

## **A Design-Driven Product-Service System Innovation for HARMAN International**

SPD Graduation Project Thesis  
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#### **Master Thesis**

Strategic Product Design  
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Figure 1: Updated design B&O speaker 'Beyond 1'

## PREFACE

This thesis is written as part of the author's graduation project for the master Strategic Product Design at the Technical University of Delft, and is executed in collaboration with HARMAN International.

Throughout the two-year program, learning about strategic design, branding, research, and entrepreneurship, I felt prepared to put the 'cherry on top' by means of my graduation project. However, after the first week it became clear to me that it wouldn't be as easy as I had hoped for. I am very grateful for being challenged and trusted throughout these past months by my graduation project client, chair, and mentor, who enabled me to create a design-driven innovation, and my own vision on strategy design.

Gorm, I very much appreciate you providing me the opportunity to come to lovely Struer. I learned a lot from you and your colleagues, and much enjoyed experiencing the development of integrated sound systems. Also when I continued the project back in Amsterdam, you were always ready to help, and provided valuable feedback.

Erik, even though your expertise lies in materials manufacturing, I learned a lot from you during this project, and I value all the 'bread crumbs' you laid out with your guidance. This made me to discover my own understanding of strategy design. In addition, it gave me pleasure to be involved in the catch-ups with your other Integrated Product Design students and learn from their perspectives.

Ehsan, if it wasn't for you this entire project wouldn't even exist. You introduced me to design-driven innovation during the Designer's Identity sessions in 2018, and Gorm and Erik for this graduation project, which I am very thankful for. You taught me to unlearn design, and to learn design in a way that I was in search of, and for this I am very grateful.

Furthermore, I would like to thank my family for their endless support, and my friends and housemates for listening to all my ideas.

I hope you enjoy reading this thesis as much as I did working on my graduation project!

Isabelle Nielen



EXECUTIVE SUMMARY

Introduction

HARMAN Automotive designs and engineers partnered branded audio systems for partnered car manufacturers. HARMAN Automotive’s ‘EPIC experience team’ focuses on developing new concepts for their numerous partnerships. Among which, the ‘Take Out Sound’ (TOS) concept that enables people to enjoy music during their journey and at their destination. The TOS concept is tailored to fit the different partnerships of HARMAN Automotive, among which their partnership with Bang & Olufsen (exclusively the sub-brand ‘B&O’) and Ford Motor Company.

Project Assignment

The graduation project assignment was to design a strategy for the aforementioned TOS case, which is still in an early development stage. This new product category, named ‘B&O Beyond’, contains two after-sales products for the U.S. market; the ‘Beyond 1’ for Ford F-150 vehicles (a portable Bluetooth speaker that enhances the B&O integrated audio system when docked in place), and the ‘Beyond 2’ for Ford Bronco vehicles (a soundbar that enhances the B&O integrated audio system, and that can rotate towards the front and rear of the car).

Project Approach

Throughout this graduation project, research was performed on the author’s understanding of ‘strategy design’. The definition of strategy as a “deliberate search for a plan of action that will develop a business’s competitive advantage and compound it” (Henderson, 1989), is used to design a framework, which supports the creation of the conception that provides for “the business’s competitive advantage”. In the context of this graduation project, the ‘B&O Beyond’ value proposition represents the conception that is the goal of the new strategy, that will be designed by the author of this thesis for HARMAN

Automotive’s partnership with Bang & Olufsen’s sub-brand ‘B&O’ and Ford.

The design-driven innovation (D-DI) method (Verganti, 2009, 2016) was used as a tool to update the initial ‘B&O Beyond’ value proposition, in order to provide for an even more unique goal of the to be designed strategy. Applying this method may support HARMAN Automotive’s partnership with B&O and Ford in the long run, as D-DI aims to provide a competitive advantage for the companies involved.

This graduation project focuses on the design of an updated concept for the ‘B&O Beyond’ value proposition, which functions as the new strategic goal for a new strategy. By applying D-DI to the author’s framework of strategy design, an approach was designed that (in theory) enables the creation of desirable and unique strategic concepts, that outperform competitors today, and may support the companies involved together to outperform competitors in the future.

