



JÖNKÖPING UNIVERSITY
School of Engineering

Industrial DESIGN

Easier travelling with babies in cities, in
collaboration with Thule Sweden AB.

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MASTERTHESIS 2020
Master in Product Development with a specialization
INDUSTRIAL DESIGN



JÖNKÖPING UNIVERSITY
School of Engineering

Enklare resande med spädbarn i städer, i samarbete med Thule Sweden AB

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This degree project is performed at the School of Engineering in Jönköping in the subject field Industrial Design. The project is a result of the master program Industrial Design. The writers are responsible of the result, conclusions and reflections.

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Abstract

Master thesis carried out in collaboration with Thule Group during spring 2020 as part of the Industrial Design Master at Jönköping University.

The work aims to develop a new concept idea related to "Active with kids" and focused on the Southern Europe market (Spain). The goal of the project is to improve the parental active experience in metropolitan areas concerning strollers or their accessories. The product proposal will fit and express Thule vision and brand language.

This project is written in the field of industrial design; therefore, we will go over the usual design process: empathize, define, ideate and prototype. The project will be done individually, however, the beginning of it (empathize and define), will be carried out in pairs between Nerea Cuello and Berta Cester, to achieve broad research and obtaining two different products within a similar market.

The project starts with a design brief formulated by the company and continues into understanding the problem by investigating the brand, the user, the market, and other interesting factors. Continuing with an ideation phase that explores different problems and ideas. The process will end with a final concept presented as a physical prototype.

The final result is a new concept solution for easier travelling with babies in urban cities, improving parents' lifestyles when they cannot use or find it difficult to use a stroller

Keywords:

- Industrial design
- Concept design
- User experience
- Aesthetics
- Stroller
- Kids
- Carrying
- Spain
- Thule

Sammanfattning

Examensarbete genomfört i samarbete med Thule Group under våren 2020 som en del av Industrial Design Master vid Jönköpings universitet.

Arbetet går ut på att utveckla ett nytt koncept kopplat till temat "Aktiv med barn" och fokuserar på marknaden i södra Europa (Spanien). Målet med projektet är att förbättra föräldrars aktiva upplevelse i storstadsområden gällande barnvagnar eller dess tillbehör. Den framtagna produkten ska passa och uttrycka Thules vision och varumärkesspråk.

Detta projekt är skrivet inom området industriell design; därför kommer vi gå igenom den vanliga designprocessen: förstå, definiera, idégenerera och prototypa. Projektet kommer att utföras individuellt, men början (förstå och definiera) kommer att genomföras parvis mellan Nerea Cuello och Berta Cester, för att uppnå en bredare undersökning och, i slutändan, få två olika produkter inom en liknande marknad.

Projektet påbörjas med en design brief som formulerats av företaget och fortsätter sedan med att förstå problemet genom att undersöka varumärket, användaren, marknaden och andra intressanta faktorer. Därefter utförs en ideationsfas som utforskar olika problem och idéer. Projektet avslutas med ett slutligt koncept som presenteras i form av en fysisk prototyp.

Slutresultatet är en ny konceptlösning som förenklar resandet med spädbarn i stadsstäder i de fall där föräldrar inte kan eller finner det svårt att använda en barnvagn.

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1 Introduction

This project is the final thesis of Industrial Design Master at Jönköping University and it is done in collaboration with the company Thule Group AB in Hillerstorp (Sweden), during spring 2020.

1.1 Background

Nowadays, we live in an era in which the existence of products is abusive. The user is no longer interested in products that do not correctly meet their needs. The products that succeed are those that are designed to solve users' needs. To be competitive in today's market it is crucial to understand the user as well as trends, customer behaviour, new technology, etc.

The baby market is constantly changing to satisfy parents' demands and trying to improve the whole parental experience making it easier and better for both parents and kids.

This market includes all kinds of items from baby care products, strollers, accessories among many others. There is a great demand in this market as well as a big competition between all the different brands that are constantly creating new solutions for satisfying users' needs. As a result of all this competition, there is a wide offer of features focused on solving the necessities of this target group. For example, solutions for the climate, for storing, for transporting, etc.

As a way of standing out from the competence, the brands need to bet on a topic that will differentiate them from the rest. **Thule Group** is one of these brands that want to stand out from the rest and develop new solutions for the market. They are a world leader company in products that make it easy for people to bring their active life securely, safely and in style. Their motto is "**Active Life, Simplified**". They develop a wide range of products like accessories for the cars (roof racks, roof boxes and bike racks), for carrying kids (pushchairs, bicycle trailers, child bike seats and child carrier backpacks), luggage, bags and RV products for caravans and vans. They own 9 production facilities, more than 35 sales offices worldwide and their products are sold in more than 140 markets.

Thule is always looking for emerging trends and market niches to expand their portfolio. One of their categories is "**active with kids**", that entered Thule in 2011 and nowadays is having a big success. Consequently, they are now looking at how to enter the **southern Europe market** within active with kids' products focusing on **warmer countries**. Then this will be the chosen topic to develop this master thesis.

1.2 Purpose and research question

The work aims to develop a new concept idea, in collaboration with Thule Group, related with "Active with kids" and focusing on the Southern Europe market. Thule's form-language, vision and human-centred design will play a central role during the project.

The project aims to answer the following questions:

1. How can Thule adapt their designs for the southern European market (Spain)?
2. What are the problems, opportunities and emerging trends in the "active with kids" market?
3. How the stroller use experience can be improve through their accessories?

Features to consider in the development of the project:

- o Formulate a form-language that fits into the brand identity.
- o Economy, climate and demographic environmental aspects.
- o Safety, behavioural design and aesthetics.
- o Ergonomic aspects, both physical and cognitive
- o Mechanical aspects.
- o Form follows function.

1.3 Delimitations

The project embraces a conceptual product design. The design language should follow the same principles of the current Thule brand language and portfolio. The concept must be designed for Southern Europe focusing on Spain.

The process will end with a final concept presented as a physical prototype. Due to the time, frame and width of the project, the project will not concern construction and cost analysis. Materials selection and manufacturing processes will only be covered briefly.

The project will follow the usual design process: Empathize, define, ideate, and prototype. The project will be done individually however the beginning of

the project (empathize and define) will be carried out together with Nerea Cuello, another industrial design master student. From this time, two different topics will be chosen for each student and the work will continue individually.

Time delimitations: Mid-presentation in week 12, 18th of March. Final presentation week 20, 13th of May. Final report hand in week 22, Monday 25h of May.

1.4 Disposition

The report outline will be structured in six chapters:

- Introduction: background information will be provided so that the reader understands the goal of the project.
- Theoretical background: relevant information will be presented to create a better understanding of the area of work.
- Method: the different methods that will be implemented during the process will be introduced, as a way to describe and motivate the chosen approach.
- Approach and Implementation: an explanation of the process and how the previous methods were conducted.
- Result: the final result is presented in detail.
- Conclusion and discussion: the last chapter will reflect on an overview of how the project went.

2 Theoretical Background

2.1 Industrial design - design science – designers

Design is a very broad field and its goal is complex, it is like knowing how to speak but not knowing exactly how you do it. To start with, **design** is an interdisciplinary field and dynamic process of reflection and planning. A “systematic **process**, represented by models, based on theory, and grounded in data while focused on problem solving.” [1].

Design is young, however over two and a half million years ago when homo habilis manufactured the first tools, design began. It is connected with picturing a better situation and helping us to become human. A **designer** is a thinker with the task of translating the thoughts in acts. The designer is not an expert in a specific field but is a person with broad knowledge in different areas and diverse skills that enable him to deal with different challenges. With skills like leadership, learning, analysis, knowledge acquisition, research, and problem solving, the designer uses these aptitudes in the right way to solve problems for clients. Therefore, the designer outcome is to meet customer needs, to test the results and to provide solutions. [2] A designer is then an expert in design thanks to the ability of learning by doing and its experience. The designer knowledge is part of the process like for example sketching as a quick method for explaining things or prototyping to visualize opportunities. By training design work and being involved in projects a designer can become an expert being capable of handle expertise.

Don Norman, defines **industrial design** as: “a professional service of creating and developing concepts and specifications that optimize the function, value and appearance of products and systems for the mutual benefit of both user and manufacturer.” [3]

Dieter Rams is a German industrial designer and a professor. During many years his work was associated with the design of Braun’s consumer products. His design approach was functionalist and he believed in “less but better”. All his decisions were meant to fulfil an intended purpose. He constantly wondered, is my design a good design? By answering his own question, he defined the basis of **good design** through the following ten principles. These ten principles are explained in Vitsoe webpage, a furniture company which Dieter was part of. [4]

1. Good design is innovative

Innovation is not yet exhausted. There is always new opportunities and innovative designs, while technology is evolving.

2. Good design makes a product useful

Good design relies on the usability of a product. A product must satisfy functional, psychological and aesthetic factors, ignoring anything that could distance the product from its purpose.

3. Good design is aesthetic

The aesthetic factor of a product is linked to its utility. Every day products affect our wellness and only well-done objects can be beautiful.

4. Good design makes a product understandable

A well-executed product should be obvious and self-explanatory.

5. Good design is unobtrusive

A product is not piece of art and it should accomplish a purpose. Its design should motivate the user's self-expression.

6. Good design is honest

A product is humble and honest, without promising something unreal that is not able to accomplish. It should not manipulate the user expectations of something and express what is it, not more than that.

7. Good design is long-lasting

In today's consumer society, a product should avoid being fashionable to avoid being antiquated. This way a product can last many years.

8. Good design is thorough down to the last detail

Any design decision should be left to chance. The user appreciates attention and precision in the process.

9. Good design is environmentally friendly

Design has the possibility to take part in the protection of the environment, by reflecting in the lifecycle of the product.

10. Good design involves as little design as possible

Design should focus in the essence of the product. Less, but better.

2.2 Design thinking

Tim Brown, CEO of IDEO explained that: “**design thinking** is a human-centred approach to innovation that draws from the designer’s toolkit to integrate the needs of people, the possibilities of technology, and the requirements for business success.” [5]

Design thinking involves reflecting on the what and the how during the process. The goal is to face a complex problem and embrace a solution that works. It is not a linear process and by **reflecting-in-action** during the process, the designer reflects, going back and making iterations in order to improve the design activity with creativity. This will help to solve design problems and to guarantee logical design solutions. Reflecting early on the process will save time, effort and money eventually. A reflective valuation of the strengths and weaknesses of a project, on time, can be effective. [6] It is needed to define the design intention in the beginning for later after reflecting in the process realize if the goal was attained.

2.3 Design knowledge - research in design

Design knowledge frame a discipline, a field, and a science. Knowledge is power information capable of changing something or somebody. It has many sources and **research** is one of them. There are six general domains of design knowledge: natural sciences, humanities and liberal arts, social and behavioural sciences, human professions and services, creative and applied arts, and technology and engineering. Doing design might encompass some of these domains, depending on the essence of the project or the problem to be solved. Through understanding the kinds of knowledge, we will realize how knowledge moves from research into practice.

Design knowledge involves explicit knowledge and tacit knowledge. The difficult challenge of many fields is to be able to explain **tacit knowledge**. Most of the fields include assumptions, shared experience, and personal development. We do not really need to explain how we did something if it works, however it will be useful for yourself and the others to know how you reach that result in order to understand the process of it and be able to replicate it or improve it. This is what is called tacit knowledge, the unspoken knowledge that can be achieved by training in doing projects.

Conceive knowledge requires thinking and practice. Human knowledge is the product of past experience but also the product of predicting the future. Knowing things involves feedback and anticipating the future of things. Not understanding how things are and how they work, can lead to performance failures. Research helps to set up those forms of knowledge that offer the exceptional potential for further development. [2]

2.4 Human centred design - user design

Don Norman wrote about human centred design in his famous book *The design of everyday things*. He said that the solution for new challenges should be approached from a human centred perspective. This consists of putting human need, capabilities and behaviour first and then designs to accommodate those factors. Good design always starts with an understanding of psychology and technology in relation with the product. To reach this understanding of the product we should follow the six fundamental principles of iteration: affordance, signifiers, constraints, mappings, feedback and conceptual model. [3]

The aim is to reach a design easy to understand and interpret: *"The industrial designer should make a sign as clear and unequivocal as possible, so that the target group understands the message"*[7]

The main subject of design is **the user** and designing the use of objects. Sullivan said once in 1986 that *"Form follows function"* and Mies van der Rohe said in 1964 that *"intensity of life has intensity of form. Every How is carried by a What."* Our design role consists in using correct language to express the functionality and intended use of the object.

People are part of a system and it is not possible to enforce a design on users. Therefore, design has to be redefined, focusing more on peoples' experiences, instead of objects.

The shift towards user design relies on thinking what we are designing and who is going to use it. As it is not possible that users exist before there is something to use, we need to imagine potential users that will become users in the future (**personas**) in order to predict and design the use. We should reduce the distance between designers and users and incorporate participatory design in the design process, so the future users also become designers. This way we can avoid unexpected future user responses and we can also try to surpass the mere satisfaction experience. [8]

Nowadays, users want rich and compelling experiences and this is the key to become a successful business. In order to **design better** we need to understand and deal with the user's **emotions**. Designing better should not merely lie on creating a beautiful, pleasing product in appearance but to create products that are more engaging, more authentic, and easier to use. One way of reaching this goal is by involving users in the design process, either in early or advanced stages and understanding their motions. This way we can avoid unexpected and unwanted user reactions, and we can also try to transcend the mere satisfaction experience. [9]

2.5 Design process - bootcamp bootleg

Bootcamp bootleg is a **design methodology** developed by Stanford Institute of Design. It is an active toolkit to support design thinking practice. These tools and methods are based on a human-centred design process that supports the seven vital mindsets of a design thinker. The mindsets are the following:

1. Show do not tell
2. Focus on human values
3. Craft clarity
4. Embrace experimentation
5. Be mindful of process
6. Bias toward action
7. Radical collaboration

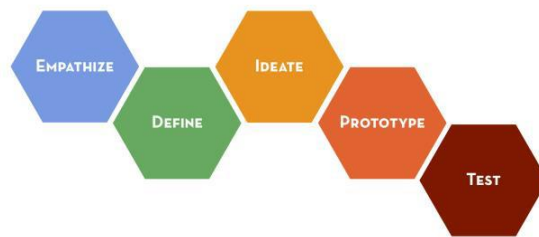


Figure 1, Bootcamp bootleg [10]

The Bootcamp process consists of 5 iterative modules that are the main elements of design thinking:

1. **Empathy** is the base of a human-centred design process. To empathize, we observe users, we engage with them and we immerse in their experiences. Basically, empathize is reaching a global understanding of the product, the users and their needs.
2. **Define** is developing a deep understanding of the users and the design space and, based on that understanding, to come up with an actionable problem statement: your point of view. This should be a guiding statement that focuses on specific users, and insights and needs.
3. **Ideate** consists of generating a large and diverse quantity of ideas. It's a transition between identifying problems and exploring solutions.
4. **Prototype** is transforming ideas into physical in order to learn more through interaction and create successful solutions. In initial iterations the prototypes are rough and rapid, to be able to explore different possibilities.
5. **Test** is the last iteration where the feedback on the solutions appears. Is the chance to refine our solutions and make them better. [10]

2.6 Visual perception and aesthetics

When designing a product, one of the designer tasks is to think in advance how the user is going to perceive our product. **Perception** is a process that consist in the brain capability of acquiring and organizing inward stimuli coming from the sensory nerves and translating them into significant data. [7]

Monö in his book *Design for product understanding* talked about the form, the gestalt and the aesthetics of the product in order to understand it. Monö describes aesthetics as “the study of the influence of gestalt on our sensations”. In addition, he describes the gestalt as “an arrangement of parts which appears and functions as a whole that is more than the sum of its parts.”

Gestalt is a German word and its meaning is related with form, shape and appearance. The Gestalt psychology is related with the human brain and its aim to find order in everything, searching for patterns and shapes with a view to create an understanding of an object/product. The most relevant rules of Gestalt visual perception are: proximity, similarity, enclosure, symmetry, continuation, closure, connection and figure and ground.

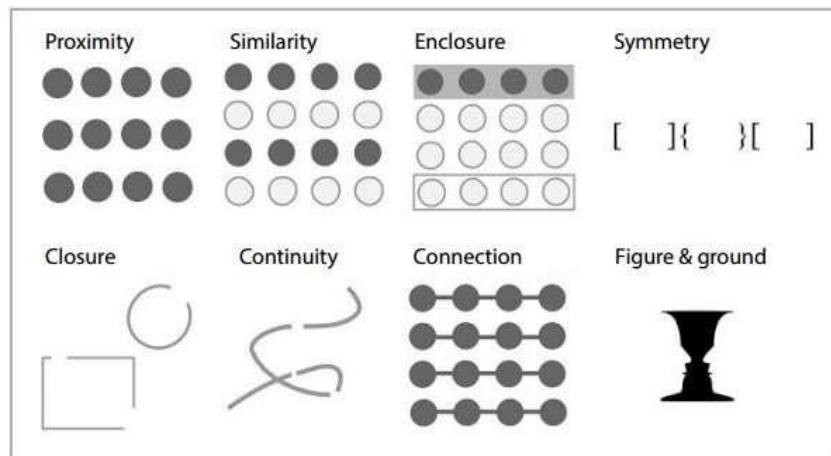


Figure 2, Gestalt laws [7]

Normally the user will take around 200-250ms to get a first impression of an object and decide if it is appealing for him or not, therefore it is very important to think about perception and aesthetics in advance. [7]

2.7 Sustainability

Sustainable Development takes into consideration **environmental, social and economic impacts** on the design. The goal we should avoid is to develop products that are not going to contribute to a better human and sustainable world.

Some changes can be minor but it can make the product more sustainable: defining the use and disposal of the finished product and choosing the right materials which have the least environmental impact; and the manufacturing and distribution systems to minimize the environmental and social effects.

Nowadays, the designer must, more than ever before, take into consideration the views and concerns of all the interested groups (**stakeholders**). Understanding the views of particular stakeholders and trying to change **customer behaviour**. Reaching this can be done by identifying the risks, benefits and opportunities and balancing them, comparing the environmental, social and economic impacts separately or together. This can be implemented for the product, company or site or all three together.

Sustainable Development direction includes three basic concepts: analysing environmental, social and economic impacts at the same time; any evaluation must be holistic by considering each element of the life cycle from raw materials, manufacture, distribution, use and final disposal; and the views of the involved stakeholders must be taken into consideration. [11]

2.8 Active with kids – Thule

Thule Group start the Active with Kids category in 2011 with the acquisition of the Canadian Chariot Carriers Inc., world-leader of multi-functional child carriers. In 2014, they add to the category sport strollers and child bike seats. In 2015, they expand their portfolio with a child carrier backpack for hiking. In 2017, they introduce their first four-wheel urban stroller. In 2019, they launched Thule Spring a three-wheel urban stroller. [12]

2.8.1 Product range

Active with kids' product category consists of strollers, bike trailers, child bike seats, and one child carrier backpack for hiking. [13]

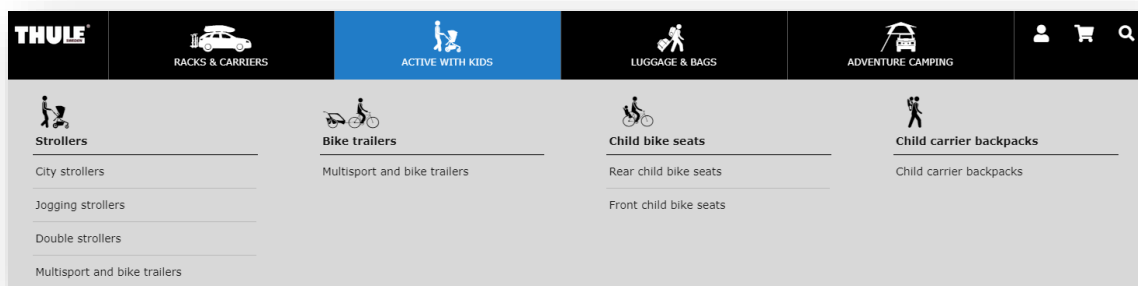


Figure 3, Active with kids [13]

2.8.2 Strollers

A stroller is a hand-pushed vehicle that allows the user to carry babies and young children easier. Different types of strollers exist in the market:

- Classic stroller: Stroller that allows to add a bassinet and a seat for the car.
 - Bassinet stroller: Part of the classic stroller.
 - Car seat stroller: Part of the classic stroller.
- Umbrella stroller: Compact, light and comfortable stroller.
- Travel stroller: Compact and compatible with the cabin size for travelling in the plane.
- Double / Twin stroller: allows to carry two children. They can be place in parallel or one after the other.
- Jogging stroller: Specially design for running.
- Multisport stroller: Stroller for different activities like walking, biking, skiing. Currently is illegal to use in Spain in urban areas.



Figure 4, Stroller types

In Thule's stroller category, they present two classic city strollers (four-wheels & three wheels), two jogging strollers, a double stroller and the multisport stroller.

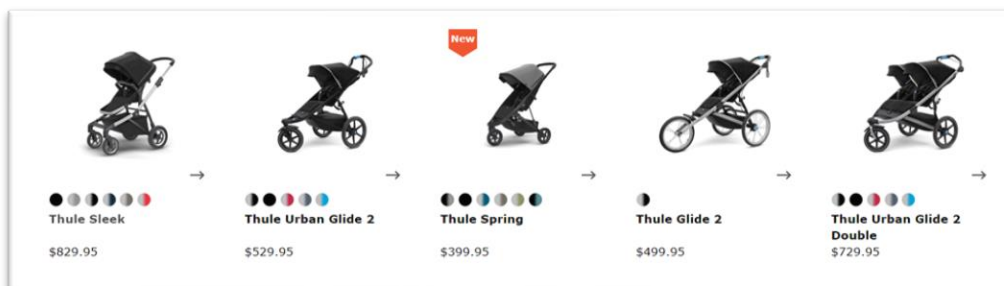


Figure 5, Thule Strollers [13]

Moreover, they offer stroller accessories too:

- Mesh cover.
- Rain cover.
- Footmuff, to keep the child warm.
- Seat liner, increasing comfort.
- Travel bag, to protect the stroller.
- Changing bag.
- Snack tray / Cup holder.
- Board, allows a second child to stand up on the stroller.
- Reflect wheel kit, adding extra visibility in the dark.
- Bassinet or sibling seat.



[13]

Figure 6, Thule Accessories

2.8.3 Thule urban strollers

Out of their four strollers, two of them belong to a new category, strollers for urban use and city adventures.

Thule Sleek, was the first one to come in this category in 2017. It is a four-wheel and stylish stroller designed for active parents. Thule Sleek has light weight, great manoeuvrability, stylish, comfort and safety, perfect for movement. Versatile stroller that can be configured to match the different family needs, shown in *figure 7 and 9*. [14]

Thule Spring, is the newness stroller, launched in 2019. It is a three-wheels stroller that offers an excellent manoeuvrability. It is also lightweight, comfortable and easy to fold with just one hand and compact. The only configuration available for this stroller is the car seat compatibility to carry a new-born baby. See *figure 8*. [15]



Figure 7, Thule Sleek [14]



Figure 8, Thule Spring [15]



Figure 9, Thule Sleek configurations [14]

2.9 Spanish design

Spanish design is still too young and there is not currently a specific aesthetic design identity like the one that design has in other countries. For example, Scandinavian design, typical of Swedish, Danish and Norwegian areas, is characterized by its minimalism and clean lines. Or, German design with the design guideline "form follows function", from the Bauhaus. Design styles are influenced by the culture, society and traditions that surround that specific place.

Spanish design cannot be identified with a single style. Design has lost some of its geographical identity like the *Made in Spain* label. Spain is a Mediterranean country, the light and the climate influence greatly the way people interact between themselves and with objects, spaces, the city... Spanish design is motivated by the heart and is a manifestation of our culture, character and emotions. It is inspired on the Spanish roots and with unique values like spontaneity, freshness, daring, risk, boldness, dynamism, vitality and passion. The criteria of Spanish customers have changed too, they rather chose something that works instead of something that looks strange. [16]

2.9.1 Iconic Spanish designs

Despite Spanish design is quite young, there are iconic Spanish products and designs recognize all around the globe.

High speed trains are one of the best infrastructures Spain has. **AVE** system is high-speed rail and speeds up to 310 km/h. It is the longest HSR network in Europe with 3,240 km and the second longest in the world, after China's.

About car industry, the only Spanish car brand is **SEAT**. It was founded in 1950 and by that time was the only company that designs, develops, manufactures and markets cars in Spain. The **SEAT 600**, made in Barcelona (1957-1973) become the first car that most of the Spanish people could afford after the Civil War.

Some of the most iconic Spanish fashion brands and designers are for example: **Loewe** that was founded by a group of Spanish leather craftsmen with passion; **Cristobal Balenciaga**, craftsmanship and innovative designs; **Adolfo Domínguez**, his designs are classical, elegant and wearable for everyone; **Palomo Spain**, sensual and lavish designs. One of the biggest high street brands is Inditex and it is formed by **Zara**, Massimo Dutti, Bershka, Oysho, Pull and Bear, Stradivarius and Uterqüe...

Spain is famous of its good quality olive oil and related with this is another iconic product. **Aceitera Marquina** (1961 by Rafael Marquina), was the first oil container that solves the drip of the oil perfectly. A transparent, stable and precise product and its function is explained without inconvenience. It won the first ADI-FAD Gold Delta and is one of the most copied designs in the world.

Another curiosity about Spanish designs is **Chupa Chups**. It is a famous candy brand but what a lot of people do not know is that it was created by **Enric Bernat** in 1958 in Asturias (Spain). Bernat thought sweets were not designed for children because their hands were dirty when they take the candy out of their mouths. Therefore, he invented Chupa Chups, a sweet with a stick. Another interesting fact is that **Salvador Dalí** create the logo of it in 1969.

Other iconic Spanish designs are the stool **Dúplex** by **Mariscal** (1981) that broke the topic of classic design. The “Spanish Guitar”, the “Alpargatas” and the special letter “Ñ” in the Spanish alphabet are other examples.

