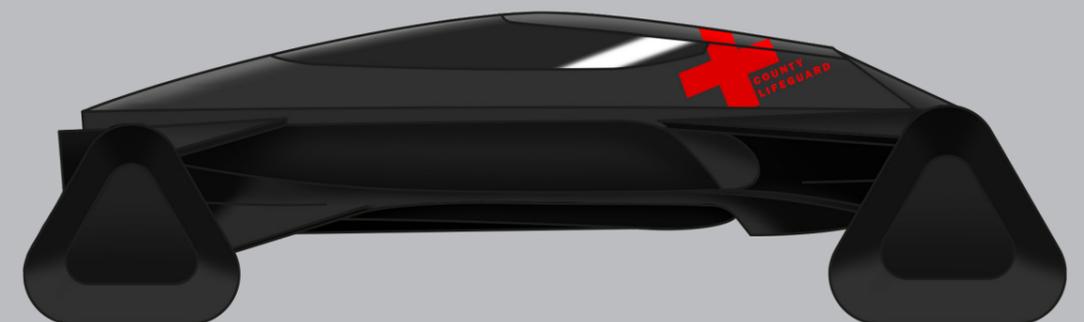
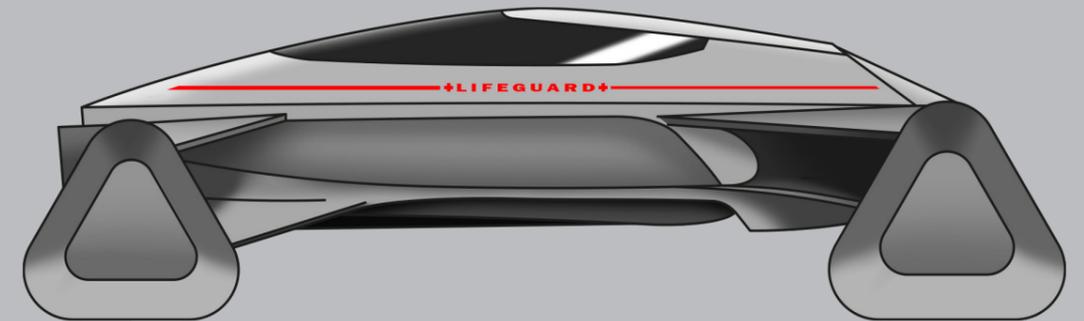
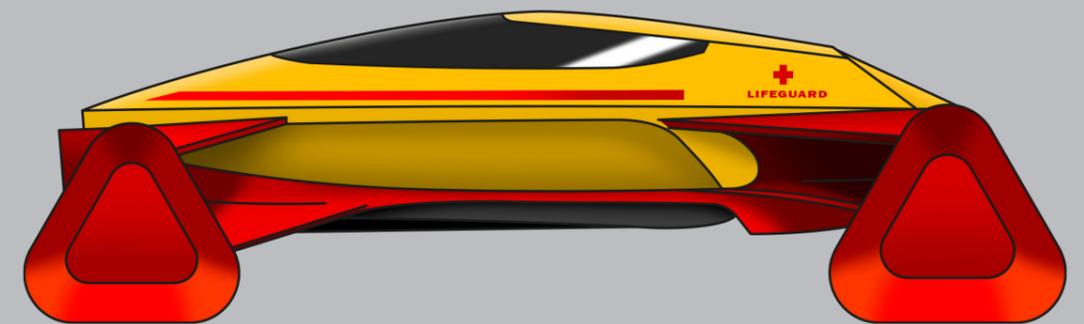


Hard-wearing grippy flooring.



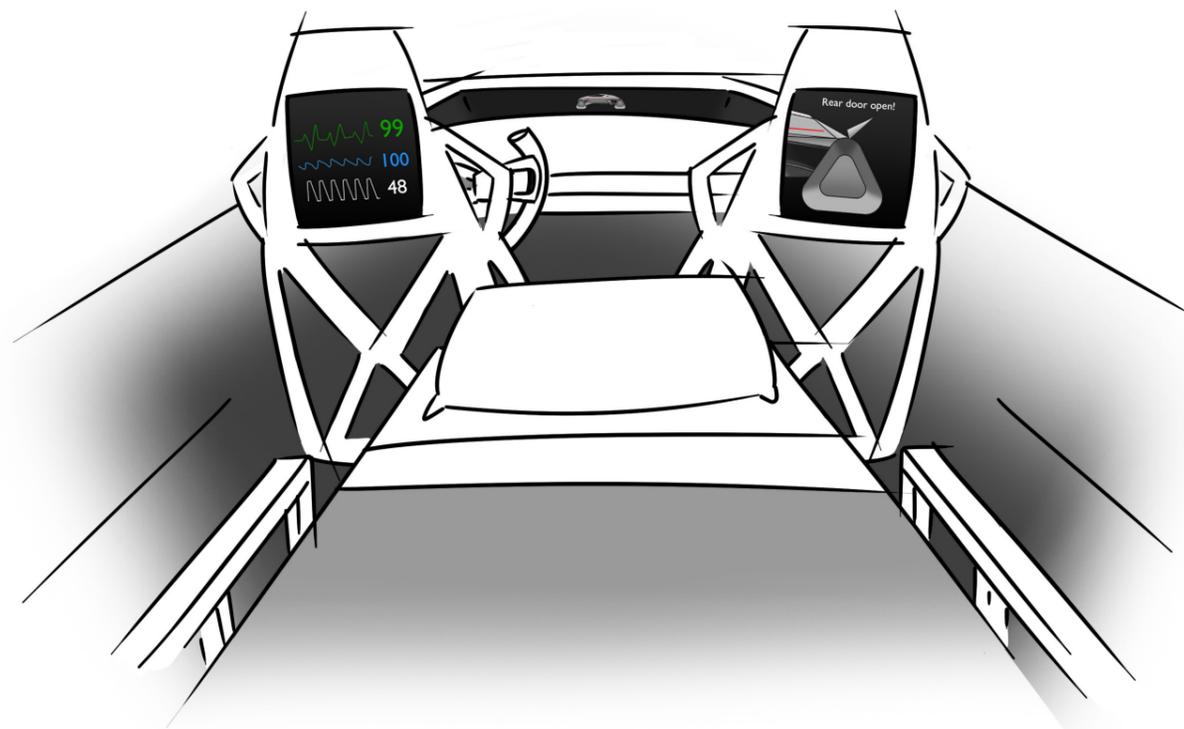
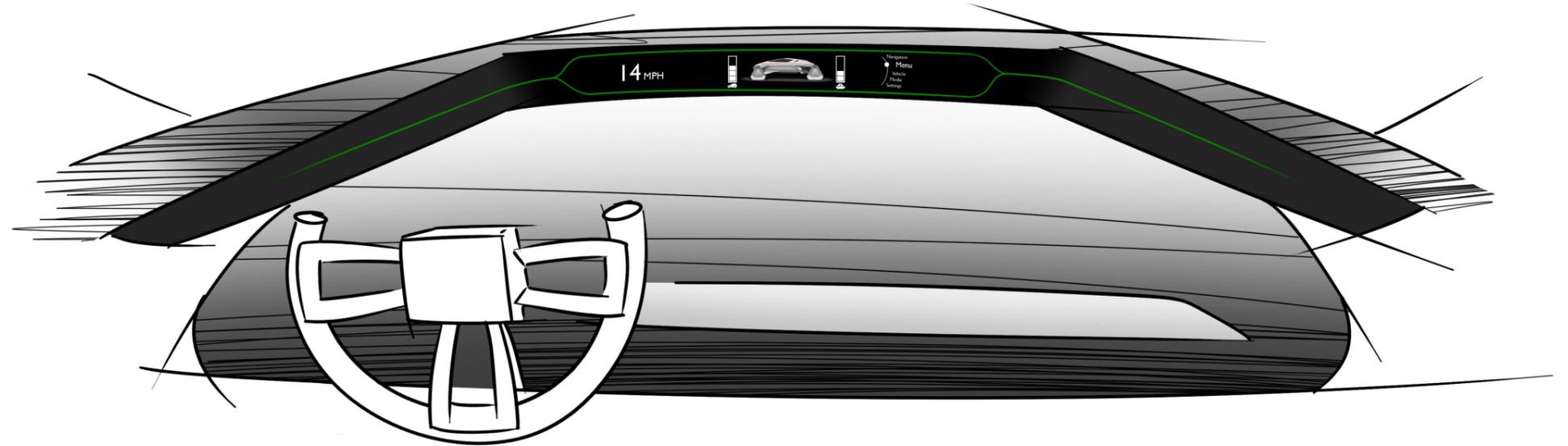
Skeletal seat structure reduces weight but also reduces pooling of water from the crew's clothes.