D-DI enables the creation of radical new concepts by innovating the ‘meaning’ (the reason why people use a value proposition) of an existing concept. Throughout this graduation thesis, the reader will be guided through the D-DI process, that is structured for this report as; **evaluation of the initial ‘B&O Beyond’ concept** (chapter 2), **building a new strategic vision** (chapter 3), and **the updated ‘B&O Beyond’ concept** (chapter 4), which represents the final designed concept and the new goal of a new strategy for HARMAN Automotive.

Initial Concept ‘B&O Beyond’

To innovate a concept, research must be performed to understand how the concept came to its being (subchapter 2.1). When evaluating the initial ‘B&O Beyond’ concept, strengths and opportunities were captured in a design requirement list that

provided support during the D-DI process (subchapter 2.2).

Building a New Strategic Vision

Innovating the meaning of a concept requires building a novel vision, as the new determined meanings are constructs of this new vision. The creation of this novel vision occurred by searching for relevant inspiration (subchapter 3.1), that enabled the design of 4 strategic ideas (subchapter 3.2), which are the fundament of the final design-driven innovation - the updated ‘B&O Beyond’ value proposition.

Updated Concept ‘B&O Beyond’

Throughout the development of the design-driven innovation, ‘design critique’ was provided by the stakeholders of this graduation project in order to guide the evolving design in a direction that would benefit customers and ‘fit’ with HARMAN Automotive’s partnership. Subchapter 4.1 evaluates on the value that the updated ‘B&O Beyond’ concept creates for the wide range of customers. And subchapter 4.2 presents the value created for the companies involved in the ‘B&O Beyond’ value proposition; HARMAN Automotive, Bang & Olufsen, and Ford Motor Company.

Conclusion

This graduation thesis presents the creation of the new goal for a new strategy for HARMAN Automotive’s partnership with Bang & Olufsen’s sub-brand ‘B&O’ and Ford. As the noun ‘strategy’ indicates a “deliberate search for a plan of action that will develop a business’s competitive advantage and compound it” (Henderson, 1989), recommendations are provided for HARMAN Automotive to compound “the conception that will develop a business’s competitive advantage” - the updated ‘B&O Beyond’ concept.

Finally, this graduation project thesis will be concluded with a personal reflection on the entire graduation project process.

READING GUIDE

As mentioned in the executive summary, this graduation project thesis will elaborate on the D-DI process (figure 2), and the final design of the updated 'B&O Beyond' value proposition, which functions as the new goal of a new strategy. What the D-DI process beholds will be explained in detail in subchapter 1.2.

This chapter presents a visual (figure 3) that supports the reader with understanding the connection between the D-DI process and the structure of this report.