[17]

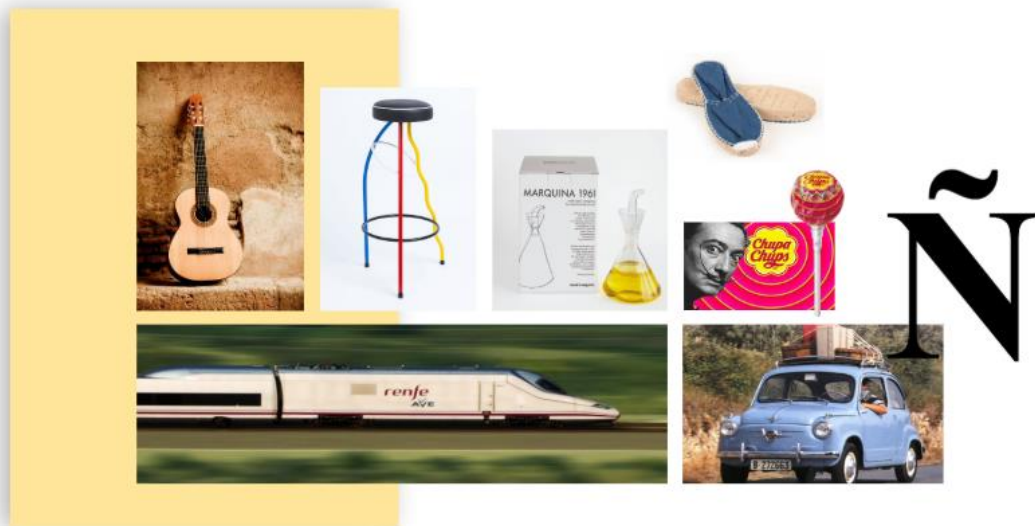


Figure 10, Iconic Spanish design

3 Method

3.1 Gantt Schedule

The Gantt chart is normally used in project management and is one of the most popular and useful tools to organize time and work. It works as a schedule or planning of the work breakdown structure. The chart illustrates the list of all the activities on the left and the time period on top. Every task is symbolized by a bar. The place and length of the bar indicates the status of the task (start date, duration and end date). This method is applied in the earliest stages of the project and it is necessary to keep track of it and update it until the end of the project. It is a good graphic way of visualizing and organizing all tasks that need to be done in order to manage the time efficiently. [18]

3.2 Brand DNA

The goal of this method is to reveal the aspects of a product brand through the combination of information collected.

With this method we evaluate different aspects of the brand and products through different perspectives: aesthetics (sensorial perspective), interaction (behavioural perspective), performance (functional perspective), construction (physical perspective), and meaning (mental perspective). Each brand has a different DNA, which is expressed through form language, logotypes, fonts, slogans, colours... This analysis explores and study all the different aspects in order to discover the specific DNA. The final product must fit within the brand and their language. [19, pg. 74].

3.3 Cultural comparisons

Cultural comparisons is a research method that helps the designer to discover an unknown market. When developing new products, globalization is making companies and designers to understand the user and community needs among other cultural sensibilities like languages, traditions, psychology, ergonomics, etc. As a result, the product will be more engaging for the specific user. [19, pg. 52].

3.4 TAIDA

Method that consist in generating a scenario planning framework in order to identify future trends and market opportunities. TAIDA process involve: tracking, analysing, imaging, deciding and acting.

Tracking: changes and signs of threats and opportunities.

Analysing: analysing consequences and generation of scenarios.

Imaging: identifying possibilities and generation of desired visions.

Deciding: evaluate information, identifying choices and strategies.

Acting: set up short-term goals. [20]

3.5 Competitor product analysis

Competitor analysis consists on making a research of the product, its competitors and the market sector, in order to identify strengths and weaknesses. This is made by comparing the product selected and similar ones. With this analysis, we will obtain valuable information that will help us to find market niches. [19, pg. 49].

3.6 User analysis

3.6.1 Questionnaire & Survey

Both questionnaire and survey are effective methods to obtain information from people. In general questions should be unambiguous and with a logical flow, from the less susceptible to the most. A questionnaire recollects one type of data and normally is a print list of questions. However, a survey involves a range of different elements, using a set of questions in an organized order to gain research data for insights into the user and their use case. Both methods can be conducted in different ways such as on the internet, via mail, post, telephone, on the street, etc. [19, pg. 69].

3.6.2 Personas

Making personas consist in creating fictional characters, based on real-life observations with specific objectives and needs. This method is normally used in the exploratory stages and is very useful in order to get a better understanding of the costumers' needs. [19, pg. 81].

3.6.3 Customer journey

Customer journey is a method that study and describes a complete user's interaction with a product or a service during a period of time by documenting every step of the experience in detail. It can be used for initial understanding stages of the user and the experience, or later in the process to reach different concept solutions. [21]

3.6.4 Try it yourself

Research method that enables designers to experience themselves how a product is and to build a better understanding of it. This method requires to use the product as you were the actual user and after evaluate it. You will reach better and deeper insights rather than just look at the product from a design perspective. Through exploring by doing is an effective way to achieve new design directions and opportunities. [19, pg. 55].

3.6.5 Be your customer/client

This method consists in embracing the role and becoming the consumer in order to experience and understand first-hand what real costumers feel. [19, pg. 73].

3.7 Expert interview

It is a human-centred design method. It consists in talking with the people you are designing for (experts) and obtaining useful feedback on your work. Experts can offer their point of view as an experience organization and valuable knowledge. They can provide relevant information in the project, like recent innovations, successes and failures ideas, technical advice... [22]

3.8 Scenarios

Scenarios allow to predict the future, raise questions, issues and purpose ideas and solutions. It is a prediction of events and it is used in order to imagine what actions will take place around a product during its lifetime. The goal when using scenarios as a method in product design is to predict actions that can influence the design of the product. [19, pg. 32].

3.9 5W+H

It is a problem definition method that consists in answering the elementary questions provided by the English language: Who? Why? What? Where? When? How? The Five W's and H are a powerful, inspiring and creative checklist. [23]

3.10 Secondary research

Most of the times projects are quite broad at the beginning and by applying human centred design the challenge become more specific. But as you move forward in the project there are moments where you need to research again, more context, or data. Secondary research can be done online, by reading books or asking the right questions.

Once you know the specific design challenge, it's time to learn more and make an additional precise research. Using the Internet, newspapers, magazines, or journals to know what's new. Find recent innovations or other similar solutions in that market and analyse it. Secondary Research is meant to understand better the context of the challenge. [22]

3.11 Function analysis

Functional analysis is a technique to organize the functions and features that you decide a product /service must include or own. In this method the functions are represented by the verb + noun + limit. The functions are classified by:

- Main function (MF) this is the primary function
- Necessary functions (N) these functions shall always be met to the main function to apply.
- Desirable (D) the desirable functions are functions one wishes fulfilled to make the product more attractive, but that is not going to be a priority if additional resources are needed
- Unnecessary (U) these functions are functions that, for various reasons are considered unnecessary.

3.12 Ideation

3.12.1 Brainstorming

Brainstorming is an effective tool to generate many ideas. Alex Osborn, founder of the Creative Education Foundation and co-founder of the ad firm BBDO, was the first one to introduce the term brainstorming. This technique consists in the generation of ideas, as many ideas as possible, in groups or individually. It is necessary to record them and the ideas cannot be evaluated during the process. [23]

3.12.2 Mind mapping

A mind map is a visual method of representing information, words and ideas around a central topic. It is meant to organize the data and have a better overview. Frequently, it is use in early stages of the project and most of the times it is applied when generating problems and concept solutions. [19, pg. 56].

3.12.3 Mood board

A mood board is a way of expressing different ideas through images. For example, which values should the product express and for whom? Images can express feelings, emotions, affective engineering, intuitive impression...Mainly is a fast visualization of a concept with just a collage of images. [19, pg. 78].

3.12.4 Sketching

It is an important tool for a designer to be able to translate the ideas from the mind to the paper, to visualize them better and explain them clearly to others. It can be simple, in black and white with a pen or in more detail adding colours to highlight the most interesting aspects. Sketching is useful in early stages of the process to explore different design possibilities and giving shape to an idea. [19, pg. 34].

3.12.5 Mock-ups and prototypes

Mock-ups and prototypes are a good tool to test form, dimensions, structure, and functions. Mock-ups are life-size physical model constructed from easy materials such as, cardboard, clay, foam, wood, fabric... They are faster, cheaper and simpler than prototypes. Normally, after testing mock-ups, you do prototypes that are more realistic and similar to the final product. They are used to show the design to the users and clients. [19, pg. 96].

3.13 CAD – Computer Aided Design

CAD means Computer Aided Design and is used to create two- and three-dimensional drawings of a product through computers. 3D-modeling consist in create the final product with the help of a computer software. There is different software that we can use, for example Alias, SolidWorks, Rhino, Clo 3D... Alias is better for surfaces or abstract shapes; however, SolidWorks is good for simpler parts and sizing. Clo 3D is a 3D fashion design software.

3.13.1 Rapid prototyping

Rapid prototyping can be used during the ideation phase, to evaluate different digital 3D or 2D concepts. One of the most popular tools for this are: additive manufacturing (3d printing). There is no need to build the whole product, it is frequently enough to test the functionality and size of crucial parts. It is a fast method to build physical models in order to prevent mistakes and verify design details, assembly, aesthetics and ergonomics. It provides quick feedback and it allows you to correct the design on time. [19 p. 107-109]

4 Approach and Implementation

This chapter is going to show the design process and the approach is taken for this project, as well as a description of how the methods mentioned in the earlier chapters were implemented.

4.1 Expert interview – feedback session 1

Introduction to the project: first meeting with the company Thule in Hillerstop. The topic was introduced by Henrik Eriksson (Design director), Jin Liu (User Researcher) and Jan Adler (Senior Product Designer). The task is to design a new concept solution for active with kids and Southern Europe market. The company introduced Thule strollers, accessories and confidential terms.

4.2 Gantt schedule

Gantt schedule was created to understand the projects timeline. This would provide an overview of how much time every task would require. The time was estimated considering the fixed dates such as: mid-presentation in week 12, 18th of March; final presentation week 20, 13th of May; final report hand in week 22, Monday 25h of May.

The tasks were define based on the bootleg bootcamp methodology and past experience on design projects. These tasks can be grouped in four big groups: empathize, define, ideate and prototype. See Gantt schedule attach in Appendix I.

4.3 Empathize

This first stage of the bootcamp bootleg consists in reaching a global understanding Southern Europe and Spain environment, users, needs, market and trends. This section is done in collaboration with Nerea Cuello, mentioned before in the delimitations of the project.

4.3.1 Brand DNA

Thule's design guidelines were provided by the company and with this help the brand analysis was carried out. The brand motto is "Bring your life" and all the solutions they provide are mainly focus for the people with actives lives. Thule is recognized as a global premium brand, in all 140 markets where the products are sold. After more than 75 years in the business, their success relies on designing and creating products that are safe, long-lasting, easy to

use and of a high quality. Their brand values are driven by passion to inspire healthy and active lifestyles all around the globe. [24]

After analysing their products, some key facts were discovered.

- Minimalism and clean lines.
- Use of chamfers for creating dynamic shapes and angles surfaces 30°- or 60°-degrees lines.
- The most use colours are black, silver or dark tones (blue, red...). Unisex colours that transmit professional feeling, trust and quality.
- Blend of different materials (fabric, plastic and metal).
- Generally matt surfaces and rare glossy.



Figure 11, Thule form language

4.3.2 Cultural comparisons

Since the final result of the project is meant to be implement in Southern Europe, this analysis was carried out to understand the demographics, economy and climate of Southern Europe, specially of Spain.

4.3.2.1 Southern Europe

Southern Europe is located in the southern part of the European continent. It is also called Mediterranean Europe because of its proximity to the Mediterranean Sea. This area consists of around eighteen countries, however some of these countries are also considered part of Central, Western or Eastern Europe. It includes the countries below, *figure 12*. [25] [26]



Figure 12, Countries that are considered part of Southern Europe. [25]

- Demographics

The population in Southern Europe is approximately 150 million and has lower birth rates than in the north. In first place is Italy, it is the most populated country with a population of 60 million. However, Spain has the largest area with 46 million people. The Vatican City is the least populated area with less than 1,000 people. Regarding languages, the most spoken languages are Italian, Spanish, Serbo-Croatian-Bosnian, Greek, Turkish, Portuguese, and Catalan. About religion, Christianity is the most predominant, although in Turkey, Muslim is more common. [25] [26]

- Economy

Southern Europe is the slowest growing economic region in the continent and is not as strong as the northern European countries. Some of the largest economies in the south like Italy, Spain, Greece, and Portugal, are still struggling from the relative recent crisis. The European Union had to bailed them out of debt to prevent them from sinking into a depression that would affect all the continent.

The most industrialized countries are Spain and Italy. Southern Europe in general is highly dependent on agriculture. [25] [26]

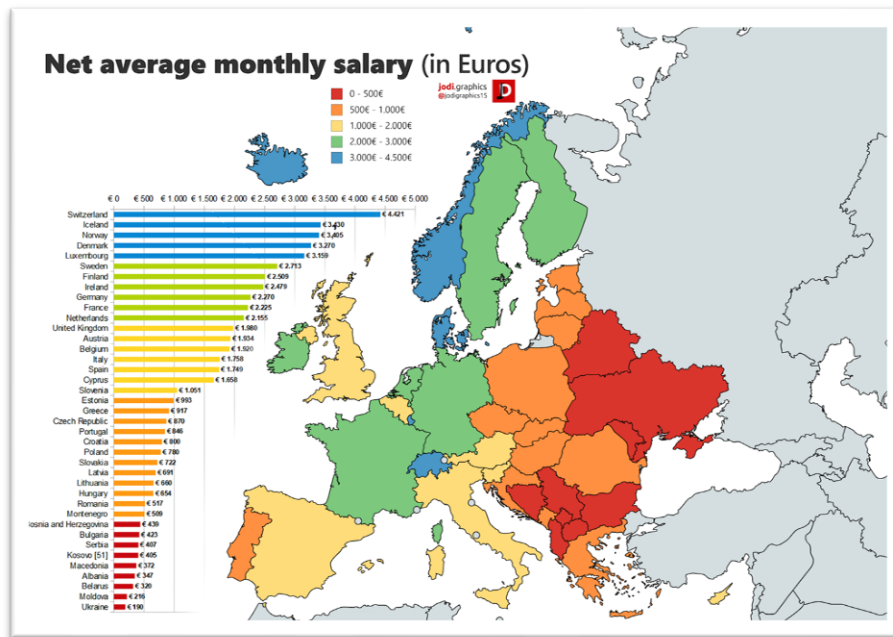


Figure 13, Economy in Europe. [26]

o Climate

In Southern Europe, the Mediterranean climate is the predominant. These areas present similar vegetations and landscapes throughout, including dry hills, small plains, pine forests and olive trees. There exist cooler climates in certain parts of Southern European countries like in the mountain ranges of Spain and Italy. Moreover, in the north coast of Spain exists a wetter Atlantic climate. [25] [26]

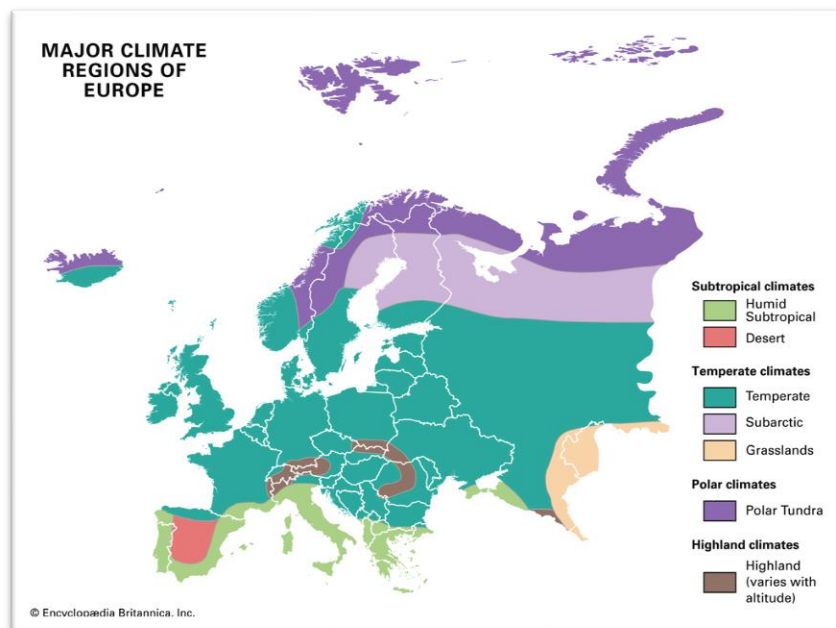


Figure 14, Climate in Europe. [26]

o Birth rate

In *figure 15*, the average annual birth rates are shown per thousand habitants in each European country. It exists a big difference between northern and southern countries. There is a birth rate decline in south of European countries in the recent years. [27]

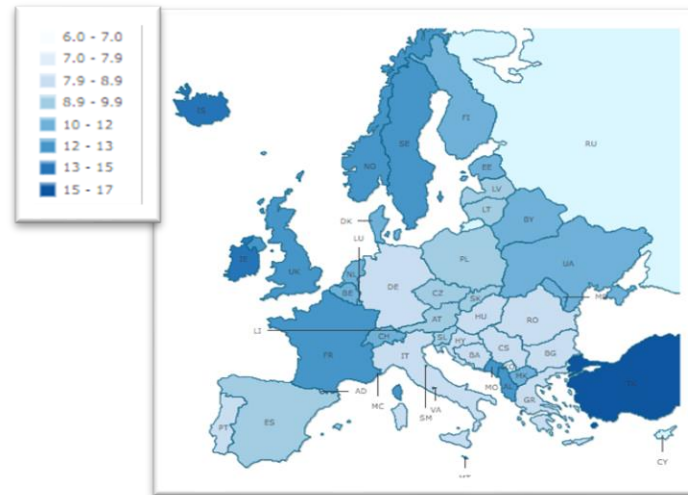


Figure 15, European Birth rate per country 2018 (units born per thousand population). [27]

According to Statista, the average age at which European women become mothers for the first time is 29 years old, *figure 20*. Although countries like Italy and Spain is around 31years old.

In *figure 16*, it can be seen in more detail the number of kids, mothers have during lifetime. European average is 1,6 kids and Southern countries around 1,3 kids.

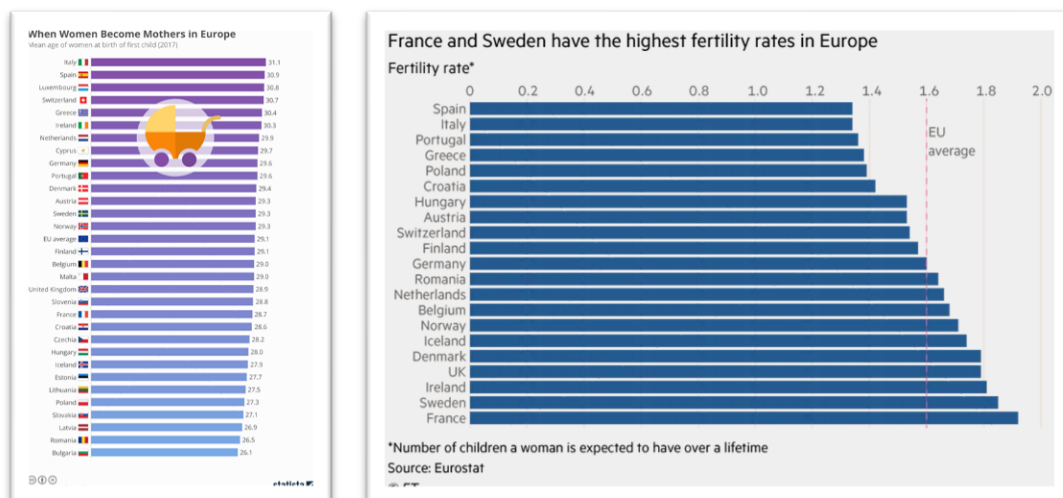


Figure 16, Becoming mother in Europe AND Number of children per women

4.3.2.2 Spain

Spain is located in Southwestern Europe and shares land borders with five countries: France, Portugal, Morocco, Andorra and Gibraltar. Spain is situated in the Iberian Peninsula but it also includes two archipelagos: The Canary Islands off the coast of Africa, and the Balearic Islands in the Mediterranean Sea. Ceuta, Melilla, and Peñón de Vélez de la Gomera are the African enclaves, also part of Spain. [28] [29]

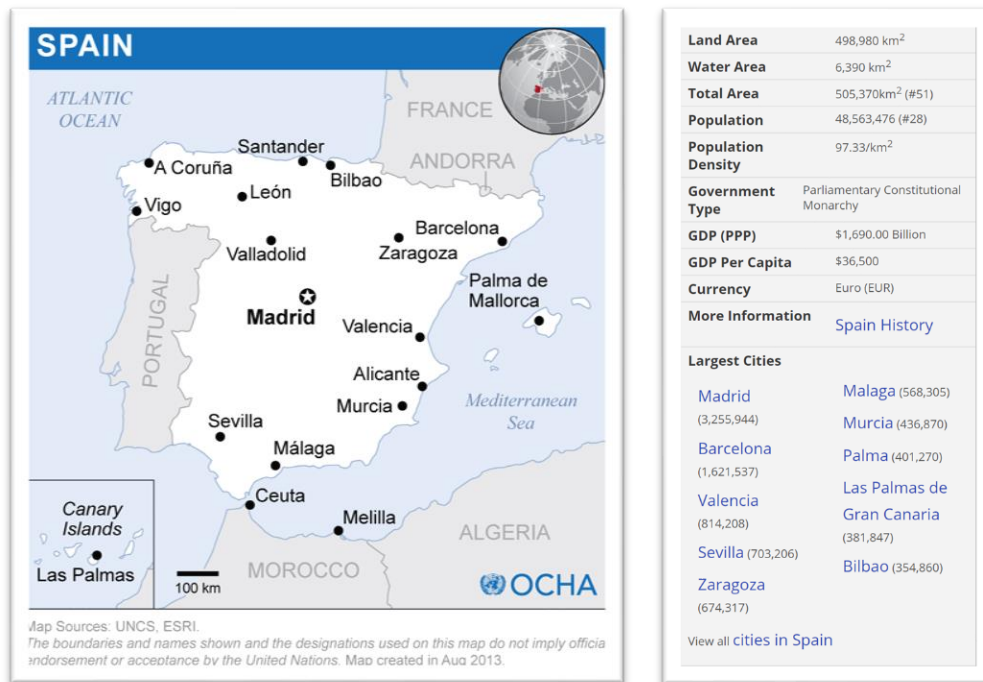


Figure 17, Spain data [28]

o Demographics

People of Spain are referred to as Spanish. The population of Spain is approximately 48 million and has a density of 97 people per square kilometre.

Madrid is the capital city of Spain. It has a population around 3 million people. This city is also the political centre of Spain, which is considered a Constitutional Monarchy.

The official language in Spain is castellano normally known as Spanish. Inside Spain there are different dialects and the most relevant are: Basque from the Basque country and Northern Navarra, Catalan from Catalonia, Valencian from Valencia and Galician from Galicia. [28] [29]

o Economy

The currency of Spain is the Euro (EUR). About economic status the north of Spain is richer due to the higher industry. Spain has suffered a recent crisis and the European Union had to bailed them out of debt. Unemployment rate

among the highest in Europe. Economy is based principally on tourism, financial services and agriculture. Spain is the world's top producer of olive oil. Spanish average salary is shown in, *figure 18*. [28] [29]

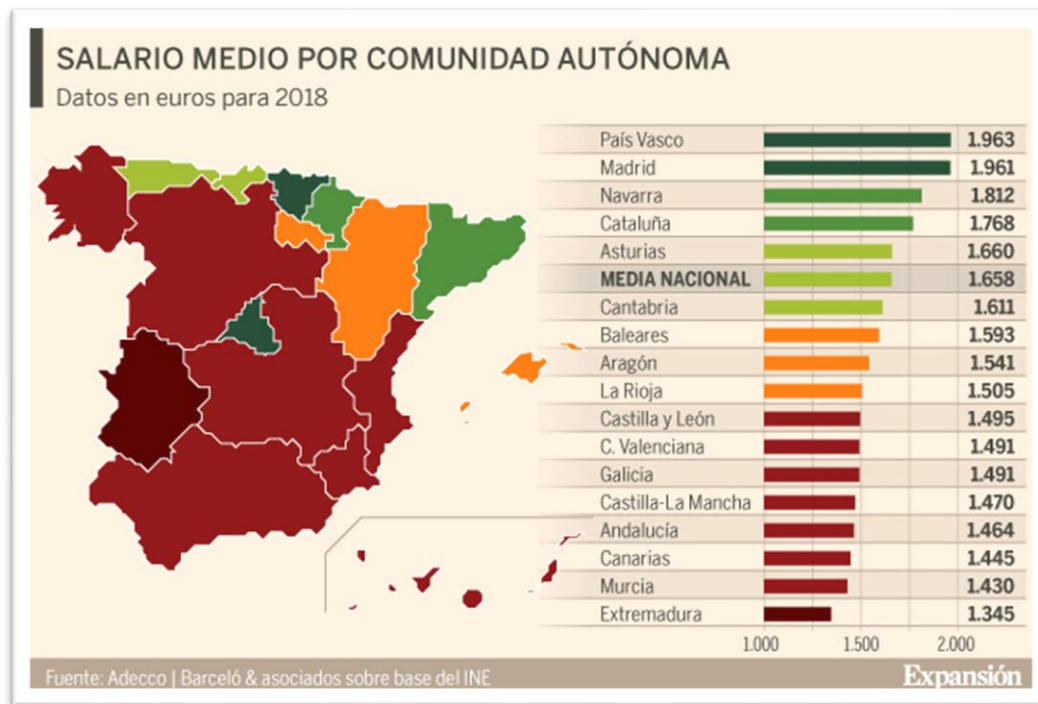


Figure 18, Spanish average salary

- o Climate

It exists three main climate zones in Spain: the Mediterranean climate is characterised by warm/hot and dry summers and dominates in the peninsula; the semi-arid climate where hot desert climates exist; and the oceanic climate which winter and summer temperatures are influenced by the ocean. Besides these main categories, there are other climates as the alpine climate in high altitude areas like the Pyrenees, the humid subtropical climate in north-eastern and the continental climates.

