Master thesis

Interior design of a future passenger car for Škoda.

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Disclaimer

This master thesis is written in context of the master Integrated Product Design at the faculty of Industrial Design Engineering at the Delft University of Technology in The Netherlands.

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Preface

This is the thesis of my graduation project for the Master Integrated Product Design at the Faculty of Industrial Design Engineering at the Delft University of Technology. This project concludes my time as a student and is the start of my professional career as a designer.

Due to my previous internships in both the product design and the automotive design field my passion for the latter kept growing. More in particular the interior branch. When Škoda gave me the opportunity to work on my thesis after my internship, I was very eager to get started. I already learned a lot about design and project management but there was still so much to learn.

During my graduation project it was interesting to see the differences and similarities between the way I learned to design at the faculty versus the way they design in this industry. Methodologies versus intuition and experience might be a strong statement but it provides the reader with an insight of how this project was developed. Balancing both aspects was challenging and will become more clear during this report.

Working at the design studio of Škoda was a great experience. It helped me to see what else there is then just making a pretty drawing. Rooms filled with 1 to 1 scales were a very inspiring sight to encounter every day.

Acknowledgments

During the process of my graduation project I felt very supported by many. I would like to the following people for their involvement in the project.

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Thank you for your support and guidance. I have learned a lot from you, not only during this project, but over the last couple of years. I have always found your way of visual thinking and your skill to keep the overview very inspiring. I am also thankful I had the opportunity to assist you during drawing classes at the faculty.

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Thank you for your support and guidance. I have learned a lot from you, not only during this project, but also during the elective Automotive 3D. It was inspiring to see your passion and feeling for aesthetics and learn for that during our encounters.

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Thank you for your support and guidance during my internship and thesis. You were always ready to provide feedback when I needed it. You gave me much freedom during the project and always came with the right critical questions pushing me to the best of my ability.

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Thank you for this amazing opportunity to develop myself within the Škoda Interior design team and your honest opinion.

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Thank you for your support and guidance during my internship and thesis. I always appreciated your honest and to-the-point feedback. Sharing your experiences and knowledge about Škoda and the car industry helped me to develop myself further.

The Škoda design team
I want to thank all of you for your openness and your interest towards my project. You were always willing to provide feedback and share your experiences.

My family
Thank you for all the support throughout my years of studying. Without you I would not have been able to do this. You gave me freedom to explore different opportunities and to develop myself to who I am today.

Ilonka
Thank you for being there for me. I could always count on your support and patience.

Table of Content

Chapter 1: Project outline

In this chapter a short introduction to the project is given. First of all the partners will be highlighted then the goal of the project and afterwards the assignment. At last the method and process will be explained with the help of a schematic visualization.

1.1 Partners

This graduation project is made in collaboration with two parties involved. In this section both of them will be shortly highlighted together with their role within this role.

Škoda Auto is a well known automobile manufacturer from the Czech Republic making cars from 1905. The company went and still is going through a very positive transformation regarding their global image. Škoda is fully owned by the Volkswagen Group from 2000.

The main location where Škoda cars are developed and produced is in Mlada Boleslav. The design center, part of the development site, is located just on the edge of the city.

Škoda Auto is the facilitator during this project. Providing the graduate student with a working place inside the studio. Beside providing the necessary equipment they played a key role in advising. Based on the many years of experience they ensured the project was going in a feasible direction.

Delft University of Technology (TU Delft) is the university for whom the graduation project is done for. This project is the final project of the graduation student at the faculty of Industrial Design Engineer, more specifically for the master Integrated Product Design.

The role of the university is mainly guidance and making sure the project is correctly executed. They are the authority in this project and will be responsible for assessing the result and grading it according to the academic guidelines.

1.2 Goals

The main goal of this project is to inspire, both the Škoda design studio as the TU Delft. This is done by creating a personal vision towards the mobility of the future relevant for Škoda. During the project it is expected to create a consistent story from research and analysis towards a fitting design proposal visualized by sketches, renderings and a physical model. This coherency is important for the TU Delft and Škoda but also in general for future opportunities in the automotive industry.

1.3 Assignment

Many companies are exploring different possibilities of future mobility within the their values. Since the automotive industry is on a critical point and changing drastically every day it is very useful for companies to show their solutions to the public. The assignment of this project is similar, a showcase of a future concept for Škoda.

Škoda let me free in defining and refining my own assignment. It is a broad assignment which means many things are possible, enough room for exploration. The assignment evolved during the course of the project, more specific step by step. At the start a few things were known.

Interior design
The project will be solely focusing on the interior of the vehicle.

Future (2035-2040)
The time-frame was set to be around 2035 to 2040. It allows for enough freedom to think advanced but still close to reality.

Passenger car
Škoda auto is making only passenger cars. It was decided to stay within this range of products and not go into the commercial side.

Škoda Auto
Obviously the future vehicle will be a Škoda which means that the values of the brand should shine through the whole process, from analysis towards styling.

1.4 Method and process

This section will explain the process that was followed during the project. Every phase will be shortly elaborated on.

The process of this project is shown in figure #fixme. Four major phases are identified and explained below.

Analysis

The start of the analysis phase was the assignment which was very open, many directions were possible. Three topics were identified. The interior evolution investigates how the interior of cars developed from the very beginning towards the future. The brand will be investigated in the broad sense. In this section information about the history of Škoda, their position, their key values, their products and the users will be shown. The last section of the analysis is the future frame which investigates trends that could play a role in the future context. These three topics will come together in the synthesis chapter. A clear brand target statmenet is created providing a generatl direction for the project. Secondly a target group statement is extracted from the user research. Both statements will provide enough guidance to start the next phase.

Vision development

The development of the vision is divided into three stages. Here the Vision in Product method will be partly used to translate the synthesis of the previous phase towards an interesting design direction. This method will be explained in more detail later. This chapter will end with two key questions. These questions will be explored in the next phase.

Conceptualization

This phase starts with a very explorative ideation and step by step turns into a more detailed concept. A key aspect of designing an interior is the lay-out which will be the base of the concepts. The final concept will be the chosen direction to develop further in the next stage.

Embodiment

The concept is chosen but many things are still not there or finalized. That is why the first step of this phase is to dive into detailing. In an interior there many different elements present. All these elements need to form one coherent whole which in te end will be prototyped on a 1:5 scale. With this prototype an evaluation will be conducted leading to future recommendations. The final design will then be displayed.

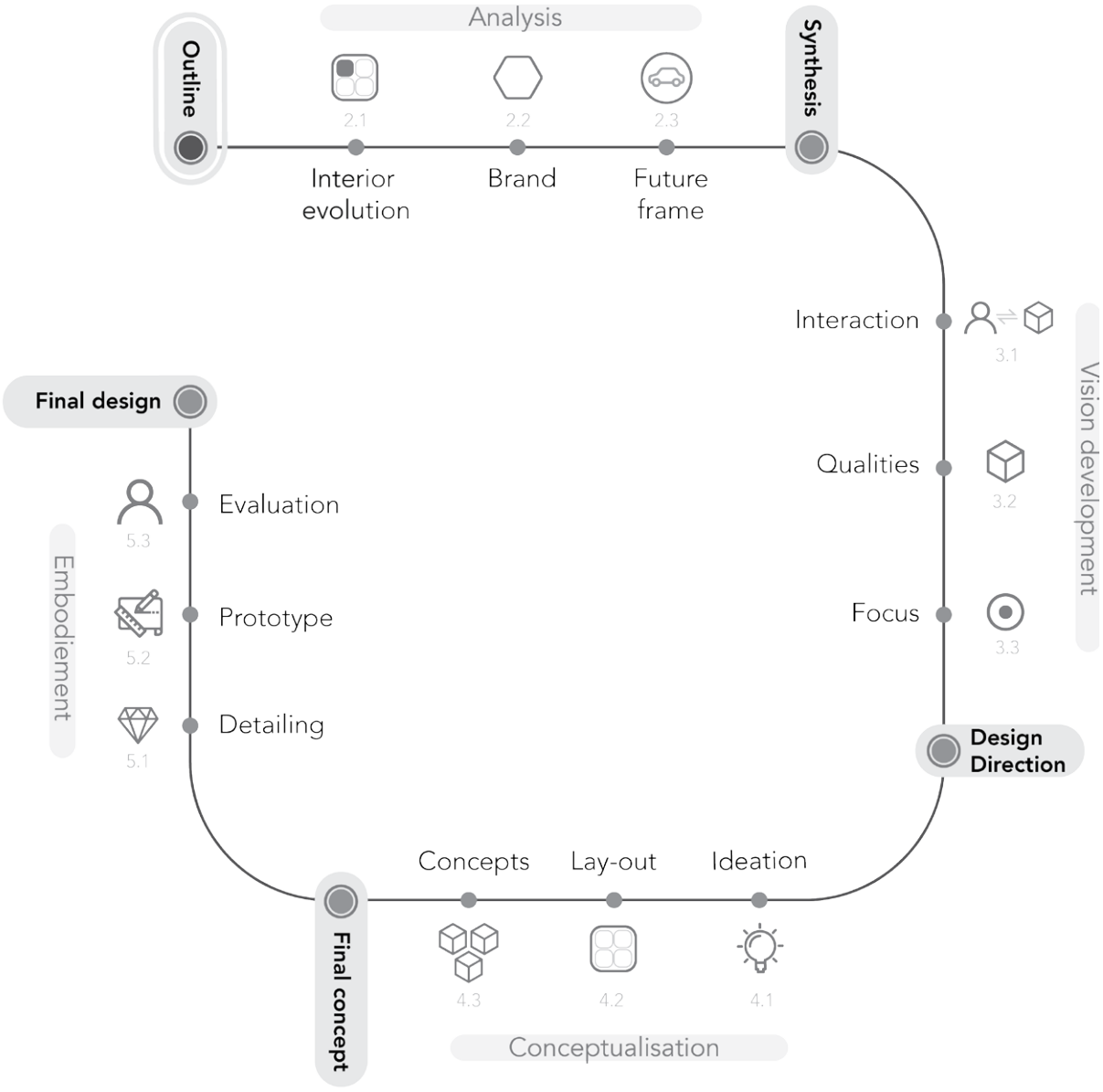


Figure #fixme: Process visualization

Chapter 2: Analysis

The analysis phase aims to gain insights regarding future interiors of passenger cars for Škoda. There are three key elements in this assignment which need further investigation: 'The interior evolution', 'the brand' and 'future frame'. All this will come together in the synthesis ending with a clear statement. Some elements are taken from the ViP method to form a good statement, more elements will be implemented in the next chapter.

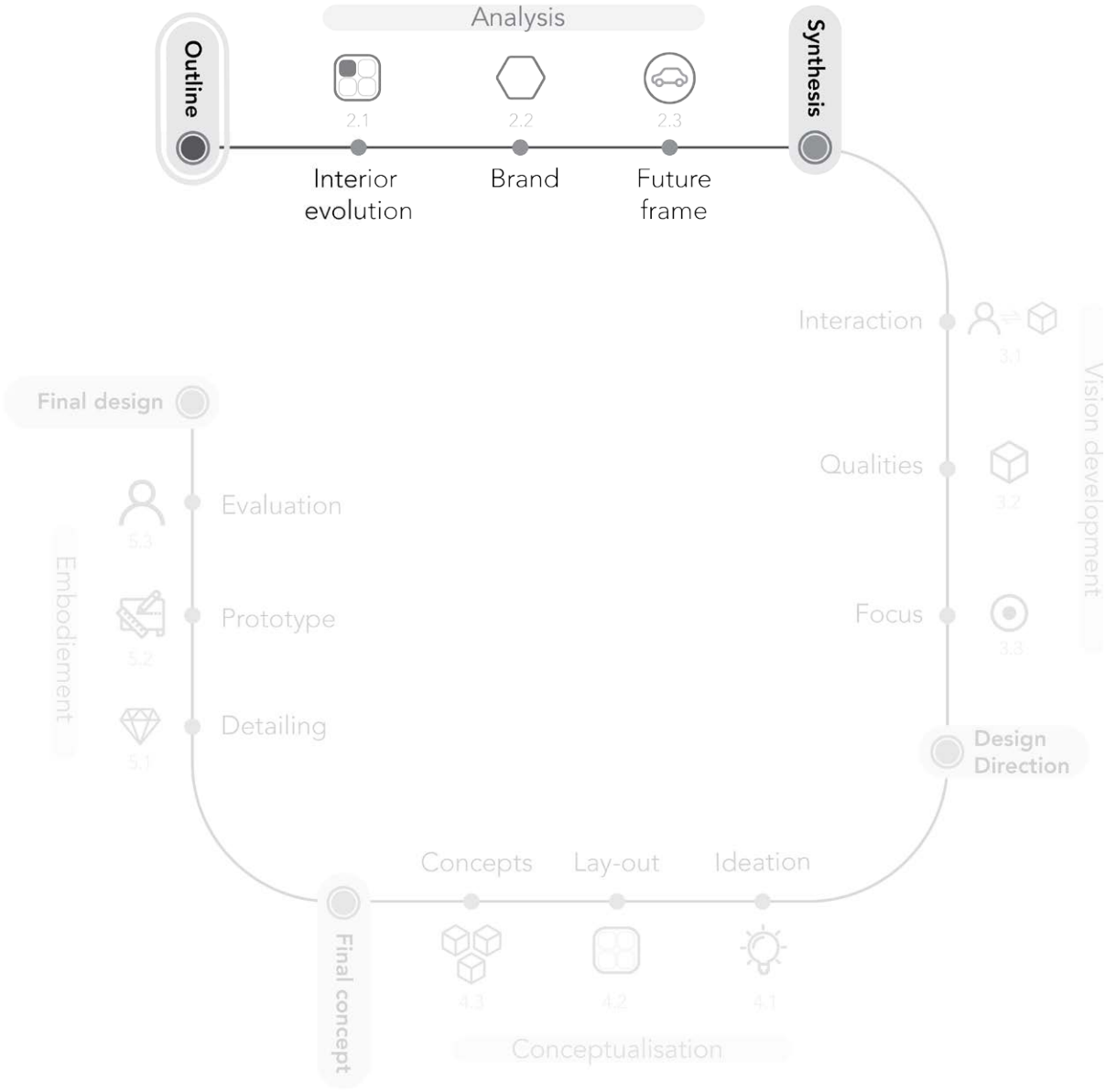


Figure #fixme: Analysis phase process visualization

2.1 The interior evolution

The cockpit can be seen as the 'user surface' of a complex mobility machine. Literature mostly neglected the interior of cars although in my opinion it went through one of the most extraordinary changes. The expression of societal changes and innovative technological developments make the evolution of the car interior worth investigating (Möser, 2003).

Two major topics will be highlighted. The first one explains the evolution of the different function and interactions within the interior from the very first car towards the future. The second topic is the development of the cockpit, from an open to a very isolated space. This explains more about the interaction between the car and its environment. A better understanding of the history of the car interior will provide a glimpse into the future. A more complete image of the history can be found in appendix #fixme.

From three functions to one

In the beginning of the existence of the car (from 1886) there was a clear separation between passengers and drivers. In those days the car needed two people to be handled. One person is in control of the machine, the other one is driving it which was an intensive job without the technological help we have today. Until 1910 the layout of the dashboard made these two functions explicit. The gauges were positioned in the centre so the 'mechanic' could scan the state of the engine, controlling the pressure, temperature and many more things.

The rear part of the vehicle, where the passengers were located, was in contrast with the front row. All mechanical elements were hidden, the passengers were not supposed to interfere in the act of driving. Drawn inspiration from coaches, comfort was added to the interior as was the layout of the passengers part. Their view was not on the road, but on the surrounding. For this reason in some cars the passengers were placed longitudinal or even backwards emphasising the split between driving and being driven.

From 1935 the engine's systems became automated and required less attention of the driver. This made the role of the 'mechanic' obsolete and reduced the division in the car to only one driver and passengers. This change moved the gauges from the centre of the dashboard to the drivers side.
The amount of gauges used for monitoring the driving machine decreased, but gauges supporting the driver increased such as the speedometer, fuel consumption, external temperature and even a clock. Later this evolved into the presence of radio, small screens and other communication devices. All these features kept enhancing the 'living-room' character of the car interior. It made driving easier and more passive. At this point even the driver is starting to evolve towards a passenger.

Today's cars have increasing levels of autonomy. This means the driver has less active tasks and will evolve more and more towards a passenger. When the day comes the driver becomes fully obsolete, there will only be one function in the car, being a passenger. What the occupants will be experiencing is still the question.

From open to complete isolation

The first cars around 1890 were engines on three or four wheels with a seat on top and tools to steer and control the speed. The drivers and passengers were sitting in open air. That started to change in 1905 when Henry Ford introduced the Model T implementing a windscreen.

The cars became more closed towards 1920 but different configurations were still possible. Often the driver would sit open and the passengers in an enclosed space which increased the separation inside the car mentioned previously. Fully enclosed cars were a big change in the car industry. The meaning of the car changed from an adventurous machine to a pure means of transportation. With this switch closed and open vehicles received two different images. "The rule was: the more domesticated and bourgeois the user, the more closed the car."

A logical consequence was the beginning of the disconnection from the environment mainly to achieve the 'living-room' comfort. When exterior design changed to a more aerodynamic shape the exterior became less visible from the inside. Together with the introduction of heating devices, tinted glass and soundproofing the interior, this disconnection increased even more. At a certain point the car was equipped more elaborately than some homes, it truly became a living-room on wheels.

Technological improvement enabled people to drive faster while being more isolated from the environment. An important milestone in the interior development is the attention to safety when the seatbelt was invented in 1959. This was necessary because it was getting very unsafe to drive in the 'speeding cells'. People did not care about safety, they were not using the seat belts because they reduced the comfort. They were not wearing one on the sofa at home, why use it in the car? It just didn't feel like their living-room which proves the importance of comfort in the car. Eventually the seatbelt evolved and other hidden safety features were introduced.

Currently a lot of attention goes into safety in the automotive industry with increasing amount of safety standards. This makes the car bigger and vulnerable areas such as the windows smaller increasing the isolated feeling.

Driving changed from active and connected with the road towards an increasingly passive driving experience with disconnection as a consequence. Although it seems like autonomous driving will only cause more isolation, this is not necessarily the case in my opinion. It is true that the connection with the road and traffic environment will decrease but because autonomous cars will have a next level safety system it could open up the cars instead of close them more. There are endless possibilities, from sleeping (total disconnection) to a glass bubble for city tripping (fully connected).

This disruption will open doors for many types of future interactions with the vehicles which will be explored in the next phase.

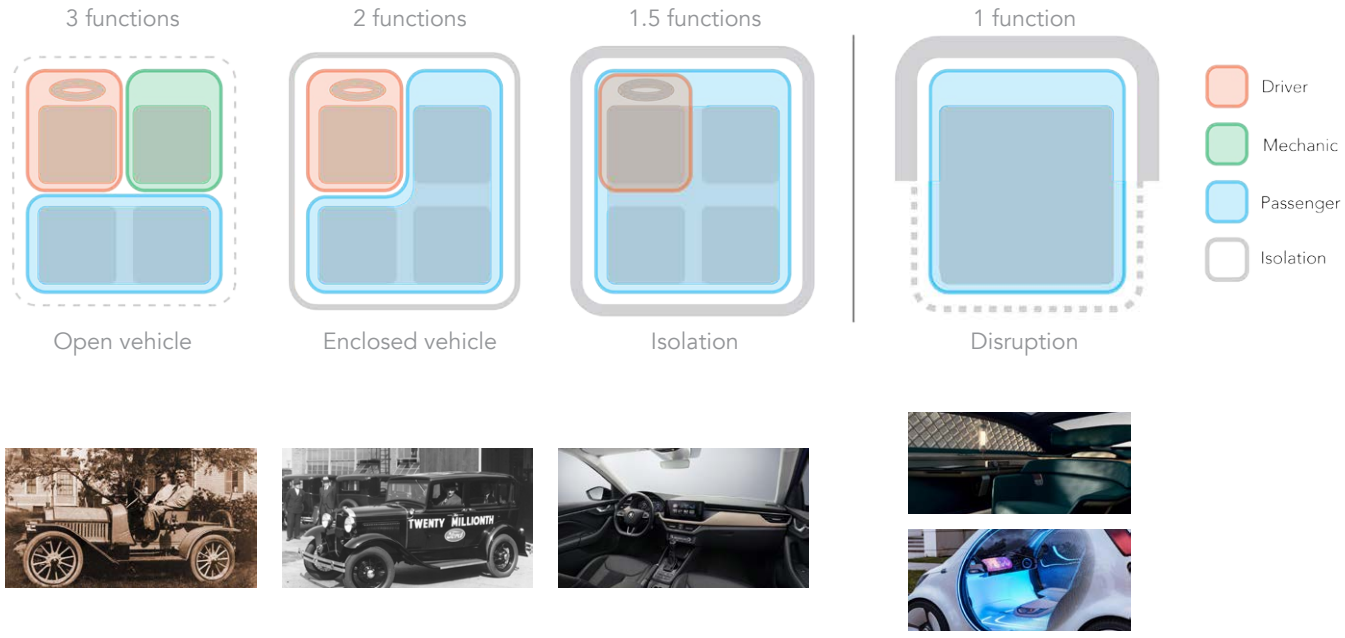


Figure #fixme: Schematic overview of the interior evolution

2.2 The brand

Understanding the brand is essential for this project since the interior design has to be relevant for Škoda. It will define a domain in which the product will be designed in. The history of Škoda, its positioning within the automotive industry, their products and their current and possible future users will be analysed. These four aspects will provide input for the brand identify prism (Kapferer, 2008) displaying different facets of the brand creating a complete picture of the brand.

History

Škoda is part of the Volkswagen group, therefor it is important to analyse who joined the group at what time. Currently the Volkswagen Group (VW AG) consists of 12 brands (Volkswagen AG, 2018) in different parts of the automotive industry. For this project, only the passenger car brands are highlighted and investigated. The Volkswagen Group started with Volkswagen (VW) in 1937 and soon acquired many other brands (see figure #fixme). It is important to note that each brand has their own history before joining the Volkswagen Group which makes the group very diverse. VW is the reliable car of the people and Bugatti is an exclusive brand pushing the speed performance limits as much as possible. Over the years VW AG became a group with knowledge about almost everything. Škoda was acquired in 2000 after different type of investments from VW AG over a time period of 10 years. It was positioned as an entry level brand together with Seat (Sytyi, 2014).

To understand the brand it is necessary to understand the history, to know where they started, what were high-and low points and it shows where they focused on over the years Škoda is one of the oldest car manufacturers still active (Škoda, 2018). The history is rich and does not only exists of cars. It all started with the duo Laurin and Klement (L&K), a bicycle manufacturer and a bookseller, making bicycles in Mlada Boleslav, Czech Republic. This is seen as the official heritage of Škoda Auto.The Škoda everyone knows is officially called Škoda Auto, for a simple reason that this is not the only Škoda company out there. More than 30 years before L&R made their bicycle in 1895, there was already a company called Škoda Works which was at the start a very important arms manufacturer. L&K and Škoda Works merged in 1925 because L&K's factory burned down and Škoda Works wanted to be active in multiple sectors. Besides the constant development of cars, Škoda Works also produced locomotives, trolleybuses, tanks and aircrafts. This was all done in separate companies. When VW AG got full ownership of Škoda Auto in 2000, it was fully independent of Škoda Works who decided only

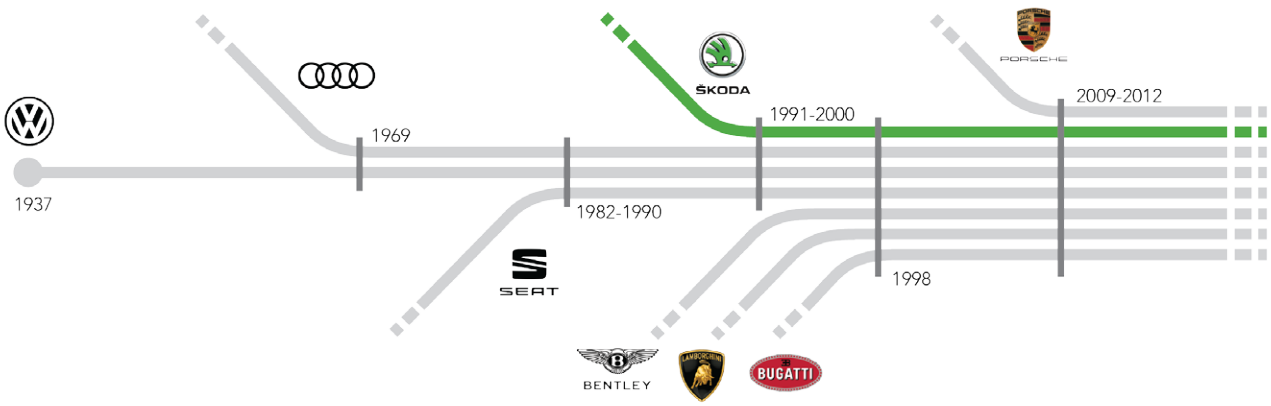


Figure #fixme: Volkswagen Group history

to be involved in transportation selling the other companies. Škoda Transportation now deals mostly with trams.

Highlighting key aspects of the most important cars of the Škoda heritage provides useful insights into what they emphasised in their vehicles. L&K's first bicycle was in Czech Republic (CZ) well known for its quality and level of innovation. Ten years later, when they introduced their first car, it became successful because it had a reasonable price. Right before the second war Škoda produced a high end vehicle, the Superb 4000, focusing on comfort, space and quality. After the war the production of passenger cars continued with a focus on low cost reliable vehicles. The Octavia in 1959 won over customers with lots of space and comfort in the interior. An important car for export was the Škoda Felicia, mainly for the USA which boosted their reputation. In 1964 Škoda changed the whole layout of the car with the most key element, a rear engine. It was a car setting the standards for both comfort and performance. This gave way for an increased sporty reputation of the brand who just got into rally racing. The Škoda Favorit (1987) was one of the last cars build without influence of the Volkswagen Group. It was a modern compact car setting standards in terms of economic efficiency. The Felicia from 1994 was the first model after the merger with VW AG, the production improved significantly and the car met international standards, it was the first Škoda with air-conditioning and airbags. The quality of the cars and therefor its reputation continued to grow. Future models were known for their spacious interior defined by the most legroom and headroom in its segment. Together with the rising quality, more attention went into the design becoming more emotional. Current Škoda cars offer a lot for less money. They are practical, spacious and have the amount of quality of a more upper range brands.

Škoda had multiple focuses over the years for their car models, but one that is quite consistent over the years is the economic efficiency. In other words, you got quite a lot, mostly the interior space, for a reasonable price. Some models did not only focus on these features for example the very luxurious and comfortable Superb 4000 and the Felicia Fun had a practical and also playful approach to spaciousness.

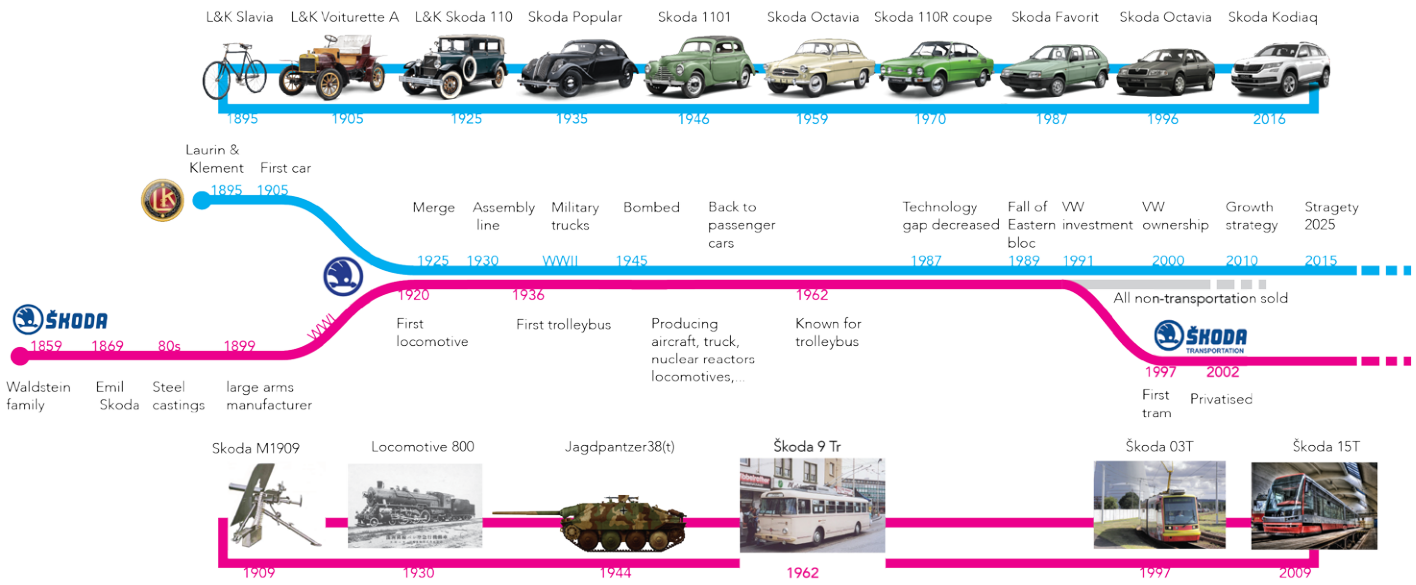


Figure #fixme: Škoda history

Positioning

New players are trying to enter the car industry frequently but it is difficult to compete with such a crowded industry. Many companies are joining forces and are bigger than excepted at first sight such as VW AG. In the perceptual map (figure #fixme) the connection with the brands and their parent company is visualised by color coding. To get a better view on the differentiation between the brands and how crowded a certain area is or isn't, two axis are chosen. This will also reveal the possible diversity within a group.
The horizontal axis ranges from budget to premium. It is based on the average cost of the most popular cars within the brand. Porsche for example sells the 918 which is exceeding Lamborghini's price range (Catchpole, 2017) and performance but the 911 is the best selling and most important car for Porsche. For this reason, the 911 will be used as a reference in this map. In general the market is divided into five categories: Entry level, mid range, upper range, premium and luxury. In combination with the vertical axis ranging from comfort to driving experience a nice overview of the brands is created. The vertical axis is less objective, it is a combination of their current brand identity and image. Jaguar for example used to be much more comfort focused ten years ago, it would fit with classy cars. At the moment Jaguar is really pushing their sportive character placing them more upwards in the map.

In figure #fixme, six groups are identified. On the premium side there are two quite obvious groups. Group 1 is fully focusing in driving experience, the sport-, super- and hyper-cars. The second group is focusing on comfort in a very luxurious way. It is interesting to see that in-between these groups no brand is positioned. It can be concluded that if a lot of many is spent on the development of a car, looking for extremities is essential.

Moving to the mid to upper range cars, there are two groups present. Group three, cars that have a sporty character with still a premium feeling separating them from group five. On the other side of the vertical axis, group four focuses on cars in a similar price range but focuses on comfort. Interesting to note is that the difference between these two groups is less clear than between group one and two. There are brands that both focus on the comfort and luxurious feeling as the sportive feeling of their cars like Audi and Jaguar.

On the budget side of the spectrum there is the biggest concentration of brands. Group five are brands like Subaru who try to attract customers with their affordable sporty and performance focused cars and distinguish themselves from the density of group six. In reality the brands here lay even closer together, price doesn't differ that much and the contrast between driving experience and comfort becomes less explicit. In this group comfort means a mere practical approach, everything that you need is there, it does the job. This has the priority above creating a more emotional vehicle which is the top side of the group is focusing on.

Looking at the color codes it can be concluded that VW AG is active in almost every group mentioned above. In the mid to upper range, there is only Audi which falls in-between group three and four. Based on this map the group is doing well to differentiate their brands and focus on other parts of the market. Within VW AG many brands are benefiting from the possibility to share technology. This is helping Škoda to improve their quality and eventually their image all over the world, due to the association with the reliable German brands.
In general Škoda is positioned far to the comfort and budget ends which partly came clear in the history section before. They are really focusing on making the life of their users easier for a good price. To help distinguish Škoda, Seat, VW and Audi even more, another matrix was created which can be found in appendix #fixme. It shows that Škoda and Seat are more playful than the German brands. Škoda is within the same range as most of the French companies focus on the human side rather than purely technology.

