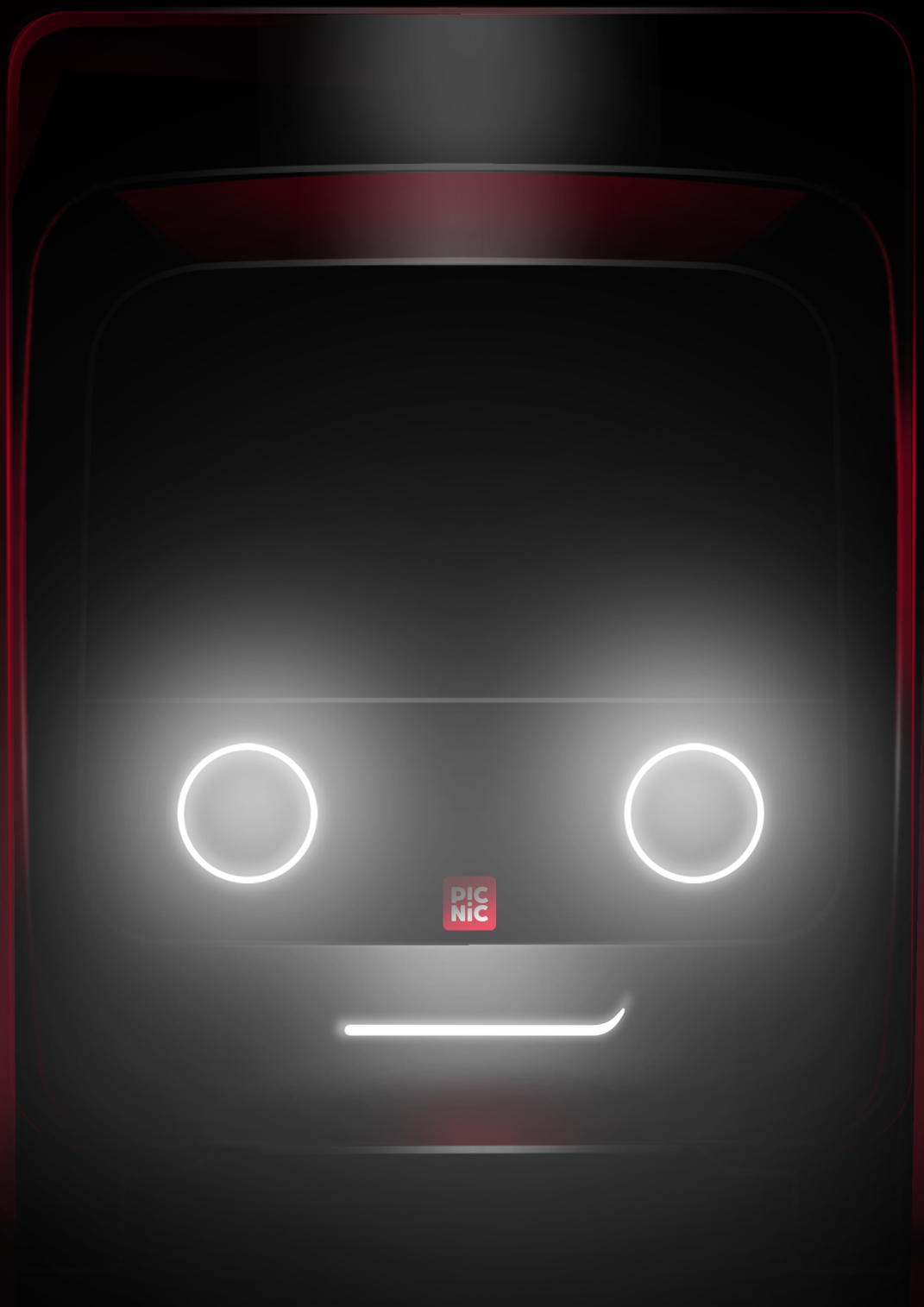
PICNIC GRADUATION PROJECT



EXTERIOR DESIGN OF A BIGGER, FASTER, STRONGER DELIVERY VEHICLE FOR PICNIC

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Glossary

A-Pillar
Is the front vertical pillar of a vehicle and a integral part of the vehicle structure. From a driver perspective it sits between the front windshield and side window.

AR
Augmented reality meaning a computer made object is superimposed in the real world.

Cargo Box
The box at the back of an EPV that contains the groceries loaded in totes.

EPV
An Electric Picnic Vehicle. An electric vehicle used by Picnic to deliver the groceries.

Fullfilment Center
The large warehouse where stock is held, orders are organized and shipped to hubs.

G4
The current EPV that picnic uses. Built originally for small munincipal maintenance work, it is now often seen by the public as the Picnic vehicle due to its quirky character.

Goupil
The french company that currently builds all Picnic vehicles like the G4 and in the future the G6.

Hub
Building in a city where EPVs are stored and groceries are delivered for the last mile.

N-Roads
Dutch national roads where the maximum speed is 80 km/h. Typically used to connect towns.

Runner
The driver and person delivering groceries using the EPV.

Totes
Crates in which groceries are placed at the fullfilment centers. There are black and red ones. Black is for chilled and frozen items. Red is for normal ‘ambient temperature’ groceries.

Executive Summary

Picnic is an online supermarket currently operational in the Netherlands and Germany. Groceries are ordered from an app and delivered to the customer using a last-mile delivery vehicle. This last mile delivery vehicle is currently built for densely populated cities and works well enough to support the current number of deliveries. However, this current last-mile delivery vehicle cannot access all households in the Netherlands. This is because its speed is limited to 50 km/h and it can only carry a limited amount of cargo. In order to expand and reach new households, Picnic is looking for a new last-mile delivery vehicle.

Having started a joint venture with VDL and TNO, Picnic is looking to design and build their very own last-mile delivery vehicle that is purpose built for their needs. They are looking to become bigger, faster and stronger on the roads. Increasing the vehicle speed to 80 km/h and carrying more cargo allows them to reach the households that are currently out of scope. Having a vehicle that can reach those extra households would significantly increase their customerbase and consequently marketshare in the supermarket space. With the opportunity to build a purpose specific vehicle, they also have the opportunity to control the aesthetic of the vehicle. Picnic relies heavily on their brand image and identity as a means of differentiation from their competitors. Therefore translating those brand assets to the vehicle will give them a stronger brand presence in the consumer environemnt.

Having identified the raison d'etre of the vehicle, namely reaching new households in less densely populated areas, research into the brand values, identity and image of Picnic was carried out to find different facets that could be leveraged in the exterior design of the new vehicle. The result of this was that the new vehicle had to look quirky, friendly and electric. Accompanying these terms was a design vision also derived from the research and in talking to the relevant stakeholders. "Design a next generation company icon, to remain a local hero".

Using this input, the sketchphase was conducted with a funnel approach. Creating a broad spectrum of different designs and options that were in accordance with the design vision and form language derived from the research. Through method of elimination with the input from the different stakeholders, the sketchphase reached a point of maturity, which consequently yielded a final design. This final design satisfied all the requirements derived from the research and embodied the Picnic aesthetic while remaining functional for the runners.

This final design was thereafter iterated once more and presented using renders from a CAD model along with detailed renders of key features and elements of the design. That is the final phase of the project and the culmination of the efforts documented in this report.

Further recommendations are also included at the end of this report. They aim to develop the sophistication of the design to the point that it is ready for VDL and TNO to create a proposal for the next steps required to take the design to a first prototype.

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//Chapter 1: Project Introduction

This chapter will outline the approach of the project. Firstly, the causation of the project will be discussed. Thereafter the project assignment will be described. Lastly a visual summarizes the process of the project and can be used as a reference throughout this report.

1.1 Project Origins

This assignment is part of the Master of Science curriculum at the faculty of Industrial Design Engineering at the Technical University in Delft. It is a graduation project that runs for 20 weeks and accounts for the entire duration of the last semester of the Masters Programme. In this specific case, this graduation project contributes to the finalization of the Integrated Product Design Masters programme.

This project is supposed to demonstrate competence and skills learnt during the masters courses with a high level of autonomy. During the course of this project Dicky Brand and Jan Willem Hoftijzer will represent the university in the form of a mentor and chair respectively, and will help guide and assist in order to achieve the best possible results in accordance with criteria set by the faculty.

Picnic is a technology company that uses a data-driven approach to supply groceries to customers in a flexible and efficient way at the lowest price points when compared to competitors. (Beckers, 2014) They are attempting to lead a grocery revolution through software and innovation in logistics. Driven by data while developing the entire operation in-house, from supply-chain management, to forecasting, to logistic planning, they are trying to innovate and optimize every part of the process in order to reach as many customers as they possibly can while also maintaining a competitive and sustainable advantage over other competitors.

Picnic is always trying to develop and challenge their current methods to see if there are other possible opportunities in order to become a better, more successful business. This is why they have given the opportunity for this project. They will fulfil the role of facilitator giving input for the establishment of this project. They will consistently check and evaluate progress and verify the validity and feasibility of the found outcomes. After all, though this is a learning project, they will have useful input that they can apply in their own development in order to keep in line with their desire to keep improving and developing as a company.

1.2 Assignment Description

Picnic developed this project out of necessity for their growth. After initial talks it became clear that the project would benefit from a graduation assignment focused on the development of the exterior design of the vehicle with an academic approach, which in turn was suitable as an Integrated Product Design Masters graduation project.

Picnic has been delivering groceries in the Netherlands since 2015, and in Germany since 2018. Picnic is quickly growing its number of hubs and emission free last mile delivery vehicles are an important part of their efficient logistics network and brand image. These last mile vehicles are instrumental in achieving high efficiency and minimizing its footprint in inner cities and suburbs. Due to the increase in demand for the services provided by Picnic in areas that are currently out of reach with the existing vehicle, Picnic wants to develop a new vehicle that can reach new city limits using N Roads.

The current vehicle is fit-for-purpose and therefore very successful, although it is still a minimal solution. Almost by accident it has become Iconic for the company and brand representation. However, finishing quality, ergonomics, robustness, connectivity, and employability have room for improvement.

Current electric last mile vans are designed for light transport and less intensive use. Furthermore, production capacity of current models are limited, although demand is quickly rising. Differences to standard light commercial vehicles center around the combination of outer dimensions, payload, and cargo ergonomics. They are either too large or cannot carry enough volume and weight.

Therefore Picnic is looking to develop a new vehicle that, in terms of outer dimensions, payload and speed, fills the gap between the smaller existing last mile delivery vehicles and the standard light commercial vehicles. With the opportunity to design and build from scratch, Picnic is looking to develop a design aesthetic that is representative of the brand in order to build on their iconic delivery appearance, while simultaneously tackling the shortcomings of the existing vehicle creating the best fit-for-purpose vehicle Picnic can have.

The assignment will run for 20 weeks. The project is designed to showcase skills learnt during the MSc programme. In order to achieve a succesful outcome in the given amount of time, the scope of the project has to be limited. This means that the focus of this project will be mainly on the aesthetics of the exterior. This also means that some aspects will be ignored for now or well-reasoned assumptions will be made in order to develop a realistic outcome. The scope of what will be and what will not be designed can be seen here in figure 1.

Interior
Designing an interior for the vehicle is a graduation project in itself. Considering the ergonomics, driver systems, interactions and many more facets of the interior that would have to be explored would be too much for this project. Therefore only parts of the vehicle that are "connected" from the exterior to the interior will be designed with regards to interior. Things such as cabin dimensions, ingress and egress movements will be relevant for the exterior and have consequences for the interior.

Cabin / Sidepanels / Rearpanels and bumper
This will be the focus area of the design. All these different parts actually create the skin and housing for the "skeleton" of the vehicle. This skin will connect all the parts and give the vehicle its styling.

Platform
The platform will house the technical components of the vehicle. It is an electric vehicle, so it will house batteries, motors, cooling unit and much more. It will also integrate the supension and frame. All these components are the result of research with regards to performance, roll-over stabillity, safety and more. Most of this input comes from TNO that have extensively looked into the best options. Therefore their composition of platform setup will be used as a base on which the exterior can be designed.

Cargo Box
The cargo box holds all the groceries. The current box holds 48 totes and the new vehicle will carry 64. Currently, the new cargo box is being developed which will be a . The new dimensions are relatively firm at this point, the only thing left to consider is how runners will be able to access the totes. Several different door options are being tested. At a later point in the project a decision needs to be made what door system to use for this cargo box. However, this does mean that the cargo box will be treated as a norm part that has to be integrated in the new design but can not be altered.

Figure 1 -- Drawing of current EPV (Electric Picnic Vehicle)

1.3 Process

The process of the project consists of four phases. An illustrated overview of these phases and topics that are relevant to those phases can be found in Fiigure 2.

Analysis

Picnic initiated this project due to the fact that they are growing rapidly and can accelerate this growth even more by expanding their operations geographically to new areas that can not be reached with the current last mile delivery vehicle. Through analysis of statistics and geographical population density they concluded that their best option would be a vehicle that can carry a larger amount of cargo and drive at higher speeds so that they can access new households by way of N-roads. However, as mentioned, they feel that current transport solutions are not adequate for this specific use-case and therefore decided to inititate this project. The analysis phase of this project will therefore be dedicated to discovering exactly what this new last-mile delivery should be in order to fullfill the need. This analysis is based on all the different stakeholders that are relevant for the new vehicle. Using the stakeholders as the main source for input into a framework which will be the outcome of the analysis was considered to be the most inlcusive approach for the success of the vehicle. Therefore the analysis dissects the needs of the stakeholders and this is synthesised into considerations for the vehicle. The synthesis of considerations is thereafter constructed into a framework that will serve as the foundation of the conceptualization phase in order to produce results that as relevant as possible. This framework will also allow for analysis during the conceptualization phase as it can be used to validate concepts and score them on how well they answer the needs of the stakeholder as opposed to taking a decision based on taste and preference on a more superficial level.

Conceptualization

The second phase of the project consists of the conceptualization phase. This is the phase where the framework turns into visual concepts. In order to break loose away from the slightly narrowed focused due to the research, a few creative instigators were used to kick off the design process. These instigators are an analogy in the form of an illustration, collages and moodboards. After the creativity is instigated, a first round of sketches provides a spectrum of choice. This spectrum of choice is focused on quantity in order to find form language that does and does not suit the project brief. This round of sketching is validated with stakeholders where they choose their four favorite concepts. They also provide feedback with regards to this concepts as a start to the second round of sketching. This second round of sketches are more detailed and provides a better understanding of what the four different concepts could potentially look like in their final form. Thereafter the least favorite of those four concepts is eliminated which leaves three concepts that all fit the design brief. These three concepts are rendered digitally in good quality, accurate proportions, and with strong character and material expression. A large round of validation with the top three concepts is carried out in order to choose the final concept. More feedback from that round is integrated in the final concept and rendered as the final outcome of this part of the design process

Detailing

Using the final concept renders, a CAD model is made. This is because a CAD model allows for a detailed and accurately proportional final embodiment of the design. Choices like what the sidemirrors will look like, how the doors open and such will all be finalized using this model. Thereafter the CAD model can be used to make realistic renders that will convey and communicate the entirety of the design accurately. It also gives the opportunity to develop an animation and AR environment which will contribute to the conviction of the design.

Review

The last phase is mostly designed to explain what phase of maturity the project has reached and what needs to be done from that point forward in order to achieve a real prototype. Also a review of the process along with a discussion on the limitations and shortcomings will be presented.

Process Wheel

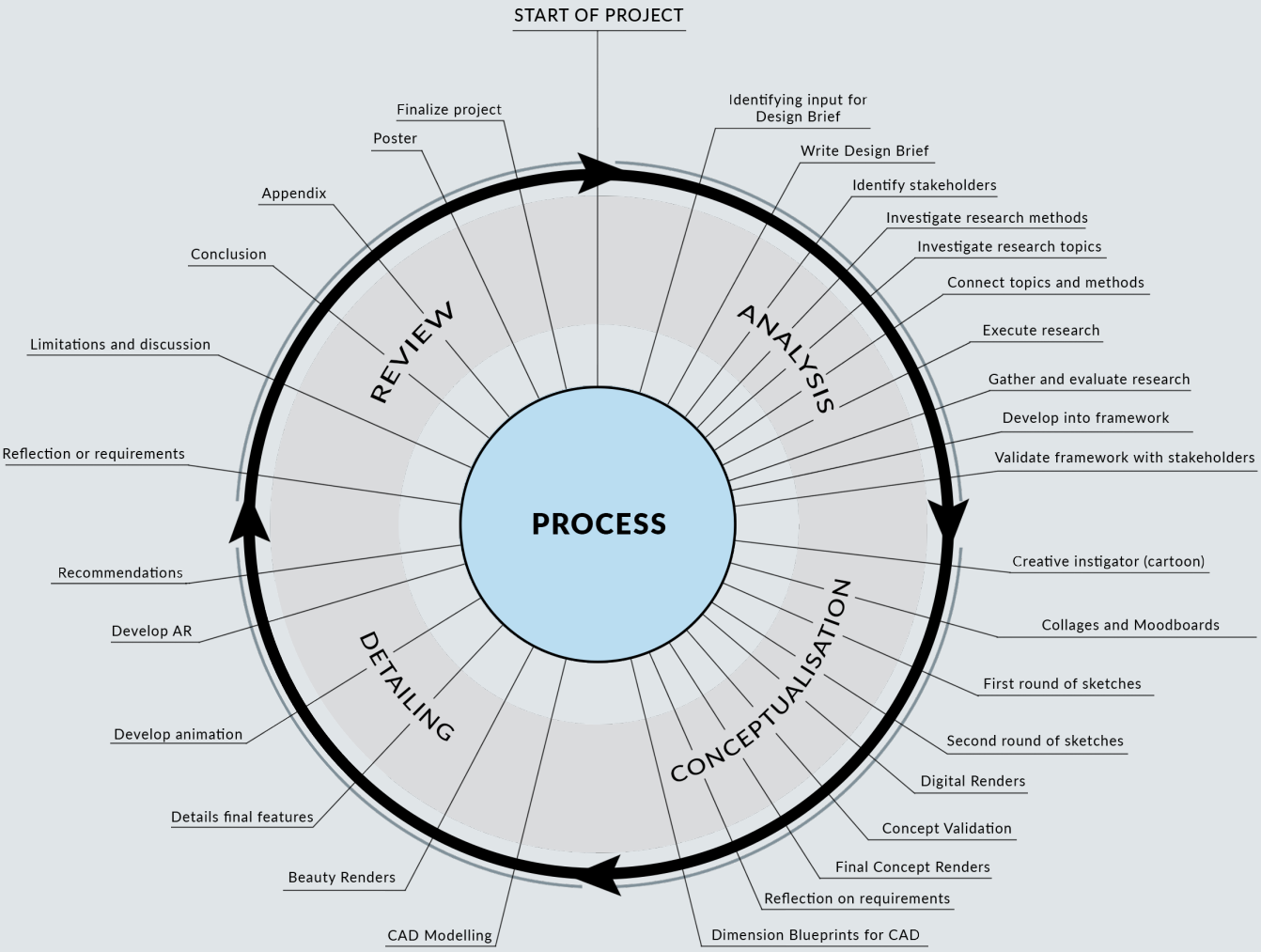
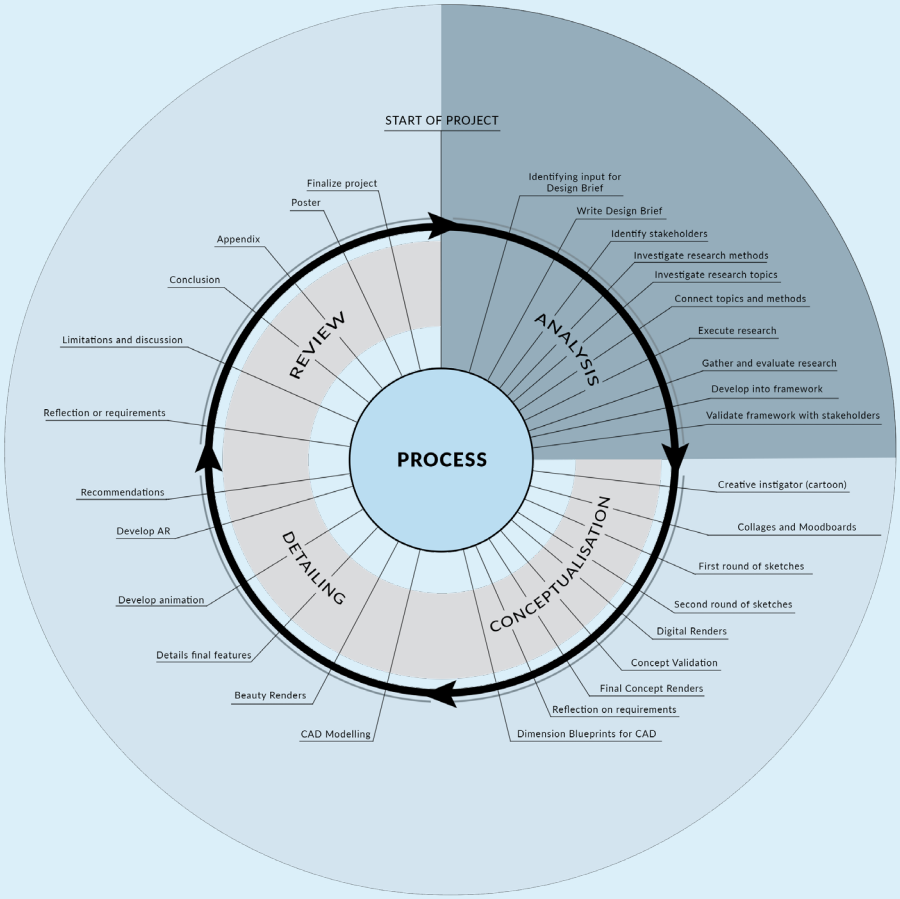


Figure 2 -- Process for the project with different important steps specified in each phase (Boeijen, 2017)



//Chapter 2: Research & Analysis

This chapter summarizes the research carried out in order to gain a greater understanding of the company, operations of the new vehicle and what it should look like in order to be most benificial for Picnic. The result of this research is synthesized into a framework that considers input from all topics in this chapter, which can be used to validate concepts and the eventual final design.

2.1 Design Brief

The Design Brief is the first step in the analysis phase. It is used to construct a feasible assignment. The full design brief as submitted to the board of examiners can be found in Appendix A.

Scope
To create a feasible project, the scope is determined by the 20 weeks during which the project has to be completed. In discussion with chair, mentor and company mentor, it was decided that the focus of this project would mainly be the aesthetics of the exterior. Supplement to the exterior is the integration of several other topics such as usability and makeability as well in order to have an integrated outcome that is not solely an aesthetics excercise.

Problem Definition
As the aformentioned assignment description highlighted, Picnic wants a new last mile delivery vehicle. This will benefit and impact several different layers in the organization. The main goal of the new delivery vehicle is to access new areas by ways of N-roads, which is currently not possible due to the maximum speed of 50 km/h of the current vehcile. The new vehicle should also be able to carry more cargo due to the fact that it will travel larger distances.

Approach
The approach used to for the design process is a typical IPD design cycle. Research and analysis looks to identify relevant input. Thereafter this input is translated to concepts. From these concepts the most suitable concept is embodied en detailed to the level of a final design. This will be the concluding proposition for Picnic and should be a result of the process.

Vision
The vision for the new EPV is that it should be a “next generation company icon, to remain a local hero.” This to build on the current EPV is a familiar sight in densely populated urban areas and is a strong brand asset in terms of physical exposure. Therefore the new EPV should have this same effect on its environment and serve as an instantly recognizable representation of the Picnic brand.

2.2 Raison D’être

The raison d’être is the starting point of the research. Justifying the reason for being is essential in determining relevant research topics for input.

Picnic currently has 70-80,000 customers waiting to get access to the app to order groceries online and have them delivered at home. These are customers that are currently within reach from the existing hubs with the existing vehicle. However, a lot of households maintain out of reach with the current vehicle. Population density and accessibility were studied in order to see how the rest of the customers could be reached. It was found that 90% of Dutch households could be reached if the N-roads could be added to the current logistics infrastructure. This would significantly increase the customers Picnic has, which would make the company more profitable and is required for the size of the company the founders envisioned.

2.3 Vehicle Actions

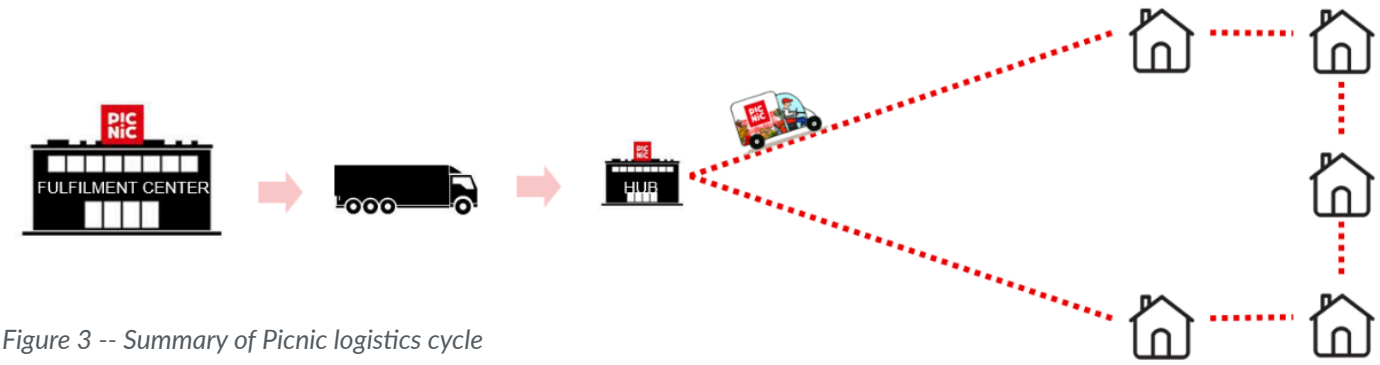


Figure 3 -- Summary of Picnic logistics cycle

In order to gain a greater understanding of how the vehicle is used and the actions it requires, the Picnic logistics cycle is explained. The image above is a simplified summary of the chain of operations and the schematic breakdown on the following pages shows all actions that exist relevant to the vehicle.

Logistics Cycle

Picnic ships orders in plastic bags that hang in crates, called totes. Customers receive their orders in bio-plastic bags from the driver at their door. Picnic currently does not leave totes with the customer, to avoid deposit fees on totes. Drivers collect plastic bags from earlier orders and any bottles that hold deposit. Other packaging items such as wine bottles or other plastics are not taken in. Picnic is running trials with taking return-packages from customers, as to reduce the number of delivery moments for the customers and increase the level of service.

Groceries come in two types of totes, ambient totes and chilled totes, which are insulated and have lids to close off all ventilation. Each ambient and chilled delivery tote holds three of the bio-plastic bags, and serve only one order. One order may require multiple totes of ambient and chilled items. The totes with frozen items can contain up to three delivery orders, each in a separate bag.

Dispatch frames filled with totes are shipped from the fulfilment center to the hubs in standard temperature-controlled trailers (13.6 m length) that hold up to 20 stacks of 2 frames with a maximum of 840 totes. Upon arrival at the hub, the trailers are unloaded. Transit times at a hub are 15-60 minutes, depending on hub docking and unloading solutions. The hub has a small chilled cell to store dispatch frames with chilled and frozen totes.

A Picnic vehicle holds two dispatch frames that in turn can hold up to 24 delivery totes each. Picnic operates a passive cool chain: chilled items reside in insulated totes with ice packs, and frozen items reside in insulated totes with dry ice. Ice pack are returned to the fulfilment center for refreezing and the dry ice evaporates.

Delivery trips currently serve 10-21 orders, take 120-140 minutes, and are executed in both morning (8am-10am and 11am-13am) and afternoon shifts (3pm-5pm, 5:30pm-7:30pm, and 8pm-10pm). The timing and the duration of the shifts can change depending on local demand and vehicle capabilities. After the shifts are completed runners return the EPV to the hub where the emptry frames are unloaded and buffered to be collected by the trailers. EPV's are cleaned and left to charge over night so that the cycle can start again in the morning.

Usecases

The vehicle has several different usecases that are propelled by different actors. Though the runners are the main actor that have touchpoints with the vehicles, there are four other actors whose actions have implications for the vehicle.

It starts with the distribution analyst. They analyse the area of operation from the hub and connect the orders coming in in those areas. They combine those orders into the most efficient route that the runner can drive.

The fleet manager is in charge of the entire EPV fleet. If there are damages or any issues, he or she is in charge of resolving those. Switching all vehicles to winter tyres or reducing the reverse speed in an attempt to reduce damages while reversing are examples of recent changes the fleet manager has made. The hub operators are

in charge of the fleet at the hub so they make sure that their respective portion of the fleet is operational on a day to day basis and any larger issues are reported to the felet manager.

Currently there are mechanics being educated for minor repairs at the hub and on a national level there is a company that servies and repairs more compicated issues.

The runners are the main drivers and have the most usecases for the vehicle. Their actions include driving, parking, manoeuvring, loading and unloading. Their actions will have to be considered a lot when developing the frameworks because these actions will have to be enabled by the vehicle.

Customers and potential customers also have a usecase for the vehicle which is the branding, they recognize the picnic vehicles and the vehicle itself and branding evoke a certain emotion which hopefully draws them to the brand.

The whole logistics cyle and the usecases complete with actions and actors should give a more complete view of what the vehicle is, what it is used for and by who. The next section of the research builds on the understanding by describing all the other stakeholders and their relation and impact to the vehicle. (Wolters, 2019)

Actor	Use Case	Sub use case	Place
Distribution analyst	Delivery analysis	Provide trip planning feedback for analysis	Office
Fleet manager	Operational management	Monitoring ePV fleet	Office
Hub operator	Charging	Charging of ePV	Hub
Hub operator	Operational management	Planning of ePV to delivery trip	Hub
Mechanic	repair and maintenance	Doing maintenance and repairs of ePV	Hub
Runner	Driving	Avoid accidents	Hub, roads
Runner	Driving	Driving from delivery to delivery	Public roads, neighbourhood
Runner	Driving	Driving from hub to delivery area	Public roads, secondary roads, city roads
Runner	Driving	Parking and manoeuvring of ePV	Drop location
Runner	Ingress/egress	Entering and exiting ePV	Drop location
Runner	Preparing ePV for trip	Loading of ePV	Hub
Runner	Preparing ePV for trip	Unloading of ePV	Hub
Runner	Unloading groceries at drop	Locking, unlocking, closing and opening of cargo and driver cabin	Drop location, hub.
Runner	Unloading groceries at drop	Retrieving and storing trolley	Drop location
Runner	Unloading groceries at drop	Pick order from ePV at delivery	Drop location
Runner	Unloading groceries at drop	Reloading of empty totes, empty bottles, and other returns.	Drop location
Runner, customer, potential customer	Creating brand awareness	Experiencing brand image	Drop location, roads

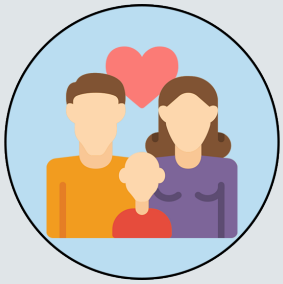
Figure 4 -- EPV usecases and actors summarized

Stakeholder Overview

Runners

Are the main users of the EPV. They maintain and operate the vehicles and are essentialy the only ones that have touchpoints with the vehicle

Customers



The EPV is the only physical touchpoint Picnic has with the company. It is the Picnic version of a store and needs to leave a strong impression showing off the brand

Founders

The founders are the people that developed the vision for the company and steer it in the desired direction. They have excecutive decision power on the new EPV

Marketing

Develop the brand identity of Picnic. The new EPV will have to embody the philosophy developed in order to emphasize the desired identity

Illustrators

The characters developed are one of the strongest assets of the brand in communication and visibillity, personifying the brand using EPVS as their canvas

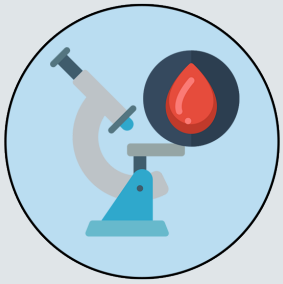
Distribution Team

Analysis of data for determining the specifications input with regards to size, travel distance, cargo size and safety

Product Designers

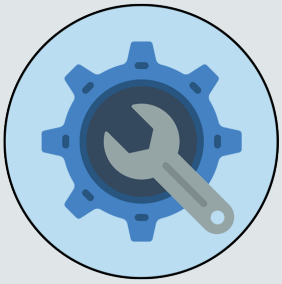
Develop products and UX/UI design in accordance with brand identity with user-centric approach. Their insights in the customer and brand awareness are valuable for the EPV

TNO



TNO is a research party that are researching possible parts for the platform of the EPV. The outcome of their research needs to be integrated with the design

VDL



VDL is the manufacturing party that will develop the tooling and consequently the parts required for assembly. They will turn the design into a prototype

These are all the stakeholders involved. Their importance is ranked in three tiers. The top 3 are the most important stakeholders. The middle 3 thereafter and the bottom 3 are the least important in this phase of the project.