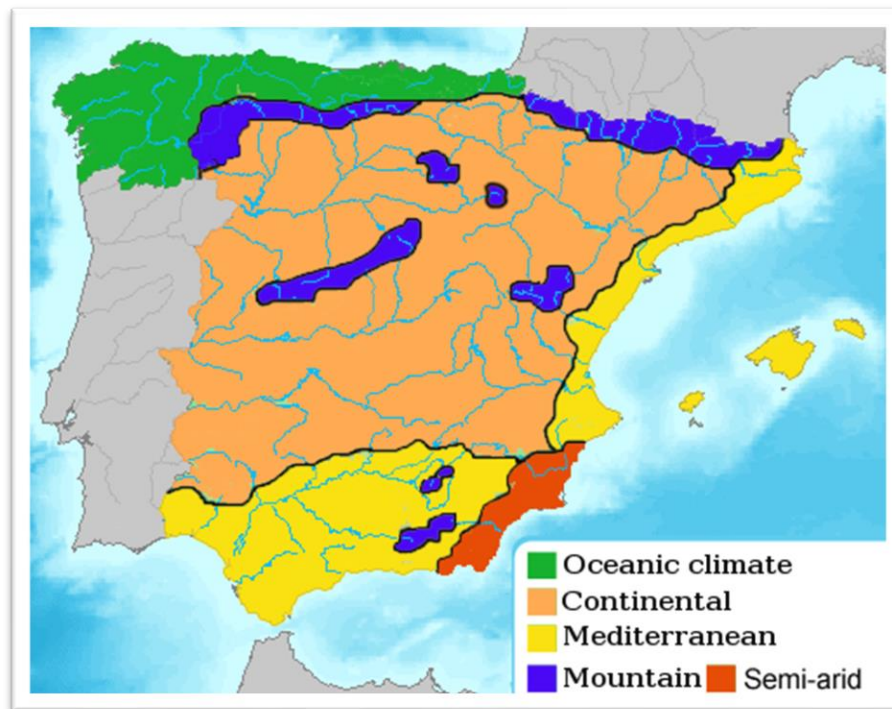


Figure 19, Spain climate [29]

North coastal regions are cool and humid (Bilbao, range from 10°C in January-March to 19° C during July-September). The central plateau is cold in the winter and hot in the summer (Madrid, winter T° about 8°C and summer T° 23°C). In Andalucía and the Levante, temperatures I summer can reach above 40° C in the shadow. The northern coastal regions are the regions with more rain with an average annual rainfall of 99cm. [28] [29]

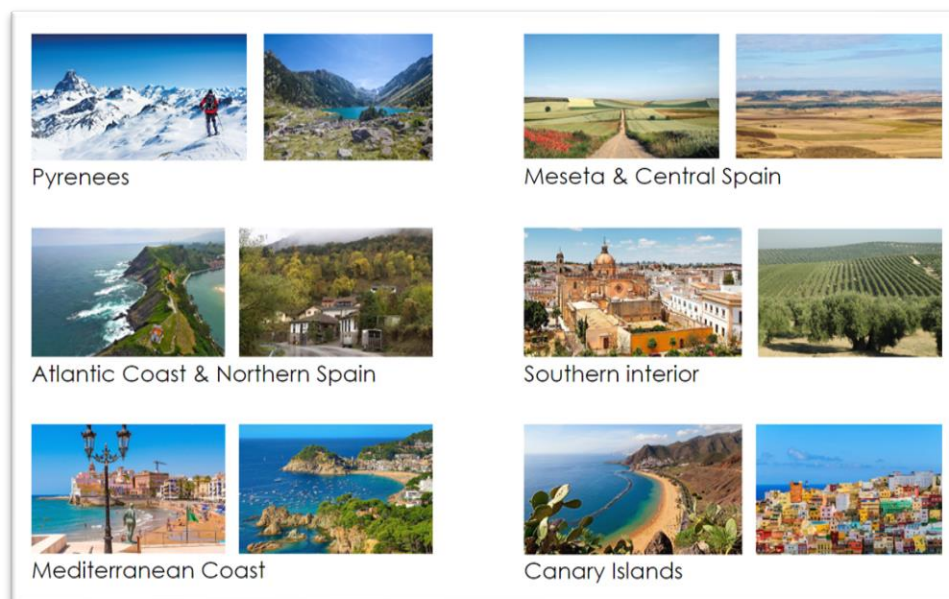


Figure 20, Spain regions

The following graph shows temperatures and rainy days, according to different cities all around Spain, *figure 21*.

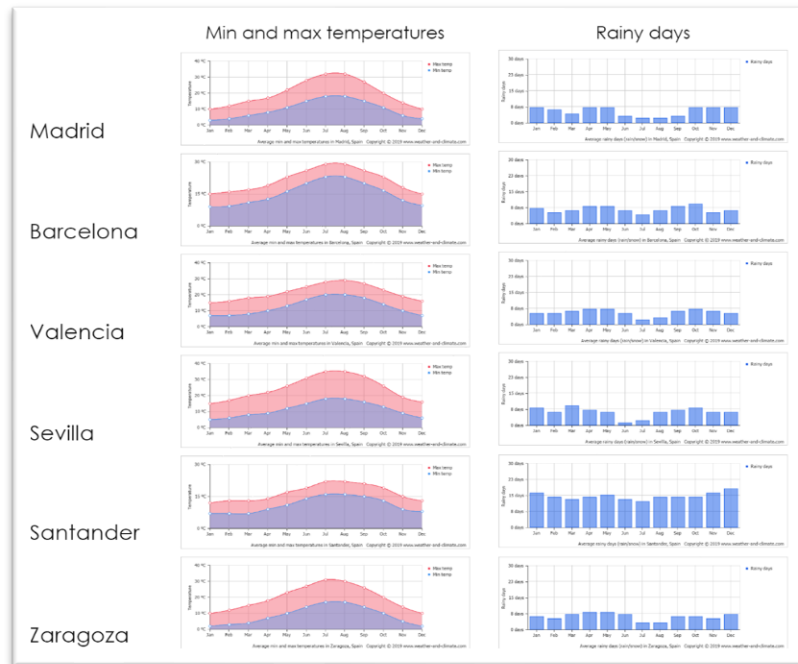


Figure 21, Temperatures and rainy days

- Birth rate

Figure 22, shows a distribution of the annual birth rate average per state in Spain and per thousand habitants. In 2018 the average birth rate value is 7,94 which means 372.777 born kids (427.721 deaths). The south of Spain has higher birth rates. Also, in some parts of the north due to the high-income status. There is a big decreasing tendency of the birth rate, it goes from 11,28 in 2008 to 7,94 in 2018. [30]

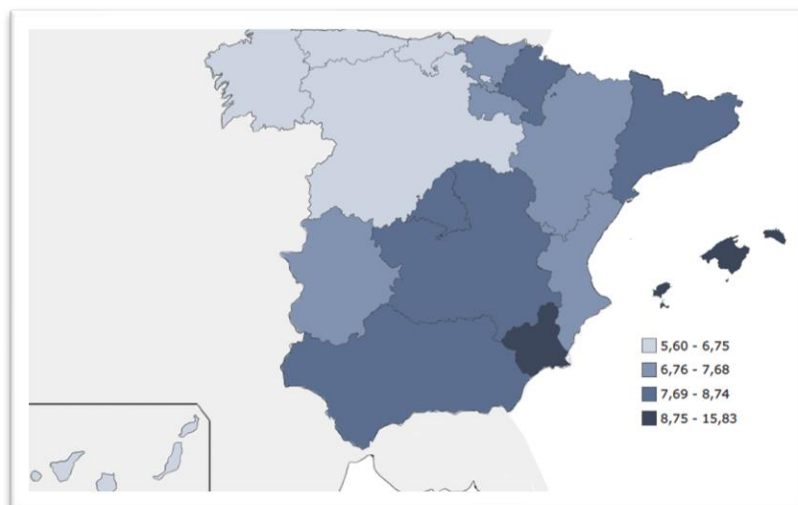


Figure 22, Birth rate per autonomous community in 2018 [30]

4.3.3 TAIDA

4.3.3.1 Tracking

4.3.3.1.1 *Global megatrends*

During the Stockholm Furniture and Light Fair 2020, it took place a symposium regarding 8 global megatrends by Louise Byg Kongsholm, owner of pej gruppen and bestselling author of the book 'Total Ret@il'. The society where we are living at the moment was analysed through 8 different facts: [31]

1. Transformation economy: high velocity society where everyone is busy and stress with their lives.
2. Luxury – a better you: people is not interested anymore in expensive products, they are looking for value and relevance. The new luxury is experiences.
3. Sleep renaissance: all about sleeping experience has become popular and a lifestyle status (yoga, mindfulness, bedroom layout, coaching, power naps in cafes, clothes).
4. Mental health: key factor for an overall wellness.
5. Combating infobesity: there is an excess of information around us that reduce our capacity to stay focus.
6. Seeking silence: living in big cities that are saturated, noisy and crowded. Silence is what everyone is trying to find desperately.
7. Radical transparency: the increase use of technologies is exposing us to everyone eyes without protection.
8. Sensory immersion: there is missing part in the digital world. The touch sense is magnified when feeling textures and volumes in the fashion and interior design industry.

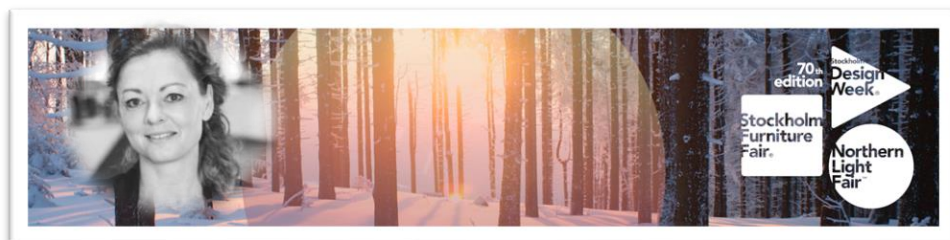


Figure 23, Trend lecture - Stockholm Furniture and Light Fair 2020 [31]

4.3.3.1.2 Industry trends

After analysing the baby market in Spain, these are some facts and conclusions [32]:

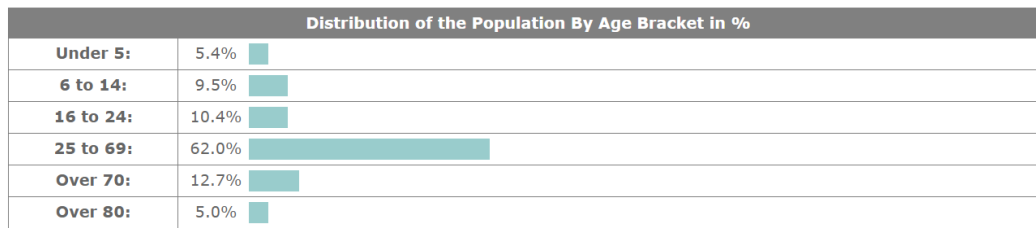
- Spanish parents spend larger amounts of money on their under two-year-old child than older children. The reason behind is because young babies are more delicate and Spanish parents try to buy good quality products for them, even if it involves higher prices. They want the best for their kids.
- Most of the children products sales are driven by Spanish television, especially cartoons like Disney princess or Marvel Superheroes that almost every child love.
- Baby products industry is a competitive business. In 2018, the famous label Unilever arrived to Spain, with specific baby products under the name, Baby Dove.
- Mercadona is a supermarket chain that promotes products made in Spain and it also has a "white label". Baby wipes are one of the most sold products within the market and Mercadona is the leader of sales of baby wipes under its own label.
- Johnson & Johnson is the leader brand in baby and child products. They are one of the most active in advertisement in television channels. However, they are suffering an increasing competition from new organic brands and pharma collections.
- El Corte Inglés, with headquarters in Madrid, is the biggest department store group in Europe and is the third in the worldwide ranking. It is used many times by the Spaniards to compare brands and prices since they have products from all categories and prices range. [32]

4.3.3.1.3 Consumer behaviour

The Santander bank made a publication regarding Spanish consumer behaviour. This analysis was used to have a better understanding of the user and the environment. In the next lines a small sum up will be shown.

Spanish consumer profile: 25% of the Spanish population is under 24 while 40% is people over 55 years. The number of elderly people is rising very fast

and the number of new-borns is declining, this is generating an inverse pyramid where a smaller group (young people) has to maintain the old population. [33]



Source: United Nations, Department of Economic and Social Affairs, Population Division, Prospects 2010 - Latest available data.

Figure 24, Spanish population by age 2018 [33]

Spain has 50 metropolitan cities and around 80% of the population live in urban areas. The percentage of active population is: “ 29% works in domestic activities, 16% in social services, 13.2% in sports, recreation and entertainment, 8.9% in associative activities, 4.5% in the reparation of computers and household items, 3.9% in creative, artistic and entertainment activities, 2.3% in games of chance, 1% in archival, museum and cultural activities and 0.23% in organizational activities.” 25,924 euros is the standard annual salary in 2018, it was similar for men and women.[33]

As well as most countries, Spain is a consumer society. After the economic crisis from 2018 and the high level of unemployment, price is one of the critical factors when buying. The usual money Spaniards spend per month on food is, 358 euros and on other items per year, 554 euros. The average money the users spend on the internet rises to 460 euros.

Imported products are being consumed in Spain however national products are usually preferred. In general, Spanish consumers care less about a brand popularity. Young public are less loyal with brands than the rest of the population and they are more open to discover new brands and products. When purchasing an item, influencers and other consumers opinion influence on people buying decision.

In the last few years, sustainability has gained considerable significance and Spain had no doubt to implement new laws for assuring a better environment. Madrid and Barcelona for example, the third and fourth biggest metropolitan area in Europe, have started forbidding driving a car in the city centre. People will need to take more the public transport, walk or find alternative types of mobility. [33]

4.3.3.2 Analysing

4.3.3.2.1 *Lifestyle – Spain vs. Sweden*

Spain has more than 50 metropolitan areas and about 80% of the Spanish population lives in one of these urban areas. [33] Metropolitan areas are formed by many different neighbourhoods fully equipped with all kind of different stores. When living in this neighbourhoods, people do not have the need to take the car and instead they go walking to the shops. There is lack of green areas in the city centre. It is possible to find small parks but most of the green areas are located in the outskirts of the city. City centres are generally crowded and noisy, with a lot of traffic. Moreover, big cities like Madrid and Barcelona are forbidding car driving in the city centre and soon will be implemented in more and more cities. This is increasing the use of public transport, walking and other kinds of new mobility.

Sweden has just 20 metropolitan areas, many of them under 100.000 residents, which is pretty small. There mainly 3 big metropolitan cities. It is very common to have green areas or even a forest nearby. This makes it easy to go for relax walks with kids. Also, the variety of stores in the city centres is quite reduced. The most common choice is going to big supermarkets or shopping malls that are normally located in the outskirts. This makes people to use own transport more often than public transport.

Previous the Spanish economic crisis in 2008, several mothers decided to become homemakers after having kids. Some of them left their jobs to take full time care of their babies. The father in contrast had to work and bring money home. Nowadays, households changed to dual-earner because is very difficult that families with just one salary can survive, therefore both parents need to work. Due to this more women get into the labour market and there is not anymore, a big number difference in the employment statistics between men and women.

The increase of female employment created other prejudices in the society. When getting hired, the chances to get a job, for a woman, were reduced due to pregnancy and the time off, among other facts. These injustices are slowly changing and new rules are being created to help families. In Spain, paid parental leave is 112 days and 70 of these days is up to parents how they share it. In Sweden, paid parental leave is 480 days and 90 of these days are reserved for each parent. Swedish mothers rarely become homemakers and they face less discrimination in the labour market when getting pregnant and facilities for returning to work.

Spain is going through a complicated situation with working mothers. Female incorporation in the labour market is increasing, however there is no balance between their career and their family life. Having a child requires high costs, it is time consuming and there is a lack of support. These are the main facts why in Spain the age of becoming a mother is above 30, that is when they might have a more balanced economic life.

Trying to combine work-family life is difficult and there are different options in the market for taking care of the kids when parents are working. Kindergarten and babysitters are the most common. However, the most popular figure in Spain is the grandparents. The grandparent role transmits more tranquillity to the parents. The major benefit of it, is that they do it for free and with love. This fact is linked with cultural clichés and the way Spanish family is build, the bonds are big and strong. In Sweden, generally grandparents are not so involved with grandkids and they help eventually.

4.3.3.3 Imaging

4.3.3.3.1 Spanish design style

Based on the previous analysis about Spanish design, described in the theoretical background, two mood boards where done to have a clearer overview of Spanish design style.

The Spanish landscape is a very popular artistic inspiration. The coastline brings a colour palette of green, blue, white and yellow producing freshness. In the central Spain lands predominate terracotta red and orange provoking an earthy sensation. The Spanish fields create colourful and vitality patterns. Craft work traditions and products under the label "Made in Spain" have particular importance among the society. This last fact, is due to the late incorporation of the industrial revolution in Spain unlike in the rest of Europe.

Craftwork "Made in Spain"

Wicker
Ceramic
Glass
Wood
Leather

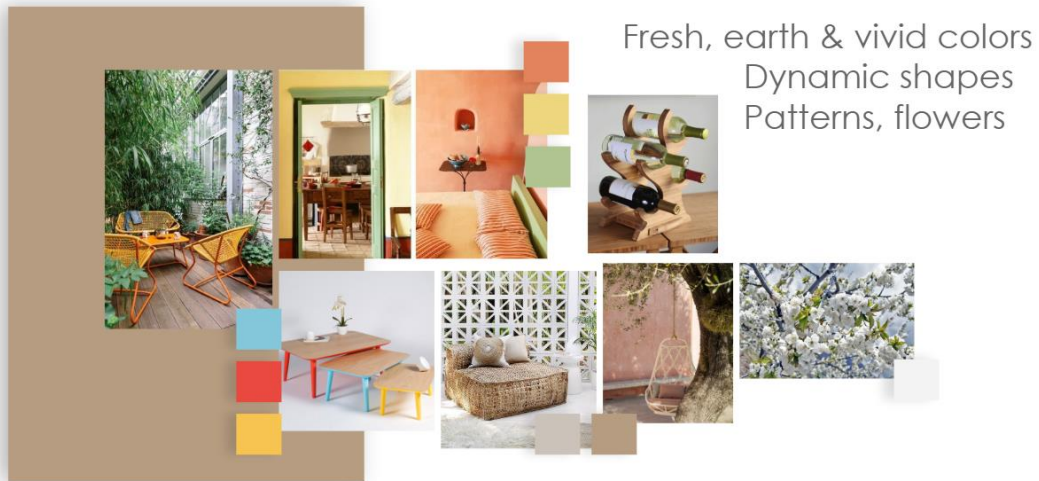
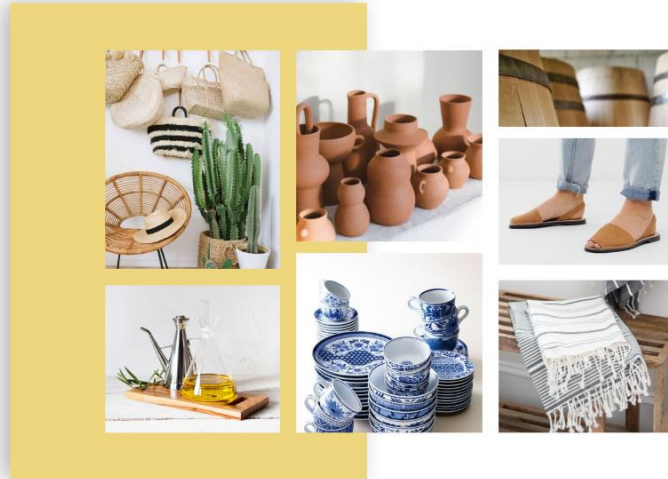


Figure 25, Craftwork "Made in Spain". Colours, shapes and textures

4.3.3.4 Deciding

- Southern Europe and specially Spain is composed of crowded society, living in condensed areas.
- Spain has a lower economy than other northern countries and this fact cause a significant influence in consumers behaviour.
- Functional design is chosen over something beautiful.
- Spanish culture influences individual and social choices.

4.3.3.5 Acting

- o Area of focus is parent with active lives in metropolitan and urban areas.
- o Improve parents commute in and between big cities.
- o Sustainable and useful solutions are preferred among the current population.
- o The end product must be safe, long-lasting, easy to use and with high-quality.

4.3.4 Competitor product analysis

Firstly, the different categories of strollers in the market (described in the theoretical background) are classified by the child age. The classic stroller was divided by its accessories: the sibling seat, the bassinet and the car seat.

Multisport stroller

Jogging stroller

Classic stroller

Urban/Umbrella stroller

Travel stroller

Twins stroller

0-6 months

X

X

X

✓

✓

X

X

6-12 months

✓

✓

✓

X

X

✓

✓

18-24 months

✓

✓

✓*

X

X

✓

✓

*might be difficult to keep the kid still and it can result heavy and not so easy to maneuver when the kid is hopping on and off but it works

From infancy to 36 months of age is the recommended period to use strollers according to the Consumer Product Safety Commission and ASTM International, but people can easily use it till the age of 5 or 6 years old.

Figure 26, Stroller category according to the age of the child

It can be seen that the classic stroller with the bassinet and a car seat accessories have a short life. New-born children need special seat features at the beginning to safeguard a correct and safe posture, however they grow up very fast and they stop using the new-born accessories. Kids bigger than 6

months are able of sitting so they can use all the other products. According to the Consumer Product Safety Commission and ASTM International, strollers can be used from infancy to 36 month age, although people can use it until the age of 5 or 6 years old.

Secondly, discovering the most used brands in Spain in the stroller market. El Corte Inglés (headquartered in Madrid) is the biggest department store group in Europe and ranks third worldwide. Based on the web and filtering, the brands that sell the most are Bugaboo, Jané, Chicco and Maclaren.

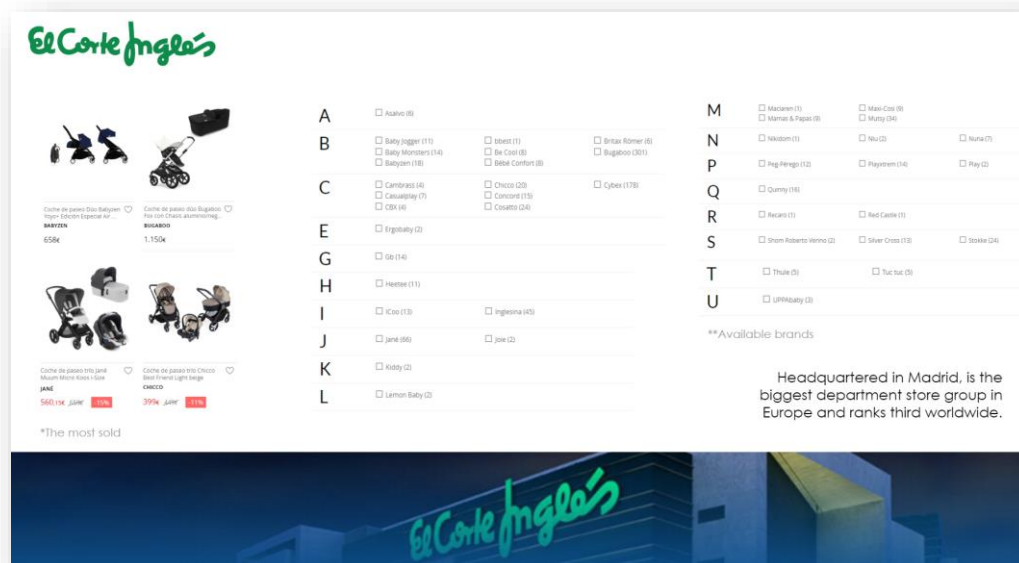


Figure 27, El Corte Inglés

The strollers and accesories of the four brands were analized (see Appendix II). These are the main differences between each other:

- BUGABOO: Dutch design company founded in 1996. It is a well known brand and leader in the stroller market. They offer high quality materials, security and last long, as a result it has higher prices. They help users to move freely by using smooth, comfortable and lightweight strollers. Their slogan is slogan is: *Made to use every day. Designed to last a lifetime.* [34]
- JANÉ: Spanish stroller brand, founded in 1932, with headquarters in Barcelona. They sell strollers, and childcare products. They offer lower prices than other well-known brands like Bugaboo and the relation quality-price is good. For many users that cannot afford paying high prices, Jané become a better option than Bugaboo. In general, their designs are classic and their folded strollers are more compact. Their goal is to solve parents and baby needs, by using the latest

technology and creating innovative products with good quality and safety standards. [35]

- CHICCO: Italian brand born in 1958 that offers a wide range of products: maternity items, baby food, baby care products, strollers, clothes, shoes... The brand is classic and traditional with a lot of experience in the field. Their slogan is: *At your side, every step of the way*. The brand is very popular and traditional in Spain between all generations. By looking the products in their website, you realized that depending on the country their product range changed to fit the user. Their products are characterized for being simple and used in all kind of situations. The most important is that Chicco offer lower prices than the other brands. [36]
- MACLAREN: American brand with headquarters in England. They were the first one in realising the umbrella stroller. They sell strollers, toys and accessories and their slogan is: *What a mother wants, What a baby needs*. They offer lifetime guarantee of the strollers structure. Very lightweight strollers and robust at the same time. The brand has the trust of many parents all over the globe. [37]

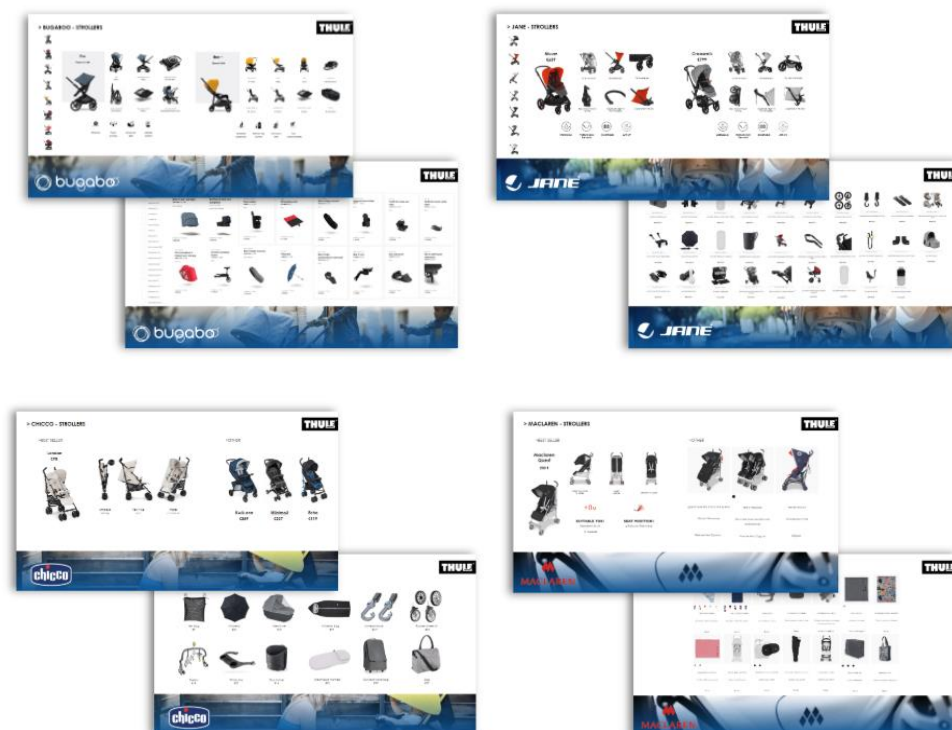


Figure 28, Strollers brands: Bugaboo, Jané, Chicco, Maclaren

4.3.4.1 Brands in Sweden vs. Spain

It was considered relevant to make a comparison between the most used brands in Spain versus Sweden. In the chapter before the Spanish brands were studied. By going to a physical shop in Jönköping called Lilla Violén, the Swedish brands were discovered and tested.

In the image below a comparison between brands is shown. The design style of the brands are influenced by the area and culture of the main users and environment. However, Bugaboo is used in both countries because it is the global leader stroller brand.

