# Appendix

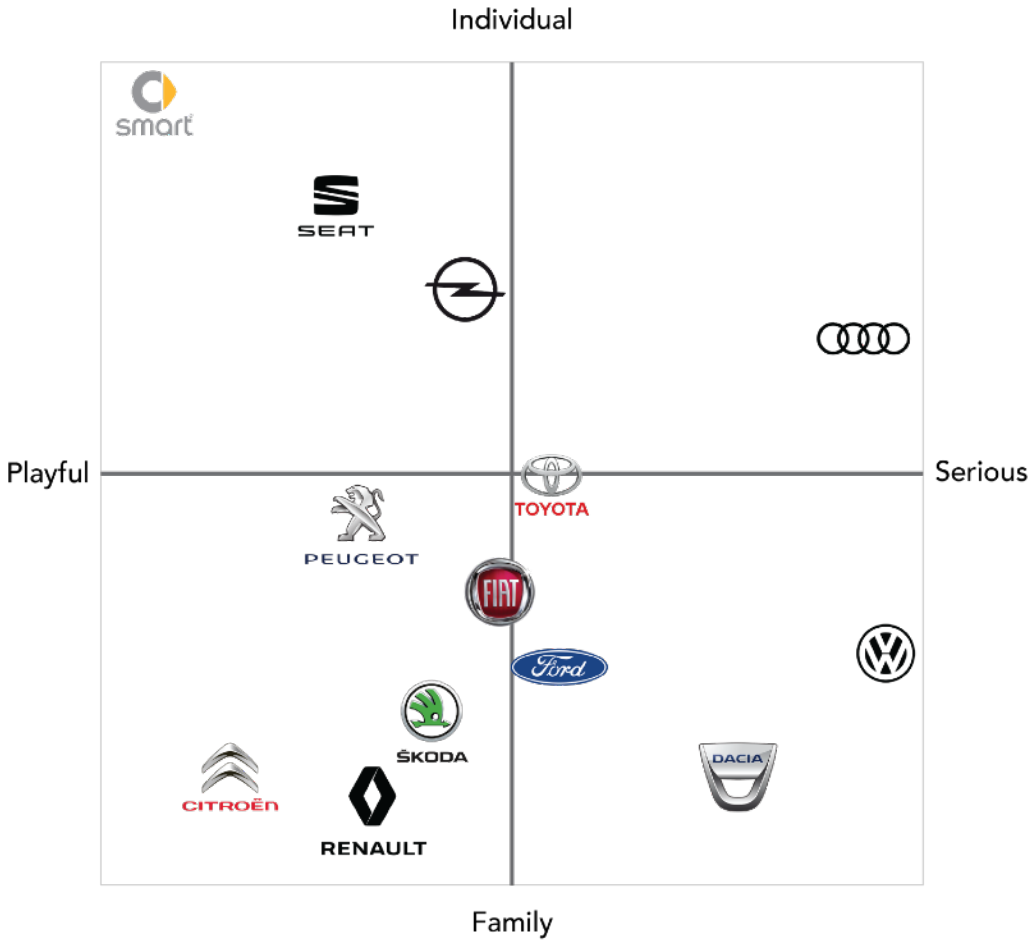
# Chapter 2: Analysis

### 2.1 THE BRAND

**Positioning**

As shown in figure #fixme in the report, Skoda is located in a very dense group of brands which might look similar at first glance. It is worth deep diving into this price segment to identify differences and similarities between brands.

First of all it is interesting to see the differentiation between Skoda, Seat and VW that have similar price tags. If brands are too close to each other, this might be an indication to increase differentiation in the future. This topic is extra relevant for two reasons. Many customers express that models of Audi, VW, Seat and Skoda look too similar. Another reason is that Skoda's sales and reputation is rising significantly which could lead to canabalism within the group. The overall goal of differentiating brands within one group is to grow and take customers away from outside the group. For this reason Skoda, Seat, VW and Audi are compared on different aspects than before shown in figure #fixme.




The horizontal axis ranges from playful to serious and was chosen because german car manufacturers are known for their focus on technology and reliability. This makes them a more serious brand than for example Skoda who tries to experiment with simple and playful solution as the slogan 'Simply Clever' states.

The vertical axis is about the target group of the brands. VW has a lot of vehicles in the large segments such as MPVs in contrast with Seat who is focusing on young people.

Not all brands are displayed because some brands do not have a clear position in this matrix. It is interesting to see that the french brands, Renault, Citroën and Peugeot are located in the playful-family corner together with Skoda. These french brands are more directed towards the users, the human side of the car. In contrast with Audi and Volkswagen who are focusing on optimising and making good quality cars. The placement of the brands in figure #fixme are mostly based on my perception of the brands since not every brand takes a strong position in this matrix. Talking to colleagues at Skoda and people outside Skoda made the matrix change over time. For this reason it is not a very objective matrix but provides enough information to differentiate the brands.