## Livery Experimentation



# HMI

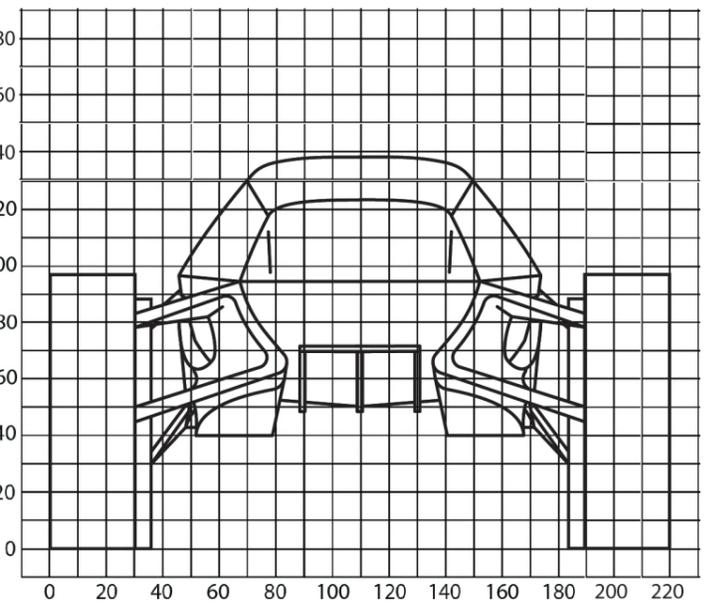
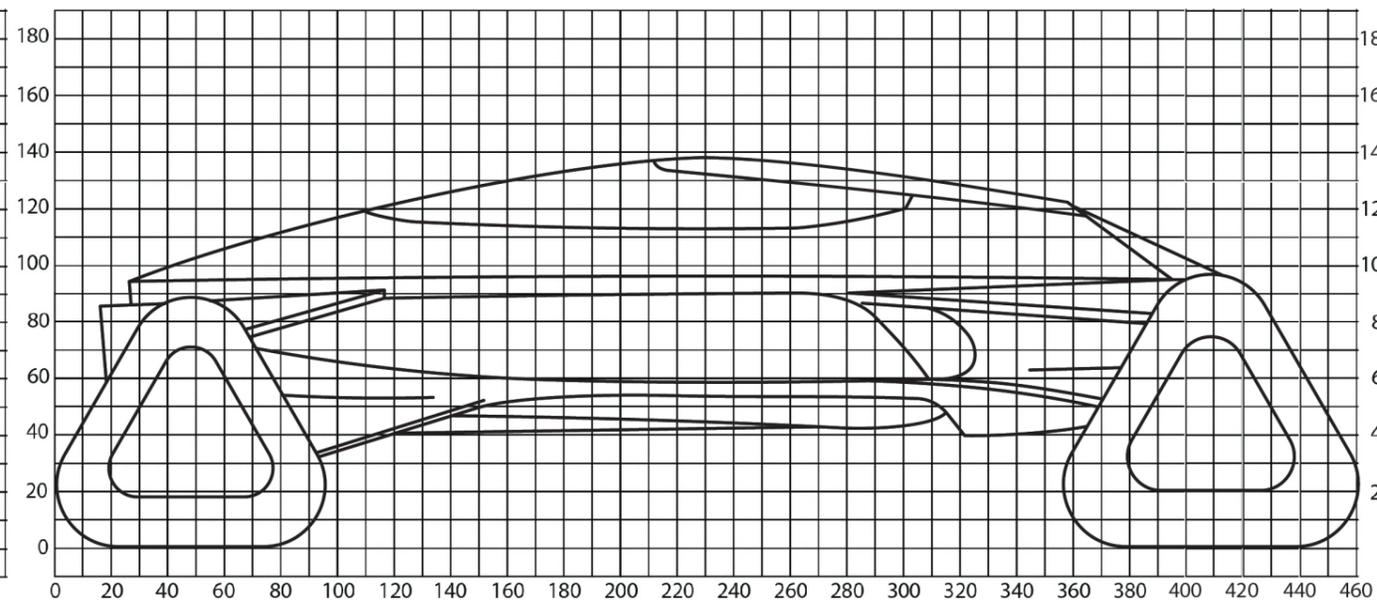
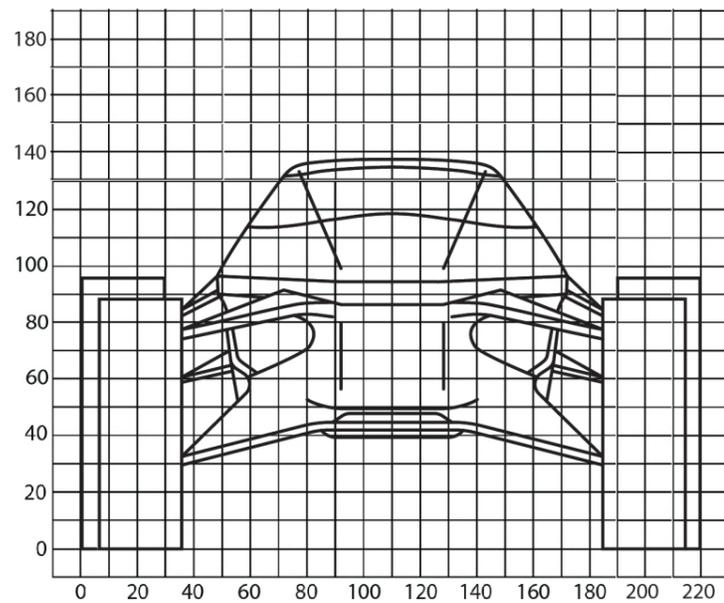
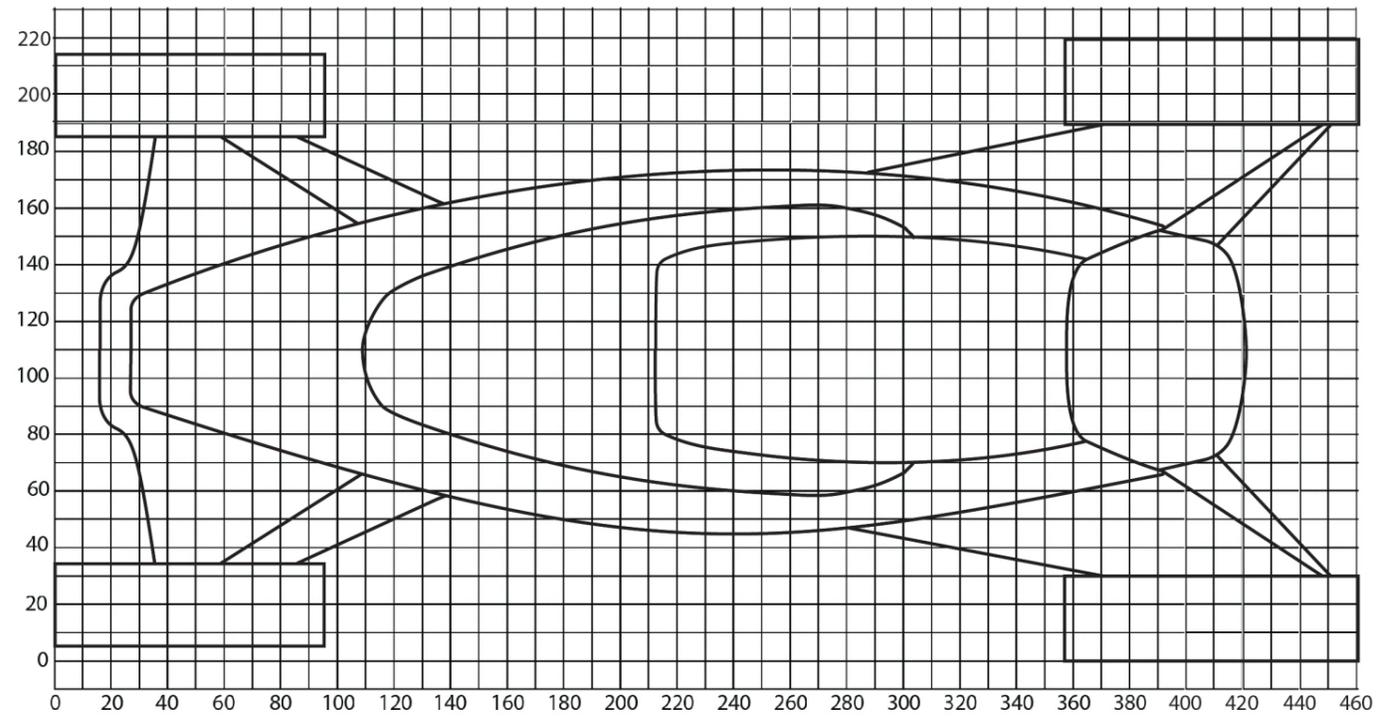
The Instrument Panel for the driver and crew member is a full width digital display. This can be configured to display relevant information depending on if the vehicle is in water or on land.



Displays in the back of the front seats show important information about the casualty and the vehicle when there is a member of crew in the rear portion of the interior.