While Spanish brands look more lightweight with a fresh style, Swedish ones look more robust and heavier.

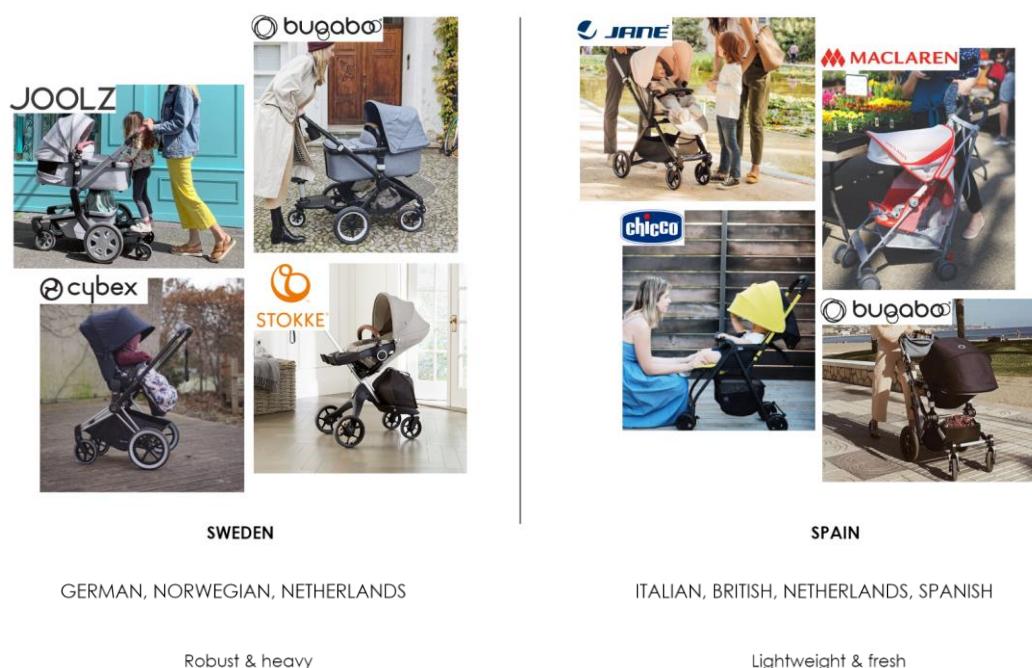


Figure 29, Sweden VS Spain

4.3.5 Survey

In order to approach the user of strollers a survey was made and it was distributed around different Spanish parental blogs, WhatsApp, Facebook groups and pages. It was conducted to discover the target group that uses strollers, which brands they prefer, where do they use, what are the problems they face or improvements they would desire... The survey was made through the platform Survey Gizmo, that Thule normally uses and they allowed access to it for this survey. See attached survey in Appendix III. The language of the survey is in Spanish as is the native language of the user.

The survey included questions about age, gender, number of kids, brand and type of stroller they use, accessories they use, problems they experience,

improvements they would like to see, activities they do with their strollers, preference of stroller or baby carriage, etc.

A summary of the results is shown below, *figure 34*. Despite not reaching enough responses, the distribution of the answers was quite broad, achieving answers from twelve different states out of seventeen.

- The age of the people was above 40, this might be because of the late age at what parents have the first baby.
- The four brands most used by the users match the brands discovered in the previous competitor analysis.
- The activities they do more often are related with metropolitan cities like going shopping or taking the public transport. One of the options was going to the beach, however not many users selected this one and this might be related with the seasonal fact, mostly you just go to the beach on summer, if you compare to other activities that they do most during the whole year.
- They complained the most about: not universal accessories, heavy, difficult to fold, manoeuvrability...
- Some of the improvement that people desired the most are related with: wheels size, avoid stroller falling over when is heavy, making fixed accessories to not remove and put them every time...
- Most of them agree that the stroller is more comfortable and safer for the baby and for the parent (rather than the carrier), mainly because of the weight. However, many parents pointed that when the baby is small and for short journeys they rather use the carrier.

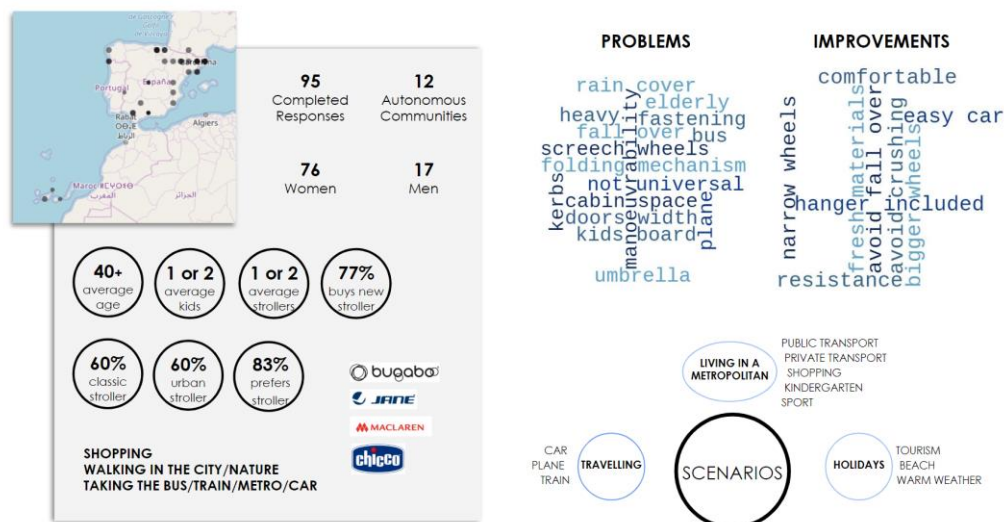


Figure 30, Survey results

4.3.6 Expert interview – feedback session 11

Survey launch: it was a skype meeting with the user researcher. An update of the project was explained. Feedback and advices were provided in order to evaluate better the results of the survey and continue with the project.

4.4 Define

4.4.1 Scenarios

Four scenarios were defined to have a better visualization of the main areas or situations where the product interact with the users. Therefore, the actions on these scenarios will be taken into consideration in the ideation phase. The scenarios selection comes from the conclusions of the survey.

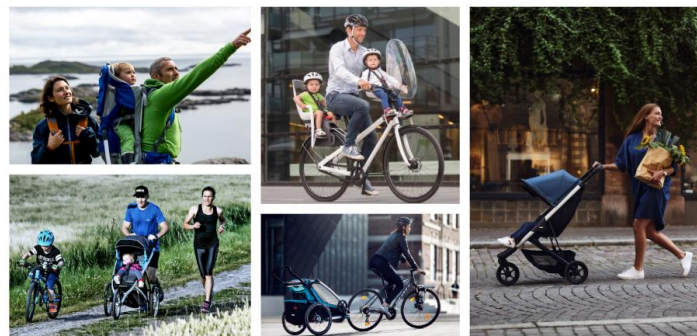


Figure 31, Active with kids

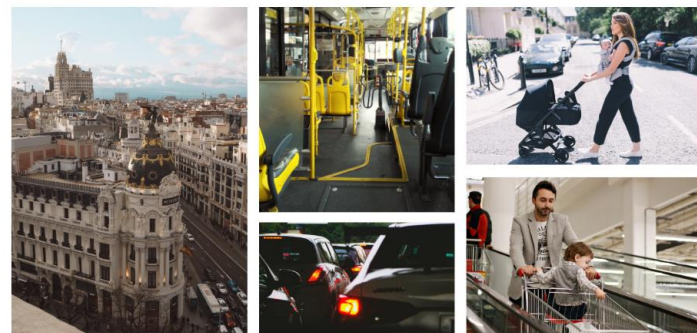


Figure 32, Living in a metropolitan

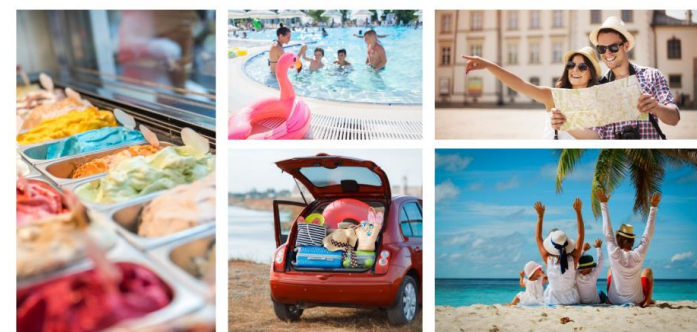


Figure 33, Holidays

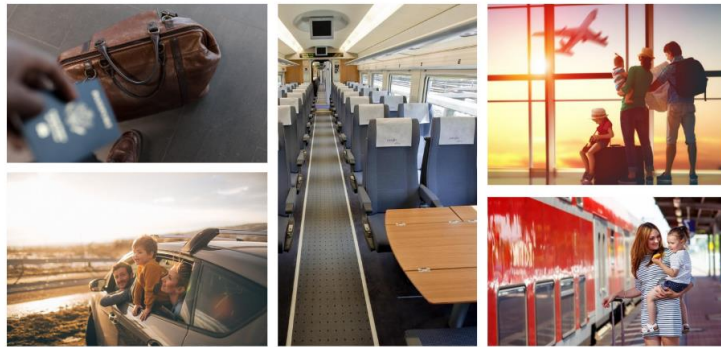


Figure 34, Travelling

4.4.2 Personas

Twelve personas were created to represent the target group. They were distributed in different areas of Spain and they create a family system all together interacting between them. Different family situations were created: married, single, widow, young, middle age and grandparents. See Personas can be found in Appendix IV.



Figure 35, Personas

4.4.3 Costumer journey

With the personas describe before, ten different costumer journeys were created with the following topics: (Shown in Appendix V)

1. Taking a plane
2. Going to kindergarten with the metro
3. Going vacation by car
4. Go shopping to the supermarket
5. Go running
6. Going to the swimming pool
7. Taking the public bus
8. Going for a walk with the dog
9. Spend the day in the beach
10. Taking the train



Figure 36, Costumer journey

4.4.4 Brainstorming

Collaborative brainstorming session between both students (Nerea and Berta). The session involved 5 minutes of thinking in every story created before (customer journeys). Thinking on different problems, desires and possible solutions for the different users in the different scenarios. A lot of ideas came up and a few were repeated. The most interesting ones were:

- Improve baby resting in the plane.
- Urban carrier - braces for carrying stroller.
- Double functionality rain cover/parasol.
- Counterweight solution.
- Animal attachment.
- How to carry stroller in the sand.
- Improve the experience of going shopping with kids.

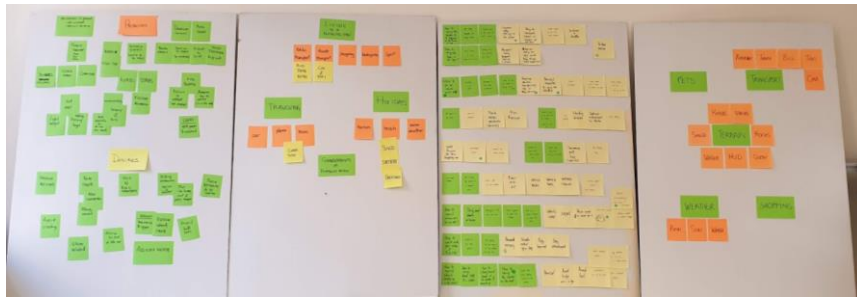


Figure 37, Brainstorming sessions

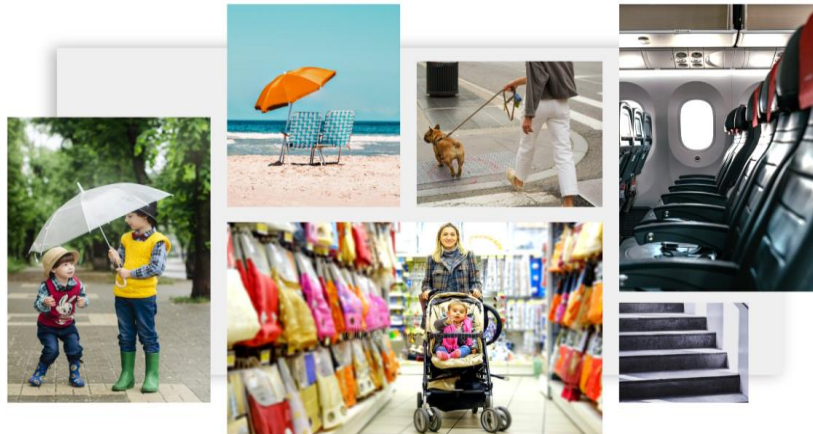


Figure 38, Brainstorming

4.4.5 Mind-map

A mind map was created to organize better the overall conclusions of the brainstorming. These are the five areas most interesting and they will serve as a guide for the following ideation stages.



Figure 39, Mind map

4.4.6 Conclusion

After all the work done until now, there is already a clear direction and chosen topic to continue the project. The solution is not clear yet but the problem, the users and the scenario are well define.



Figure 40, Conclusion

The start point are the following facts that were consider more relevant and interesting from the research. Spain has more than 50 metropolitan areas and about 80% of the Spanish population lives in one of these urban areas. Movility is increasing more and more everyday and people want to travel more. In big areas, they are starting to forbid cars and due to this the use of public transport is increasing.

How all these facts affect to the use of strollers? When living in this metropolitans cities, being an active familly and travelling regularly, the user face different situations and problems where using the stroller is difficult or impossible. Urban carriers solve this problem, however the lifetime of this product is quite short. The project challenge is to find a new solution between a stroller and a carrier for those moments when the user will not be able to use the stroller.

> Direction - Berla

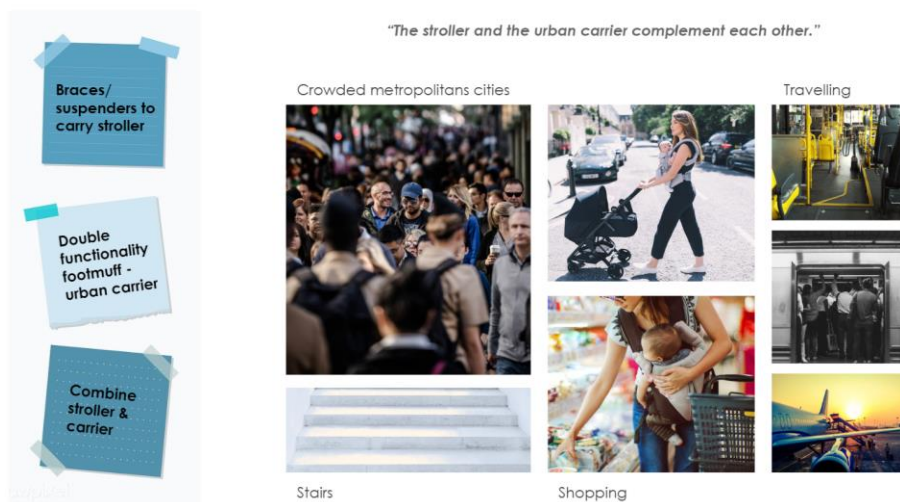


Figure 41, Selected direction

4.4.7 Expert interview – feedback session III

Project direction selection: the meeting took place at the company Thule in Hillerstop. It was a presentation of the work done till the moment and the results of the empathize and define phase. Two directions of the project were presented, one for each student. Great feedback on both directions and a more specific task to work with each one.

The company found very interesting the problematic presented to continue this project individually. There is see market niche in the topic. Thule has been trying to do urban carriers before, but they have never dare to go for it. They would like to see what it can be discovered in this new market, between a carrier and a stroller. Something that manage to solve some of the big problematics of both worlds (stroller and carriers). However, they point that it is a risky topic, difficult and quite broad challenge to develop individually in the short period of time of the project.

4.5 Redefine – Iteration II

4.5.1 5W+H

By implementing this method, is easier to have a better and clear understanding of the topic and how to approach the project to continue working. 5W+H is shown is the picture below.

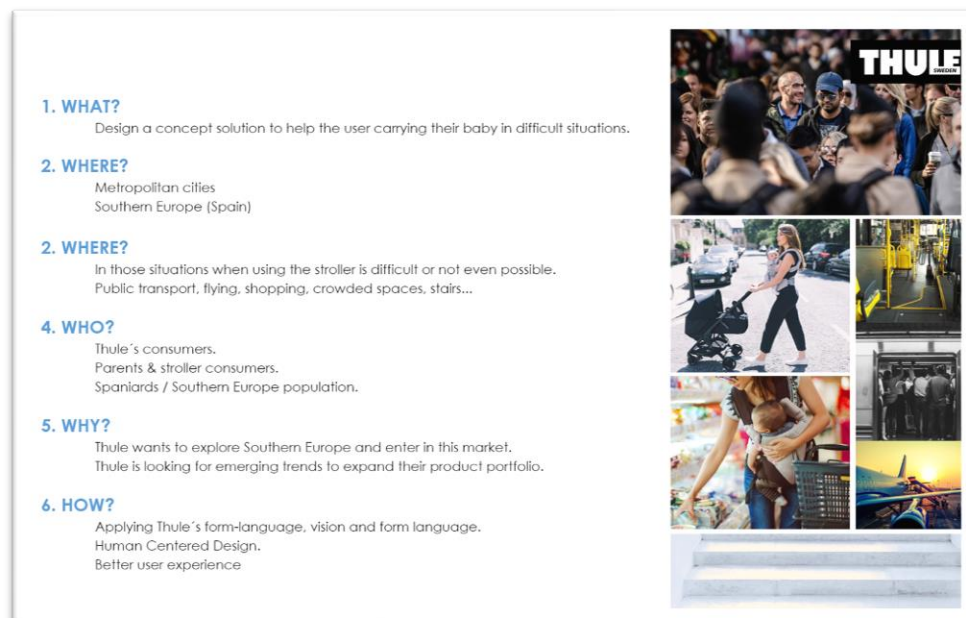


Figure 42, 5W+H

The scheme below was made to explain more in detail the topic of the project so the reader can understand better. The start point is Thule products related with the chosen topic. The main problems that generate the topic are:

1. There exists crowded situations in the public transport. Sometimes the user cannot get in the bus or metro due to the high number of people and needs to wait until the next one. Other times, the user can get in, however the stroller must be fold and the baby needs to be in the arms of the user in order to fit in.
2. When travelling by plane or train, the user needs to carry the stroller, the baby and other heavy bags. Moreover, when taking a plane, at some point you need to check in the stroller and after that the user question is: where do I carry my baby? Also, there are security controls and many other steps is these experience that makes really complex to travel with kids.
3. When going to the groceries with a baby, using the stroller at the same time you carry the shopping kart is not possible. If the user goes by car to the supermarket, the baby cannot stay alone in the car while the parent goes shopping. Some users take the car seat and put it into the shopping kart. This is a bad use of the product because is not safe for the baby.
4. When living in a metropolitan the user runs into obstacles like stairs or kerbs.
5. The most common solutions that replace an urban stroller are: carrying the baby in the arms, wrap or sling fabric and urban carrier. The market niche that this project pursue is a solution in between a stroller and a carrier.

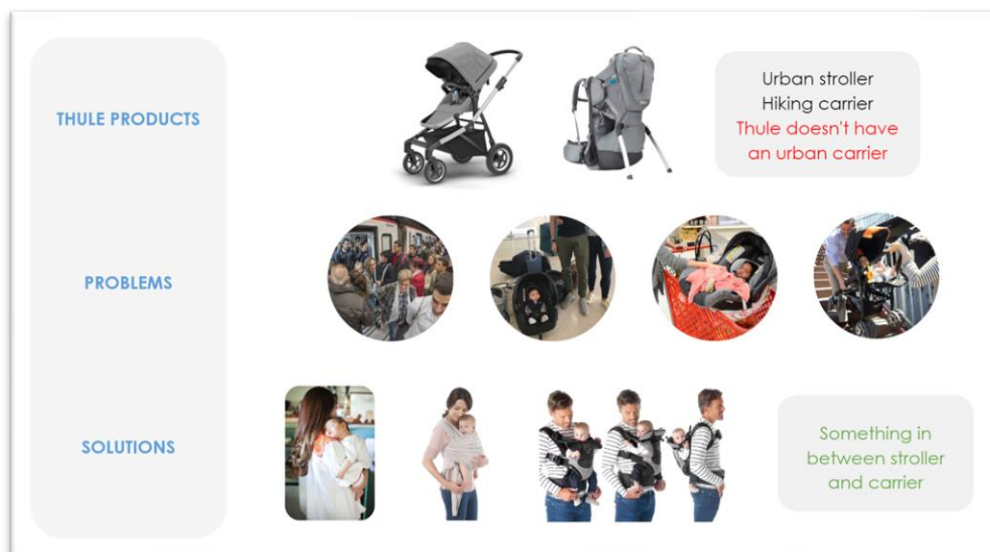


Figure 43, Problems and solutions

4.5.2 Functional analysis

This analysis defined the main function, the necessary functions and desirable function of the product.

VERB	NOUN	CLASS	FUNCTION LIMIT
Facilitate	Carrying	MF	
Allow	Transport	NF	Products & Baby
Provide	Adjustability	NF	Different positions
Offer	Safety	NF	Personal safety
Improve	Experience	NF	
Being	Aesthetic	NF	
Offer	Durability	NF	
Communicate	Function	NF	Intuitive to use
Maximize	Accessibility	NF	Physical and cognitive ergonomics
Simplify	Construction	DF	Production, material & assembly

Figure 44, Functional analysis

4.6 Secondary research - Iteration I

4.6.1 Competitor product analysis

Looking the market, different brands competing in the urban baby carriers' sector were analysed. In the image below, the most popular brands are shown.

- o The most appreciated are:

1-Babyjorn / 2-Ergobaby / 3- Chicco / 4- Cybex

- o More offer of different carriers available

1-Ergobaby / 2-Cybex / 3- Babyjorn / 4- Chicco

- o Price range:

- Babyjorn: 90 – 195 Euros
- Ergobaby: 80 – 180 Euros
- Chicco: 50 – 90 Euros
- Cybex: 100 – 180 Euros

This analysis is mainly focus on the Spanish market however in other places of Europe is quite similar.



Figure 45, Baby carriers' brands

4.6.2 Ergonomics

In this section, an ergonomic research about baby carriers is presented. The main resource, for this specific study on carrier design considerations, has been the International Hip Dysplasia Institute (IHDI). They put effort on improving the health and quality of life of children affected by hip dysplasia. They also give advice of which products are good to improve **healthy hip development**. Babywearing products can affect hip positioning or hip motor development and it is even more important to note this during the first six months of life when the hips are growing rapidly. [38]

Baby carriers usually are used for **short-term purposes** while transporting or for sporadic parental actions. A periodic short-term use of a baby carrier is not likely to cause any effect on hip development. However, carrying a baby on the parent's body might influence hip development during the first six months of life when the baby is carried for many hours each day. It is very important to choose the right baby carrier that provides healthy hip positioning, as well as other safety considerations. When carrying babies during **long periods of time**, the hips should spread apart with **the thighs supported and the hips bent**.

In the womb, a baby spends a long time tucked in the fetal position with the hips and knees bending. Newborns that are not in this position before birth have a high risk of having hip dislocation and hip dysplasia. After birth, it takes several months for the joints to stretch out naturally. Moreover, babies are flexible and the limits of the socket are made of soft cartilage that can bend easily. **Hip dysplasia** happens when the socket is twisted or when the hip is dislocated. Dislocation in babies is hardly ever painful, so this might be unnoticed until walking age or later during adult life. The risk of hip dysplasia is most common in the initial months of life. After six months of life, babies are bigger and hips are stronger, therefore hip dysplasia is not common to develop in kids older than six months. [38]

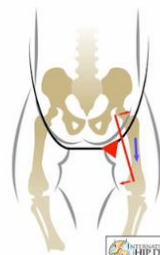


Figure 46, Womb position [38]

When using baby carriers for extended periods of time here are some conclusions: [38]

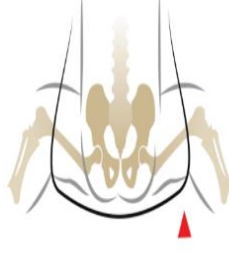
- Baby's legs in an unhealthy position should be considered a potential risk for abnormal hip development. The longer time in an incorrect position the hips are exposed to a higher risk.
- The size of the baby should match the carrier to the size of the child so that the hips can be in a healthy position during transport.
- The worst position is when the legs are held in extension opposite to fetal position, with the legs bound together and straight.
- The hips should fall or spread naturally. Before the age of six months, the **M-position**, frog position or squat position is the best, achieved through inward facing carriers. After six months this position might be hard to keep when the infant is facing outward in a hip seat.
- To stimulate a natural hip development, the hips should be free to move without forcing them to be together.
- Allow legs to spread and the hip in a stable position.

Not Recommended:



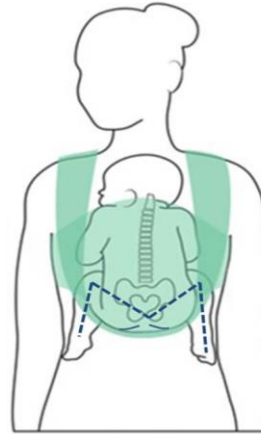
Thigh NOT supported to the knee joint. The resulting forces on the hip joint may contribute to hip dysplasia.

Better:



Thigh is supported to the knee joint. The forces on the hip joint are minimal because the legs are spread, supported, and the hip is in a more stable position.

Recommended:



Thighs spread around the mother's torso and the hips bent so the knees are slightly higher than the buttocks with the thighs supported.

Not Recommended (cradle position):



Baby carriers that force the baby's legs to stay together may contribute to hip dysplasia.

Better:



Baby carriers should support the thigh and allow the legs to spread to keep the hip in a stable position.