**Future positioning**

In this section a few goals of the Volkswagen Group will be explained. They are quite general because it implies all the brands in the group. The topics are the expansion of the portfolio, the electrification and automated driving functions.

The Group will introduce 20 new models in the SUV segment by 2020 confirming the trend further explained in the model range section.
Another important aspect for the VW group is the electrification. It will develop more than 30 electric vehicles by 2025 and aims to become the leader in automotive batteries technology. Using more shared and modular platforms they want cut the expenses by 30% by using the MEB platform for their electric cars for example. By 2021 they want to bring highly automated driving functions to the market and make it a core competence of the Group. This will be driven by Audi which is developing a self-driving system for the whole Group.

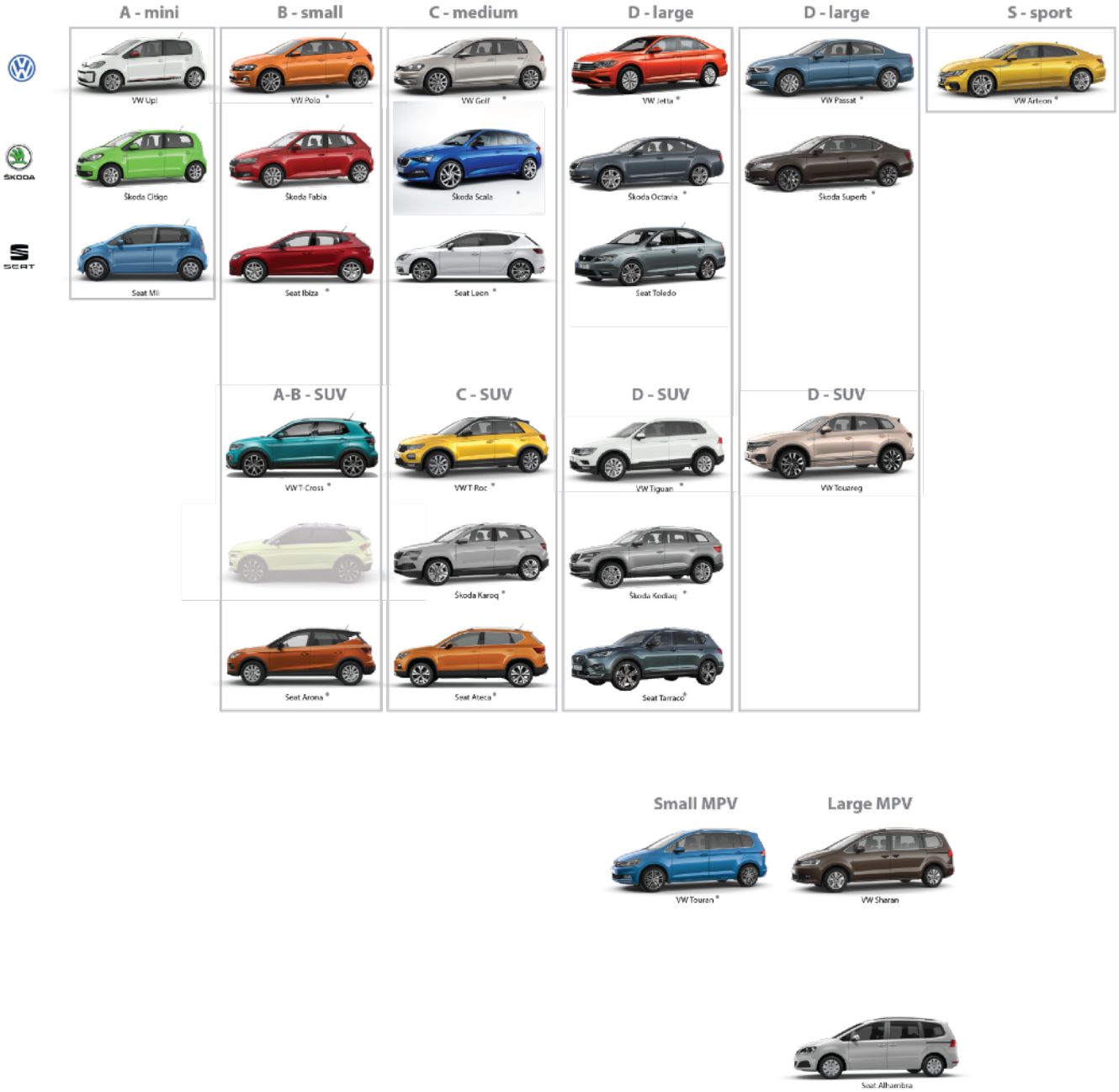
**Products**

An overview of the model range indicates where Skoda is or isn't focusing on and how consistent their line up of cars is.