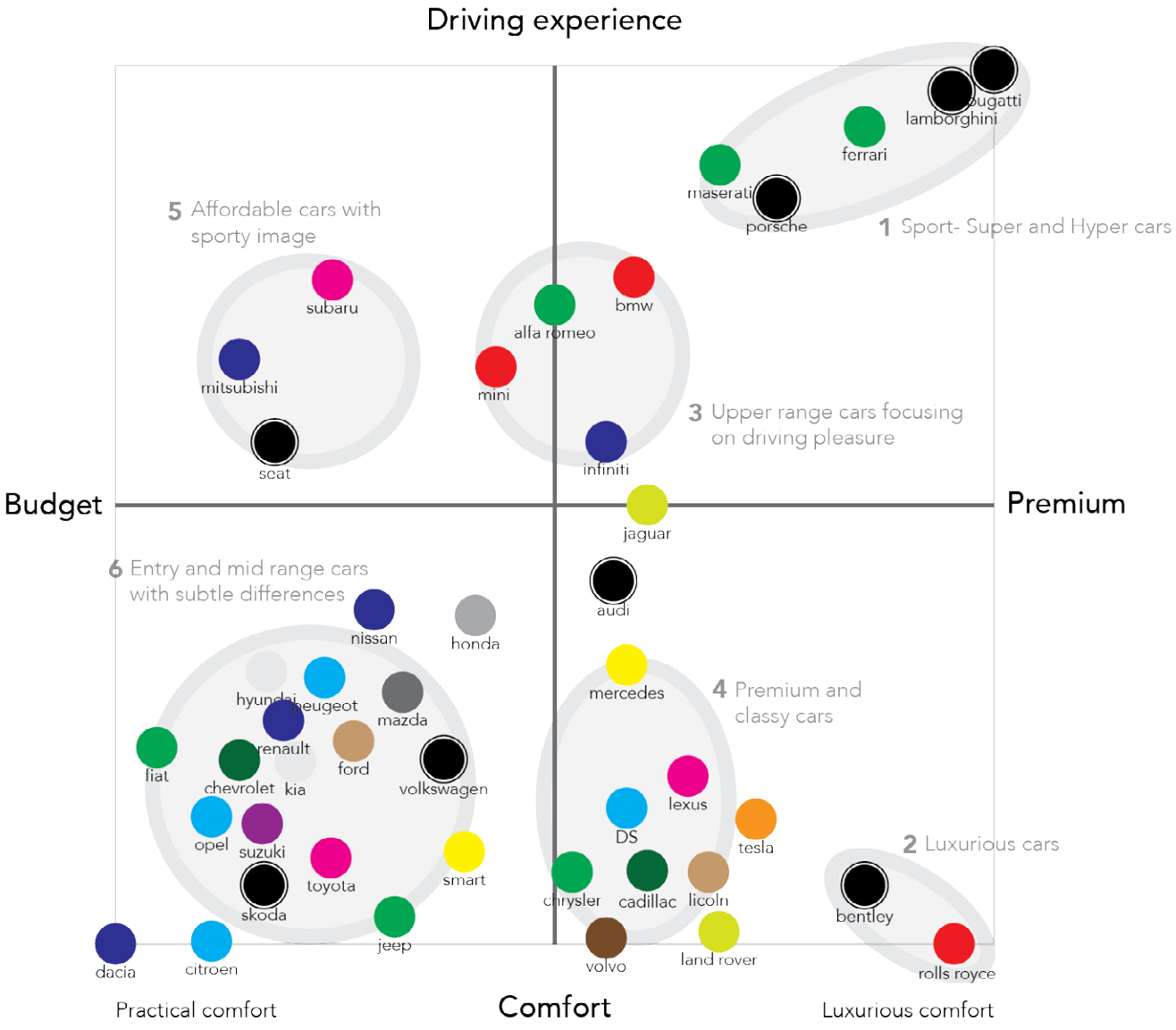


Figure #fixme: Positioning of Škoda and other brands in the automotive industry

The brand identity prism

Asking myself and others what Škoda stands for unveiled that this is not as easy as it seemed at first hand. Investigating and understanding the brand is important. As seen before, the model range of Škoda currently consists of seven models and soon will increase. It is important that the reasoning behind these products come from intrinsic motifs providing coherency in their models. If the identity of Škoda is analysed sufficiently it will give a sustainable advantage in the future context. It is important to make a statement as a brand communicating the core values to the world strengthening the position of Škoda.

To get a complete picture of the brand, the 'brand identity prism' (J Kapferer 2008) is used. It consists of six facets which are placed on a prism as shown in figure #fixme.

1. Physique - The first facet of the prism are the physical aspects of the brand, the tangible product representing the brand's qualities. In the case of Škoda, I interpreted it as the unique selling points (USP) of the cars, what is different from all the other brands and how Škoda stands out based on their cars. First of all they offer spacious interior in almost every segment they are active in. The cars have the same dimensions as the competitors and in addition to that have more trunk space, leg- and head room. The second important USP are the simply clever solutions Škoda implements in their cars. For example an umbrella stored in the armrest, a magnetic detachable trunk light and an ice scraper implemented at the fuel cap. All these features are available for a reasonable price compared to the competition.

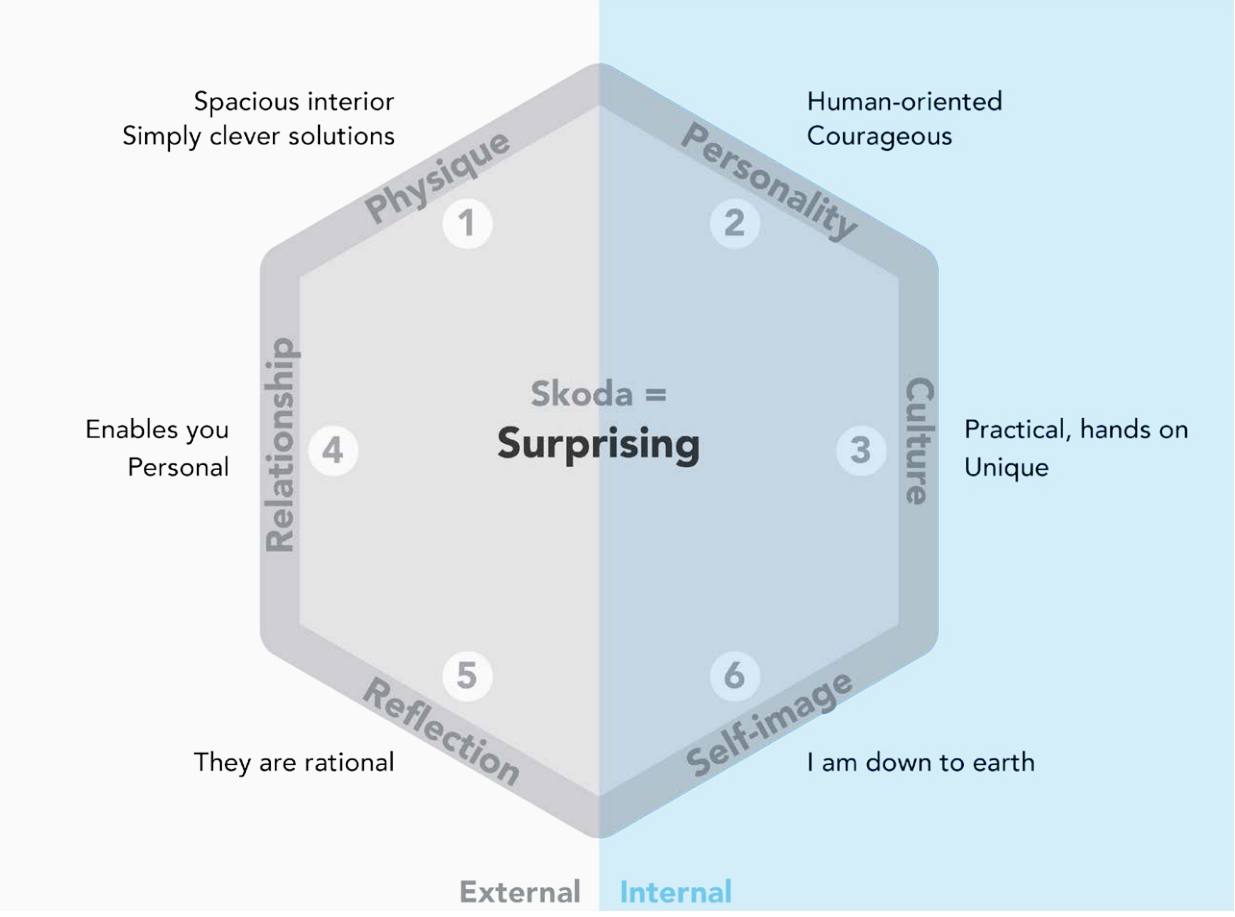


Figure #fixme: The brand identity prism (Kapferer, 2008) for Škoda

2. Personality - The second facet is the character, almost describing Škoda as a person. Škoda is first of all a human-oriented brand, they put the users first. They listen to what they need and really understand them. They are focusing on making the life of the user easier. Secondly Škoda is courageous. Being part of the Volkswagen group, they have a lot of 'guidelines' which could limit the creativity but they are pushing limits towards their own vision, implementing new ideas and dare to go against 'the norm'.

3. Culture - The third facet is an important aspect for Škoda which they are trying to translate more and more in their physical products. Everyone knows Volvo is Swedish, which is really important in their brand identity and therefor visible to the outside world in the cars and advertisement. In the early 2000s, Škoda benefited from taking over more German values from their parent company VW AG to increase their credibility. Škoda is trying to create more awareness of their heritage and use their culture in their cars. One aspects already used at Škoda is their love for detail, for example their unique bohemian crystal. In line with this is their practical and hands on approach to many aspects in life.

4. Relationship - The fourth facet is about the relationship between the brand and their customers. Škoda enables the user to do whatever they want, it is made for every occasion. It speaks to everybody but still in a personal manner. They support the user to be themselves and reconnect with that part. The brand communicates open and honest towards their customers and the world by sharing a lot of information.

5. Reflections - This facet is how the outside world sees Škoda owners which changed quite a lot in the last decade. Ten years ago Škoda owners were mostly retired men that could not afford a Volkswagen. Now the owners are seen as rational people, focusing on practicalities for less money with less attention to the emotional aspect of owning a car.

6. Self-image - The last facet is the customers own internal mirror, it expresses how they feel owning a Škoda. They see themselves as down to earth and honest. They make decisions based on good information and arguments. Research has shown that Škoda customers are one of the most satisfied with their car. I think this is because their expectations are achieved or even exceeded by the product.

As indicated in figure #fixme the facets on the right side of the prism are internal, showcasing the spirit of Škoda. The left facets are the expression of these, how the identity is communicated to the world. The prism has another dimension, on the top of the prism is the picture of the sender, on the bottom it is the picture of the recipient. These extra dimensions provide a useful insight in where possible discrepancies are located.

In the center of the prism the brand essence is positioned. Škoda = surprising is for me the essence. This captures what Škoda wants to be identified with in one word. When you buy a Škoda you get a surprising amount of quality, space and features for a low price you do not expect certainly not with all the features that make your life easier. At Škoda they are implementing the emotional aspect more consciously. The combination of the practicality and emotion might cause another surprising affect.

Several aspects of the prism are considered more valuable for the process, it is not productive to use them all in the next stage. An important question toward the future of Škoda is how the personality will be expressed to the outside world. Therefor the following statement for Škoda was made:

Škoda surprises people with its practical and emotional expression of their human-oriented and courageous character.

Škoda currently is going through some changes where they are trying to convey a more emotional association with the brand. For this reason the way the personality is transformed into the physical part is done in a practical and emotional way.

The statement will be guiding on a more abstract level what future products of Škoda should do to the users, and therefor also my product.

Products

The current Škoda range consists of seven models with four relevant categories identified by Škoda (Škoda,2019). The smaller vehicles perfect for the city. The other five are seen as family cars. Within this group the SUVs are categorised within the outdoor group. Both the Superb and the Kodiaq are more luxurious cars and fall within the Business group.

In appendix #fixme an overview of the model range of Škoda, Seat and VW can be found. The interiors of the seven cars mentioned above are shown in figure #fixme. The categorisation of the interior is similar as the models in general. The urban vehicles have similar design cues as do the SUVs. The others are seen as limousines where Scala, Škoda most recent model, is the start of a whole new generation interiors.

Investigating the experience inside the vehicles, there are many differences but most are linked with the size and height of the drive. In a future context where driving is not a necessity anymore, the experience could be much more differentiated.

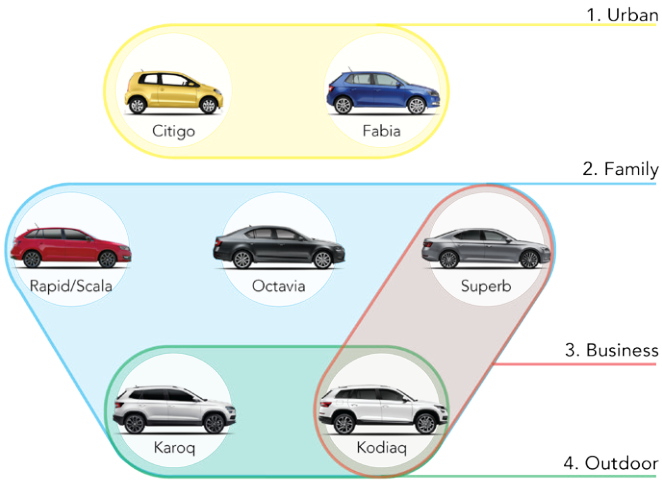


Figure #fixme: Categories of the Škoda range

CitiGo

Fabia

Rapid/Scala

Octavia

Superb

Karoq

Kodiaq

Figure #fixme: Interiors of the Škoda range

Users

Škoda is currently targeting young professionals and young families (Garber, 2016). In my opinion both groups make sense, young professionals now are looking for freedom and flexibility and want to buy a car but they do not have the capacity to get a high-end car. The smaller Škoda cars are a very good option for them. The young families are also attracted to Škoda because of the spaciousness, practicality and flexibility of the cars which is very important when raising a family.
Looking back at the seven cars shown in figure #fixme, the actual target group might be wider then mentioned initially. The overlap of categories mentioned earlier means that Škoda is not making for example a dedicated high-end business car which is meant only for that purpose. It is often in relation with other aspects. Therefor the link between the target group and the work-life balance is investigated. A rich businessman will not buy a Superb, but in combination with a family he might think it is a valuable option.

The first group that was identified are the dreamers. They are 20 to 30 years old and match the description of young professionals as Škoda calls them. The dreamers are young adults who are experiencing their independence and freedom for the first time. They are fully in control of their life which scares them sometimes because the possibilities are endless. They are very focused on finding their dream and making it come true, diving into their work. The dreamers have a life with a lot of high and lows, a very diverse and spontaneous lifestyle where they in essence are discovering who they are.

The second group are the nurturers. The group that is fully dedicated to raise a family, everything they do is in function of the family, their home, job and car. They are looking for stability while the responsibilities at work and at home are growing significantly. Balancing all this is proving to be very difficult which means the leisure time is very short or non existing at all.

The third group are the guardians. Named because of their less intensive but not less important roll in their children's life. This group feels confident and is back in control over life in general, balancing all aspects of it. They reflect on their current status and act accordingly, it is the time for checking that bucket list. After the intense Pacifiers stage, they are searching for themselves again, their authenticity.

The last group are the comfort seekers. They comfort their dreamer children while seeking comfort for their own. They experience a new type of freedom due to their 'empty nest'. They have more time for leisure and are conscience about their life. They are searching for simplicity, back to the essence. "More and more matters less and less but what matters, matters more and more."

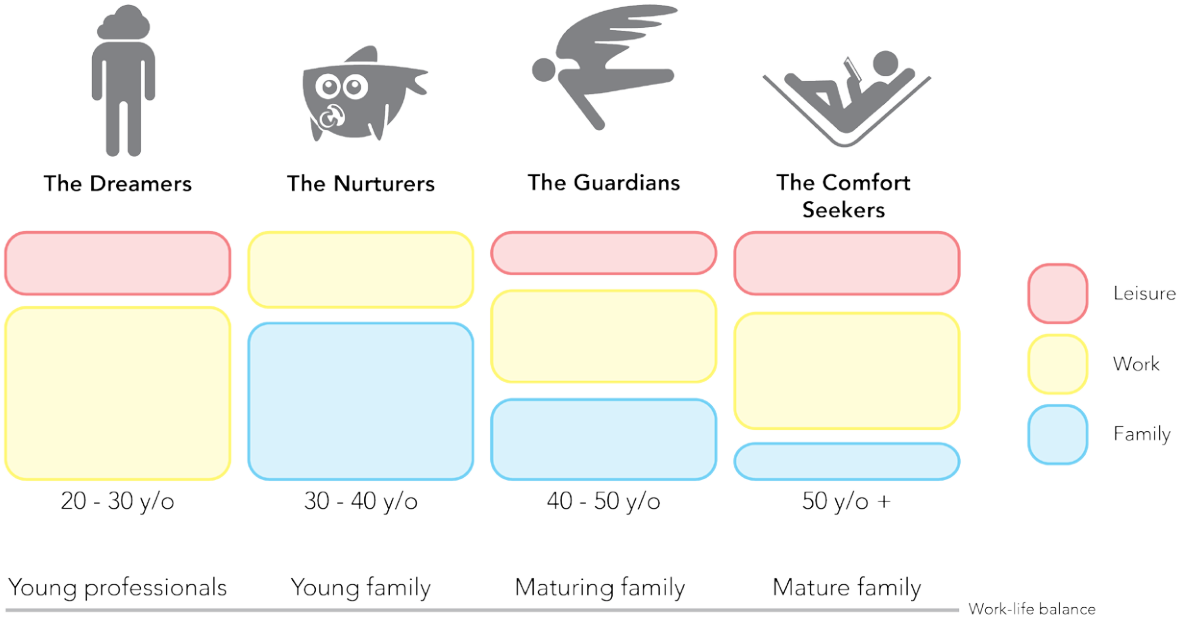


Figure #fixme: User groups with Work-Life balance

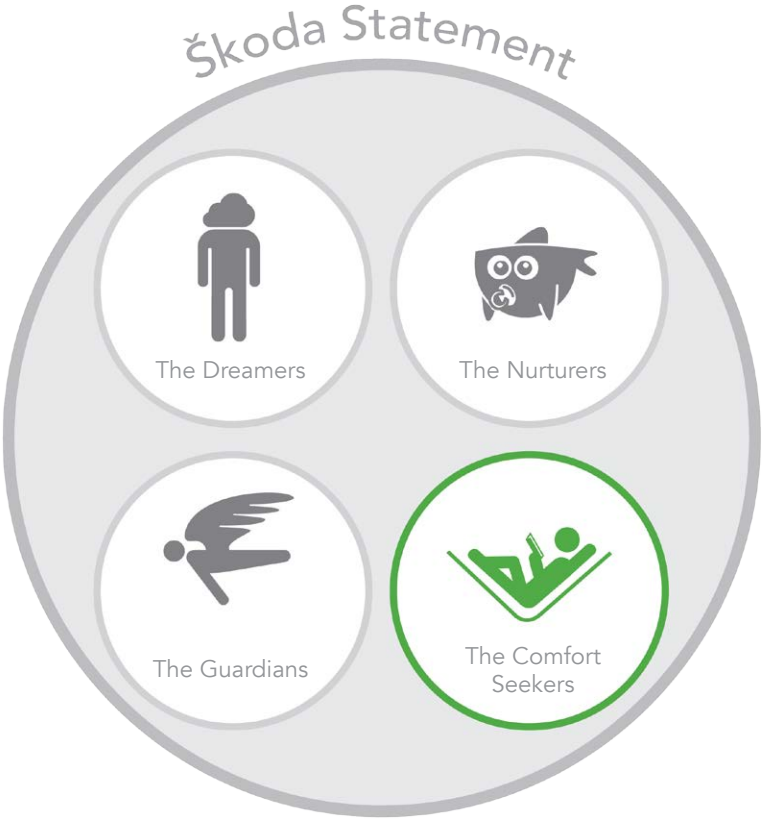


Figure #fixme: Škoda statement and the four directions

As mentioned before, the Škoda statement is general for all future directions. Based on the user analysis four distinctive directions could be identified. These groups have all different needs and therefor could form four directions where Škoda could focus on. This will increase the differentiation between the vehicles compared with today as explained in the 'product' section.

The group 'The Comfort Seekers' was chosen for different reasons.

First of all it could expand the target group of Škoda as the current focus is on young professionals and families. Although the Superb has a slightly older target group, it would be beneficial to attract a more diverse group of users.

Secondly it would be an opportunity to push the emotional side of Škoda and show this to the public. This group is more experience driven where leisure and simplicity play an important role. Not the practical aspects of 'The Nurturers' for example.

Thirdly is the change this group will go through. Currently it consists of the users that are more skeptical towards change. In fifteen to twenty years from now, the values of this group will change. They will consist of the people that are in their later twenties now who are exposed to fast changing technologies and can easily adopt to them. The comfort seekers are the dreamers of the future!

The last reason is a more personal motivation. As explained before this group focuses more on experience rather than pure practicality. This has my personal preference, a combination of both as also mentioned in the Škoda statement.

Work-life balance

Current generation of comfort seekers are searching for a work-life balance but in the future this will decrease. Some argue that balance will not even be applicable anymore. Work, family and other aspects start to be blended together due to increase in connectivity. One is never truly off work. Therefor it is more a work-life alignment with flexibility as the most important factor for future generations.

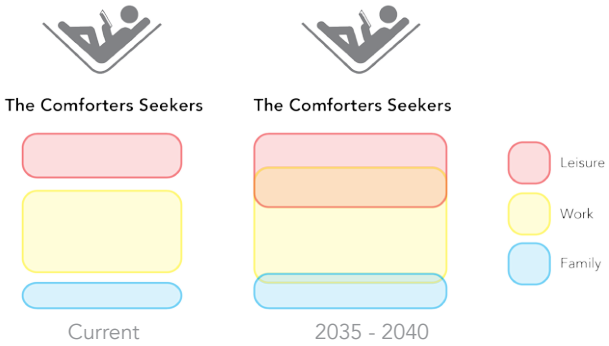


Figure #fixme: Work-life balance future

Striving for this work-life balance or alignment is generally less important for generation Y and Z. This is the generation that will be 'The Comfort Seekers' in 15 to 20 years. They will aim for fulfillment in everything they do. It is important that they design their life so they only do things that fill them with passion. An important consequence of the overlapping of the work-family-leisure balance is that might seem that the leisure time increases because of the overlap, but there is more to it. There is actually less time for pure leisure. Research shows that people satisfied with their leisure time are much more satisfied with their life overall. So what is leisure?

Leisure

The term leisure had many definitions over time. It could be seen as the time an individual has after all other activities, free time. A broader definition of the word is as follows: Leisure is a state of mind where an individual is free from thoughts of basic necessity. Since leisure is an important part of the target groups life, it is beneficial to look at how people spent their leisure time now and in the future.

According to Stebbins (2007) there are three types of leisure, serious, casual and project-based leisure.

The first type is important for self-fulfillment and is the pursuit of a core activity which could lead to a career. The second type, casual leisure, is immediately and short and need no experience to perform. A few examples are play, relaxation, passive and active entertainment and sociable conversation. The last type is also short-term but involving planning and most of the time creative undertaking.

Leisure should be all about new experiences where the people are fully immersed in. Preferably distinctive experiences where people can express their uniqueness.
Popular experiences are adventurous activities, self-improvement and escapism, wanting to escape from home and work. An increasing trend is a phenomenon called the oasis of deceleration explaining how people need dedicated time to slow down from their very fast and intense life.

Generation difference

As explained before, the future comfort seekers will be the current dreamers. The characteristics of the group and leisure will stay similar, but the ones of the generation will differ. A selection of most important differences between Generation X (current comfort seekers) and Generation Y (future comfort seekers) will provide insights in how the group will behave in the future.

Technology is essential and seen as intangible for Gen Y which is in contrast with Gen X who see it as something you hold like your phone.

Fulfillment is the key word in everything Gen Y does. They want to do something meaningful and are constantly in search for this.

Although screen time is massively increasing for Gen Y, they are still social. They like to work in teams and share experiences.

Gen Y is ambitious, they want to turn things around which feels like their responsibility. They are very optimistic and see opportunities everywhere.

Living in the moment, Gen Y works to life, they realize that work is not everything. They are eager to spent money in contrast with Gen X who very much focus on saving.

Constant change is typical for Gen Y, they want diversity and are very flexible.

2.3 Future frame

The future frame consists of four different topics as shown in figure #fixme. The future context describes what is happening around the automotive industry. Future trends within the automotive and interior design industry are researched as well as characteristics of future users and the future of the competitors.

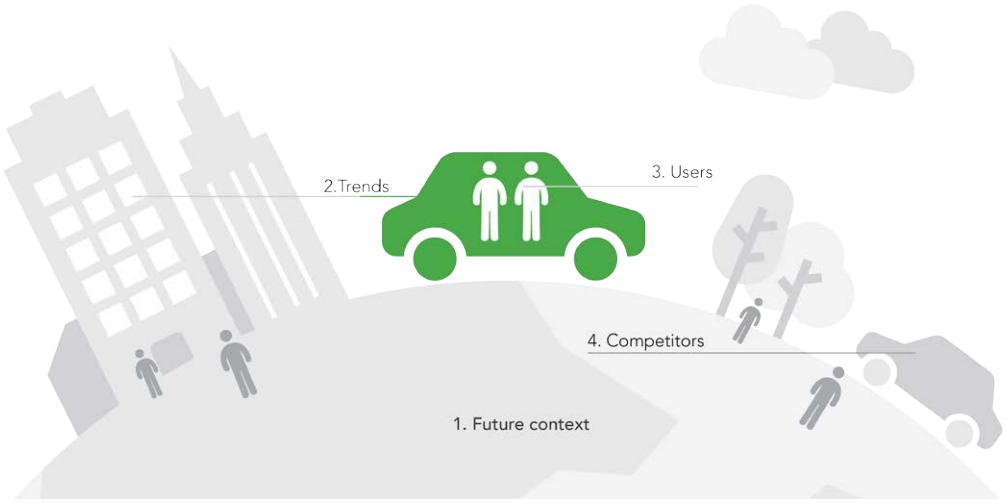


Figure #fixme: Visualisation of the future frame aspects

Clusters

Clusters have been made based on the future context, trends and users. The topics individually can be found in the appendix #fixme.

(dis)connected

This cluster is about people being connected anytime and anywhere. In the near future more and more objects will become smart and connected with everything else. This means that there will be more opportunities to be connected with other people and more objects that give you information. This enormous amount of impulses will need to be processed which makes the future generation better at multitasking. Being connected all the time can be very social, you can make friends abroad or have business meetings on the other side of the world as if everyone was together making the line between reality and the digital world blurred. The flip side is the disconnection of the physical aspect. People will communicate less face to face and not learn to deal with certain social situations. It is clear that the quality of the connection between people but also objects is declining. If we look at the difference between the interaction with a tablet or a lego set, it says enough.
The amount of digital and physical connection will not keep growing apart in my opinion. There is a limit of amount of connection we can have and a minimal physical connection will always be there (as shown in figure #fixme). The quality of connection on the other hand might rise. With the help of technology the quality of the digital connection will become more natural and intuitive bringing it closer towards the quality of the physical connection.

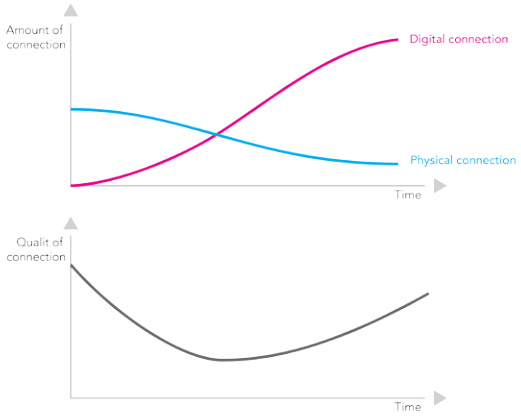


Figure #fixme: Relation between amount and quality of connection

Uniqueness vs automation

With the rise of automation less tasks are left for humans. As a reaction people will be in constant search for their own place in this world. The automatisation will push people in the same direction away from certain industries making it harder to differentiate themselves from other. Being unique is very high on the list of future generations. Even now we see a rise in popularity of hand-made and authentic products. Another reaction is the increasing amount of young entrepreneurs looking for their added value in the world early on.

Less but more

In general people will desire less objects but still want the same or even more functions. This causes multi-functional objects to rise, starting in the interior industry where people start living smaller and smaller and still want a spacious place to live.
As mentioned before many objects are become smart, in general they will have a high amount of integrated technology. This means there is more than meets the eyes.
These two trends will cause an increase in uncluttered spaces. Back to basics 2.0, because the functionalities and technologies are still present, but well integrated. A driver that pushes towards this new phase is the growing conscience for the environment which will keep increasing over time.

Privacy vs personalisation

People are getting used to the fact that there is no privacy on the web. The younger generation was born with this awareness and really values privacy. They know the consequences of the online world, once its on you can never get it off. So it a very conscious decisions to share something making them cautious. On the other hand they expect very personal advertisement. Currently people see this as an invasion of their privacy but in the future people see this as a quality of a company. One of the requirements is that companies are very transparent in what they do.

In control vs sharing

People want flexibility regarding their work-life balance. They want to be in control of when and where they work and strive for a seamless transition. Early independency will grow, they will start their own business and earning money sooner.
Another aspect proving their need for independency are the self-sufficient homes. This need for control is in contrast with the booming sharing trend. More and more people are willing to live together (co-living) and sharing car rides. This trend is mainly driven by the need for social contact, as mentioned earlier, and cost saving. Sharing will have an influence on the control people have on their life.

Competitors

The last aspect of the Future Frame is the competition. Since the assignment is about a future interior of a passenger car, it is beneficial to look at what other car brands are envisioning for the future and where they want to position their brand and models.

Types of concept cars

Brands show their vision with the help of concept cars which can be divided into three types. A design vision is a concept car that shows the design language of future production models. The second type shows the implementation of new technology, currently autonomous technology is very popular. The third type are concepts that tell a story, they go deeper than 'just' implementing new technologies. This category is where my thesis will be located in. A more in depth explanation can be found in appendix #fixme.

Positioning the concept cars

Analysing the positioning of concept cars is relevant for multiple reasons. First of all it provides an overview of what is or isn't done. It is meant to open the mind to see what is possible within the scope of this project. Secondly it will help during the synthesis phase to look for interesting fields to position a concept. Since the first type of concept cars mentioned above are not relevant, a selection was made combining concepts of type two and three. An overview of all the concept cars taken into account can be found in appendix #fixme.

In figure #fixme a schematic overview is shown of the most interesting concepts. A complete overview can be found in appendix #fixme. In figure #fixme a simplification of the interior layout is visualised. The squares are seating positions with the arrow indicating the orientation, both directions are sometimes possible. All these concepts are positioned on two axis to help identify the focus of these concepts.

The horizontal axis ranges from individual to together indicating the if the concept is focusing on a single person experience or it provides space for being together. The vertical axis ranges from practical to experience. Some concepts focus on the experience within cabin, other focus on the practical aspects of the interior.

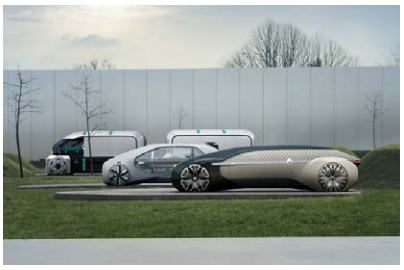
The first group is called 'Race'. These concepts show how a true drivers car could look and work in the future without much help of the autonomous technology purely focusing on the driving experience. The reason behind these concepts are brand dependent. Audi for example is really focusing on bringing autonomy in production but it was time to show something else and give expression to their sporty side of the brand. Important to note is that brands located in within the 'race' group have a reason for making a level 0 sport car, it would not fit every brand.

The second group is 'Lounge'. Most of the concepts located here are fully autonomous vehicle allowing the interior to fully focus on the experience of the user. These vehicles carry a lot of emotion with them. The interiors are very luxurious with a significant eye for detail and comfort.

The third cluster,'Group', on the right side of the map ranges from practical to more experience focused. Renault is present on both extremes

Type 1: Design vision
The Škoda Vision RS interior concept was showcasing the new design language first shown in the Škoda Scala.

Type 2: Autonomous technology
The Peugeot Instinct concept shows the brand could implement autonomous technology.



Type 3: Mobility vision
The EZ trilogy of Renault addresses future mobility and how Renault can play a role focusing on mobility for all.

Figure #fixme: Types of concept cars

of this group. The Symbioz is designed to be an extension of your home, the experience of this living-room like interior is very important to achieve a smooth transition between being home and on the move. On the other side of the group is the EZ-GO which has a more public transport feeling. The concept is focusing on efficiency and not on the comfort or experience of the occupants.

The fourth group, 'Modular' consists of two concepts with the Volvo 360c the strongest in my opinion. This concept has different modes, the interior changes based on the mode, it ranges from a very individual interior where the occupant can sleep comfortably while the vehicle drives you to your destination. The work mode is a much more social arrangement where four occupants can face each other and have a discussion, much like a meeting room on wheels.

The fifth cluster is the conservative group, 'Con+', consisting of concept cars that are close to existing vehicles. In contrast with the previous group, these vehicles have only two modes, driving or not driving. It showcases how autonomous technology can be implemented in the near future but still keeping the current car context and lay-out.

The sixth and last group, 'Drive+' are the concepts that have different modes but are more focused on the driving experience. They are meant to be driven with enhanced driving pleasure, but with the help of autonomous technology there is an option to let the car drive you. With the These concepts all explore how added value can be created by taking away the driving activities while still being fun to drive.