Figure 5 -- Overview of stakeholders and their relation to the EPV

2.4 Stakeholders

After identifying the reason for being of the vehicle and the way it is used, it became apparent that there are lots of different stakeholders that are relevant for the new vehicle and instrumental for its new success. Therefore these stakeholders and their relevance were researched for their input required for the success of the vehicle.

Marketing

The marketing team is focused on developing Picnic as a brand across all channels. The brand identity is instrumental in differentiating the company from its competitors. Due to the fact that a lot of the services are app-based, their online presence is important. Just as important though are the marketing opportunities they have and create in the physical world. They have several different strategies to increase their brand presence in communities, however, the EPV is the most consistent factor. It is a double-threat in the sense that it can serve as a mobile billboard, but its recognizability due to its shape and is seen as a character that is part of the company identity. Therefore the marketing team is dependent on the EPV for its marketing potential and needs it as an asset for the strength of their message. This is why they are a relevant stakeholder and should have input for the new vehicle, in order to make it a vessel that can carry their message.

In addition to the EPV being a tool for the marketing team, their approach to the branding of the company and the manifestation thereof are crucial in making the EPV as Picnic as possible. Therefore the brand identity of Picnic was analysed using a brand identity prism (Wat, 2014). This because several strategies applied in shaping the brand identity can be implemented in the design of the vehicle as well. The marketing director gave a presentation and answered questions through an interview. An overview of the brand identity derived from this session are illustrated on the following page.

The brand identity of Picnic can be summarized as a friendly, quirky and modern.

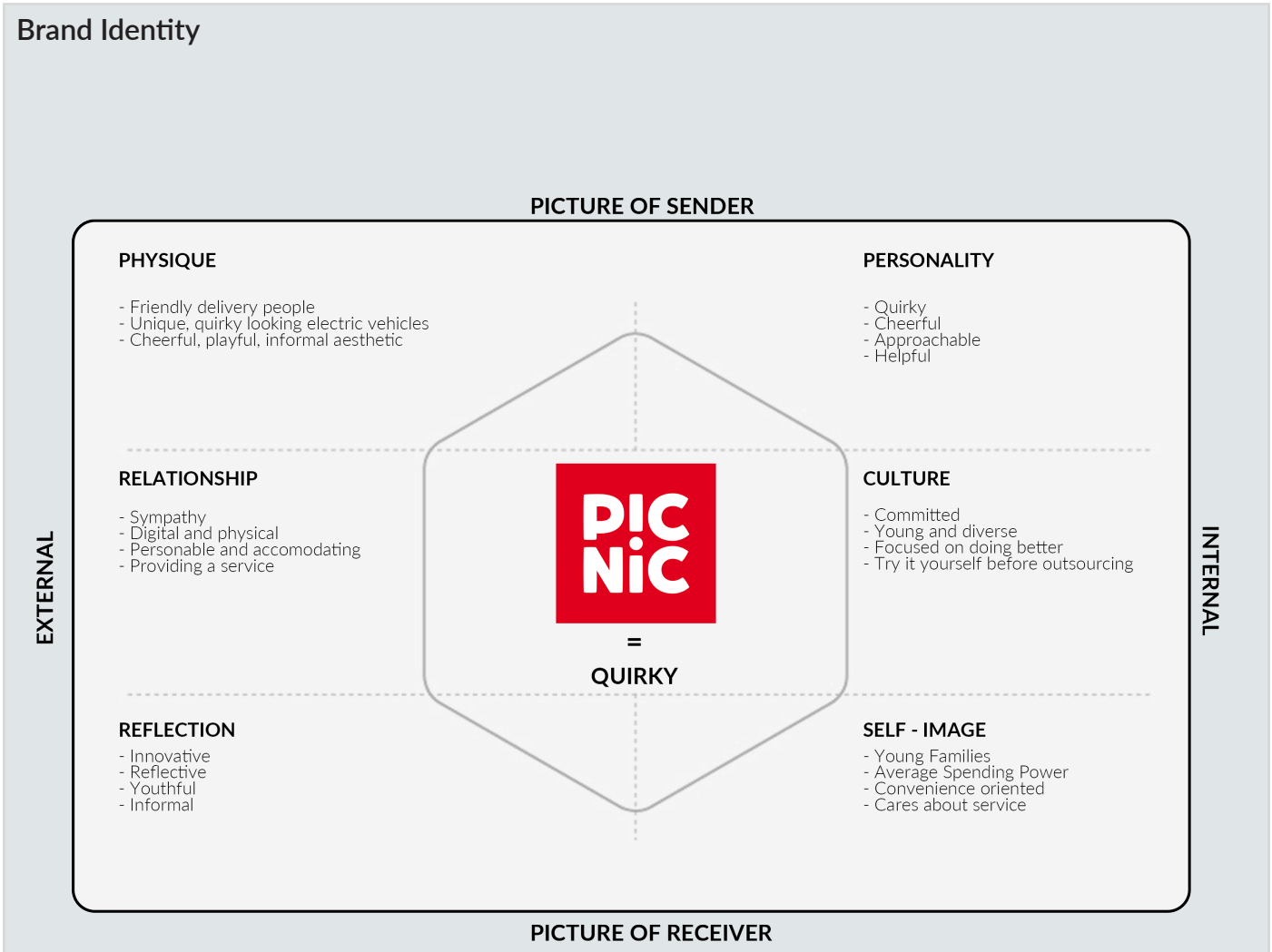
The current EPV has a very distinct shape. It is very narrow and sits high on its wheels. This gives it a quirky appearance and makes it instantly recognizable. So much so that other similar looking electric vehicles are referred to as a Picnic vehicle. This is a strong asset for the brand identity and with the branding on the vehicle showing clear Picnic colors and fun illustrations, it comes across as a friendly approachable brand.

Furthermore, the appearance and attitude of the runners also contributes to the brands desire to come across as friendly and energetic. Often referred to as the modern milkman, they try to be as personable as they can when dealing with customers, in the same way that the milkman of the past would deal with customers. Their bright red aprons, white collared shirts and jeans also look different than most delivery personnel contributing to the milkman image.

More evidence of Picnic trying to be quirky, friendly and energetic can be found in its way of communicating with customers. They use an informal tone of voice in their responses by calling you by your first name and friendly yet not so formal language. Picnic believes this is incredibly important because it lets their customer know that, even though they are an app-based service, there are real people at work at Picnic that they can talk to and deal with. This gives Picnic a more human character and makes it feel like less of a technology company.

Another interesting example of the brand identity is that Picnic campaigns are focused on communities instead of country-wide. They want to have a local presence so that people feel like their Picnic vehicles and runners are a part of their own community. They do this by engaging in local festivities such as block-parties, events at sports-clubs and naming vehicles after people from the local community. You can pickup a bouncy castle from every local hub for kids-parties, they can provide an EPV that has been transformed into a ball-pit or a shooting target that kids can kick footballs in, or hand out free ice creams when its hot all in an attempt to engage with the local communities and let them know that they are not a large conglomerate but rather a local service with attention for your specific community.

All these different facets of the brand identity and strategy are well though out and always in line with the values that Picnic tries to uphold, being the friendly, quirky, energetic and local grocery service that embraces a modern milkman attitude. These are all values that the new EPV can leverage in order to create a strong Picnic aesthetic and should be considered as input for the new EPV. (Method by Lindberg, 2012)



The brand identity of Picnic is very influential for this project. Understanding how the customer aligns with the intentions of the brand gives key insights into how these different facets can be leveraged in the design of the new vehicle. What stands out is that the brand is considered quirky as they have a fresh approach to an age old activity and that the emphasis is on service with a smile. Therefore friendliness and quirkiness are very important take aways from this brand identity prism and will be consequently used as inspiration for the character of the new vehicle.

Figure 6 -- Picnic Brand Identity (Dods, 2018)

Illustrators and Product Designers

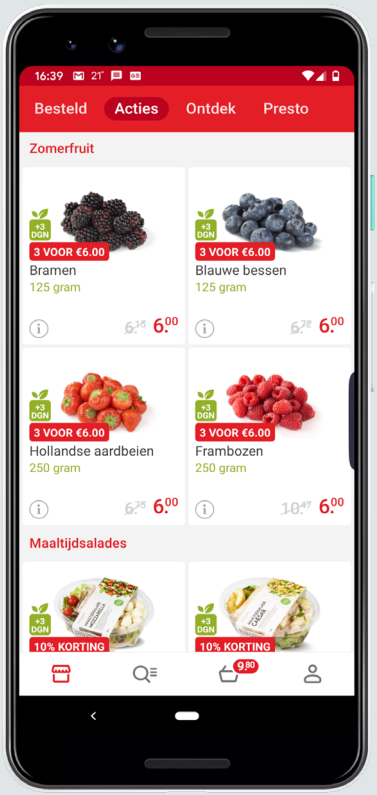
The illustrators and product designers visualise a large part of the brand identity . They have developed characters that have personified the brand. Inspired from the “milkman”, the initial Picnic branding was made to be ‘local and friendly’ (Vermijs, 2019). It gives Picnic a relatable face and makes it more human. The illustrators, together with the product designers, dictate largely what the house-style of Picnic is. Though they describe it as fluid and constantly evolving, they have also developed a few key values that are consistently used in the development of the visual identity and house-style of Picnic. (Degani, 2018)

The color use is predominantly white. This is complimented with hints of red. Though the logo is the other way around, most of the visual products by Picnic look this way. It is an effort to keep the brand clean and instantly recognizable. Simplicity is also important. Instead of making very elaborate designs, they try to create a visual aesthetic that is easy on the eyes and legible by use of this color combination and illustrations.

There are several different products where this house-style manifests itself. First it shows in the branding of the EPVs. They are largely white with the products and Picnic characters displayed on the sides of the vehicle. Along with the company tag-line of “Free delivery, lowest prices” this adds to the visual aesthetic of the brand. Having these large areas that basically turn the EPVs into large driving billboards is very important for the brands presence and the new vehicle should accommodate this as well. Secondly, the app, which is basically the store and the digital realm where Picnic really gets to show its identity is another prolific example of where the house-style created by the illustrators and product designers comes to life. The intent of the app is to create an environment that is simple and to the point. From the way products are displayed with only the most relevant information to the visual representation of the task-bar with simple pictograms, everything the shopper needs to see is available in a very simple manner.

A profile of the house-style can be found in figure 7. The use of color, combined with the simple and honest approach to the app as well as the fun and friendly illustrations are all strong styling cues that should be considered when developing the design of the new EPV. When applied correctly it will help a lot in giving it an authentic Picnic appearance.

House Style Examples



LAAGSTE PRIJS GRATIS THUIS

Figure 7 -- Examples of House Style

TNO and VDL
TNO and VDL are partners in this project. When Picnic decided to look into building a vehicle from the ground up, they understood that they would need partners as they are not a company with the tools and resources in-house to develop hardware. Therefore they approached TNO and VDL in the form of a joint venture.

In this joint venture, TNO has the role of research party. Their main focus is on researching the most optimal layout of the skateboard for the intended use based on the specifications derived from data provided by the distribution team (discussed later in chapter). This means they are looking at what type of motors are required, batteries, safety specifications such as implementing ABS systems, crumple-zones, tire and suspension setup for optimum friction and roll-over stability, and much more. At this stage in the project their research is still mainly explorative and not yet consolidated into a place where it is ready to be applied yet. Therefore it is relevant to consider them as stakeholders, however, their input is not essential as of yet.

VDL is a manufacturing party. They have experience with automotive production, mostly focused on heavier transport such as buses. Once the design for the new EPV is ready and drawn out in enough detail, meaning a CAD model with class A surfacing finish, they can start analysing the makeability of parts. Once they have the skin they can develop the rigid frame structure onto which panels and other system components can be mounted. Once this frame structure is complete, they can look into different manufacturing processes based in cost and complexity. As a stakeholder they are relevant because the outcome of this project is their starting point. They will use the final detailing and embodiment of the concept and turn it into a prototype.

Though both TNO and VDL are not the most important and influential stakeholders, considering their role in this project does make for a more complete picture and will prove valuable in creating the final result.

Runners
The runners are the people that deliver the groceries to the customers front door. They are energetic, young people that take pride in their job and often work part-time next to their studies. Picnic seeks out these young part-timers as the premise they provide is that you have flexible working times, decent pay and a rewarding job. In turn they expect the runners to be courteous towards customers and flexible with demands.

For this project the runners are relevant stakeholders because they are essentially the only ones who have touchpoints with the vehicle. The vehicles are stored at the hub. When the groceries come in, they make their assigned vehicle ready by loading the frames with groceries into the vehicle. When loaded, the runners will drive out to their route given in a tripsheet and a purpose-specific developed app for the runners. They drive around the city centers delivering the groceries to the customers door. This is where they have an interaction with the customer, asking if they have the recyclable bags from the previous delivery and any bottles or Nespresso cups that they can take back with them. After completing their stops, they drive back to the hub. Upon arrival, they unload the empty frames and totes and park the epv so it can be recharged. If necessary they clean it quickly or give it a quick wipe-down.

In speaking to the runners about how they feel about the vehicle, it became clear that there are a few very strong points the vehicle has and a few that have room for improvement. They like the dimensions and the fact that they are driving an electric and distinct looking vehicle. They often receive positive responses from bystanders and they say it is because the vehicle looks cute. In practice the vehicle is a very useful tool and only has a few minor shortcomings. Things like the heating system, single windshieldwiper, flimsy sidemirrors that can not be adjusted easily and such were mentioned. After joining them for a trip and talking to them with regards to the functionality of the vehicle, they mentioned that a new vehicle would benefit from better cornering capabilities and better visibility.

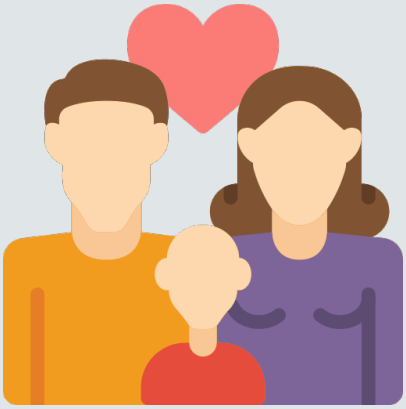
The main takeaway from the runners as input for the EPV is that the current EPV is a useful tool and the new vehicle should provide, at minimum, the same usability and ease for their workflow. If the new vehicle requires more actions from them, comparatively, it will be considered worse. Therefore the new EPV should provide at least the same functionality in order to be successful.

Customers

The customers are considered one of the most important stakeholders for this project. The current EPV has become an icon for the brand in their perception. Talking to some customers, they instantly recognize the little vehicle. Described as this quirky cute strange machine that looks a little bit unstable and has a friendly appearance, it has become a huge part of Picnic's brand image. The typical Picnic customer profile is shown in figure 8.

As mentioned, Picnic is an app-based platform. Therefore it does not have a physical presence in the form of a store like some of the main competitors. This in itself can be considered a disadvantage but it is something Picnic tries to combat with a very strong customer-oriented approach. App-based services have a slightly more difficult time in building a relationship with customers because the technology causes distance between company and customer. They do not see or come in contact with the human side of the company. Picnic has chosen to actively seek out their customers and connect with them on a personal level to show that beyond the technology there are actual people working at the company ready to help. In addition to this the runner is also crucial in maintaining that relationship with the customer. Together with the vehicle they are the only physical presence and therefore have to be a strong representation of the brand. This is why the vehicle is so important as a personification of the brand. It needs to support and strengthen the relationship with the customer, which is why their view of what the brand image is very important to consider in the design of a new EPV.

Brand Image and Customer Profile

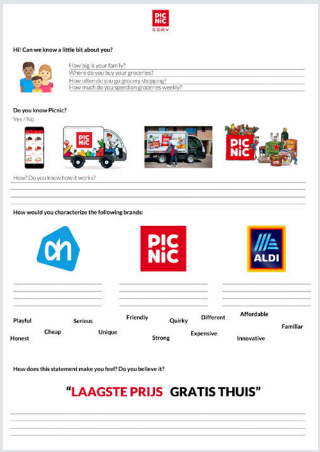


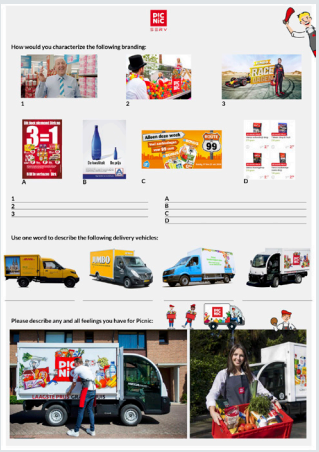
- Young families with an avarge of 2.1 children

- 19th percentile education average

- Average spending power 50 euros per week

- 71% of people ordering are female





Brand Image Survey

Six mothers were interviewed while coming out of a competing grocery store. The intention of the survey was if the brand image could be derived by asking them questions about Picnic and comparing the brand to two competitors. The following quote summarizes the brand image derived from their answers:

"Picnic is a new supermarket where we can order on-line. Their strange little cars drop off groceries all over town. It feels luxurious to have groceries delivered but most products are cheaper than other A-brand stores. Their happy delivery people and quirky cars are always fun to see"

Figure 8 -- Brand Image and Customer Profile (Viet, 2017)

The Founders
Picnic was founded by four entrepreneurs. Three of them are still currently at the company. Their roles differ where one of them functions as a CEO, the other as COO and one is the creative director. Picnic is one of the fastest growing companies in Europe and attracts a lot of young talent, something the founders really believe in. The structure of the organisation suits this youthful, explorative, doing mindset which means that the founders are often still involved in all projects. This ranges from decisions that are made in the app but also the development of the new vehicle. They recognize how crucial the new vehicle is for the growth of the company and the image of the company and therefore it is crucial in recognizing them as a stakeholder for the project as well. They have executive powers and will therefore have a final say in the design of the new EPV.

Distribution Team
The distribution team is a large team at Picnic headquarters. They control everything from the allocation of runners into timeslots to the algorithm that plans the most efficient routes. Based on the current capacity and geographical scope Picnic can cover from the current hubs with the current vehicles, they found that if Picnic were to employ new faster vehicles that can carry more cargo, the company can grown faster and access new clients.

The potential of the new market goes beyond the borders of the Netherlands. In order to quantify the potential market growth and therefore financial upside of having a faster vehicle that can carry more cargo, members of the distribution team analysed the geographics and demographics of the Netherlands, Germany and France. In figure 9 you can see how the population density is distributed geographically in these countires. It also shows where the largest gain in terms of customers is situated when optimizing the speed and cargo limits of a new EPV. This is essentially the data that sparked the inititation of this project, after they realized and recognized the growth potential that could be had by adjusting two metrics of the vehicle.

As can be observed the current market in which they operate is not where the largest growth potential remains. Specifically the urban towns and suburbs and intermediate towns is where the most growth can be achieved. Understanding that these places are often isolated and therefore not within reach right now proves that gaining access to the N-roads is vital in reaching these. Therferore the expected increase in reach is 20-25%.

Synthesis
All of these stakeholders have their own individual concerns and benefits when it comes to the outcome of a new vehicle, which is why their input was considered and synthesized into a framework. This framework can be used during the conceptualization phase as a reference for the iterations of concepts and ultimately would serve as a guide for panel members to support them in the validation of the concepts in order to make the decision for the final concept as fair as possible. The framework is developed from the perspective of top level requirements. Though many of them could have sub-requirements that are more specific, those are not as relevant for this stage in the development of the concepts. If all those sub-level requirements would also be considered it would constrain the development of the concept too much which would not yield interesting results. Therefore all of this input from the stakeholders and also research hereafter has been condensed so that the specifications in the framweork remain manageable.

CONFIDENTIAL EXTRACT 1.1

Figure 9 -- Geographical data provided by distribution team (Bijl, 2019)

2.5 Context

The context of operation for the new EPV is broader and slightly different than the current context. This is obviously due to the addition of N-roads and less densly populated towns, which is the main area of operation.

Current Context

The current context of operation as mentioned previously is densely populated cities. Highways and N-roads are avoided due to the speedlimits there, which could cause unsafe situations. In the app designed for the runners they can turn on a function that navigates them away from highways. This has implications for the logistics as some parts of cities are just not accessible without driving on highways or N-roads due to the distance the runner would have to drive. The densely populated areas where runners currently deliver were instrumental for deciding what vehicle is currently used. Recognizing that streets would often be narrow and because runners have to park for delivery, they recognized that the vehicle footprint would have to be as small as possible while still being able to carry the desired amount of totes. Therefore, after much deliberation, they selected the G4. This mostly due to the fact that it is small and nimble, it has a tight turning circle so that it can manoeuvre easily due to the short wheelbase and cab-over setup, and is narrow. This makes it perfect for parking in tight streets and especially also one-way streets so that they do not inhibit the flow of traffic. This is safer for the runners but also for the people living in the delivery areas. As the Picnic vehicles have become a common site and will continue to operate and become familiar in those areas, the last thing Picnic wants is that they become a nuance that impedes in the lives of the residents. When comparing to the delivery vehicle of other supermarkets it becomes clear that this nimble and smaller size is an essential part of the current success of Picnic. The images below show how easily a G4 can park compared to how the bigger delivery trucks from competitors often have to park because their vehicle does not suit the context.

New broader context

The new context for the EPV has several consequences. N-roads and possibly highways will now be part of the route options and thus a lot more customers can be reached. N-roads are essentially provincial roads connecting towns and cities together off the highway. They are often single lane and do not have a physical barrier seperating both ways. Along the sides there is often scrub or trees. The national speed limit on these roads is 80 km/h and there is no official minimum speedlimit, however, a speed of at least 60 km/h is adviced. The workflow of the runners will not necessarily change, they only have to drive longer distances, do more drops, and do not have to set their app so that they have to avoid highways. In reaching these customers, vehicles will also operate in less densely populated areas such as small towns. Here a slightly larger vehicle will be acceptable as most of these towns are urban areas with more space and therefore parking and manoeuvring will be easier. Having driven the areas and understanding that space is less of an issue, it favours the idea that the new vehicle needs to carry more cargo. Below is an image of what parking in these less dense neighbourhoods would look like and what an N-road looks like. To the right is a map of all the N-roads in the Netherlands. This gives an impression of what the expanded context of the vehicle looks like.

Laws and Safety

With the increase in speed and cargo, the vehicles have to become safer for the runner to operate when driving on the N-roads. By law for homologation for the Dutch market, there are not a few standards set by the RDW that have to be achieved in order to classify as a small series light commercial vehicle. The exact specifications come from the N1 or L7E typification, depending on the final makeup of the vehicle, but in order to achieve these standards, beyond the regular APK, the new EPV can not exceed certain size and weight limits and must be a limited production run.

Figure 11 -- Picnic can easily park in most places

Figure 12 -- Competitor parked, blocking the sidewalk

Figure 13 -- Runners has more space in towns

Figure 15 -- Overview of N-roads (thin) and A-roads (thick)

Figure 14 -- Impression of a typical N-road

2.6 Form Analysis

A form analysis is made in order to gain a better understanding of why the appearance of the current EPV is so iconic and beloved and what elements could potentially transfer to the new EPV. Furthermore an analysis of the character of competitors is also made in order to evaluate what makes their vehicle (un)succesful and if the new EPV could draw inspiration from that.

Current Form

The current EPV is a peculiar success story. From a functional point of view the choice was very deliberate as lots of different options were initiallly tested and the vehicles by Goupil were found most favorable. This was due to the fact that most other small electric transport vehicles would succum to the weight of the cargo box. The cargo box is one of the vital components of the vehicle so that would be the determining factor for the choice of vehicle. With the custom cargo box integration it got an even more unique topology which would later incidentally end up being a part of the G4 success in terms of recognizability. Figure 16 highlights some of the form features that make the current EPV so unique and descriptions of the features are as follow:

1. Cab-over setup

The G4 is very recognizable for its cab-over setup. This is not a very common sight any more but as the vehicle is electric it does not require an engine bay which was traditionally in the front of a vehicle often creating a large nose making a cab-over structure difficult. This cab-over construction places the driver beyond the front axle and close the windshield. This provides good visibillity for the driver and allows for a tighter turning circle so it is functional as well. Combined with the larger cargo box sitting behind it, it creates what Picnic calls a worker ant topology. It looks like the cargo box is being pulled forward, which from an aesthetics point of view is a reference that they would like to see in the new vehicle as well.

2. Short Wheelbase

The current wheels are very small and narrow, size 155 80 R13, and have a normal steel rim construction. This is very functional and cost-effective however not the most appealing. In terms of efficiency they do offer less roll-frinction which requires less power output for the new vehicle. Also relative to the body length, the wheelbase is very short. There is overhang in to front and back which makes parking and turning easier.

3. Ground clearance

The vehicle sits very high off the ground. Due to this it looks unstable. Though this is not necessarily true, it does make people anxious about it falling over. It is a visual aesthetic that is not necessarily positive, however, the feeling of concern people have does create sympathy and is a trigger for them to feel emotional attachment which, in its manifestation, is a positive thing. In combination with the cab-over and large cargo-box behind it, it creates a sort of underdog feeling, like it is not really meant to work but it does and that makes people smile and take note.

4. Cargo Box height

The cargo box sits higher than the cabin, again reinforcing the worker ant topology.

5. Anthropomorphic front

It is nothing new that people can recognize facial features in the front of vehicles. In the case of the G4, the facial features are very clearly recognizable. There are eyes, a nose, and a mouth. It gives the vehicle character and is often mentioned named as one of the features that makes the vehicle cute. There are multiple anthropomorphic studies that prove that the face is hugely influential in the perception of the character of the vehicle, which should be leveraged for the new EPV as well.

Form Analysis Current G4

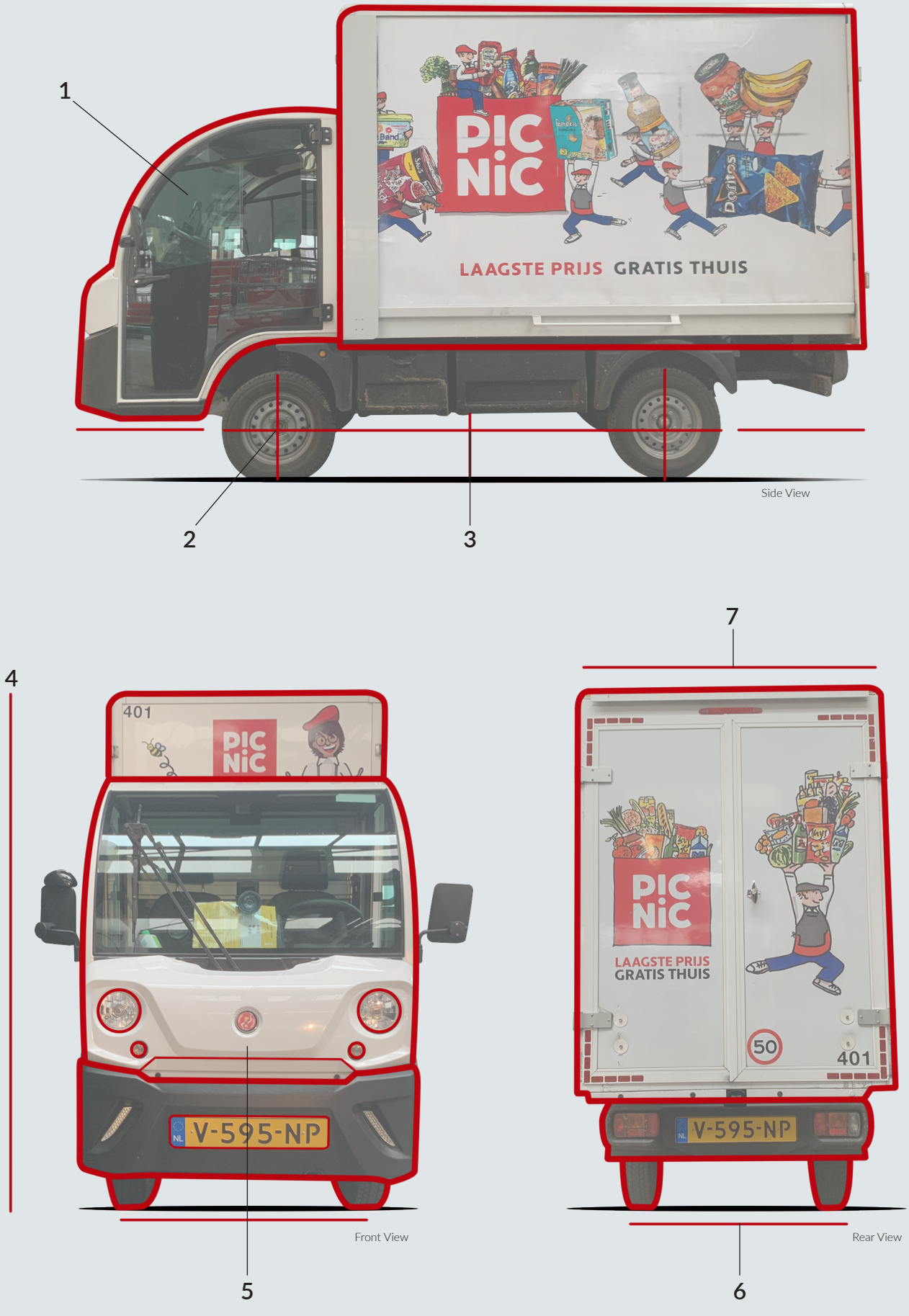


Figure 16 -- Overview of the G4 and breakup of its aesthetics

6. Narrow wheelbase
As mentioned the wheelbase is fairly short, here you can see that it is also quite narrow. Again this benefits the turning circle, however, not necessarily the stabillity.

7. Vehicle Width
The vehicle is very narrow and this is great in densely populated areas. It allows for easy parking which saves a lot of time and effort and makes the lives of runners easier. It also contributes to the distinct profile and gives it sort of a cartoonish look because the vehicle has this consistent narrow width from front to back.

The G4 is a very recognizable character and this recognizability has become instrumental for the Picnic brand recognition and brand image. It looks cute and nimble, a bit odd and almost clumsy, but it is capable. Therefore we determined that this could be best described as an underdog. There are plentifull reason why people might think it is not up to the task, but in reality works very well and is very appropriate for its purpose. This suits the picnic brand image very well, a friendly local service that is approachable and accomodating. All these characteristics derived from the form language should be considered as input for the new vehicle. It will help maintain the appropriate appearance for the company and make sure that the G4 and new vehicle become recognizable as family.

Competitors
Of course Picnic is not the first company looking to develop a new electric light commercial vehicle. There are several other manufacturers that have vehicles in this segment. Though not all appropriate for Picnic and the desired aesthetics and performance, looking at them for inspiration is worthwile. It creates a better understanding of what works and what does not work with regards to the desired aesthetic. Therefore a few examples have been selected and displayed in figure 17.

1. Nissan e-NV200
The Nissan e-NV200 is more like a van than any of the others. It has very classic styling and one would not be able to tell that it is electric. These types of vans are gaining popularity and are obvious choices for manufacturers. All they require is a newly designed platform and most of the other parts can be used from existing vans. This is distinctly not the aesthetic Picnic is looking for. It is just a normal van and does not have any character. There is no expression of it being a modern electric vehicle. Also the conversion for a cargo box on this platform would be too much effort for too little gain. Therefore this vehicle is a good example of what Picnic is trying not too achieve.