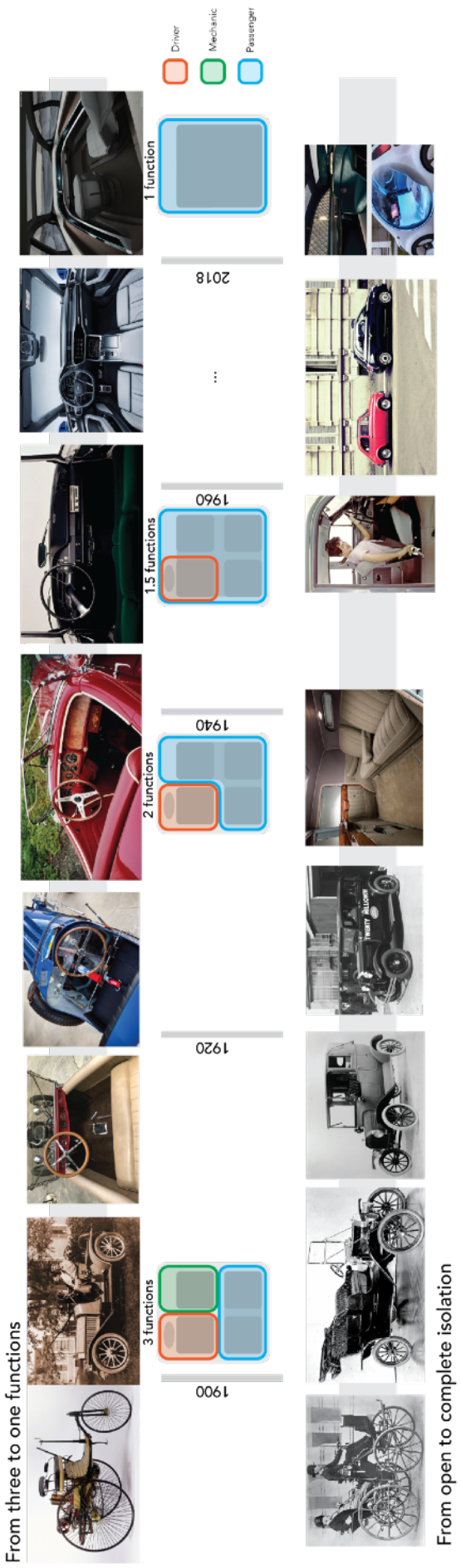
First of all the standard segments of vehicle are getting outdated. Ten years ago there was maybe one SUV per brand, now this segment is booming. Even in such a way that company stop producing 'standard' cars and invest in SUVs. In the image above the standard segmentation of the market is visible, from A to D. E (executive cars) and F (luxury cars) are not a part of these brands' portfolio. The SUV segment is called J and the MPV is M. Over the years there has been difficulties to describe smaller SUVs, they were called CUV or crossover since they were not truly Sports-Utility-Vehicles. Today brands try to improve this organisation and implementing ranges from A-SUV to D or E-SUV.
An interesting development in the industry is the booming SUV which almost are 50% of market share in some countries. SUVs used to be very environmental unfriendly with much higher fuel consumption, but nowadays, there is almost no difference anymore. SUVs sit higher, have most of the time all wheel drive and have a lot of practical space. Although some might say they are less fun to drive, it is surely worth considering. From the automakers perspective it also makes sense. The cost of producing the vehicles are not much higher, but the margin they gain is.
The trend is becoming even more clear when looking at the upperclass of the market. Bentley, Rolls Royce, Jaguar, Maserati, Lamborghini and even rumours for Aston Martin and Ferrari are proof of the SUV trend.

Investigating the model range of Skoda is particularly interesting in comparison to the range of Volkswagen and Seat. It can give clues to future models of brands for example the recently revealed VW T-Cross which was followed by the Seat Arona. Surely Skoda will follow with their own car in this segment. A clear reason for this is the technology underneath the body. A lot of cars within these brands and even Audi share the same platform, the MQB platform (the cars build on this platform have a circle behind their name). The main advantage is that the production is flexible, they can shift to different models in the same plant if needed which saves a lot of time and costs. A similar strategy will be applied on the platform for electric cars (MEB). This platform is not used yet in any production car of the Volkswagen group. Skoda's Vision E concept car might turn into production soon on this platform. Sharing platform between brands and even

between different cars is essential to keep the development cost of these vehicles as low as possible. Sharing platforms will become necessary, certainly when autonomous technology will hit production. For the same reason as before, to make these new technologies affordable for the mass.



## 2.2 INTERIOR EVOLUTION



## 2.3 FUTURE FRAME

### Trends & Developments

In this section relevant trends for the industry will be touched upon. More general trends can be found in the next two parts about Interior trends and users.

Everyone is talking about Industry 4.0 where the physical world is coexisting with digital data and other technologies. This is not different in the automotive industry. Technologies are developing very fast and may just cause a breaking point.
The industry is starting to think less about the car as an individual product. To solve the problems such as congested urban areas it is necessary to take a more holistic approach to mobility. There are four major trends everyone is investigating, ACES, including Autonomous, Connected, Electric and Shared. The possibilities will be highlighted.