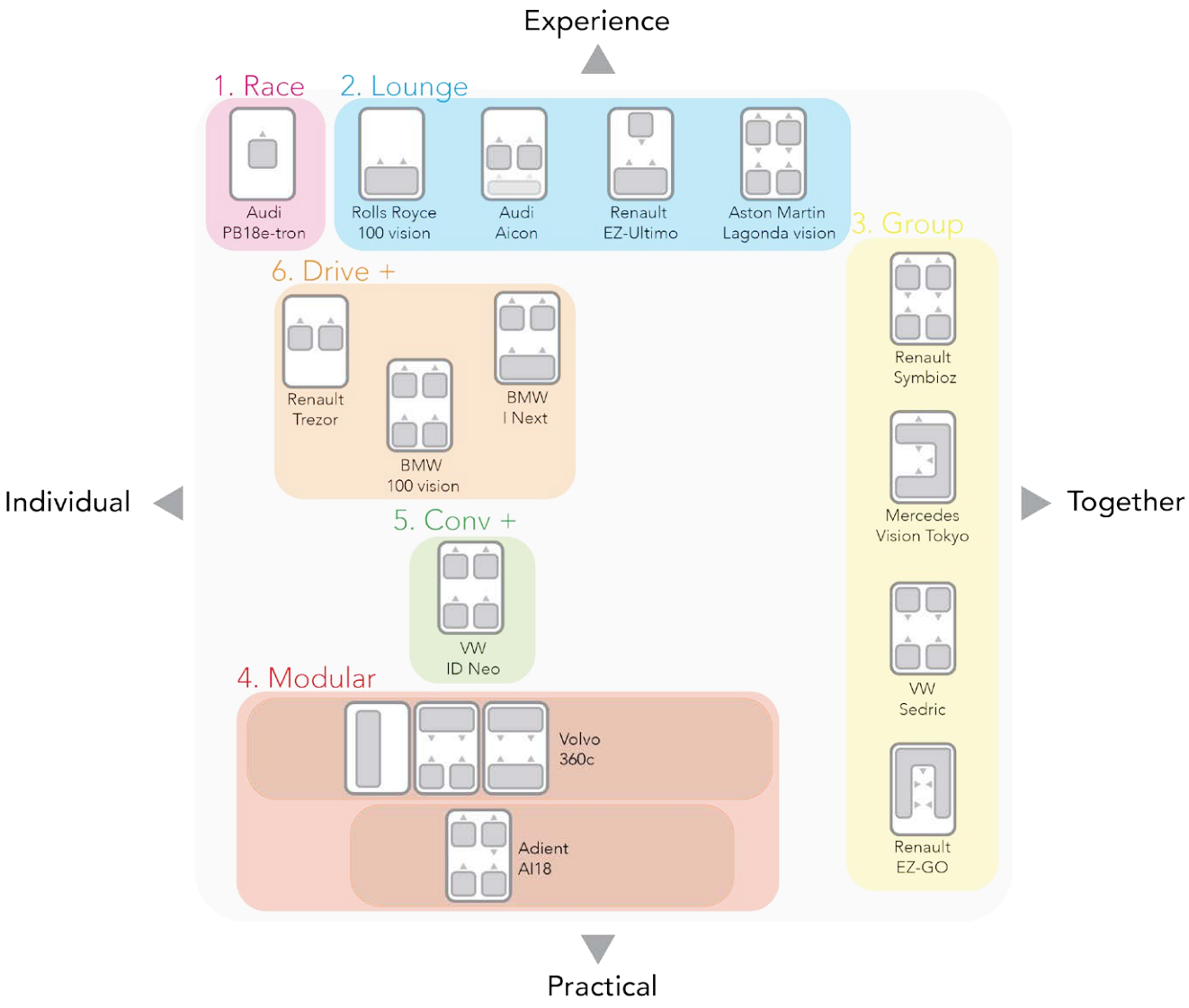


Figure #fixme: Positioning of competitors concepts

2.4 Synthesis

The synthesis is the conclusion of the previous chapters and the gate towards the next phase, the vision development. Chapter 2.1 provides insights in the possibilities of autonomous technology on the interaction. Chapter 2.2 provides a brand statement, a selection and analysis of a specific target group and together with elements of chapter 2.3, a statement is created concluding the analysis phase.

The first chapter showed the possibilities regarding the future interaction within the vehicle and with the environment. Autonomous technology will cause a disruption in this field, for this reason this project will focus on the opportunities this innovation brings. It opens up a whole range of different interactions with the environment as well as a whole new approach of designing an interior of a vehicle.

The second chapter provided insights in the brand and eventually focus for this project. The brand prism, shown again in figure #fixme, showed many different facets of the brand. It was decided to focus on a few, rather than trying to incorporate everything in this project. Skoda is recently starting to improve the balance between emotional and practical design in their products. This raises the question how they will express their personality through this new design philosophy into their physical product.

The focus on the translation from Skoda's personality to their products lead to the following 'Skoda target statement':

*"Škoda courageously **surprises** people with its practical and emotional expression of their **human-oriented** character."*

When autonomous technology is widely available, their current physical expression might not be relevant anymore. But it is key to stay close to the personality and essence of the brand.

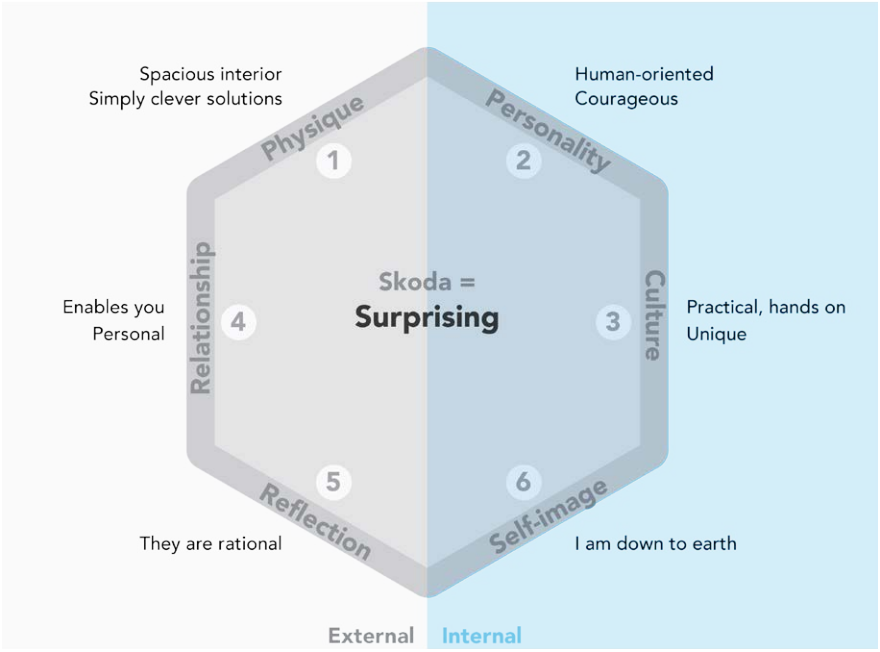


Figure #fixme: The focus within the brand prism

Within this statement four different directions are identified based on the user analysis. These groups have different work-life balances, values and needs, therefor they demand different types of experiences in their car.

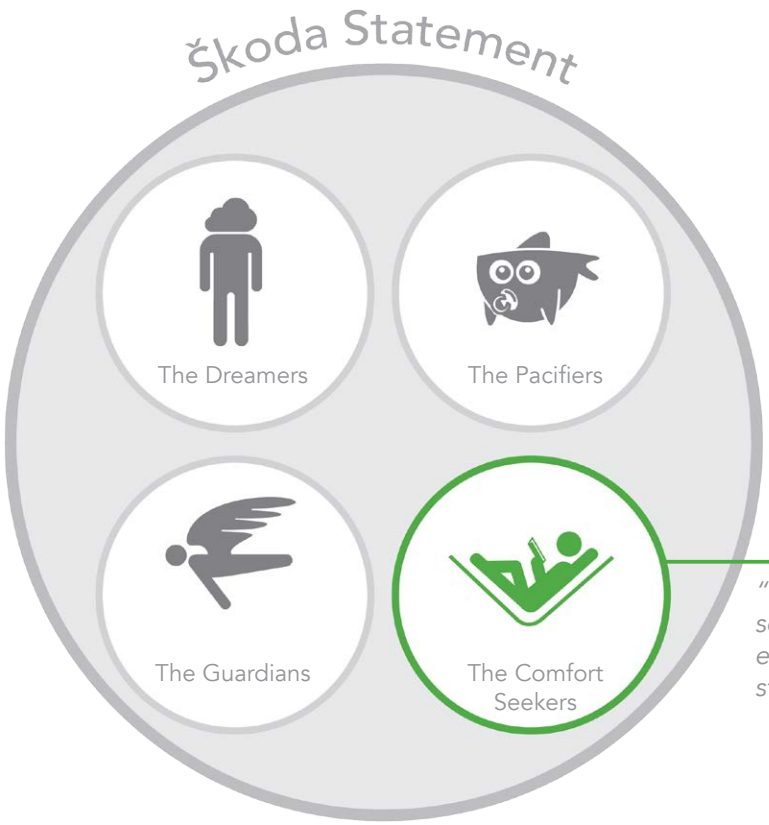
The comfort seekers were chosen as the target group of this project. This choice was based on the possible expansion of Skoda's target group, the way this group will develop in the future and the focus on the emotional rather then purely on the practical aspects.

Based on the research of the comfort seekers the future generation and the future frame, a statement is created by combining these results in a meaningful way.

The target group statement is as follows:

"Škoda wants the comfort seekers to reconnect with the essence of life by taking a step back."

One of the key unlying reasons for this statement is the sudden change in rythm in the users life. The children left the house and suddenly there is a lot of freedom, but what do you actually do with all this time?
Another important reason is the increasing need for simplicity. A more reflecting future target group will only increase the trend of less is more in all aspects of life.



Target group statement

"Škoda wants the comfort seekers to reconnect with the essence of life by taking a step back."

Skoda target statement

"Škoda courageously surprises people with its practical and emotional expression of their human-oriented character."

Figure #fixme: Synthesis

Chapter 3: Vision development

The vision development phase aims to translate the statement into a relevant design direction. In this phase other elements of the ViP process will be used. Starting from the statement, the interaction and product qualities are determined. Besides this, the scenario is explained, containing a broader view of the vehicle. The chapter will end with a clear design direction.

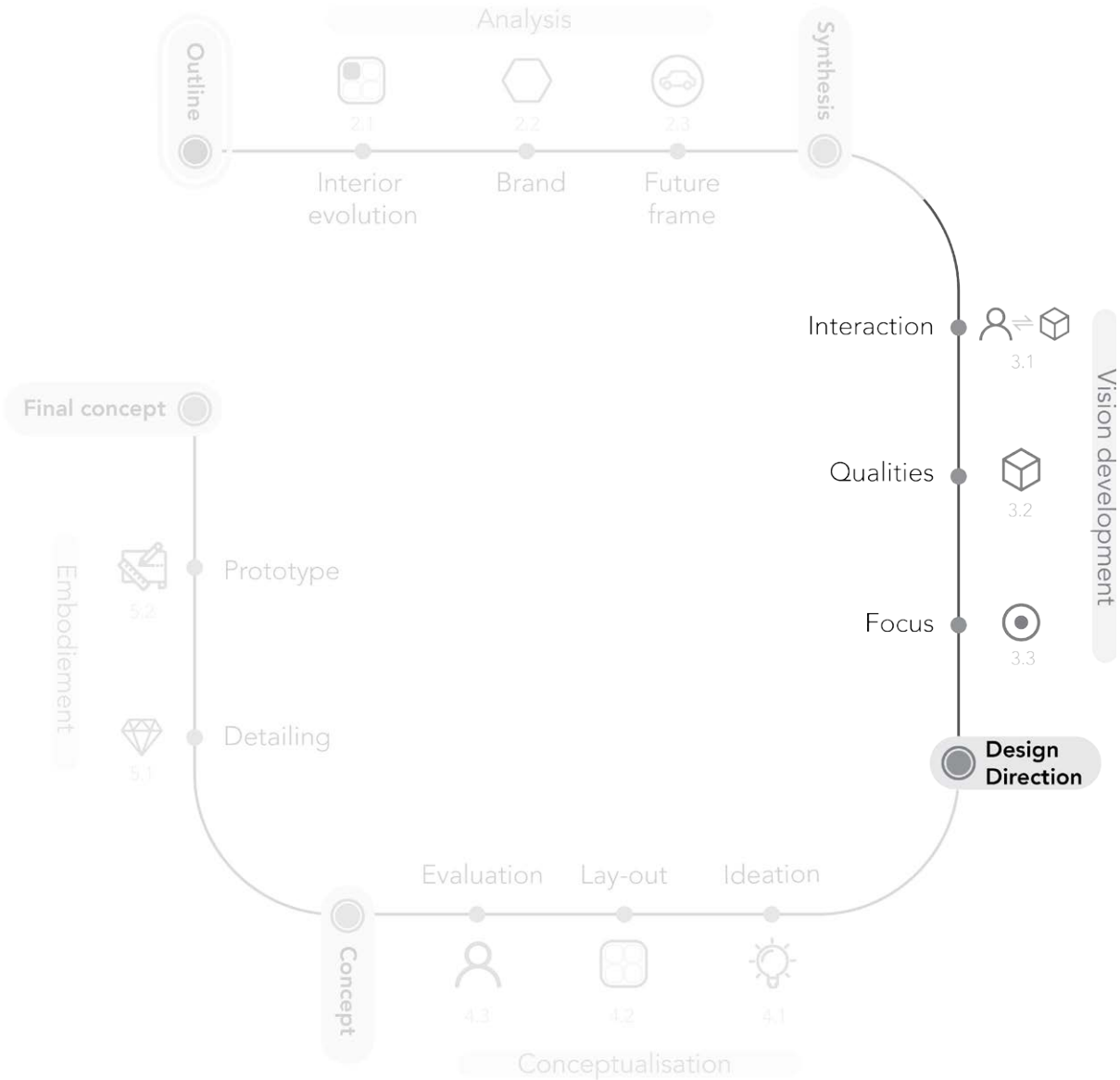


Figure #fixme: Vision development phase process visualization

3.1 Interaction and qualities

The interaction between the vehicle and the user is very important to carefully define. It has to be in line with the statement of the previous chapter and will eventually lead to the core qualities of the vehicle.

As described in the VIP book (Hekkert & vanDijk, 2011) an analogy can help to describe the interaction without actually looking for the words. It can also bring a new fresh perspective in the project. The statement of the previous chapter was:

"Škoda wants the comfort seekers to reconnect with the essence of life by taking a step back."

A suitable interaction for this statement is:

"The interaction is like enjoying the view on top of a mountain."

There are different elements to this interaction that explain why it fits the statement.

Looking at the view makes you wonder, it shows that you are just a small piece in this world. It is literally looking at the beauty of the world and making you realize what is important.

The way towards the top of the mountain is away from civilization, it is disconnected from your daily routines and tasks. Besides that the view takes away all of your attention without being overwhelming, it takes you to another place.

The qualities of the vehicle are mostly linked with the feeling you have when you are on top of that mountain:

"The atmosphere of the interior is surreal and calm"

These characteristics make the user reflect automatically, they are free to let their mind wonder in this surreal and calm environment.

Figure #fixme: Interaction

3.2 Focus

The focus chapter describes how the statement and interaction could fit the Škoda brand. This focus is determined in cooperation with Škoda after taking a step back and reflecting on the progress so far.

Reflection

The vision developed so far quite natural but a reflection was necessary to link everything more to Škoda. It is important that my project fits the brand not only in terms of design, but also the story behind it. As indicated in the prism on page #fixme, the two personalities of Škoda are human-oriented and courageous. The first one was reflected by taking a look at the overlap between the competitor analysis, the products of Škoda and the four target groups identified in the analysis phase. It is clear that Škoda is located mostly in the fourth quadrant focusing on practicality and togetherness as shown in figure #fixme. Within the range of Škoda cars there is already a differentiation inside this quadrant. The Citigo, the smallest city-car is a very practical solution for urban transport but does not have a focus on together. More towards the experience, the Superb is located which is seen as the more premium car of Škoda.

Taking a leap into the future, four concepts could describe the borders of Škoda. According to the second personality Škoda is courageous. For this reason it is appropriate to search for the limits and not stay in the middle of the comfort zone. Another reason for pushing the boundaries is the advantages of autonomous technology making more distinction between the models possible.

As stated on page #fixme, the target group of this project is the comfort seekers. Based on figure #fixme it could be stated that this project is closely linked with the future superb as they overlap in the same corner of the quadrant.

Individual together

Besides the product qualities, other aspects of the interaction analogy can be used as key features of the interior. A very interesting experience that is taking place when you are on top of a mountain enjoying the view is the fact that it is an individual process. The statement is also very individually, but the experience is much stronger when you can share it with others. Imagine enjoying the view as shown in figure #fixme together with a friend or partner. There will be times of complete silence for the both of you, letting your mind wonder. But at some point you want to share certain things you see, think or feel.

As Škoda is not positioned towards the individual side as shown in figure #fixme, it fits the brand that it is not a pure individual experience.

As stated on page #fixme, the Superb is both a family car as a business car. This means the character of the Superb already contains these two elements. Therefor it is very interesting to explore how this will develop in the future.

Freedom

In this environment as shown in figure #fixme, you are very free to look at and explore whatever you want. The view is so impressive that there is a lot to see which means everyone is free to wonder their own path.

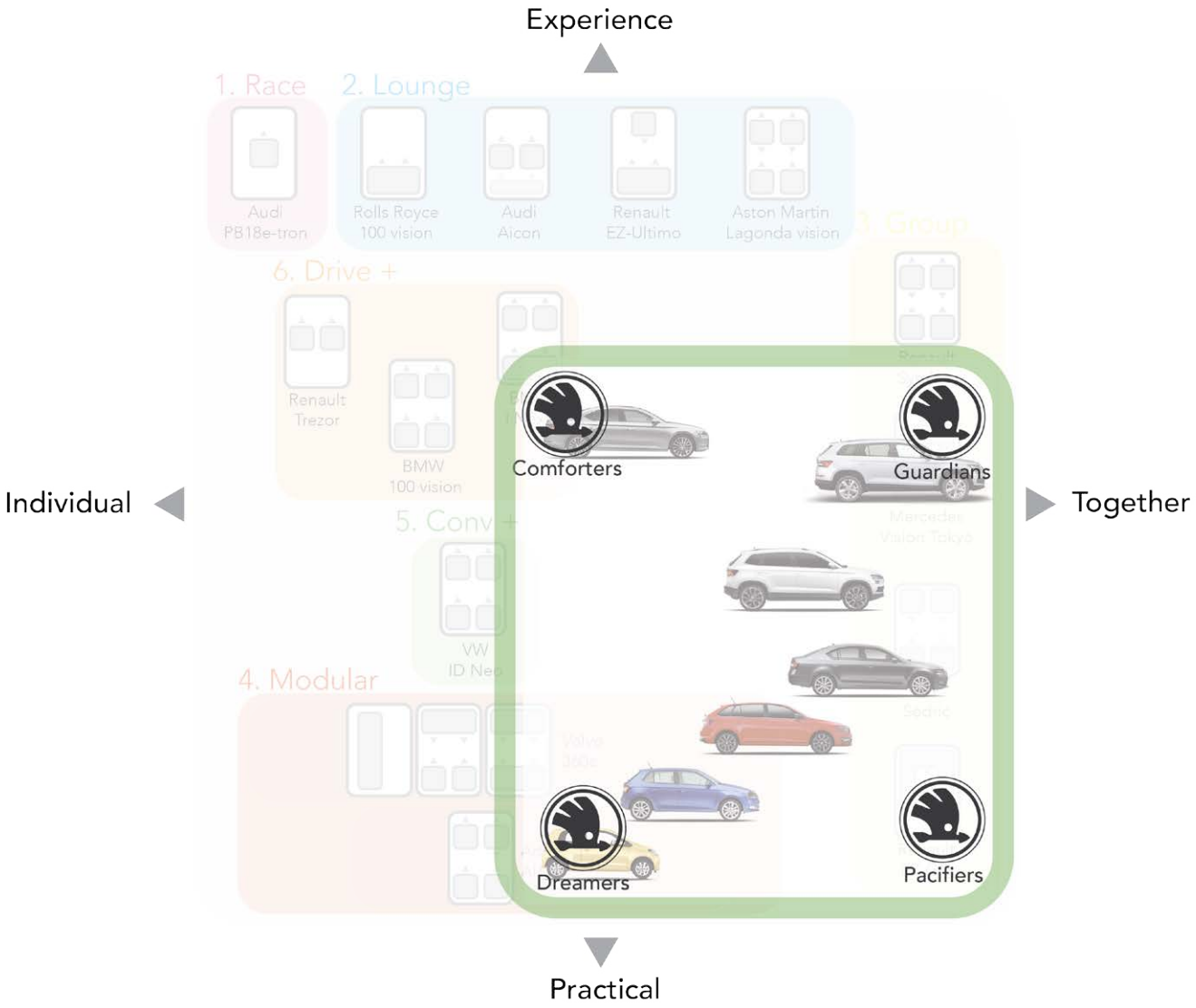


Figure #fixme: Vision development phase process visualization

3.3 Design direction

Based on the focus a clear and specified design direction is created. It will provide clear challenge that needs exploration during the conceptualization phase.

The design direction consists of two element. First of all an important challenge rose during the vision development, having an individual experience together. The key question is how to combine these so the user feels free to do their own thing, walk their own path and let their own mind wonder but at the same time feels comfortable to share certain thoughts with your loved one. This is a balance which will be explored in the next chapter.

The second aspect of the design direction is the atmosphere of the interior. As described before, the mood is surreal and calm which makes sure the users will take a step back and reconnect with the essence of life as the mission stated. How this atmosphere can be translated into the interior will be explored in the next chapter.

- How can the users feel free to experience individually but feel comfortable to share at the same time?

- How can the surreal and calm environment of the mountain view be translated into the interior?

Figure #fixme: Focus

Chapter 4: Conceptualization

The conceptualization phase aims to work towards a specific concept which can be further detailed in the embodiment phase. This phase starts with a very broad ideation and lay-out exploration based on the design direction mentioned before.

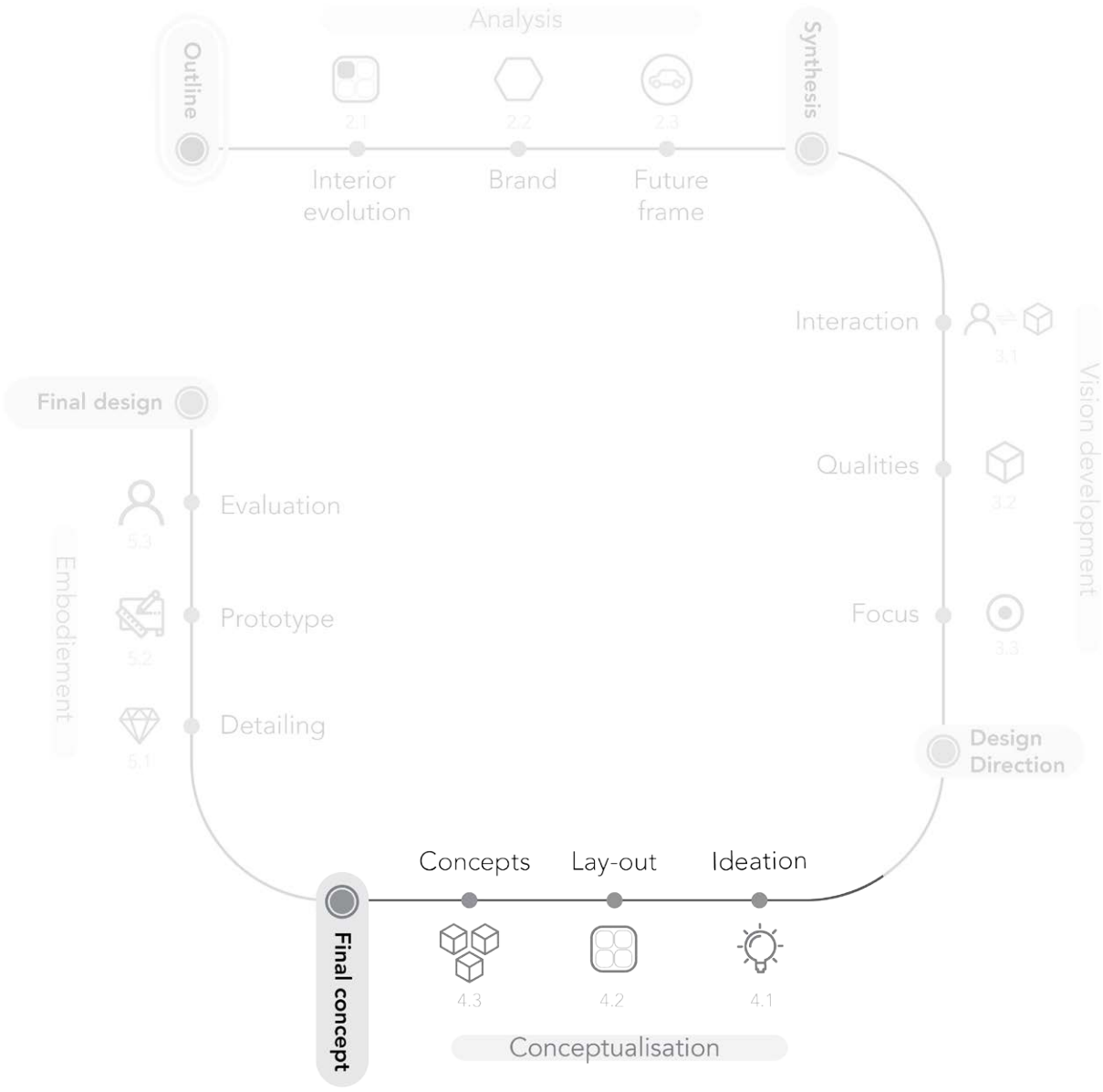


Figure #fixme: Conceptualisation phase process visualization

4.1 Ideation

The ideation of a project is always very explorative and in a way random. In this short section I explain what my goal is for this phase and what the most important influences were in the ideation phase.

Based on the design direction many exploration sketches were made to identify a suiting solution for the following questions.

- How can the users feel free to experience individually but feel comfortable to share at the same time?

- How can the surreal and calm environment of the mountain view be translated into the interior?

This ideation section is mainly showcasing the start of the translation from a vision towards something physical. During this process there were two elements that always played a role.

A fresh innovative idea. Many brands are exploring future concepts for autonomous technology as mentioned in the analysis phase. Besides that, there are a lot of students project coming out every year. For me personally it was very important to try and find something that felt new and not 'the expected solution'. This was my main personal driver.

The second element was that the concept has to fit Škoda. In the previous chapter I already explained the relationship between this concept and their current product range. This was already 'not standard' which triggered me to do the same in this phase. Trying to make it a concept that fits with Škoda, but still different.

In figure #fixme explorative sketches are shown how this phase started.

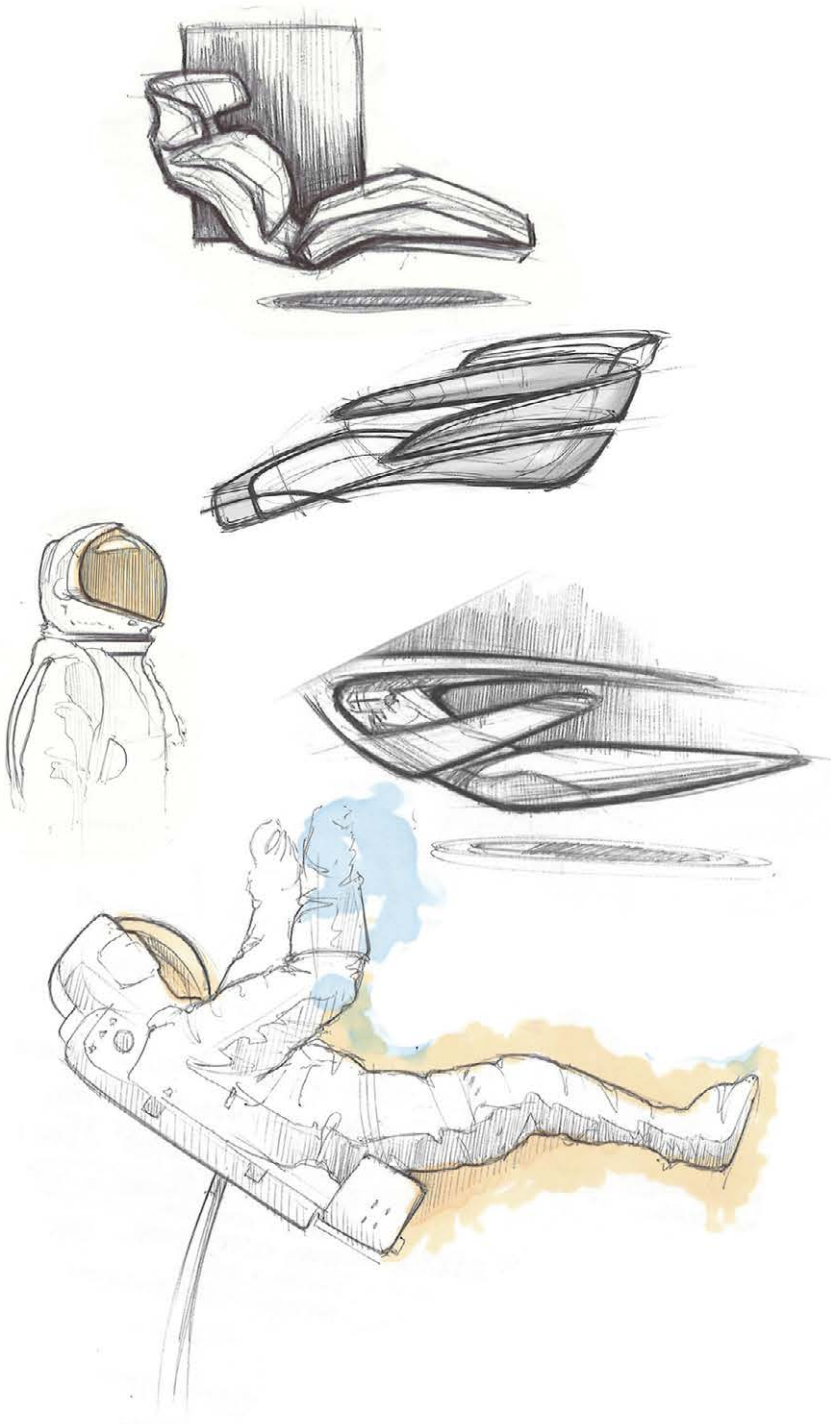
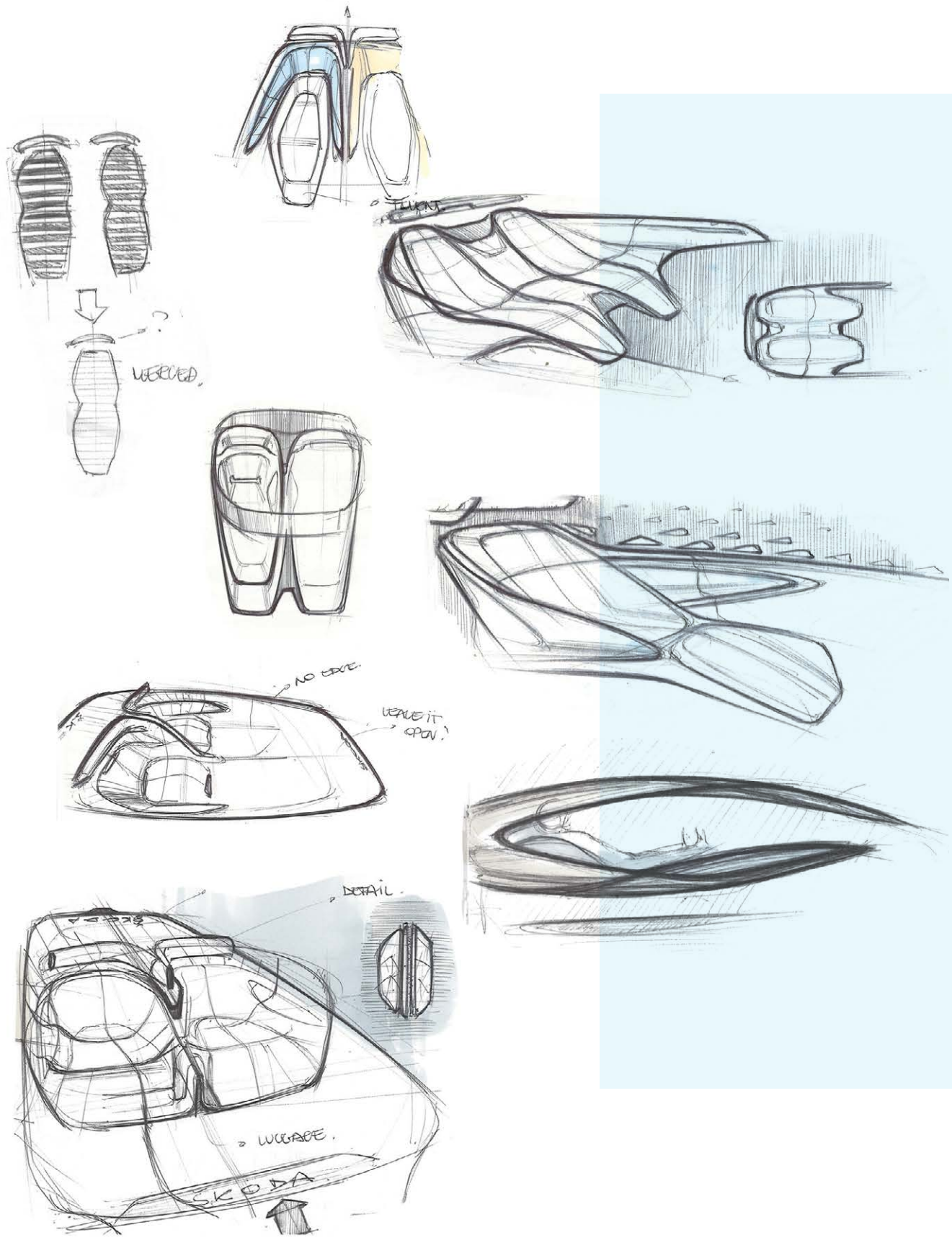


Figure #fixme: Explorative sketches


FLUENT
?
NO EDGE.
LEAVE IT OPEN!
DETAIL.
LUGGAGE.
SKODA

4.2 Lay-out

This section shows the lay-out of the interior and by what it was inspired. It is also explained why this lay-out is suiting with the vision, the users and with Škoda.