2. Streetscooter
The streetscooter makes an interesting case. Largely developed for DHL, it looks like it is a marriage between a smaller EPV much like the G4 and a regular van. The shortened wheelbase is supposed to improve manoeuvrabilit. The vehicle is very bare and looks industrial. In terms of proportions this vehicle looks very out of balance. It is so front heavy and there is strong seperation between front and back that it almost looks like a frankenstein. This also does not look like an electric vehicle. Though this may be one of the most prevelant competitors for the new Picnic vehicle, it is an easthetic that is nowhere near what Picnic is trying to achieve.

3. The Navistar Estar
The most futuristic and electric looking vehicle of the three is this. It was tried and tested by Fedex as a delivery vehicle and is under development with them. Though it looks futuristic and electric and utilises the options that come with that, it does not have the cute anthropomorphic qualities that evokes the emotion and has the aesthetic is looking for.

To conclude, the current G4 vehicle has a lot of quirky design features that can be leveraged and challenged in the new design. The competitors set an interesting benchmark and should be considered inspiration and a reminder of what Picnic should distinguish itself from.

Competitors

1

2

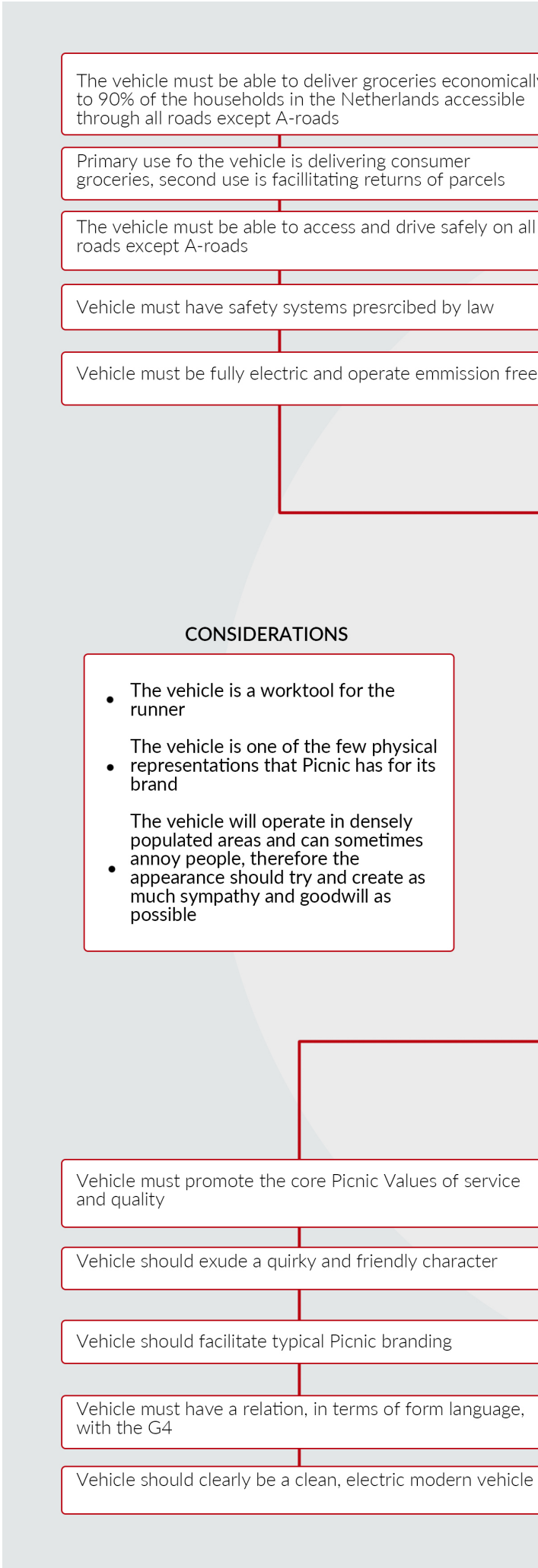
3

Figure 17 -- Examples of competitors

2.7 Synthesis

A framework with input and considerations dilluted from the research is shown in figure 18. This framework should be used for the conceptualisation phase in order to make the concepts as relevant and Picnic as possible.

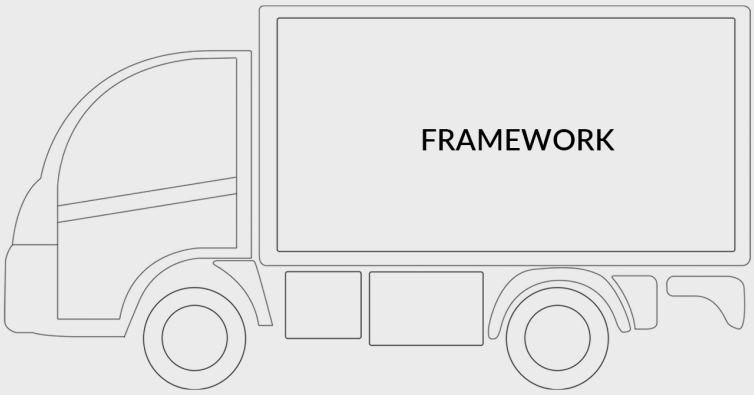
The research in this chapter is the most important information required in order to move on to the next phase of the design process. An adequate amount of input has been developed so that the results for the next phase can be steered into the right direction for a favorable outcome. Starting with the usecases and actions of the EPV was very useful to understand the operations the vehicle endures because almost all of those would be relevant for the new EPV as well. The stakeholders thereafter were instrumental in understanding the relevance and importance of the EPV for the company. Though there are many stakeholders, a lot of their concerns and input for the vehicle manifest in similar requirements and could therefore be combined. Having talked to all of them and having gathered input in a variety of ways, the outcome thereof is integrated in this framework. Understanding the context and especially the new context of operation also yielded very important information for the stakeholders. If the newv vehicle does not suit the new context well and can therefore not operate to the best of its abilities, it will not be successful. Therefore the context was closely examined and added to the framework. Lastly it was important to understand that Picnic is already operational with their vehicles and have built an impressive reputation and recognizability with these in a relatively short amount of time. Therefore understanding what made them a success through form language anlaysis and comparisons to other vehicles is vital in developing the right form language for the new EPV as well. After all, these vehicles will be operational and visible simultaneously and therefor need to embrace some familiarity between the two whilst also having some distinct differences. All of this has been considered and developed into the framework depicted here. This is the foundation of the next phase, which is conceptualisation. Here these requirements will start to take on a physical form and expression.



TECHNICAL SPECIFICATIONS

- The vehicle has to provide a safe and ergonomically responsible enivronment for the runner
- The vehicle must support the workflow of the runner in the same capacity as the G4
- The vehicle must be able to carry and safely support a fully loaded cargo box
- The turning circle should be as small ass possible, no greater than 10 m from wall to wall
- Vehicle should be driveable for a licensed individual for B class vehicles
- Vehicle width should be smaller than a van but larger than the current vehicle
- Wheel and rim size should be a common size
- The vehicle should have similar drop time and cost efficiency performance compared to G4
- Vehicle should be able to drive safe speed on N-Roads
- Vehicle should integrate with current logistics without requiring alterations in this system

FRAMEWORK

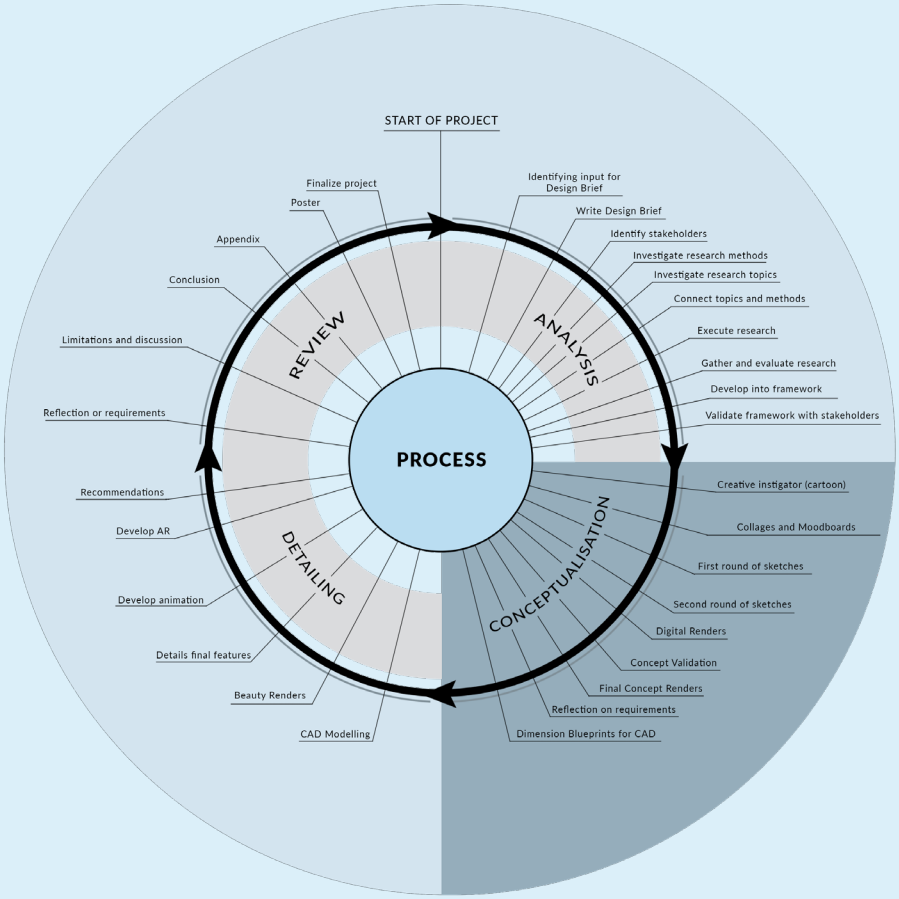


CONSIDERATIONS

- Due to the iconic shape of current vehicles, a lot of other electric delivery vehicles are called Picnic vehicles, the new vehicle should try and accomplish this generic standard as well
- The new vehicle should look simple, modern and electric but should not move to far way the archetype of a small delivery vehicle, otherwise it may not be accepted as such and become disconnected from road users

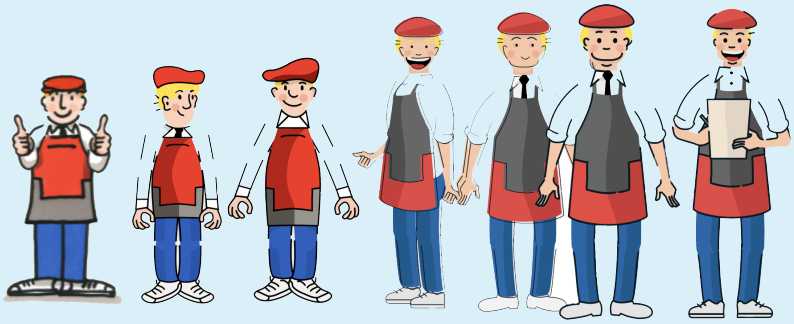
AESTHETIC SPECIFICATIONS

- The vehicle should represent a modern take on the qualities of the traditional local milkman vehicle from the past
- Vehicle should be able to be abstracted into a character that could play in a cartoon
- Vehicle should use antrhopomorphic qualities to trigger the feeling of cuteness
- Vehicle should appear swift and nimble
- Vehicle should look more stable than current G4
- Vehicle should have trasnparency so the runner is clearly visible
- Vehicle should have the potential to be recognized by customers as their local hero
- Vehicle should have a-typical delivery vehicle proportions
- Runners should feel proud to drive the vehicle
- Vehicle should take on the role of underdog compared to vehicles from supermarket competitors



//Chapter 3: Conceptualisation

This chapter is the kick-off of the conceptual design phase. Using the framework derived from the feedback it will start as an exploration for the right character and will ultimately result in a final concept. This part of the process can seen as a funnel, it begins very broad exploring a lot of different options and by review and validation with stakeholders will crystallize into three different concepts that check all the boxes of the framework. These three concepts will be evaluated by a large group of people for a final round of validation. This input will eventually substantiate the decision of which one will be detailed as the final concept.



3.1 Design Vision & Analogy

In order to design an appropriate and relevant vehicle, a design vision serves as a constant reminder of the intention of the vehicle. The statement below is the design vision for the new EPV established with stakeholders. The analogy beneath is a creative instegator for the design process and serves as visual representation of how the new vehicle weighs up against the existing vehicle.

"DESIGN A NEXT GENERATION COMPANY ICON, TO REMAIN A LOCAL HERO"

Analogy

The analogy depicted here is a visual representation of what the new vehicle should be compared to the existing EPV, the G4. The shorter illustration, Peter Picnic, is used as a representation of the current G4. He is a small, friendly, happy character that looks capable and embodies the spirit of Picnic. Ton Picnic next to him is his cousin. Ton is taller and broader, has a bit of a belly, and is very strong. He can comfortably lift two totes where Peter is better off by just carrying one. He has recognizable features that are similar to Peter that are distinctly Picnic like his clothing, wide smile and overall friendly appearence. With their similarities but also differences, they give off a similar vibe. They are happy, capable and ready to serve their customers!

Peter Picnic = G4

Ton Picnic = New Vehicle

3.2 Design Funnel

To develop a relevant and attractive new vehicle for Picnic, the design process is set up like a funnel. A wide spectrum of options is created and thereafter refined by means of validation with the stakeholders until a final concept is derived. This is to keep all stakeholders involved consistently so that, ultimately, they feel confident that all options have been explored and the final concept is the best possible result.

Creative Instigation

To kick off the creative process, a series of creative instigators were developed. As all the research culminated in a set of requirements these creative instigators aim the free up the mind a little bit so that no stone is left unturned when starting the sketch phase. The instigators chosen in this particular case were an analogy, general volume studies of possible vehicle shapes, moodboards and collages. The analogy serves as a means to visualize the end result in a different form. Ton Picnic was created in order to show what the new EPV intends to be compared to the current form by means of a figure. The volume study was mainly focused on deciding what type of shape would be most appropriated for the new vehicle in relation to the existing vehicle, defining a bit of the character already. The moodboards and collages are developed in order to inspire and facilitate references by means of form language, color, expression and composition.

Sketch Round 1

After the creative instigators, the first sketchphase started. Using all the input from the research and creative instigation, a broad spectrum of different possible designs is created using frontviews and sideviews. Quantity is important because it gives options as to what does and does not work with regards to character expression. Together with the stakeholders the broad spectrum is reduced to four different expressions that seem fit for the Picnic brand.

Sketch Round 2

After narrowing down the broad spectrum with stakeholders, the characters expressed in sketches, along with feedback with regards to those characters are refined and sketched with more detail by means of perspective drawings. Still relatively roughly drawn but with enough progress compared to round 1 to give the stakeholders a better understanding of what those concepts could eventually be, another round of validation is carried out.

Renders

The render phase is where the design process is starting to come to an end. Having validated sketch round 2 together with the stakeholders, three concepts are left. With the feedback from the stakeholders during the validation round and using input from the requirements defined using the research, three final concepts are rendered in more detail. This detail includes material expression, appropriate proportions, definitive character and so forth. The point of these renders is to accurately convey three different concepts that all suit the original design brief and requirements. In order to chose the most appropriate, a significant round of validation is required. Along with the input and opinion of the regular stakeholders, a presentation was given to 65 employees. They were all from different disciplines within the company, however, they all had a very good understanding of what type of company Picnic is and what core values it entails. They each voted for their favorite concept and were able to provide feedback. In addition to this, potential new customers were also approached in order to assess how they saw the concepts and which ones they would like to see driving thru their streets and if it could potentially sway them to start ordering from Picnic. This significant round of validation eventually leads to the choice for the final concept.

Detailing

The detailing phase is the final phase of the design process and project. A digital 3D model is created based on the renders and blueprints. In creating this model some detail choices are to be made such as side mirrors, panel gaps, door opening mechanism to really complete the final design. This design will then be presented using digital beauty renders and an animation. A reflection on the process, requirements and feedback from the stakeholders will evaluate the success of the design.

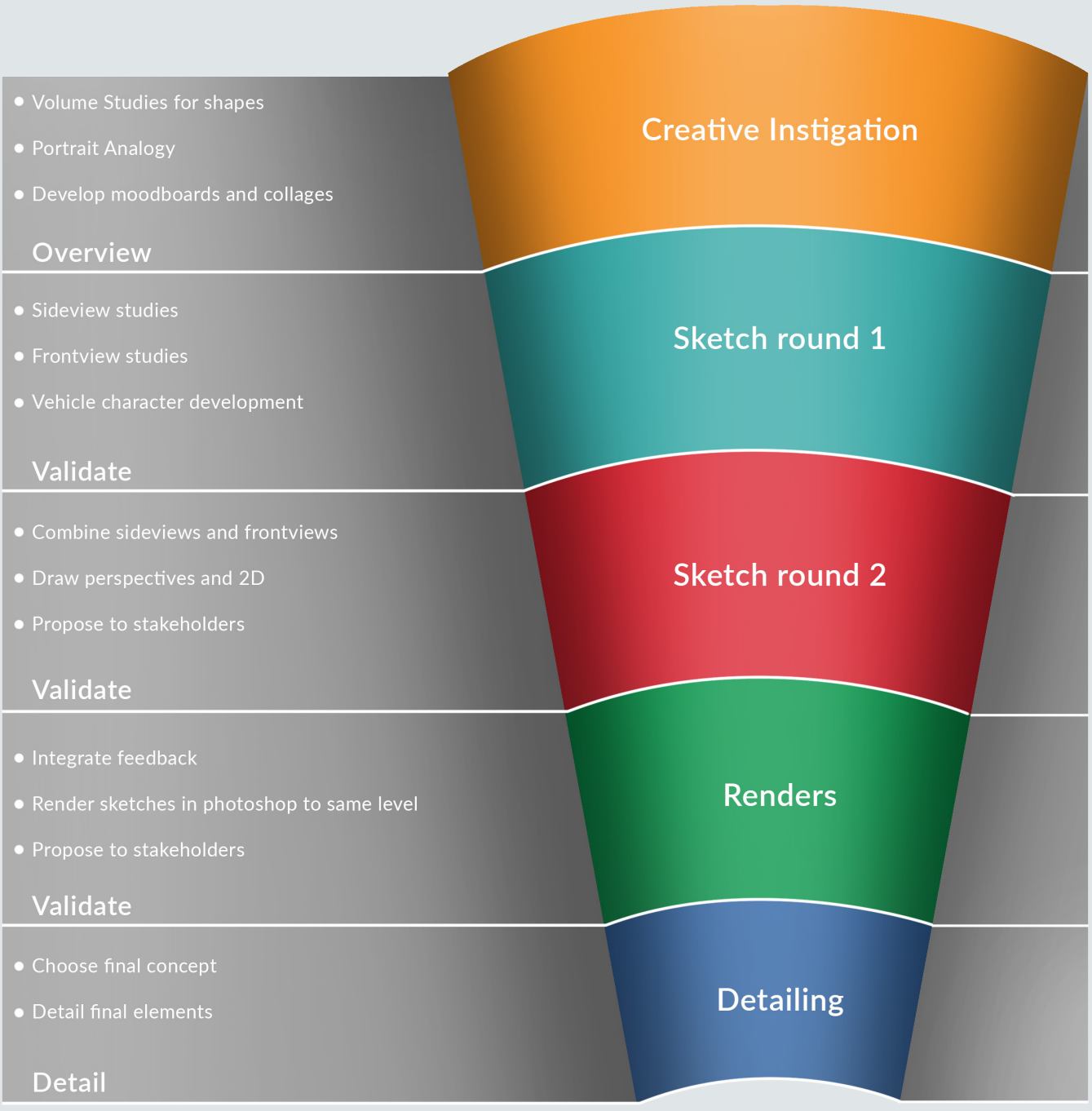
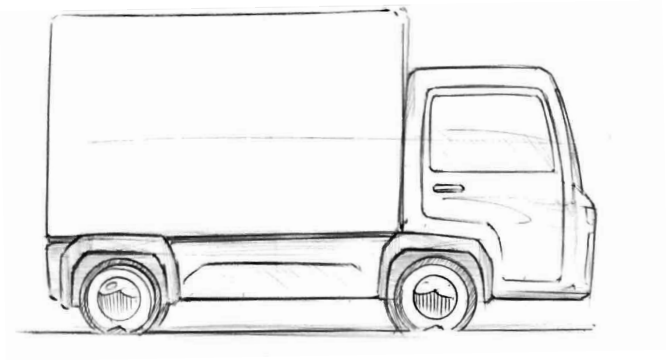


Figure 18 -- Design funnel showing the steps required to achieve a final concept.

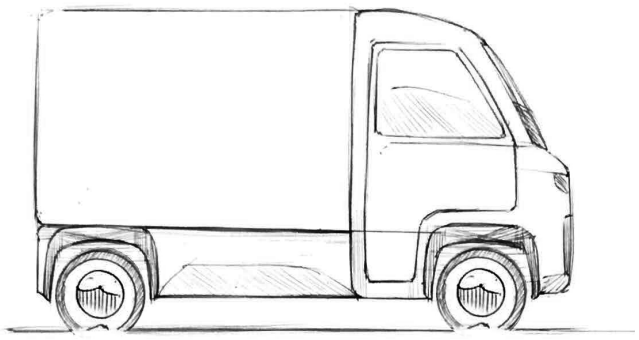
3.3 Volume Study

As part of the first phase of the process, it is important to establish the desired volume of the vehicle. This volume refers to the different cabon to cargo constructions the vehicle could potentially have. It is a fundamental element of the form language.

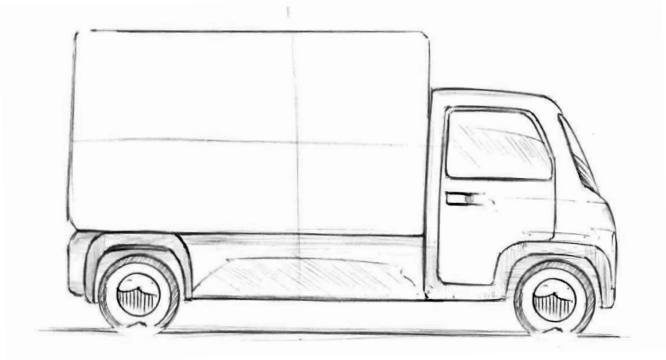
In trying to find the right volume, 6 different common to not so common vehicle shapes were sketched. Due to the standard cargo box the focus is on the cabin construction in relation to the box, the variety in wheelbase, and front and rear overhang. From the research and in talking to the stakeholders, they are looking for a few different features in the new vehicle with regards to the overall volume. Firstly, the vehicle should look stable and capable of travelling at higher speeds than the current vehicle. Turning circle and being nimble will not be as important in the less densely populated areas and therefore are not limitations in this case, however, the vehicle should not look bulky. The volume should also add to the uniqueness of the overall character. Looking at the different volumes and in talking to the stakeholders it became clear very fast that the most preferred shape would be similar to the current EPV. This means short overhang in the rear and a cab-over construction in the front. This because a cab-over construction is fairly unique these days, which will allow it to stand out easily and simultaneously it references the worker-ant topology which the stakeholders are very fond of. It also looks stable and capable and will support the desired performance. Therefore sketch 1 is the preferred setup and starting point for the sketch phase.



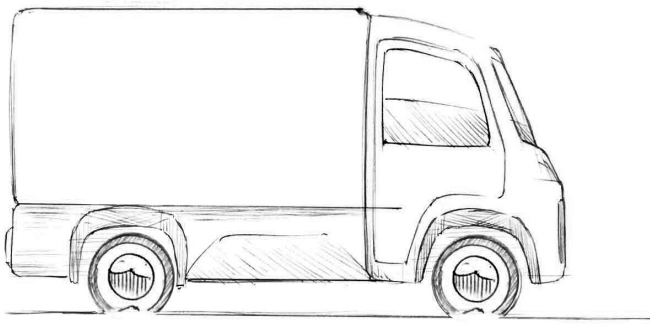
Volume Sketch 1 - Cab-Over



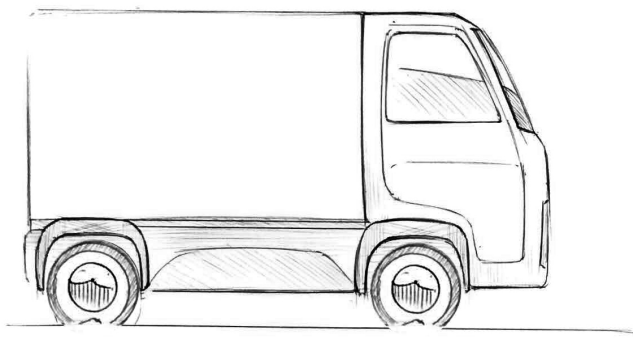
Volume Sketch 2 - Regular Van



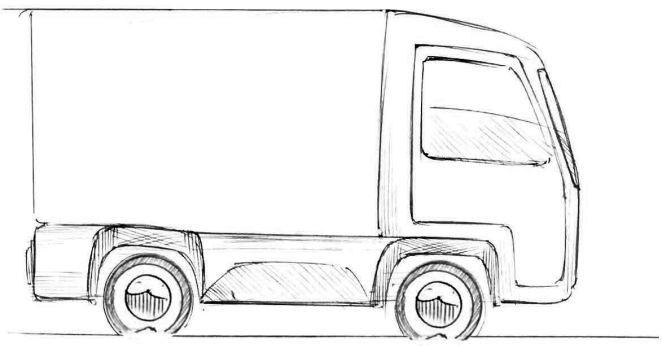
Volume Sketch 3 - Regular Truck



Volume Sketch 4 - Regular Van / Long Rear Overhang



Volume Sketch 5 - Cab-Over Van



Volume Sketch 6 - Cab-Over Van with Long Rear Overhang

3.4 Design Constraints

Some parts of the new vehicle are "off limits". For different reasons several parts of the exterior of the new vehicle fall outside of the design scope.

Before starting the sketch phase some results of the research did lead to some design constraints for the exterior of the vehicle.. Figure 19 and figure 20 both show these constraints respectively. Both of the main design constraints have to do with the cargo box. The cargo box is an intricate part of the supply chain system for Picnic. Therefore changing it has significant ramifications for this system. Picnic is looking at possibilities of developing a new cargo box, however, at this time there are no specific indications that they will develop such. For the stability and appearance of the vehicle we did decide that it would be benificial to make the new vehicle wider. This will make the vehicle appear more stable and stronger which is what Picnic wants.

3.5 Collages

In order to facilitate and kick-off the concept phase, collages are useful in order to gather inspiration and references that are suitable for the object that is to be designed.

Through the research of what type of brand Picnic is in terms of image and identity, what they like about the existing vehicles and how they would like to see their new vehicle, two collages were developed in order to find references and inspiration for the development of the form language, material, use of color and so forth for the new vehicle.

Figure 21 is a collage that is focused on exploring colors in combination with retro interpretations of classic cars. You see a lot of soft round edges and very uncomplicated bodywork and surfaces. Contrast between color to acentuate different body panels and define shapes are used in order to give a friendly and soft appeal.

Figure 22 is a collage that is more focused on memetic references. The older vehicles with the sof curvatures, round headlights and simple bumper create a reference that can be recognized as friendly facial features adding character to the presence of the vehicle. The two other products also have features that can be read like this and it immediately gives them a softer friendly appearance as well. We often and easily recognize these types of features in products and this collage is supposed to serve as an inspiration and reference for this meme.

Figure 21 -- Collage 1

Figure 22 -- Collage 2

3.6 Moodboards

In addition to the collages, moodboards are developed to inspire and serve as reference as well. These are often more an abstract composition of different things in order to achieve a certain feeling that could be used during the design phase.

In speaking with the stakeholders, analyzing current form language and assessing what aesthetics would be appropriate in the future, moodboards were created. These moodboards each represent an abstract composition with material references, form language, use of color and such in order to set a certain mood that inspires and can be referenced for the design of the new EPV.

Figure 23 is a moodboard which centralizes products that have a bold simple modern aesthetic. The composition also has different material structures that ties those products together. Using a combination of modern products and materials in this manner shows what current design trends are and how the new vehicle could benefit from some of these features and details in order to appear modern and futureproof.

Figure 24 is an even more abstract composition setting a modern simple mood as well. More focused on line work and connections, it shows a variety in simple and complex shapes and how these create a certain aesthetic together. The intention of this moodboard is to depict how this play of lines, together with material expression and simple effective use of color can create a modern and clean look with a variety of detail and complexity.

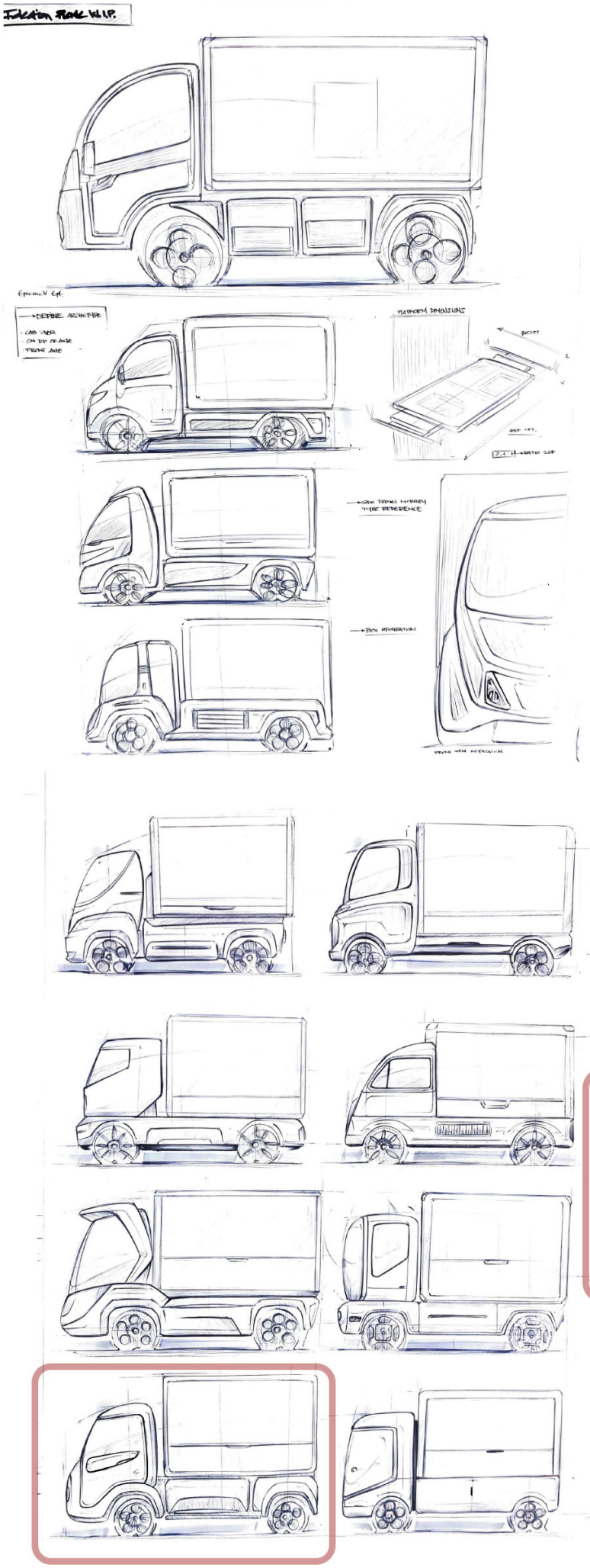
Figure 23 -- Moodboard 1

Figure 24 -- Moodboard 2

3.7 Sketch round 1

After the creative instigators and volume definition the next step in the design process is the sketching part. In this first round of sketches quantity is important in order to create a spectrum of choice. In this spectrum features that are known to work well and not so well are just as important. Being able to say "I like this but I do not think that works gives more focused feedback and focuses the development of the form language to a succesful outcome. Notice that not all sketches use the Cab Over volume. This is because there was still some doubt as to whether or not the Cab-Over would be the best option and showing the difference here with more options was another way of validating that decision.