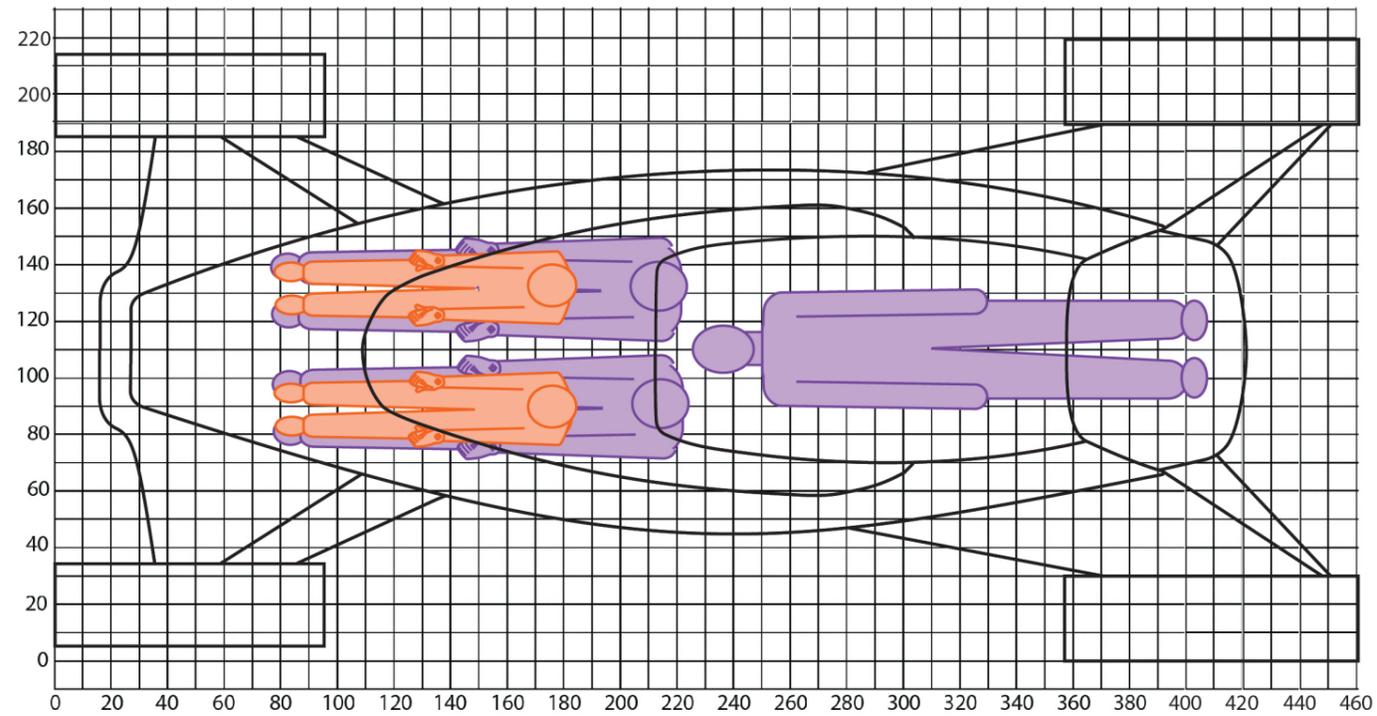
# Dimensions

All measurements in cm.

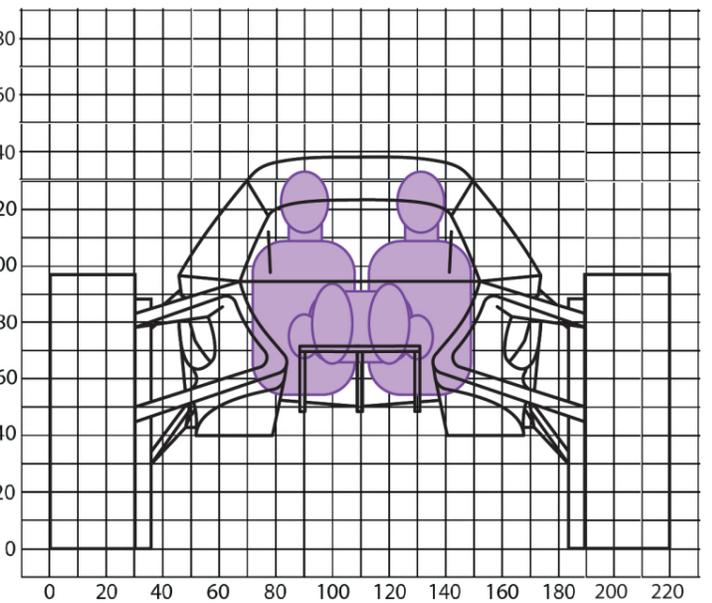
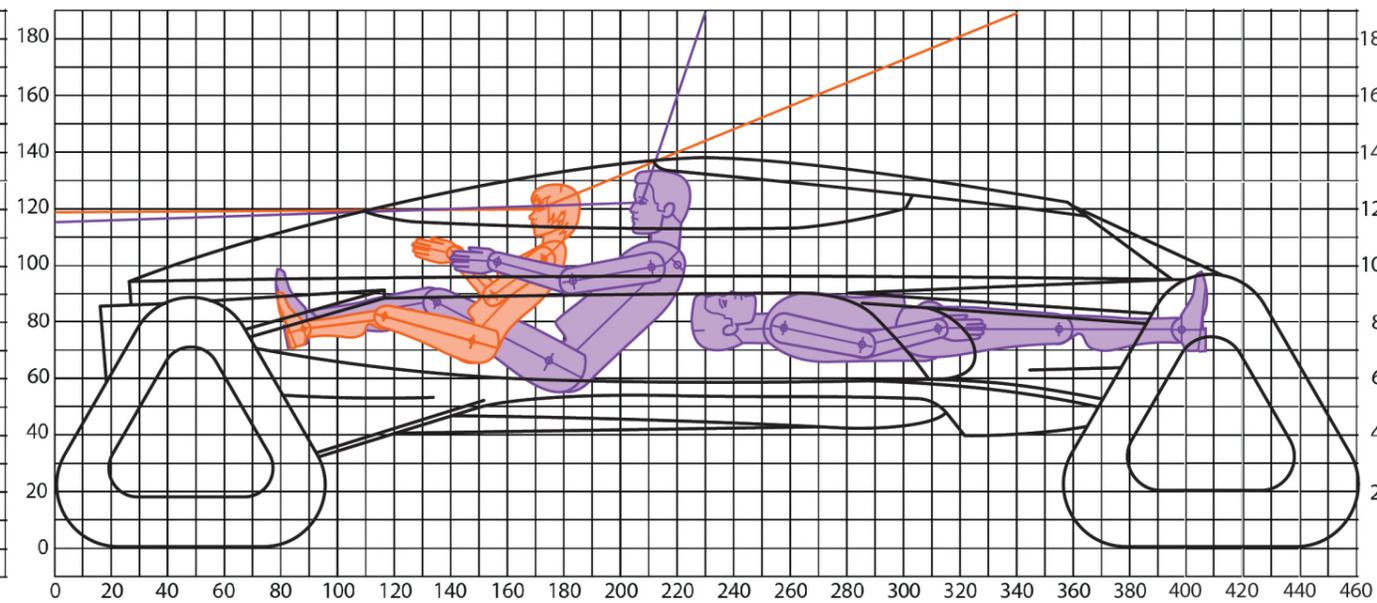
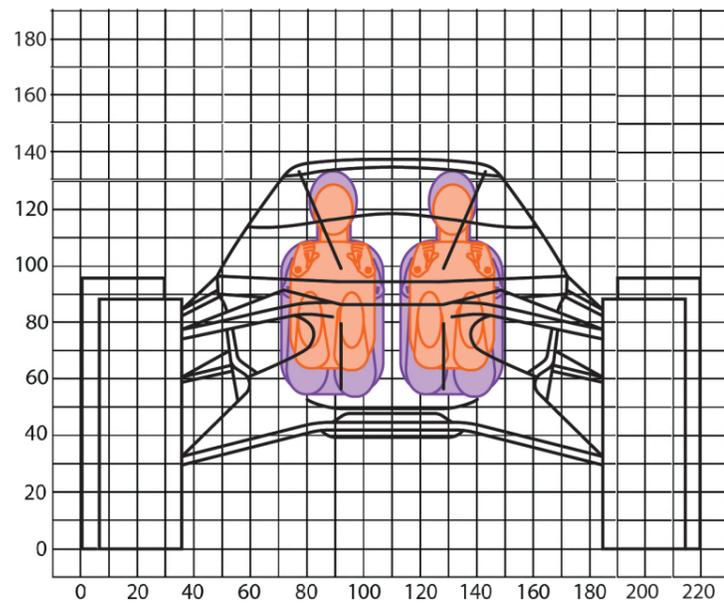