Autonomous

40% of the km traveled in Europe could be done by autonomous vehicles by 2030. 15% could be fully autonomous. To clarify these statements, autonomous vehicles are not driverless vehicles, they have autonomous technology. Analysing this statement 40% seems high at first but the easiest context of autonomous technology is the highway and also the place where car make long distances. Maybe a more impressive number is that in 2040 half of the car sold globally are autonomous vehicles.

Currently 90% of all car accidents are caused by human error. With autonomous technology this could be reduced significantly and therefor increasing the safety. Looking at a higher level of autonomy, disabled or older people can enjoy mobility like the rest, reaching a broader spectrum of customers. This implies that more car travel will exist but due to sharing services less cars are needed. Another major advantage is the simplification of the car because of the increased safety, no crumple zone, bumpers, air bags etc making them eventually cheaper. But this would only work if the car only has contact with other driverless cars. If not, an accident caused by human error can still occur. It causes the fundamentals of the car as we know it to stay the same only with added technology. This transition period is good for the development of the technology but it might hold back the radical break from the archetype as we know it now.

Connected

Cars will be smart devices, similar to your smart phone, connected with everything in your home. Sensors are key to make a device smart, these enable increased personalisation of the driving experience for example by preparing the cockpit for the user. Car companies are starting to rethink the whole customer experience because of these emerging functions. A lot of things in the car will be automated based on sensors, the input of the driver can also be divers. It started with physical buttons, moving towards touchscreens, now voice and gesture control are making its appearance.

Electric

95% of new models will be partially electrified in 2030. More than half of these are fully electric vehicles. This trend will continue until the internal combustion engine (ICE) disappears. As discussed in the model range section, the segmentation is currently based on size. The electric vehicles could be differentiated based on their use, smaller vehicles for short-range trips, larger vehicles for longer trips.

Shared

Currently there two types of sharing, ride and car sharing. The first one is like Uber or Blablacar offering a seat while still driving. Sharing your complete car is the second type like Car2Go, which makes sense since the average car is used for only 5%. In 2030 26% of the travelling distance could be shared in 2030. Owning a car is not a rational decision, it is the second largest purchase

people make, while having the lowest utilisation rate of everything they own. Cars are emotion and are an expression of yourself, or is this fading away? Millennials places less importance on owning a car and therefor are very open for other alternatives such as public transport or ride- or car sharing.
There is a clear connection between sharing, electrification and autonomous driving. Sharing will receive a boost when electric vehicle are more frequently used, their initial costs might be higher but maintenance and feeling costs are much lower. As for autonomous vehicles, by 2030 autonomous shared vehicles could have a market share of 25%. Driverless cars will cause an even bigger boosts since cars can independently pick you up and drop you off wherever you want. Privately owned autonomous vehicles will still exist but will be a status symbol, similar to cars now.

**Interior design trends / housing trends**

"The day fully autonomous vehicles hit our streets is the day cars are not cars anymore." (Space10) A strong statement but it made me think. A car can be so much more due to this development. The living-room on wheels is already in evolution since the car had an interior as explained above, the autonomous car might be the ultimate game changer. For this reason it is very useful to look at outside the scope of the automotive industry and dive into interior architecture and design. It is interesting to make the comparison to see the interaction between the two.

"By 2030 there will be 1.2 billion more people on the planet, and 70 percent of us will be living in cities. " This demographic development causes disruption in many industries.
Together with the rising environmental awareness, the 'tiny house movement' is one of the consequences. It all comes down to downsizing everything, from your house or apartment, to the amount of objects you own. The movement has a big influence on how the interior is designed starting from the preferred use and limited available space.

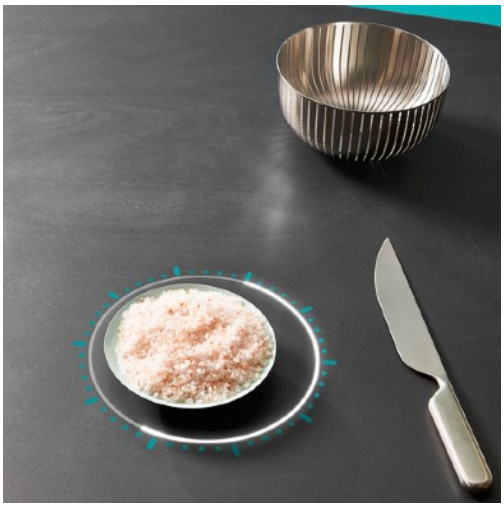
One design, several functions

First of all the rooms become more fluid. This means that there is not a clear definition of a bedroom anymore. It used to be: Bed + drawers = bedroom. It could be that the bed is used as a sofa to relax and socialise and when you do not need either of the two, it is folded away to not lose space.
Linked are the objects in the room which are multipurpose as for example the bed. Because the house is smaller and less objects are present, everything needs to have a use, preferably more than one. A chair can be used to sit on, as a bedside table, a ladder and much more.

Another consequence is co-living or shared living, becoming more and more popular. According to the co-living survey of Ikea (Ikea, 2018) the main reason why people would share their house is to socialise. Saving space and money is of course also a big factor. The main concern for most people was the lack of privacy, people require a good balance between my, your and our space.