Sideviews and frontviews are the easiest and fastest way communicate and develop form language and character expression. 27 sideviews were sketched and 18 frontviews. They range from very conservative familiar shapes to more exotic and unqiue shapes. The sketches contain an appropriate level of detail for this phase but are kept relatively loose in order to allow the stakeholders to feel like changes can still be easily made through iteration. Keeping in mind that the intent of this round of sketches is to find a character and form language that expresses Picnic appropriate friendliness, quirkiness and conveys that it is a unique electric vehicle, the stakeholders were asked to select their four favorite designs in sideview and frontview. In addition to selecting their favorites, they were also asked to provide feedback as to why they chose those specific vehicles, what details they liked and what details they did not like. The result of this rounc of validition can be seen here, the most popular sketches being highlighted by the red boxes around them. These four concepts, together with the feedback with regards to how they could be improved sets up the next step in the design process.



3.8 Sketches Round 2

The second round of sketches uses the input and validation of the sketches from round 1. The characters and form language from the frontviews and sideviews have been combined in order to establish four concepts. These four concepts will once again be evaluated by the stakeholders and three will remain that will be rendered with more detail in the following phase of the design process.

Concept 1

This concept sketch uses the Cab-Over volume. Its overall shape has some form familiarity with regards to the current EPV. However, it is more modern and friendly due to the sleek and soft curvatures in comination with the large simple surfaces. It has a lot of transparency in the front and sides allowing the customers that see this vehicle on the road to recognize and connect to the runner inside, an important feature for our stakeholders. The large headlights add to the character and gives it a recognizable facial feature which translates to friendliness. The thick weel arches and sturdy base between the wheel arches makes it look confident and capable.

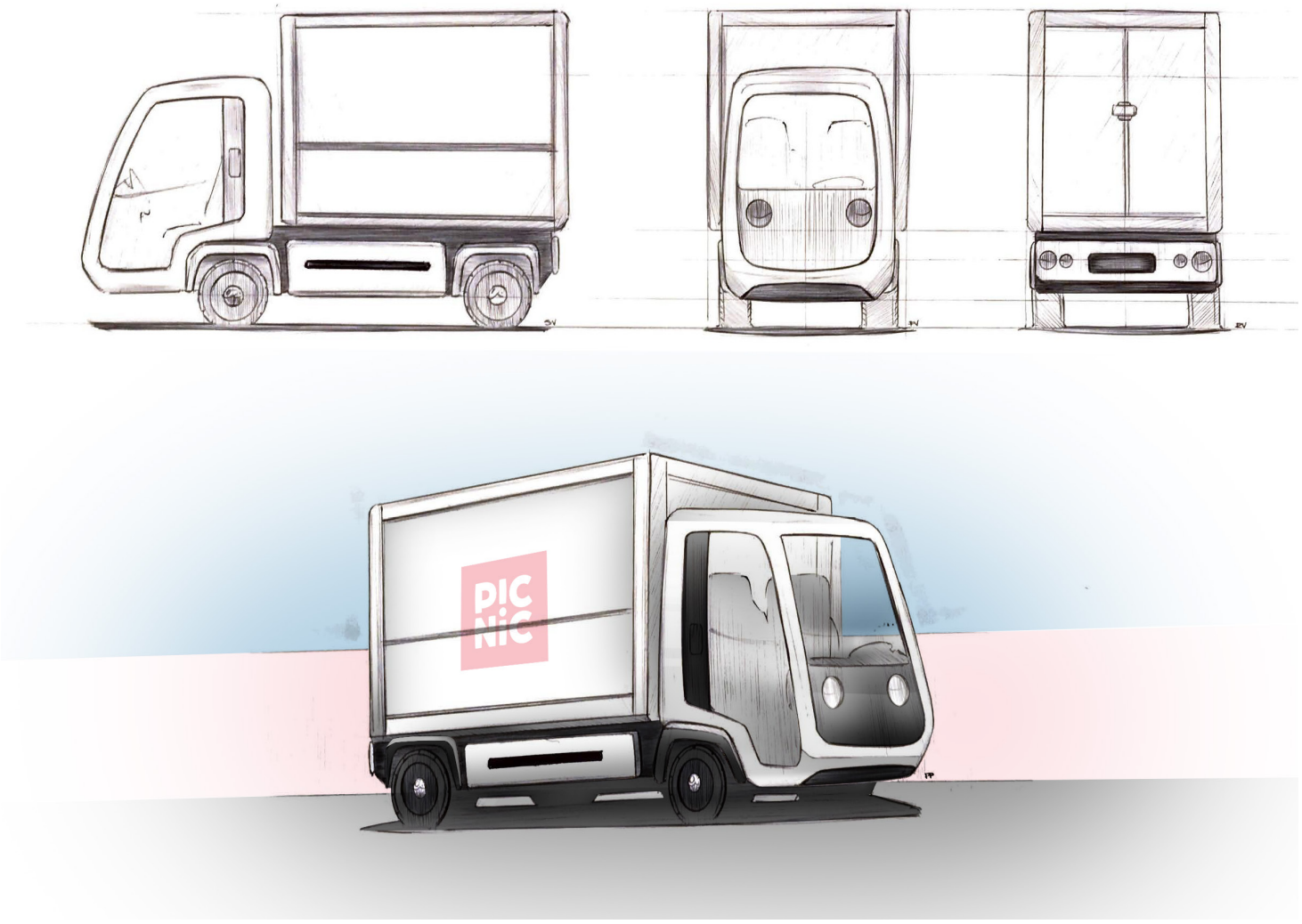


Figure 25 -- Concept 1

Concept 2

Concept 2 also uses the Cab-Over volume. It has slightly more overhang in the rear compared to concept one. The intention of this concept was to make a very round and soft overall shape that really incapsulates the runner and makes him feel very safe. Therefore this concept looks very strong and robust, especially from the side is favorable as the vehicle comes across as capable. However, due to this it does lack some visibility for the runner. Though it looks cute and does fit the initial design brief and requirements, in validation of this round it was considered to be the least attractive of the four concepts and therefore it did not make the final three.

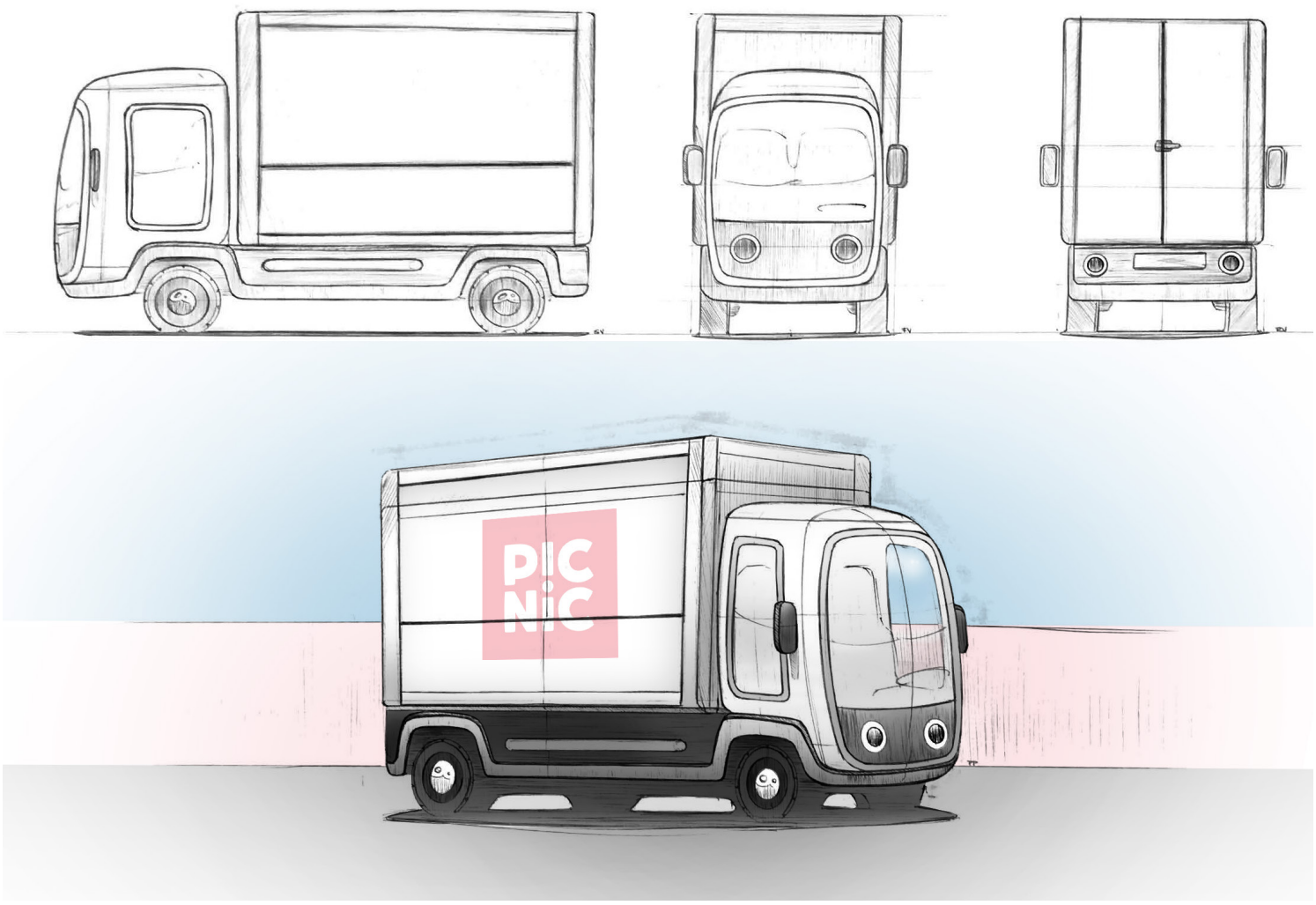


Figure 26 -- Concept 2

Concept 3

This concept also has a Cab-Over volume just like the others. The bumper line underneath creates a continuous base adding a sturdy appearance. The cabin is soft and round and has a large windshield that is uninterrupted from side to front giving the runner a lot of visibillity. In the bumper line there is an opening, that in combination with the headlights, creates a very strong recognizable face meme. Underneath the cargo box on the side the panels are white. This was done to try and tie the base of the cargo box and cabin together more and emphasize the continuous bumper line.

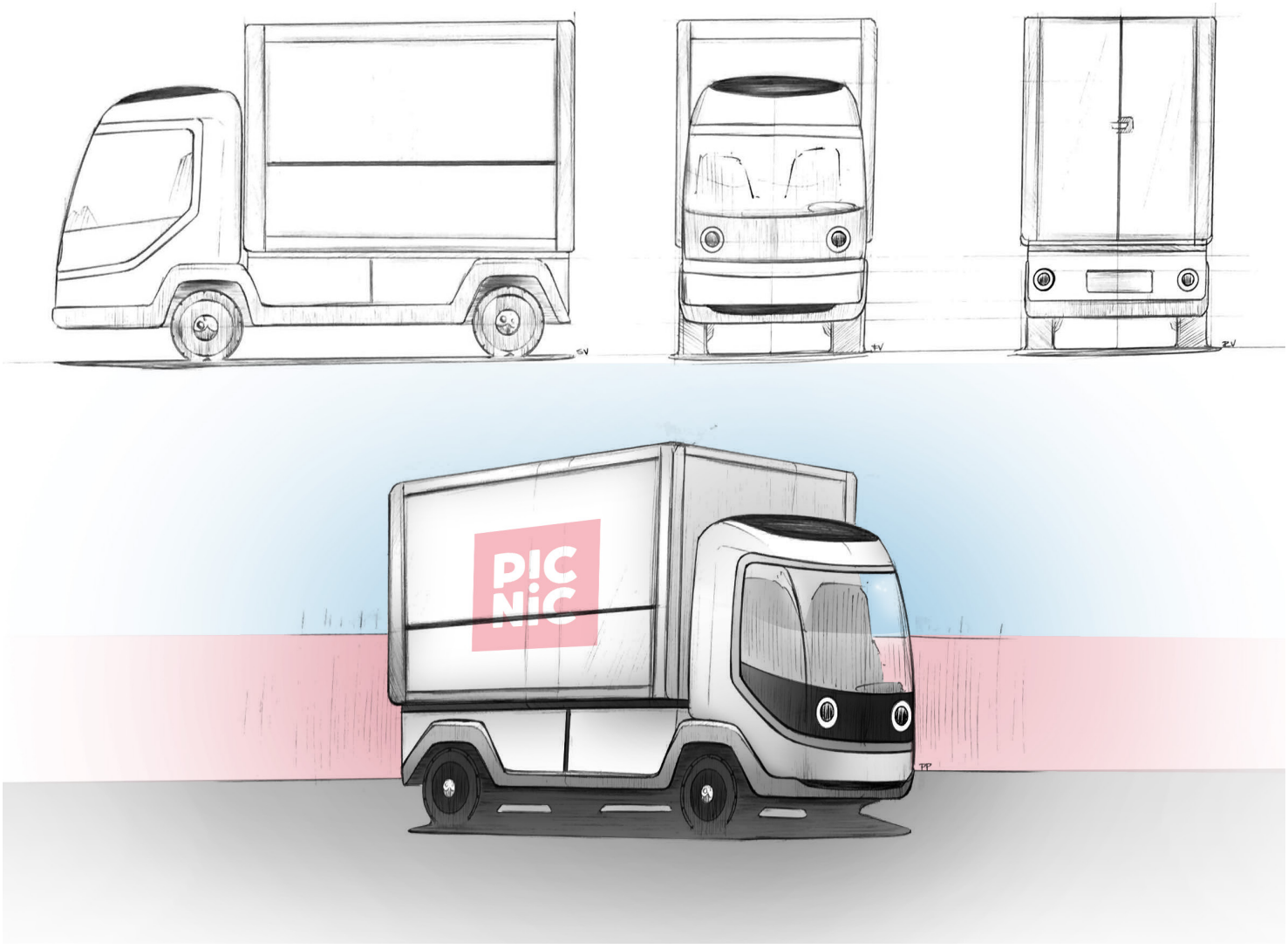


Figure 27 -- Concept 3

Concept 4

Once again a Cab-Over volume, with almost no rear overhang making it very compact. All these concepts tipify the worker-ant topology meaning it looks like the are pulling the cargo box forward. This concept is very transparent and really shows of the runner. It has a slightly boxier look to it making it a little more traditional in form. the slightly boxier look does make it very strong and robuts and this is accentuated by the squarer shapes in the fron panel that frames the headlights. The headlights here are square because it follows the overall form language better and adds a different character that is still considered suitable for the design.

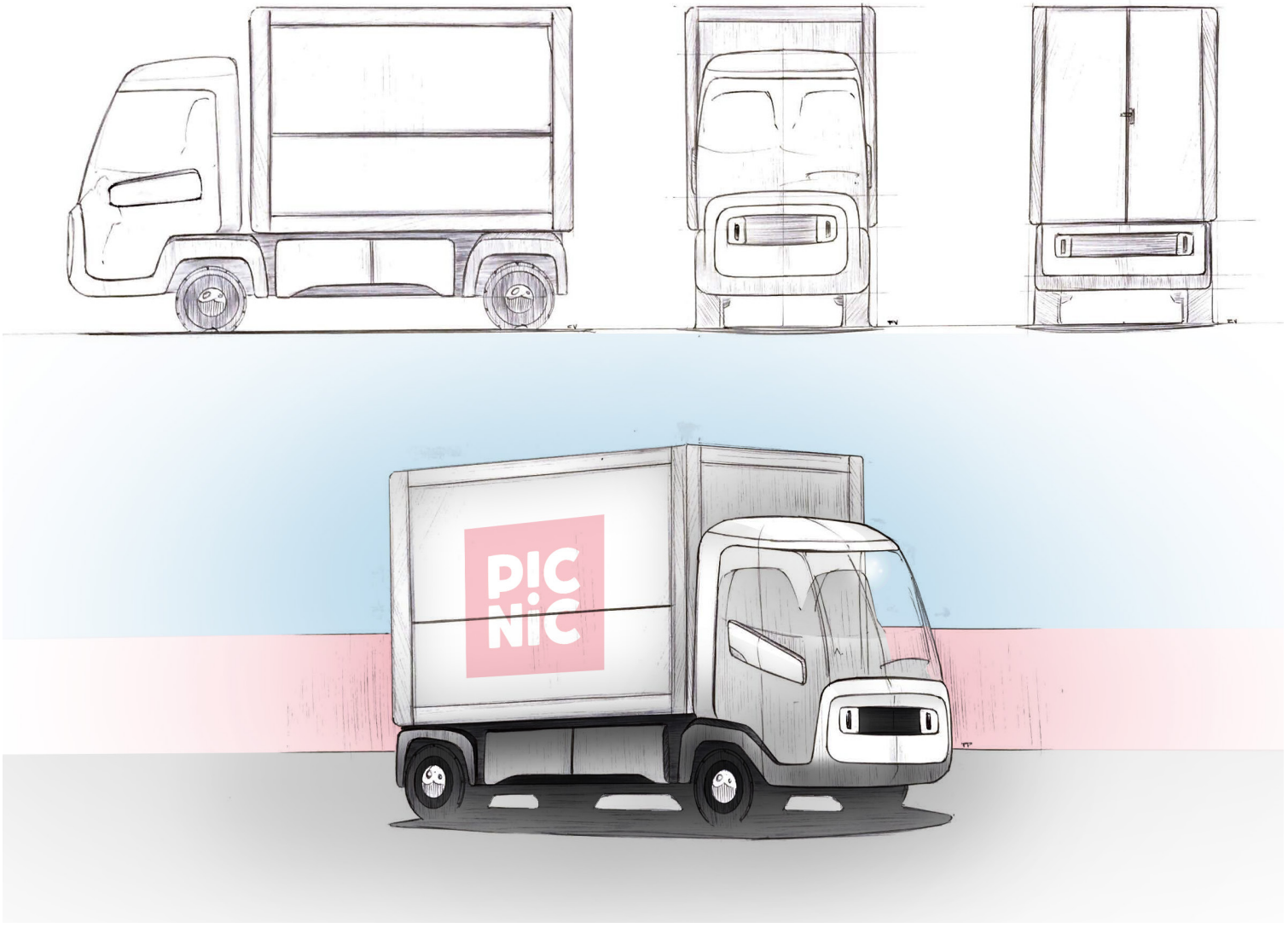


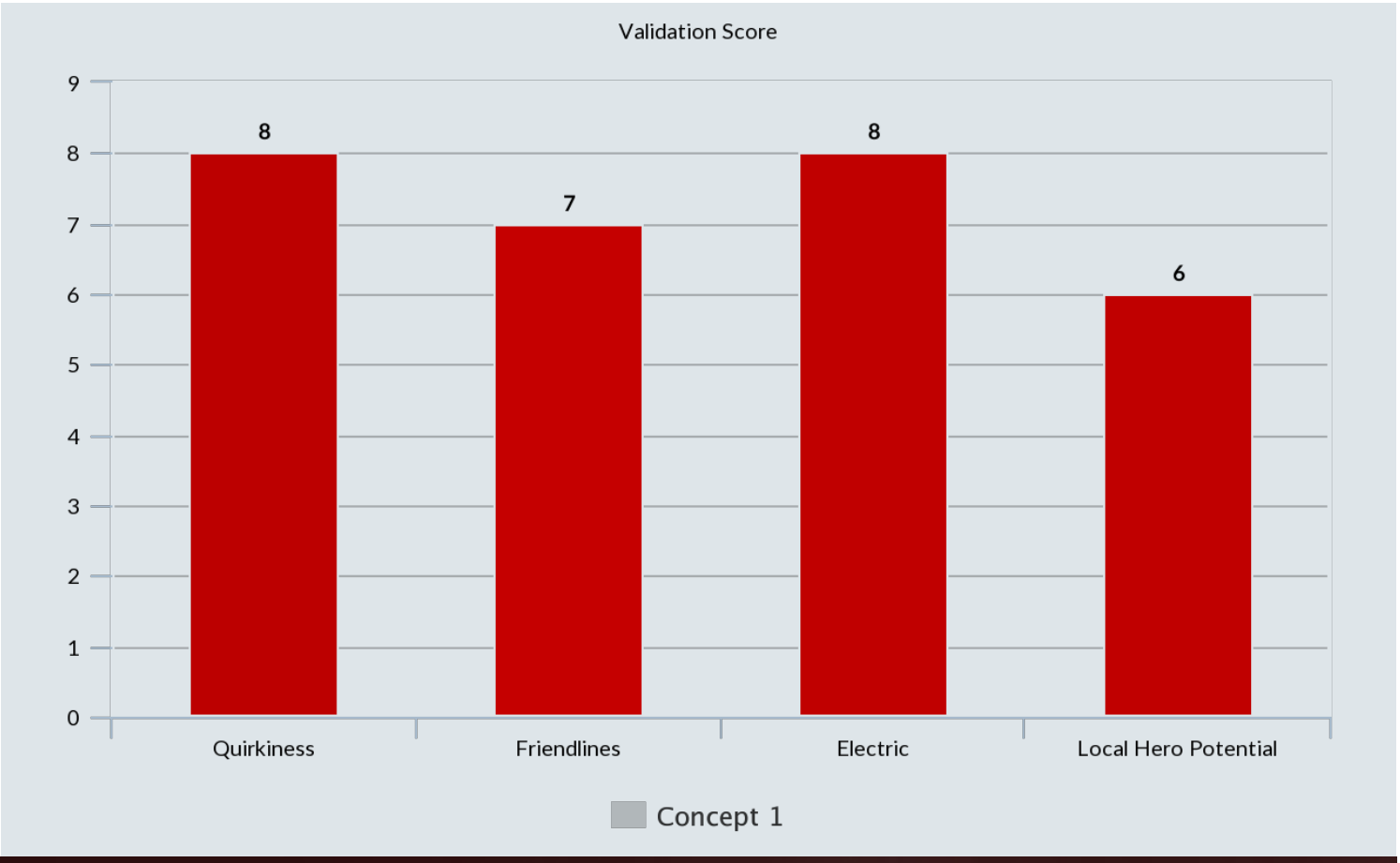
Figure 28 -- Concept 4

3.9 Renders

After sketch round 2, the stakeholders eliminated one concept which results in the three most promising designs. Once again they were also able to give some feedback and these changes have been integrated in these renders. All three concepts adhere to the requirements and do so in their own unique way. The intention of these renders is to accurately visualize the best three concepts so that a well considered and weighed choice can be made for the final concept with the stakeholders.

Concept 1

This is the final iteration of concept 1. The cargo box remains untouched as a consequence of the design constraints. Based on the size of the cargo box the rest of the vehicle has been designed to fit around it and really create that worker ant topology with the cab-over setup. The cabin is soft and round with a very giving it a friendly appeal but compared to the previous iteration has been made proportional to the size of the cargo box. The main feature is the wrap around glass that goes from side to side across the front. This glass can be glazed over the A-pillars to achieve the continuous appearance. The headlights in combination with the small black gap in the bottom bumper line gives it a recognizable face and contributes to the friendly character. The trim around the windshield is slightly glossier than white panels which accentuates the windshield even more. The continuous bumper around the base makes it sturdy and stable. On the side there is a chrome bar in the middle of a black panel. This gives the runners a spot to place their foot while reaching for the totes. Around the rear the design is kept very simple and to the point. The rearlights are rectangular with soft corners which compliments the shape in between the lights that will hold the license plate. The overall character of this concept was described as futuristic, friendly and robust.


Validation Score
9
8
7
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2
1
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7
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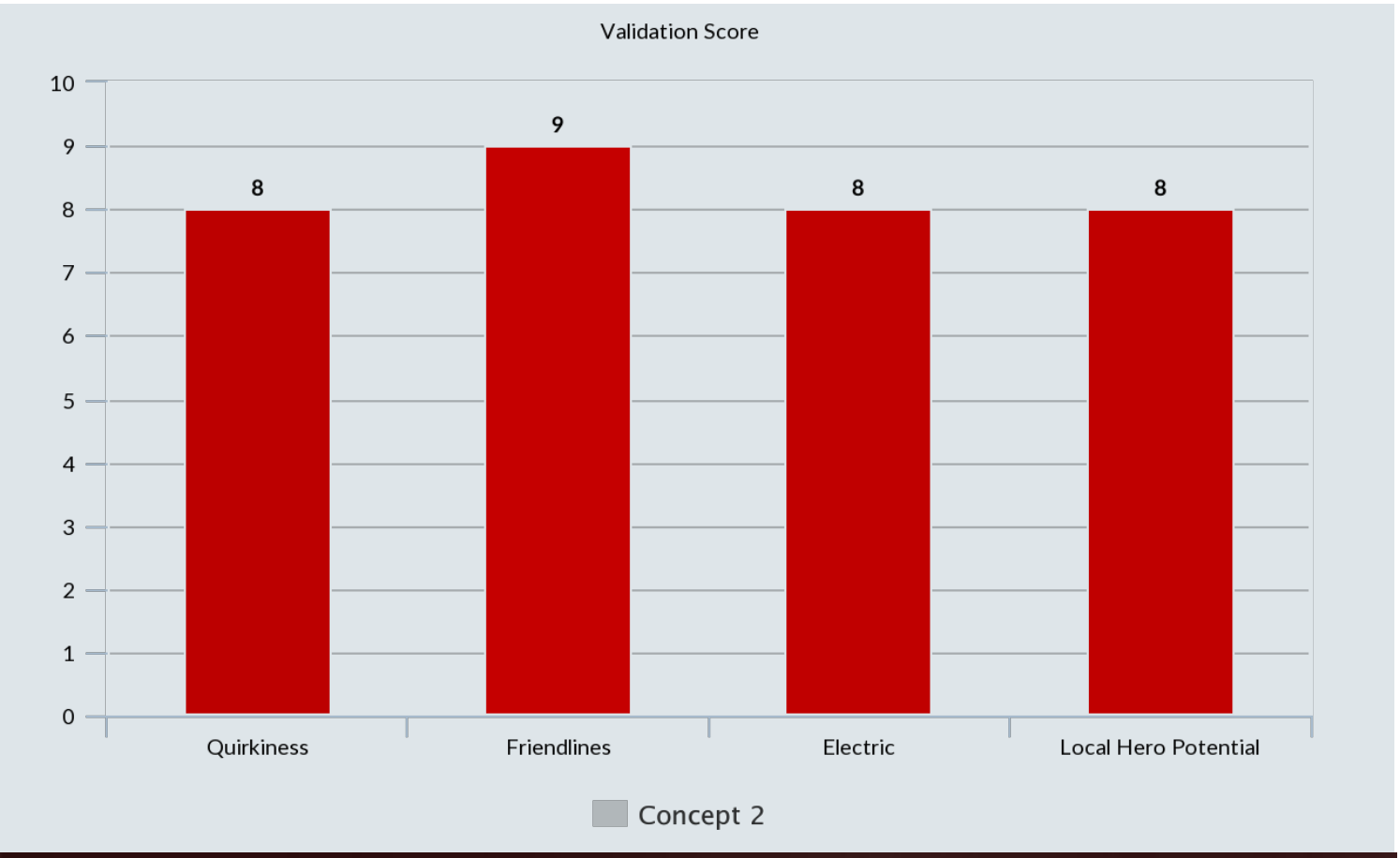
6
Quirkiness
Friendlines
Electric
Local Hero Potential
Concept 1


PIC
NIC

Concept 2

This is the final iteration of concept 2. Also in this case the cargo box remains untouched due to the design constraints. The design of this concept has what some stakeholders called a pleasant familiarity. It looks like it has drawn some inspiration from the current G4 but has been redesigned to look more modern. This familiarity is an asset as this concept would be recognizable as the evolved version of the G4. This stays close to the analogy used at the beginning of the design process. The simplicity of the shape and the round curvatures along the edges of the cabin makes it feel very friendly. Referring back to the moodboards and collages, you can see some of the inspiration from those compositions and memes. The headlights for example and also the aforementioned soft radii and curves on edges are sourced inspiration. The thick wheelarches frame the wheels and makes it look like it is more than capable of carrying the carrgo box.

Once again transparency and visibillity of the runner is a theme. This remains important as an assett in connecting with the runner and actually seeing them in the cabin makes it more personable. It also of course adds to the safety by creating the most visibility. The side of the vehicle remains simple and effective. The large black area between the wheels reduces the perceived width of the vehicle somewhat and in operation will have the vehicle look better as dirt will not appear as much. Around the rear is, once again, a very simple and effective layout. The rearlights suits the form language of the rest of the body. The license plate holder also has soft corners so that the theme is consisent. The overall character of this vehicle was found to be quirky, open and friendly.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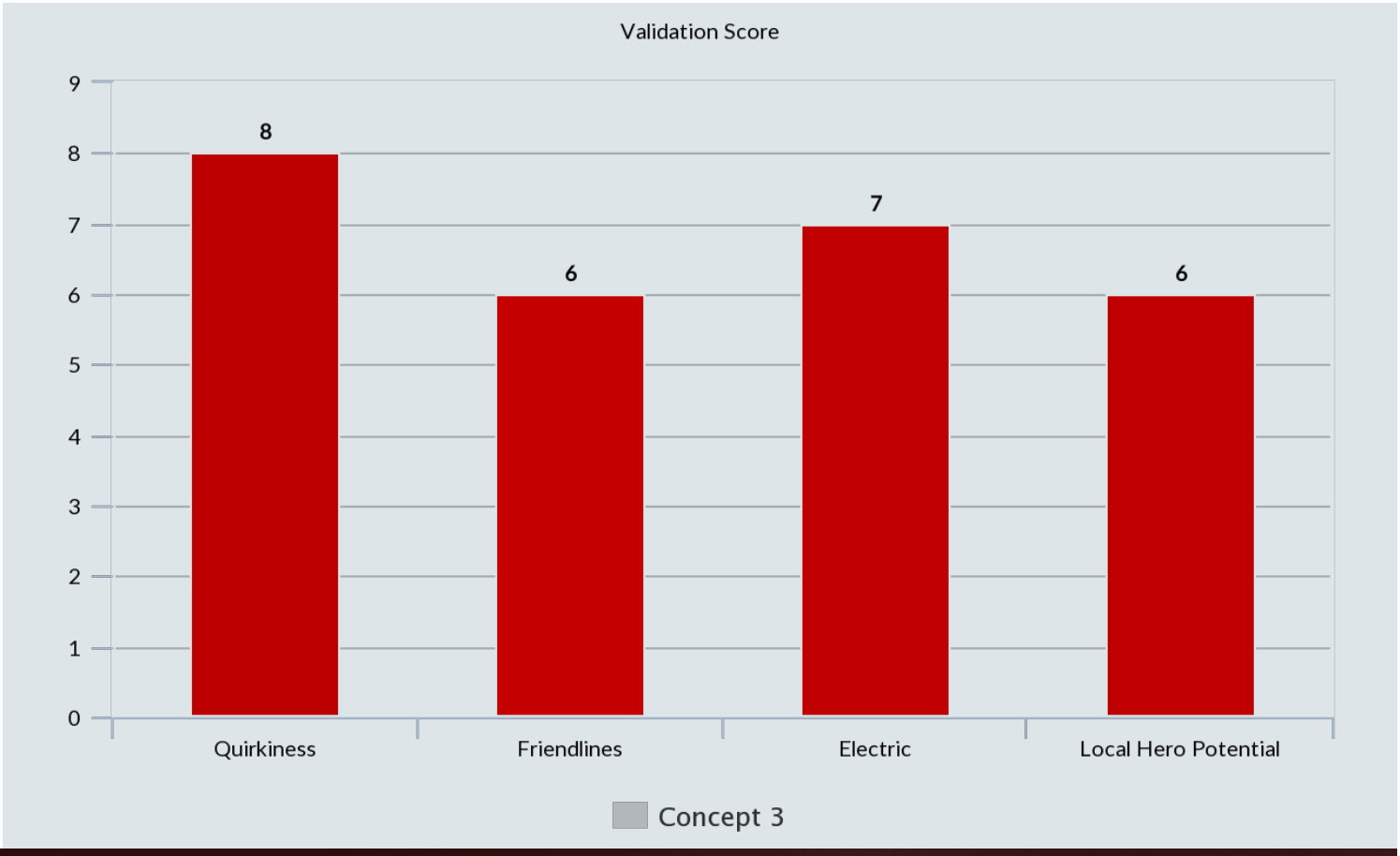
Quirkiness
Friendlines
Electric
Local Hero Potential
Concept 2


PiC
NiC

Concept 3

This is the final iteration of concept 3. As mentioned previously, the cargobox remains untouched in order to adhere to the design constraint. This concept has an archetype reminiscent of a regular small truck. Though it is still a cab over, the cabin is relatively boxy and has a small nose that, in profile, looks a little bit more common. The reason that this concept has made it into the top three is an example of how people tend to also gravitate towards designs they can recognize. Even though it has some unique features that does not make it similar to anything on the roads today, that relatively simple and recognizable profile may suit the taste of a lot of people. However, some features are truly unique and have a modern twist on the character of the vehicle. The large open cabin on the side that is connected to the front windshield is relatively unique. Also the translation of the front that frames the headlight to the side that flows into the wheel arch is a unique feature. It gives the vehicle a stable base and some continuity. In this design it was mostly the floating side panel in the cabin and the rectangular headlights that were polarizing. They caused a lot of discussion with people either liking or disliking the feature. The decision to design the headlights like this and keep them was because it suits the overall form language of the vehicle best. The was a feature designed in order to provide transparency but simultaneously also add a little bit of perceived safety. As can be imagined having the large transparent open cabin on the side could make the runner look vulnerable. This negates that perception and adds a little bit of robustness. The thicker wheel arches frame the front and the rear of the vehicle and also give it a sturdy base. The overall consensus was that this vehicle looked most like a regular vehicle but did have the cuteness and strong appearance the stakeholders are looking for.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7
6
Quirkiness
Friendlines
Electric
Local Hero Potential
Concept 3


PIC
NIC

3.10 Validation

In order to make the decision as to what will be the final and therefore most appealing concept, the regular panel of stakeholders was asked for their opinion and feedback. In order to verify their decision to see if what they chose would also be the common consensus, a few other groups of people deemed relevant were approached.