# Occupant Package Drawing

All measurements in cm.

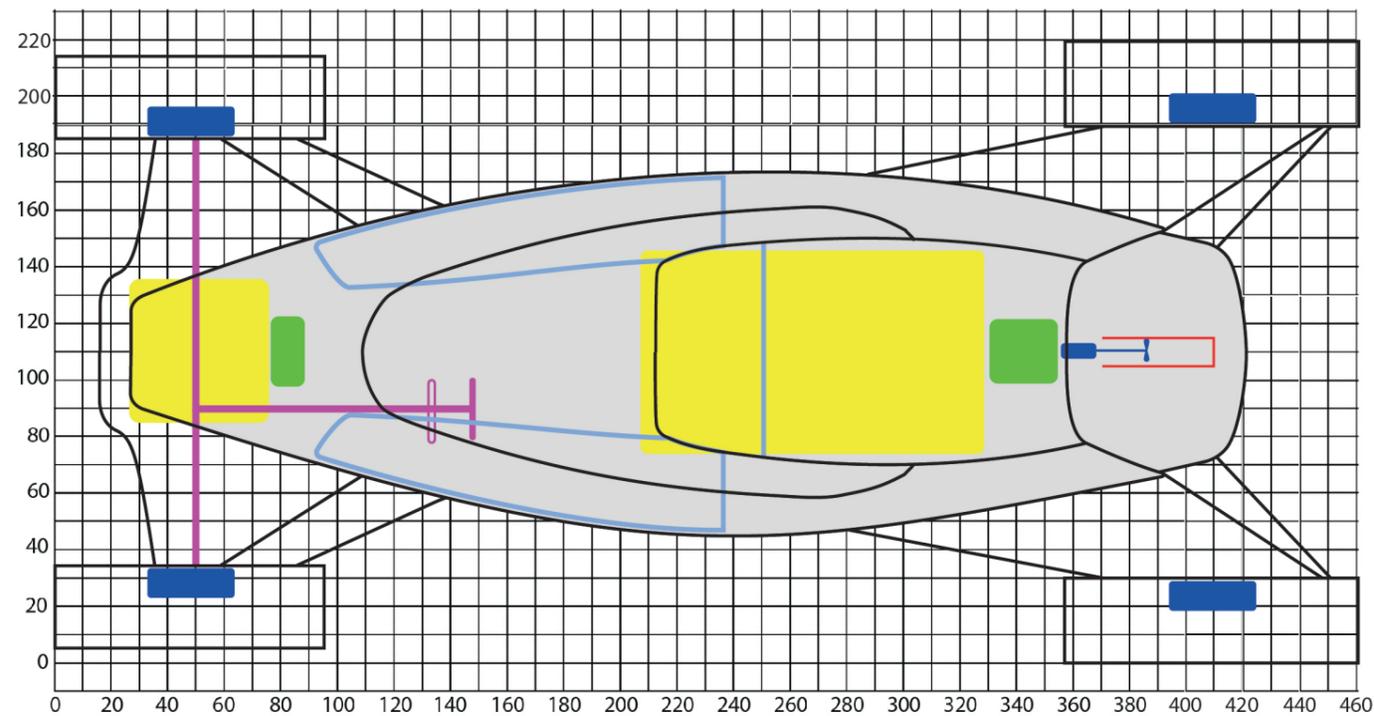


- 97.5 Percentile Dutch Male
- 97.5 Percentile Dutch Male Field of Vision
- 2.5 Percentile Chinese Female
- 2.5 Percentile Chinese Female Field of Vision