Inspiration

The key question partly solved by the lay-out is the contrast between the individual and together areas in the car. It is important to have both aspects equally important in the car.

As shown in figure #fixme an abstract painting was made, trying to express this contrast. It shows how two individuals are connected but still have their own freedom, their own are in the car.

Figure #fixme: Inspiration painting

Another inspiration image was made were the individual space organically flows into the shared space in one element.

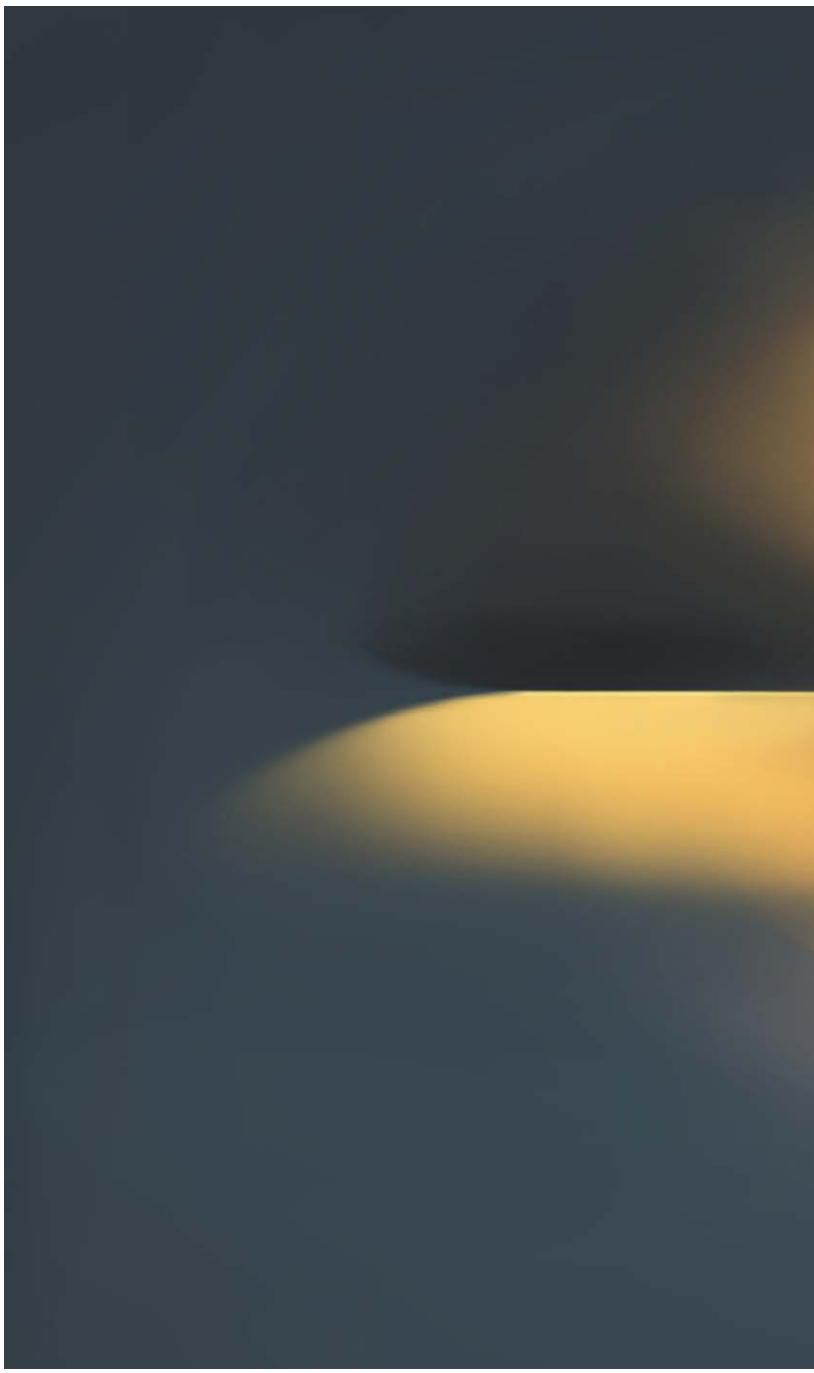
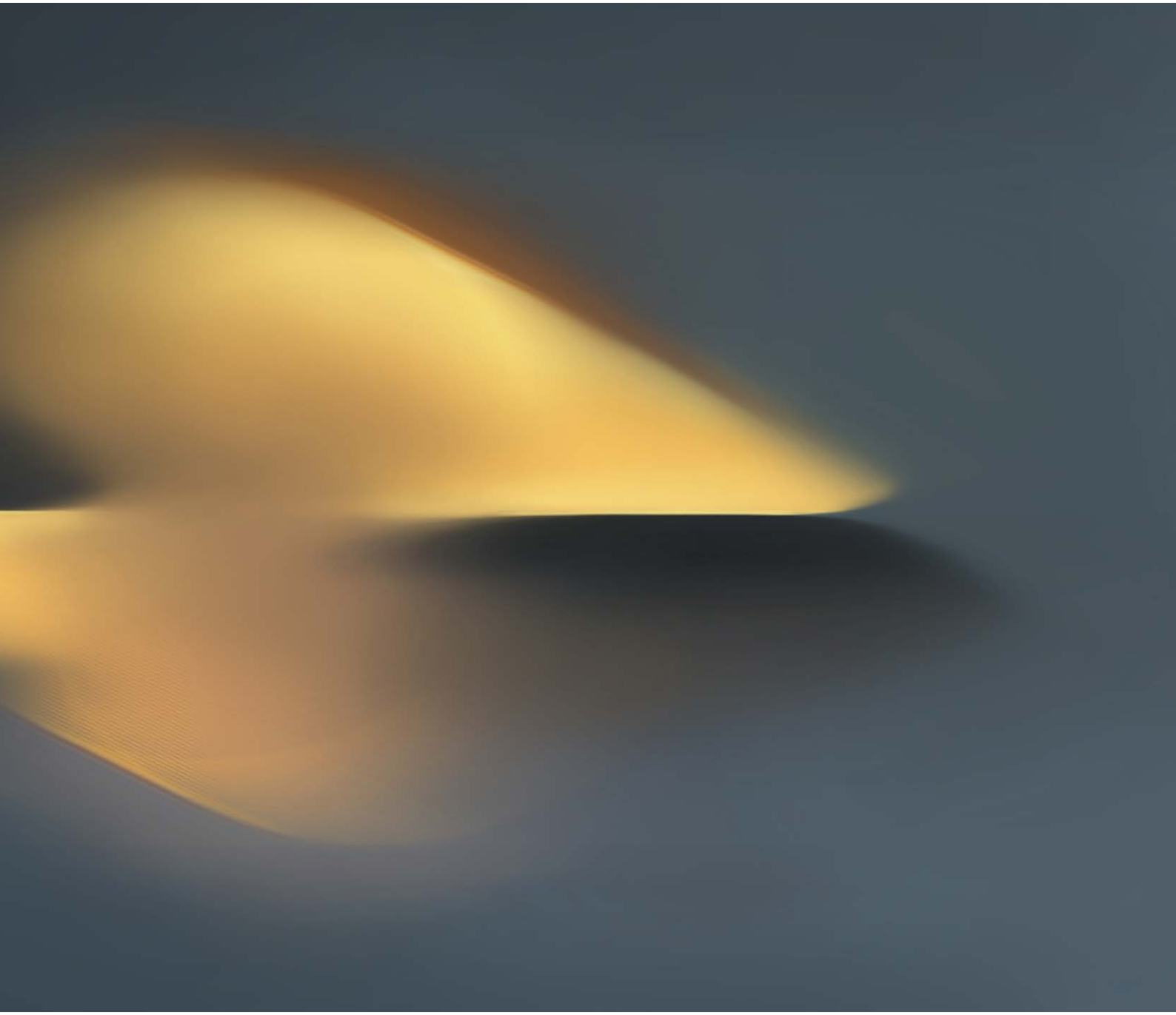


Figure #fixme: Digital inspiration painting



Lay-out

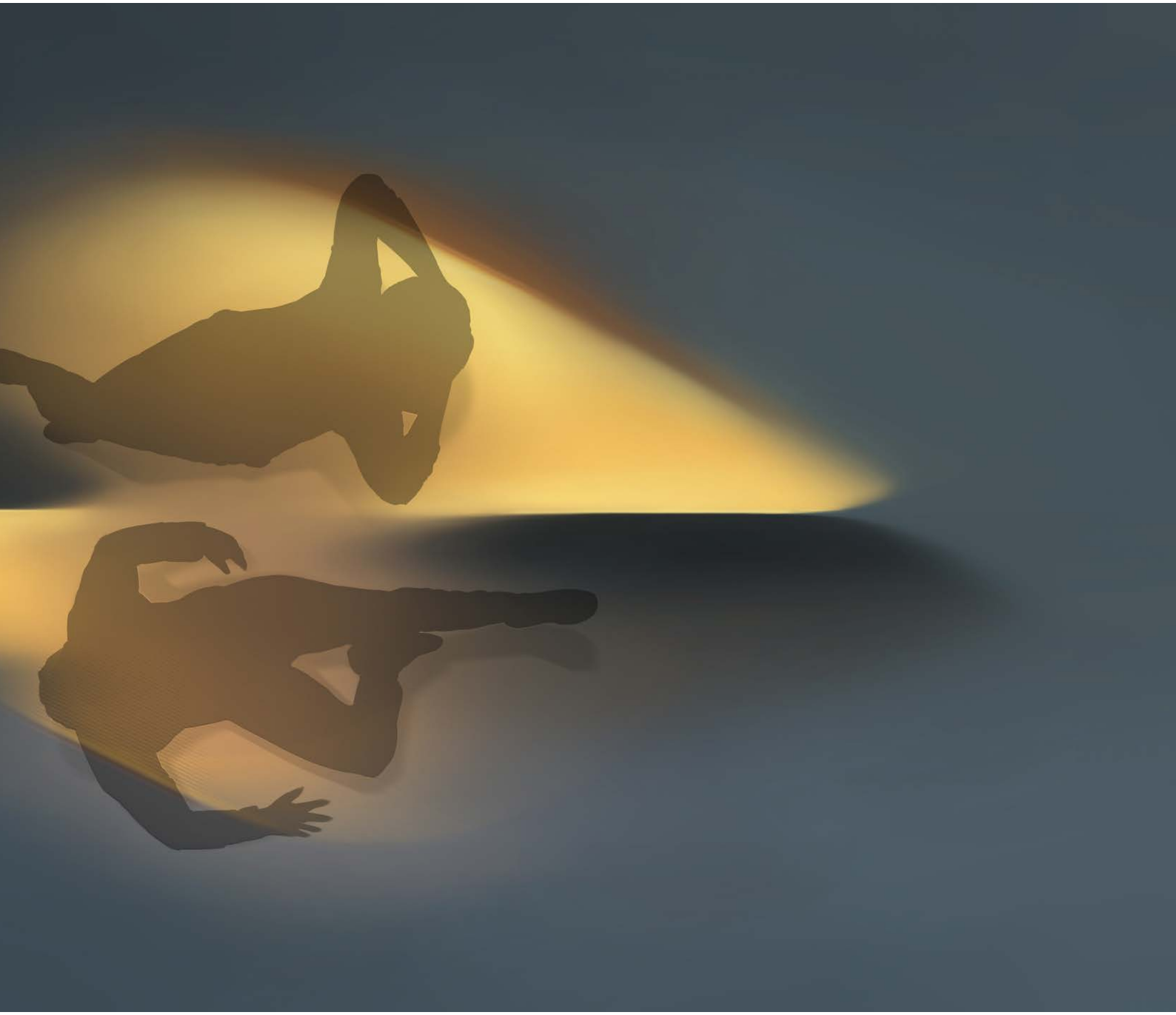
Based on both inspiration images the final lay-out is shown in figure #fixme. Three key aspects of this lay-out will be explained.

An interior for two persons.
It is designed for the comfort seekers who can experience different thing now the children are out of the house. For this reason, the interior is focusing purely on their both individual needs and ones they share.

An interior were passengers face opposite directions.
Being able to see each other enhances the intensity of the interaction compared to normal seating arrangements. Because they are not directly face to face the layout automatically suggests a play between individual and shared space. Facing them in other direction might cause problems for some people that could get sick. Fortunately the lay-out allows the car to be unidirectional which eliminates this problem.

A new interpretation of Škodas values. Škoda is human-oriented as explained in the analysis phase. The current interior express this by creating a clear symmetry and providing the passengers with an equal experience. This lay-out takes the symmetry to a new level. The passengers have exactly the same environment around them which is also in line with the vision of Škoda.

Figure #fixme: Lay-out



4.3 Concepts

Before arriving at the final concepts multiple proposals were developed based on the same lay-out mentioned above. These concepts were proposed to supervisors and based on feedback they were changed or discarded. This means that the different concepts were created with the help of iteration steps. In this section the process of arriving to the final concept will be explained.

Concept 1

With the lay-out set more sketches were created that provided me with possible directions. The seats are a very important aspect of this project. Through the seats, the viewer should directly recognize the story behind the concept. In figure #fixme a few seat sketches are shown as the development of the first concept.

The idea of this seat proposal was that both passengers were connected with a centerpiece that was a key element in the interior. The seats should express the relaxed position the users are in. The inspiration image on figure #fixme shows a light and simple element expressing calmness. In figure #fixme an exploded view is shown. The idea of a morphing frame underneath the soft cushioning of the seat and headrest is explained here.

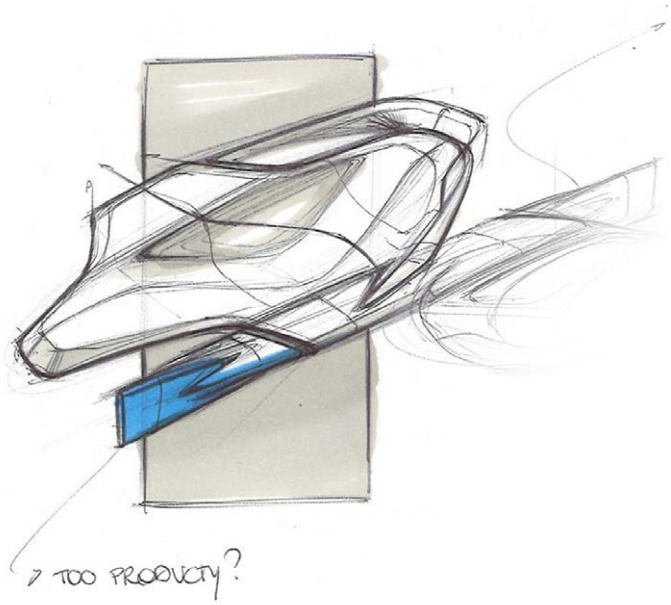
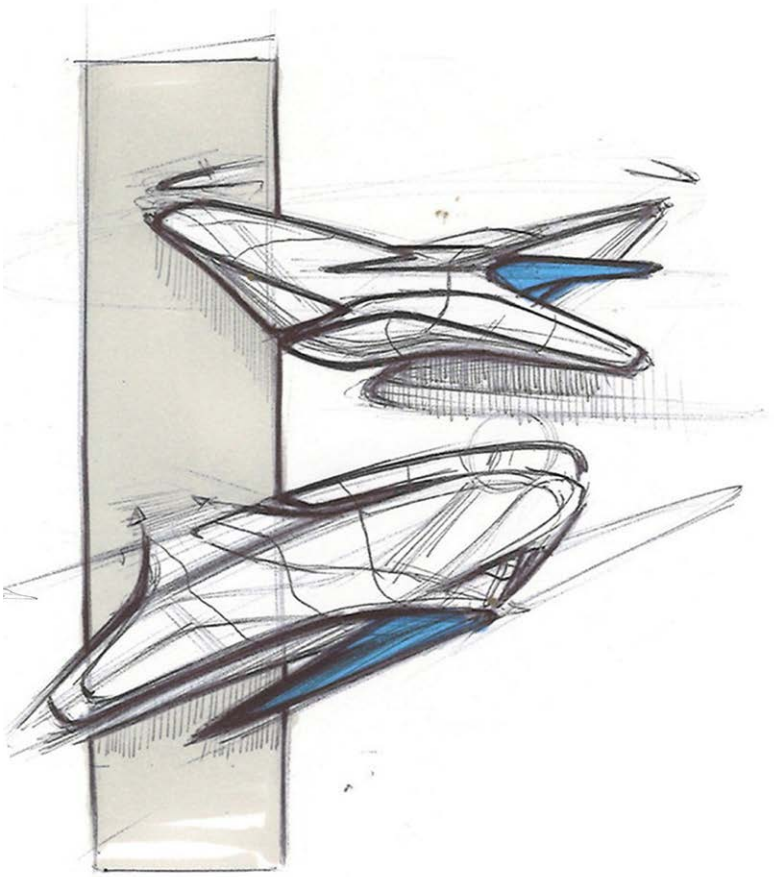


Figure #fixme: Inspiration image



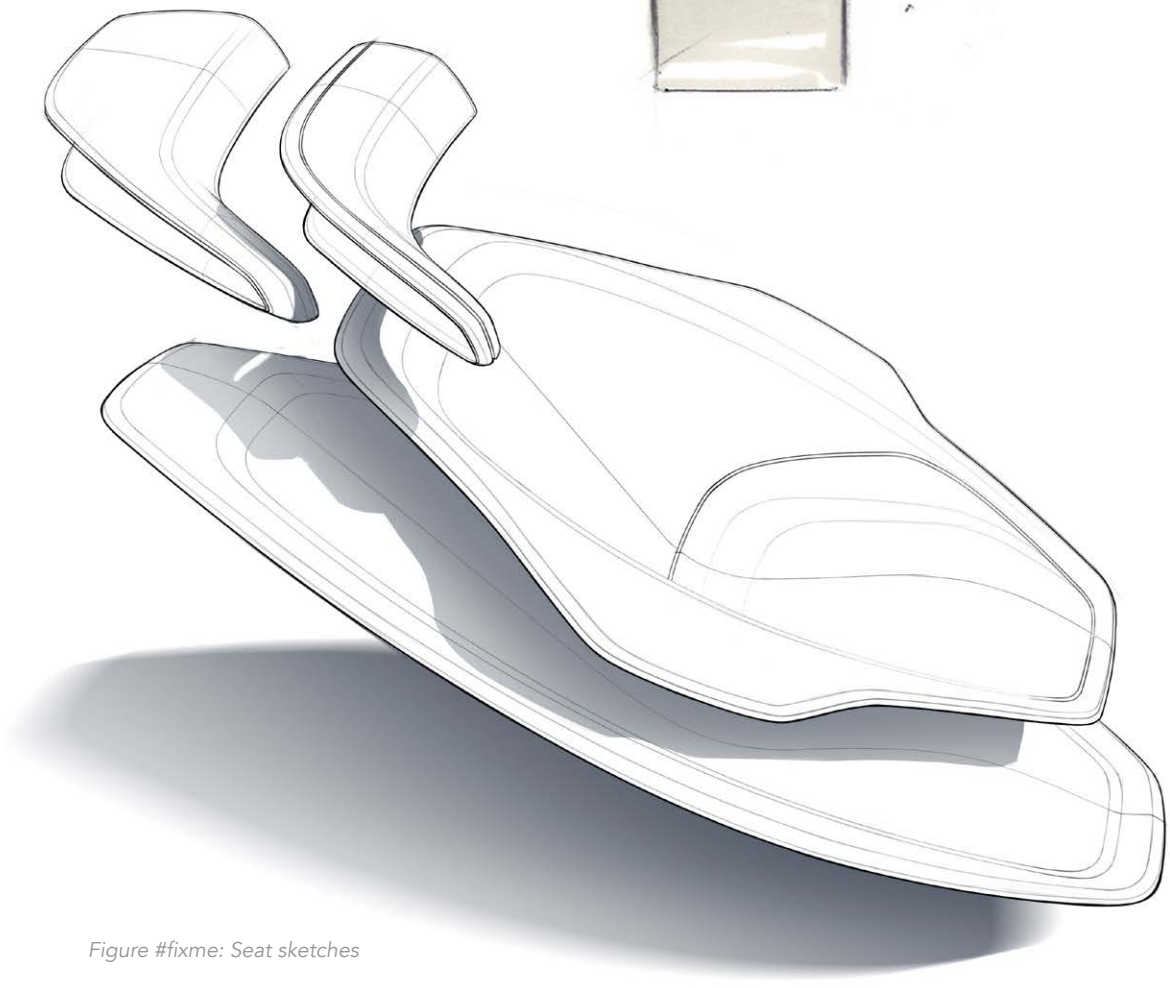


Figure #fixme: Seat sketches

How the seats are placed in the interior is shown in figure #fixme. The are placed in diagonally in the interior to create a feeling of spaciousness. The seats are part of the interior, rather than a free floating object. The controls are flowing from the armrest of the seats. The seats are surrounded by storage possibilities as shown in figure #fixme.

The main feedback was about the functionalities of the interior. Getting in and out of the vehicle was questioned. Also the comfort of the seating position and the diagonally placed lay-out was questioned. Based on these comments and other smaller ones the second concept was created.

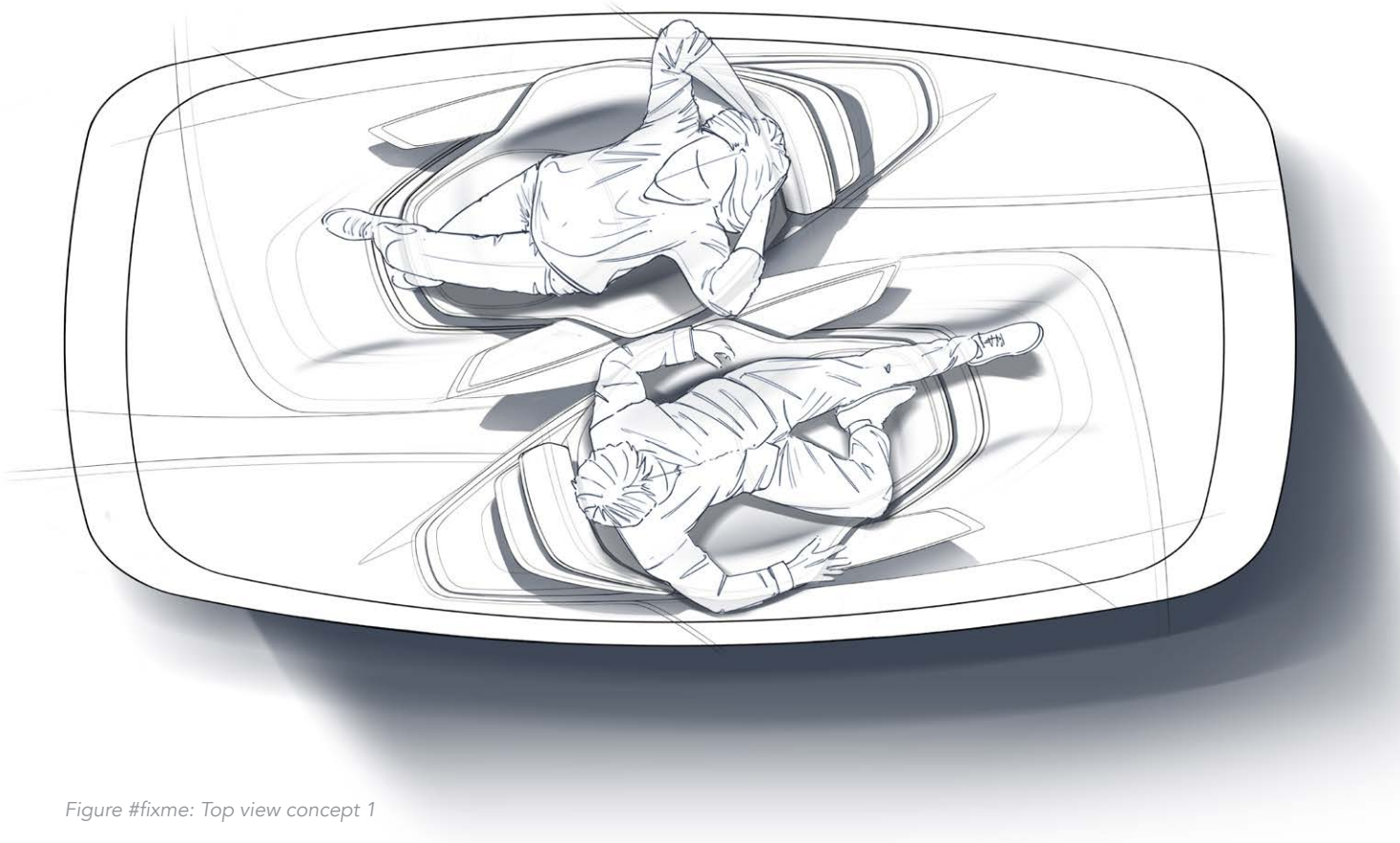


Figure #fixme: Top view concept 1

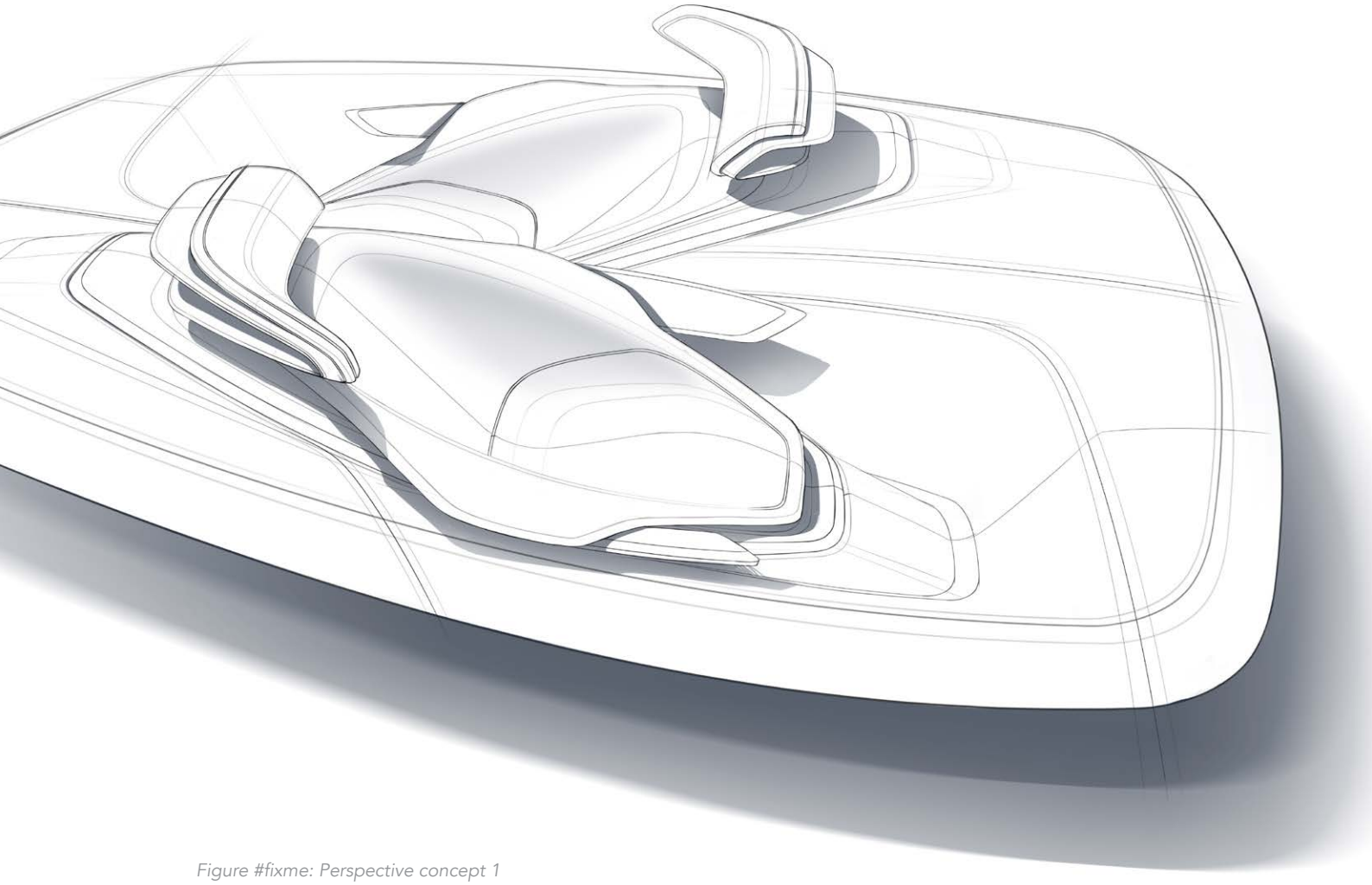


Figure #fixme: Perspective concept 1

Concept 2

This concept is a further development of the previous proposal. As can be seen in figure #fixme a new proposal for the seat was created. The idea was to have it more integrated in the interior. The upper backrest was morphic so the vision was optimized for the other passenger. With the same reasoning a floating, connected to the roof, headrest was created as shown in figure #fixme. The lay-out of this proposal is similar but more functional ideas were implemented. The center piece is the element where the seats are placed around forming multiple S-curves to lead the attention to the middle. The function of this piece is creating an surprising intimate atmosphere as shown in figure #fixme. Another functionality is the introduction of hidden storage. At they experimenting with lamels in the interior as shown in the Vision iV (figure #fixme). The idea was to have these lamels function as a soft hidden storage compartment for whatever the passenger needs as shown in figure #fixme.