For validation a variety of methods can be applied such as Harris Profiles or a weighed criteria. For this project however, it seemed more interesting to get the opinion of a wide variety of people and the panel of stakeholders in order to compare and contrast their choices and feedback. This has lead to very interesting results and has delivered great insights and learning with regards to the perception of the vehicle.

Firstly there was a company wide evaluation of the concepts. The concepts were briefly introduced as potential new vehicles. As the employees are aware, the new vehicle should really exude the spirit and values of the company. After the short introduction they were able to choose their favorite design and give feedback on why they preferred it or what they would change. Of course getting so much input from that many people the most interesting thing do is compare it to the opinion of the stakeholders to see if they have been in tune with the common consensus. As the results in figure 30 show, concept 2 is by far the company wide and stakeholder favorite. The employees strongly prefer concept 1 compared to concept 3 where the stakeholders are relatively evenly divided.

In addition to the employee opinions and stakeholders, a set of runners (figure 31) were also asked to give their feedback and choose the most preferred concept. Again concept 2 was the most popular choice. As a final test, potential customers outside of a competing supermarket chain were asked to choose their favorite (figure 29) by simply asking which one they would prefer to see driving around their neighbourhood. Again concept 2 received majority of the votes.

Therefore as figure 33 demonstrates, concept 2 was overwhelmingly popular. The general feedback was that the simple clean aesthetic, high transparency and recognizable happy face meme created by the headlights all contribute to a friendly, happy and quirky appearance, which is part of the requirements and main intetion of the design. There was some feedback from the stakeholders one last time and some small iterations were made in order to find its true final form. The final renders of concept 2, including the last iterations, can be found from page 54 to 57.

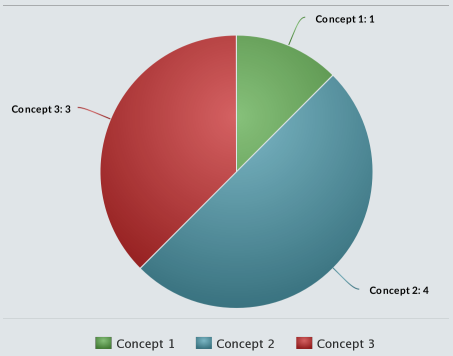


Figure 29 -- Potential Customers

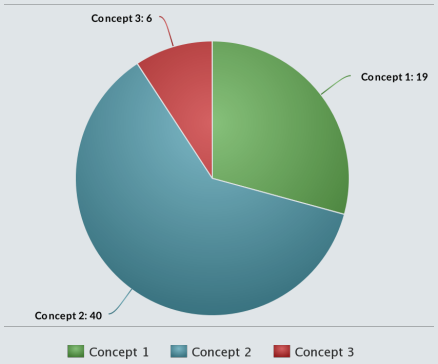


Figure 30 -- Employees

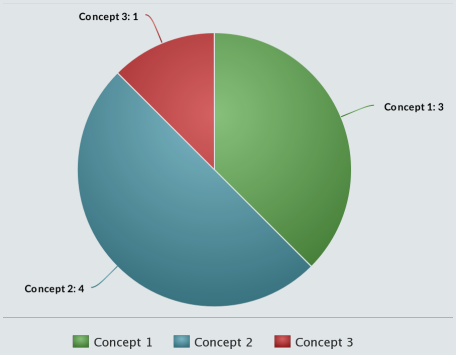


Figure 31 -- Runners

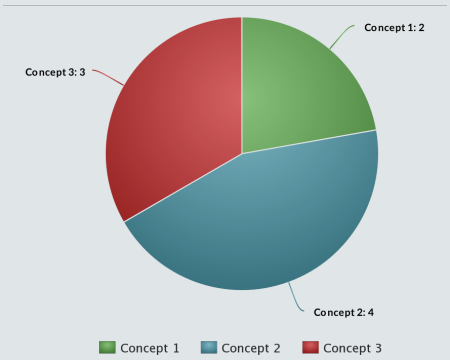


Figure 32 -- Stakeholders

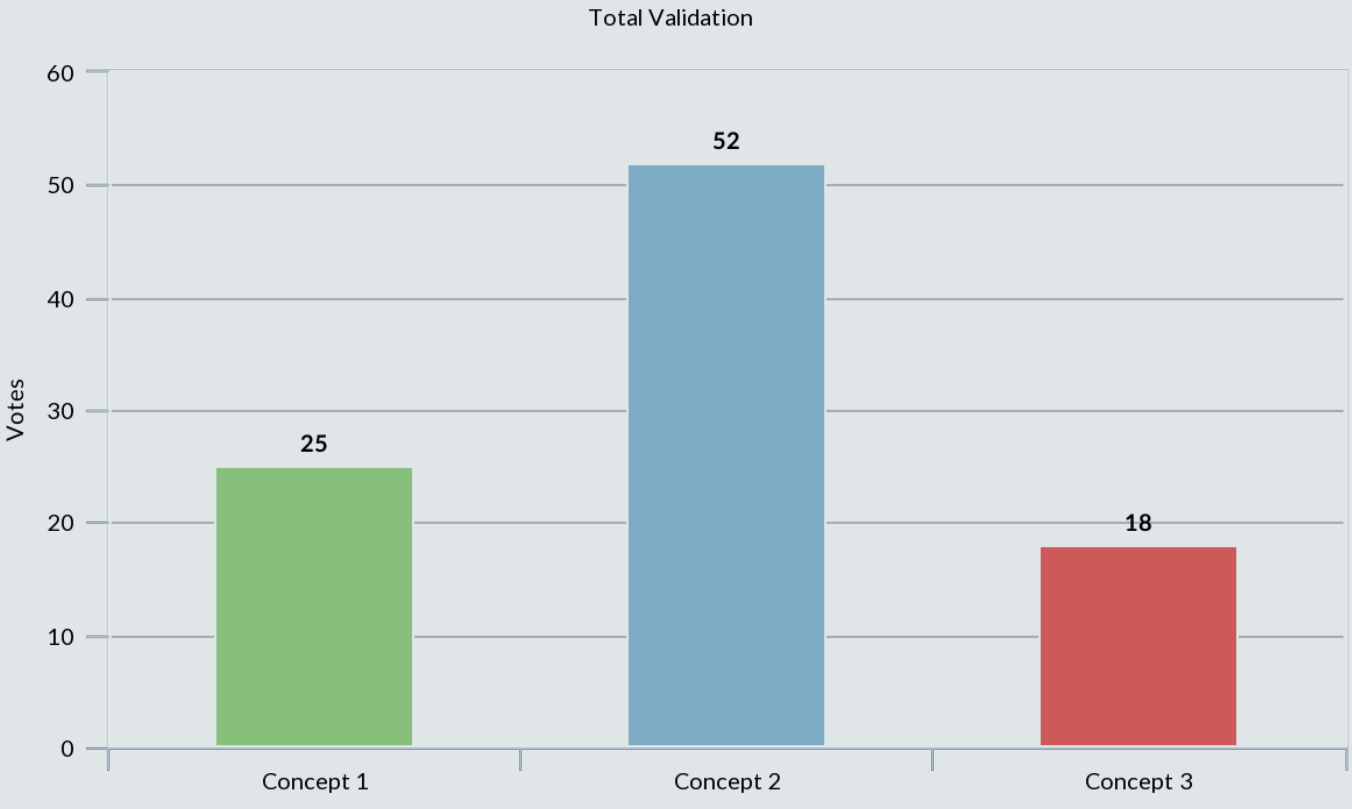
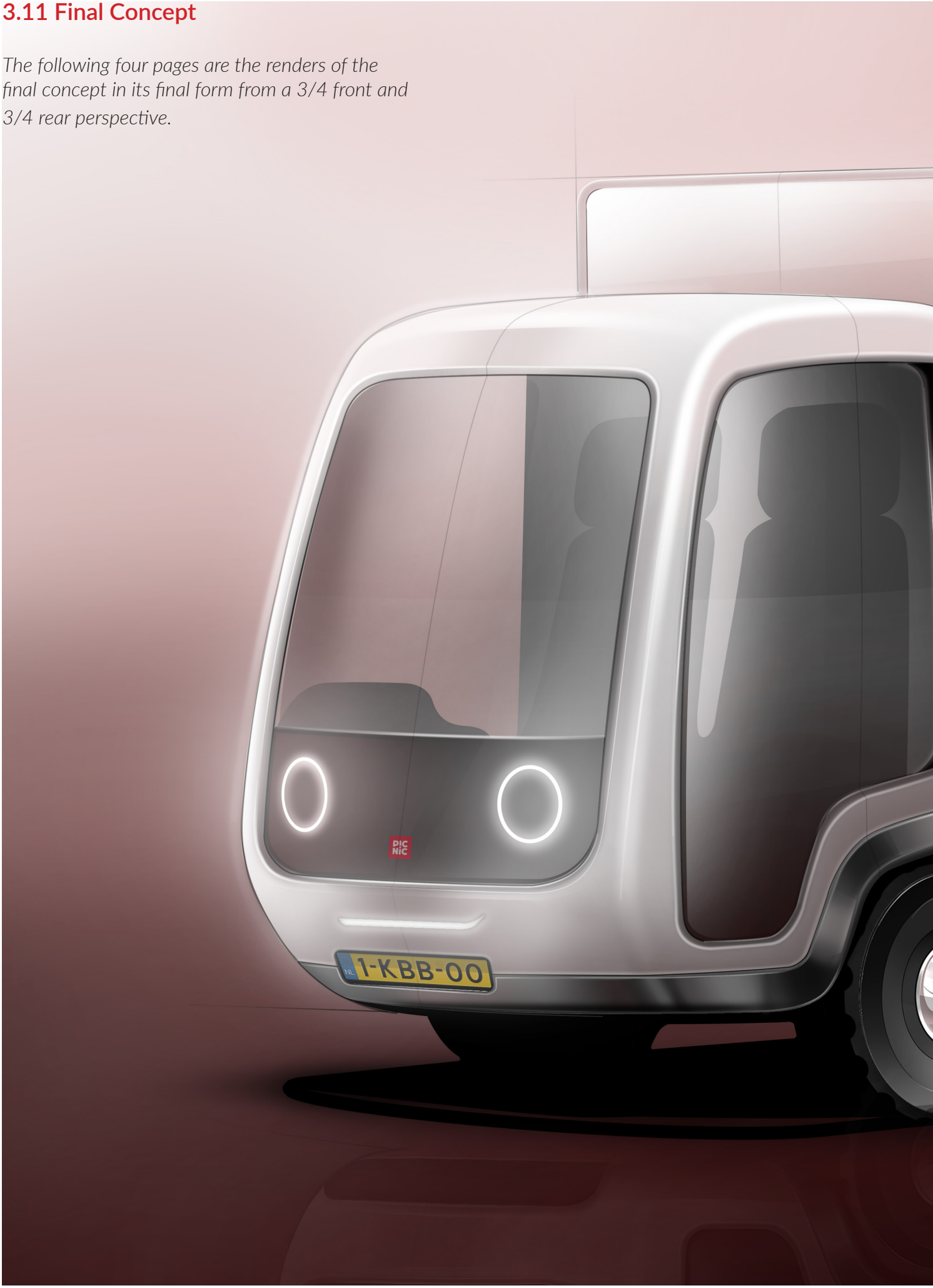


Figure 33 -- Overall Results

3.11 Final Concept

The following four pages are the renders of the final concept in its final form from a 3/4 front and 3/4 rear perspective.



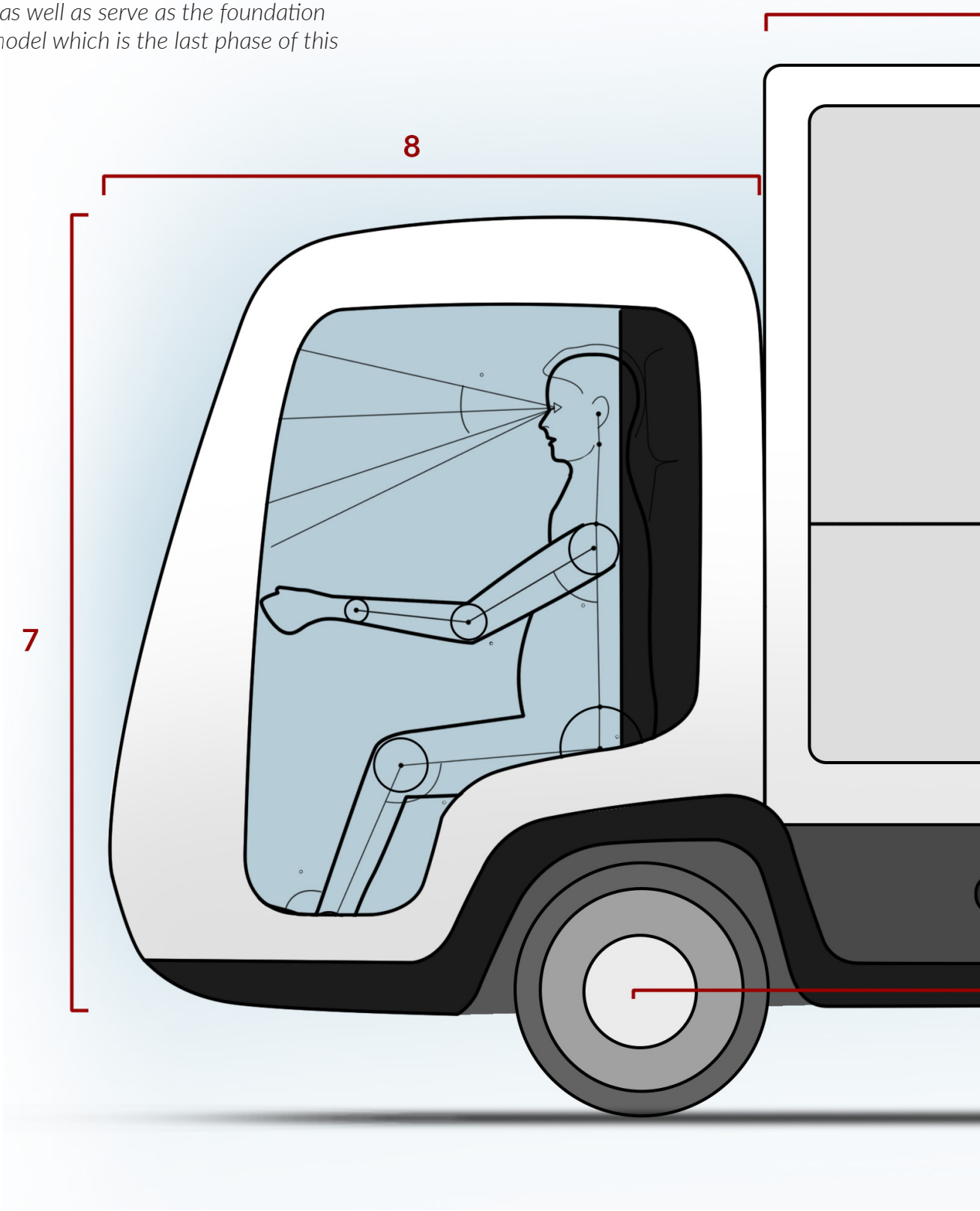

PIC
NIC
Volle yoghurt
De Ruijter
Calvé


Volle yoghurt
1-KBB-00


PIC
NIC
De Ruijter
La Vache qui rit
Calvé

3.12 Blueprints

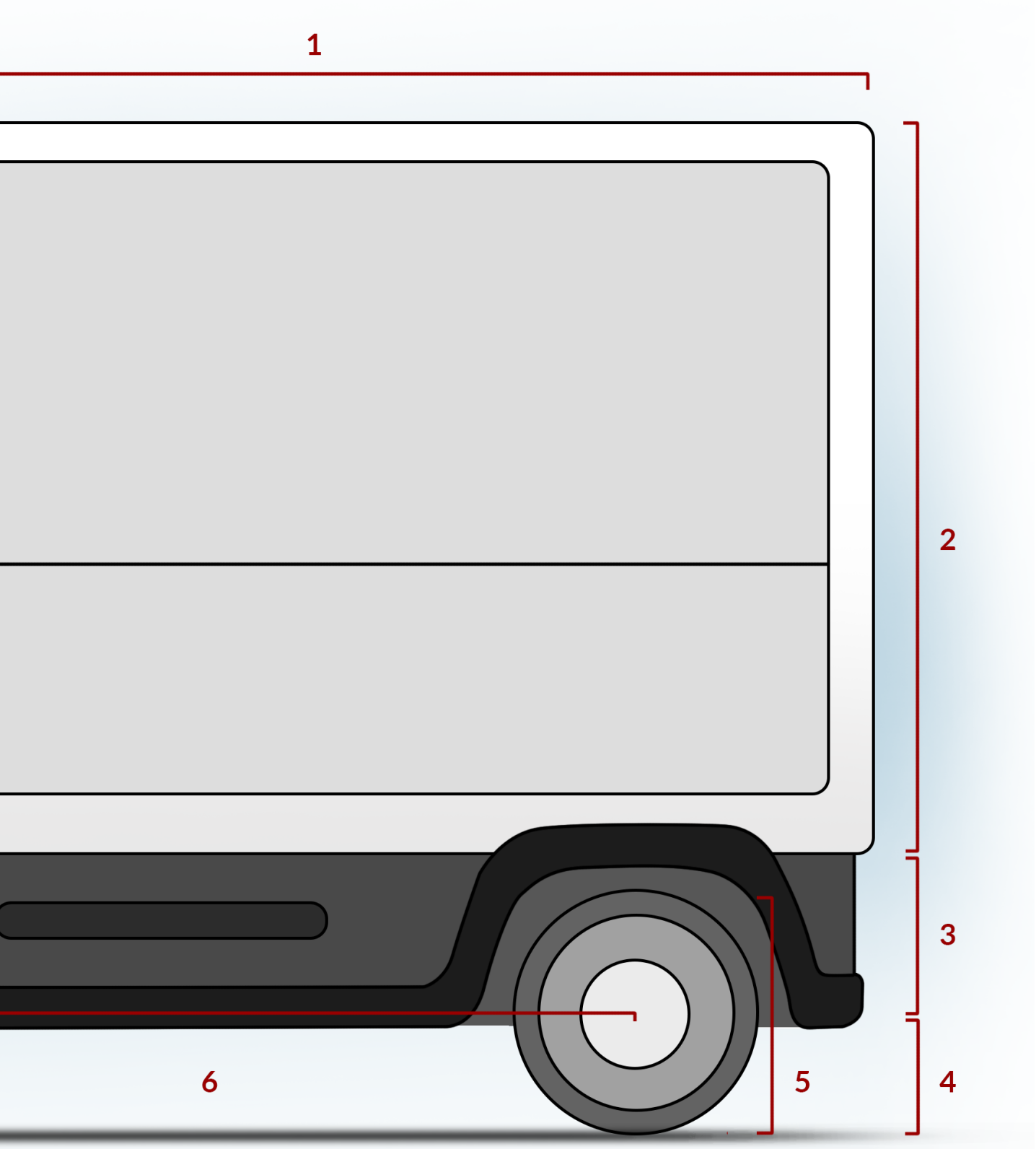
Now that the design process has culminated into the final form of the concept, a blueprint with general relevant dimensions has been developed. These blueprints give an impression of the size of the vehicle as well as serve as the foundation for the CAD model which is the last phase of this project.



3. Side Panel Height: 400 mm

4. Ground Clearance: 300 mm

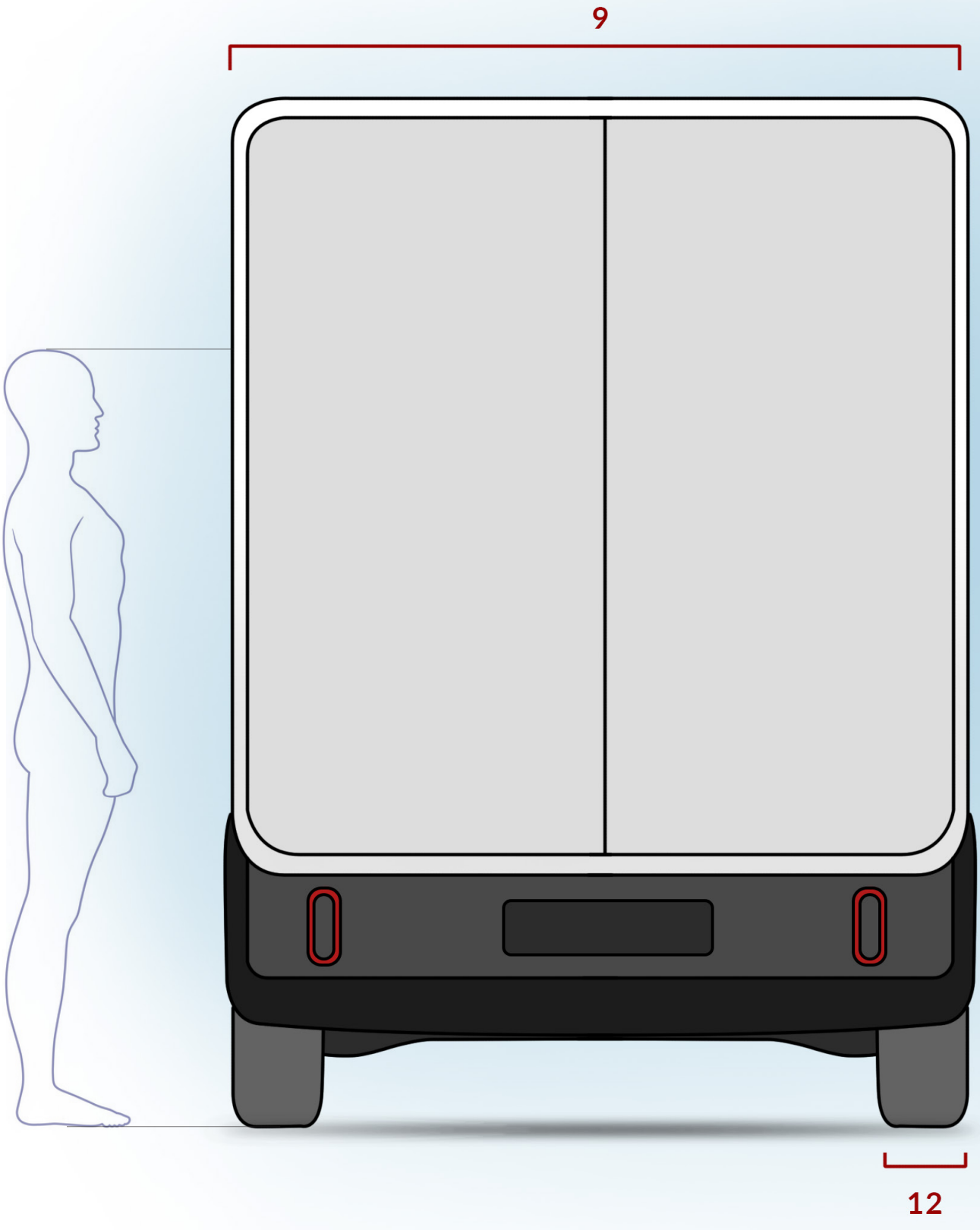
Sideview

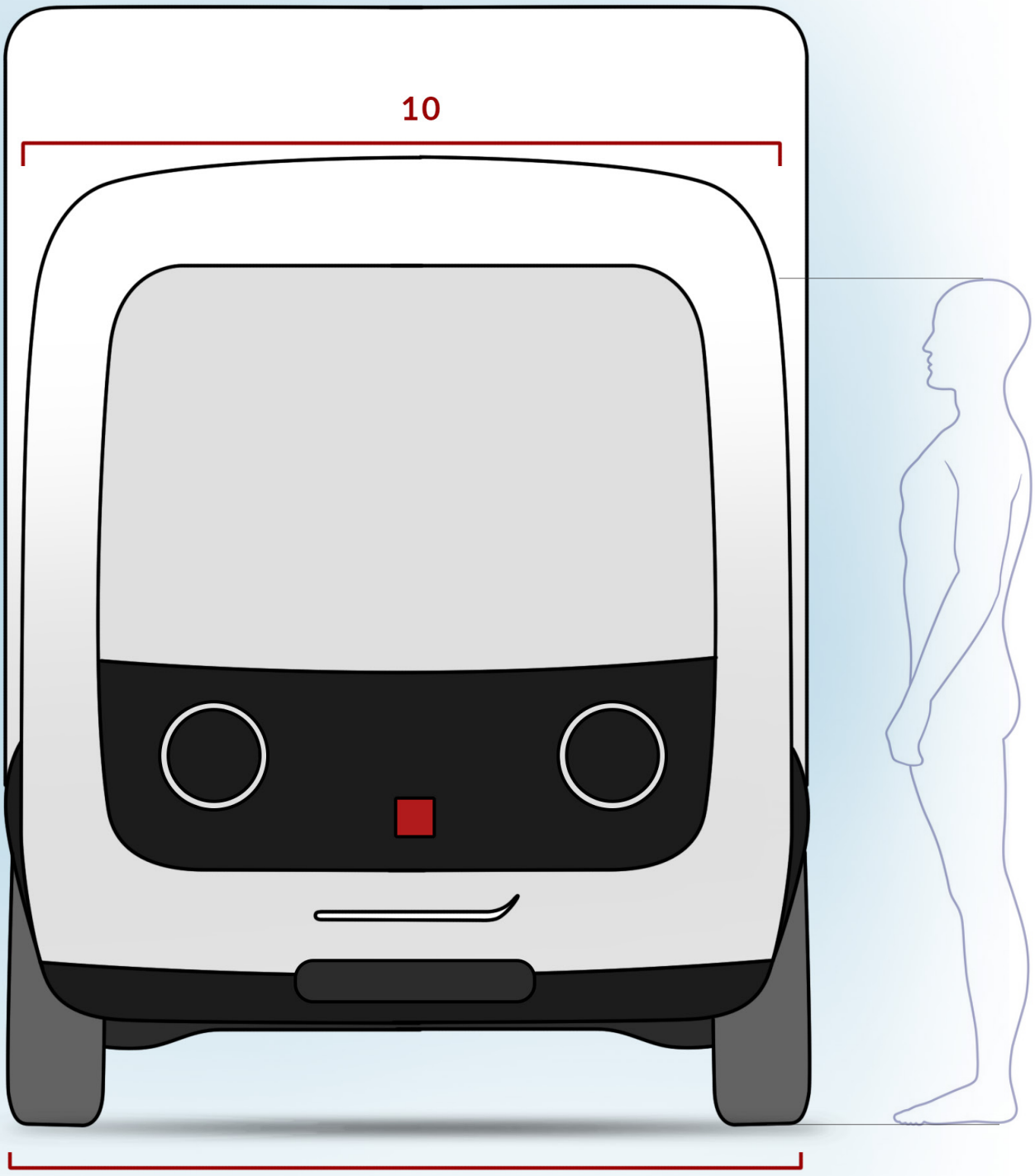


7. Cabin Height: 2000 mm

8. Cabin length: 1500 mm

Frontview and Sideview




10
11

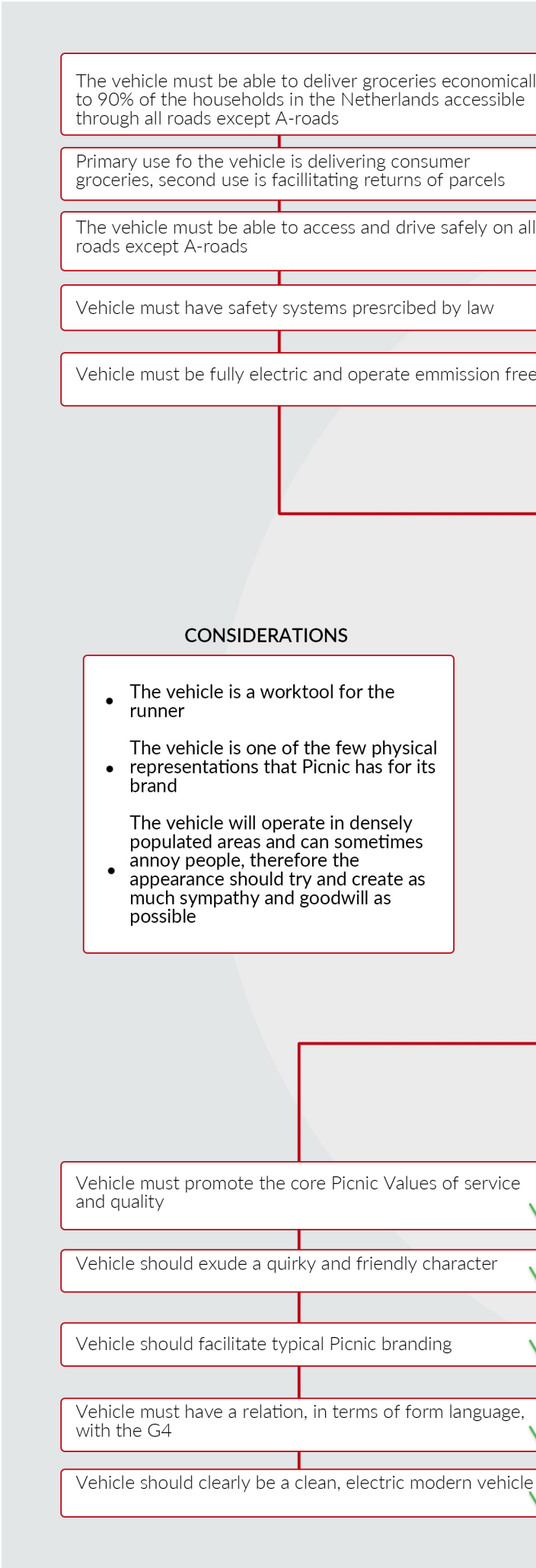
3.13 Reflection on Requirements

As the design phase has delivered the final concept, a reflection on the requirements with regards to the final concept is necessary to see how it performs and what has been achieved.

The framework derived from the research served as a set of specifications that had to be considered when designing a new concept. While going through the design process, it became apparent that some specifications were very helpful in making decisions and in making the vehicle most relevant for Picnic. However, some specifications were less useful and could not be verified at this stage.