Figure 47, Baby positioning in baby carriers and slings [38]

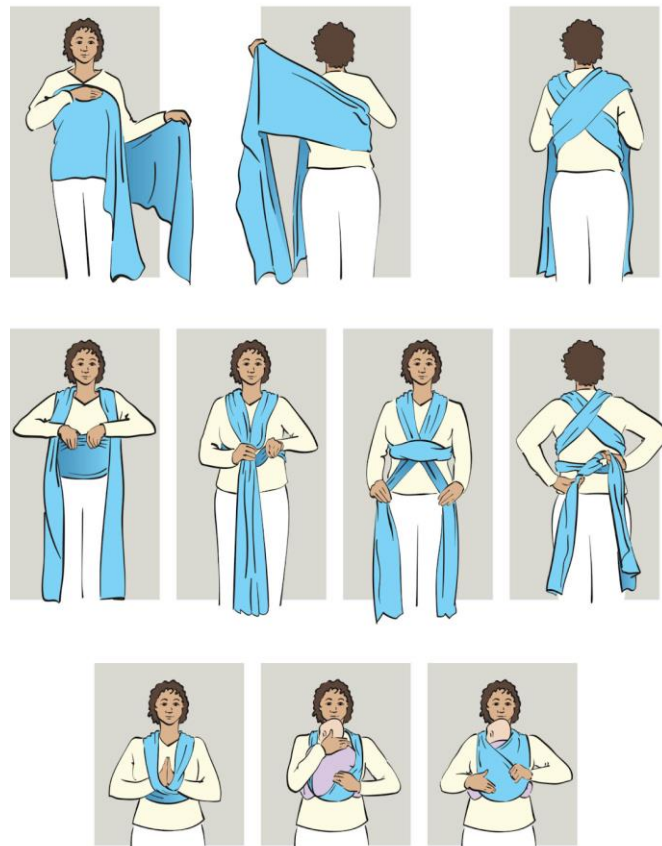


Figure 48, Baby wraps encourage the ideal position for hip health [38]

Carriers might be considered as hip healthy when they support the thighs with the hips spread creating an angle between 60 degrees and 120 degrees between both thighs. The optimum flexion span is approximately from 70 degrees to 120 degrees with the hips spread. IHDI said that “when baby wearing is practiced with each hip in approximately 40° to 55° of abduction and 90° to 110° of flexion, the femoral head – the ball of the hip joint – is pressed evenly into the center of the hip socket.” While the hips are flexed, less spread is necessary. While the hips are straighter, more spread will help to maintain a healthful position. The picture below show the cone of stability. [38]

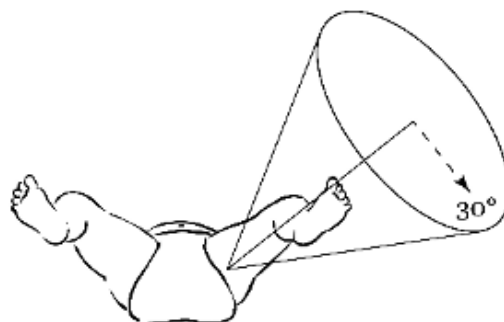


Figure 49, Baby [38]

The measures of infants were found in the book, The measure of man and women. The most value data for this project is infants from birth to 12 months, more specifically infants with less than six months. [39]

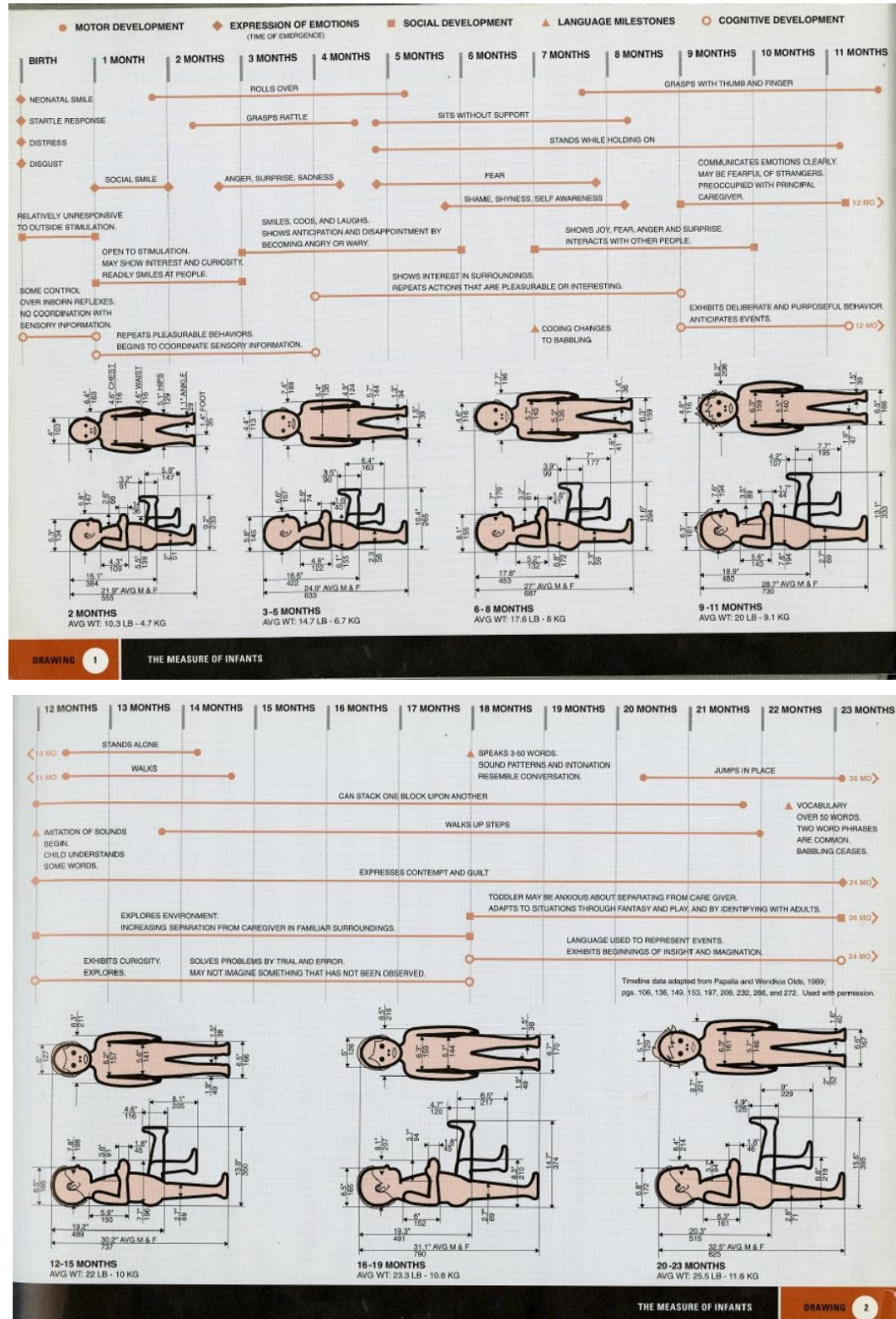


Figure 50, The measure of infants [39]

4.7 Ideate - Iteration I

After the empathize and define stages were done, rough sketches were made (analog sketching). The goal was to brainstorm on different solutions around the topic. Some of the ideas were (See picture below):

1. By looking Thule products, it was very interesting the Thule Chariot Infant Sling, that actually is a seat accessory for the multisport stroller. A new possibility of redesigning this product by modifying it and convert it into a baby seat for the shopping kart.
2. By looking into the usual accessories that most parents use, it was discovered that the changing mat, the footmuff or the seat mat were some of the most popular. A few ideas around these accessories consist in converting them in multifunctional products, that will be able to change their purpose and be a carrier too. For those moments when using the stroller is not possible.
3. One of the problems when folding the stroller is that later on you do not have the hands free to carry the baby or other things. This simple idea, consist on a harness to carry the stroller, allowing the user to have the hands free.
4. Travelling with babies by plane is a stressful experience because of the little space in plane, the airplane company luggage restrictions, the amount of luggage, the security control, etc. One of the ideas was improving the baby rest in the plane. Another one was a carry-on diaper bag, where the user can carry all the baby products organized, to use them more efficient. At the same time, it allows the user to attach a carrier to it, to carry the baby easily in those moments when using the stroller is not possible.
5. Baby carrier that grows with the baby and will allow the user to still use the product when the baby gets bigger. It can be used as a stroller attachment, so the kid can walk alone without getting lost in a big and crowded city. Increasing mobility and child growth.
6. Living in a metropolitan city, public transport, stressful life, travelling... In this kind of scenario is difficult to find privacy to breastfeed your baby when not being at home. An accessory to the stroller (like the changing mat) to provide privacy for breastfeeding in public and carry the baby.

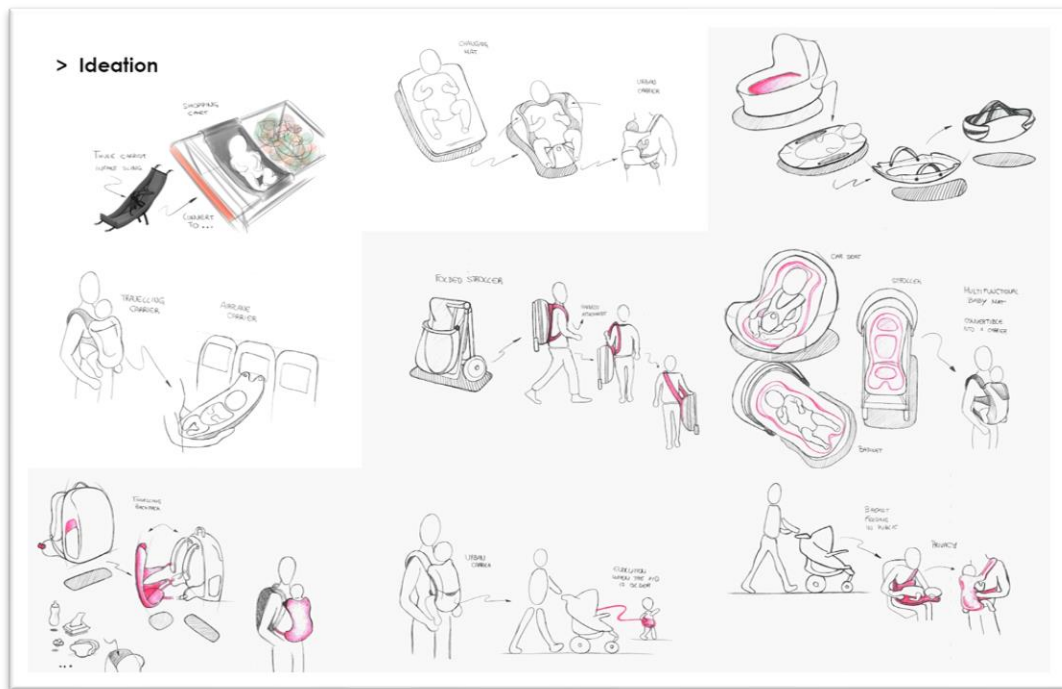


Figure 51, Ideation

The concepts were evaluated by using self-intuition and gut-feel. After this, three main concepts were selected and developed in more detail.

The three concept ideas were done (digital sketching) and presented to the company.



Figure 52, Concept 1

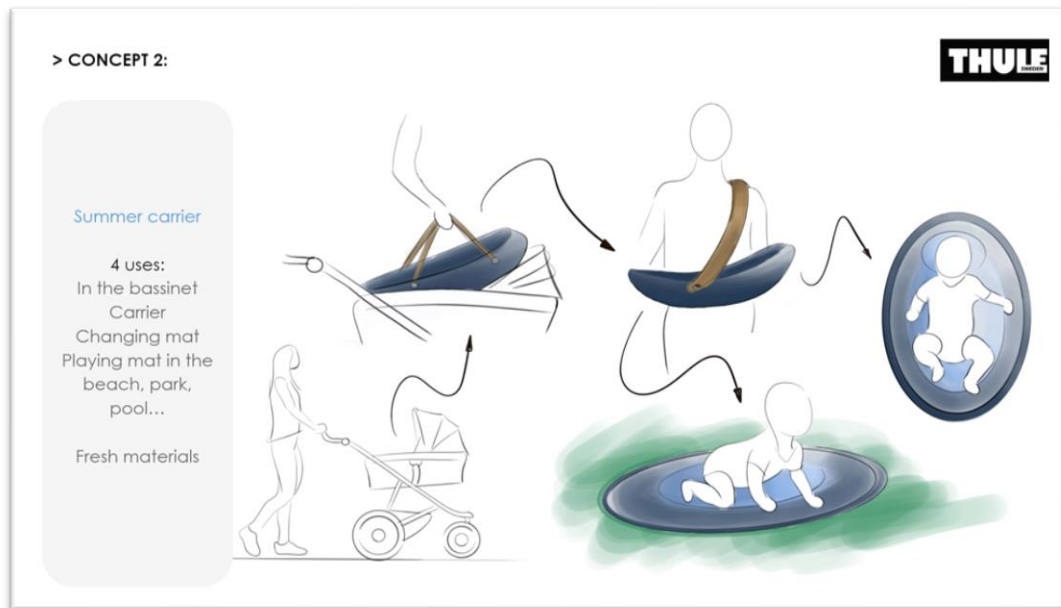


Figure 53, Concept II

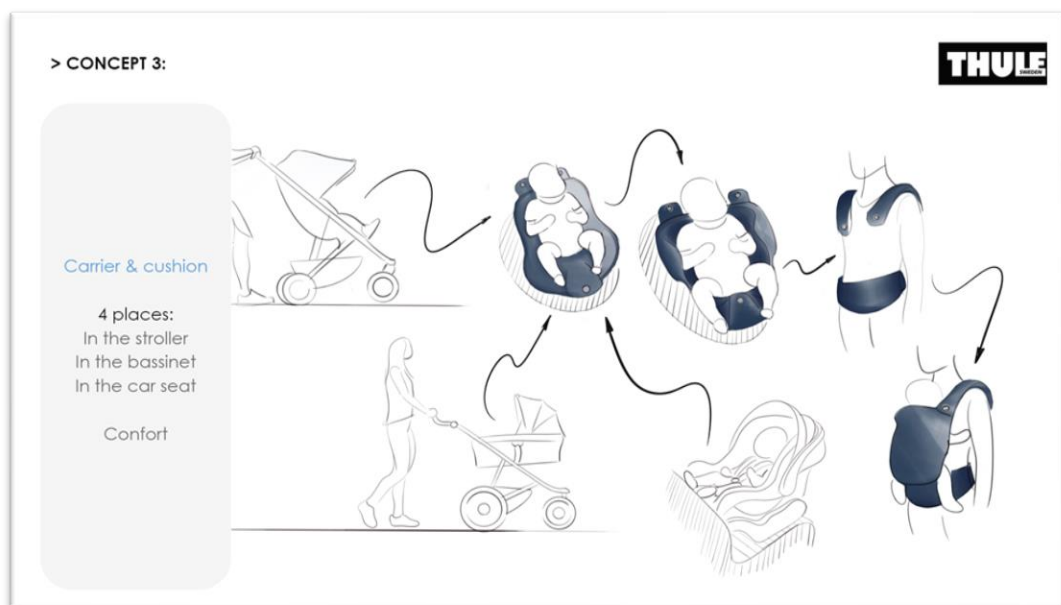


Figure 54, Concept III

4.7.1 Expert interview – feedback session IV

Concept selection: Skype meeting due to COVID-19 situation. In this meeting, the concepts and the process were presented. At the end, one concept was selected to continue. The company feedback was very useful in the process. They evaluate the three concepts and the comments were as follows:

- o **Concept 1:** this idea has a huge potential. It is so logical concept and there is nothing similar in the market. When you have a usual urban carrier is almost impossible to take a backpack at the same time, so

then there is a lack of space to carry stuff when using a normal carrier. The main point on the concept is that there is relevance on the solution. Thule has been thinking on how to expand their child carrier products portfolio and this concept is a good way to relate a carrier with a changing backpack. This concept is the one that fits the brand the most, because it is also related with their backpack's portfolio. When you buy this product package it can be used more time than a usual urban carrier, cause when you cannot carry your baby anymore you can still use it as a normal backpack. It has an interesting selling point that will encourage the users to buy this because you can use it for longer time.

- **Concept 2:** the idea has the same challenge and similar concerns than concept 3. They question the harness safety and how to carry it in a good way. It has many features and they see an issue on the relevance of bringing a carrier with you.
- **Concept 3:** least like because of safety reasons. It is the most complicated concept. It needs to be considered the belt or harness when taking the product out. It is still a valuable idea but Thule will not dare to go in this direction because there are many regulations considering safety (especially in car seats) that will make the development of the product very complex.

The most preferred concept was number 1 and the least number 3. The company opinion was crucial in the concept selection. Concept one was selected to continue further on. The project will continue focusing mostly on the back part of the backpack, handles and the carrier, without emphasizing too much on the actual backpack, otherwise it will be too broad project for one person. The challenge is the harness, so attention to ergonomics will be crucial to reach a good result. A few more relevant comments on the concept were:

- Should the user always use the carrier with the backpack? Can the user use the carrier without the backpack?
- Can the baby seat on the shoulders on top of the backpack? Will this add another dimension to the concept?

The company will start looking for a patent research to try to protect the idea. They have never seen anything like this in the market or in the case that there is already something they did not have enough economic power to be recognize. The only similar thing is called Carus made by Diono. However, the story they sell is the opposite and the user behaviour are different. This product is an urban carrier that allows to attach a small bag to it. The concept for this project will be a proper backpack that allows to attach a child carrier. Thule thinks this is a better way and is more logical than Diono solution.



Figure 55, Diono solution

4.8 Secondary research – Iteration II

4.8.1 Thule products analysis

The picture below shows the changing bags that Thule sells today as stroller accessories. One is located in the bottom of the stroller to provide more stability rather than placing it on the stroller handle. The other one is meant to be carry by the user.

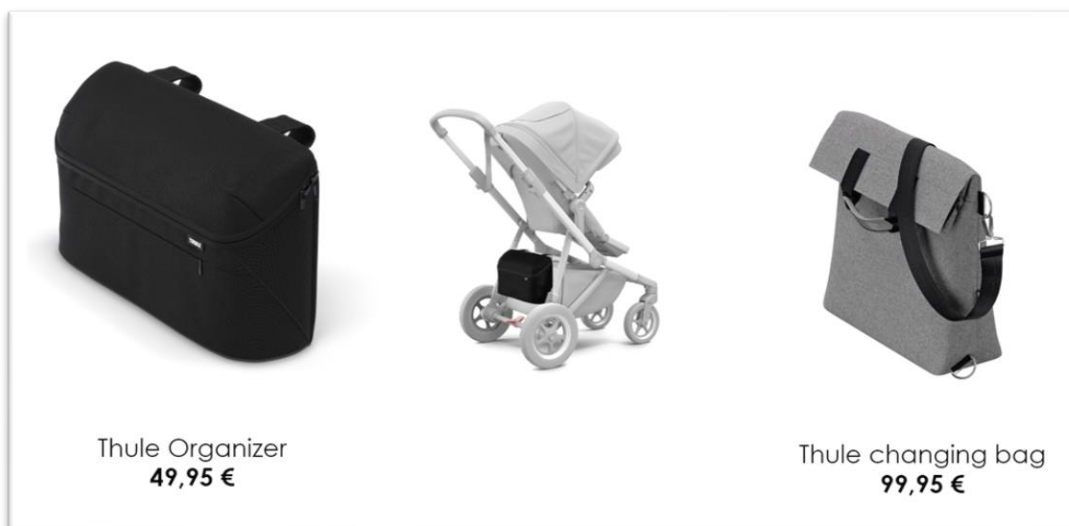


Figure 56, Thule changing bags

The inspiration for the project was taken by looking Thule backpack portfolio. The products line of Thule carry-on luggage was the most relevant to study. The bag collection Thule Spira and its aesthetic match perfectly with the urban look for the concept.

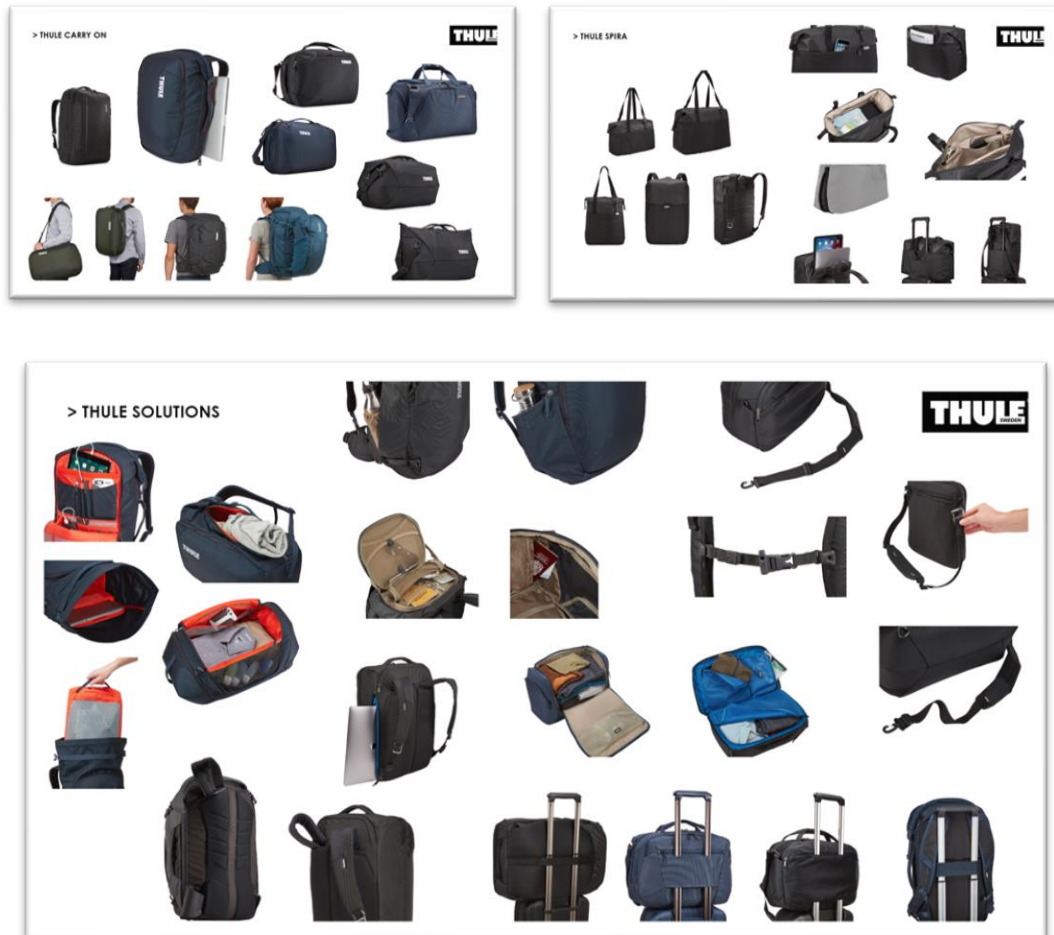


Figure 57, Thule backpacks solutions

4.8.1 Travelling with babies

What kind of luggage you need to carry? The most common is to check in: car seat, stroller and a big suitcase. Apart from that normally the user carries a personal bag and a carry-on luggage. It is not mandatory to check in the stroller, you can carry it until the boarding door and then they will put it in the aircraft hold. However, going through the security check without the stroller is a lot easier. [40]

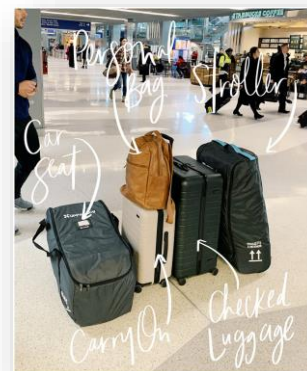


Figure 58, Luggage [40]

What to bring in the personal bag when travelling? The first picture is Hopopower Multi-Functional Diaper Bag (30\$) and it is one of the solutions most like to travel with between parents. The last bag is JoJo bag made by Paperclip (140 \$) and it has a smart solution that includes a changing mat in the back part of the bag.



Figure 59, What to carry? Where to carry?

Airport regulations? Some relevant regulations were found in Norwegian airplane company and Aena webpage (State trading company that manages Spanish airports).

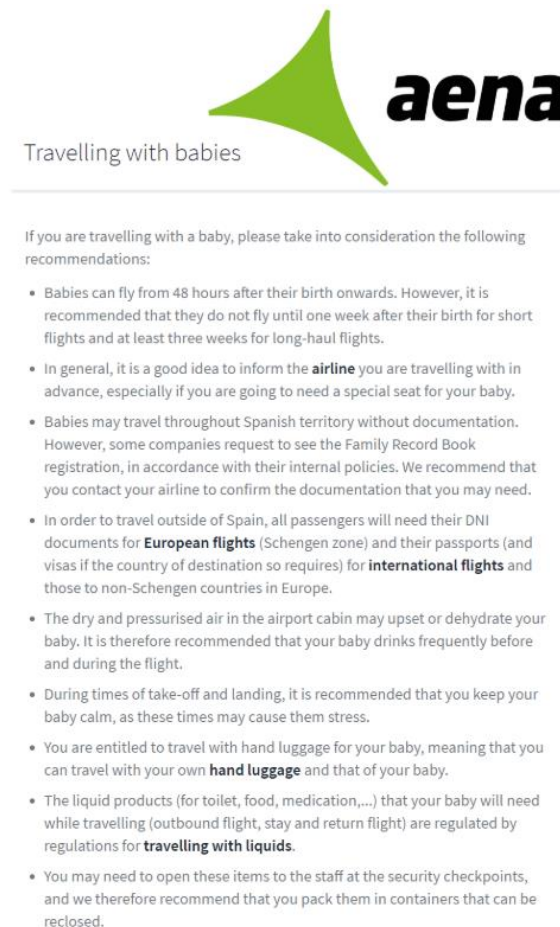


Figure 60, AENA [41]

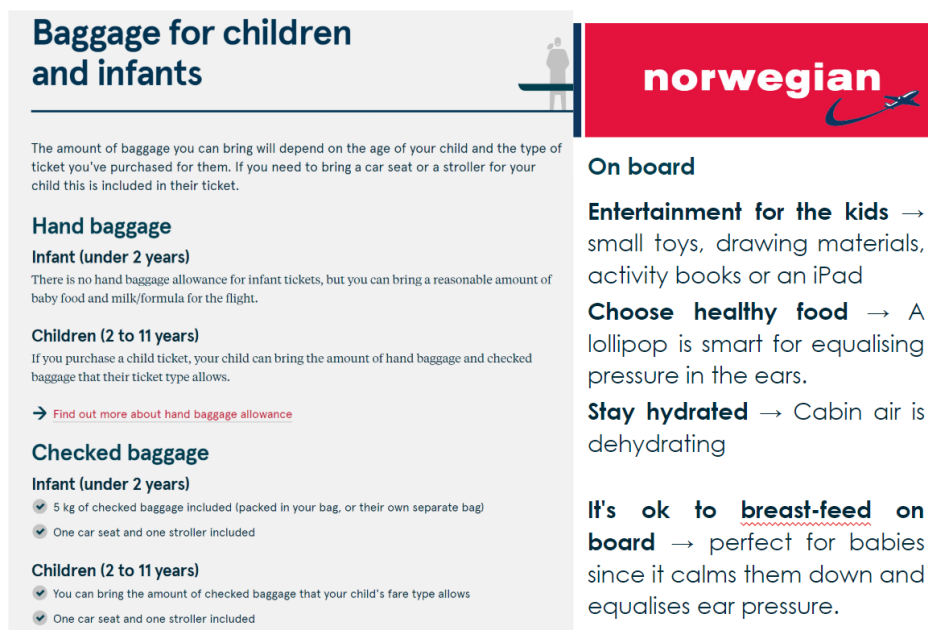


Figure 61, Norwegian [42]

4.8.1 Try it yourself

In order to have a better understanding of the product, two second hand baby carriers were acquired through Facebook Market and Blocket. Moreover, an interview was made to the owners. These two baby carriers are considered “hip-healthy” by the International Hip Dysplasia Institute.