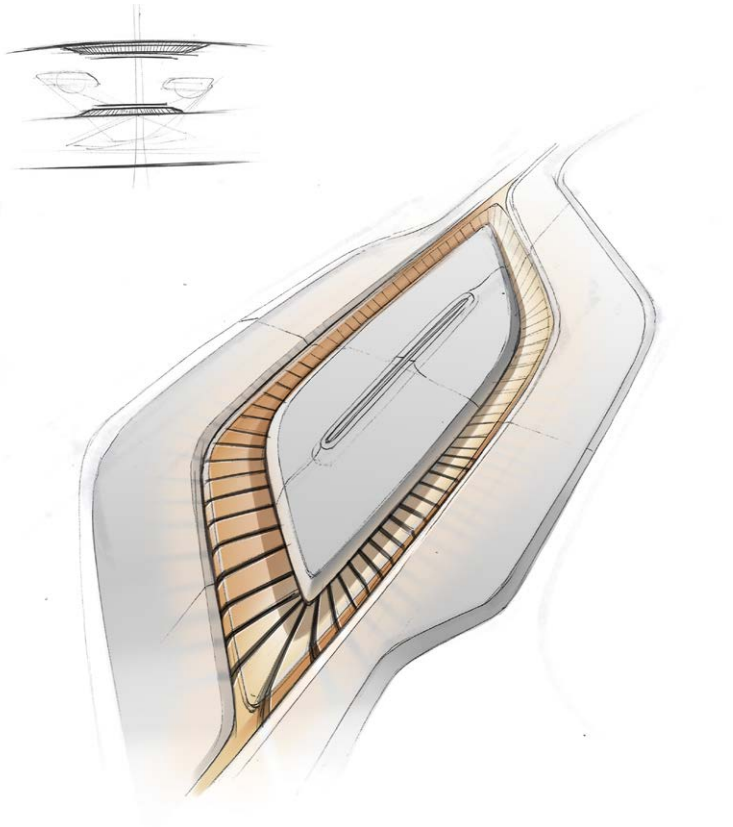


Figure #fixme: Center piece ideation concept 2

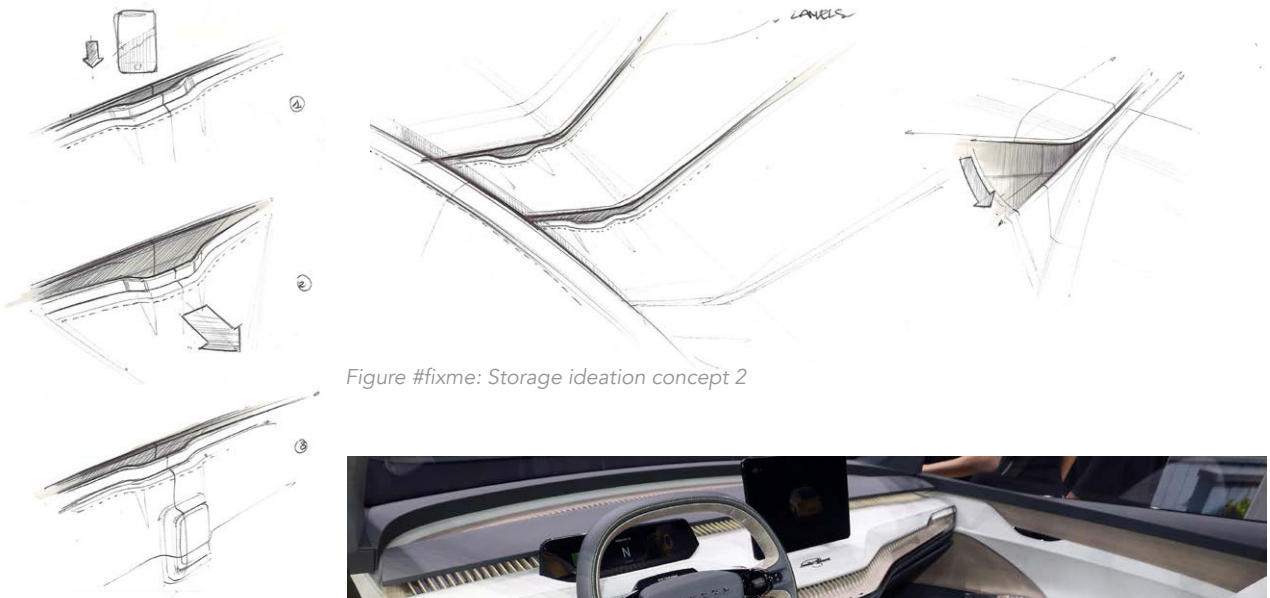


Figure #fixme: Storage ideation concept 2

Figure #fixme: Škoda Vision iV interior

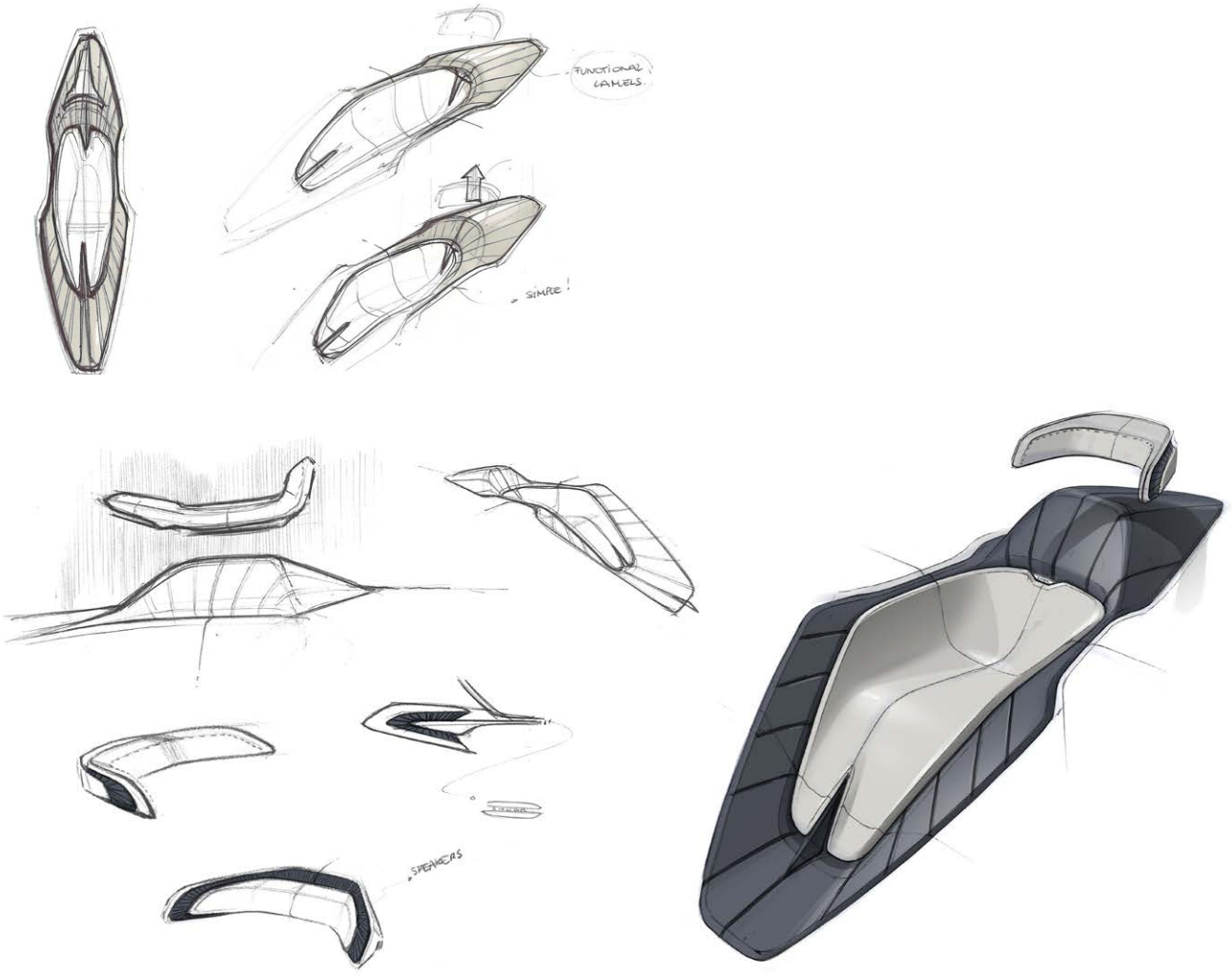


Figure #fixme: Seat sketches concept 2

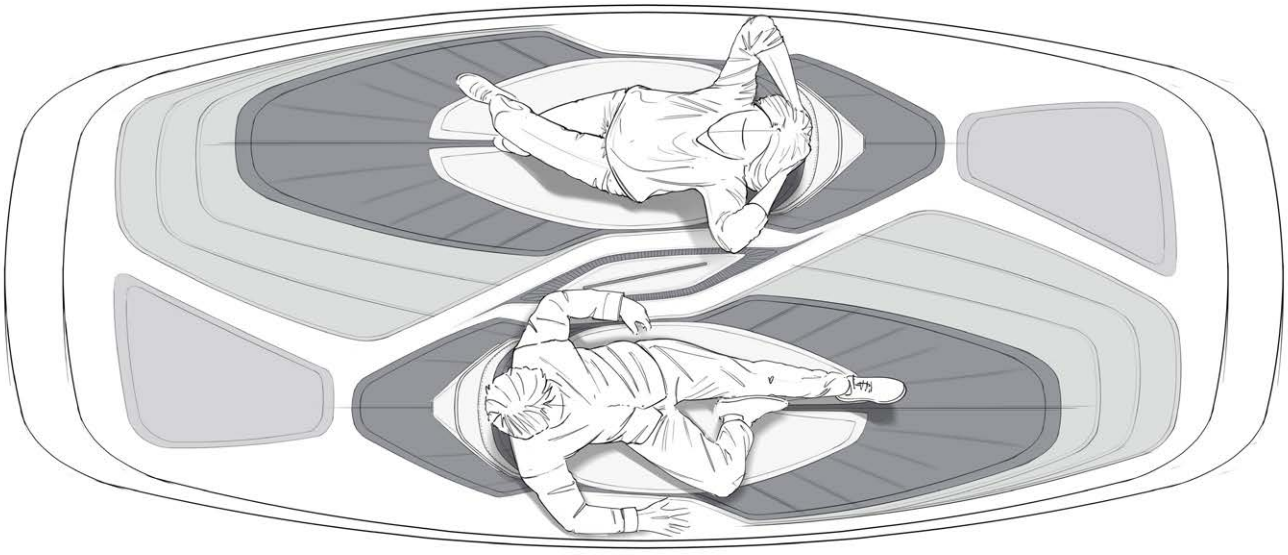


Figure #fixme: Top view concept 2

In figure #fixme an overview is shown how this interior could look with all the ideas implemented.

The main feedback on this proposal was the lost of space in the interior and the lack of real functionalities. Another comment was that the seats did not look comfortable and only suitable one posture.

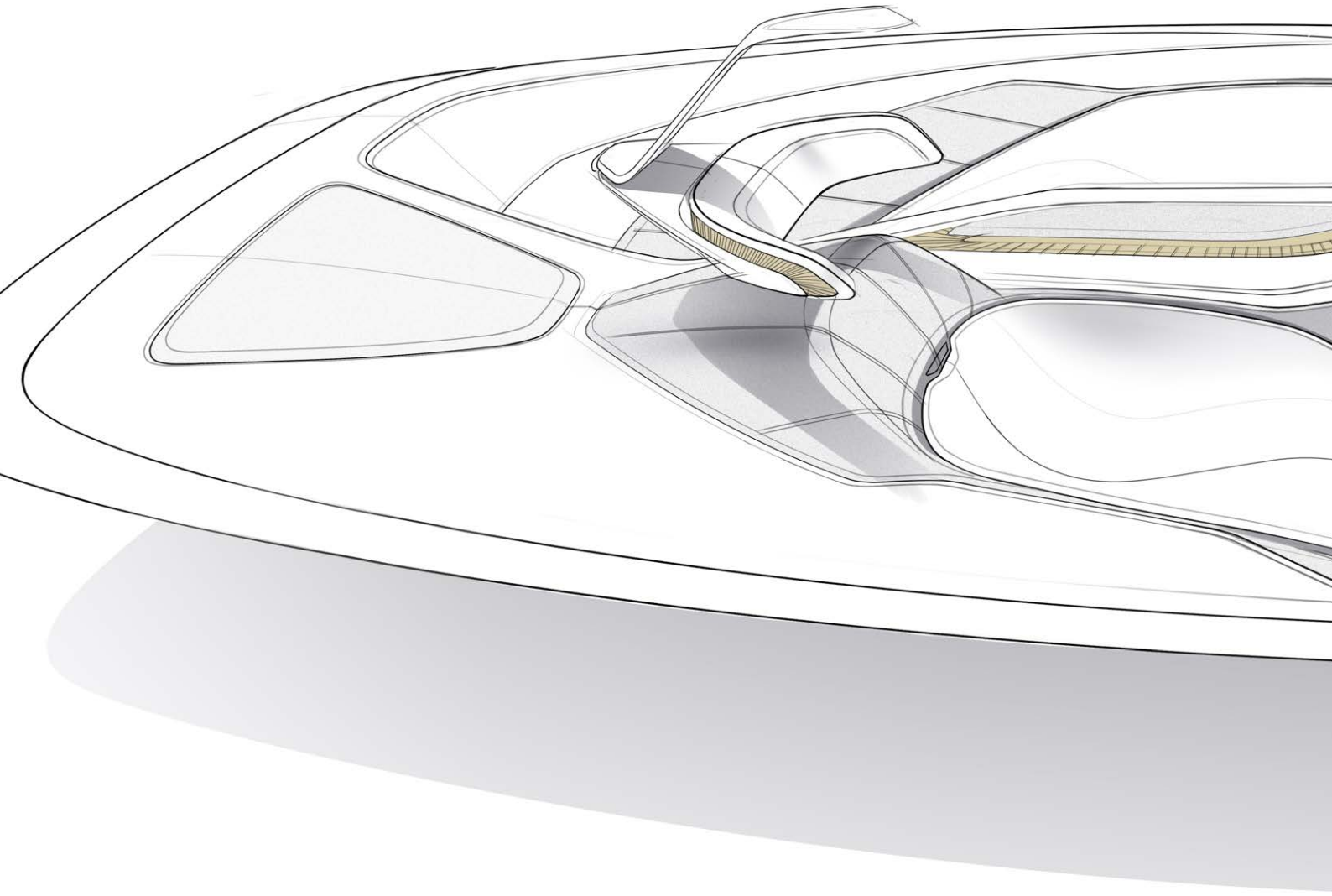
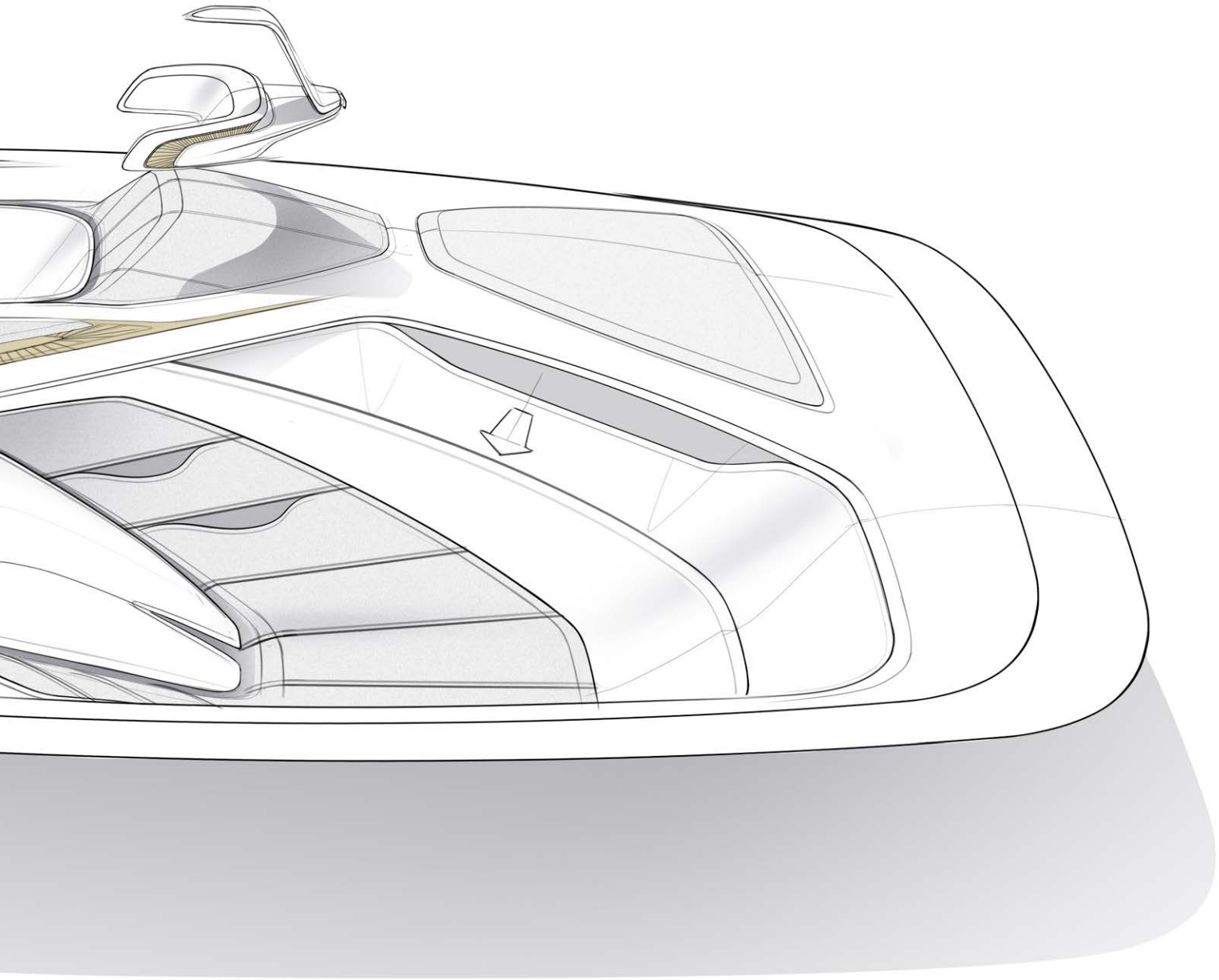


Figure #fixme: Perspective concept 2



Concept 3

During the development of the third concept it was decided to take a step back and think about the true functionalities in the vehicle. What would the comfort seekers want to do in the interior? A short scenario was sketched showing the use of the vehicle. It will be used travel from the busy city towards a beautiful nature environment as shown in figure #fixme. With the target group in mind, they would like to travel in comfort and feel free to do what they want together or alone during the trip.

As shown in figure #fixme three modes exist in the interior. The first mode is the social mode, the standard mode, were the passengers are located in a natural position to communicate or play a game together. When both passengers move forward they enter the second mode, the individual model. Here they can read a book, relax and do their own thing. In the third mode, the surrounding mode, the passengers are moving all the way back. This creates an open space and with the help of a reclined seating position it is optimal for enjoying the surrounding of the car.

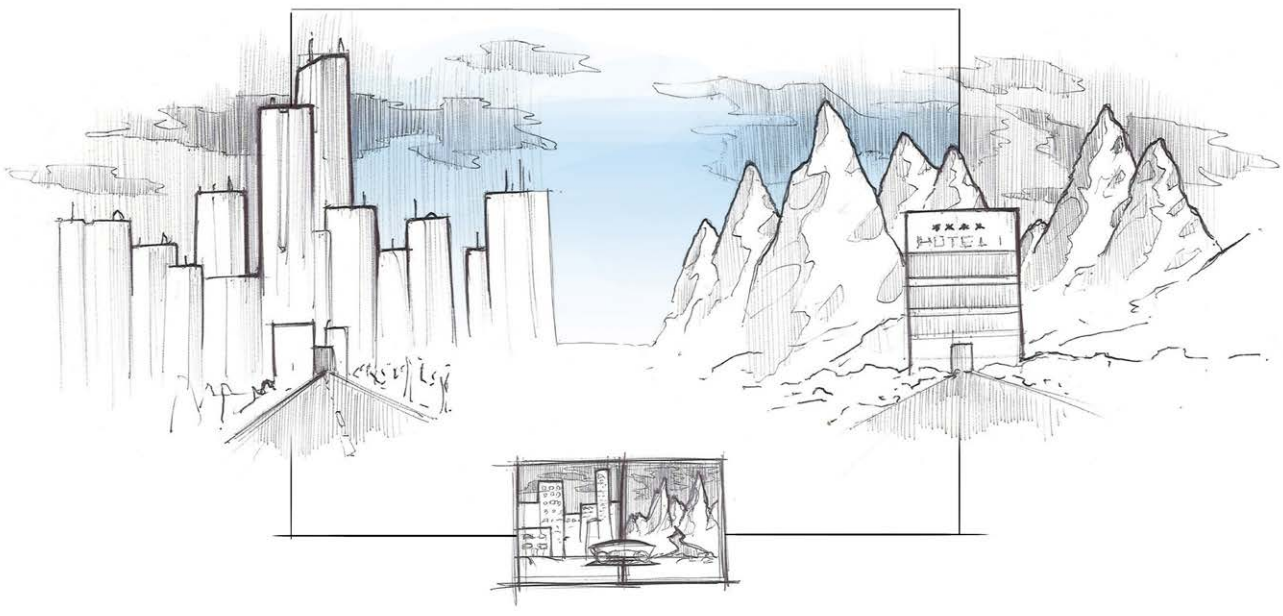
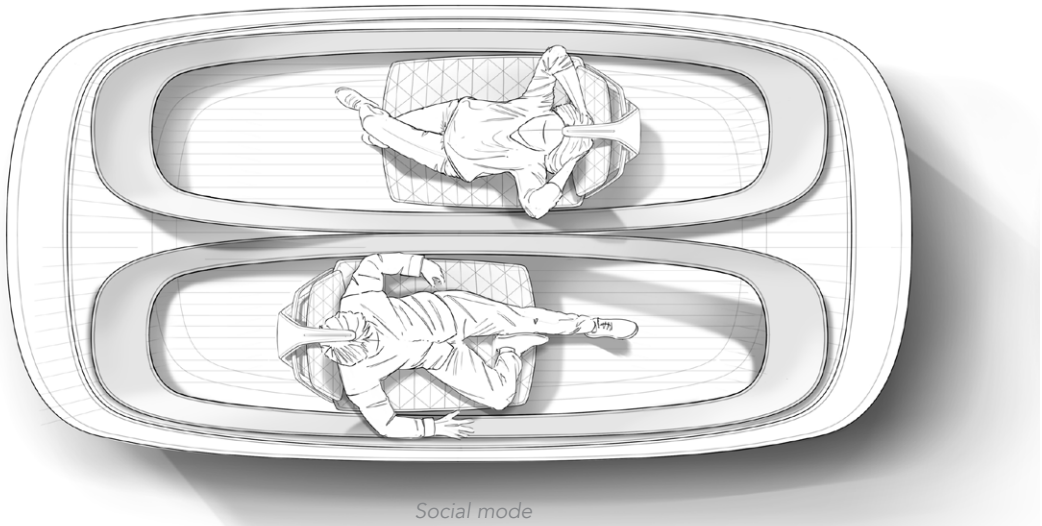
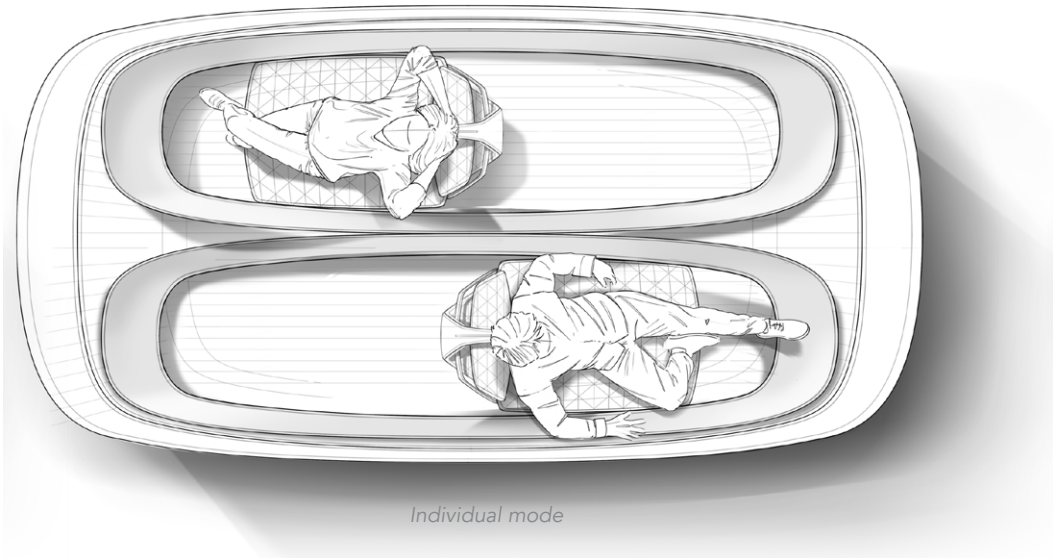


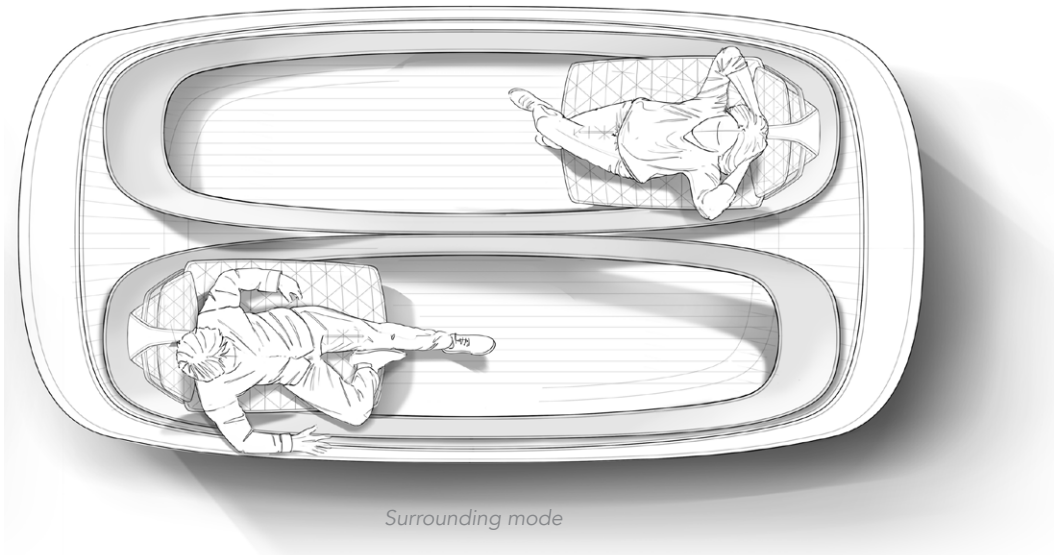
Figure #fixme: Scenario sketch



Social mode



Individual mode



Surrounding mode

Figure #fixme: Different modes concept 3

Different modes require different seating positions. As shown in figure #fixme the idea is to create a morphic seat that supports these different positions. The moment you sit on the seats, the structure used in the frame and cushion are deforming and taking the shape of you body.

Both passenger have their own preferences and needs. Therefor they are divided by two loops providing them with different functionalities in the three modes as shown in figure #fixme.

The feedback on this proposal was that it was turning towards a more conventional setup with regular seats, a mid console and a dashboard.

Figure #fixme: Seat sketches concept 3

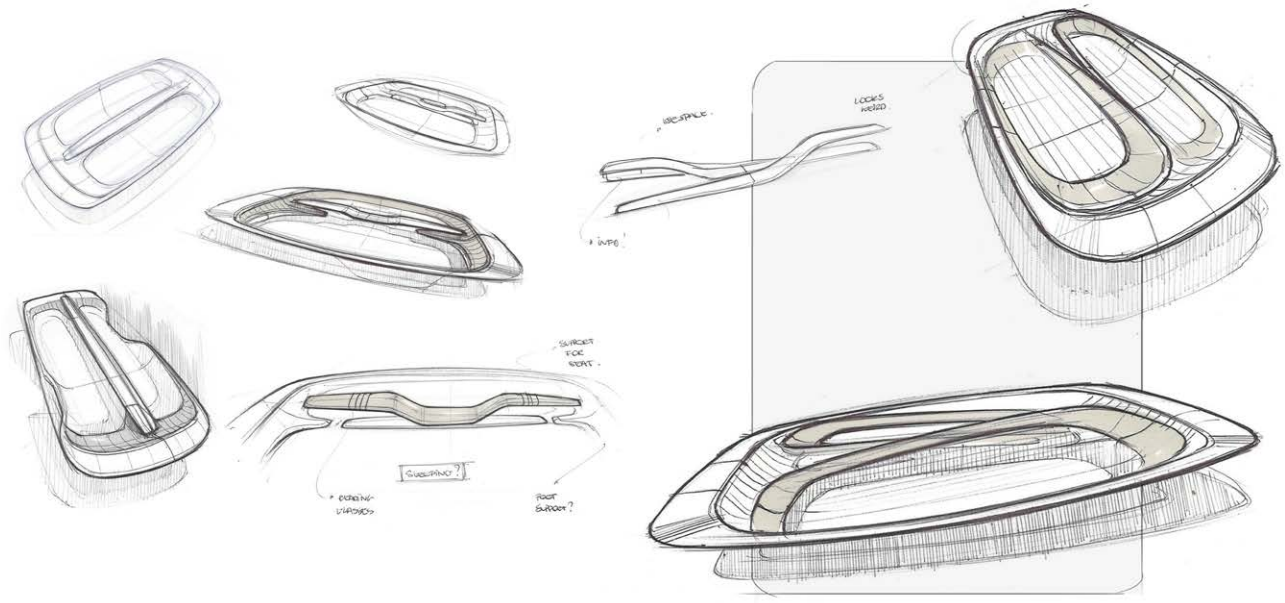


Figure #fixme: Interior sketches concept 3

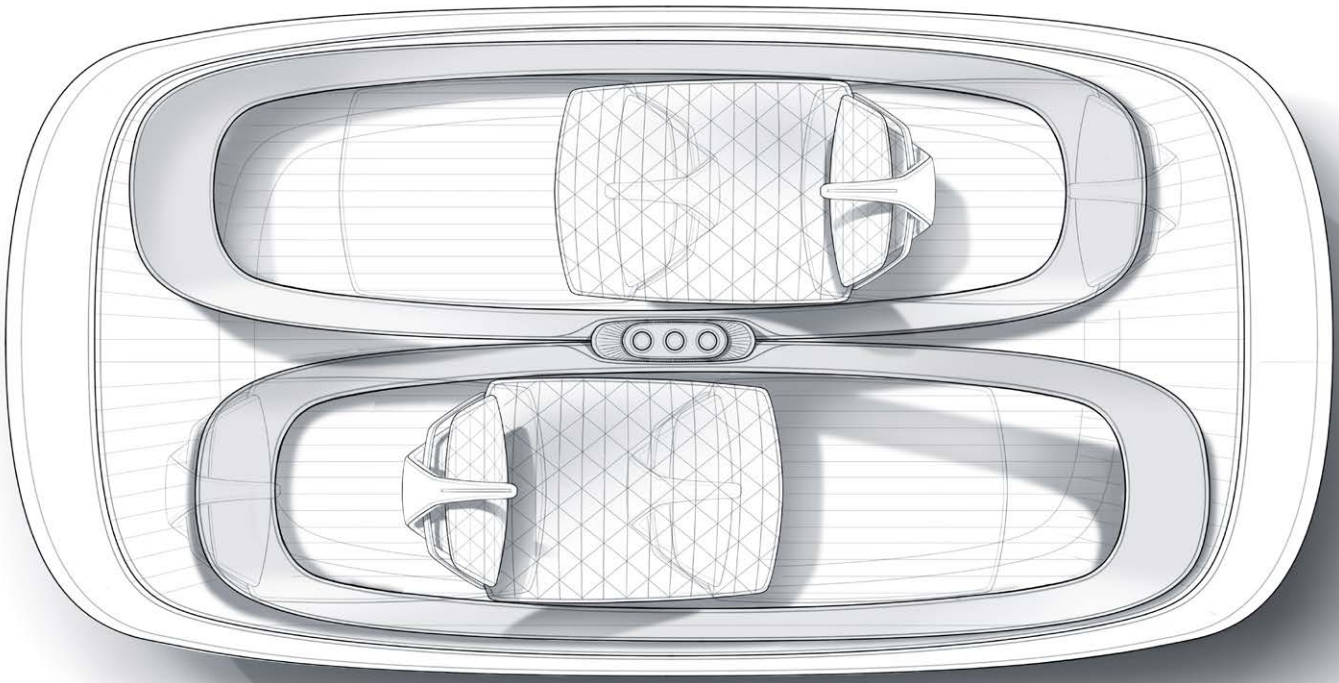


Figure #fixme:Top view concept 3

Concept 4

This concept builds on the functionalities of concept three but needs more work to make it an attractive proposal which expresses the vision. For this reason more sketches were created (figure #fixme) focusing on connecting the two passengers in an interesting way while still keeping the different modes active. Based on these sketches, the final concept was created.