Due to increasing amount of digital jobs, a phenomenon of digital nomads rose recently. This new generation does not have fixed roots and often change countries and cities. This means that furniture needs to be movable and therefor temporary and easy to assemble and disassemble, overall it needs to be practical in all aspects.

Another interesting development is smart interiors. In the future not only our mobile phones will be smart, every element in our home will be connected with each other. This means a significant change in how we interact with our object and in general our home, it will become more efficient and seamless. It will create an intuitive space were everything is when and where you need like a hidden sink or build in induction hobs.
More and more will only exist in the cloud such as books, music and movies causing less storage in homes which is in line with downsizing trend. It will also make the home less cluttered only existing of valuable physical object that show who you are.



A trend we see in the automotive industry for a while now is the awareness of environmental issues. It causes a rise of sustainable materials and products influencing our homes. More and more people want a conscience interior which is also becoming ‘cool'.

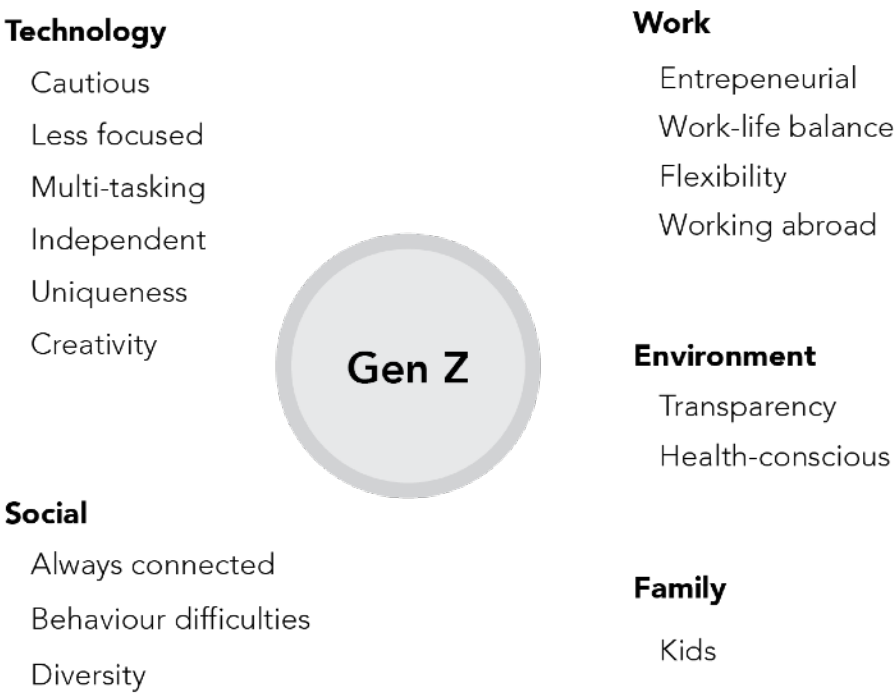
Closely linked are products with a story which are becoming more popular even to a level that companies like Ikea want to mass produce unique and personalised products. Perfectly imperfect it sounds. The materials used are also important, they are becoming more tactile and natural. This is in contrast with al the screens that we currently touch or even air when virtual and augmented reality become widely used.

The last trend is caused by cultural exchange. It is easier to travel, connect through the internet and migrate to other countries. This all causes a mixture of styles in the interior. It is expected to increase and become a hot topic in the future.

Is the automotive industry going towards an era where cars will become spaces on wheels? Itwill cause players outside the autonomic industry to be relevant in the future. Space10, Ikea's innovation lab, explored this idea and created seven different concepts meant to trigger the upcoming change in the industry. "Comparing an autonomous vehicle to a car will be like comparing car to a horse."

**Users**

Currently Generation Y (Gen Y), also known as the Millennials, are most interesting for the automotive industry as Generation Z (Gen Z), born from 1995 to 2010, is still getting into the work environment. For this project it is interesting to investigate this Gen Z which will the users of the future mobility. It is therefor important to understand what important is for them and in what direction they are developing in. This section is divided into five categories: Technology, social, work, environment and family.




**Technology**

Gen Z is born in the middle of the technology boom where the internet, computers and smartphones were developed. For this reason they understand the risks and consequences of using the internet, something cannot easily be deleted. They act with caution when communicating online. Another way the internet made the Gen Z more cautious is the amount of information that is available. Before buying something they would check multiple reviews before making the purchase.
Gen Z is set on their privacy on the internet. For this reason they do not use Facebook that much, but more Instagram and Snapchat. On the other hand they expect personalised advertisements based on previous activities. This generation doesn't see it as a violation of their privacy, but as a normal way for companies to advertise.
The attention span of the Gen Z is significantly lower than the millennials because of the fast processing of information.