Figure 62, Baby Björn [43]

- **Baby Björn Baby Carrier MOVE [43]**
 - 0 – 15 months
 - min 3,2 kg/53 cm, max 12 kg/85 cm
 - Carry facing in or facing out on your front
 - Easy to adjust the width of the seat area
 - Proper support for the back, legs and hips
 - Easy to put on and take off
 - Dries quickly after washing
 - Easy to lift out a sleeping baby
 - Suitable from new born and adapts to your growing baby
 - Sturdy, adjustable head and neck support
 - You keep your hands free
 - Bag include in the carrier

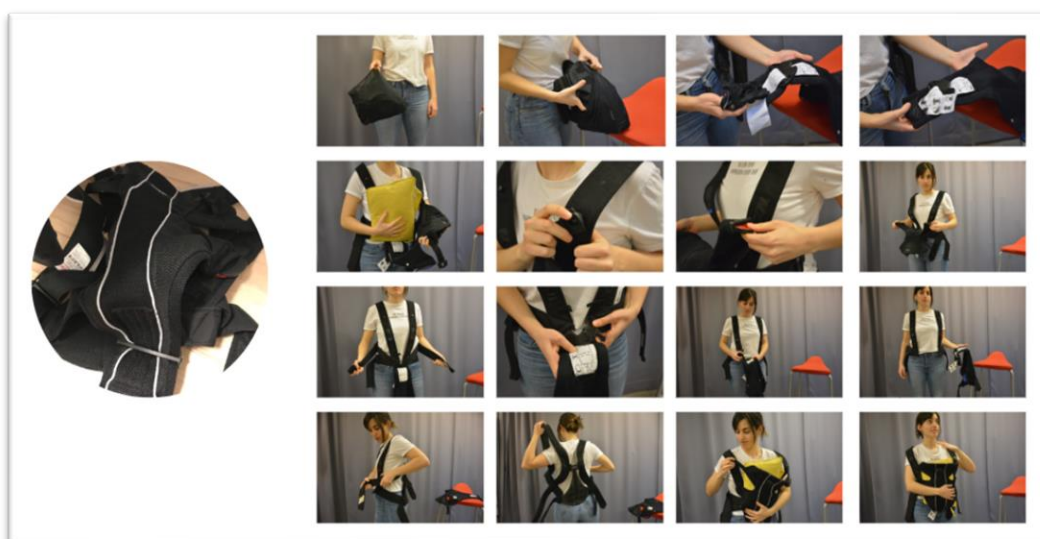


Figure 63, Trying Baby Björn

The overall experience when using this baby carrier was good and it was very intuitive to use. The different connections were differentiated by using colours and shapes and it has useful instructions attached to it in case you cannot guess how to use it.



Figure 64, Ergobaby [44]

- **Ergobaby Original Carrier [44]**

- Comfortable and convenient
- Big storage pocket
- Padded shoulder straps for long-wearing comfort
- Lumbar support for extra back comfort as your baby grows
- Great for older babies, beginning around 4 months
- 5,5 kg-20 kg
- Machine washable
- Breastfeed in carrier
- Multi-position: front carry, hip carry and back carry.

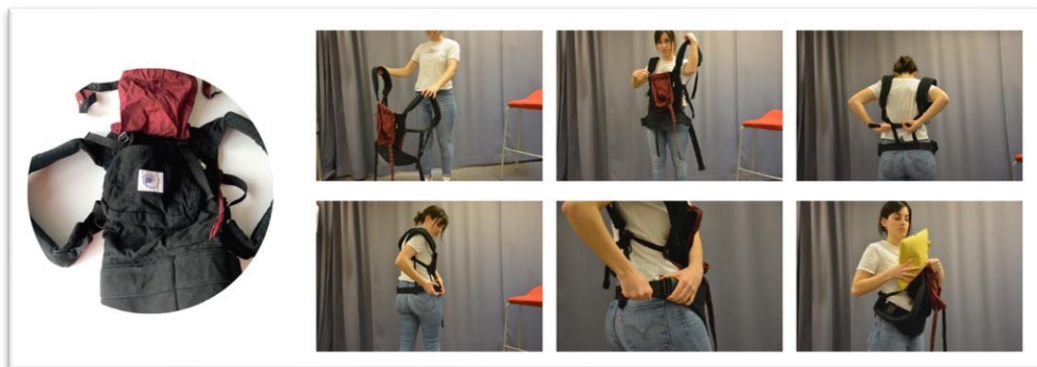


Figure 65, Trying Ergobaby

The product looks and feels tough and comfortable. The pocket on the carrier is a great idea. However, the other one is a better solution because it allows different baby position and the user can use it for longer time.

4.8.1 Interview

Some questions were asked to the owners of the carriers commented on the previous section. One of them was via mail and the other one was in person. These were the questions:

- How long did you use the carrier for?
 - Baby Björn: 0-2 years (with our 3 kids)
 - Ergo baby: 6 months (with 2 kids) After that I bought another carrier that I could put the baby on front and facing out.
- For what did you use the carrier most of the times?
 - Baby Björn: It depends on the baby's age. In the beginning we use it at home. Later we using it for traveling.
 - Ergo baby: I used it most of the time at home while cooking, cleaning or playing with my older kid.
- Have you ever travelled by plane or train with a baby? Did you use a carrier, a stroller or both? How was the experience?
 - Baby Björn: Both train and plane. We always use both during traveling. It's very convenient to use the carrier when you are not allowed to use the stroller.
 - Ergo baby: I have never travelled with kids by plane neither train but in that case, I will use a carrier.
- When you use the baby carrier, do you normally need to carry other objects? Are you able to carry a backpack and a carrier?
 - Baby Björn: Yes, when we used the carrier we use to have hand luggage and nursery bag with us. At home we use it and did cooking or other things in home.
 - Ergo baby: Normally I stay home but if I go out I will carry a bag and my husband the carrier. It is very uncomfortable or not even possible to wear the handles of the backpack and the carrier harness at the same time.

- What was the thing you like the most of your baby carrier? And the worst?
 - Baby Björn: It's thin and light and easy to fold it into the "ball". Worst: take time to fold up.
 - Ergo baby: I like it a lot cause my baby loved being in the carrier and it was very nice to have him close to me. The baby was very comfortable in this position. I liked the stiffness of the carrier. The worst is that is too heavy.

4.9 Ideate – Iteration II

4.9.1 Mood-board

To find some inspiration in the process a mood board was created. It shows the expectations that wants to be stated in the final concept.



Figure 66, Moodboard

4.9.1 Exploring solutions

A series of questions were asked on the initial concept and explored with different solutions that later on will be judge.

Baby travelling bag & carrier

3 positions:
On the stroller
Backpack
Bag & carrier

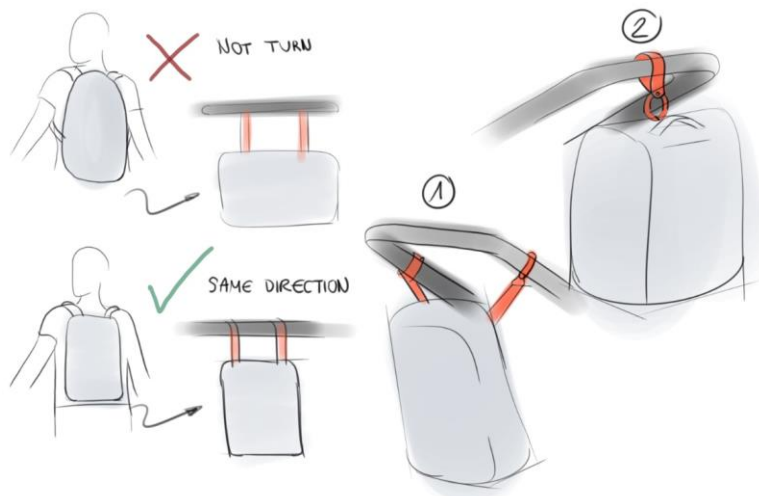
Carry-on bag

Organized

Travelling with
children have never
been so easy.

1. How to place it in the stroller?
2. Versatile carry options. How to easily convert it from shoulder bag to backpack? Take away straps when not in use.
3. How to attach a baby carrier to it? Where do I place it when not using it?
4. How to carry the baby? In the back? In the front facing you or not?
5. Do they need changing mat? Could this also be the carrier?
6. Multi-purpose compartments. Inside and outside pockets.
7. Baby products and parents products (currency, electronics and everyday essentials...)
8. Safeguard and securely transport.

How to place it in the stroller? And as a backpack? Shape



How to easily convert it from shoulder bag to backpack?

1



2



Figure 67, Exploring I

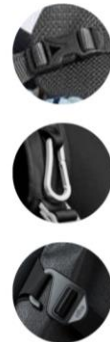
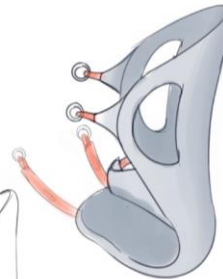
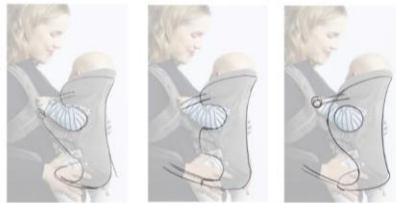
Backpack style? How to arrange inside?

Open completely
One side electronics and documents
On the other side the rest
Small bags you can take in-out easily
Termic compartment? Cold-warm



How to attach a baby carrier? Where to place when not in use?

Small pocket on the back
(Phone, passport or travel ticket)



From backpack & stroller....

...to backpack & carrier



Figure 68, Exploring II

4.9.1 Be your costumer/client

With the aim of exploring how the concept would look like, the role of the user was embraced. This method was conducted through the combination of a stroller, a normal backpack and a baby carrier without the harness. By this first-hand experience, an understanding of what real costumers will feel was reach. It was helpful to imagine how will it be possible and which would be the best way to attach the carrier to the backpack and the backpack to the stroller.

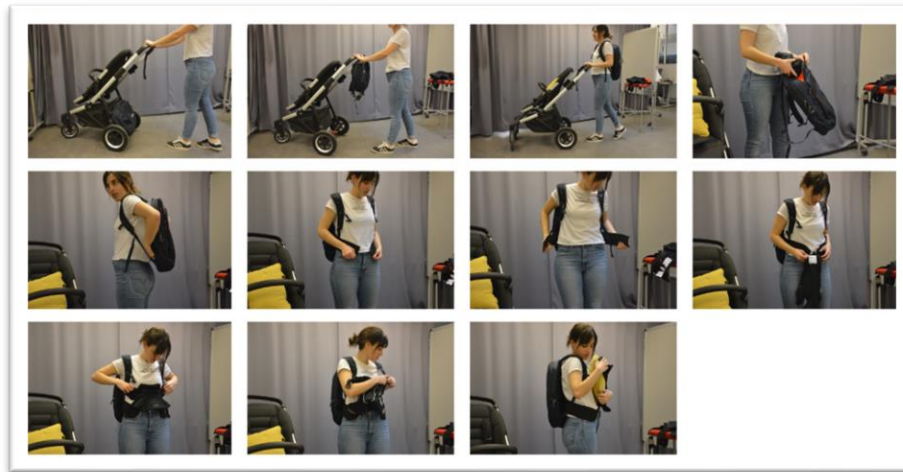


Figure 69, Exploring III

4.9.2 Mock-ups

By doing mock-ups, was a better method than just sketching the shape on paper. This helped a lot to visualize the real dimensions of the product, test the tight ergonomics of it and finally reach a better understanding. Building different solutions for the different problems will make easier to pick the right selection for the final concept.



Figure 70, Mock-ups I

Making patterns, cutting fabrics and sewing were the main actions. Thule provide all the necessary material for the mock-ups and for the future prototype (one stroller, backpacks, small components from their workshop, fabric, padding...) In the figure below the process is shown, from a sketch to the mock-up and the final evolution of the pattern.



Figure 71, Mock-ups II

The main points to focus on the carrier, apart from the ergonomic and aesthetic shape, are the connection of the carrier to the backpack and the length regulation of the carrier. In the picture below, the first row is a mock-up without padding and the second has padding inside. In the first column the inside part of both mock-ups is shown, the part which the baby is in contact with. In the second column the outside part of both mock-ups is shown. Different babies with different dimension can sit on this carrier therefore a component for this regulation is needed. It was done firstly with cardboard and after 3d printed.

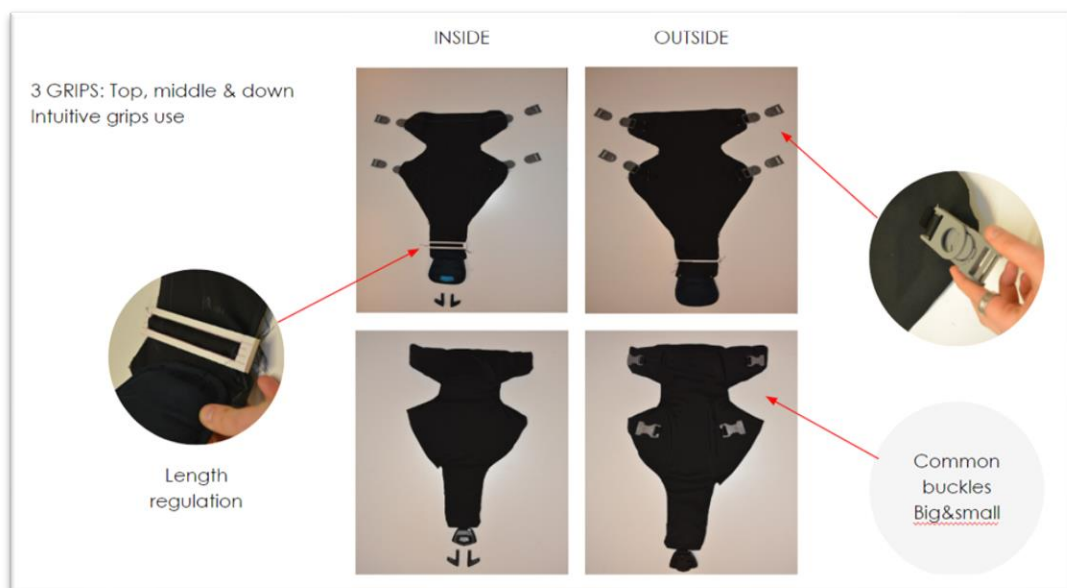


Figure 72, Mock-ups III

For the backpack mock-up, Thule gave an old unfinish prototype backpack. It was to play around with it, cutting it, changing and adding parts to be able to connect the carrier to the backpack. The main focus was the back side of the bag and the handles.

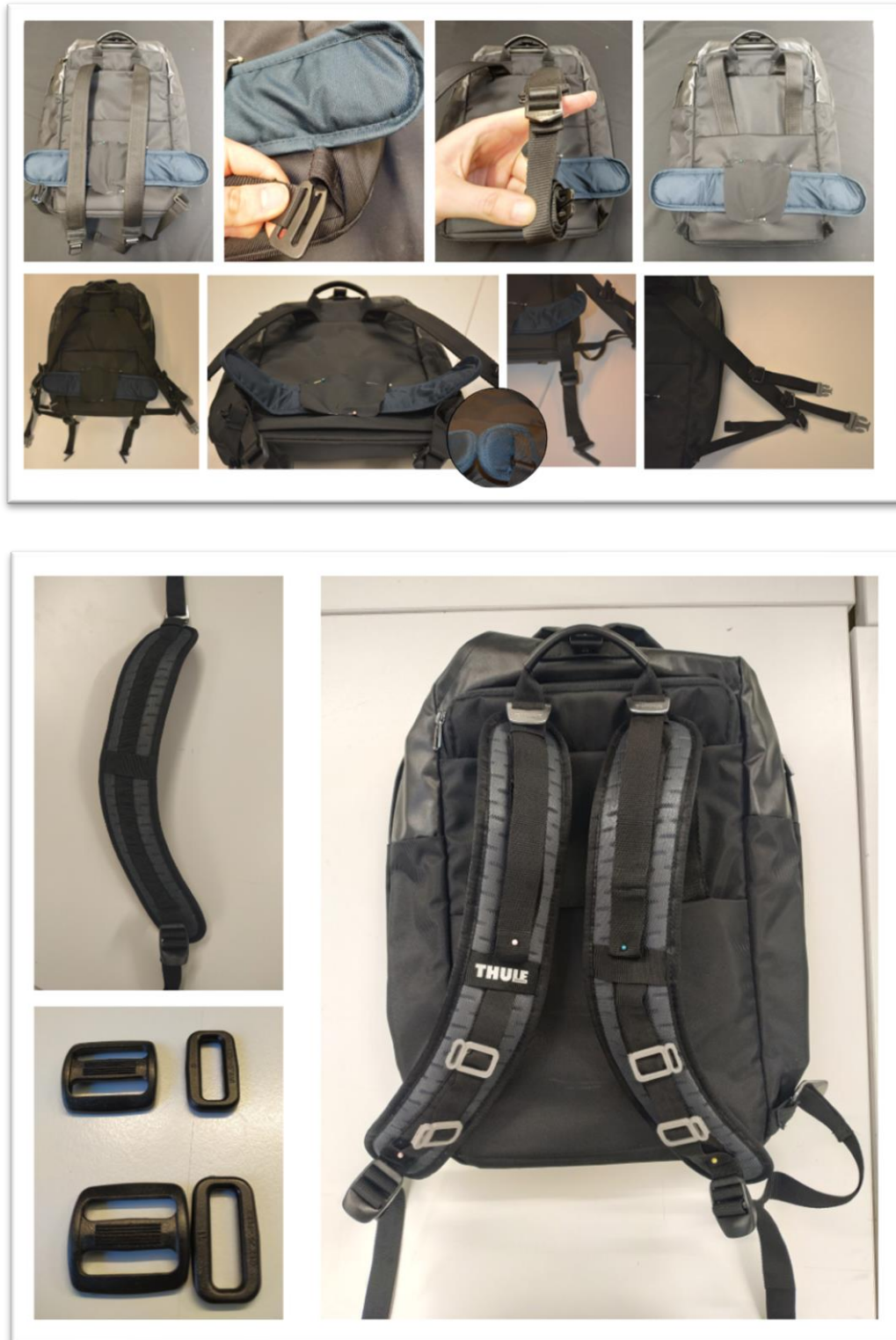


Figure 73, Mock-ups IV

4.9.3 Rapid prototyping

For the small connections that were not made with fabrics this method was implemented. To validate different aspects and design choices, 3D-printing was used after the CAD-modelling in SolidWorks. Few iterations were made until reaching an optimal one.

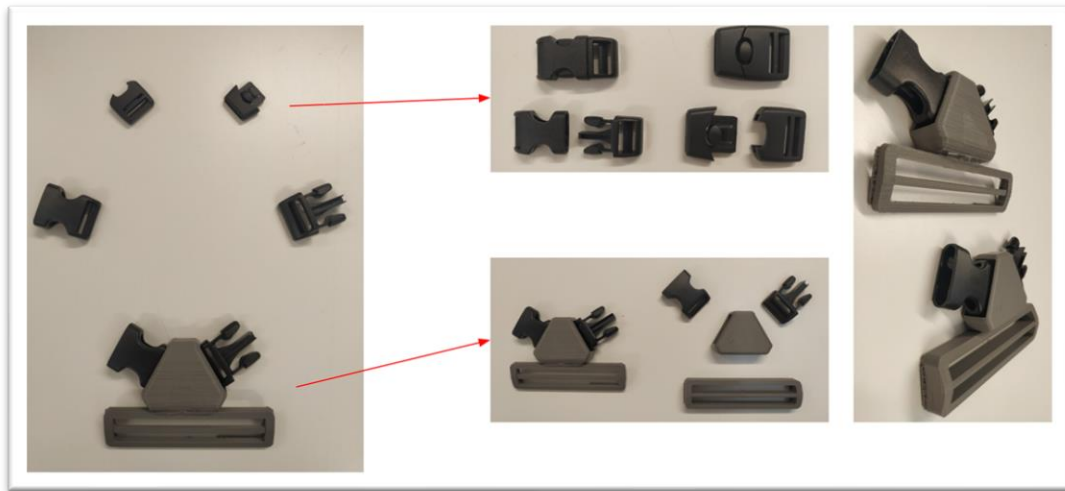


Figure 74, Rapid prototyping I

Moreover, as it is a broad project and due the time limit, there was not enough time to build a backpack so different mash-up made in photoshop were done to see how the backpack can look like. The mash- up was done by mixing parts of different existing Thule backpacks.



Figure 75, Photoshop mash-up

4.9.4 Test

In order to test the mock-ups Thule, provide some realistic mannequins:

- Smaller – representing ca. 6-month, 60 cm tall
- Bigger – representing ca. 1 year of age, 75 cm tall

The one used was the smaller one due to the target group.



Figure 76, Mannequins



Figure 77, Mock-up test

4.9.5 Expert interview – feedback session V

Since the last feedback session till these one, there was three skype meetings. These meetings were carried out via Skype due to the COVID situation. Their overall impression of the work done was positive. Some reflections of the concept were commented and some topics were suggested to reflect before doing the final prototype.

- Where should be the storage for the carrier? A specific pocket for it? Should it be place outside and be part of the aesthetic of the backpack?
- Can the carrier be in the washing machine?
- Safe perception. What it is the perception of the product when the user look at it? Should it look safe or just be safe? This question is related with the main lower button. At the beginning the same fastener that they are using in the strollers seat, was reuse. However this one is a click button and the user might think that it can be deactivated with a bump (actually this will never happen but it is the perception of it). On the contrary, the perception of the buckle solution is better, it looks safer and is trustworthy.
- Hole safety aspects. Avoid getting the kid fingers somewhere. The holes should be bigger than 12 mm or smaller than 5 mm.
- Should all the connections in the handle be detachable or fixed? This depends on the purpose of the concept and its later use.
- How to place it the stroller? Stability? On the stroller handle? On the lower part?



Figure 78, Mock-up place in the stroller

4.10 Prototype

The main materials used for the prototype were: padding, net fabric, black thin fabric and black thick fabric. In addition, it was used, straps, buckles and 3D print parts.



Figure 79, Materials



Figure 80, Prototyping

How the prototype was built:

- Sewing together two exactly same parts of the net fabric, leaving a side without sewing. After, turning it inside out.
- Before turning inside out sewing thicker black fabric in the four corners. After turning it out, these parts stayed outside.
- Placing padding inside the four corners and sewing the corners of the four sides.
- Placing the four buckles with their straps, inside the pocket and after sewing to fixed them.

- Sewing split lines in the carrier so is easier to fold it and also there are not that many wrinkles.
- At the end flattening the fabrics with the iron.
- The handles of the backpack were cut and they were replaced for new stronger ones. They are placed in a way that they are detachable.
- Adding two straps in both handles for adding four slides. This way the user will be able to adapt the high of the buckles.
- Sewing Velcro in the back part to attach the hip belt.



Figure 81, Building carrier



Figure 82, Carrier and backpack

- The four slides of the handles and the main connection of the carrier was built in SolidWorks and print them in 3D.
- The slides parts process was: printing, sanding, priming and painting.
- The process of the main connection was a bit different. The part is divided in four: two normal buckles, the triangle and the lower part. Everything was inserted together and join with putti. After that: sanding, priming, painting and placing sticker.

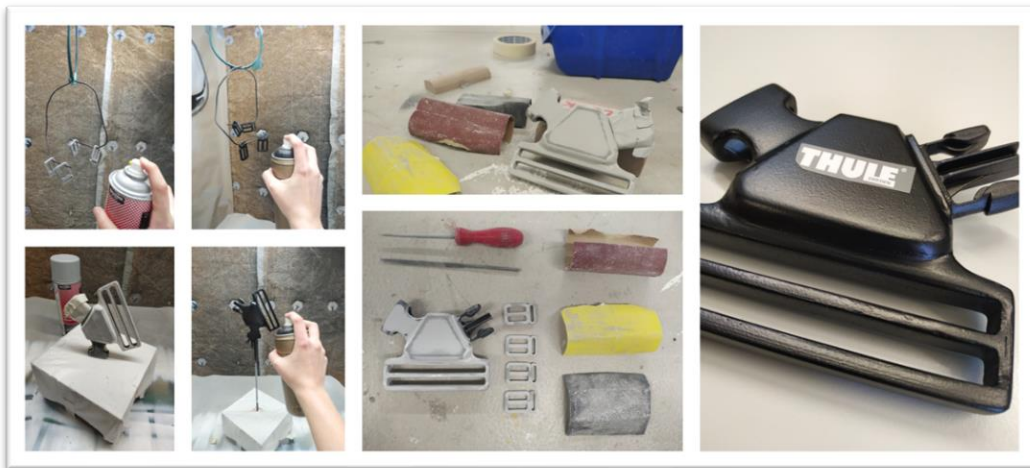


Figure 83, 3D print parts. Sanding and painting



Figure 84, Hip belt

5 Result

In this chapter the final concept design will be explained along with presentation images of the final physical model.



Figure 85, Introducing Thule Cariño I

Thule Cariño is a new concept solution for easier travelling with babies in urban cities, improving parents' lifestyles when they can't use a baby stroller. The product consists of a diaper backpack with a baby carrier attachment. The bag has three different configurations: in the stroller, as a backpack and a bag plus carrier. Usually the life time of baby carrier products is quite short because babies grow up quickly. However, one of the main benefits of this solution is that after approximately six months, when the baby is too heavy to carry, you can still use the product as a normal backpack.

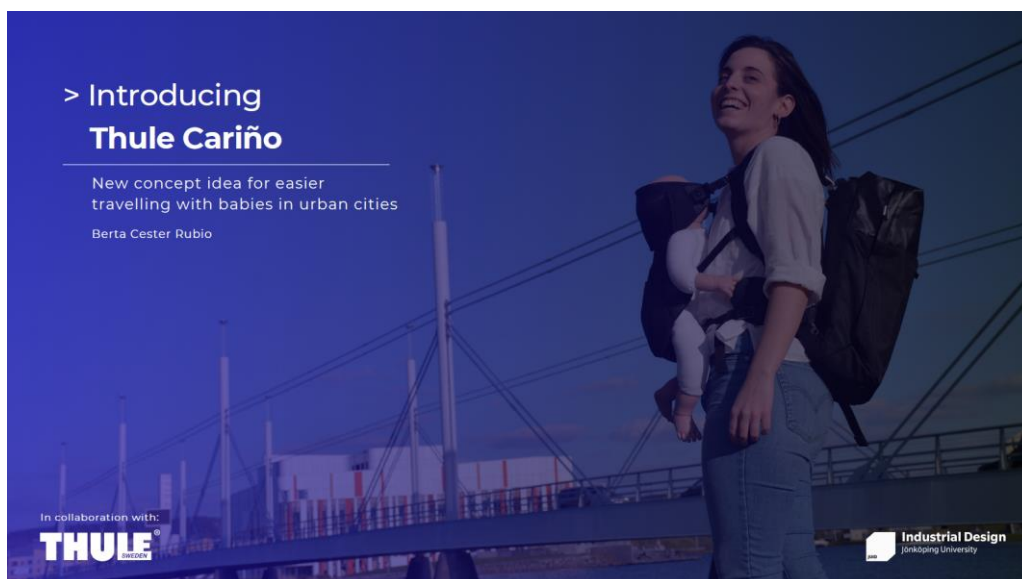


Figure 86, Introducing Thule Cariño II

5.1 Components

The product consists on a diaper backpack, where parents can bring all their belongings as well as their baby's items, organized in an efficient way.