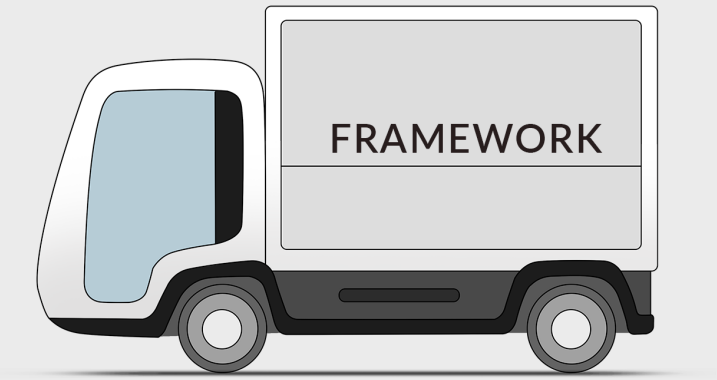
Therefore an evaluation of the final concept with regards to the original framework is made. The green tick mark means the final concept satisfies the specification. The blue circle means that the specification is still to be verified but has been considered in the design and does seem feasible. Most of these blue circles are specifications that can currently not be tested and requires input from VDL and TNO in a later phase of the process. Economics, for example, is hard to determine. The current design of the vehicle is still conceptual and once a company like VDL assesses the concept from a manufacturing standpoint, a battle between using the most cost efficient processes while trying to achieve a product as close to the concept starts. Therefore it is very hard to determine the cost aspect of this vehicle and therefore the cost efficiency performance is still to be determined. In addition to that, driving safely and comfortably on all roads except A-roads will require further iteration with a physical prototype. Once a physical prototype is built, the system components can be evaluated and tweaked so that the performance suits the needs.

All in all the final concept seems to be a desirable outcome for Picnic from the specifications perspective. As the general shape and character has taken form, the next chapter will be dedicated to adding more detail and understanding of the working principles of the vehicle in order to convey its worthiness as the successor of the G4.



TECHNICAL SPECIFICATIONS

- The vehicle has to provide a safe and ergonomically responsible enivronment for the runner
- The vehicle must support the workflow of the runner in the same capacity as the G4
- The vehicle must be able to carry and safely support a fully loaded cargo box
- The turning circle should be as small ass possible, no greater than 10 m from wall to wall
- Vehicle should be driveable for a licensed individual for B class vehicles
- Vehicle width should be smaller than a van but larger than the current vehicle
- Wheel and rim size should be a common size
- The vehicle should have similar drop time and cost efficiency performance compared to G4
- Vehicle should be able to drive safe speed on N-Roads
- Vehicle should integrate with current logistics without requiring alterations in this system

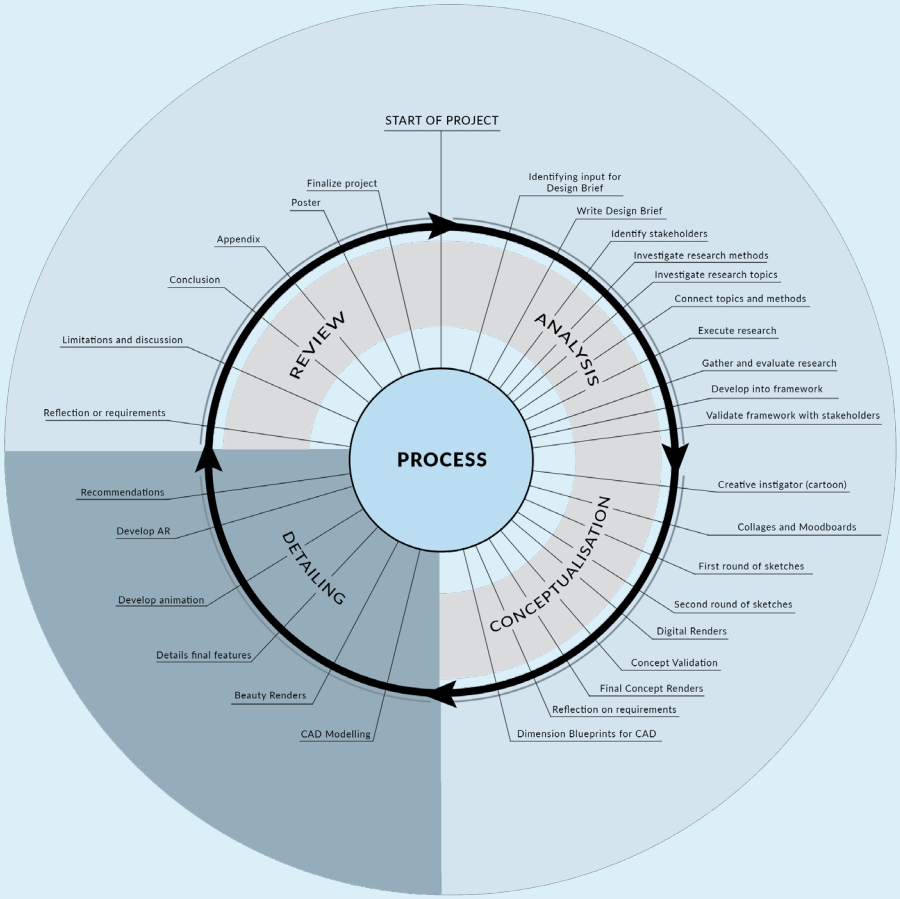


CONSIDERATIONS

- Due to the iconic shape of current vehicles, a lot of other electric delivery vehicles are called Picnic vehicles, the new vehicle should try and accomplish this generic standard as well
- The new vehicle should look simple, modern and electric but should not move to far way the archetype of a small delivery vehicle, otherwise it may not be accepted as such and become disconnected from road users

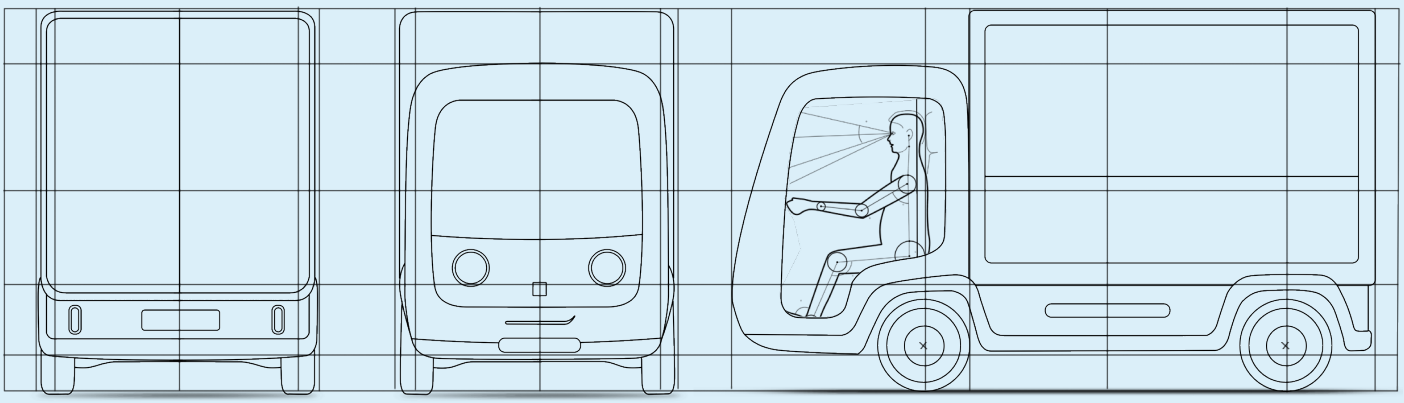
AESTHETIC SPECIFICATIONS

- The vehicle should represent a modern take on the qualities of the traditional local milkman vehicle from the past
- Vehicle should be able to be abstracted into a character that could play in a cartoon
- Vehicle should use antrhopomorphic qualities to trigger the feeling of cuteness
- Vehicle should appear swift and nimble
- Vehicle should look more stable than current G4
- Vehicle should have trasnparency so the runner is clearly visible
- Vehicle should have the potential to be recognized by customers as their local hero
- Vehicle should have a-typical delivery vehicle proportions
- Runners should feel proud to drive the vehicle
- Vehicle should take on the role of underdog compared to vehicles from supermarket competitors

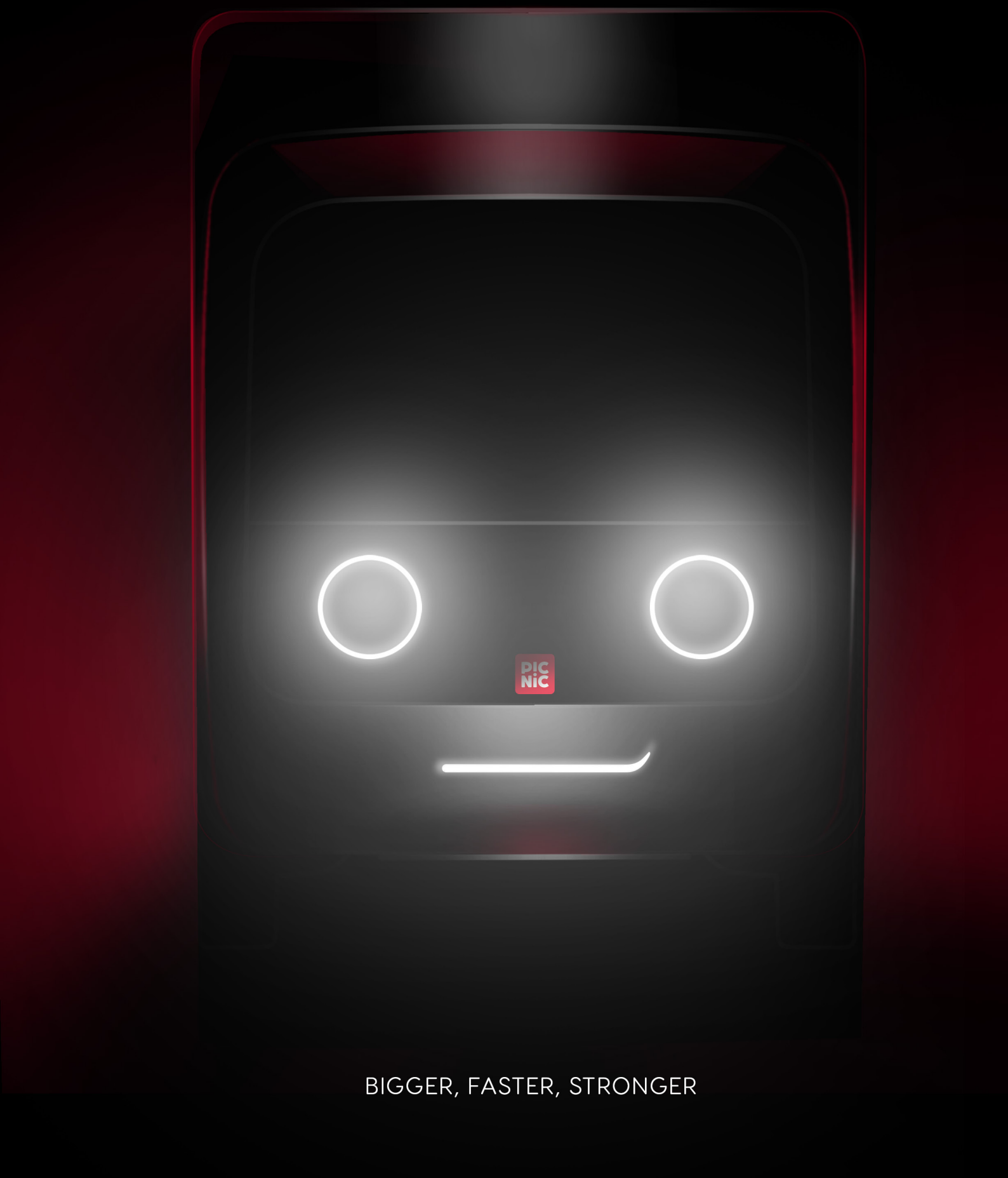


//Chapter 4: Detailling

This chapter focuses on the detailing and showing the complete final concept. The vehicle has aptly been named the SPEEDe. Renders using a CAD model will demonstrate final features that have been added in addition to beauty shots that will add material expression and a greater understanding of the overall shape and function of the vehicle. At the end of this chapter one will have a thorough understanding of the vehicle and the exterior design thereof.



SPEEDe



BIGGER, FASTER, STRONGER

3/4 Front Perspective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3/4 Rear Perspective


NL
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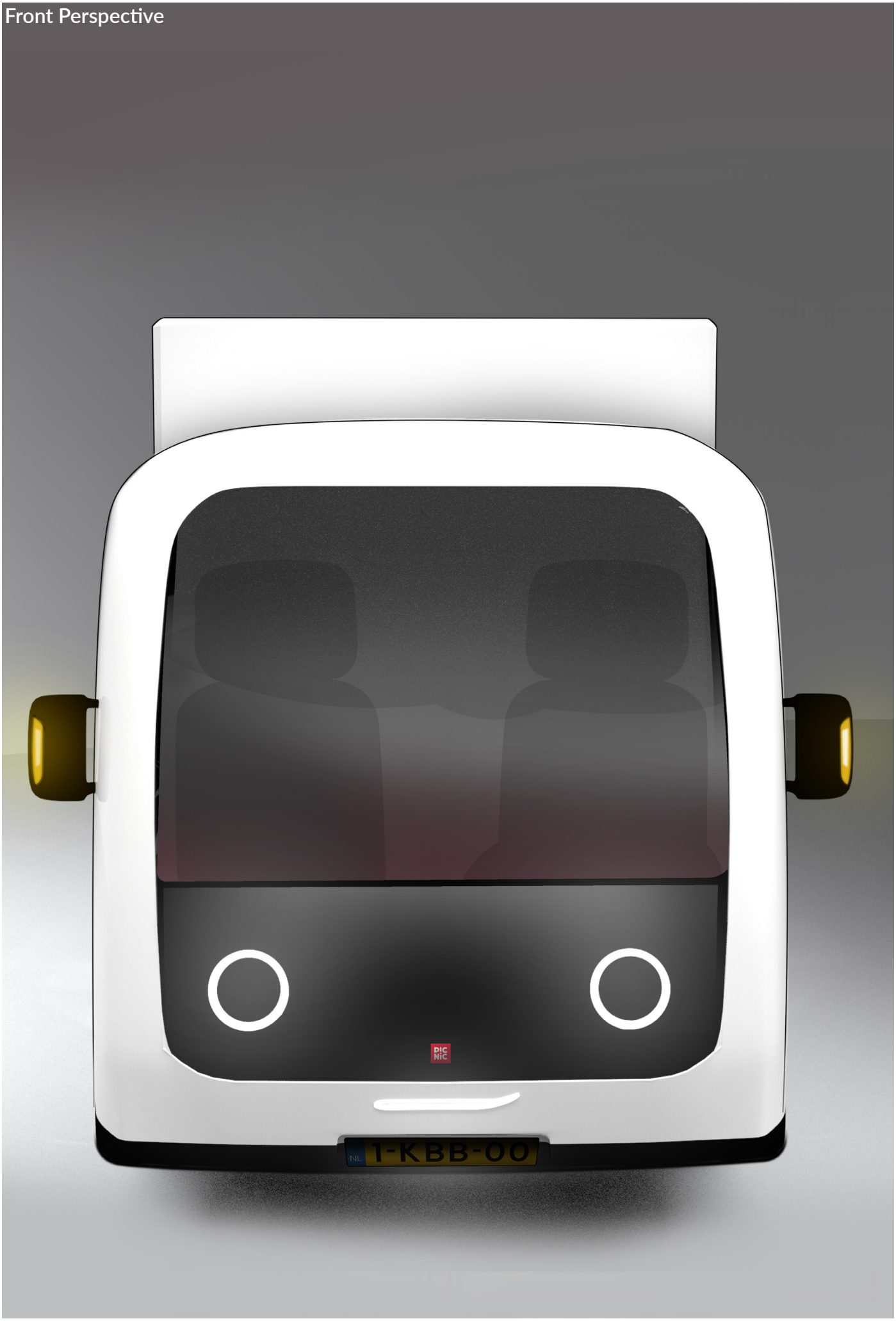
Front Perspective



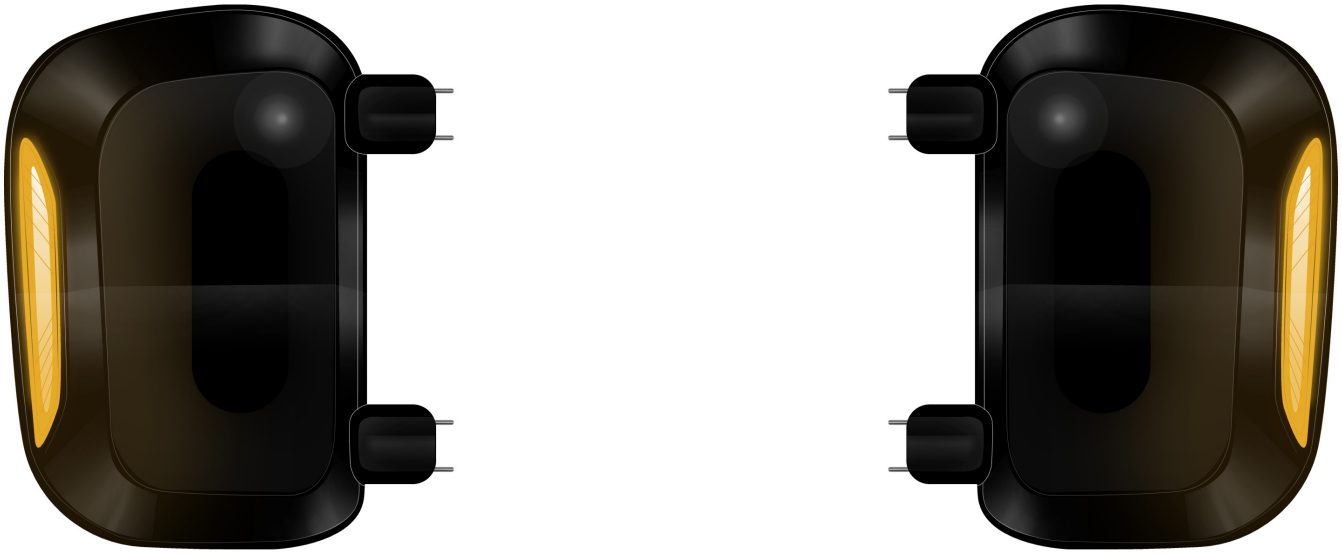
Rear Perspective

Sideview Perspective

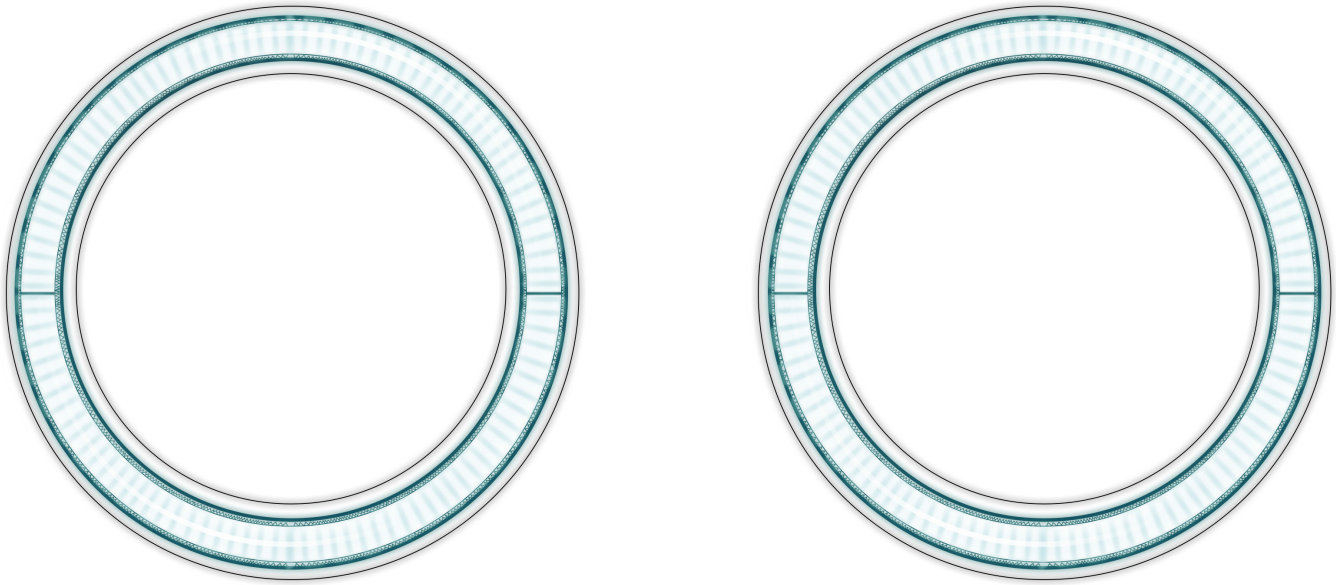

De Ruijter
La Vache qui rit

4.2 Details

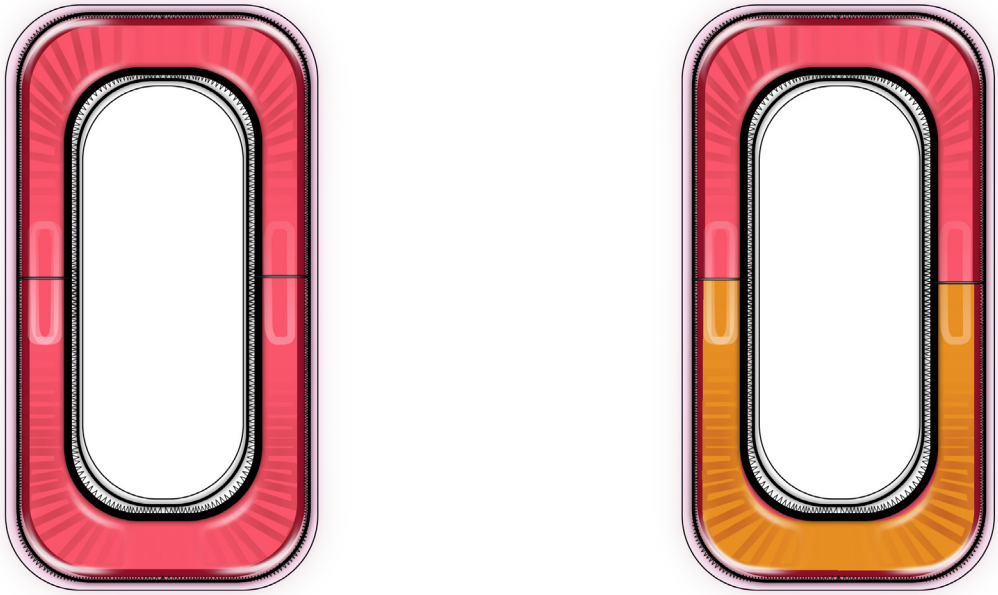
Some important features have been rendered in order to develop a better understanding of the total package.



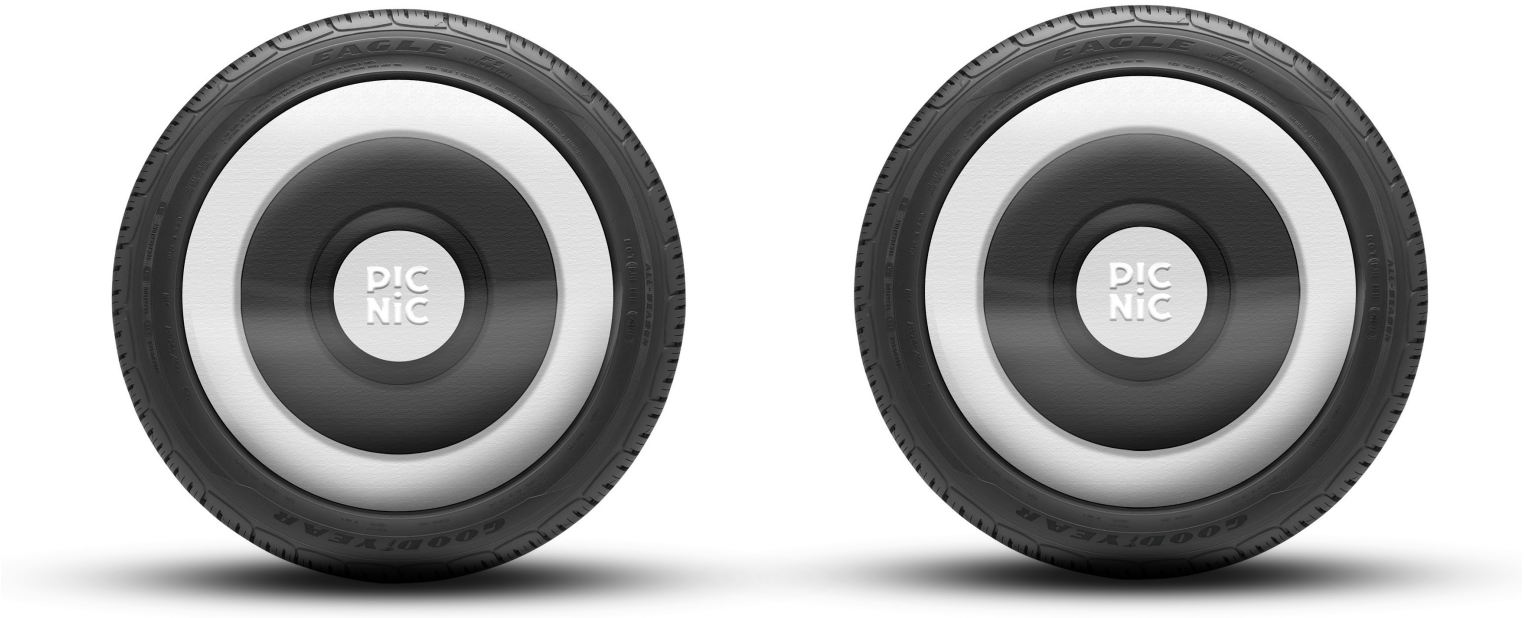
Sidemirrors



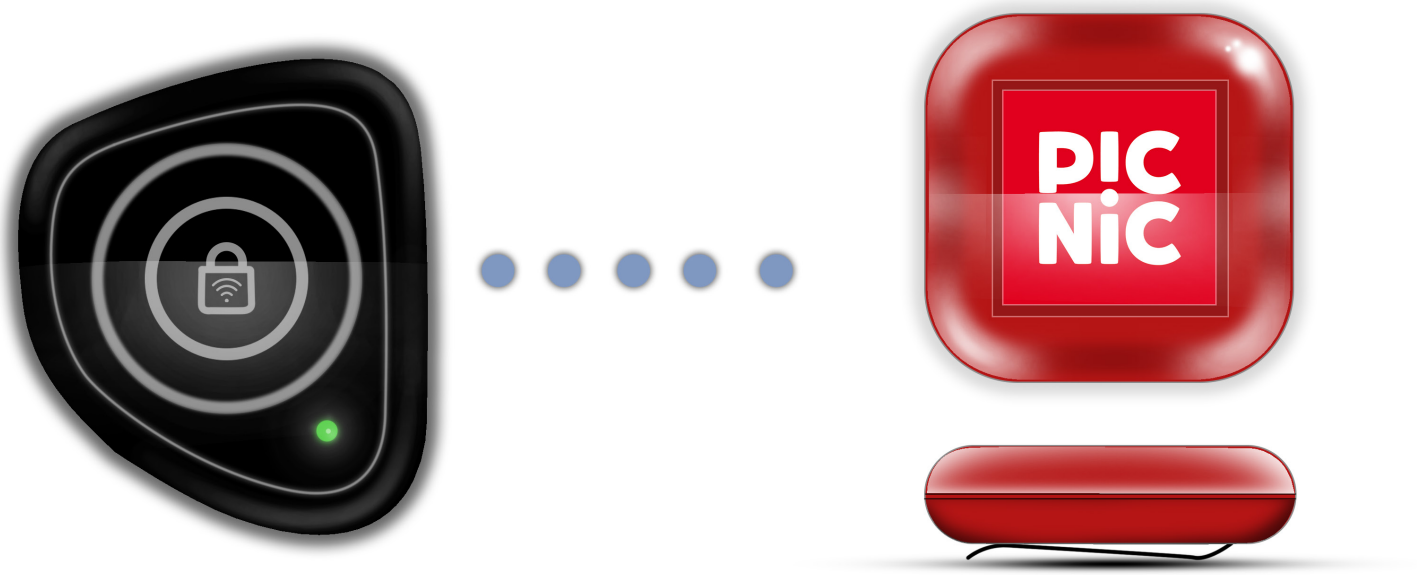
Headlights



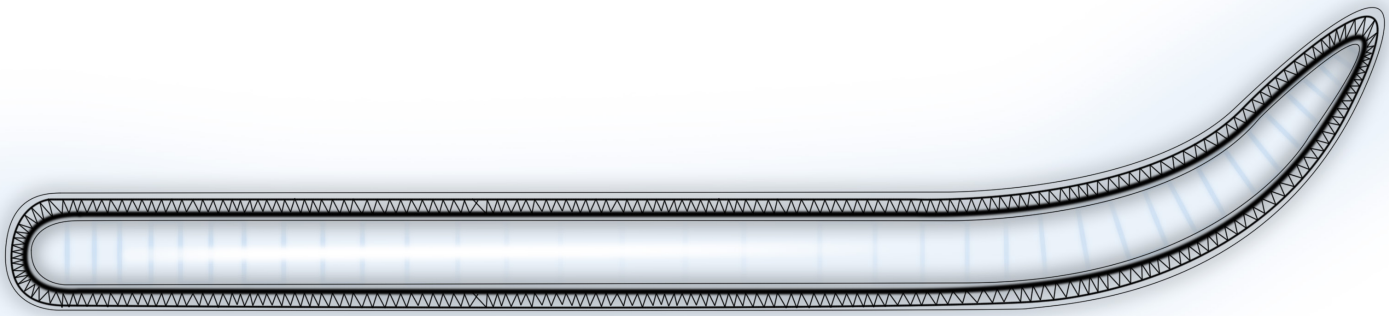
Rearlights



Wheels and Tyres



Key and Locking Mechanism



LED Smirk

Sidemirrors
The sidemirrors are designed in order to finish the anthropomorphic reference apparent in the front of the vehicle. They are attached at the A-pillar to sit at eye-height for the driver so that they are easy and quick to see. The sidemirrors also house the indicator lights. This is to make the indicators clearly visible.

Headlights
The headlights are circular LED rings. In the position they are located they reference the anthropormorphic qualities of the front of the vehicle by referencing eyes. These LED lights are considered 3-in-1 lights. They are daytime running lights for the vehicle. When it turns dark they increase in brightness and become low beam lights which vehicles would normally have during night time. They can also be turned up another level which would turn them into high beams. These types of lights are common and readily available on the market by companies like Hela and would only require simple plug and play and appropriate housing making it a cost-effective norm part.

Rearlights
The rearlights are simple and clean in their aesthetic. They compliment the shapes in the vehicle and are easily legible. They are also 3-in-1 lights. They are regular brake lights, nighttime red lights and indicator lights. The right light drawn here shows the amber light which is used for signalling as a demonstration as to what that would look like.

Wheels and Tyres
The rim design was chosen for its classical appearance which gives the rather modern looking vehicle a slight retro reference, a nod to the milkan metaphor. Simple disc shapes with different metal finishes like black and chrome highlight this and the Picnic logo embossed is a final detail. The envisioned diameter of the wheel 600 mm which translates to a tyre profile 205/65/R15 meaning the tyre width is 65 mm and the rim size is 15 inches. These are very common tyres and readily available in different styles which makes helps with maintenance purposes.

Keys and Locking Mechanism
An important feature is the keyless go. The red square is the key and the black shape the receiver. The receiver is placed on the cargo doors and the driver door in the black panel. When the key is in close range to the receiver the vehicle will automatically unlock. Once the driver steps away from the vehicle the vehicle will lock. This process occurs handsfree and the key can be clipped onto the runners apron. This should prevent the vehicle from being open without supervision of the runner and gives them less things to be concerned with while delivering groceries.