Obviously there are also positive sides to being raised with these technologies. Gen Z is very good at multi-tasking, working on a laptop while watching tv and sending things through the smartphone. The internet is a huge source of information where you can learn a lot of things very independently. YouTube is full of tutorials on DIY things. Because everyone can in principal learn the same things, it is hard to be different which is big concern for Gen Z. They want to form their own identity, style and addition to the world. Creativity will be a popular topic to learn because that will be harder to master by smart systems in the future. For this reason during the education skills will be more important than content which can be derived from many other sources.

**Social**

These technological developments have influence on the social behaviour of the people. One might say they become less social but they are always connected with others. They can video chat with someone on the other side of the world, they can place videos and pictures online which the whole world can see. A more occurring trend is the use of images instead of words, communication will become even more visual. Because of this non verbal communication, their behaviour regarding empathy and other social situations could drastically decrease.

**Work**

Gen Z are showing more and more interest in building their own company and becoming an entrepreneur. It is an attractive choice because of the independency. Flexibility in a work environment is more important for Gen Z. They expect less a strict segregation between work and life but prefer a seamless transition with a lot of flexibility. This means the work can be done anywhere and anytime having less effect on their life. Although they are less social in certain situations, they look for collaboration with peers during work.
As mentioned above, they have a shorter attention span which is also visible in the shifting to different employers and even countries. They are constantly looking for new things to challenge them.

**Environment**

Transparency towards Gen Z is necessary to attract them to your business for example. They pay more and more attention to where the product is made, who was involved and what impact it has on the environment. If a company is not transparent, they are less likely to purchase it.
Gen Z is altruistic, they are less selfish than other generations. Doing good for the world is high on their list, they worry about the consequences of theirs and previous generations behaviour.
This conscious behaviour has impact on what they consume and therefor on their own health. Compared to previous generations, a lot more is known about what is a healthy lifestyle, how to achieve it and the importance of it in the long run.

**Family**

Over the years the age on which women got pregnant increased mostly because the career focus of many. Together with decreasing number of marriage, increasing amount of divorces, these trends will continue to Gen Z. They are expected to have less kids and in a later stage than the Millennials.

**Competitors**

Types of concept cars

Many car companies express their intention of the future models using concept cars. There are different types of concept cars with fitting purposes. The first category are concepts as ‘design visions’ showing the design language of future production models. They are used to test the publics and experts opinions.
An example is the Mazda Kai concept which was received very well by the public. This design language has just been introduced in their new Mazda 3 production vehicle. Often these type of concept cars are focusing only on the exterior such as the BMW I vision Dynamics concept.




Concept cars of Skoda are within this first category. Recently they introduced the new Scala, the replacement of the Rapid. The ex- and interior are based on the Vision RS concept released earlier this year.


Since a few years there are many concept cars relating to autonomous driving technology. One of the big reasons that brands ‘need’ to explore this is because the fundamental change in how the cars are developed. Looking at the electric cars that soon will explode, the difference with conventional cars are minimal regarding the lay-out and overall appearance.

The concepts in this second category show the possible application in a more abstract way. It is a vision of how the brand sees the future and how it can play a significant role in it.
An example is the Peugeot Instinct concept which shows how autonomous cars can still be fun to drive. Of course this concept is a combination of both technology and design language which makes it even more interesting. It displays a certain extra functionality and how the interior is adapted around that feature.


Most autonomous concept cars are focusing on the application of technology but some brands try to involve the future mobility in their story. How this technology not only could be used in their future car but how it can play a role in the (r)evolution of the future mobility. Brands like Volvo, Volkswagen, Mercedes and Renault are the brands that currently have concepts that try to involve future mobility. The concepts in this third category are close to what my end result will be. They tell a story behind the vehicle. Some interesting concept from this category will be highlighted here.

**Volvo**

Volvo 360c is a modular autonomous vehicle with different interiors. Volvo identifies three key activities that people will do during an autonomous car ride. The first mode is enjoy where the focus lies on comfort and relax. The second one is work, having meetings on the move in a fully equipped workplace. The last one is sleep which could compete with the short-haul flights.



**Volkswagen**

Volkswagen has a range of concept vehicles focusing on their electrification vision. The I.D. range shows how the models could look in different segments.
Apart from showcasing the flexibility of the new MEB platform, the interior shows an implementation of autonomous technology. The first three concepts show similar interiors where the steering is well integrated in the dashboard.

The I.D. Vizzion concept is together with the Volkswagen Sedric concept focusing on full autonomous technology.

The reason why Sedric is not part of the I.D. range is not known. I think because it tackles mobility from another perspective. The I.D. range are owned cars from practical vans to luxurious autonomous cars. Sedric is not a future vision on an existing car, it is a whole new concept which VW might bring in production using a daughter company.
Cedric falls under the category Robo-Taxi, a shared fully autonomous vehicle that can pick you up and drive you to a place anywhere you want.

**Mercedes**

Mercedes has made a four concept cars in the last 3 years that are worth mentioning here. The first is the F015 Luxury in motion concept showcasing their vision on autonomous technology. When autonomous driving is activated, the front seats turn and a social or working environment is created.