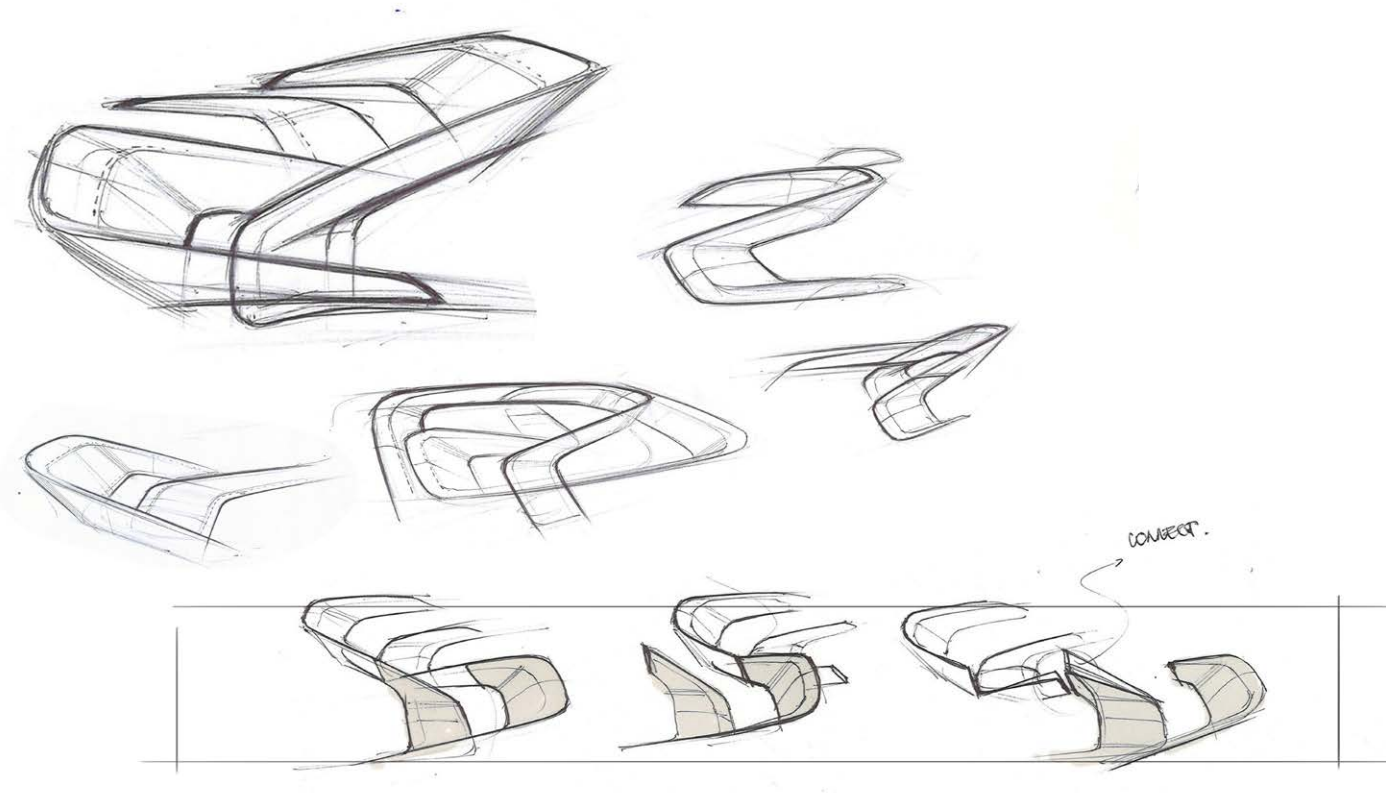


Figure #fixme:Theme develoment concept 4

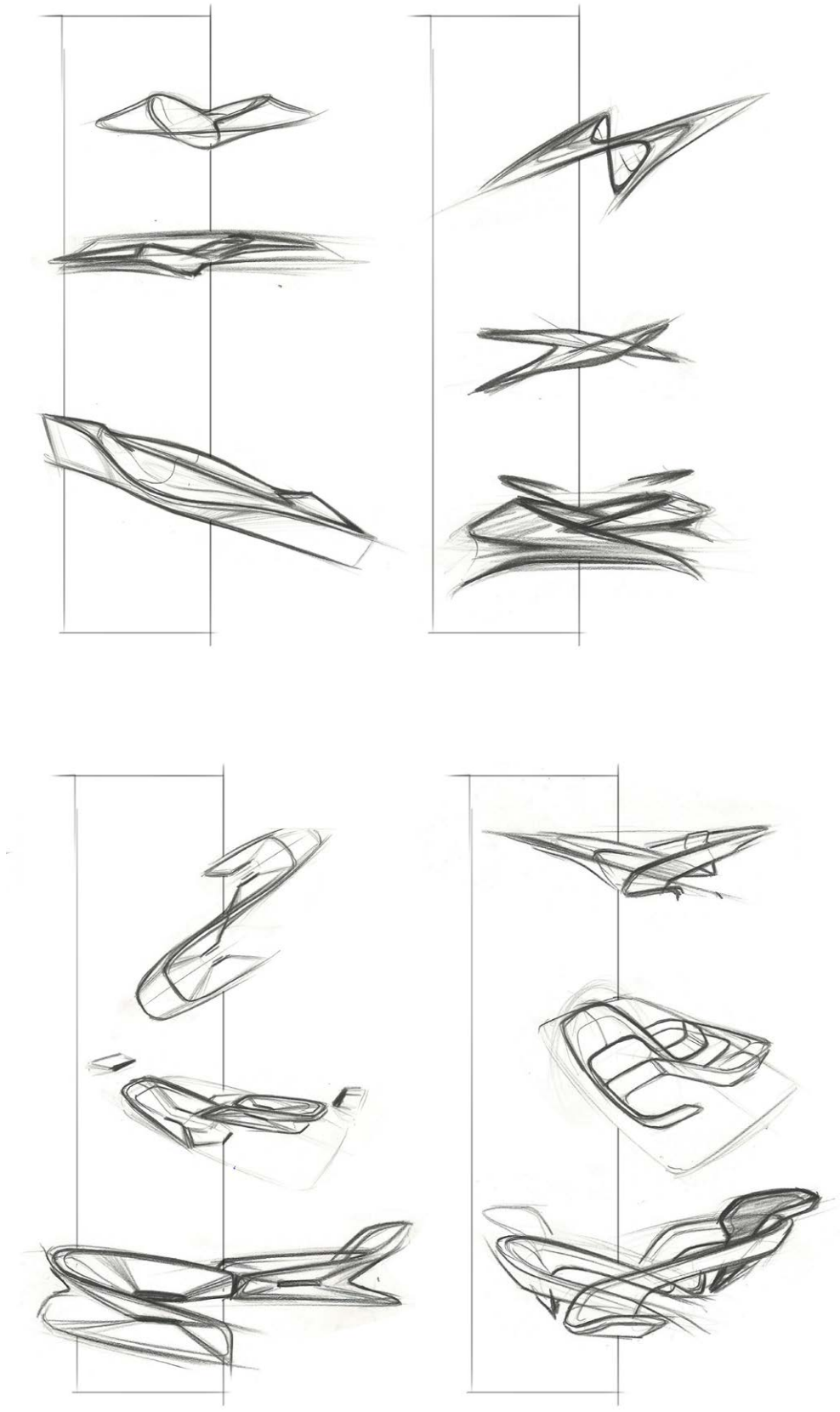
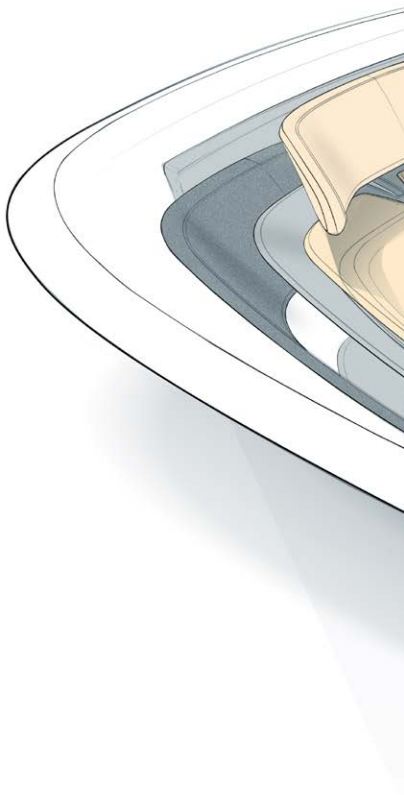


Figure #fixme: Initial theme sketches concept 4

4.4 Final Concept

Based on all the iterations explained in the previous section, the final concept was created. In this section the concept will be shown with all the functionalities in the different modes. This will used as a good start for the next stage, the embodiment phase where the final concept will be further detailed.

As the sketches in the previous section suggested, the theme of the seats is the movement from the backrest to the seating area of the other seat. This creates a linkage between the two passengers. Even in the different modes they are connected. This idea is developed further which can be seen in figure #fixme.



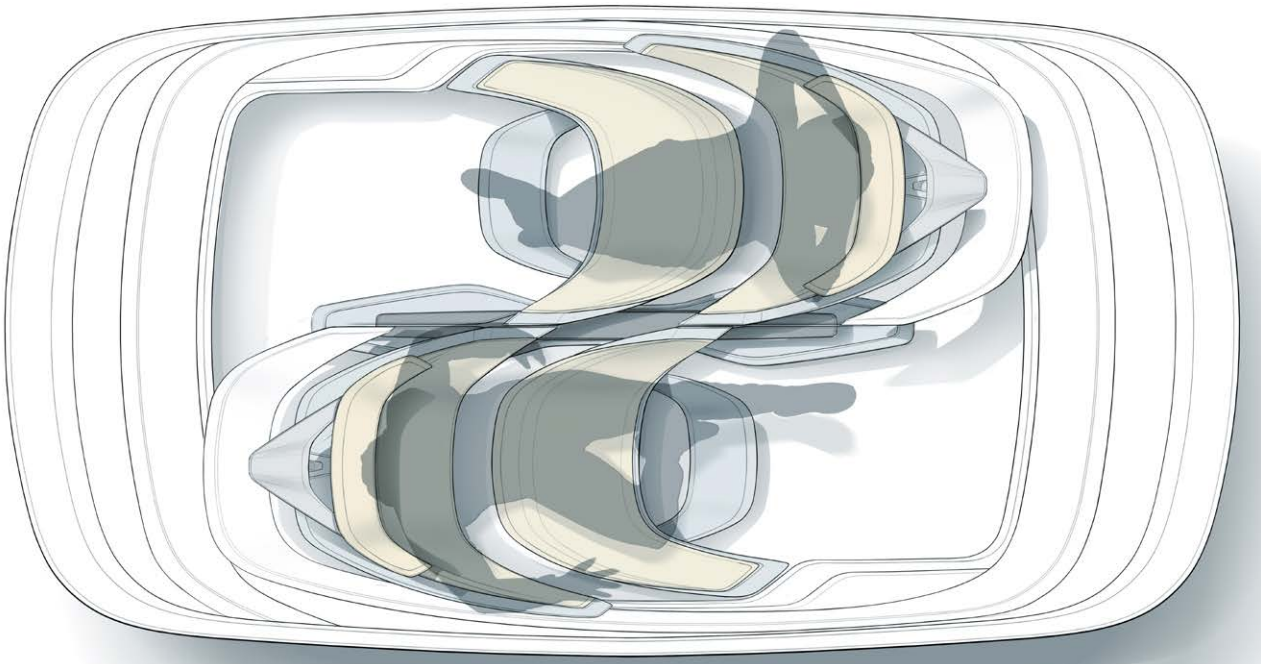


Figure #fixme: Topview final concept

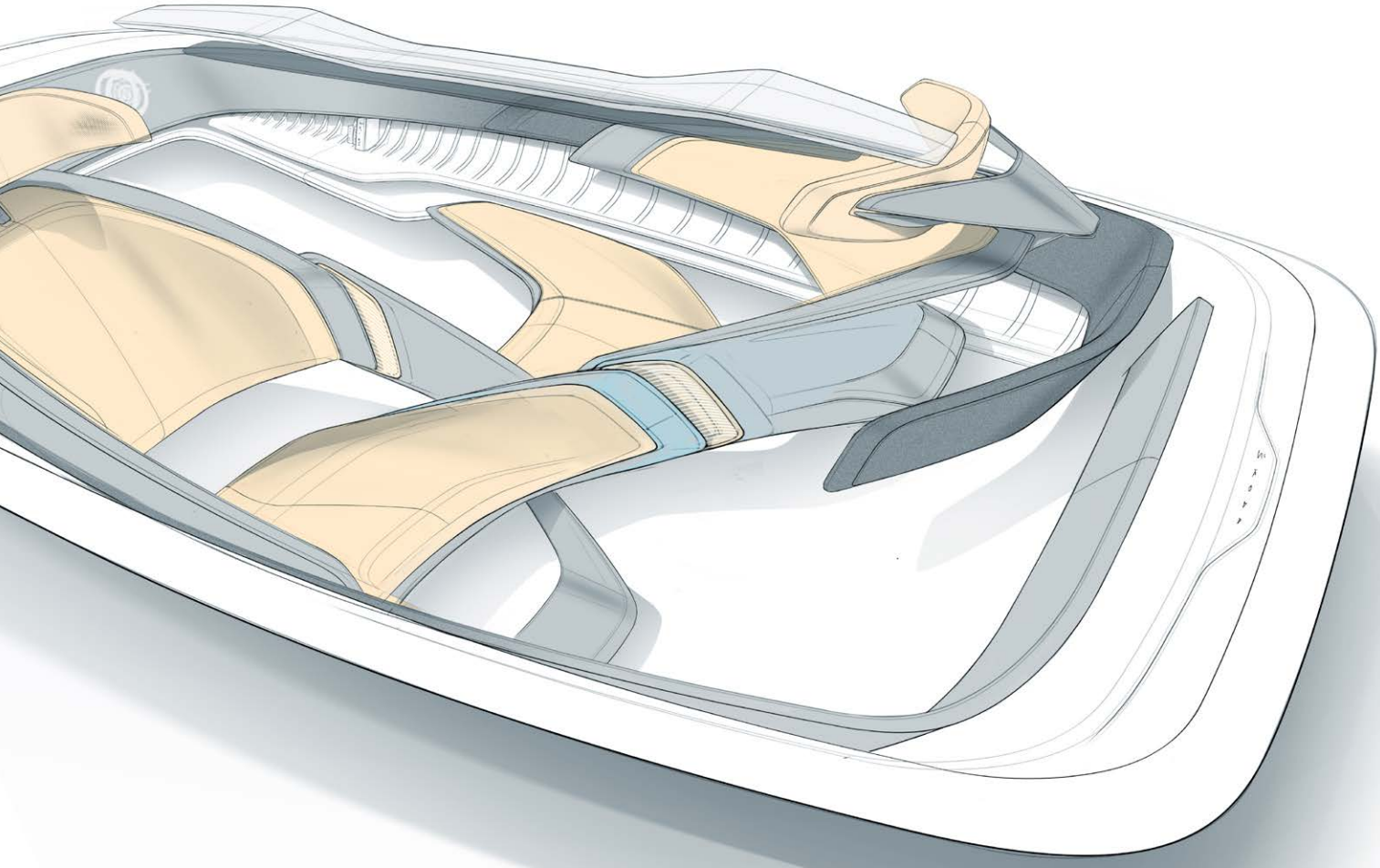


Figure #fixme: Perspective final concept

A key aspect to pay close attention to is the integration of the seats with each other and with the rest of the interior. When seats are moving in an interior it is hard to make them truly a part of the interior. In the final concept the movement of the seat opens up new functions for the user, creating different areas as shown in figure #fixme.

Social Mode

In the social mode the roof center piece uses a projection to display information or games for both passengers. Besides this function, this element introduces the atmosphere of the interior together with the integrated lights in the side lamels.

Individual Mode

As the passengers move forward, the lamels become book holders integrated in the side of the interior. For a more individual experience, the headrest has integrated speakers adjusted by the controls in the seats.

Surrounding Mode

Moving towards the back and recline backwards, the roof turns into an interactive transparent screen providing more information about the surroundings.

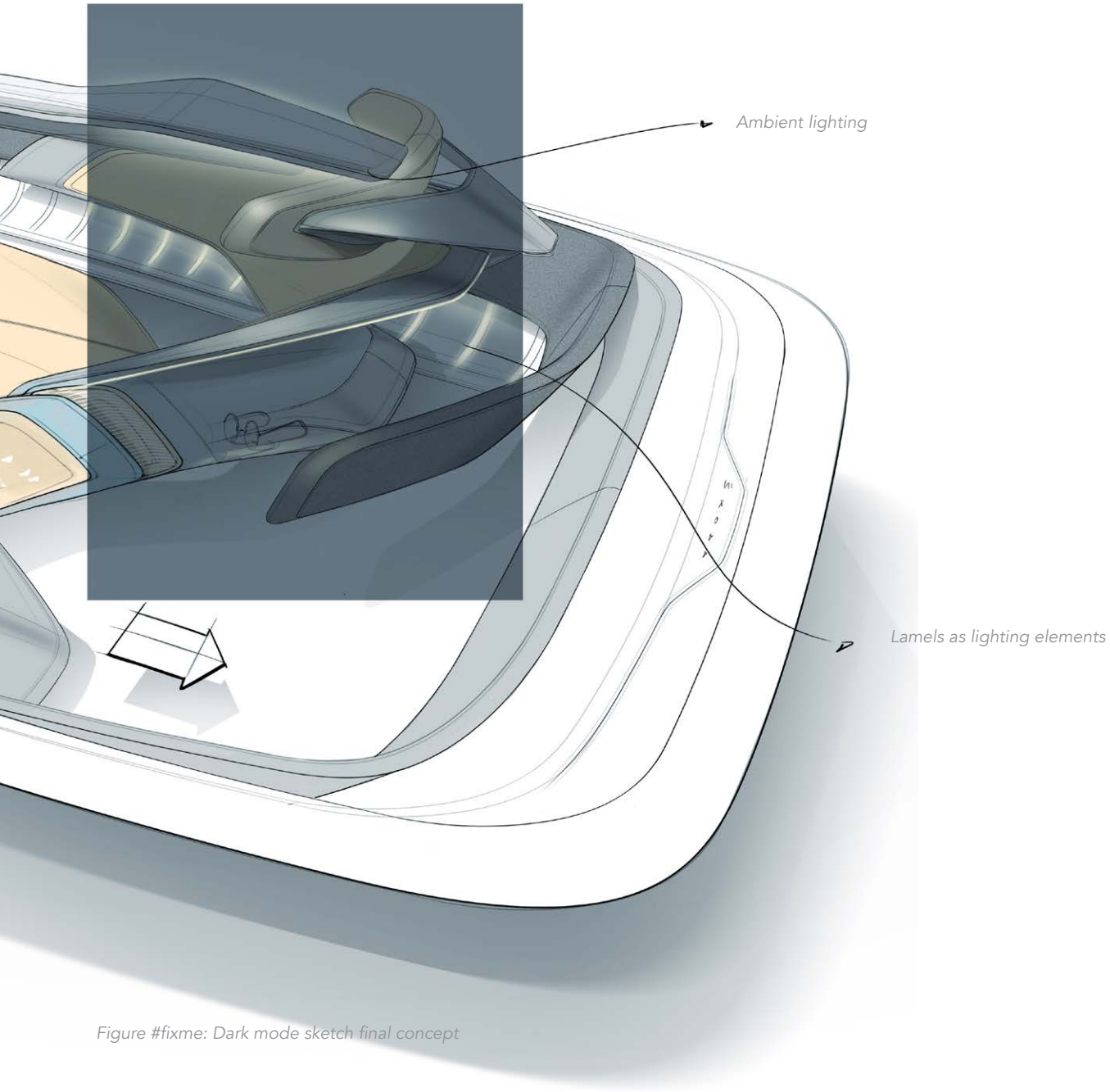


Figure #fixme: Dark mode sketch final concept

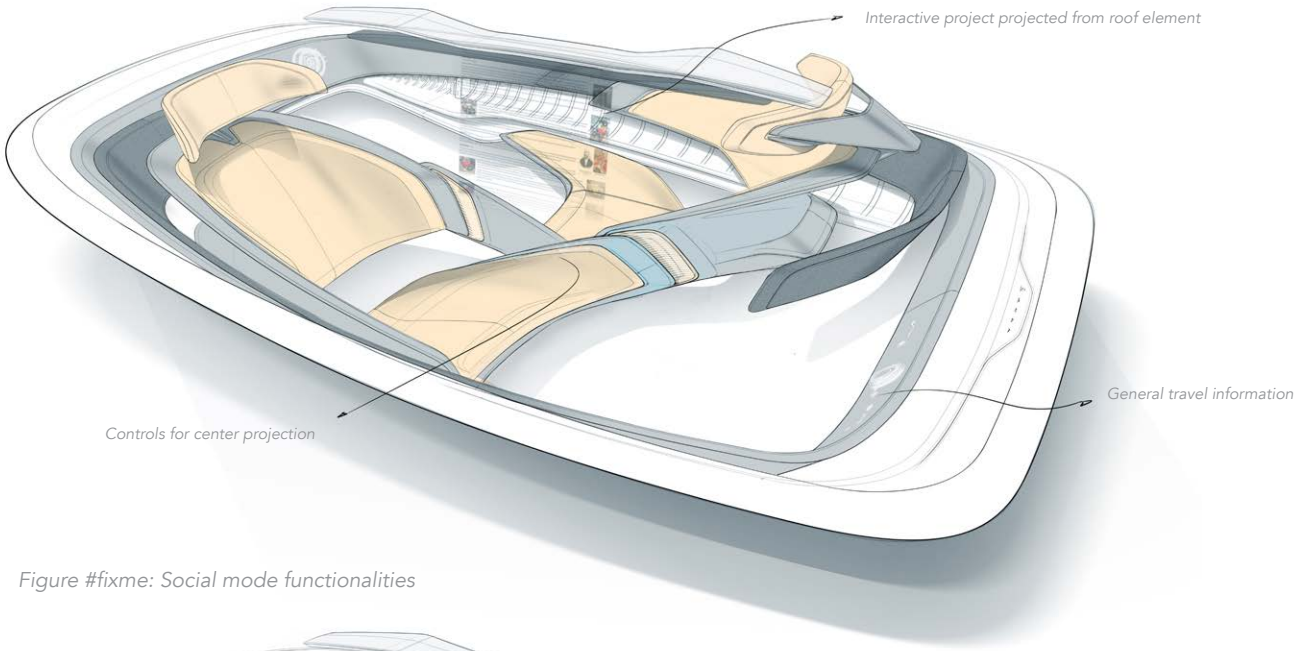


Figure #fixme: Social mode functionalities

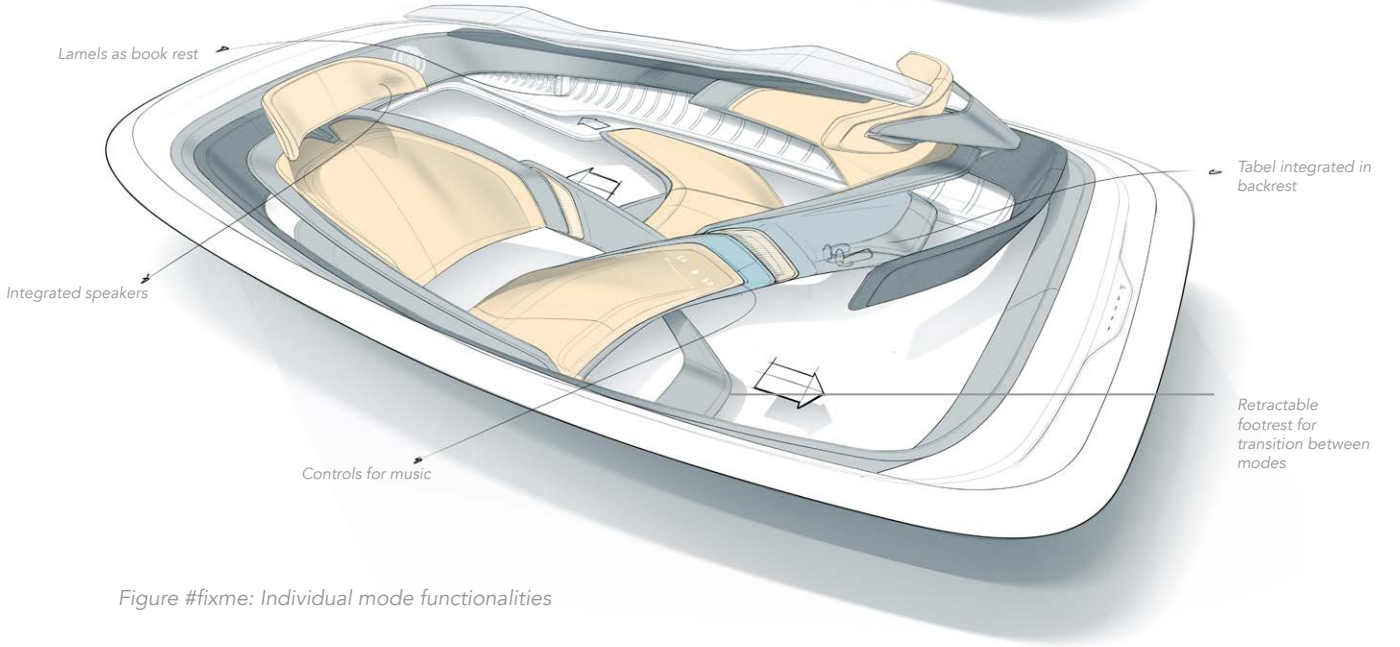


Figure #fixme: Individual mode functionalities

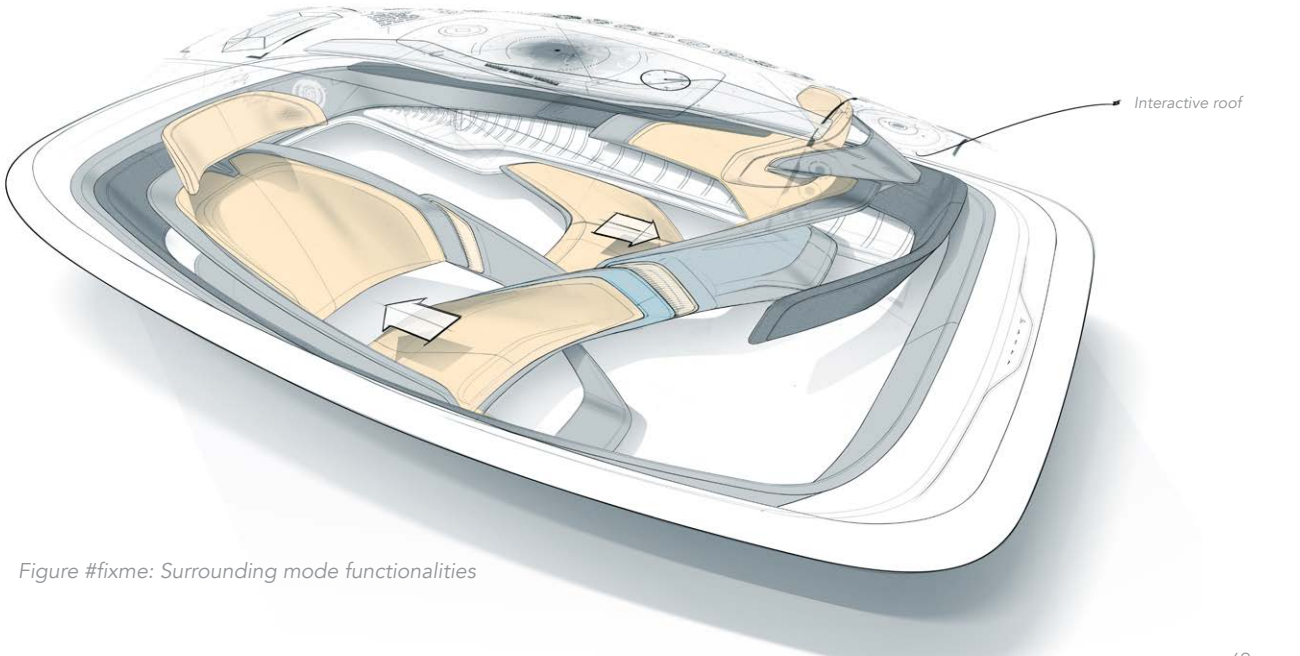


Figure #fixme: Surrounding mode functionalities

Chapter 5: Embodiment

In this chapter the final concept will be further detailed and made physical. This will be done with the help of a digital model. Based on the prototype an evaluation will be performed where the final design will be evaluated based on the initial vision.

5.1 Detailing

5.2 Prototype

5.3 Evaluation

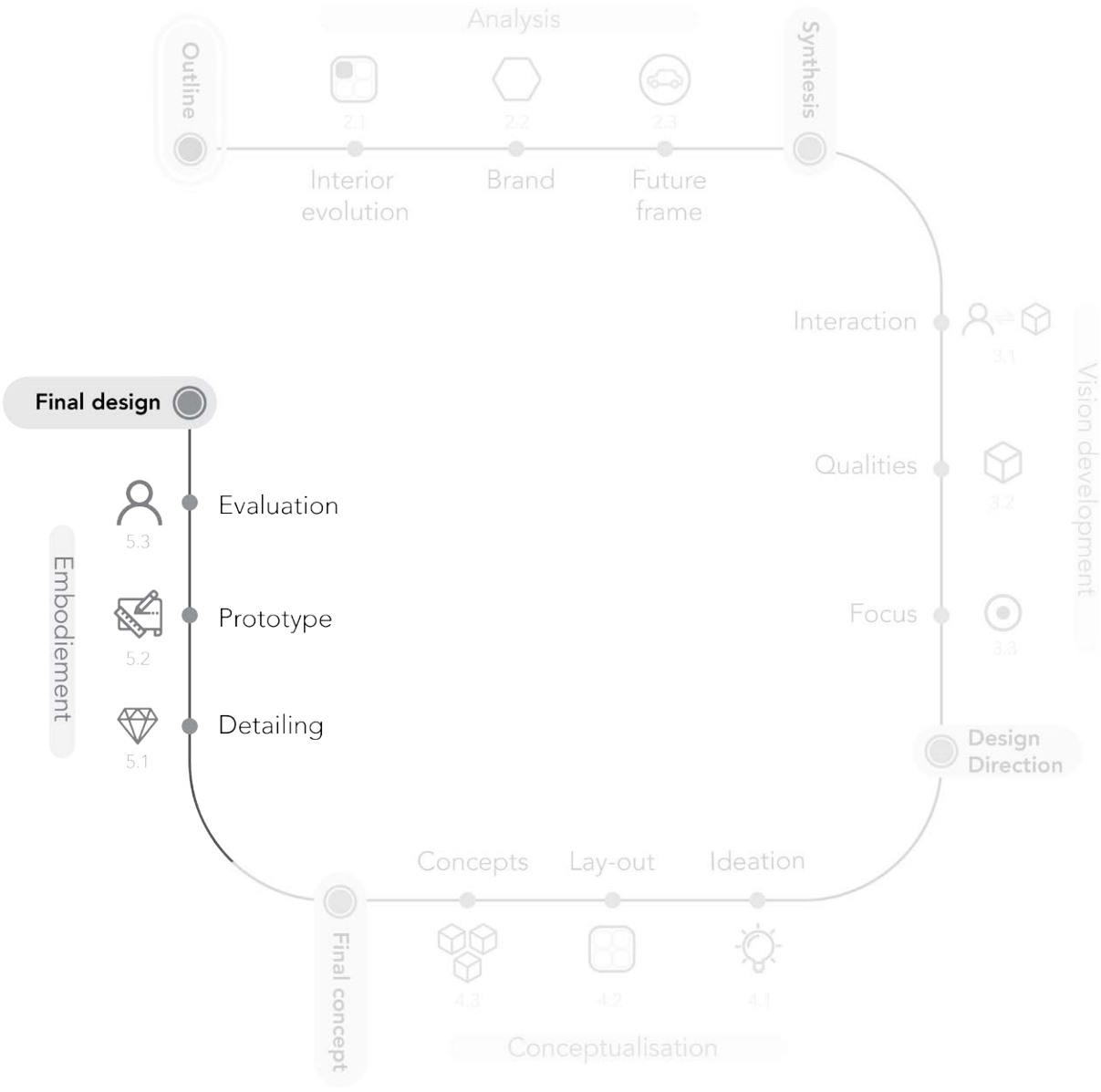


Figure #fixme: Embodiment phase process visualization

5.1 Detailing

In this section the final concept will be more detailed in terms of function and form. The process and the result will be explained.

In this phase the use of a digital model is crucial. Many drawings are made based on this model to improve certain aspects. If the drawings are received positive, the sketch is build in 3D in the digital environment. This process is repeated, adding details step by step. An example of these drawing can be seen in figure #fixme.

In figure #fixme, the initial 3D model can be seen based on the final concept of the previous chapter. During the process of modeling, ideas came alive as can be seen in figure #fixme. The initial seat was perceived quite technical and too functional. It looks like your hands could get stuck in some parts. A more closed seat was explored. The connection with the side of the interior was also explored further.