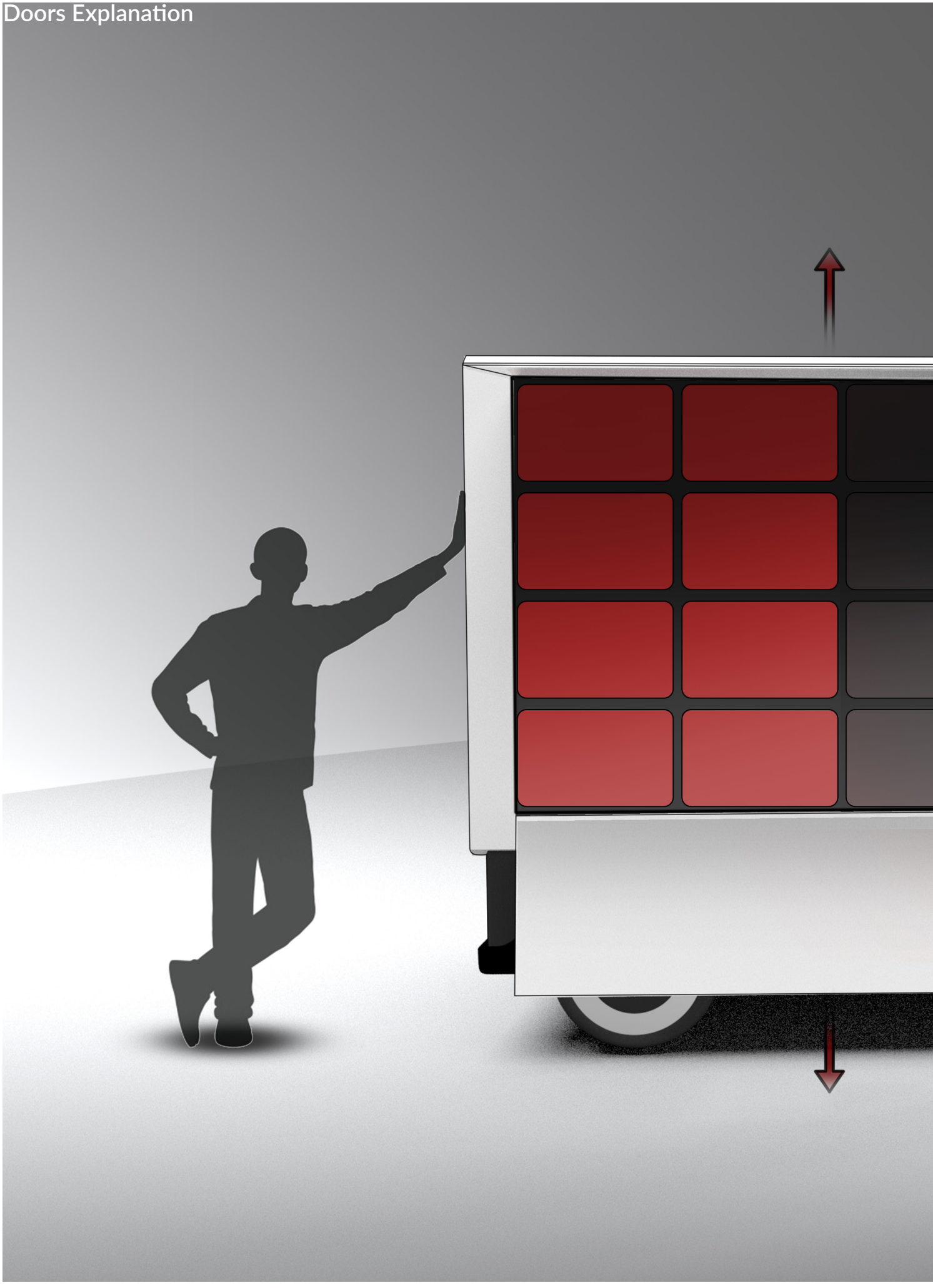
The Smirk
The smirk is the last highlighted feature. It is an addition that finishes the anthropromorphic front and adds a lot of character to the vehicle and makes it truly unique. It represents the quirky and cheecky character of the brand. It really gives the vehicle a recognizable face and integrating it as an LED light also allows the vehicle to be extra recognizable at night.

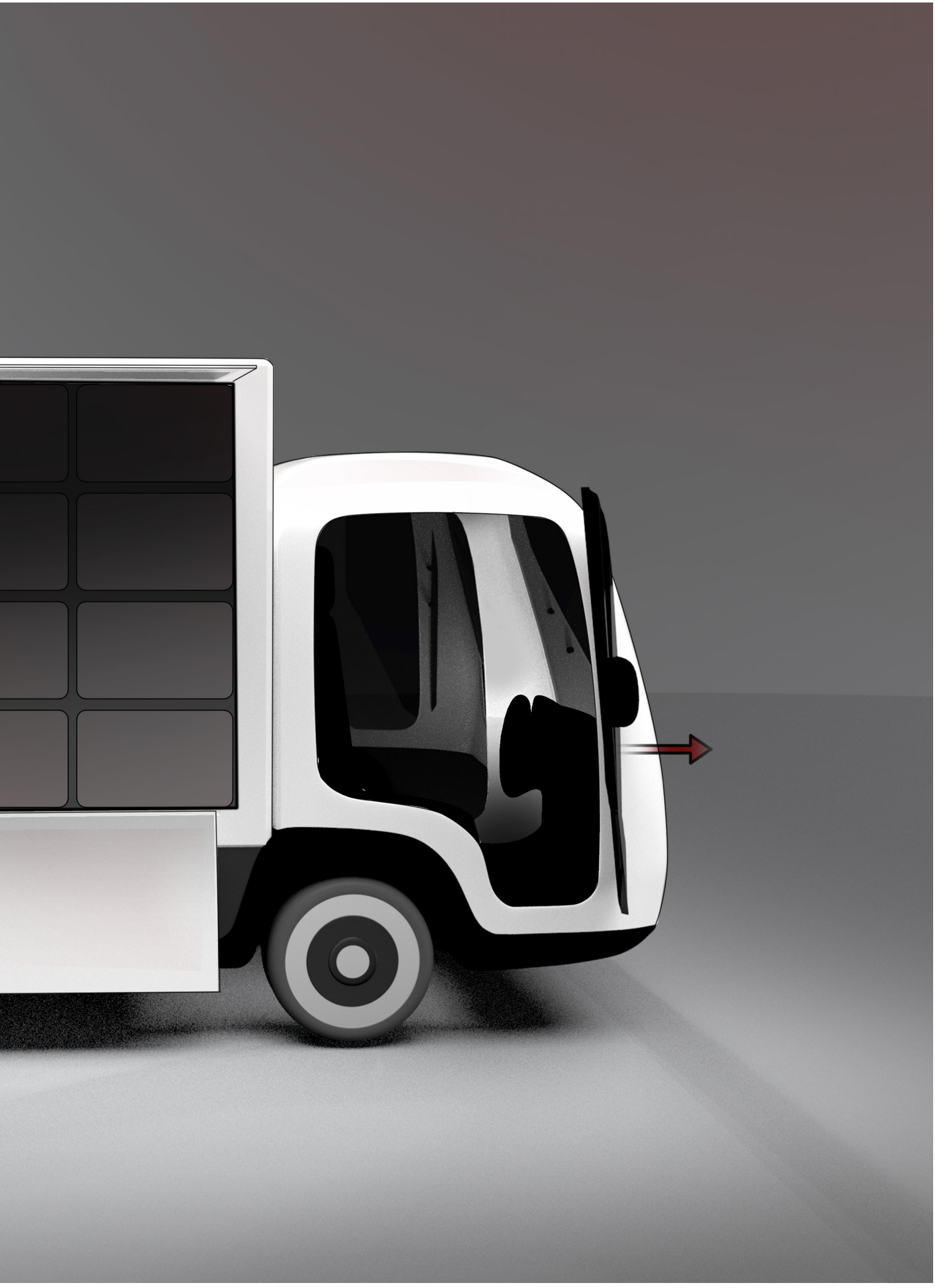
4.3 Doors Explanation

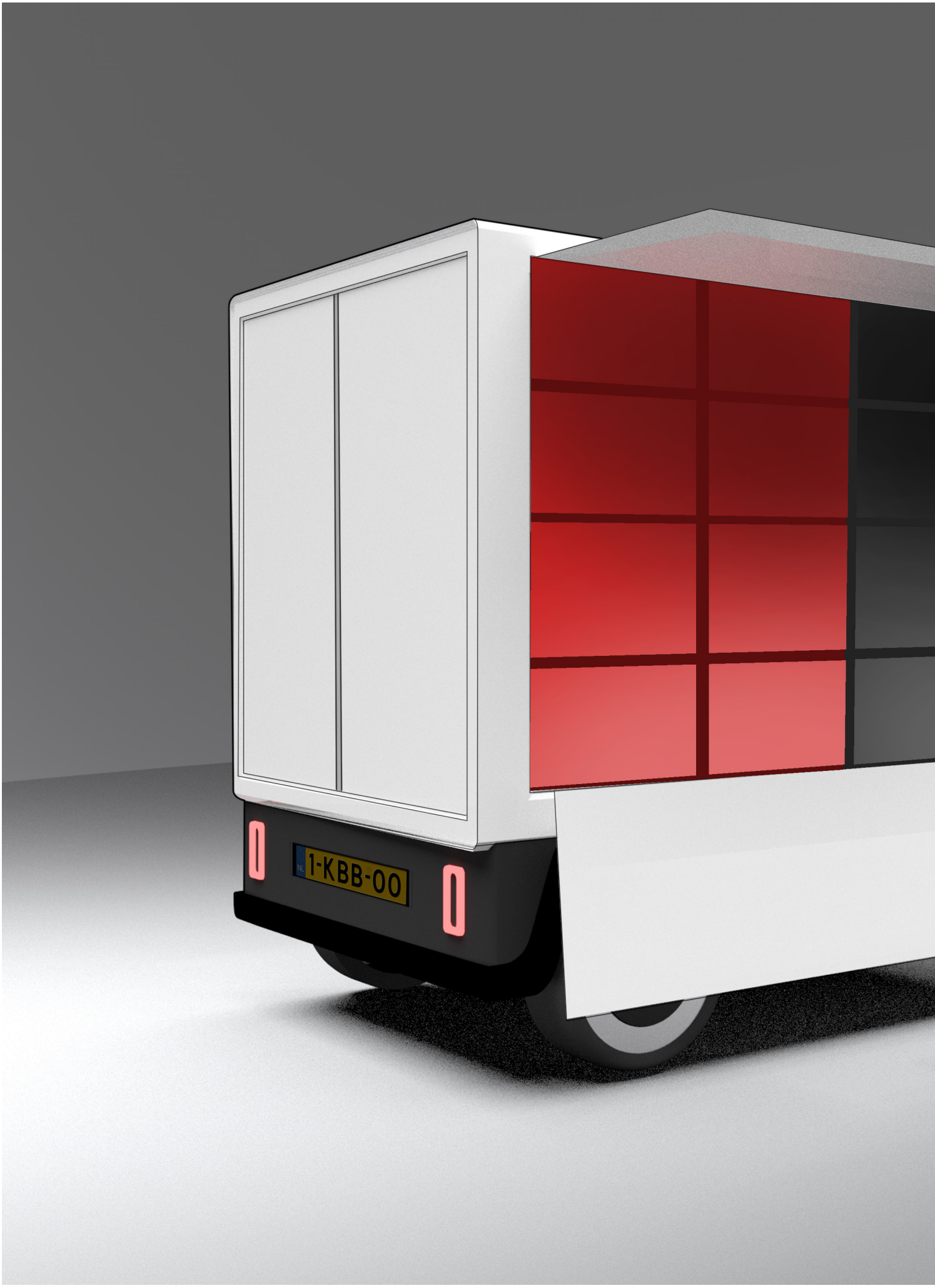
The two spreads on the following pages depict the way the doors open and the cabin and cargo box containing the totes can be accessed by the runner.

Another key element to be highlighted of the final design is the access to the cargo and cabin areas. A big change with respect to the G4 is the cargo box. Not only has it changed in size but also the access to the tote area is different. The new cargo box employs a split door. The top split is 2/3 of the height and bottom split 1/3 of the height. This gives the runner easy access to the totes and gives the vehicle almost a marketstand like appearance when the doors are open. Access to the cabin is by way of a regular door. The G4 currently has a suicide door, however, for ingress/egress reasons it seems more obvious to have this type of door since the totes can be accessed without having to walk around the door which is the case with a suicide door. The door has also been angled so that gravity pulls it shut once it is open and let go. This way whenever the runner walks away from the door it will automatically close.

Doors Explanation



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4.4 Splitlines and Panelgaps

For production, a vehicle needs to be split up in different panels. Here the red lines show how the different panels and splitlines are decided so they have minimal impact on the visual aesthetic of the surfaces while considering the impact on production.

The panels are made out of mild steel or aluminium, a choice that is made from a payload and cost point of view. In both cases the panels will be stamped which means that their shapes can not be too complex. The splitlines caused by this have a considerable impact on the visual aesthetic as they break up the surfaces. Therefore they need to be chosen in such a way that they cause the least amount of impairment to the visual while still remaining easy to manufacture. The bumpers and sidepanel can be made by injection moulding. This allows for a slightly more complex shape to be made from plastic but adding too much complexity and size can ramp up cost which is why they have als been split up.

As can be observed the cabin has been divided into 4 segments. The sides are split and are one shape. This means the splitline will run over the apex of the A-pillar and the top of the roof. The middle of the cabin which joins the two side panels is split on top of the roof of the cabin. This makes the two middle panels easier to produce and the splitline on top will not be as visible. All four panels can be relatively easily produced by means of stamping as they are relatively large surfaces with little complexity. Gaps will also be noticeable at the cutouts for the door and front windshield but these gaps following the form of those parts meaning their visual impact is low.

The bumpers and side panels have been split as well. These can be injection moulded. Since the bumper is black the splitlines will not be as visible. Dividing them into pieces makes it easier to produce and when damaged also easier to replace. The side panels of the vehicle will be made by the same means as the bumper. They will not have apparent splitlines but will look seperate from the bumper as they are a dark grey. All these splitline locations and panelgapss have been chosen carefully in order to minimize their visual impact.

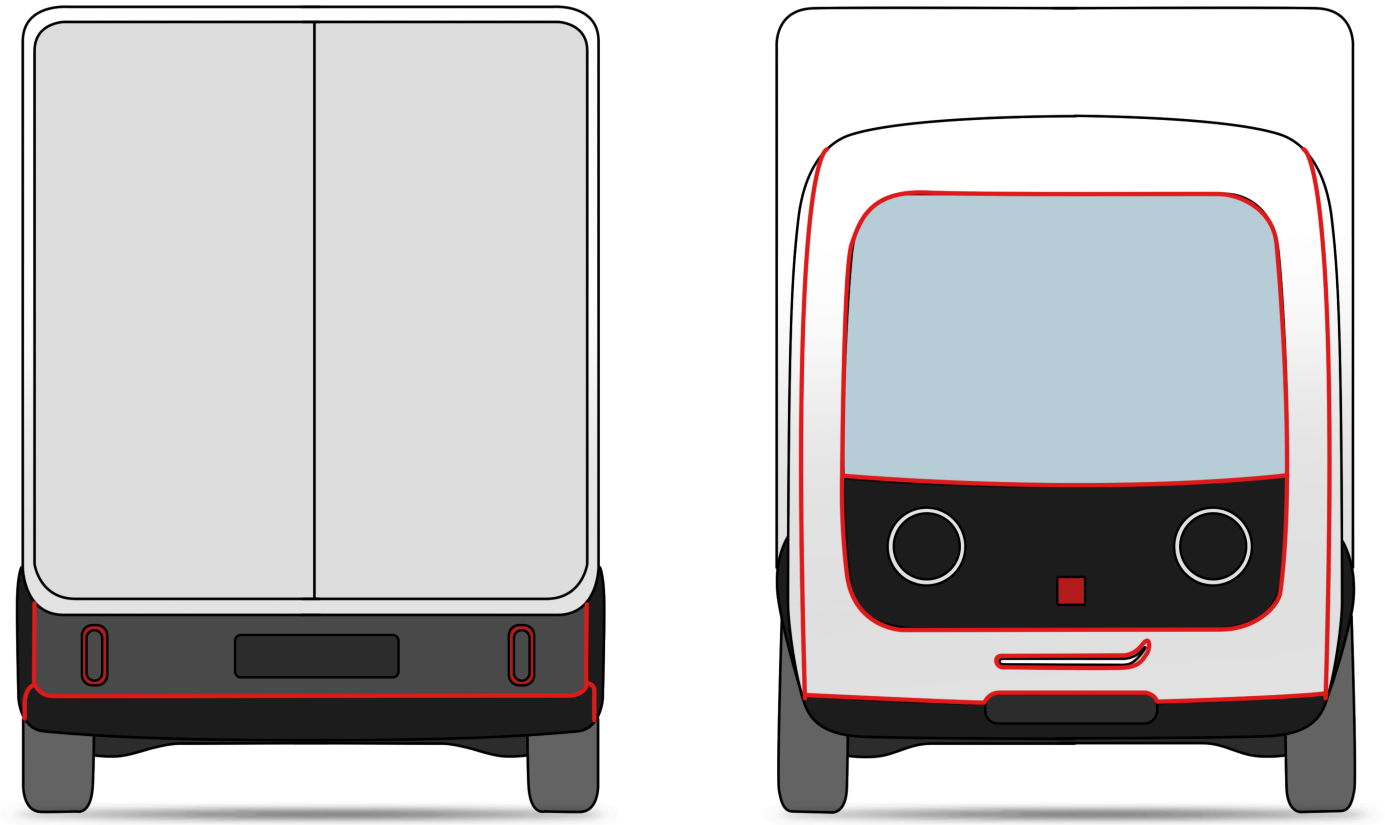


Figure 34 -- Splitlines and Panelgaps Rearview and Frontview

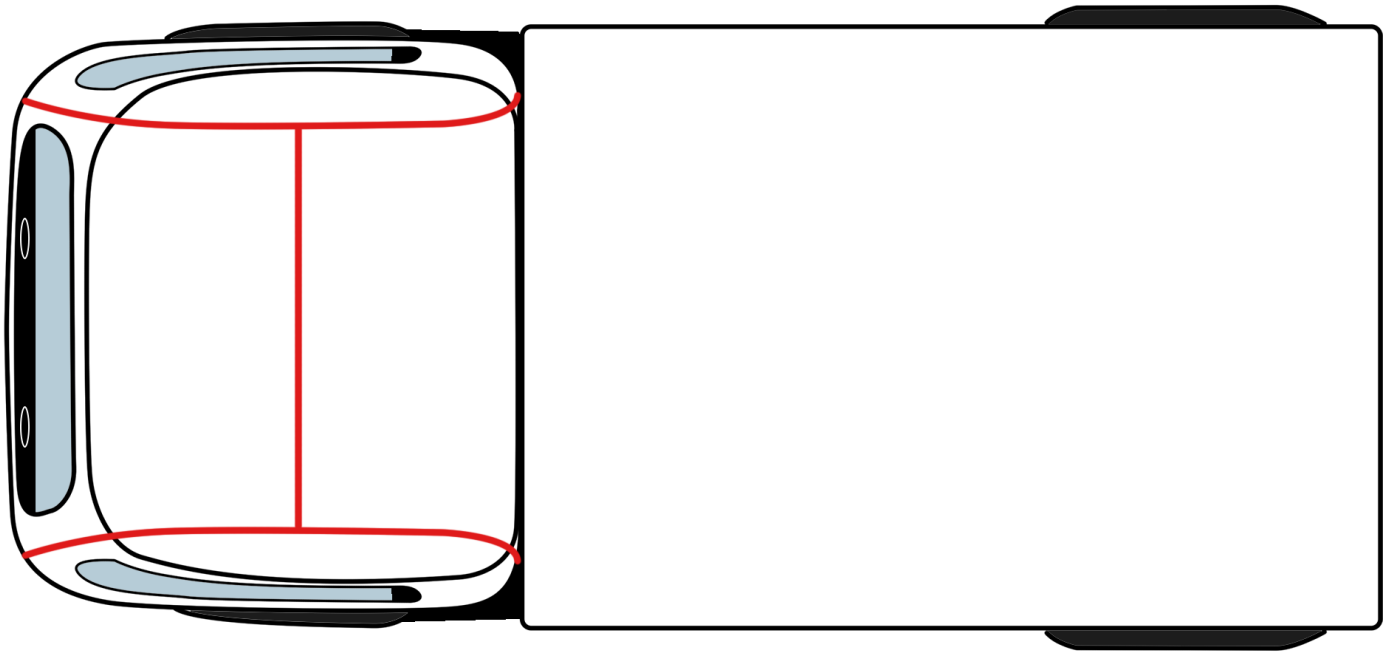


Figure 35 -- Splitlines and Panelgaps Topview

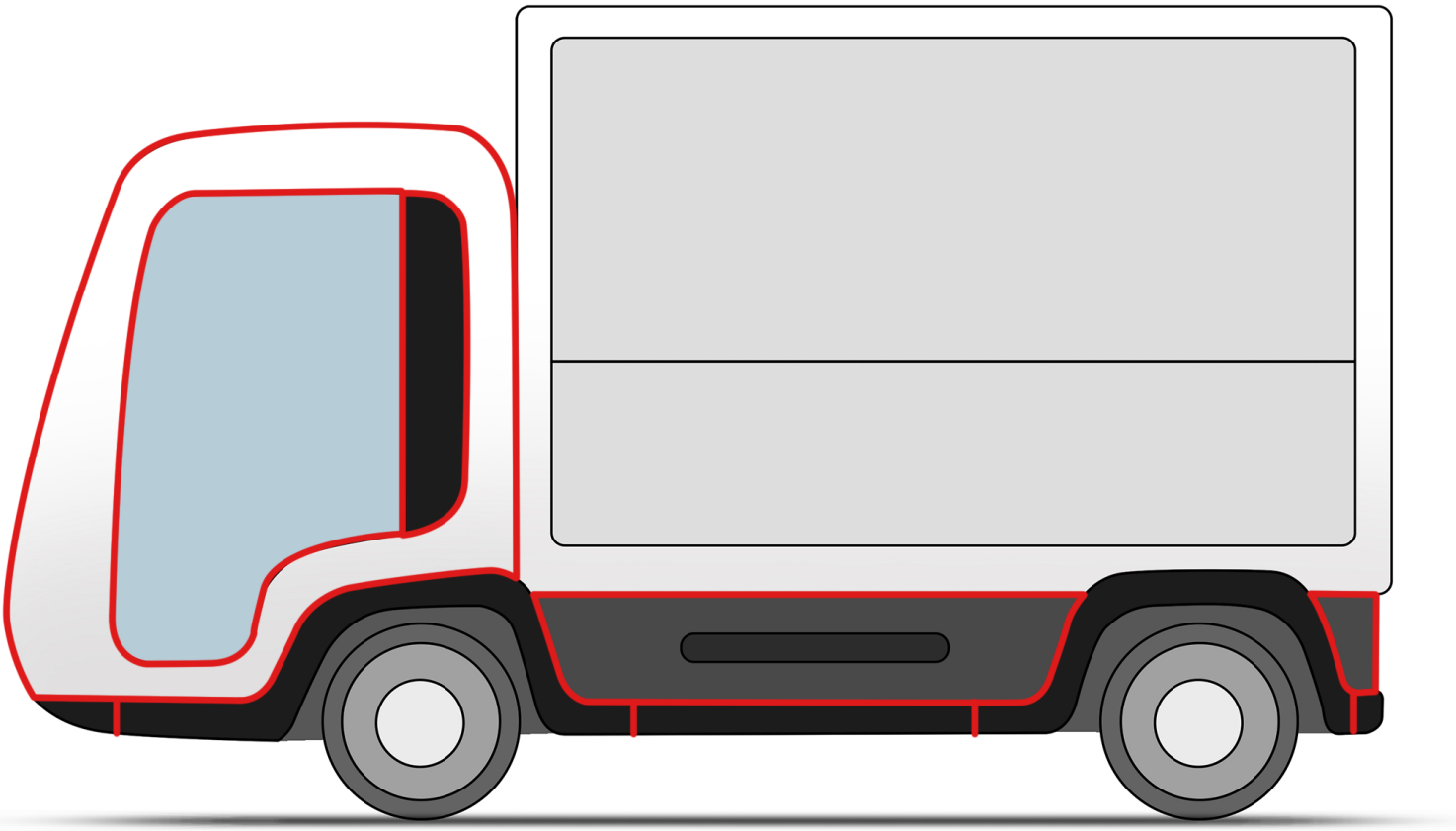


Figure 36 -- Splitlines and Panelgaps Sideview

4.5 Augmented Reality Comparison

Having made an accurate CAD model of the vehicle for renders there was an opportunity to convert this model to an Augmented Reality model so that the model could be evaluated in real time next to the existing G4.

Using AR as part of this project was an experiment in itself. Having the opportunity to do so because of the CAD model, the idea was to make side by side comparisons in AR of the SPEEDe and G4. Figure 37 to 39 show the outcome of this comparison. The model was loaded into an AR environment. Using a camera it was placed among the existing vehicles in order to give a feel of how it would compare to the G4.

As can be ovserved, there are some noticeable differences between the G4 and the Speede. Figure 37 shows that the SPEEDe is wider and has a higher cabin. The added width facilitates the increase in cargo the vehicle needs to carry. The larger cabin also allows for better visibility and more comfort. Also, the larger cabin makes the vehicle look stronger and more appropriate for travelling at higher speeds.

Figure 38 shows a sideview comparison. Once again the cabin looks a bit taller. The vehicle does not necessarily sit a lot lower but appears to be lower due to the bumper that hugs the extremities of the vehicle. This makes the vehicle more planted and makes it appear a bit safer. In terms of length the SPEEDe is a bit longer yet still remains compact which was exactly what was hoped could be achieved by only increasing the width.

Figure 38 shows the vehicle at the loading table. It looks like it will still fit the current setup which means no large alterations for cargo loading have to be made which is a great advantage.

Overall the SPEEDe looks wider and a bit bigger but the contrast in size of the two vehicles is not too great. This AR comparison proves that, though the new vehicle looks more capable of delivering groceries to more remote areas, they are still within the same form family and the SPEEDe is an upgraded, bigger, faster, stronger cousin of the G4 which was exactly the intention of this project.

Figure 37 -- Overall Results

Figure 38 -- Overall Results

Figure 39 -- Overall Results

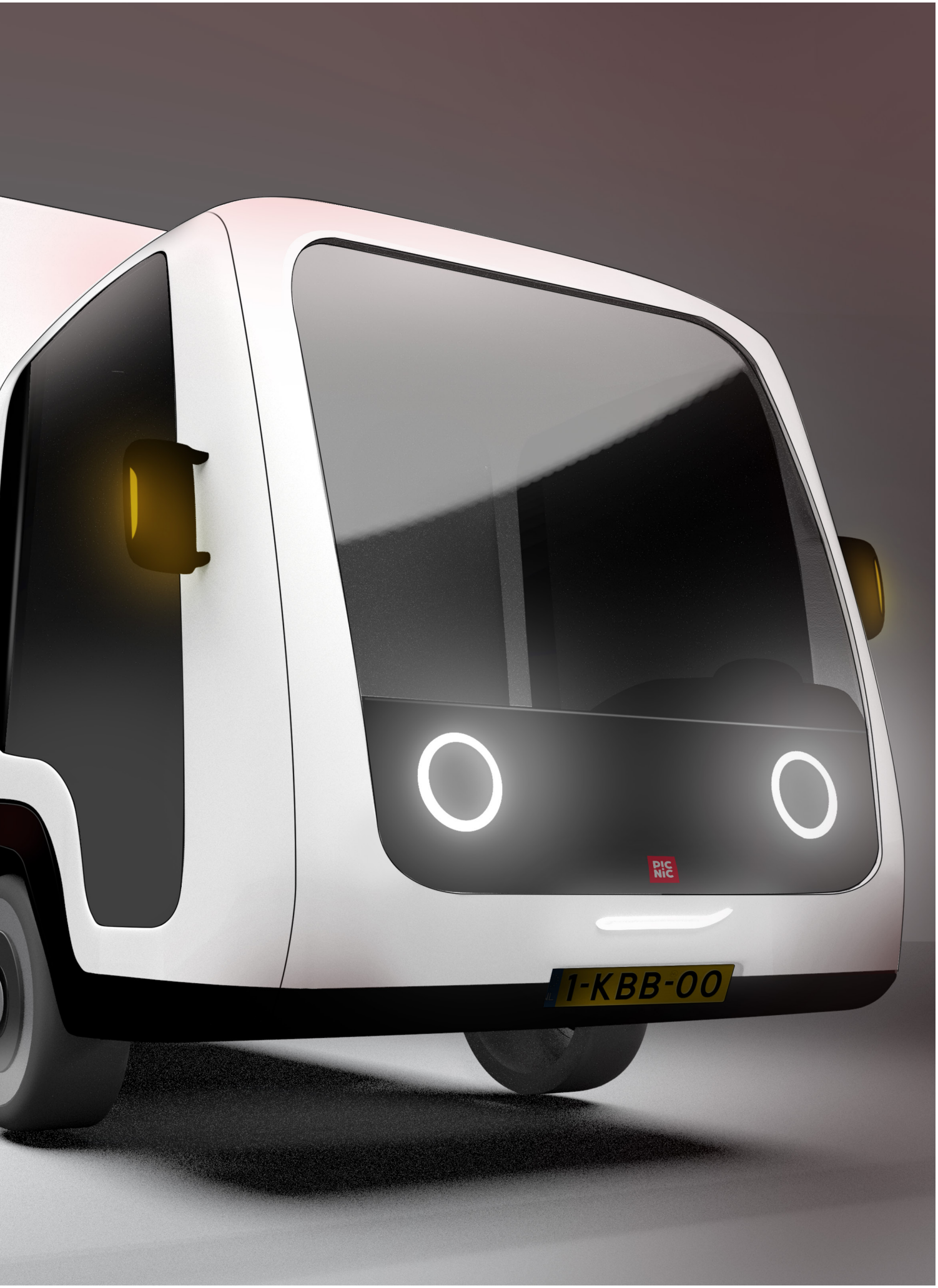
4.6 Final Renders


PIC
NIC

SPEEDe

BIGGER, FASTER, STRONGER

Speede is the new last mile delivery vehicle for Picnic. It carries more cargo and drives faster than any of the current Picnic vehicles. It is designed to embody the Picnic spirit. Friendly, innovative and quirky, ready to serve millions of families.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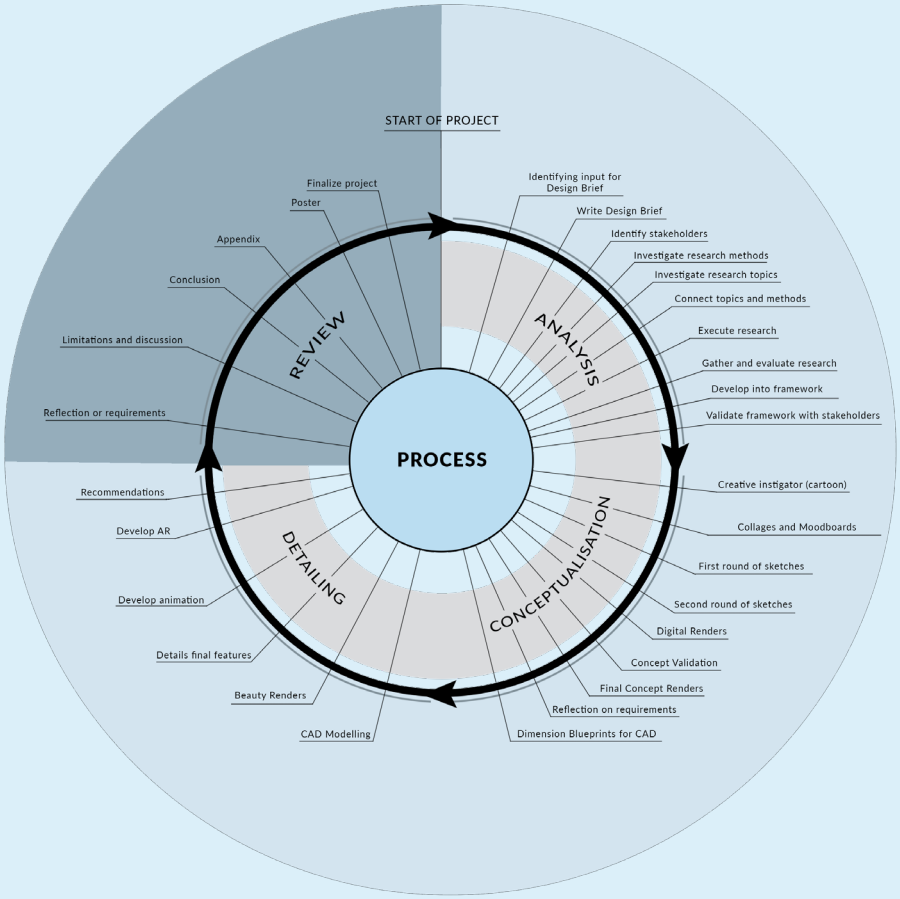

//Chapter 5: Review

This chapter focuses on the review of the entire design process. It will reflect on what has been achieved during the project, make recommendations in order to continue the process to take it to the next level, and discuss the limitations. A final conclusion is presented that highlights the outcome and wraps up the project.