Vision Tokyo focuses on the urban transport moving more people at the same time but in a luxurious way. With an interesting interior lay-out and possibility for autonomous driving, this concept is worth mentioning.

EQ Silver Arrow is a fully electric, extremely streamlined, one-seater racer. it shows how racing could take place in the future with the help of smart systems and projects on the windows helping the driver with his task, going as fast as he can. It does not demonstrate autonomous features which might make it even more interesting.

The Vision Urbanetic is a modular vehicle which can transport cargo or people. Using a skateboard which carries all the technology it is possible to have different modules. It can be a shared people mover as a service or a commercial cargo mover used by other companies.

**Renault**

From 2010 until 2013 Renault created six concept cars showing a revolution within the company. Laurens Van Den Acker, Corporate head of design of Renault, explained how he translated the value of the company to relevant products. Laurens identified six phases in life and linked a concept car to each phase. Each concept car had a different story, a different purpose and therefor a different lay-out and design. Mobility for all, but still tell a coherent story to the customer.

Renault released again six concept cars in the last two years but they are not all that literally linked with the flower of life used before. The first concept car, Trezor, is a car showcasing the future design vision of the brand. It has autonomous technology incorporated but in contrast with concept cars from other brands, it is not the focus. Because of the 'love story' behind the car, the autonomous functions have a reason of existence. They are not there just because they can.

The next concept car was the RS Vision, a future race car to emphasise Renaults roots in Formula 1 and Formula E.

The third concept was Symbol showcasing Renault's personal mobility vision. This vehicle is a continuation of your living room. It can drive autonomously, when it does, the front seats can turn and a homy setting emerges. The story doesn't stop there because Renault takes it a step further and sees the car as an extra room in your house. Because the car can be a place to isolate yourself from the rest, or a place where you talk to your kids. The car is an extension of you home.

The last three concept, the EZ series, all show how Renault sees mobility services in the future. EZ-GO is a driverless people mover focusing on urban transportation and mobility for all like elderly and people with disabilities.

EZ-PRO is a commercial vehicle concept which could be used by different companies. It could be a last mile delivery vehicle, or a movable coffee place. This is made possible by using the same platform, the skateboard. There are two variants one that is completely autonomous which has to be accompanied by the 'leader' the second variant.

EZ-Ultimo is a driverless luxurious vehicle that can be used to transport you to an important place. This vehicle is shared which makes one ride in the car affordable for all.

**Positioning of concept cars**

Concept cars that were chosen for further investigation are located in the second and third category mentioned above. They are an expression of the brands vision on the future with more to it than styling.

Two big trends in the automotive world is autonomous driving and shared mobility as discussed in the trends and development section.
It is interesting to map all relevant concepts to see where everyone is focusing on, or where not. As can be seen, some brands are staying in the owned area such as Audi, Peugeot and BMW.
There are quite a number of empty areas which can be explained as seen in the image. For concepts it is