Figure 87, Product specifications

The backpack has a hip support and strong handles to increase the comfort of the user. It has a side and two front pockets for easy access to it so while the user is carrying the baby can reach these compartments. A specific pocket, in the front, is reserved for storing the baby carrier attachment. The backpack has a zipper all around, so the user is able to fully open it, same way as a suitcase. This way the user will open the bag completely and will have a clear overview of what is inside to organize the content better. The user can have access to the inside without opening the zipper completely in the same way as normal backpacks.

The baby carrier is made out of two different fabrics, with padding reinforcement in the corners to increase the strength of the product. The carrier is built mainly with a net fabric that provides breathability, avoiding both users sweating.

How the carrier is connected to the backpack? The carrier has six fasteners, two on top, two in the middle and two in one at the bottom. In the left side male buckles and the right-side female buckles. The handles of the backpack have four fasteners, two male buckles on the right side and two female buckles on the left side. The other two buckles are located lower in the hip support. This way the user can attach the carrier to the backpack but also when not using the carrier, the user can close the slides around him for support.



Figure 88, Prototype I



Figure 89, Prototype II



Figure 90, Prototype III

5.2 Configurations

Thule Cariño has three different configurations. The user can use it as a diaper bag hanging on the stroller or carrying it as a backpack. Once the user finds obstacles in the way and is not able to use a stroller, the backpack allows to attach a carrier in order to carry the baby with you and having the hands free. While carrying the baby there are two possibilities, facing in and facing out. When facing out, the top part of the carrier can be folded so it does not disturb the baby view.



Figure 91, Configurations I



Figure 92, Configurations II



Figure 93, Configurations III

5.3 Ergonomic aspects

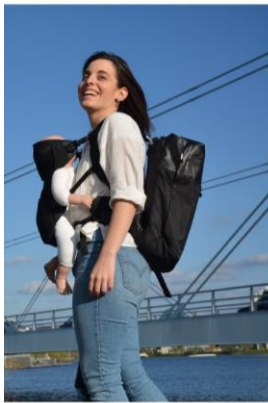
Thule Cariño is ergonomically designed to be intuitive to use and to provide health, comfort and efficiency.

- Carrier with air mesh fabric improving airflow and with three-point-adjustment.
- Adjustable shoulder straps and hip belt.
- Lumbar support.
- Weight distributed evenly without pressure points.
- Padded shoulder straps and main points.
- The carrier allows baby legs to spread and the hip is in a stable position.
- Baby in M-position when facing in.
- The size of the baby always matches the carrier size, thanks to the adjustability of the seat area.
- Appropriate for a new-born and adapt the growth of the baby.
- Easy to lift, to put and take off.
- Adjustable head and neck support.
- Washable carrier.
- Intuitive use of the connections. Differentiating connections based on their shape and size.

5.4 Aesthetics

The aesthetics on this project are highly driven by the ergonomics and the function of the product. These two main aspects are the ones that shape the form of the product. This way the result is achieved, is a functional tool of a high performance and comprehensibility with focus on the well execution and keeping the product functional and useful. Moreover, materials and details were thought to follow Thule's brand language: minimal product, blend of different fabrics, dark colours, clean lines, angles and chamfers. Thule Cariño bring active life securely, safely and in style.

ACTIVE LIFE



SAFE



LONG LASTING



EASY TO USE

THULE*Figure 94, Aesthetics*

6 Conclusion and discussion

6.1 Design process

The Bootcamp Bootleg methodology was implemented in the process. At the beginning of the project it was followed strictly. However, while the project progress I had to make many iterations, going back and forward on the process and I end up applying the methodology in a more flexible way trying to fit better with the situation. Sometimes it is not enough to implement design thinking methodologies in your process, it is needed to adapt them to the specific project needs.

It should also be noted that the project was quite broad at the beginning and there was not a defined direction to work with. The advantage of this was that I had a lot of freedom to create and to pick the direction I felt best. The negative side of it, is that it takes a lot of time to research and find a market niche. It was very helpful to work with a company with experience in the field that could advise me wisely during the process.

6.2 Findings

How can Thule adapt their designs for the southern European market (Spain)?

What are the problems, opportunities and emerging trends in the "active with kids" market?

How the stroller use experience can be improve through their accessories?

Thule Group is a world leader brand developing products that make it easy for people to bring their active life securely, safely and in style, under their motto "Active Life, Simplified". They are now looking at how to enter the southern Europe market within the active with kids' products range.

The goal of the project was to improve parental active experience in metropolitan areas concerning strollers or their accessories, focusing in Southern Europe market (Spain).

Spanish design is quite new and there are no clear guidelines for it, however it is very influenced by its culture, its environment and its people. After the economic crisis and the weak recovery, Spain is betting on innovation, sustainability, equality and diversity, to boost the economy and society. The seeking of alternatives to live in a more sustainable way in Spanish cities and the search of a prosperous and inclusive economy, is winning.

Today we live in an era in which the existence of products is abusive. The user is no longer interested in products that do not correctly meet their needs. The products that succeed are those that are designed to solve a need. To be competitive in today's market it is crucial to understand users and trends.

Nowadays we live in a crowded society that moves and grows really fast. Population in southern Europe tends to live in condensed areas and mobility is increasing more and more. Specifically, Spain has more than 50 metropolitan areas and about 80% of the Spanish population lives in one of them. They are starting to forbid car driving in the centre of big cities, the use of public transport is increasing and sustainable solutions are preferred.

How all these facts affect the use of strollers? Parents with active lives and living in metropolitan areas face many situations where using the stroller is not possible, like in public transport, flying, shopping or in crowded spaces, stairs, kerbs and other obstacles.

Thule Cariño is a diaper backpack with a baby carrier attachment. This new solution promotes easier travelling with babies in urban cities, improving parents' lifestyles when they can't use a baby stroller. The project application in the stroller use experience will result in an improvement in the quality of parents' daily life.

6.3 Further development

Due to the time frame there came a time when I had to stop developing and improving the concept. After analysing the finish product, there can be some improvements in order to implement the results of the project in a production stage:

- Evaluating possibilities of creating a prototype in a textile focus software like Clo 3D or Marvelous.
- Working on the inside design of the diaper backpack.
- Redesign the bottom connection and its length regulation functionality, to become more aesthetic and effective.

6.4 Time management

The Gantt-schedule was followed as planned until the final concept was selected and the mock-ups stage started. I was not able to keep up with the Gantt-schedule that I created. Up to the point of the mid-presentation, I felt

that I was about as I had planned. The thing that really set me back was the COVID situation when it was time to start the prototype and test stages. Exploring and testing solutions took more time than expected. I wanted to make sure that I had explored as many solutions as possible. Moreover, I have to mention that the main factor that delay my project was my lack of knowledge at the beginning about fabrics, sewing and textile cad software. First, I had to learn how to work with fabrics and how to use a sewing machine, because it was the first time in my life working in this field. Also, I learn the basics of Clo 3D, but to do the final product in this software requires more learning time. These factors delayed my project almost two weeks.

Planning this project under this COVID situation was much harder than it has been before, but this is one of those experience in life that you have to learn by trial and error. Also, despite the difficult times we are all going through I think I'm proud of myself that I could reorganize everything and succeed to finish on time as it was planned at the beginning.

A great learning lesson during this M.Sc. has been that no matter how many obstacles there are in the way that with a good organization everything is possible.

6.5 Conclusion

The goal of this project has been successfully achieved. The company is satisfied with the result and I also feel content. It was a great opportunity and experience to work in collaboration with an experienced company like Thule. Both sides got enriched, they got more knowledge of the Spanish market and great new concept ideas to expand their portfolio. It was a big project, in terms of the factors and details to consider, research, ergonomics, prototype, etc.

Overall, I learned a lot and I realise all the work there is behind a product specially with so complex ergonomic and use factors, that require time of study, reflection and patience. I am really glad that I had the chance to be involve in the textile industry and learn new skills like hand work and sewing.

I am grateful I had the chance to meet and collaborate with the great people from Thule Hillerstorp. Thanks to my classmates for sharing this rewarding experience and supporting me till the end.

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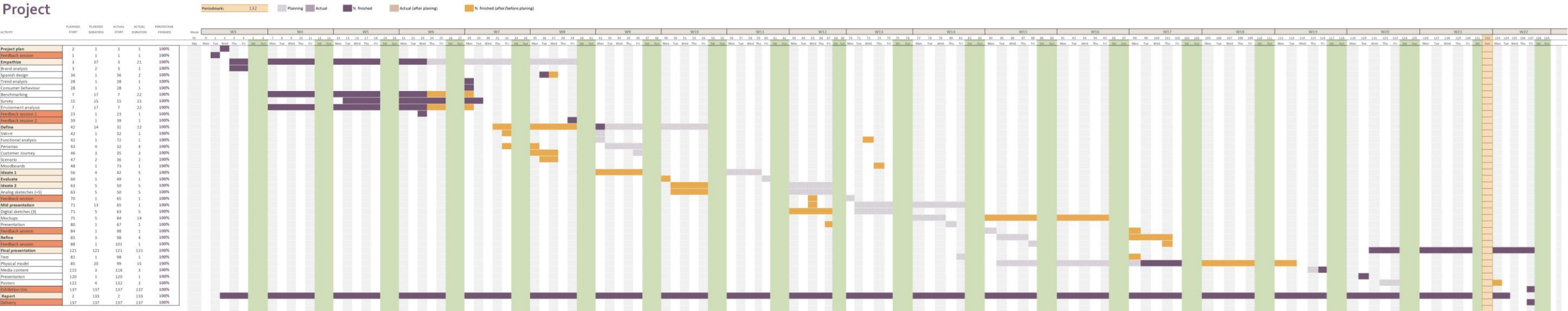
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8 Appendices

8.1 Appendix I – Gantt schedule



8.2 Appendix II – Competitor product analysis

> BUGABOO - STROLLERS



Product selection for Bugaboo strollers, featuring the Fox and Bee models.


Fox
From € 1.149

Bee
From € 949

Icons representing features: All-terrain, Power steering, Strong yet light, Ultimate comfort, Advanced suspension, Ultimate city comfort, One-piece fold, Top maneuverability.



> BUGABOO - ACCESSORIES



Product selection for Bugaboo accessories, including sun canopies, cup holders, changing mats, baby cocoons, smartphone holders, car seats, rain covers, and self stands.

Bee 5 sun canopy
★★★★★ (17) € 89,95

Donkey 2 style set complete
★★★★★ (17) € 499,95

Cup holder
★★★★★ (17) € 24,95

Changing mat
★★★★★ (17) € 15,95

Bee 5 baby cocoon
★★★★★ (17) € 99,95

Smartphone holder
★★★★★ (17) € 34,95

Turtle by nuna car seat
★★★★★ (17) € 229,95

Turtle by nuna iofix base
★★★★★ (17) € 139,95

Fox/cameleon 3 breezy sun canopy
★★★★★ (17) € 89,95

Comfort wheeled board
★★★★★ (17) € 199,95

Bee 5 baby cocoon
★★★★★ (17) € 109,95

Parasol
★★★★★ (17) € 49,95

Bee 5 high performance raincover
★★★★★ (17) € 99,95

Bee 5 tray
★★★★★ (17) € 49,95

Ant raincover
★★★★★ (17) € 29,95

Bee 5 self stand extension
★★★★★ (17) € 24,95



> JANE - STROLLERS

THULE
STROLLERS**Muum**
€659

Water protector



Reversible seat



Front suspension



Easy and compact folding



Adjustable height of the handlebar



3 positions of the seat



Waterproof



Protects from the wind



Breathable



Anti UV

Crosswalk
€799

Water protector



Reversible seat



Big nest for storage



Easy and compact folding



Adjustable height of the handlebar



3 positions of the seat



Waterproof



Protects from the wind



Breathable



Anti UV

JANE

> JANE - ACCESSORIES

THULE
ACCESSORIES

See product >



See product >



See product >



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JANE

> CHICCO - STROLLERS



>BEST SELLER

London
€90



Umbrella
folding



Reclining
seat



Water
protector

>OTHER



Kwik.one
€359



Miinimo3
€227



Echo
€119



> CHICCO - ACCESSORIES



Net bag
€9



Umbrella
€26



Insects net
€10



Universal bag
€69



Universal hook
€6,9



Rubber wheel kit
€54



Toybar
€18



Child's tray
€27



Cup holder
€14



Breathable mattress
€26



Car seat travel bag
€90



Bag
€69



> MACLAREN - STROLLERS



>BEST SELLER

**Maclaren
Quest**
200 €
Weight clearance:
0 - 25 kg
Weight:
4-25 kg


30 x 34 x 111.5 cm

+0m

SUITABLE FOR:
Newborn & Up
0 - 5 years old

SEAT POSITION:
4 RECLINE POSITIONS

>OTHER



QUEST WINTER STYLE SET BLACK

PERFECT MATCHINGS

POPULAR ITEM \$200.00



TWIN TECHNO

BUILT FOR DUAL COMFORT AND PERFORMANCE

POPULAR ITEM \$495.00



SHARK BUGGY

DANGEROUSLY CUTE

\$175.00



> MACLAREN - ACCESSORIES



SPECIALTY LINERS

Two Extra Premium Interiors

\$19.00



FALL/WINTER LINERS

Two Extra Premium Interiors

\$19.00



CUPHOLDERS

Set and Straps, in One

\$19.00



UNIVERSAL ORGANIZER

Holds everything inside the stroller without spilling

\$19.00



UNIVERSAL FOOTREST

Provides continuous motion for better weight of seat

POPULAR ITEM \$19.00



BABY BLANKET

Let soft on your baby

POPULAR ITEM \$19.00



REVERSIBLE BUGGY BLANKET

Works in stroller and basket

\$19.00



LARGE ZIPPERED BAG

Two Item on the way to the store

\$19.00



INFANT BABY SUPPORT

Protects your baby's head

\$19.00



ADJUSTABLE STROLLER LINERS

Protects your baby's head

\$19.00



REMOVABLE STORAGE LINERS

Protects your baby's head

\$19.00



REMOVABLE LINERS

Protects your baby's head

\$19.00



MESSENGER BAG

A Daily Messenger

\$19.00



BACKPACK

A bag for everything you need

\$19.00



8.3 Appendix III – Survey

Link to the survey: <https://www.surveygizmo.eu/s3/90208928/Product-Feedback-Survey>

The survey was launched in Spain and due to this the language is in spanish. The english translation is shown below.

Encuesta de usabilidad de carritos de bebé en España



Hola! Somos dos estudiantes haciendo nuestro proyecto fin de máster relacionado con niños y carritos de bebé. La encuesta se está realizando en colaboración con Thule Sweden AB, con el propósito de crear una solución innovadora. El objetivo de este cuestionario es saber cómo los padres y madres usan los carritos de bebé y esto nos ayudará a mejorar su experiencia.

Sería de gran ayuda si nos pudieran responder a estas preguntas, no les llevará más de 5 minutos. Sus respuestas son completamente anónimas y permanecerán confidenciales. Durante la encuesta en todo momento se puede volver hacia atrás, pulsando la flecha, para cambiar tus respuestas.

Si tiene cualquier pregunta, no dude en contactar con - cebe18lv@student.ju.se. Muchas gracias por su colaboración.

Pulsa la flecha para empezar :)

Next

0%

1. Sexo *

- ☐ Mujer
☐ Hombre
☐ Prefiero no decirlo

2. Edad *

- ☐ menos de 20
☐ 20-24
☐ 25-29
☐ 30-34
☐ 35-39
☐ 40
☐ más de 40

3. ¿Cuántos hijos tiene? *

- ☐ 0
☐ 1
☐ 2
☐ 3
☐ más de 3

4. ¿Cuántos carritos de bebé tiene? *

- ☐ 0
☐ 1
☐ 2
☐ 3
☐ 4
☐ más de 4

5. ¿Cómo los ha adquirido? *

- ☐ Compré uno nuevo
☐ Compré uno de segunda mano
☐ Lo alquile
☐ Me lo prestaron
☐ Fue un regalo

6. ¿Qué marcas ha usado? *

- ☐ Bugaboo
☐ Jané
☐ Chicco
☐ Thule
☐ Maclaren
☐ Cybex
☐ Babyzen yoyo
☐ Otro

Back Next

7. ¿Qué tipo de carrito tiene o tuvo?

Si no tiene ninguno de estos deje en comentarios qué tipo de carrito tiene *



Carrito multideporte - carrito para diferentes actividades como andar, usarlo con la bici o esquiar



Carrito para correr - carrito diseñado para usarlo mientras se corre



Carrito clásico - carrito que además permite acoplar el asiento del coche y el capazo



Carrito urbano/ligero - silla de paseo compacta, ligera y cómoda



Carrito de viaje - muy compacto compatible con el tamaño de cabina para viajar en avión



Carrito gemelar - carrito para gemelos

Comments

8. ¿Qué clase de accesorio usa en su carrito?

Si posee otro accesorio que no aparece dejelo en comentarios *



Protector de lluvia



Bolso cambiador



Saco



Parasol



Patinete



Bandeja de comida



Capazo



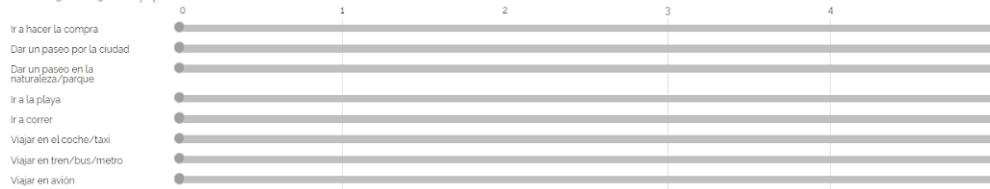
Silla de coche

Comments

9. ¿Ha tenido algún problema o dificultad a la hora de usar su carrito o alguno de sus accesorios? *

10. ¿Existe algo que le gustaría mejorar o añadir a su experiencia con los carritos? *

11. ¿Con qué frecuencia usa el carrito en estas situaciones?
Evalúe del 1 al 5, siendo 5 mucho y 1 poco. *



12. ¿Usa el carrito en otras situaciones? De ser así, nombrélas. *

13. ¿Qué prefiere usar? *

- ☐ Carrito de bebés
☐ Mochila portabebés

14. En relación con la pregunta anterior ¿Por qué? *

15. Gracias por sus respuestas. La encuesta está casi terminada, por favor introduzca su correo electrónico si quiere participar en futuras encuestas o entrevistas relacionadas con el mismo tema. Su colaboración sería de gran ayuda para hacer de su experiencia usando carritos más satisfactoria.

En caso contrario pulse la flecha para finalizar la encuesta.

Back

Submit

75%

Gracias por responder a esta encuesta. Su opinión es muy importante para nuestro proyecto :)



100%

[English translation below]

Hello! We are two students doing our master thesis related with kids and strollers. The survey is done in collaboration with Thule Sweden AB, with the goal of creating an innovative solution in the field. This survey is to see how parents use strollers in order to improve your experience.

We would appreciate it if you could answer our questions, it will not take you longer than 5 minutes. Your responses are completely anonymous and will remain confidential. By pressing "Back", you can always go back to change your selected answers.

If you have any questions, please do not hesitate to contact - cebe18lv@student.ju.se

Thank you for your collaboration. Please press the arrow to begin.

1. Sex
 - ☐ Female
 - ☐ Male
 - ☐ Prefer not to say
2. Age
 - ☐ less than 20
 - ☐ 20-24
 - ☐ 25-29
 - ☐ 30-34
 - ☐ 35-39
 - ☐ 40 & 40+
3. How many kids do you have?
 - ☐ 0
 - ☐ 1
 - ☐ 2
 - ☐ 3 & 3+
4. How many strollers do/did you have?
 - ☐ 0
 - ☐ 1
 - ☐ 2
 - ☐ 3
 - ☐ 4 & 4+
5. How have you acquired it? (Multiple choice)
 - ☐ I bought it new
 - ☐ I bought it second hand
 - ☐ I rent it
 - ☐ I borrow it
 - ☐ It was a gift

6. Which brands have you used? (Multiple choice)
 - ☐ Bugaboo
 - ☐ Jané
 - ☐ Chicco
 - ☐ Thule
 - ☐ Maclaren
 - ☐ Cybex
 - ☐ Babyzen Yoyo
 - ☐ Others:_____
7. What type of stroller did/do you have? (Multiple choice)
 - ☐ Stroller 2 pieces
 - ☐ Stroller 3 pieces
 - ☐ Twin stroller
 - ☐ Light stroller
 - ☐ Running stroller
 - ☐ Other:_____
8. What kind of accessories do you attach to your stroller? (Multiple choice)
 - ☐ Rain cover
 - ☐ Changing bag
 - ☐ Footmuff/mattress
 - ☐ Umbrella
 - ☐ Platform
 - ☐ Food tray
 - ☐ Other:_____
9. Have you faced any problems when using strollers or their accessories?
10. Is there anything you would like to improve or add for your future stroller experience?
11. How often do you use the stroller in these situations? Grade them from 1 to 5, being 1 never and 5 many times.
 - ☐ going shopping
 - ☐ walking in the city
 - ☐ walking in the nature/park
 - ☐ going to the beach
 - ☐ running
 - ☐ travelling in the car/taxi
 - ☐ travelling by plane
 - ☐ travelling with public transport train/bus/subway
12. Do you use the stroller in other situations? If yes, name them.
13. What do you prefer using?
 - ☐ stroller
 - ☐ child carrier backpacks
14. Related to the previous question. Why?
15. Will you prefer to attend further research with us, if you prefer, please leave your contact info and your name.

8.4 Appendix IV – Personas

- Couple: Fernando and Ingrid. They live in Valencia.



FERNANDO DÍAZ

Valencia, 28

Journalist

Married to Ingrid Eriksson

1 kid: girl of 6 months

BIO

He lives in a small flat in the city center. He works for the "20 minutes" newspaper in the international news department. Involved in charities organizations.

WANTS & NEEDS

- He wants to teach the baby swimming.
- He would like to own a small sailing boat.
- Need to stop smoking.

FRUSTRATIONS

- He likes travelling without weight but with his new kid is not possible.
- He wants a salary raise.

MOTIVATIONS

Price

Ease of use

Saves time

Uniqueness

Sustainable

BRANDS

DECATHLON



INGRID ERIKSSON

Valencia, 30 (Swedish)

Translator

Married to Fernando Díaz

1 kid: girl of 6 months

BIO

She lives in a small flat in the city center. She works as a freelance translator from home so she can spend more time with her baby. She is writing a vegan recipes book and has her own channel.

WANTS & NEEDS

- Concern about the nutrition of his kid.
- Looking for an english school for her kid.

FRUSTRATIONS

- So difficult to be vegan in Spain.
- Trying to convince her parents buying a house in Spain to live closer.

MOTIVATIONS

Price

Ease of use

Saves time

Uniqueness

Sustainable

BRANDS



- Single: Patricia. She lives in Bilbao.



LAURA AGUIRRE

Bilbao, 25

Phd in biotechnology

Singles

One girl of 1 month

WANTS & NEEDS

- Take care and be aware of her child health
- Worried about how long is gonna take to go back in shape

FRUSTRATIONS

- Unsure about how she is gonna manage to bring up her child by herself
- She does not have a car, she depends on the public transport to go to any place.

BRANDS



BIO

She lives in the city center in a small apartment. She has always been focused on her career and now she is leaving a new experience being a mum. Her mum is helping her a lot and giving support.

MOTIVATIONS

Price



Ease of use



Saves time



Uniqueness



Sustainable



- Widow: Arturo. He lives in Barcelona.



ARTURO NAVARRO

Barcelona, 40

Physiotherapist

Son of Antonio & Marga

Widow & 3 kids: 6 years, 3 years and 5 months.

WANTS & NEEDS

- Concern about active life. He wants his kids to be active and join sport teams.
- He needs help to take care of his kids.

FRUSTRATIONS

- He is struggling a lot with his recent lost but still he tries to be positive and do the best for his kids.

BRANDS

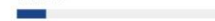


BIO

He lives in a flat near the sea. He has his own clinic focus on high performance athletes. He travels by car many weekends to visit his parents in Zaragoza.

MOTIVATIONS

Price



Ease of use



Saves time



Uniqueness



Sustainable



- Grandparents: Antonio and Margarita. They live in Zaragoza and they are Arturo's parents.



ANTONIO NAVARRO

Zaragoza, 75

Retired

Dad of Arturo

4 sons, 10 grandchildren

WANTS & NEEDS

- He wants to learn using WhatsApp and join the family group.
- He wants to win the boule tournament.

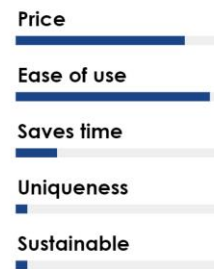
FRUSTRATIONS

- He does not have his driving licence anymore and he has to take the train to Barcelona to help his son.

BIO

He lives in a house in the outskirts of the city, it has a small garden where he plants his tomatoes. He loves spending the holidays with his grandkids around. He likes singing "Jotas" in the family meetings.

MOTIVATIONS



BRANDS



MARGARITA LOPEZ

Zaragoza, 70

Retired

Mum of Arturo

4 sons, 10 grandchildren

WANTS & NEEDS

- Concern about nutrition.
- Mercadona bringing her weekly shopping home.
- Need Renfe card to take the train more often.

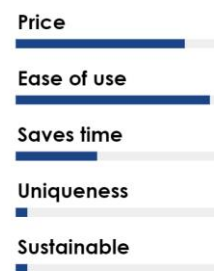
FRUSTRATIONS

- She doesn't like his son living far away of his hometown.
- One of his sons doesn't want to baptize his child.

BIO

She lives in a house in the outskirts of the city, with enough space to host family meals every Sunday. She cooks with love for everyone. She goes to the church every Sunday.

MOTIVATIONS



BRANDS



- Couple: Carlos and María. They live in Sevilla.



CARLOS SÁNCHEZ

Sevilla, 40

Logistics engineer

Married to María Torres

3 kids: twin boys of 3 years and girl of 5 months

WANTS & NEEDS

- Concern about environment.
- Needs a bigger car to fit all the kids strollers, car seats...
- He wants his kids to practice football.