Figure #fixme: Embodiment phase process visualization

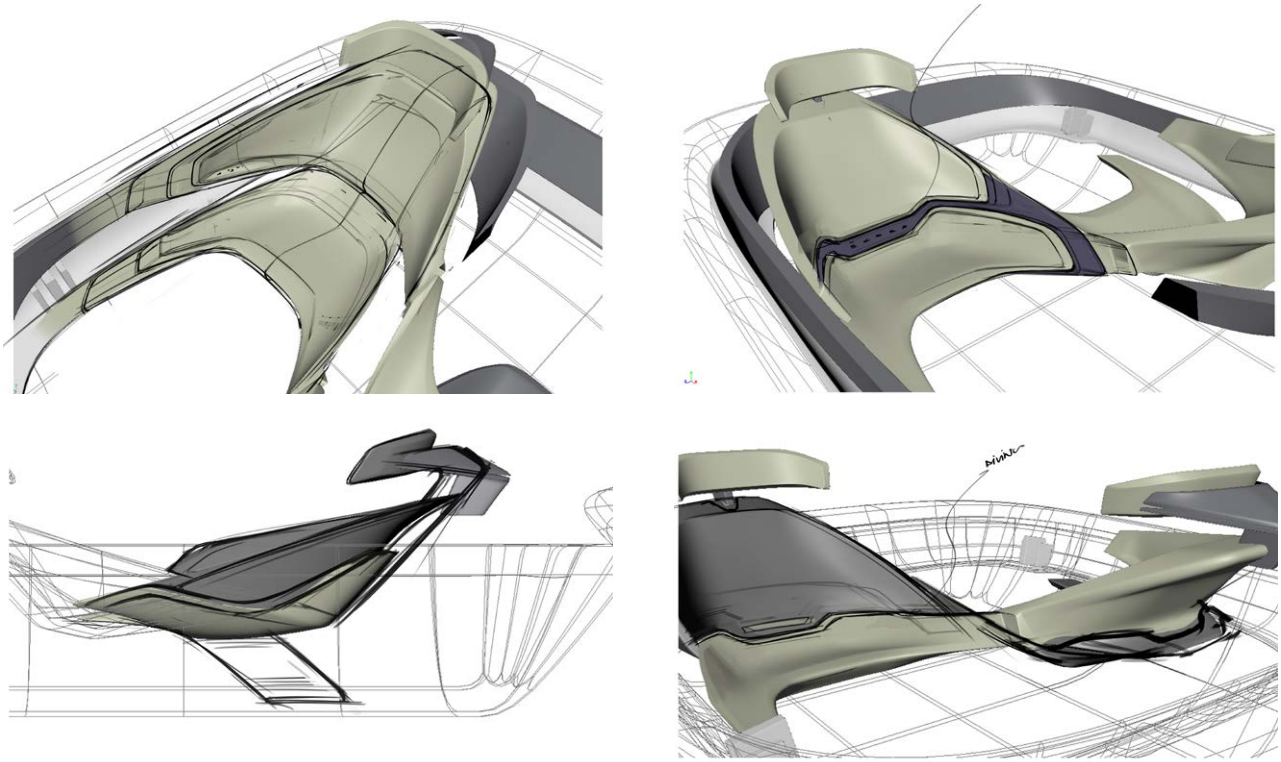


Figure #fixme: Initial digital 3D model variation 1 based on sketch

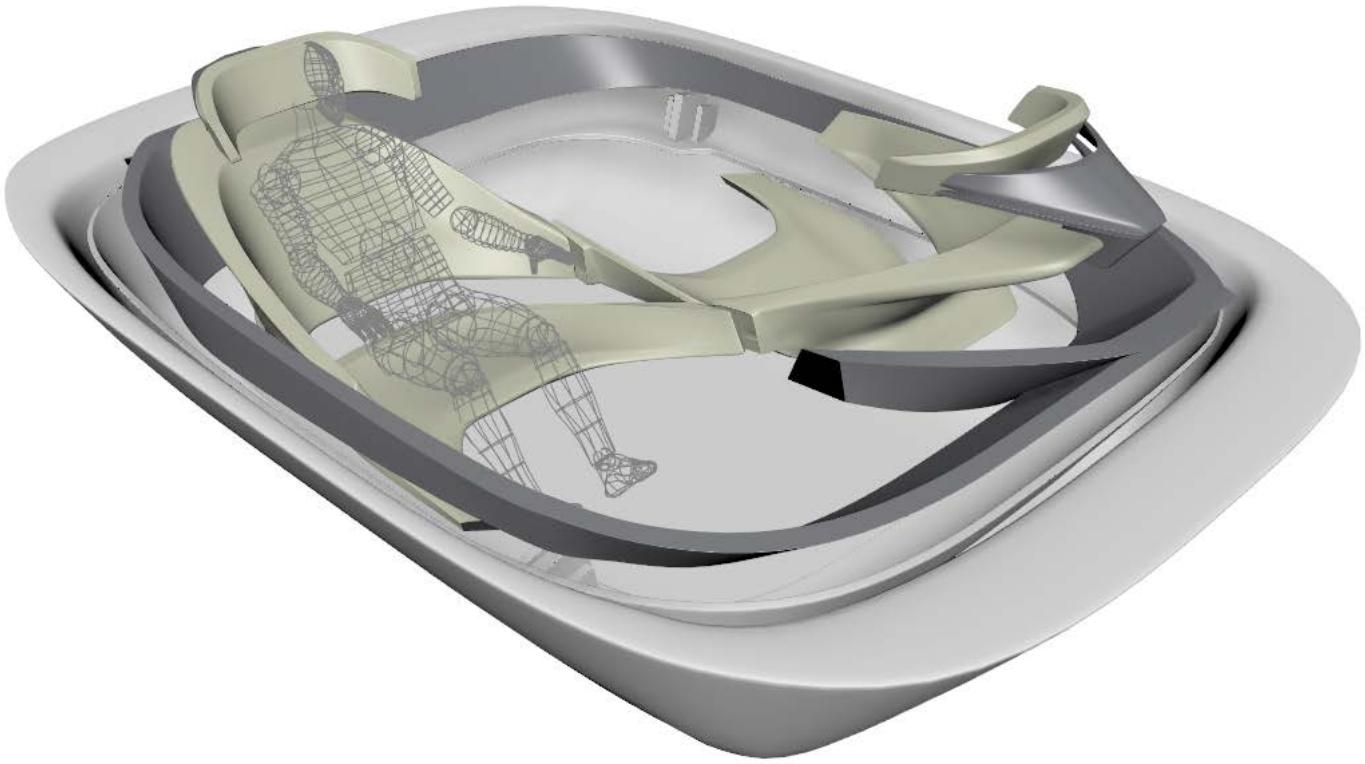


Figure #fixme: Initial digital 3D model variation 1 based on sketch

The adjustments based on the previous model lead to the second variation. In figure #fixme it is clear that the proportions of the whole interior were revised. The seats and therefor also the interior were reduced in width. Another adjustment is the head rest which was out of proportion when compared to the human figure.

In figure #fixme some more thoughts went into the frame of the seat. Having it connected with a fin-like shape opens up opportunities to create an interesting connection.

Moving between the different modes the user might want different seating positions. A wide seat is one aspect of the solution, but a movable footrest could add even more freedom. It also makes the surrounding mode more rich because a part of the interior moves with the user all the way back.

The main feedback on this variation was regarding the seats and the tub-like exterior. The seat contains some unsolved corners and ends. The seat pointy seat ends do not work and are contradicting to the intended comfortable expression.

The tub, shown in wire frame in figure #fixme, is a very large piece and needs more attention. It is a little contracting because it is not really a part of the interior. On the other hand it provides the feeling that this is in fact the interior of a vehicle and not a living room.

The two seats are less physically connected than the previous variation. The idea rose to make them still visually connect. Still, the angles suggest they are flowing into each other, but the colors can add to this feeling. In figure #fixme, the top view shows the effect of continuing the color of the seating surface towards the backrest of the other seat.

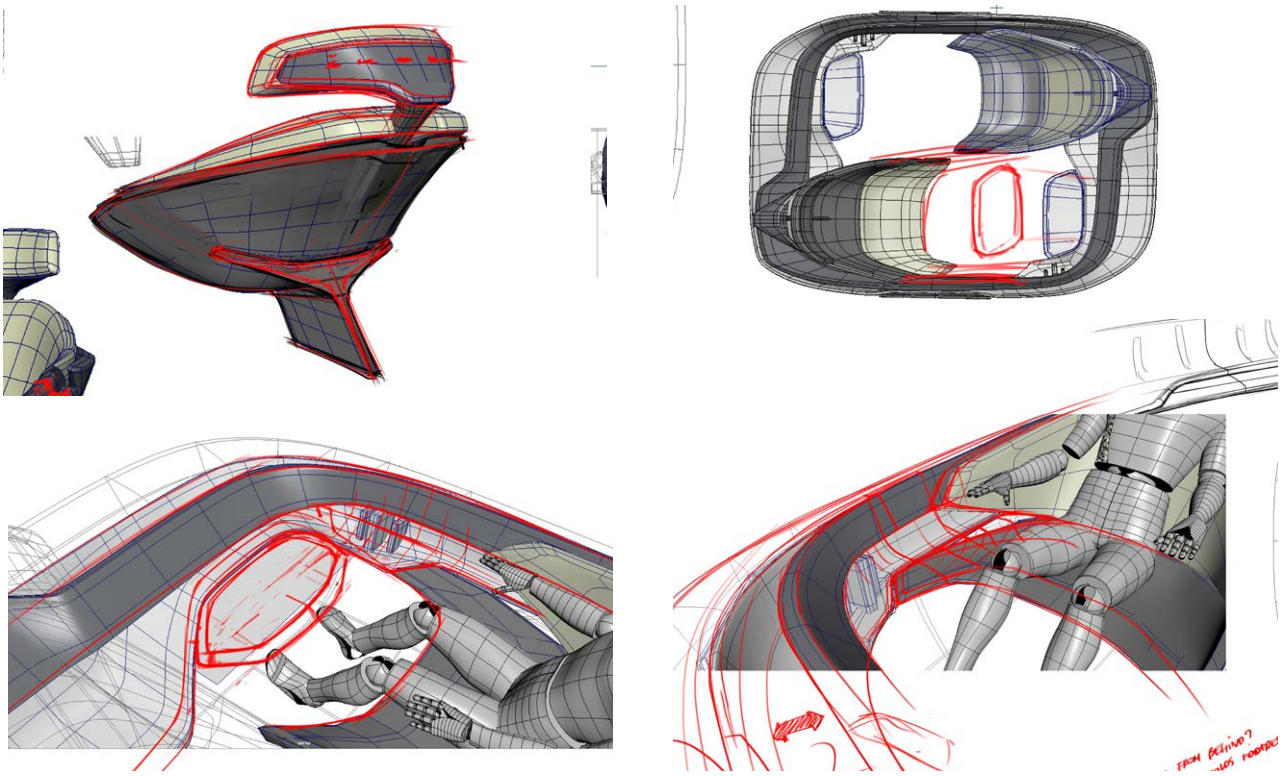


Figure #fixme: Development of digital 3D model variation 2

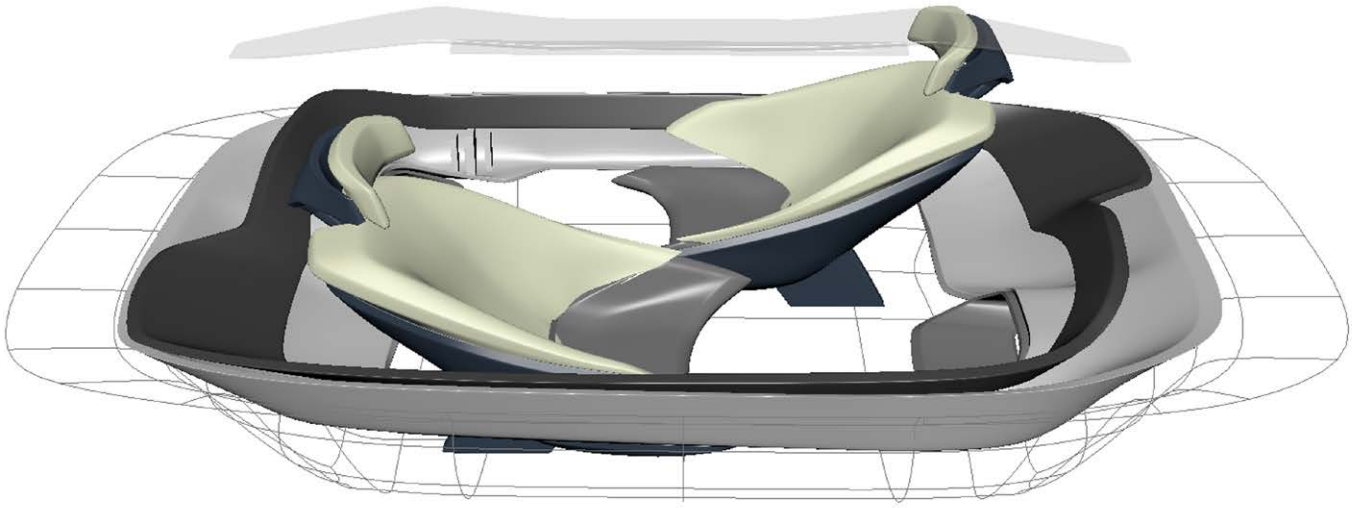


Figure #fixme: Digital 3D model variation 2

Figure #fixme: Digital 3D model variation 2

The roof element that has an interactive and lighting function needs to be somehow connected with the interior. In figure #fixme, a frame is shown that holds the roof element but at the same time also accentuates it by letting it stick out. In figure #fixme it is shown how this frame idea is combined with a more stylized base of the interior.

Figure #fixme shows the last iteration steps of the seats. The corners are solved, as discussed before but the connection between the two seats became less obvious. Due to ergonomics, the shoulder and elbow area needed more space to provide more freedom to move. For this reason the the backrest opens up more on the top.

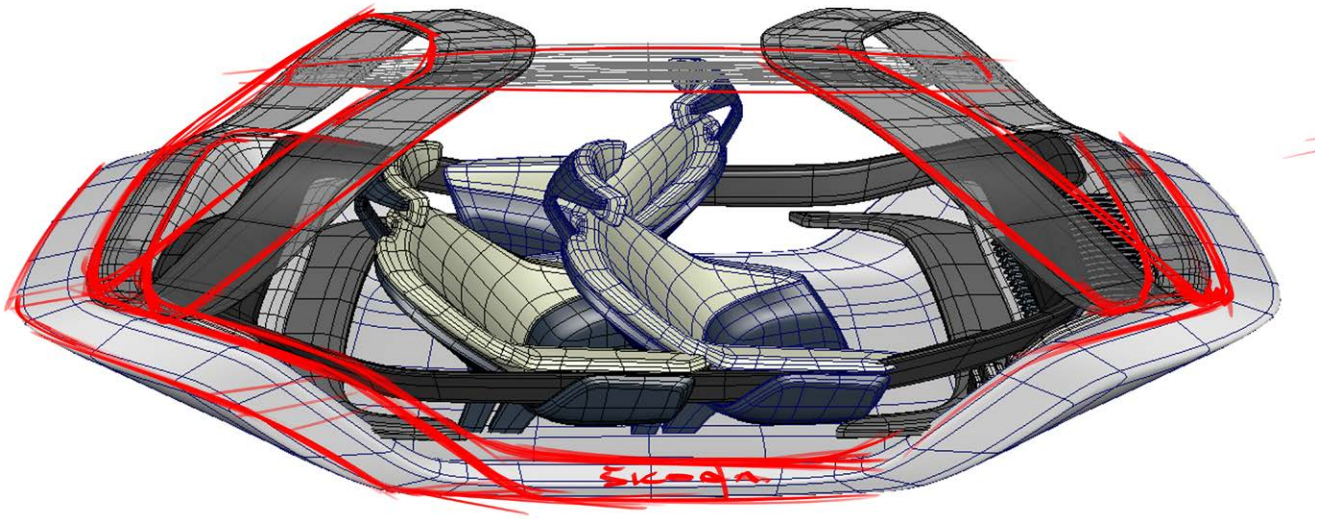


Figure #fixme: Development of digital 3D model variation 3

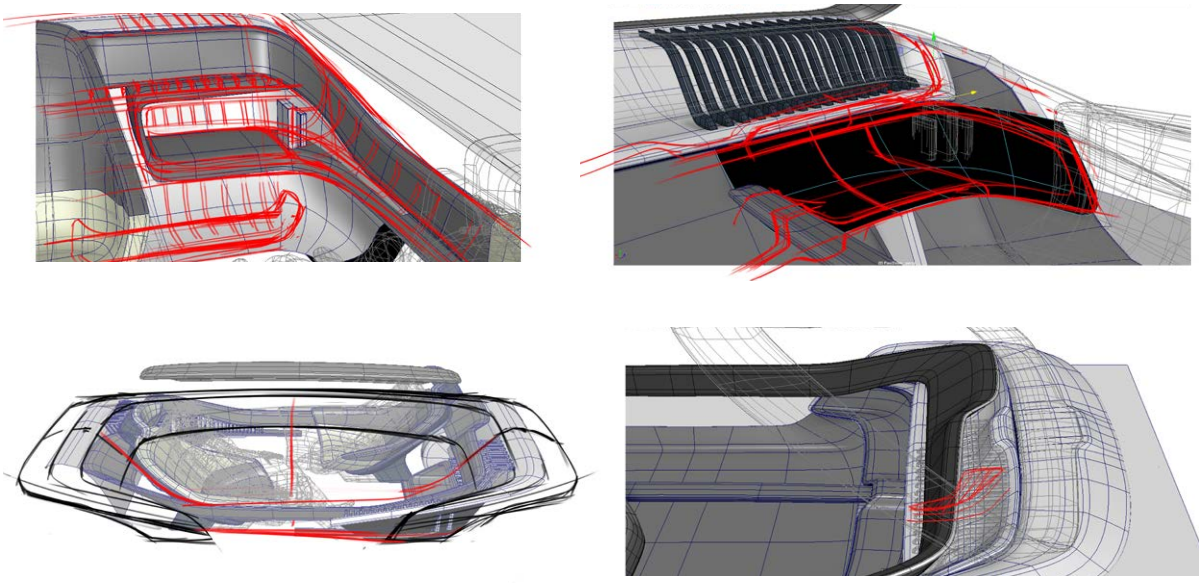


Figure #fixme: Development of digital 3D model variation 3

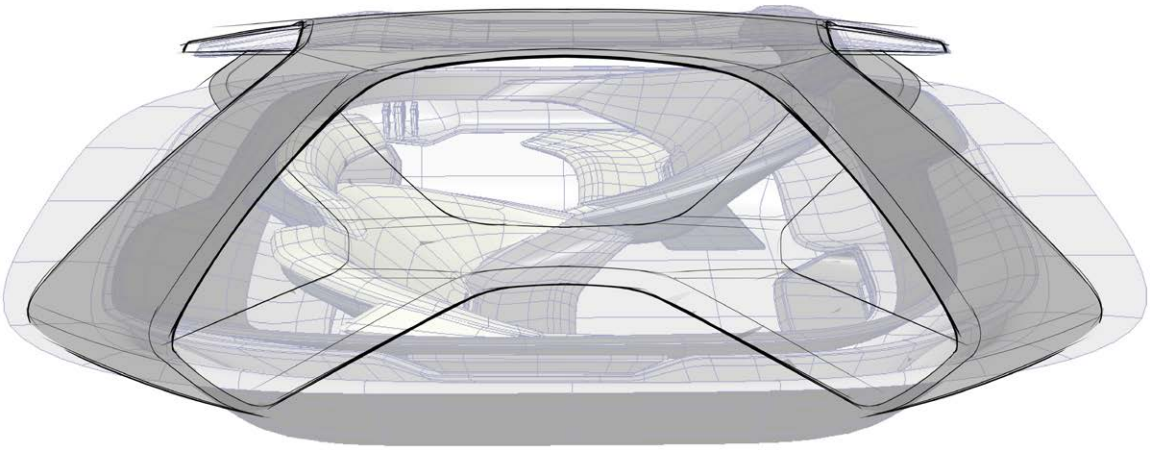


Figure #fixme: Digital 3D model variation 3

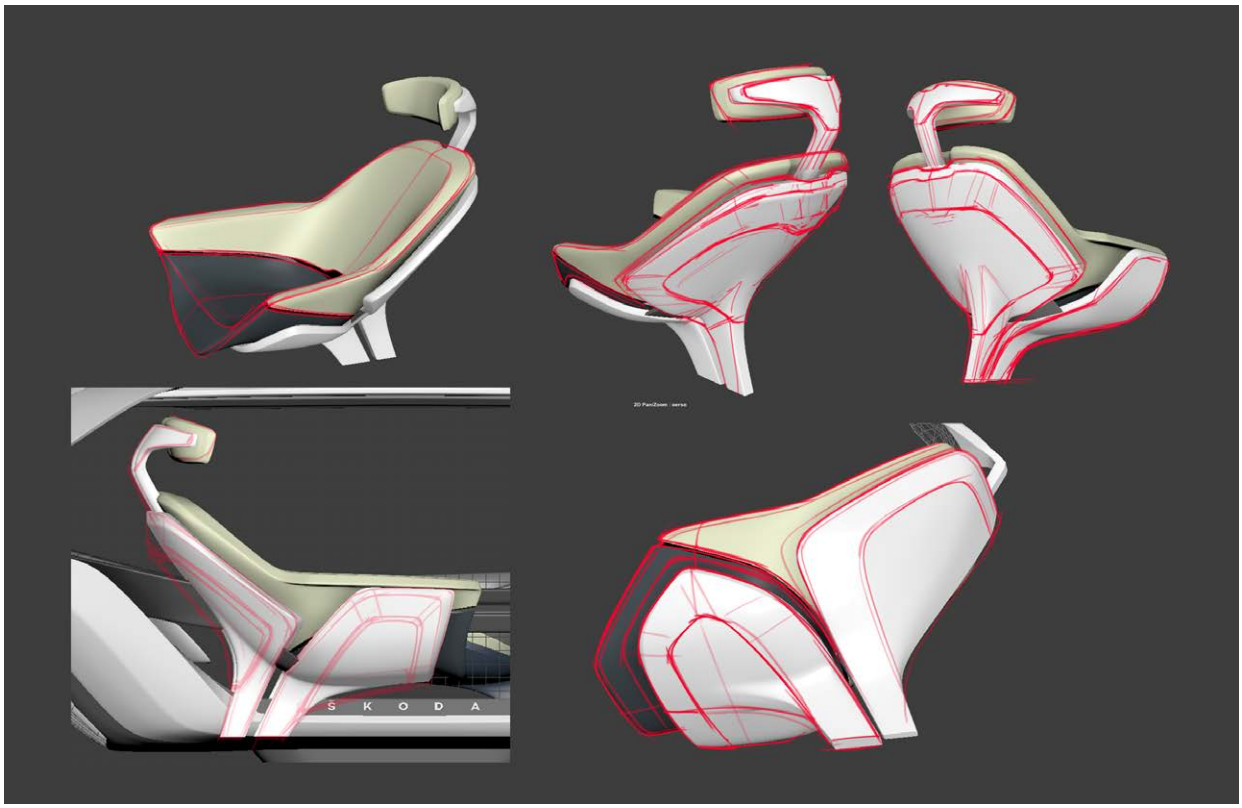


Figure #fixme: Digital 3D model variation 3

Color and Material

Besides the shape of the interior, color and material are other aspects that could make or break an interior. The target group of 50+ was the intial starting point of the inspiration images shown in figure #fixme. A comfortable and calm feeling but still modern. In figure #fixme three proposals are shown. They are all based on the inspiration images. The first one is focusing on creating a warmer tone inside the car. The second one is more neutral with only an orange accent color. The third uses a combination of warm and cool colors with a white seat frame.

Feedback of the Color&Trim department at Skoda was mainly regarding the warm colors. They are working well on production interiors, but for concepts they often push for more neutral towards cool colors.

For this reason, a combination between the second and third proposal was chosen.

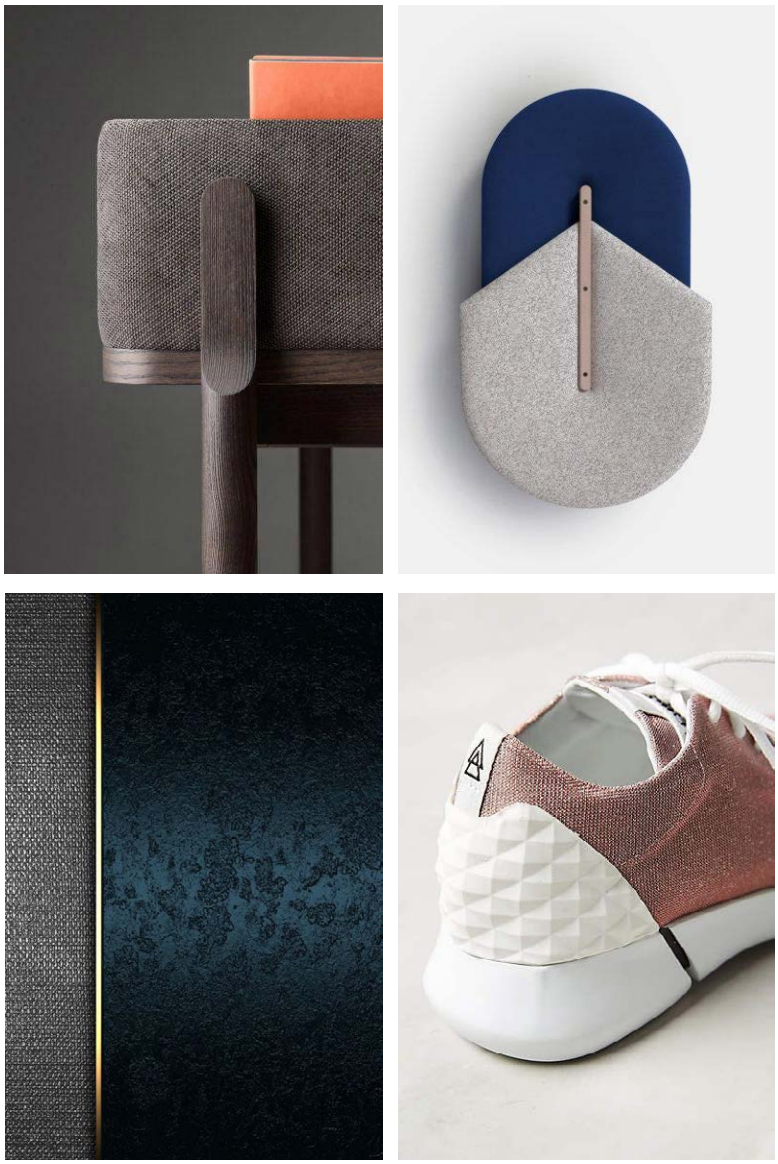


Figure #fixme: Digital 3D model variation 3

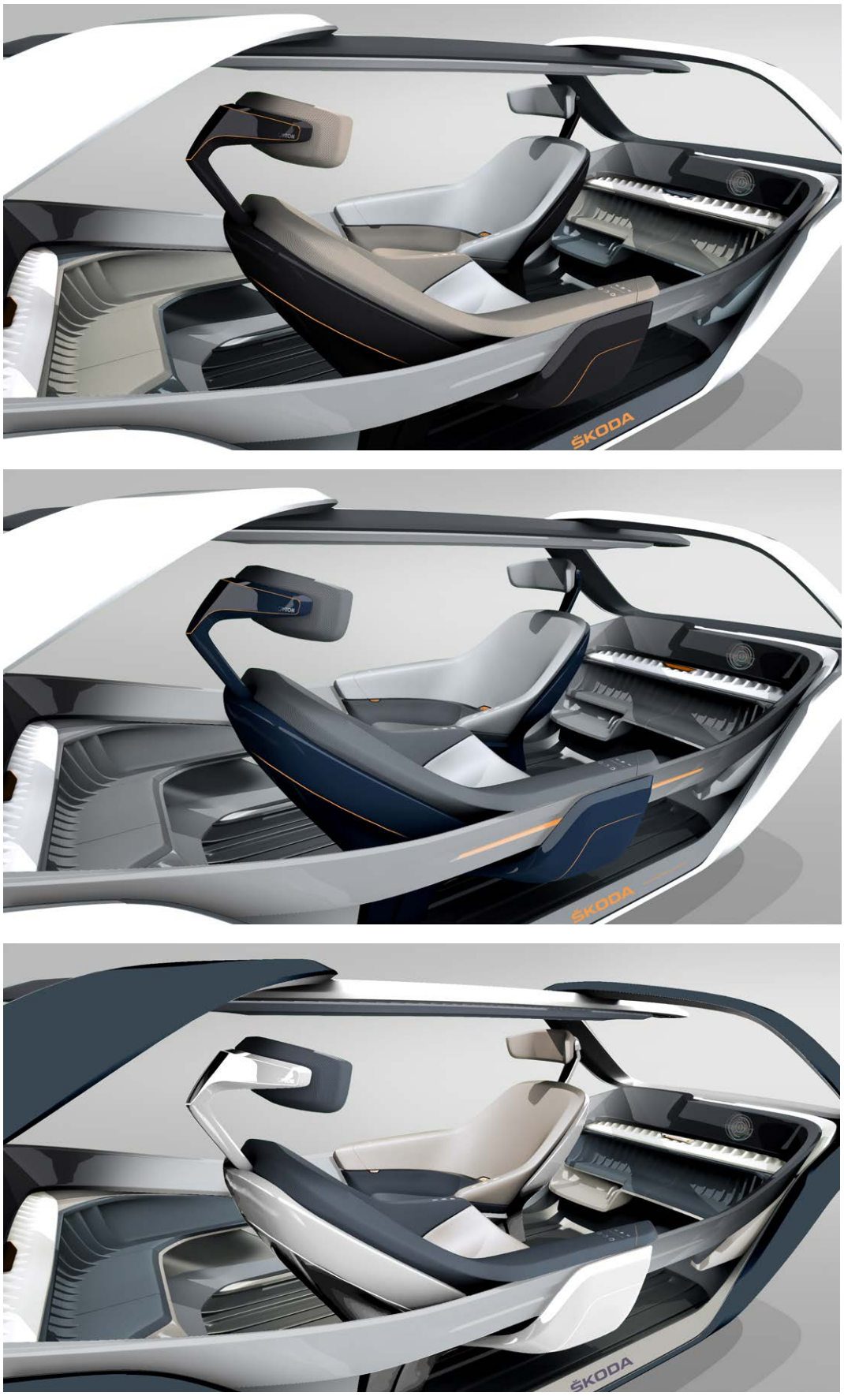


Figure #fixme: Digital 3D model variation 3

5.2 Prototype

In this section the process of making the prototype, a 1:5 scale model, will be explained as will the final result be shown.

The purpose of the prototype is threefold.
First of all it is extremely important to have a physical representation of the design. It is the only way to correctly evaluate the quality and the coherency of the design. In the automotive industry they are still holding on to making 1 to 1 clay models even in this digital age. For similar reasons, this project will end with a physical model.
The second reason is linked with the first. It helps to evaluate the design, but at the same time it implements an extra element of interest for other people. It is an eyecatcher which is very important in this industry.
The third reason is one that is aimed towards the future. Many automotive companies are expecting a high level of 3D understanding of shapes. Only sketches will barely improve this skill, moving from sketch to digital modeling is the first step, a physical model is the next. It is a display of not only the design skills but also the ability to make things work in 3D.

The prototype was made within the Skoda facilities which made it impossible the make process pictures. The process of making it will be shortly explained with the help of an exploded for in figure #fixme.

1. Dashboard top (2x)
2. Dashboard detail (2x)
3. Screen (2x)
4. Roof connection (2x)
5. Dashboard bottom (2x)
6. Tub (1x)
7. Roof element (1x)
8. Stand (1x)
9. Seat (2x)
10. Headrest (2x)

As the parts are listed, they were prototyped as a whole. Everything was 3D printed except for the tub, which was milled out of foam.

The first step after the initial creation was to clean the parts. This was done by sanding with factor 240. The second step was to add primer on all the parts. After that, more sanding, from 240 up to 1500 (400,600,800 and 1000). Some parts needed repairs or an extra layer of filler.

When all parts were smooth, the painting could begin which was done by the professional Skoda painter. First the parts which were high gloss white were painted. After that, the taping could begin, precise taping of the tight radii was challenging. When taped, the glossy paint was sanded again, because the next layer was matte. This process repeated itself until the last copper details were painted.

The last stage was the assembly were everything was glued together.

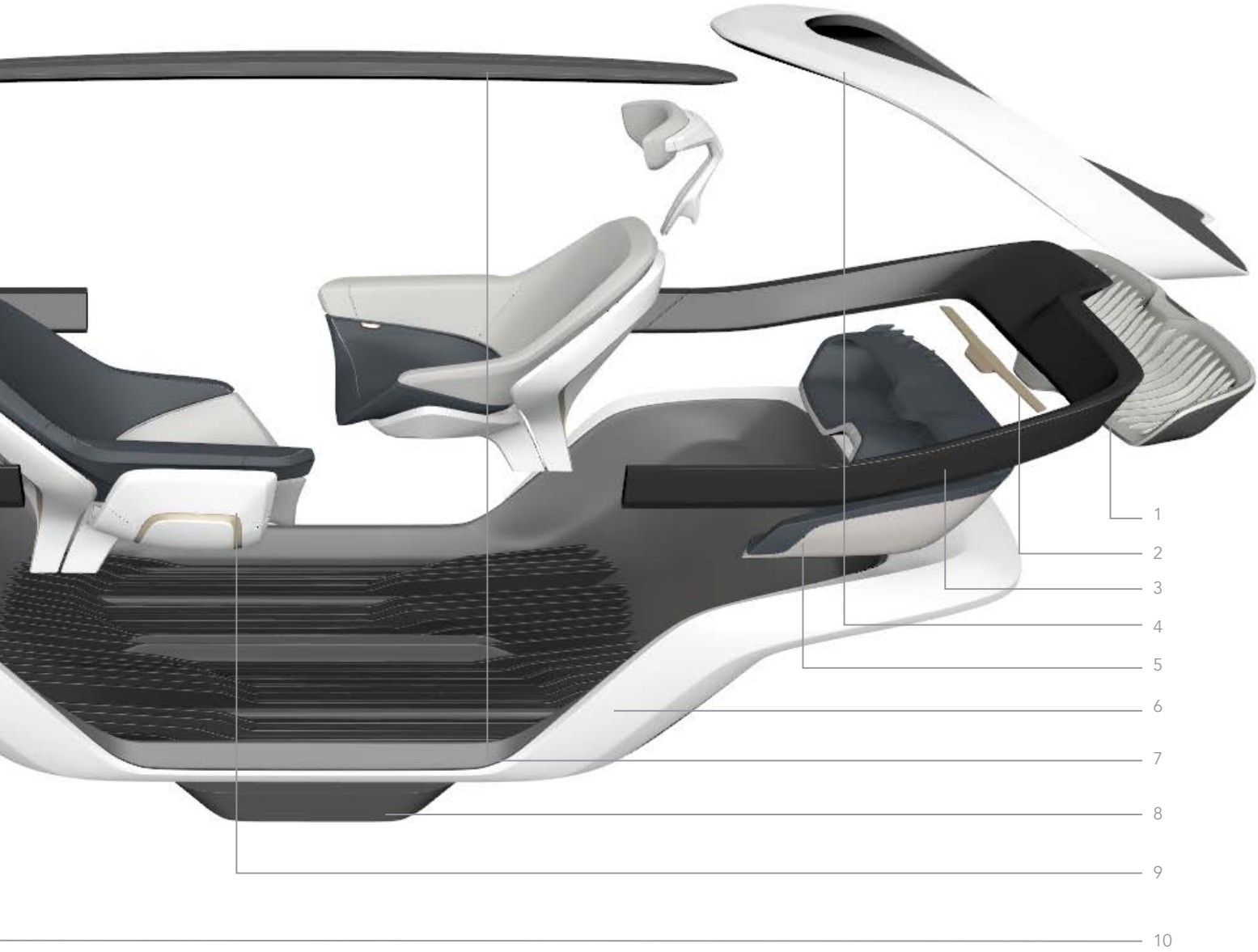


Figure #fixme: Digital 3D model variation 3

5.3 Evaluation

In this phase an evaluation is conducted with the help of the prototype. The results of this evaluation will lead to recommendations.