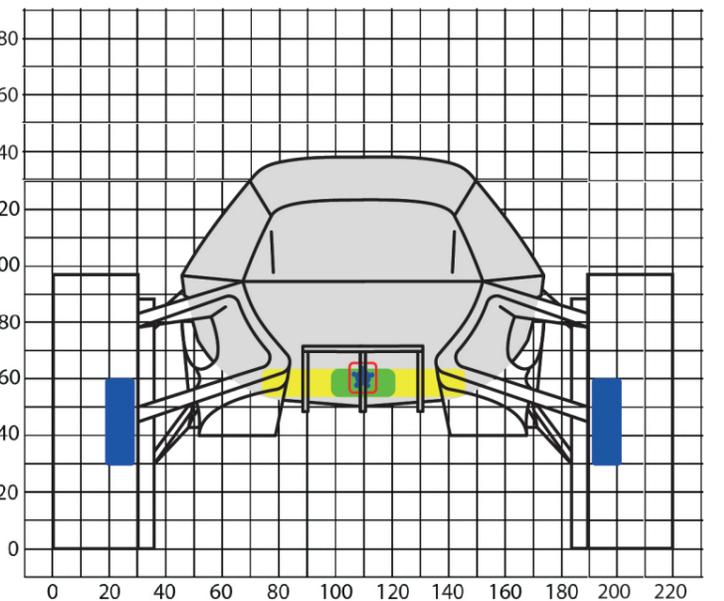
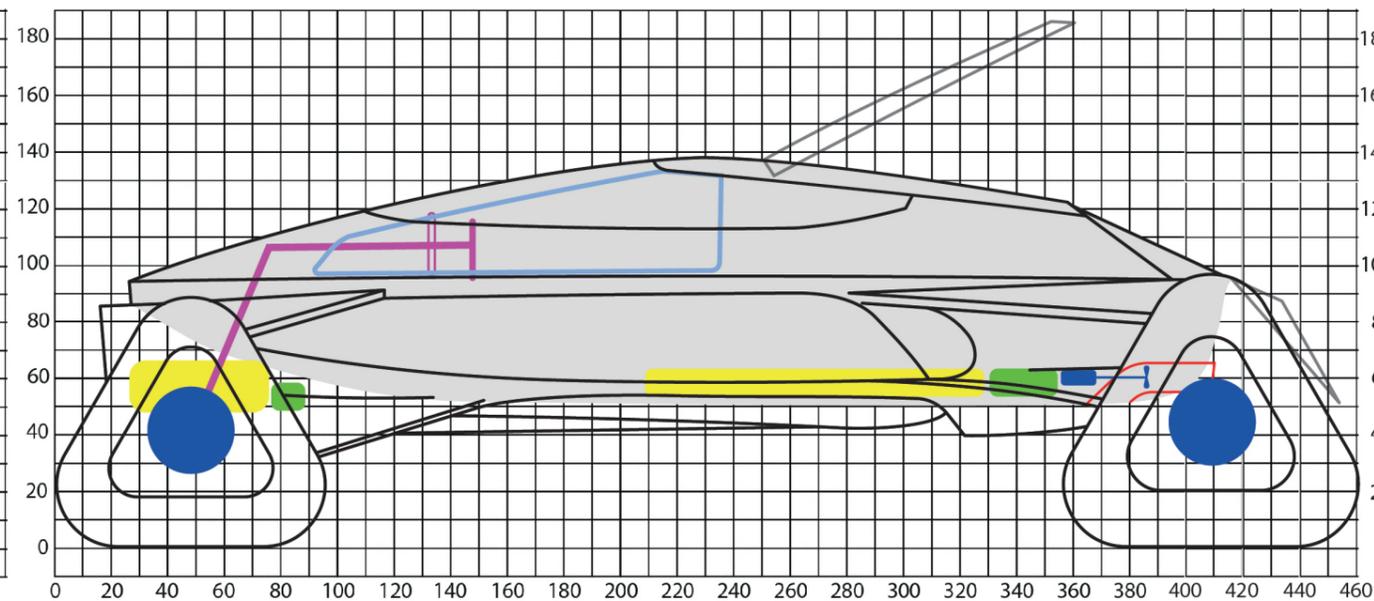
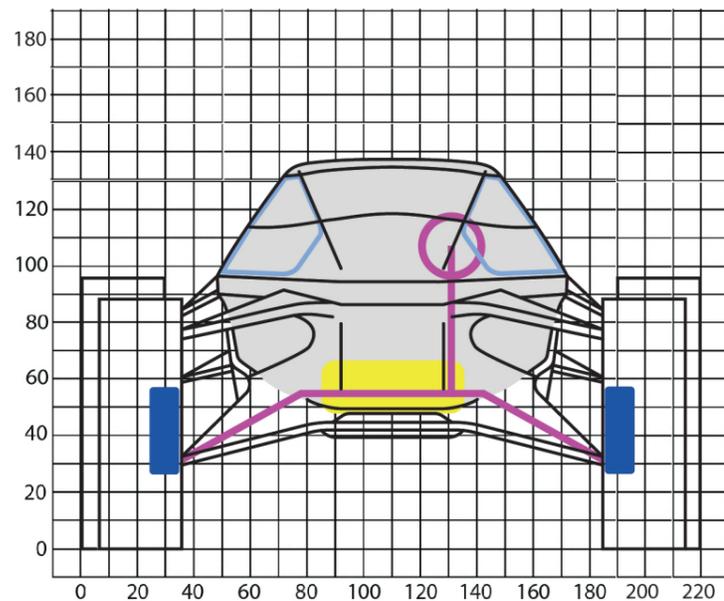


# Technical Package Drawing

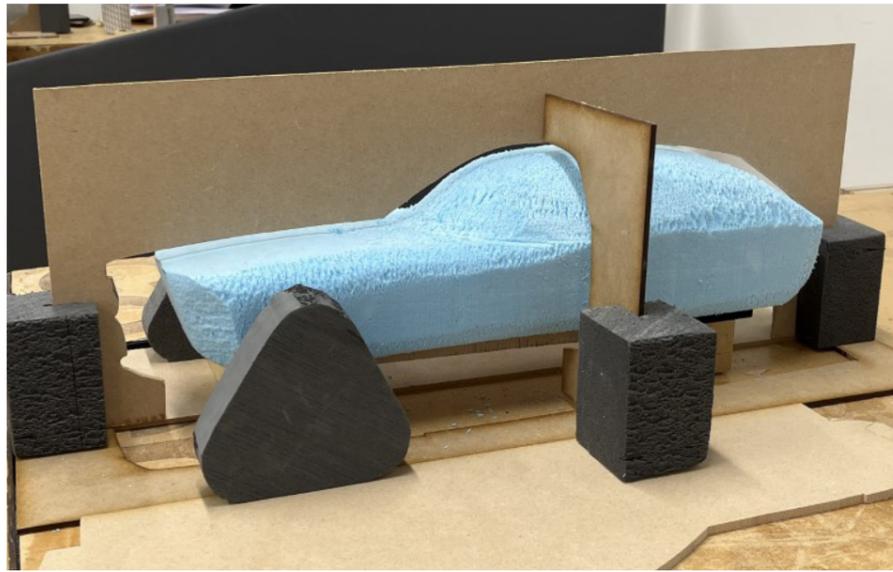
All measurements in cm.