FRUSTRATIONS

- He would like to spend more time with his family but his job is very exigent.

BIO

He lives in the outskirts, in a big house with a garden.

He takes turns with his wife to pick up the kids from kindergarten. His work requires him to travel occasionally.

MOTIVATIONS

Price

Ease of use

Saves time

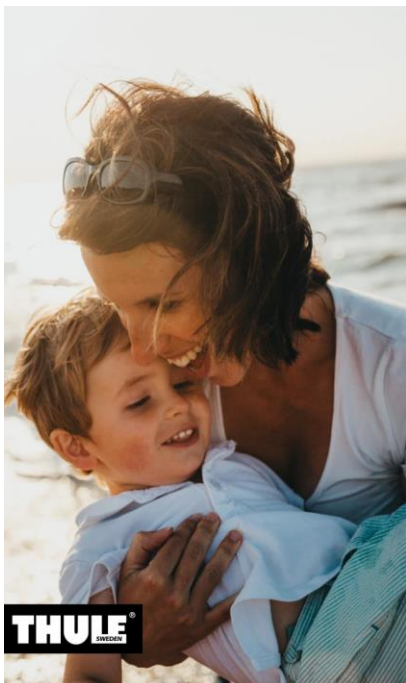
Uniqueness

Sustainable

BRANDS



NETFLIX



MARÍA TORRES

Sevilla, 35

Nurse

Married to Carlos Sánchez

3 kids: twin boys of 3 years and girl of 5 months

WANTS & NEEDS

- Planning already her holidays and considering many factors to assure the welfare of her baby.

FRUSTRATIONS

- Her maternity leave is soon finishing and she feels bad for leaving her recently born kid in the kindergarten.

BIO

She lives in her dream house with a garden where her kids can grow and play. Her job allows to take different shifts every week so she can combine it better with her family life.

MOTIVATIONS

Price

Ease of use

Saves time

Uniqueness

Sustainable

BRANDS



- Couple: Javier and Marta. They live in Málaga.


JAVIER PÉREZ

Málaga, 38

Waiter

Married to Marta Alonso

Will get a boy soon, girl of 1,5 years and a dog

WANTS & NEEDS

- He wants to buy a house near the sea.
- Take care of the dog (beagle).

FRUSTRATIONS

- Very difficult to go for a walk with his daughter and the dog at the same time.
- He would like to go and visit his parents in Madrid more often.

BRANDS

easywalk



renfe


BIO

He lives in the family hotel of his wife. He works in a restaurant pretty close to the hotel so he is always very reachable.

MOTIVATIONS

Price

Ease of use

Saves time

Uniqueness

Sustainable


MARTA ALONSO

Málaga, 34

Hotel manager

Married to Javier Díaz

Pregnant of 6 months, girl of 1,5 years and a dog

WANTS & NEEDS

- Disconnect a bit more from work and spend more time on herself.

FRUSTRATIONS

- She doesn't like to delegate in her job.
- Receiving negative reviews from the guests.

BRANDS

Booking.com


BIO

She lives in her family hotel, where she also works. She lives from tourism so the amount of work pretty high almost all year around.

MOTIVATIONS

Price

Ease of use

Saves time

Uniqueness

Sustainable

- Couple: Alicia and Sara. They live in Madrid.



ALICIA JIMENEZ

Madrid, 34

Marketing

Married to Sara Ruiz

1 kid: 14 months boy

WANTS & NEEDS

- Focus on her career.
- She wants to educate her kid with good values and respect for everyone.

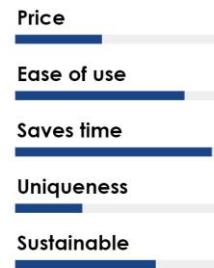
FRUSTRATIONS

- She feels bad for spending so much time away from home.

BIO

She lives in the city center in a small apartment. Her job is very demanding, she travels often. She is lucky to have her partner taking care of the kid. She likes practising yoga.

MOTIVATIONS



BRANDS

L'ORÉAL

Skyscanner

ZARA

Trello



SARA RUIZ

Madrid, 36

Graphic designer

Married to Alicia Jimenez

1 kid: 13 months boy

WANTS & NEEDS

- Looking for a kindergarten in her area that she can reach easily, she does not have a car.
- Looking for the best quality products in the market for his kid.

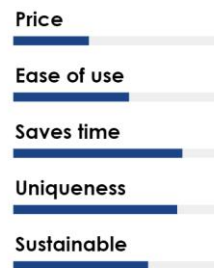
FRUSTRATIONS

- Her maternity leave is soon finishing and she feels bad for leaving her recently born kid in the kindergarten.

BIO

She works from home within kids illustrations. Her job gives her total freedom of fixed schedules so she spend a lot of time with her kid. From time to time, she has meeting with clients.

MOTIVATIONS



BRANDS

Johnson & Johnson

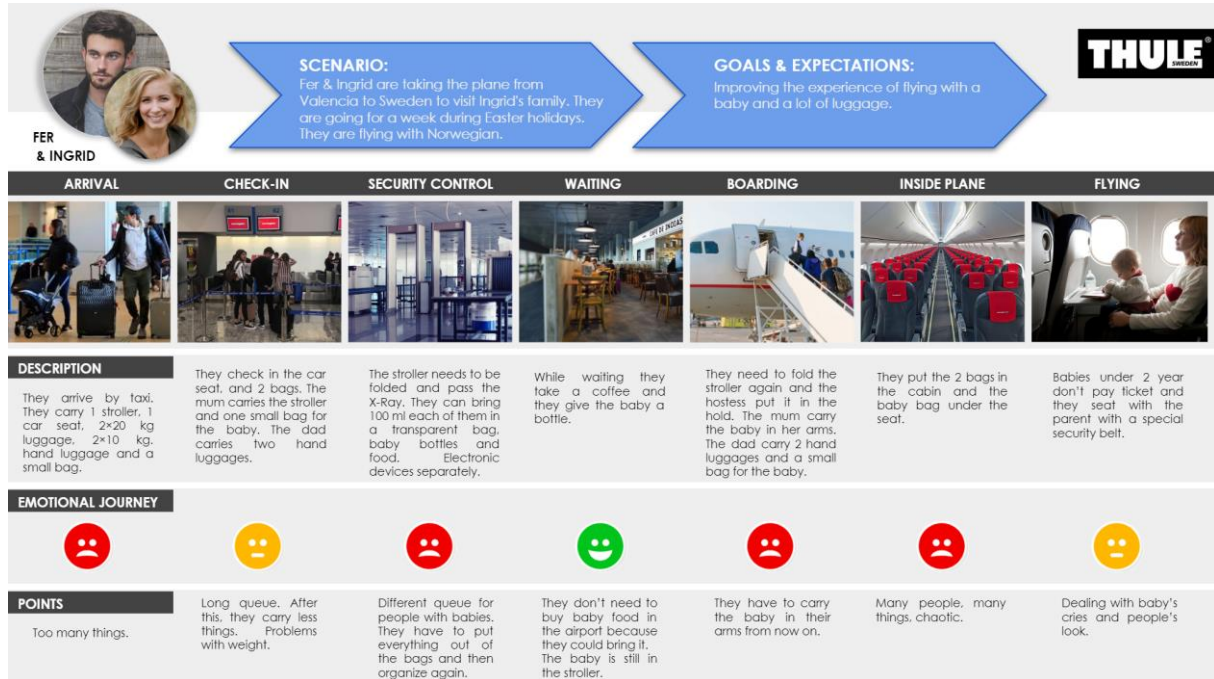
Bē

EDELVIVES

Montessori

8.5 Appendix V – Customer Journeys

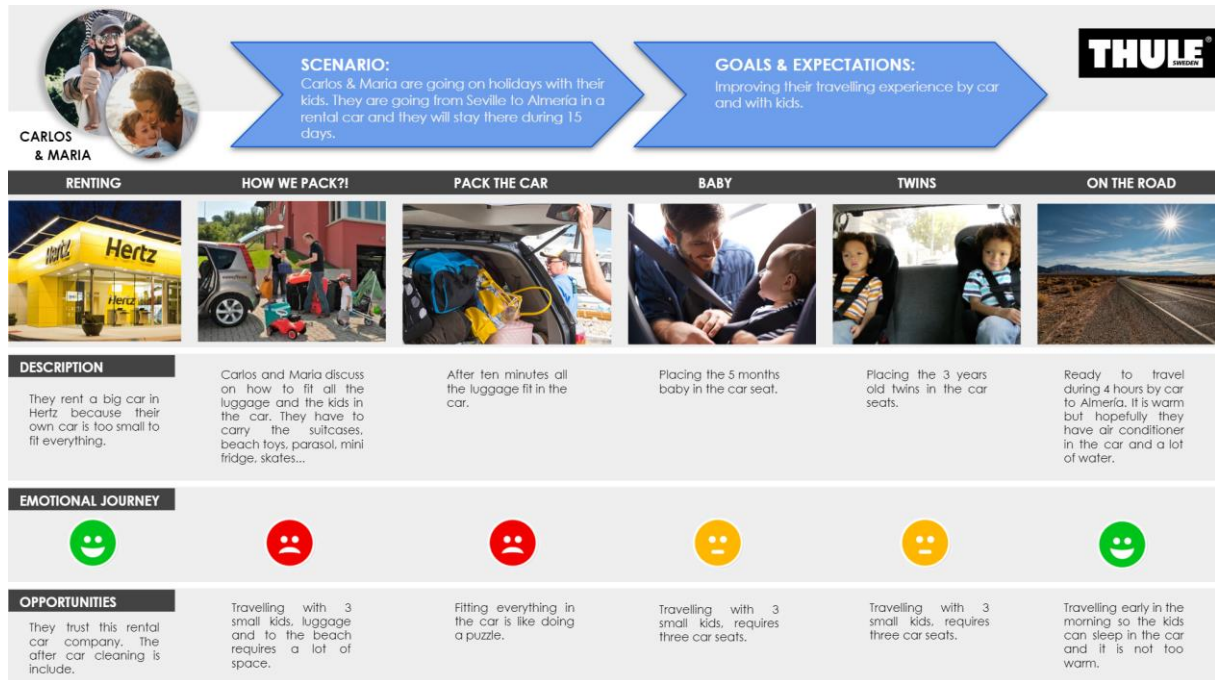
1. Taking a plane



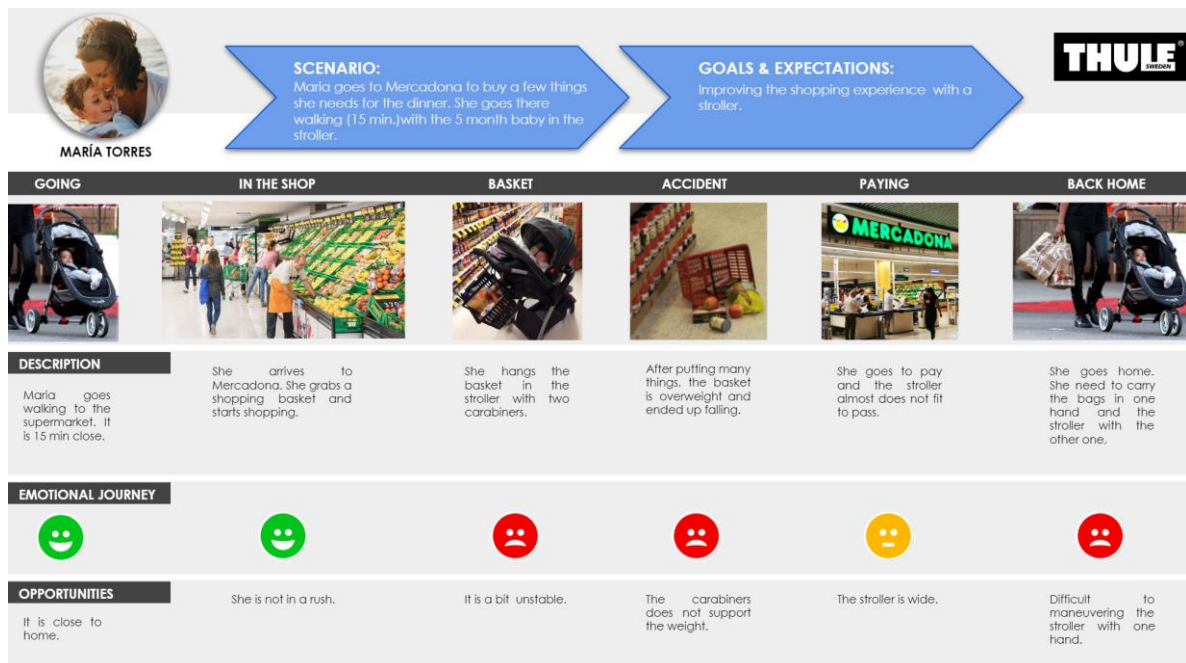
2. Going to kindergarten with the metro



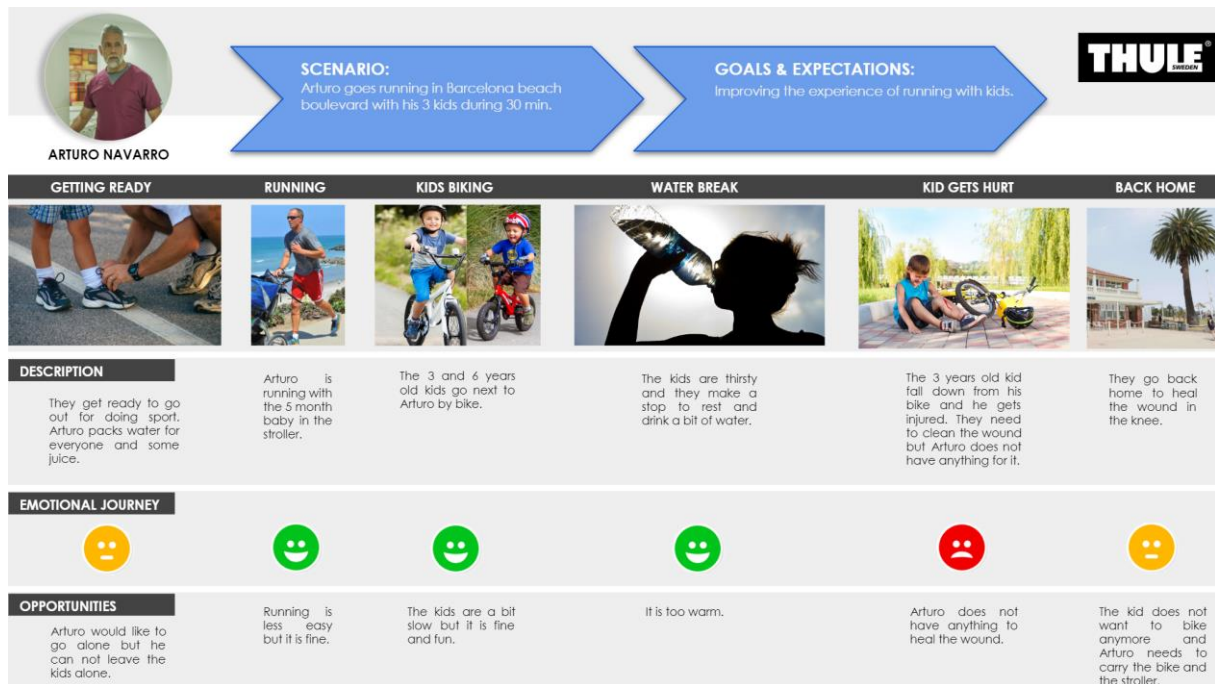
3. Going vacation by car



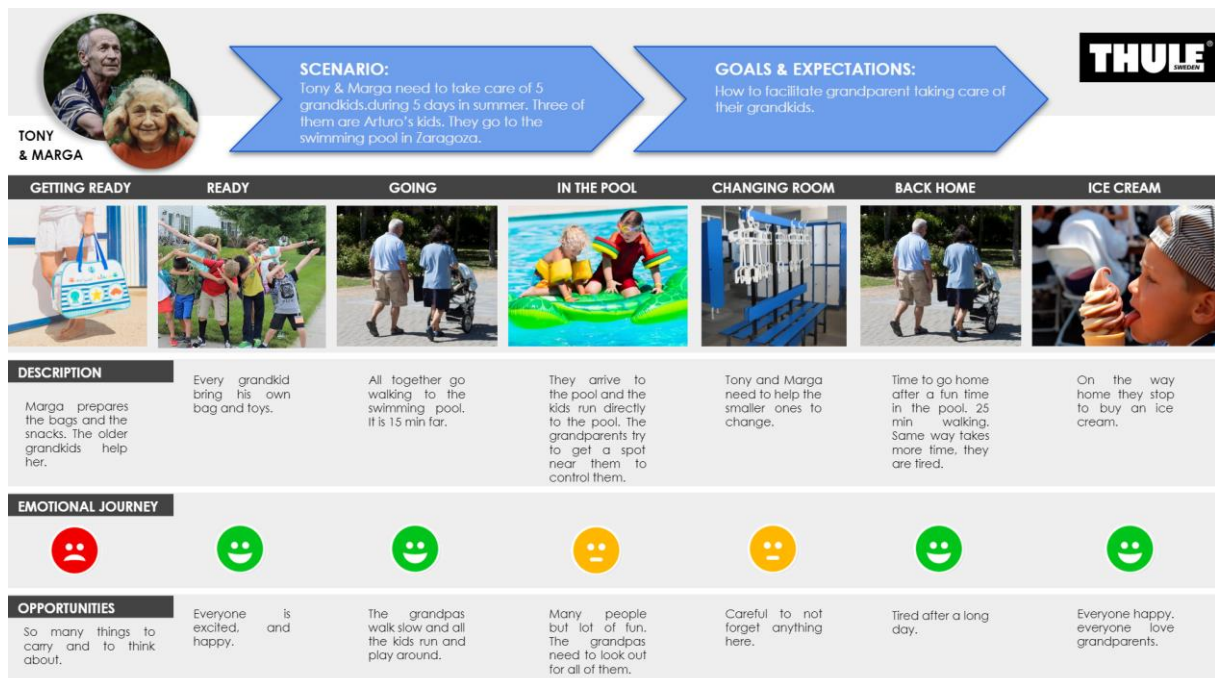
4. Go shopping to the supermarket



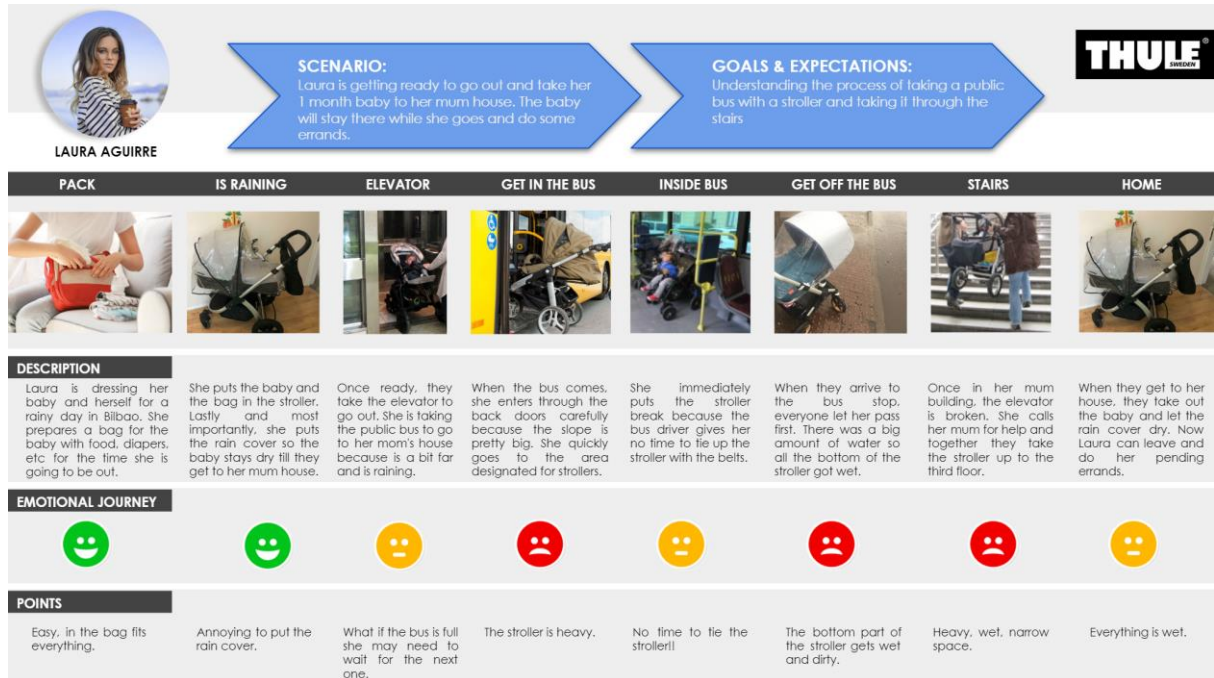
5. Go running



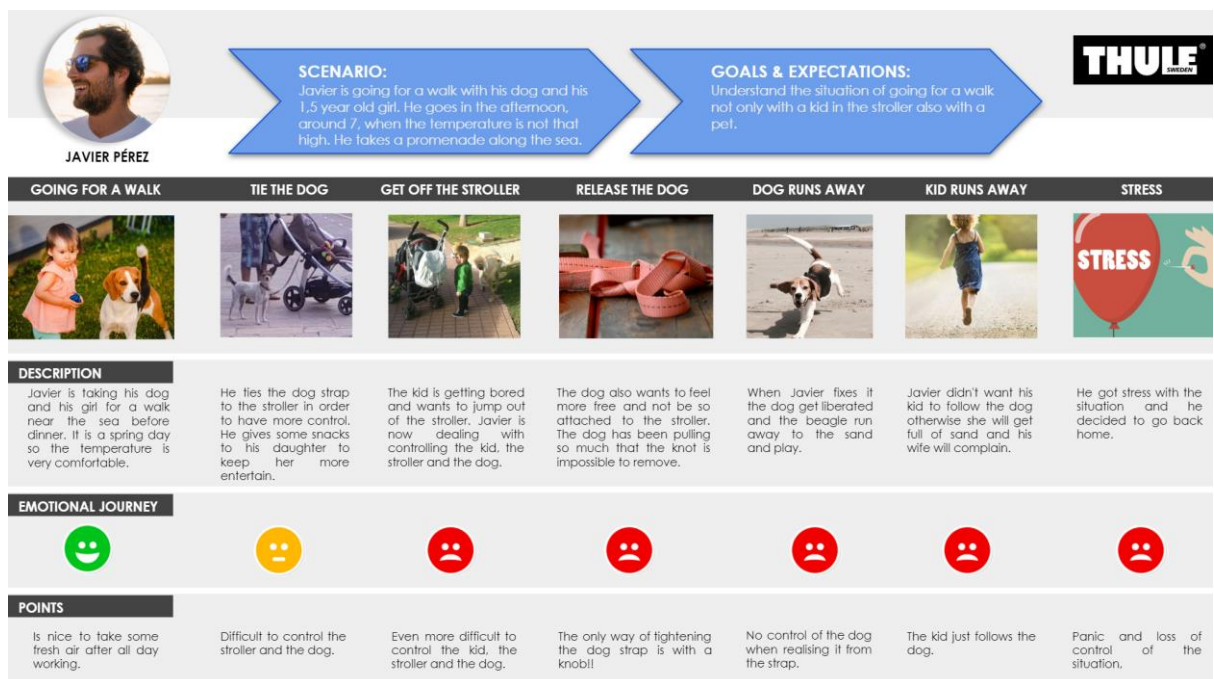
6. Going to the swimming pool




7. Taking the public bus



8. Going for a walk with the dog
















9. Spend the day in the beach




SCENARIO:
Marta is going with her kid to spend a Sunday at the beach. The weather is warm enough to play in the sand and have a bath.

GOALS & EXPECTATIONS:
Improve the stroller experience when going to the beach.




GOING TO THE BEACH	ACCESS TO THE BEACH	CARRYING THE STROLLER	WHEELS	PLAYING	NAP TIME
					
<p>DESCRIPTION</p> <p>Marta prepares the beach bag. Toys, towels, sunscreen, snacks, etc are indispensable. She fits everything in the stroller the better way she can.</p>	<p>Once in the beach she tries to find a spot in the first line of shore. When the concrete floor ends, she asks her child to get off the stroller otherwise she won't be able of carrying the stroller.</p>	<p>Today her husband is not here and cannot help her with taking the stroller to the shore. The stroller is so full and the contact with the sand makes it very difficult for the wheels to roll, so she has to push it.</p>	<p>When they get to the shore, the stroller wheels are covered with sand and together with the salt from the sea it will probably end up damaging the wheel mechanism.</p>	<p>They spend some time playing with the toys and the sand. After that the kid eats her lunch and afterwards the child wants to take a nap.</p>	<p>Marta cleans off the sand the kid has with water from the sea, and she will place her child in the stroller. There the kid is comfortable, clean and protected from the sun.</p>
					
<p>POINTS</p> <p>So many things to carry to the beach just by herself.</p>	<p>Annoying to take the stroller through the sand.</p>	<p>The stroller is very heavy specially for her being pregnant, is warm and the stroller doesn't roll.</p>	<p>So bad that the stroller wheels might end up not working or screeching.</p>	<p>Is nice to spend to some time with her kid.</p>	<p>She feels calm and good knowing that her child is comfortable in the stroller.</p>













10. Taking the train



SCENARIO:
Alicia and Sara are taking the AVE with his kid to visit Sara's family who lives in Valladolid. The trip is around 1h by high velocity train.

GOALS & EXPECTATIONS:
Improve travelling by high velocity train with a stroller.



WAITING FOR THE TRAIN	STORAGE	NO FREE SPACE	NO FREE SPACE	WAITING	STAIRS
					
<p>DESCRIPTION</p> <p>Laura and Sara were travelling together so one was taking the stroller and the other one the suitcases.</p>	<p>When the train arrives they found out that the place for putting the stroller and the suitcases was quite full.</p>	<p>They manage to fit the suitcase but not the stroller. Sara goes to sit in the wagon with the kid while Alicia waits with the stroller folded till someone gets off and make some space.</p>	<p>In their desperation for having a calmer trip, they try to fit the stroller in the space above the wagon seats but with no success.</p>	<p>Alicia had to spend all the trip standing controlling the stroller. Thank god that the trip was not too long!</p>	<p>When they arrive to Valladolid the lift was being repaired so they had to take the stairs.</p>
					
<p>POINTS</p> <p>Travelling two people seems more manageable.</p>	<p>Very small space for leaving the luggage.</p>	<p>Very annoying to be standing controlling the stroller.</p>	<p>Is incredible that a stroller doesn't fit in the space above the wagon seats.</p>	<p>A nightmare standing up all the trip.</p>	<p>Really bad to have to carry the stroller up after the trip they had.</p>

GRACIAS. THANKS. TACK.
BERTA CESTER RUBIO