Set up

The evaluation will be performed during the final presentation at Škoda. This is the moment where the whole project will be presented together with the physical model. Feedback will be provided by many employees of the Škoda design studio both interior and exterior designers. Some of them were aware of my progress while for some it was the first time seeing anything. This makes it an interesting moment for evaluation. The opinion of experts in the field that are not involved in the project will tell how well the end result fits the story which is the main question of this evaluation.

Results

The overal feedback was positive. People were mostly enthoustiastic about the new interpretation of the symmetry and where this came from.

Recommendations

There are a few recommendations based on the process and the evaluation.

- An autonomous interior opens up a lot of possibilities, but it also takes away the key elements and architecture of the interior. For this reason, the elements in the interior should have a function that is relevant for the users. What the people are doing or want to do will need a lot more research to understand.

- The interior that is proposed in this project has a few key simply clever ideas. The flexible space upons up a lot of opportunities to implement even more.

Chapter 6: Final Design

In this chapter the final design is displayed.

The final design will be displayed with sketches. Sketches are used for two reasons. The first one is to show the skills towards the company. In the industry it is not very relevant to show how you can render very realistically with a rendering program. The second reason is because concept cars are often revealed with so called 'press-sketches'. They are often used to tease the crowd and show the true expression of the car.
Besides the press-sketches, final explanatory sketches are displayed to explain the concept.

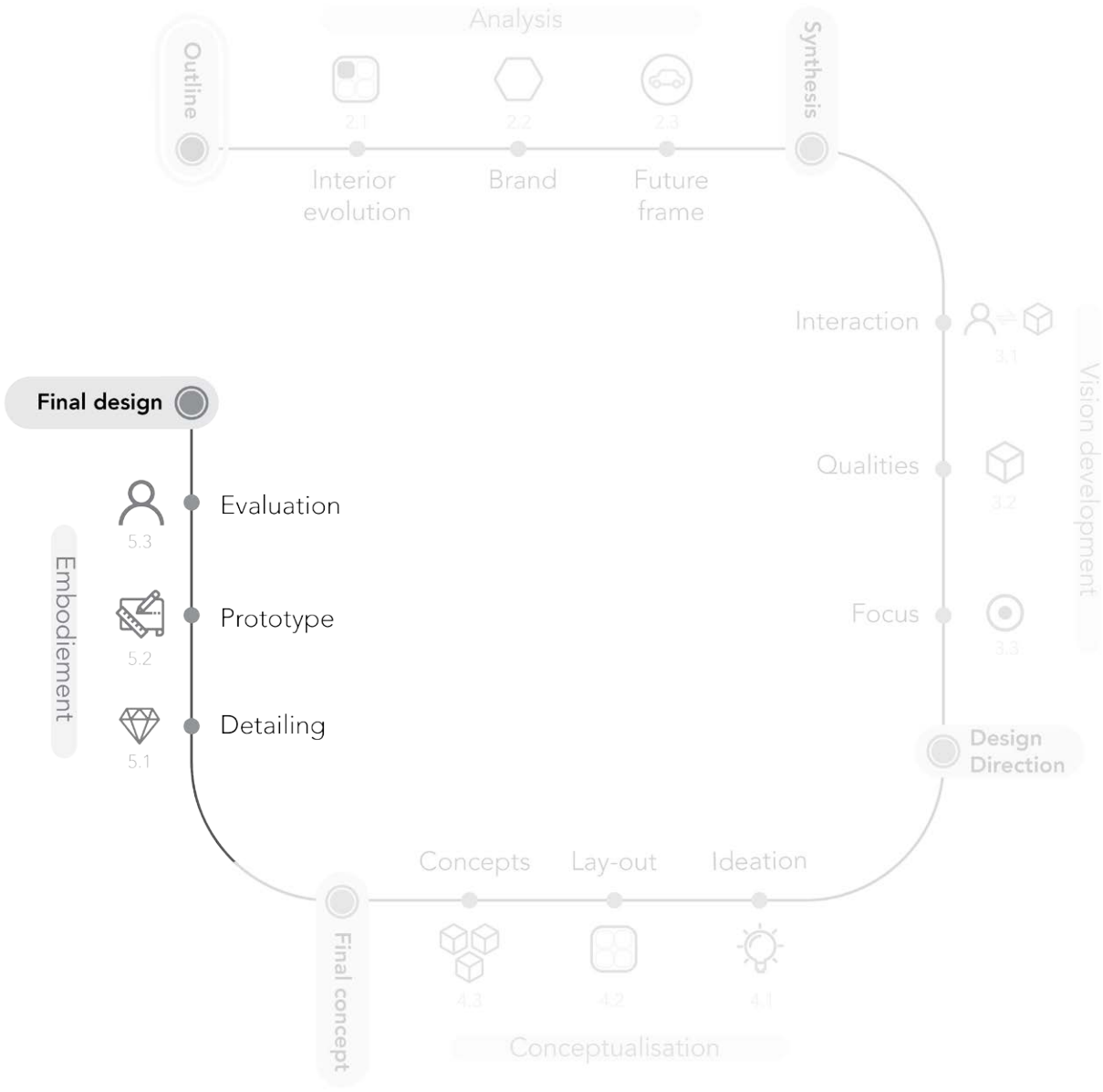


Figure #fixme: Embodiment phase process visualization

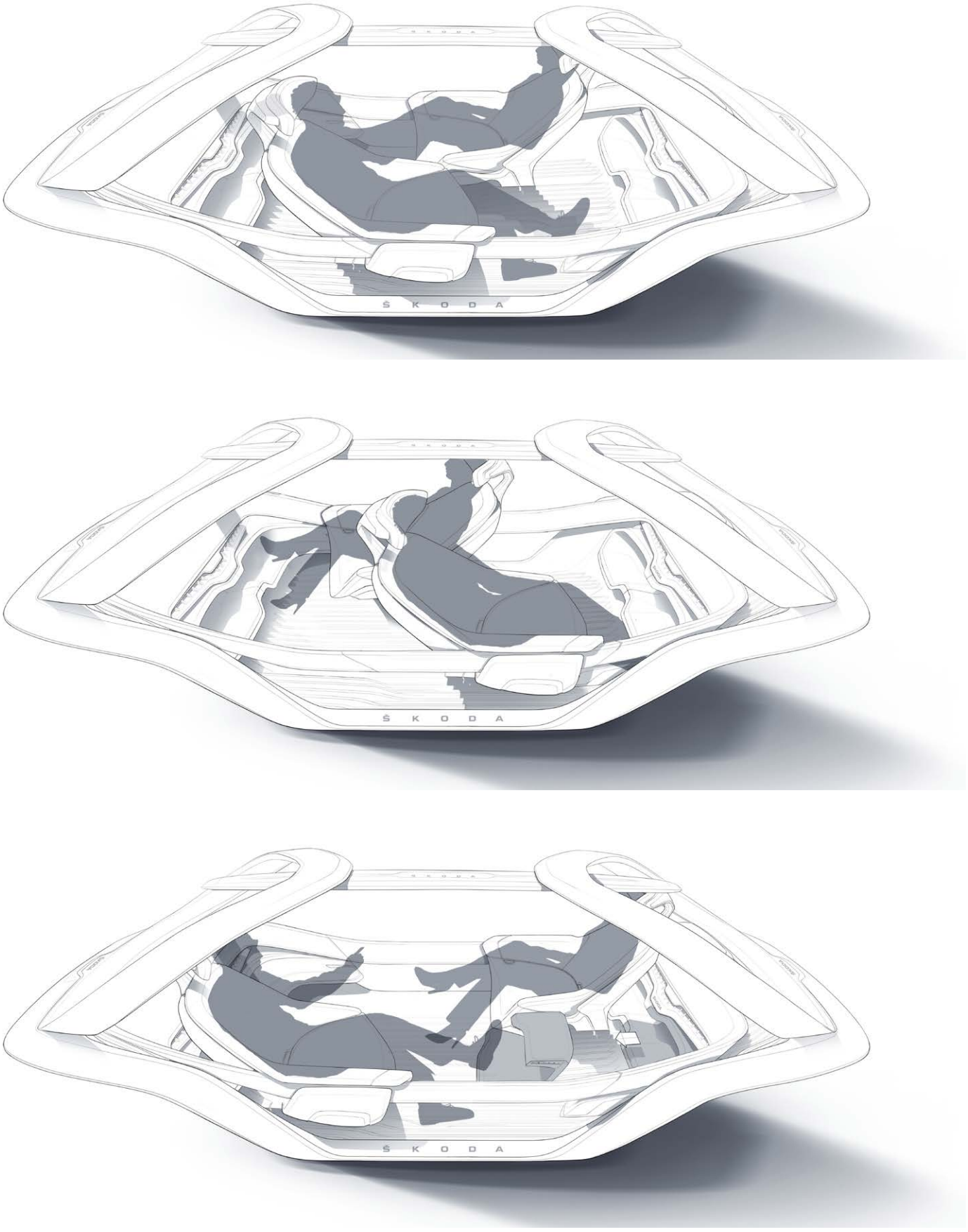


Figure #fixme: Different modes visualization

Figure #fixme: Seating position visualization

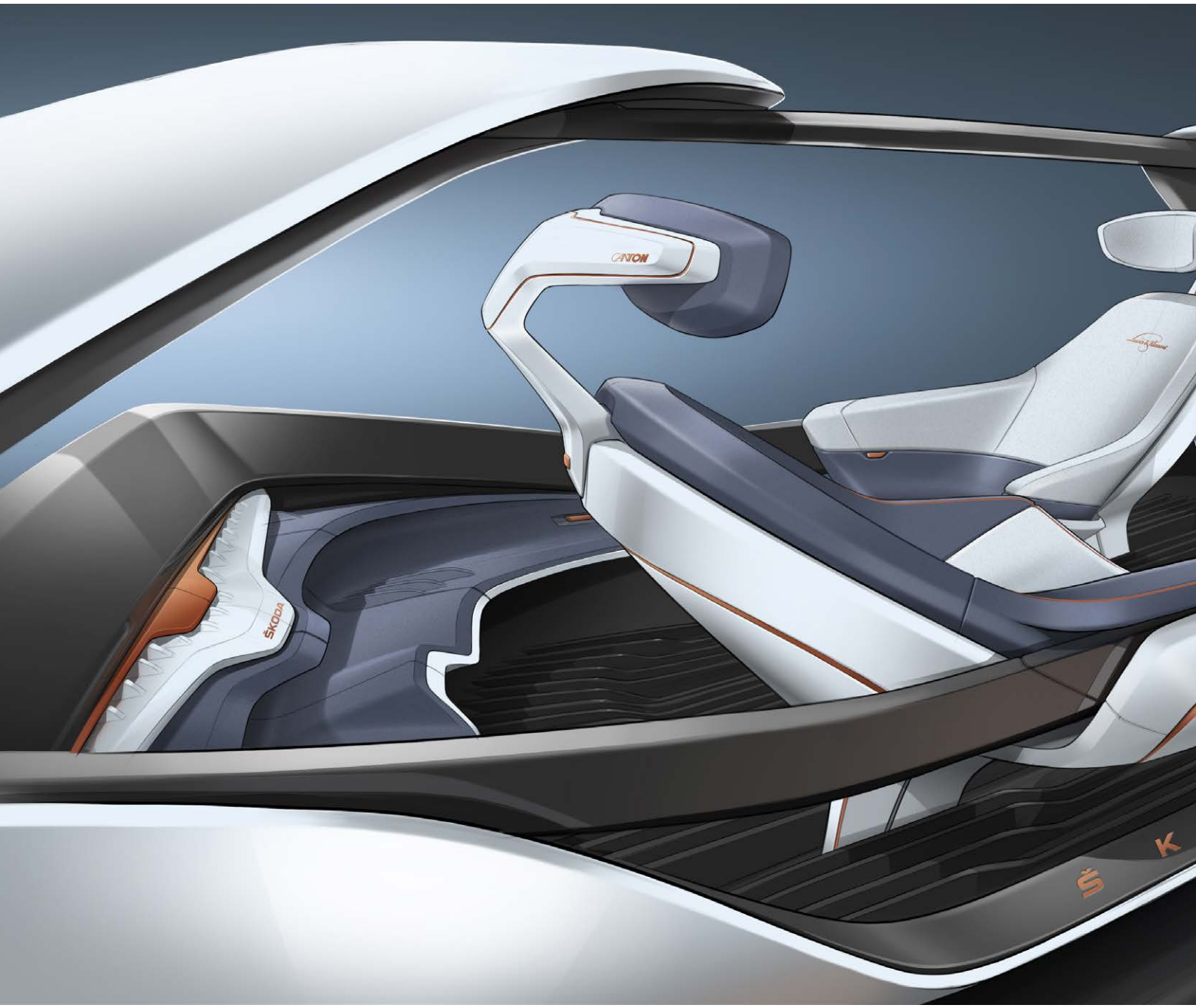
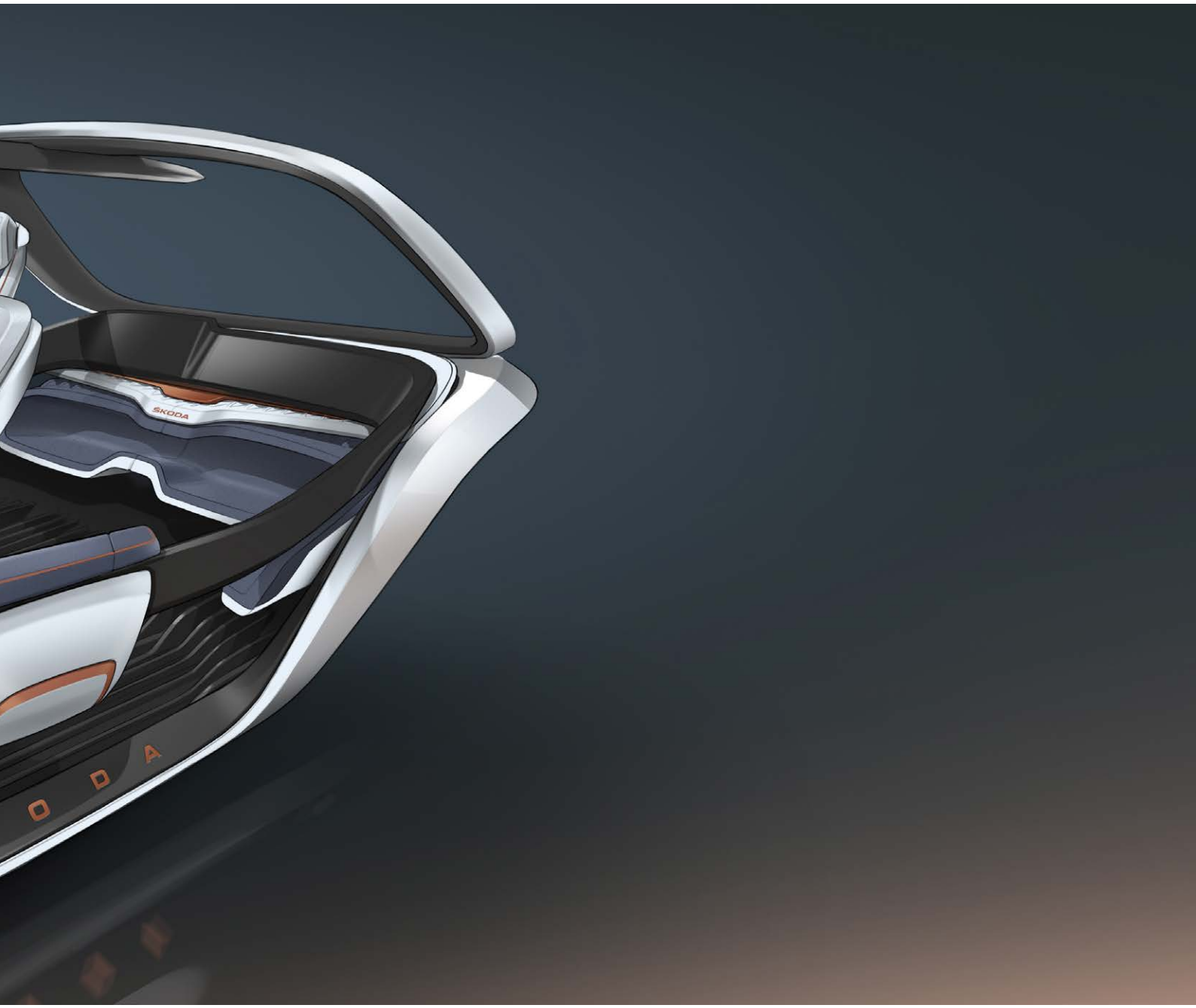


Figure #fixme: Visualization #1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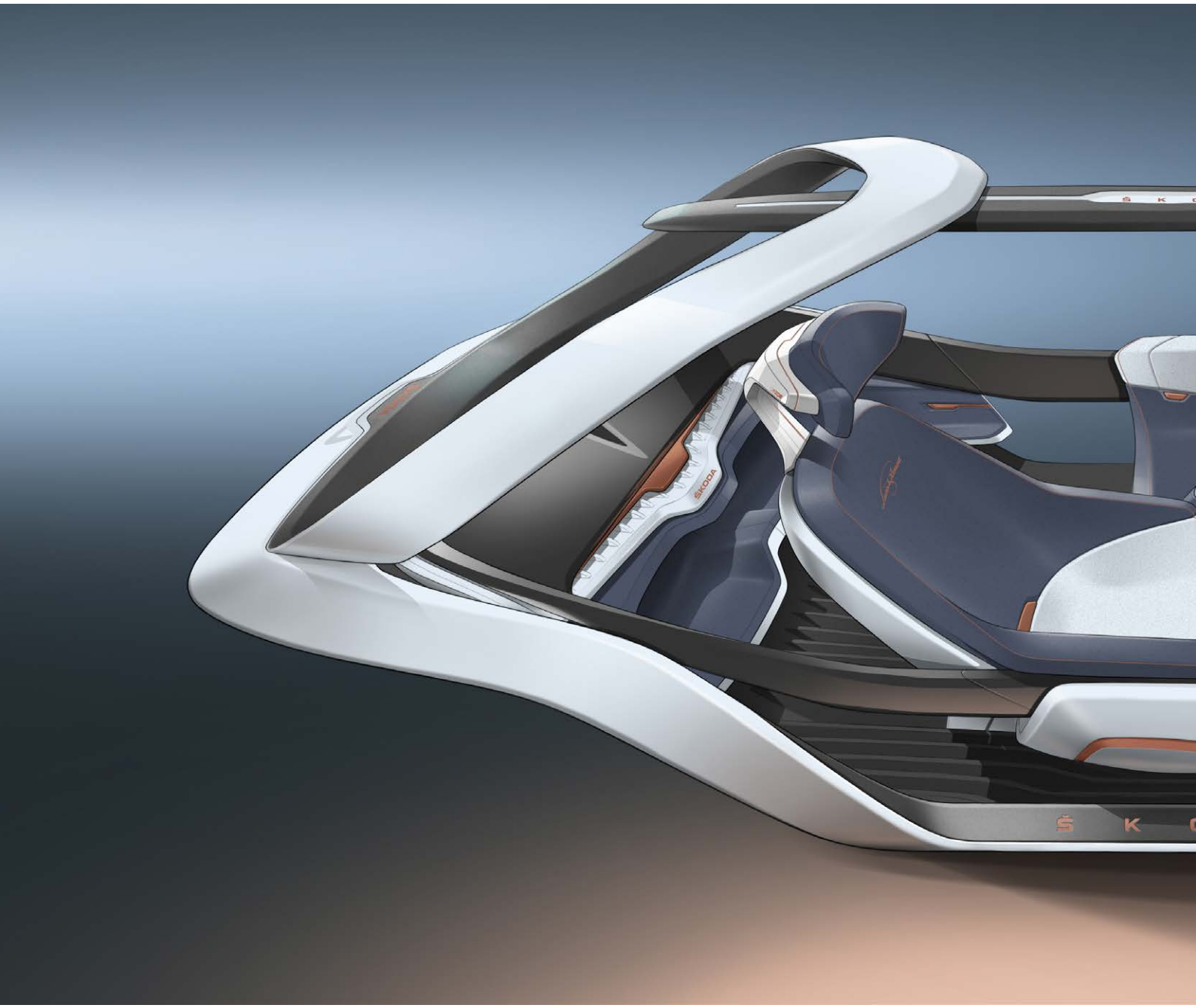

Figure #fixme: Visualization #2

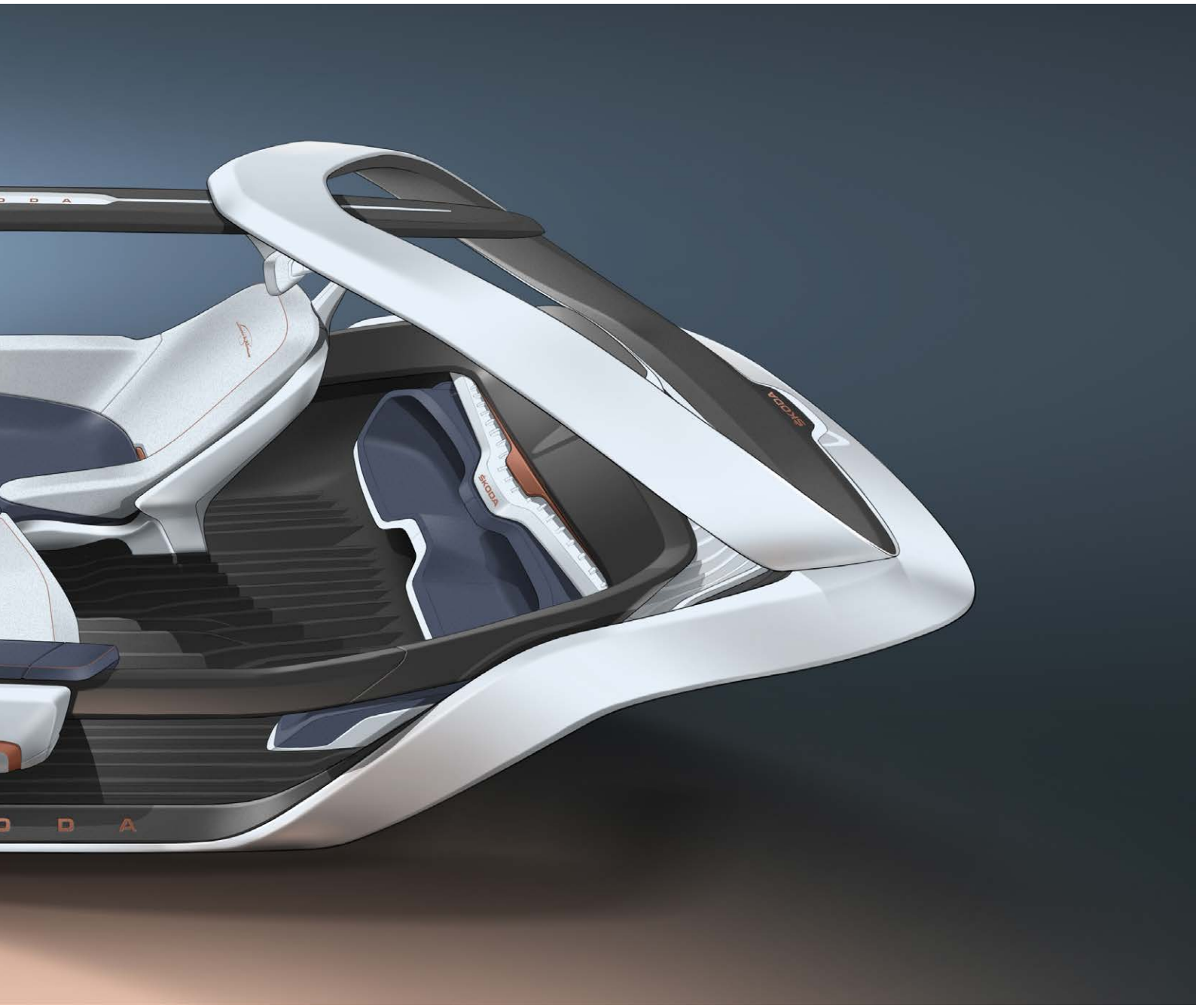
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Figure #fixme: Visualization #3

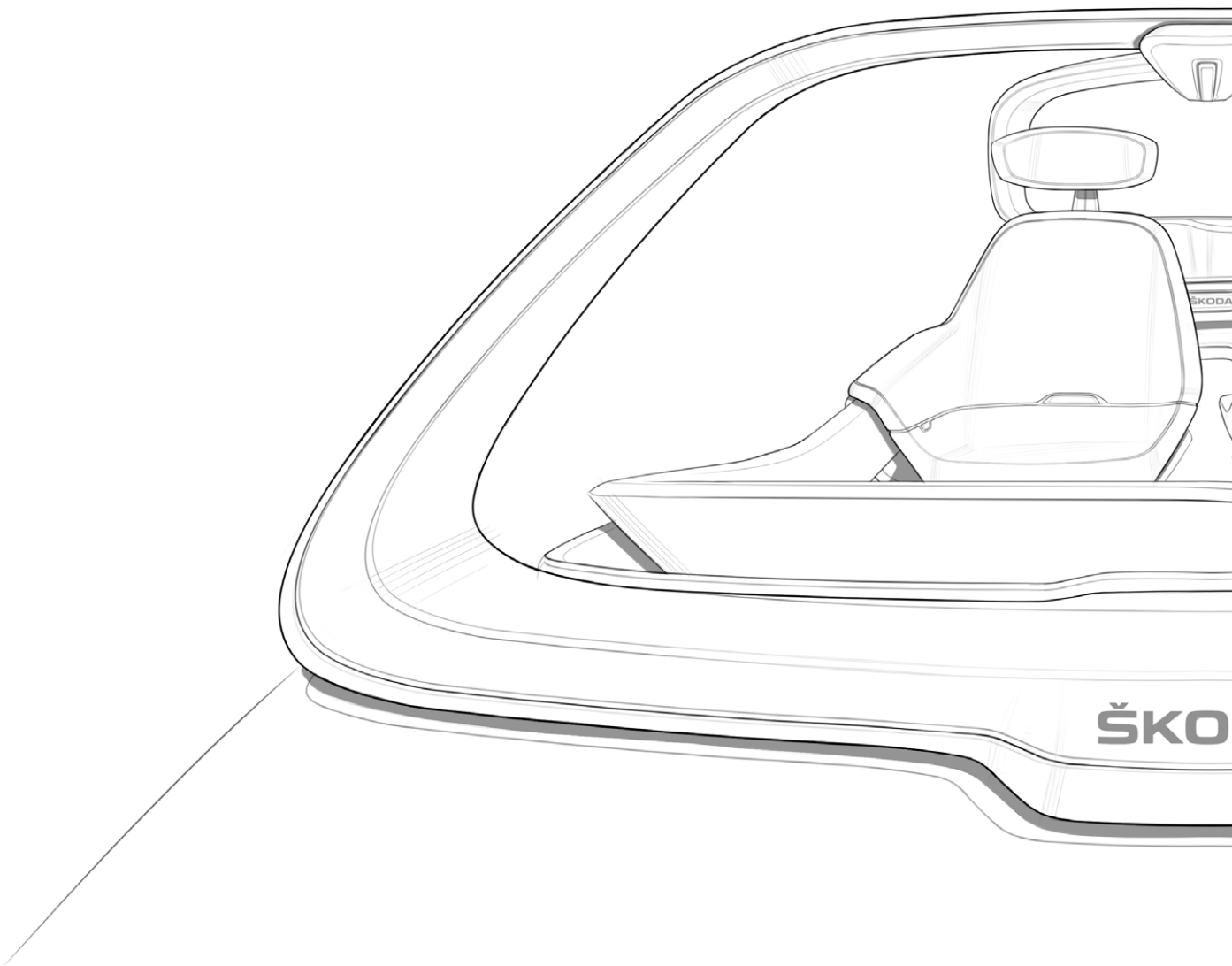
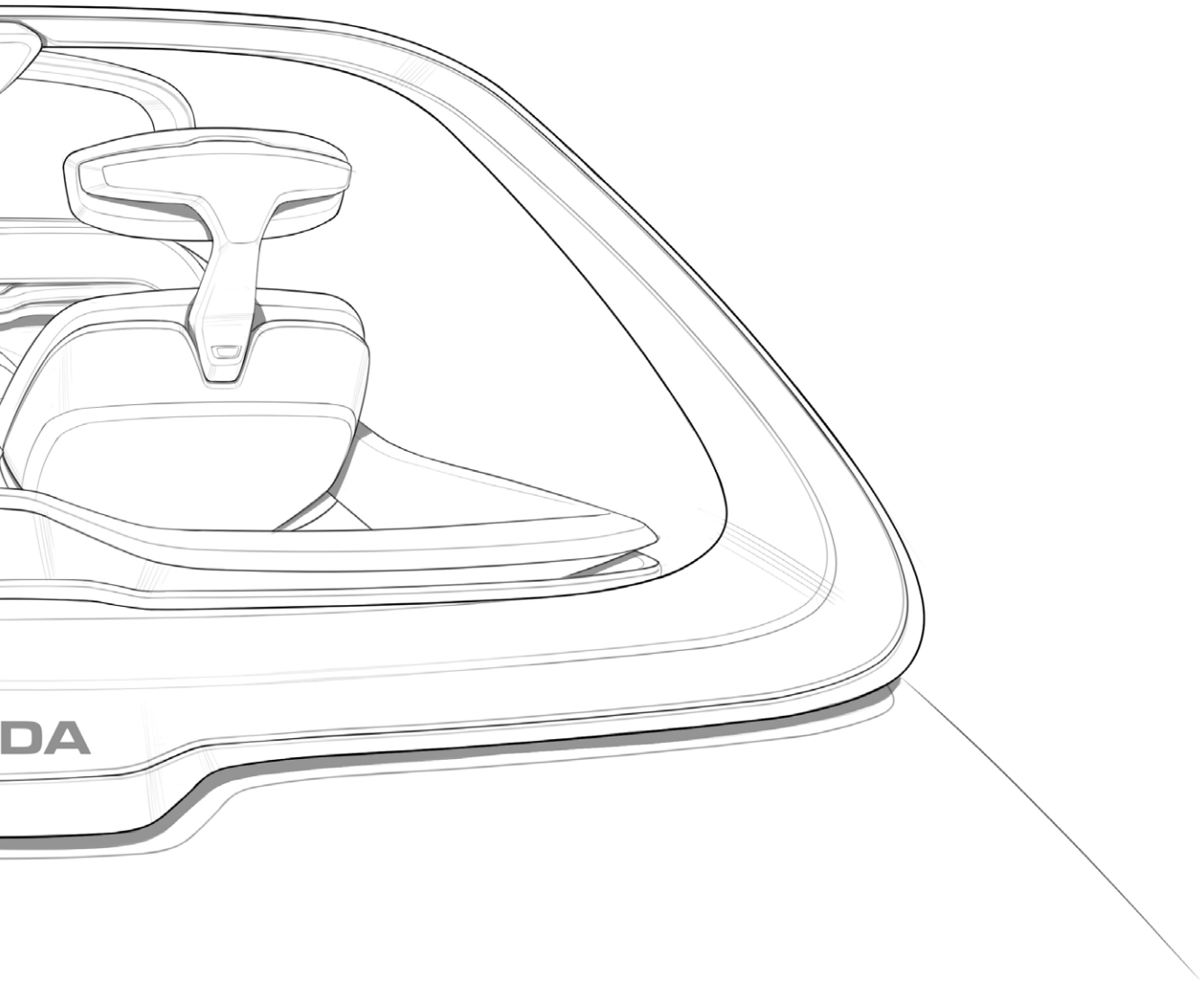


Figure #fixme: Visualization #4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Chapter 7: References

In this chapter the references will be listed

Catchpole, H., 2017. Porsche 918 Spyder review - prices, specs and 0-60 time | Evo. Retrieved January 12, 2019, from https://www.evo.co.uk/porsche/918

Garber, P., 2016. International Marketing Plan of Škoda - SlideShare. Retrieved January 12, 2019, from https://www.slideshare.net/PatriciaKimberleyGar/international-marketing-plan-of-Škoda-68190570

Hekkert, P. & van Dijk, M., 2011. Vision in Design, A Guidebook for Innovators. p. 159

Möser, K., 2003. The driver in the machine: changing interior of the car.

Škoda, 2018. Model Timeline – ŠKODA Heritage. Retrieved January 12, 2019, from https://heritage.Škoda-auto.com/en/timeline/

Škoda, 2019. Škoda Family Models.. Retrieved January 12, 2019, from http://archive.Škoda-auto.com/en/models/family/

Sytyi,D., 2014. Marketing Audit of Renault & Volkswagen. Retrieved January 12, 2019, from https://rockstarsbm.wordpress.com/tag/volkswagen-2/

Volkswagen AG,2018. Group - Volkswagen AG. Retrieved January 12, 2019, from https://www.volkswagenag.com/en/group.html