5.1 Recommendations

Though the project has gone through significant stages in order to arrive at this point, a lot of strides have to be made in order to arrive at a first prototype. This section discusses recommendations with regards to this process and how to continue from this point onwards.

Designing and building a new vehicle is a long and complicated process. Even more so if this is not your area of expertise and have to establish relationships and connect the right partners in order to do so. Picnic has taken the right approach in starting a joint venture with two very relevant partners in order to even think about turning this idea into reality. Now that a design that seems to be relevant and considers all the needs from a Picnic perspective has been developed, it is time to start involving these partners closely with the project.

I believe the next step should be to sit down with VDL and discuss the readiness for manufacturing. Basically to figure out if the design decisions made can be produced in a cost-effective way. Also with regards to roadworthiness TNO should get involved at this stage. Their research with regards to battery, powertrain and safety systems should be added to the conversation in order to establish how all of these components could fit and be housed within this design. Once a disucssion has been had, the next phase of the design process can be initiated.

The next phase would be developing the interior of the cabin. Understanding what is needed in the cabin from a runner and company perspective. Ergonomics will be a very important factor along with some unique challenges specific to Picnic such as parcel delivery. The cabin will have to facilitate space for the driver and a passenger while also carrying some of the runner tools and possibly parcels. The development of this cabin will rely heavily on integrating existing systems from manufacturers in order to keep cost down. This is a huge undertaking and therefore should be started as soon as possible now that the outer extremities of the design have been established.

Parallel to the development of the interior, a resurfacing of the model should have started. Class A surfacing is required in order for VDL to move forward with designing the internal structure of the vehicle. Class A surfacing means all panels should be developed to the point that their exact thickness, gaps, connection and flow is determined and locked in place. This means that once the vehicle has been surfaced in Class A, only small changes can be made.

Once this skin is developed VDL can design the structure on which this skin sits and the housing for all of the components. Once this structure has been developed and designed a careful assessment with regards to production can be made. It is at this stage during which the cost for production, determined by material, amount of processes and handlings, methods of manufacturing and order volume will play a significant role. This will ultimately determine whether or not the investment is worth the outcome. If the upside is big enough for Picnic and the cost ramifications are manageable they should continue to production. If the costs become too high and do not make sense versus buying a product that is not as Picnic as they want but makes more sense for an economic perspective, they should seize the project and look for appropriate alternatives, possibly the G6 by Goupil.

In terms of short-term recommendations for this project I believe there is some desire to review the current chosen design. Given the fact that this project only runs roughly 20 weeks, which is a limited amount of time for such a large project, some small iterations to perfect the chosen final design could be beneficial. Also more comprehensive detailing and refinement of some of the features could be benificial in order to gain a better understanding of how they are integrated and used in the vehicle. All-in-all I am satisfied with the outcome of the project in the given amount of time and some of these recommendations aim to take it to another level potentially if Picnic would want to do so.

5.2 Limitations and Discussion

As with all projects, the process and the outcome of the design incurred some limitations and challenges that are worth discussing. This section reflects on the different phases of the project and its limitations and challenges.

Designing a new vehicle is a long and difficult process as there are so many facets to consider. From a company standpoint it is a daunting undertaking and therefore highly experimental. Picnic has a refreshing attitude, if they can not find something they feel suits the company they will try and do it themselves. This is why the development of a new vehicle inhouse in correspondence with a few partners became an option for them. They made a few strategic hires and set up a small team to work on the new vehicle project. This started a year before I joined the team as a graduate intern which means some of the research and decisions due to that research had already been made and the project was given some direction. This was the starting point of my project.

The first phase of the project was dedicated to research. The initial brief from Picnic was to design a vehicle that could carry more cargo, driver faster and is stronger to provide a safe vehicle for those higher speeds with more cargo. Their research had concluded that a cargo box similar to the existing one was required in order to accompany the loading system that is already in place and that the box would only be wider and use different doors. Though it was beneficial that they had decided and frozen the design of the cargo box, it also meant that a large portion of the vehicle would not be able to change very much. It also meant that the vehicle width had some limitations already. The brief also stated that the vehicle has to be distinctly Picnic. Research during the first phase of the project was therefore focused on what distinctly Picnic meant. There was no styleguide containing the housestyle and I was told that this was an organic evolution based on the expertise and opinion of a few people within the company. This meant that, though analysis could be carried out, a lot of it was determined by opinion which meant that considering the right stakeholders consequently was very important and that sometimes opinions would not align. I noticed this early enough and therefore I decided to use the information received and formulate it in my own way with the intent to satisfy as many stakeholders as possible, which happened relatively well.

After the research phase I gathered enough input so that I knew what had to be designed, for who, why and what it would eventually have to look like and represent, the design phase started. As I was part of a small team I had to convince them of my approach and somehow guarantee that the outcome of this approach would result in what they would want. As they are not industrial designers, constant communication and expectation management was something that was important and I had not foreseen. Sometimes it felt like the process was not truly recognized as the best approach and also the time and effort it takes to work through the approach is hard to understand for someone not familiar with industrial design. This did not necessarily limit me but it was an additional job that I had to take care of that I did not anticipate in the beginning. I feel like I had enough credibility to earn the trust in the team so that they would let me make the decisions but ultimately sometimes the bigger picture was lost and during the design process people could get hung up on details that were not necessarily relevant at the time. However, once the process started coming to an end and resulting in a final concept, the team started recognizing the merit and were happy with the outcome.

For the communication and final design phase there was a lot of expectation from the CAD model. I taught myself a new CAD program and a new rendering program to challenge myself and also see if this new program, often used in automotive industry, could result in a better model. As is always the case with these programs it takes a long time to learn. Learning the program while having the pressure to deliver a satisfactory outcome was something I should not have done in hindsight though I am happy with the result. All in all there was a steep learning curve, however, I feel like this limitation as well as the others were challenges I overcame and learned from which ultimately is the goal.

5.3 Conclusion

Conclusion of the project by means of evaluating the process and result.

As aforementioned, the learning curve during this project was steep yet fullfilling. Taking on such a big task of designing a new vehicle at a company where they do not have any experience with vehicle design but do expect very good results at a high pace was definetly challenging.

Going through the different phases of the project, I believe the right approach was used in order to come to a favourable outcome ultimately. Identifying the character of the brand, its tone of voice and also what the new vehicle was required to achieve, known as its raison d'etre, allowed me to establish a foundation from which the design could be developed. From an academic perspective this was also important as it seeked to prove that from all the available information the right conclusions could be drawn in order to establish a fruitful bottomline for the design. The culmination of this was a combination of requirements and considerations as well as a design vision.

Thereafter the design process in the form of developing sketches and visuals based on that information started. Showing that iteration is key and that this is best done through a funnel with the stakeholders was an intensive but useful approach. I also believe it was important to keep all the stakeholders involved like this because ultimately their ideas and opinions are the ones that matter just as much when final decisions are to be made. Also from the academic perspective this was part of the learning and demonstrating my ability as an industrial designer.

The conclusions, a final concept that is detailed enough so that the stakeholders have a good understanding of the design was achieved. I think that the final outcome, in terms of quality when reflecting on the initial design brief, is succesful. It has its own character, falls in line with the identified brand values, tone of voice and character that Picnic was looking to achieve. It is able to perform accordingly and also seems to fit within the existing vehcile form language and family. Therefore I think the entire process and development of this new vehicle was succesful from both a company perspective and academic perspective in demonstrating my abilities as a designer.

In order to advance this project into an actual roadworthy driving vehicle, obviously a lot of strides still have to be made but I am confident that with this report and design outcome Picnic as a solid foundation on which they can build and could draw inspiration from to eventually get their very own vehicle to market.

5.4 Personal Reflection

Personal reflection of goals, learnings and overall project execution.

This last project of my academic career has been one of the hardest and most interesting projects I have done. Balancing the academic expectations with the company expectations took considerable amounts of learning along with a new level of autonomy that is required with this project. Initially I set out to learn as much as I could in a corporate setting, to understand what it takes to function as a designer in a realm where real money, time and expectation is at stake. I also wanted to see how well I could apply the theory I had been taught and if I could tailor it in such a way that it created value and showed the worthiness of our profession in a space where that would not necessarily be immediately apparent.

In the smaller scheme of things I also wanted to develop myself personally. I wanted to say yes to as much as possible and see how far I could push myself in order to achieve the result I had envisioned. I established small goals on the way which increased the difficulty of the project but would benefit the outcome. Things like looking for and applying new theory in order to establish a good foundation to design from. Involving many different stakeholders and keeping these stakeholders informed so that they feel connected and invested in the outcome. Learning a completely new CAD software and rendering software. Using augmented reality for validation purposes, something I had never even really given much thought to as an option. Making sure that people understood my ideas, could read my visuals the way I wanted them too and ultimately be infected by my energy and positive attitude. I wanted to work long days, come in early and leave late to show my dedication to the company but also to myself. These were a lot of small and bigger goals that organically evolved and became relevant as the project went on. They were not written down or quantified in any sort of way but they were all developed and established with the same goal. To get as much as possible out of myself during this project in order to facilitate a good result I could be proud of. To say that all of these learning ambitions, goals and ideas were succesful is hard to say. Having had them in my head and pushing me did enrich me a lot as a person. I think that I encountered significant personal growth and also professional growth. Working at Picnic on this project confronted me with my strengths and weaknesses and I was able to manipulate those in my favor.

So to speak of the result as solely the culmination and outcome of what I was able to deliver here in this report would be untrue. I think that during this project I gained significant work experience in a fast paced startup environment while also setting and achieving personal goals in a way I felt was benificial to myself, and ultimately deliverd an academically sound product that Picnic can benefit from. I think I showed that I am a capable designer, which ultimately I believe is the intention of a graduation project.

Thank you for reading this document. If you have any questions and would like to get in touch, please do not hesitate to contact me.

5.5 Acknowledgements

Of course I could not have done this project alone. There were lots of people who helped me in a variety of ways in order to achieve the desired outcome.

I would like to thank my chair Jan Willem Hoftijzer and my mentor Dicky Brand for their belief and guidance during this project. Your openness and willingness to help, listen and provide feedback were invaluable to me and I feel very fortunate to have had to opportunity to work closely with both of you. Once again, thank you for all your time and effort in helping me throughout this project.

Secondly, I would like to thank Joris Wolters for taking a chance on me and giving me so much freedom to really execute my own project. I appreciate your willingness to listen to me and challenge me and letting me take ownership of the project.

Kay van Mourik, thank you too for giving me this opportunity. Your critical questions and desire to find the best possible outcome and making sure no stone was left unturned really pushed me to be thorough and conscientious in my decision making.

Benjamin Collins and Mark Janssen. It was great having you two at the office working on your graduation projects as well, definetly saved my ass a couple of times.

Mom and Dad, thank you for your patience and unwaivering support. I know it took me a while to graduate but this is the home stretch. Thank you for everyhting you have done for me.

Willem, thank you for teaching me how to draw all those years ago and being my big brother. I am very proud to have someone like you to look up to and inspire me in so many different ways.

Thomas, thank you for all the hours on the golf course with me and inspiring my competitiveness. It has been pretty useful even outside of golf. Even though you are my little brother, I look up to you too. When the time is right, you can come be my CFO.

Evert-Jan and Sander, thanks for sticking by my side for so long and being great friends. The past couple of years had some ups and downs but I am very thankful that I was always able to count on you guys.

Tijmen, Jeroen, Bastiaan and Geert. The Ossoboys. You guys have been an instrumental part in my development as a designer. Always challenging me, pushing me to be better and think different. Living together for years, endless drawing sessions, chillings, trips, parties, painting sessions, the list goes on. You guys made my time in Delft amazing and I will always look back on those days as some of the best in my life.

Lucy, thank you for your unconditional love and support. I could not have done it without you by my side.

5.6 References

These are references used for the report.

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//Appendix

This appendix contains some supplementary information for the project.

Appendix A

DESIGN FOR our future

TU Delft

IDE Master Graduation

Project team, Procedural checks and personal Project brief

This document contains the agreements made between student and supervisory team about the student's IDE Master Graduation Project. This document can also include the involvement of an external organisation, however, it does not cover any legal employment relationship that the student and the client (might) agree upon. Next to that, this document facilitates the required procedural checks. In this document:

- The student defines the team, what he/she is going to do/deliver and how that will come about.
- SSC E&SA (Shared Service Center, Education & Student Affairs) reports on the student's registration and study progress.
- IDE's Board of Examiners confirms if the student is allowed to start the Graduation Project.

USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT
Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

STUDENT DATA & MASTER PROGRAMME
Save this form according the format "IDE Master Graduation Project Brief_familyname_firstname_studentnumber_dd-mm-yyyy".
Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !

family name	van Brouwershaven
initials	RM given name Rutger
student number	4169255
street & no.	Fultonstraat 65
zipcode & city	The Hague
country	The Netherlands
phone	+31630307137
email	rutgervbrouwershaven@live.com

Your master programme (only select the options that apply to you):

IDE master(s):	★ IPD ○ DfI ○ SPD
2nd non-IDE master:	
individual programme:	- - (give date of approval)
honours programme:	○ Honours Programme Master
specialisation / annotation:	○ Medisign
	○ Tech. in Sustainable Design
	○ Entrepeneurship

SUPERVISORY TEAM **
Fill in the required data for the supervisory team members. Please check the instructions on the right !

** chair	Jan Willem Hoftijzer	dept. / section:	ID-HICD
** mentor	Dicky Brand	dept. / section:	ID-DA
2nd mentor	Joris Wolter		
	organisation: Picnic Technologies		
	city: Amsterdam	country:	The Netherlands

comments (optional)

Chair should request the IDE Board of Examiners for approval of a non-IDE mentor, including a motivation letter and c.v..

Second mentor only applies in case the assignment is hosted by an external organisation.

Ensure a heterogeneous team. In case you wish to include two team members from the same section, please explain why.

Procedural Checks - IDE Master Graduation

TU Delft

APPROVAL PROJECT BRIEF

To be filled in by the chair of the supervisory team.

chair Jan Willem Hoftijzer date 11 - 10 - 2019 signature

CHECK STUDY PROGRESS

To be filled in by the SSC E&SA (Shared Service Center, Education & Student Affairs), after approval of the project brief by the Chair.
The study progress will be checked for a 2nd time just before the green light meeting.

Master electives no. of EC accumulated in total: _____ EC

Of which, taking the conditional requirements into account, can be part of the exam programme _____ EC

List of electives obtained before the third semester without approval of the BoE

YES all 1st year master courses passed

NO missing 1st year master courses are:

name _____ date - - signature _____

FORMAL APPROVAL GRADUATION PROJECT

To be filled in by the Board of Examiners of IDE TU Delft. Please check the supervisory team and study the parts of the brief marked **.
Next, please assess, (dis)approve and sign this Project Brief, by using the criteria below.

- Does the project fit within the (MSc)-programme of the student (taking into account, if described, the activities done next to the obligatory MSc specific courses)?
- Is the level of the project challenging enough for a MSc IDE graduating student?
- Is the project expected to be doable within 100 working days/20 weeks ?
- Does the composition of the supervisory team comply with the regulations and fit the assignment ?

Content: APPROVED NOT APPROVED

Procedure: APPROVED NOT APPROVED

comments

name _____ date - - signature _____

Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

Personal Project Brief - IDE Master Graduation

TU Delft

Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies — project title

Please state the title of your graduation project (above) and the start date and end date (below). Keep the title compact and simple. Do not use abbreviations. The remainder of this document allows you to define and clarify your graduation project.

start date 23 - 09 - 2019 — 14 - 02 - 2020 end date

INTRODUCTION **

Please describe, the context of your project, and address the main stakeholders (interests) within this context in a concise yet complete manner. Who are involved, what do they value and how do they currently operate within the given context? What are the main opportunities and limitations you are currently aware of (cultural- and social norms, resources (time, money,...), technology, ...).

Picnic Technologies is a strictly online e-commerce platform for groceries currently operational in the Netherlands, Belgium and Germany. Their main objective is to deliver groceries to their customers in a way that is reminiscent of the old-fashioned milkman, delivering groceries to your front door, but adding a modern twist by incorporating a digital platform for the customers to choose beforehand what groceries they would like. Also in the spirit of the milkman, Picnic makes it a point to be friendly and accommodating with a personal touch while delivering groceries for free and beating the price points for products of other supermarkets in order to deliver the best customer service and shopping experience for their customers. All of this and their innovative approach to the logistics of delivering groceries sets them apart from other large supermarket chains.

Although delivering groceries is the outcome of all the efforts by Picnic Technologies as a whole, there is much more that goes on within the company, hence the technologies part of the company name. As a startup in 2015 Picnic sought to do things differently. Instead of outsourcing the development of their software and apps required to support the selling, delivering and logistics for their deliveries, they developed everything in-house so that they could always be in control and develop on their own terms. This turned out to be hugely beneficial and has inspired a company-wide motto of self-reliance and confidence for venturing into new markets to support their core business.

This is also how the development of a new Electronic Picnic Vehicle (hereafter EPV) came about. With the rapid growth and expansion of the company fueled by the desire to establish themselves in new regions consistently, Picnic needs a vehicle that can do more than what is currently available in their fleet. After having looked at possible options currently available in the market they concluded that none are adequate. As the current vehicle has a very distinct character that is associated with Picnic and serves as an important visual identifier for the company, they are looking for a new vehicle that suits their brand identity and image. In addition to that, data analysis has shown that the new vehicle has to be able to access N roads, which means they should be able to drive at 80 km/h, carry a larger cargo load, and have a higher battery capacity. All of this, in combination with their desire to do as much in-house as possible, has lead to the assignment of this (graduation) project. Picnic realized that accomplishing this feat solely in-house would be impossible and therefore set up a joint venture with TNO and VDL. They will be partners in the development of this new vehicle. VDL will be the manufacturing party. They will be responsible from transferring the concept design into a road legal vehicle. TNO will be responsible for the drivetrain and battery development and integration of the undercarriage. Currently, the project is still in its concept phase which allows enough room and time for design iterations in the exterior before choosing a final concept that can be further developed into a first prototype.

This is a great opportunity to execute and apply analysis into a focused aesthetics design exercise that could eventually be integrated into a real vehicle. I believe that the most interesting opportunity and challenge possible within the given time-frame and for me personally as a worthy graduation project, is developing a design aesthetic for the exterior which is distinctly Picnic and can be tested and verified against the framework established through analysis of stakeholders and context so that the integration of their input is translated into a coherent design.

space available for images / figures on next page

Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

introduction (continued): space for images

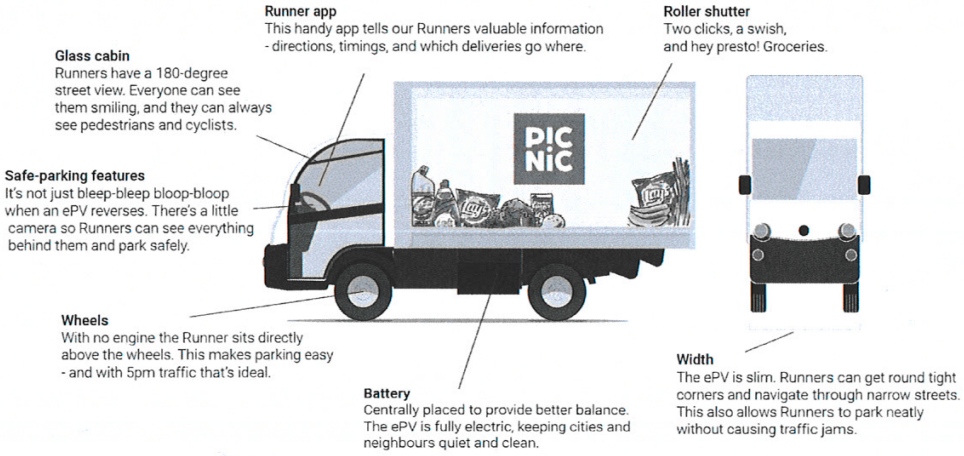


image / figure 1: Details of Electronic Picnic Vehicle (EPV) image courtesy of Picnic

image / figure 2: Intended Project Process

Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

Personal Project Brief - IDE Master Graduation

TU Delft

PROBLEM DEFINITION **

Limit and define the scope and solution space of your project to one that is manageable within one Master Graduation Project of 30 EC (= 20 full time weeks or 100 working days) and clearly indicate what issue(s) should be addressed in this project.

Picnic wants to expand their reach to access new households and consequently grow their amount of customers. To achieve this Picnic needs a new last mile delivery vehicle that looks distinctly Picnic, can travel farther and faster using N-roads, and can carry more cargo. In order to develop a relevant and suitable exterior design, the following stakeholders, brand qualities, and context will be analyzed to gather input for an integrated coherent exterior design:

Picnic
- Distribution team for specifications such as speed, cargo size, safety
- Marketing team for brand identity for aesthetics
- Graphic Designers for house style translated to aesthetics
- Runners (delivery personnel) for workflow which culminates in usability

VDL
- Manufacturing capabilities for feasibility
- Technical Specifications

Customers
- Brand Image for aesthetics

The context, which will be where the vehicle operates, who operates it and how, will also be analyzed so that input can be taken into account. This will all compile into a framework used to validate design choices for the embodiment. The aesthetics will be the main focus of the project, however, usability, safety and feasibility for manufacturing for example will also be taken into account to some extent making it an integrated design exercise.

ASSIGNMENT **

State in 2 or 3 sentences what you are going to research, design, create and / or generate, that will solve (part of) the issue(s) pointed out in "problem definition". Then illustrate this assignment by indicating what kind of solution you expect and / or aim to deliver, for instance: a product, a product-service combination, a strategy illustrated through product or product-service combination ideas, ... In case of a Specialisation and/or Annotation, make sure the assignment reflects this/these.

Analyze stakeholders and context using academic research methods in order to find the necessary input for a framework that can be used to design the exterior design of a new last mile delivery vehicle for Picnic that will serve as a flagship for their brand. Validate the outcome of the design with relevant stakeholders through means of a 3d model rendered in virtual reality, rendered animations and images to deliver the most desirable outcome.

I expect to deliver an exterior design that is coherent with the brand image and identity of Picnic creating a unique appearance that also supports the user in their efforts of delivering groceries and suits the context of operation by supporting desired cargo size, safety standards and vehicle speed. I believe this solution will be best embodied and understood in the form of a 3d model, a rendered animation and illustrations of the vehicle.

The establishment of the framework is meant to serve as a foundation to ensure all the requirements for the vehicle from different stakeholders can be integrated. This differs for different stakeholders and range from very practical vehicle specifications such as size to less tangible requirements such as brand image. The reason for involving all of these requirements from different areas is that it makes the design assignment more in line with the idea of designing an integrated product rather than solely the expression of a derived style influenced by personal taste. The framework is crucial in making sure that the desired outcome is objective and founded in research. In addition to that, choosing the right form of embodiment of the outcome of this framework allows for pragmatic validation in order to come to the best result. That is why a 3d model in virtual reality, an animated render and illustrations are the most effective means for this assignment. It will allow stakeholders to see the exterior, walk around it and interpret it so that they understand the outcome of the design. This will also be the best way to communicate the feasibility of the design decisions to the manufacturing party and will allow the project to end at a point where they can takeover and develop the design further for the first prototype.

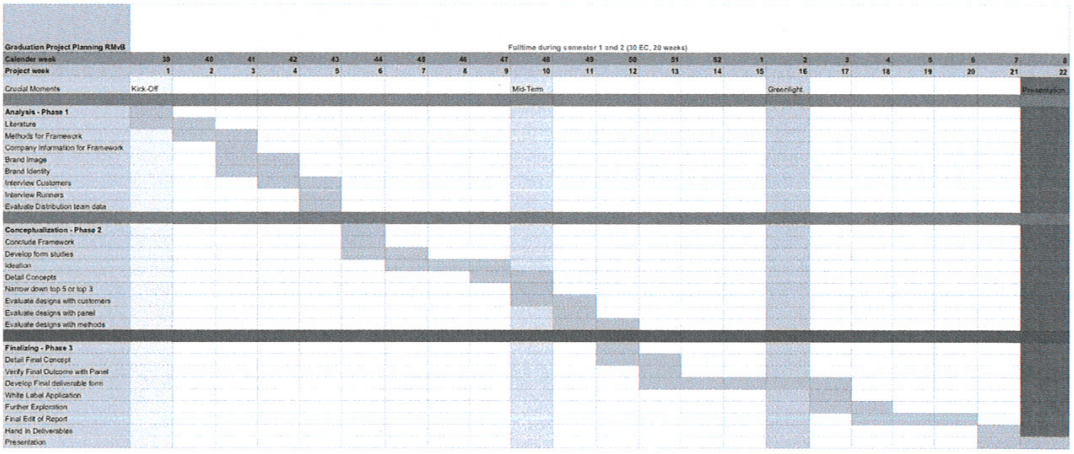
Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

PLANNING AND APPROACH **

Include a Gantt Chart (replace the example below - more examples can be found in Manual 2) that shows the different phases of your project, deliverables you have in mind, meetings, and how you plan to spend your time. Please note that all activities should fit within the given net time of 30 EC = 20 full time weeks or 100 working days, and your planning should include a kick-off meeting, mid-term meeting, green light meeting and graduation ceremony. Illustrate your Gantt Chart by, for instance, explaining your approach, and please indicate periods of part-time activities and/or periods of not spending time on your graduation project, if any, for instance because of holidays or parallel activities.

start date 23 - 9 - 2019 14 - 2 - 2020 end date



This Gantt Chart shows the intended project planning. I planned for 22 weeks as there formally is a holiday during week 51 and week 52. I do intend to continue working on the project during this time. On the left side you can find an overview of the activities I believe will be relevant during the project and need dedicated planned time. Of course this chart is subject to change, however, I believe this is a relatively clear and deliberate planning.

Phase 1: The analysis phase will consist of research in order to derive input from different stakeholders. Different methods such as context mapping, stakeholders analysis, brand identity prism etc. will be used in order to develop the knowledge required for a framework that will culminate in requirements and considerations for the exterior design.

Phase 2: Using the knowledge from Phase 1, the conceptualization phase will start. This is going to be an iterative process switching between virtual and manual development of the aesthetic with constant validation of choices. Validation will be incredibly important in order to satisfy all stakeholders and develop a relevant design.

Phase 3: Is the final embodiment phase. This is where the verified concept will be brought to life using drawn visuals, animation and virtual reality in order to communicate the final design as best as possible. This is important to convince people of the potential of the final embodiment and communicate the design for the production phase, going from a skin to a structure that will develop into the first prototype.

Deliverables: 1. Midterm - Report should require analysis and array of concepts ready for final validation. 40% finished
2. Greenlight - Report should be 80% finished, fully formatted and visuals, animation and VR should be finalized hereafter. Those are also the final deliverables; A report + appendix, renders, animation video, VR model.

Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

MOTIVATION AND PERSONAL AMBITIONS

Explain why you set up this project, what competences you want to prove and learn. For example: acquired competences from your MSc programme, the elective semester, extra-curricular activities (etc.) and point out the competences you have yet developed. Optionally, describe which personal learning ambitions you explicitly want to address in this project, on top of the learning objectives of the Graduation Project, such as: in depth knowledge a on specific subject, broadening your competences or experimenting with a specific tool and/or methodology, ... Stick to no more than five ambitions.

The reason I started studying IDE in the first place was to pursue my car design ambitions. I was always intrigued by the function and form of vehicles. Largely due to what they represented and what impact they have had on our society through the years.

During my BSc I grabbed every opportunity related to transportation design. Participating in the People in Transit minor, Design Visualization, and even during my BEP I chose a project that I could relate to cars (it was a stretch, but I made it work). While the BSc offered some immersion in the field of transportation design, I wanted more and decided I would be of added value and could learn a lot working on the first Delft Hyperloop team. This is where I feel like I really hit my stride. Designing part of a complex system and turning concept to reality all with the goal of transporting people from A to B was a riveting experience rewarded with a best overall design and most overall points. This was incredibly inspiring for myself and I developed a lot of skills of which the foundation was established in the BSc.

While working on my MSc and after finishing Delft Hyperloop, I tried to stay close to the transporation design domain. I sadly did not get the opportunity to work on the Ford Project but did enjoy an exploration into Med Design doing a project for Philips. Thereafter I went straight into the next course, developing an entirely new Embraer airplane seat. This was a huge challenge as the aerospace is a very conservative industry not prone to innovation. We tried to push the envelope as much as possible and delivered a much lighter, private and comfortable economy airplane seat for short-haul flights. The seat was actually shortlisted for a potential Crystal Cabin Award but unfortunately did not make the finals. While diving into the field of Aerospace at the faculty, my desire for developing and working on different modes of transportation was aroused again by a project named Silverwing. Two friends started this team in order to participate in the Go Fly challenge by Boeing. I jumped onboard and within months we had developed a concept and grown into a team of 40 students working on creating personal flight. With our design of this compact aircraft we have won the first two rounds of the competition. After having completed my first year and all the required points I was able to enroll into my electives while still working at Silverwing as creative director. Of course I chose all the automotive courses available and in addition chose all possible drawing courses to make up my 30 points. This is where I discovered I really am most passionate about the automotive exterior design. Identifying what the vehicle needs to be and translating that into a design aesthetic that is appropriate and suitable for those needs is an incredibly complex challenge that contains elements of all my favorite things I have learned throughout the years. It considers people, it consider technology and it considers design aesthetics. I feel like with all my experience I am competent in all those disciplines to a certain extent but I think this project for Picnic allows me to bring it all together in one final hoorah before I go off into the real world.

Explicitly I would like to focus my efforts and learning on developing a method to establish a relevant and poignant framework in order to drive design decisions so that it is not personal taste or bias making all decisions but that they are evident and supported by research. Beyond that I think every chance I get to develop my competency in terms of visual communication through drawings, rendering and modelmaking will be valuable in my growth as a designer, so I will make it a point to spend a lot of time and effort on that. Lastly I want to practice being my own project manager one last time. Making sure I deliver a diligent and clear project with an interesting outcome that, instead of stressful which is often the case, gives me energy and joy to work on.

FINAL COMMENTS

In case your project brief needs final comments, please add any information you think is relevant.

Initials & Name RM van Brouwershaven Student number 4169255

Title of Project Exterior Design of the Last-Mile Delivery vehicle for Picnic Technologies

Appendix B

Hi! Can we know a little bit about you?

How big is your family?

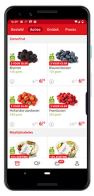
Where do you buy your groceries?

How often do you go grocery shopping?

How much do you spend on groceries weekly?

Do you know Picnic?

Yes / No



How? Do you know how it works?

How would you characterize the following brands:

Playful **Serious** **Friendly** **Quirky** **Different** **Affordable**

Cheap **Unique** **Expensive** **Familiar**

Honest **Strong** **Innovative**

How does this statement make you feel? Do you believe it?

“LAAGSTE PRIJS GRATIS THUIS”

How would you characterize the following branding:

1

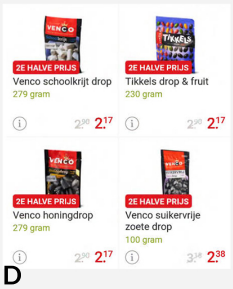
2

3

A

B

C



D

1 _____
2 _____
3 _____

A _____
B _____
C _____
D _____

Use one word to describe the following delivery vehicles:

_____ _____ _____ _____

Please describe any and all feelings you have for Picnic:

PIC NiC

TU Delft

RUTGER VAN BROUWERSHAVEN | IPD MSc PROJECT | 4169255