- Land-based Chassis
- Watercraft Module
- Steering
- Battery
- Power Converter
- Hub/Inboard Jet Motor and Propellor Shaft
- Inboard Jet Duct
- Access/Egress



# 3D Modelling Development



# 3D Modelling Development

It was at this point in the construction of my model that my design developed to what we see in the livery experimentation and package segments earlier in this presentation.



# 3D Modelling Development



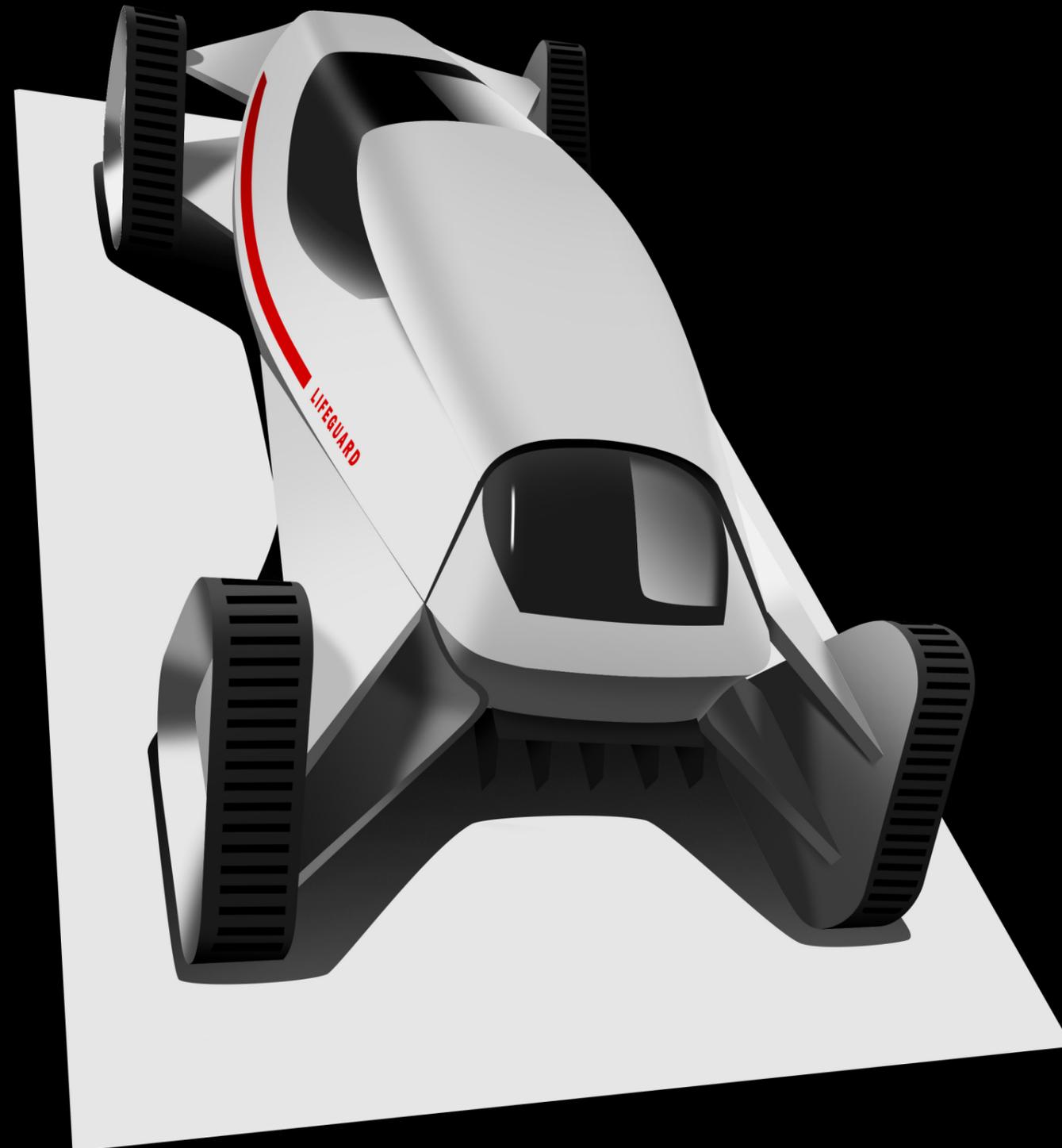
# Finished Clay Model



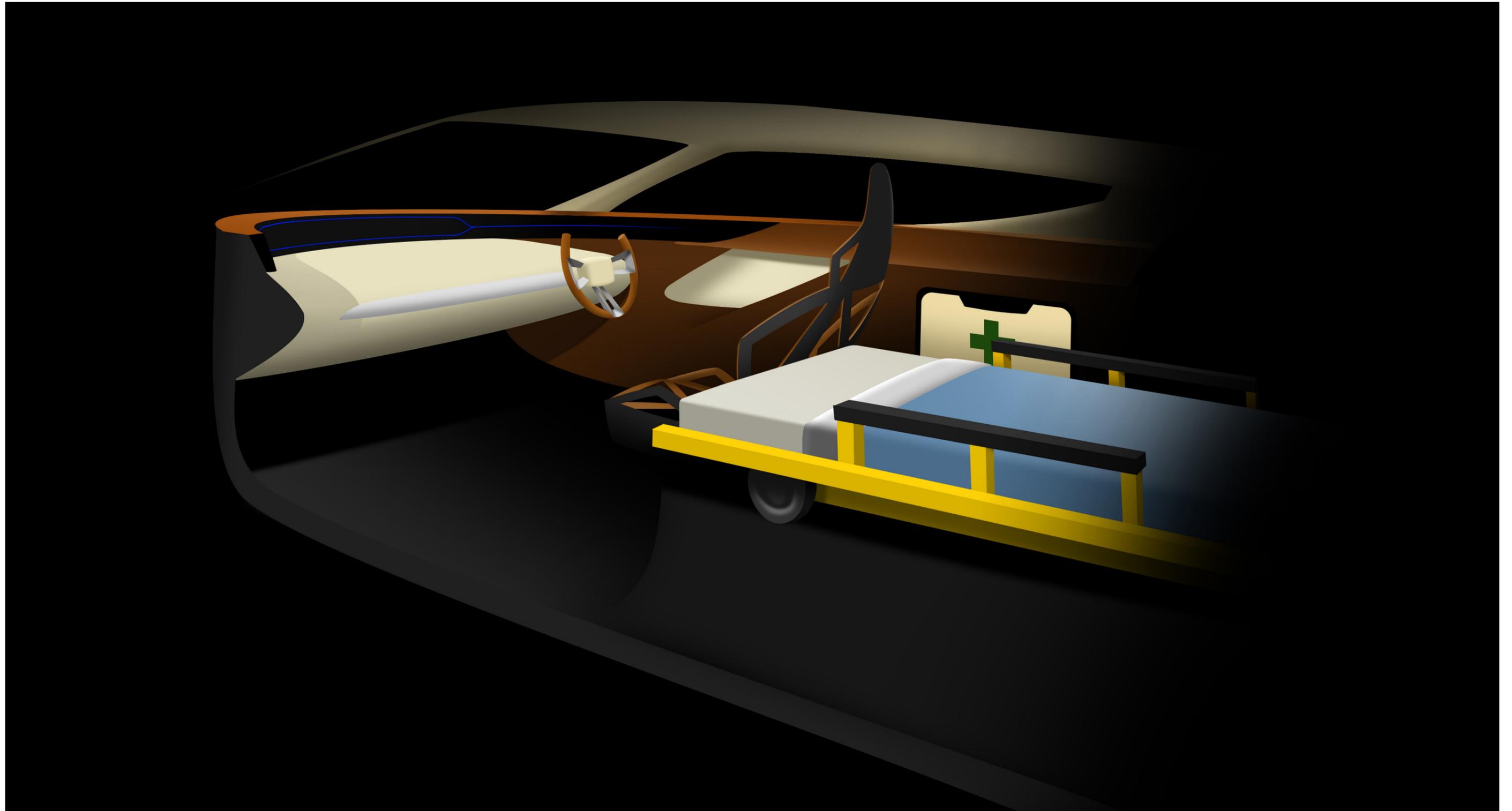
# Finished Clay Model



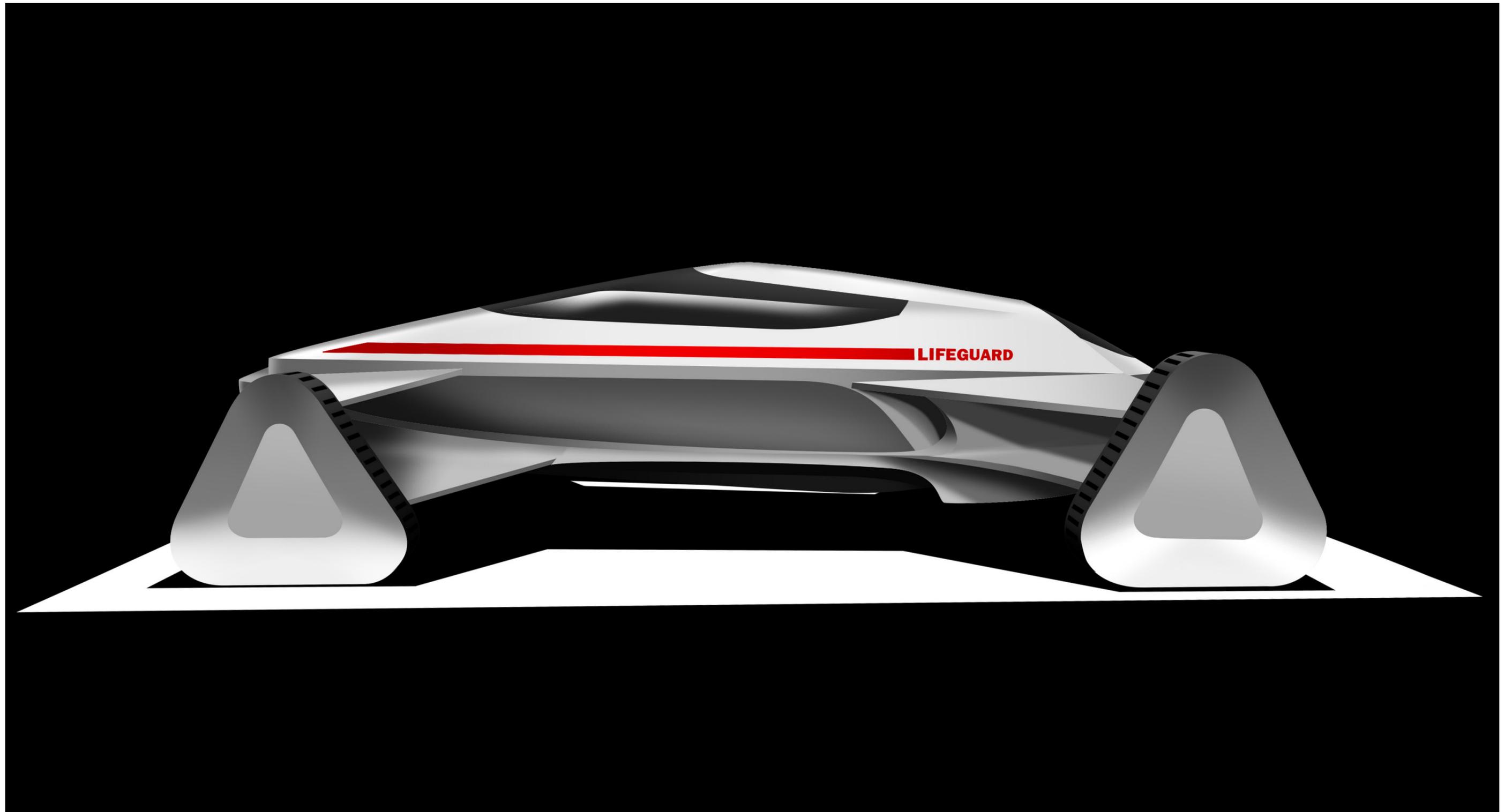
# Final Renderings



# Final Renderings



# Final Renderings





Thank-you