1 Adient AI18
2 Aston Martin Lagonda Vision

Audi
3 Aicon
4 PB18 e-tron

BMW
5 I-inside
6 vision I Next
7 Next 100

8 Chrysler Portal
9 Honda NeuV
10 Icona Nucleus

Mercedes
11 F015
12 Vision Tokyo
13 EQ Silver Arrow
14 Vision Urbanetic

15 Mini 100 vision

Peugeot
16 e-legend
17 Instinct

Renault
18 Trezor
19 RS Vision
20 Symbioz
21 EZ-GO
22 EZ-PRO
23 EZ-Ultimo

24 Rinspeed snap
25 Rolls Royce 100 vision
26 Smart EQ Fortwo

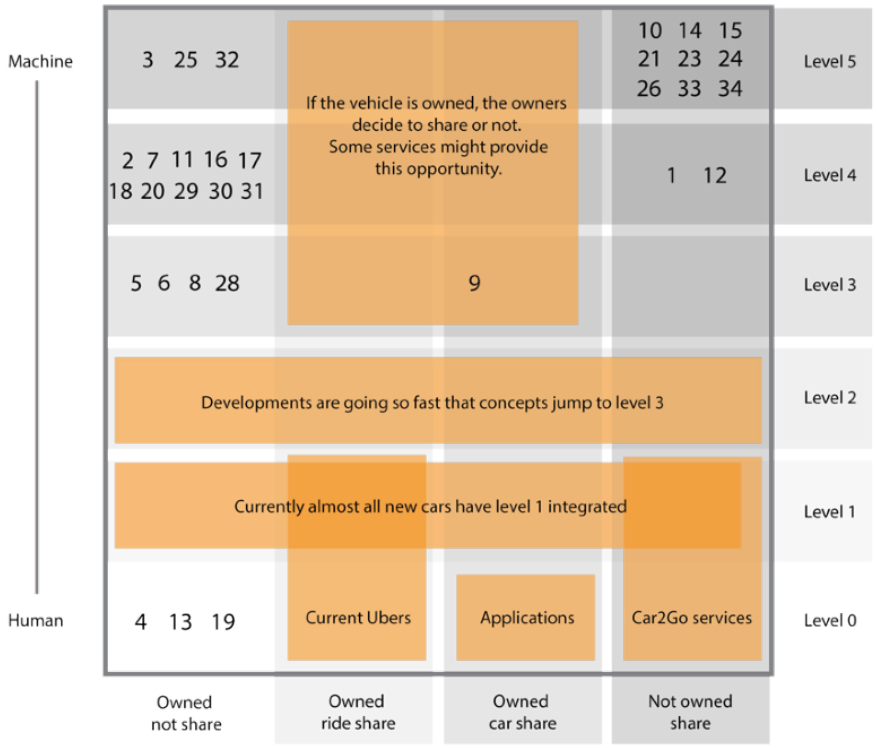
Toyota
27 E-palette
28 i-concept

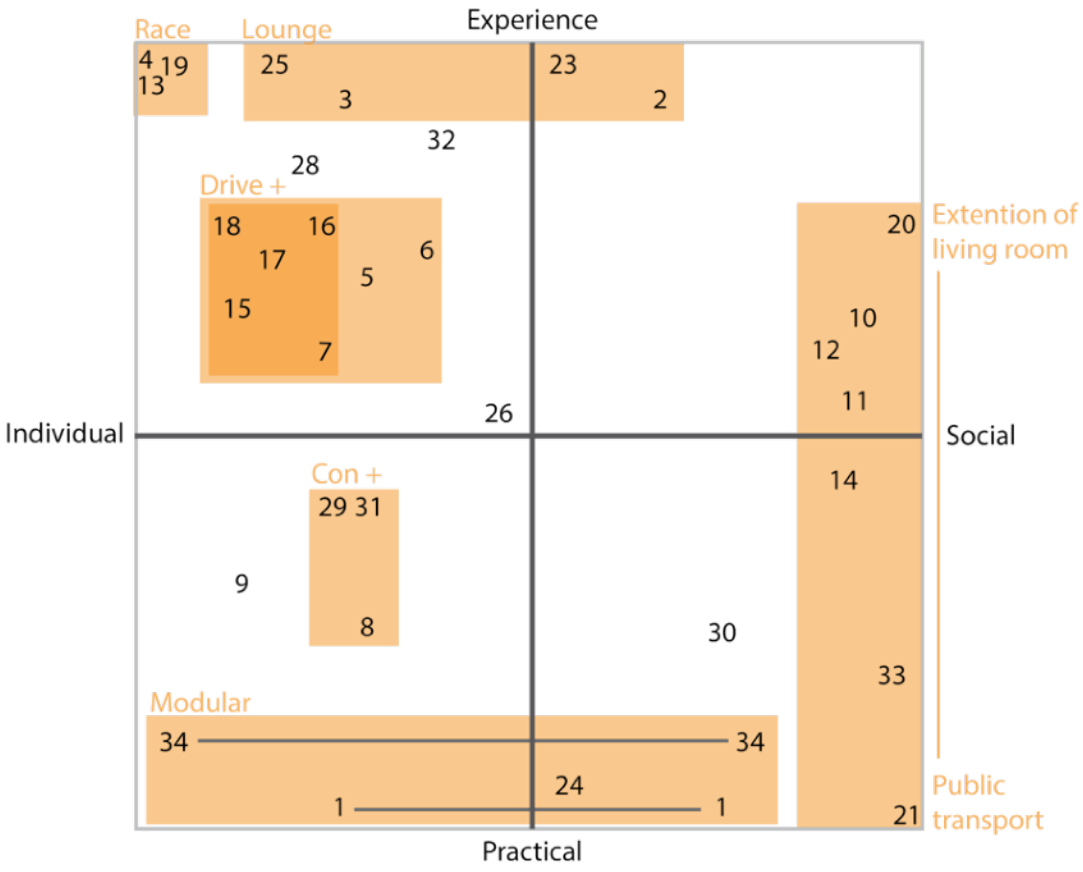
Volkswagen
29 ID Neo
30 ID Buzz
31 ID Crozz
32 ID Vizzion
33 Sedric

34 Volvo 360c

important to show the possibilities and push boundaries. That is why many concepts are situated in the upper right corner envisioning a future with driverless vehicles. On the left side it is more distributed. These concepts show a transition from driving to other activities which will be available in the near future.

Renault EZ-GO and EZ-Ultimo are positioned identically in the previous image but there is a big difference between the two. To identify this a new map is created.

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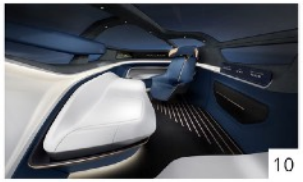
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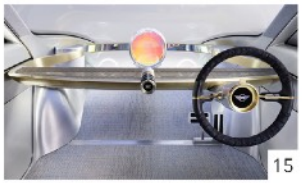
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