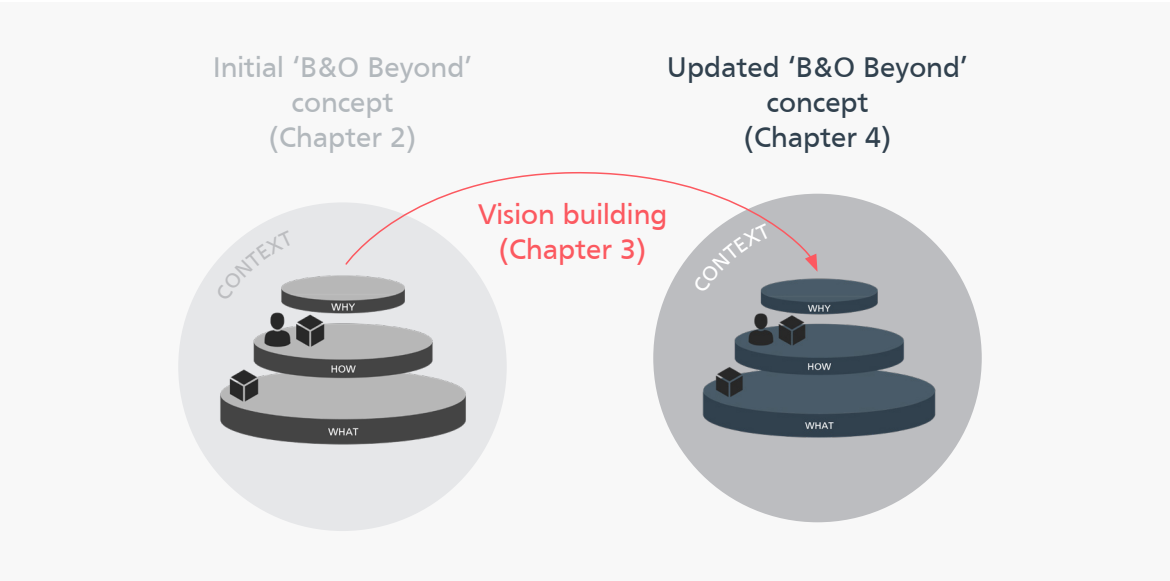


Figure 2: Overview of the design-driven innovation (D-DI) process.

CHAPTER 1 INTRODUCTION	CHAPTER 2 INITIAL CONCEPT 'B&O BEYOND'	CHAPTER 3 BUILDING A NEW STRATEGIC VISION	CHAPTER 4 UPDATED CONCEPT 'B&O BEYOND'	CHAPTER 5 CONCLUSION
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Figure 3: Overview of the structure of this graduation project thesis.

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## CHAPTER 1 INTRODUCTION

The first chapter of this thesis will elaborate on how the graduation project's assignment and approach were created in collaboration with the graduation project's client, HARMAN Automotive, apart of HARMAN International.

### Contents of chapter 1

#### Subchapter 1.1

Project Assignment

#### Subchapter 1.2

Project Approach



1.1 Project Assignment

1.1.1 Project Context

HARMAN International (HARMAN) is known for designing and engineering audio and infotainment products and solutions for automakers, consumers, and enterprises worldwide. Throughout its heritage, HARMAN practices an acquisition strategy, which powers its extensive brand portfolio (i.e. Harman Kardon, JBL, Lexicon, AKG, and Mark Levinson).

HARMAN Automotive

The graduation project assignment was created in collaboration with HARMAN Automotive. This department designs and engineers HARMAN’s acquired branded audio systems for premium (figure 4) and luxurious car brands (figure 5); including the acoustic engineering and industrial design of the sound systems. In addition to the HARMAN acquired audio brands, HARMAN Automotive also possesses the legal rights to develop ‘Bang & Olufsen’-branded and ‘B&O’-branded audio systems for in the vehicles of partnered car manufactures. Figure 6 provides an overview of the partnerships in which HARMAN Automotive’s B2B business operates.

Furthermore, HARMAN Automotive’s ‘EPIC User Experience’ Team focuses on creating new concepts for the diverse partnerships presented in figure 6. The graduation project assignment is focused on the newly created concept, named; Take Out Sound (TOS).

Take Out Sound

The Unique Selling Point (USP) of the TOS products include their dual-use function; in the vehicle, a TOS audio product operates as an additional speaker to the integrated audio system, and when taken out of the vehicle, a TOS speaker performs as a portable Bluetooth speaker.



Figure 4: HARMAN Automotive manufactured JBL audio grill and engineered sound system for Toyota.



Figure 5: HARMAN Automotive manufactured Lexicon audio grill and engineerd sound system for Genesis.

1.1.2. Project Opportunity

The various TOS concepts are at an early stage of the development process, therefore the opportunity arises to envision how the developing concepts may evolve and position themselves within their competitive market.

1.1.3 Project Assignment

The graduation project assignment is to **design a strategy** for HARMAN Automotive’s TOS concept that is tailored to their partnership with Bang & Olufsen and Ford Motor Company (Ford). This B2B2C value proposition is named; ‘B&O Beyond’.

B&O Beyond

The B&O Beyond product category contains two new B&O branded audio products that are created by HARMAN Automotive specifically for the partnership between audio brand ‘B&O’ (the premium sub-brand of Bang & Olufsen) (figure 7) and car manufacturer Ford. Chapter 2 will elaborate more on ‘B&O Beyond’ value proposition.

The design brief of this graduation project can be viewed in appendix 1.

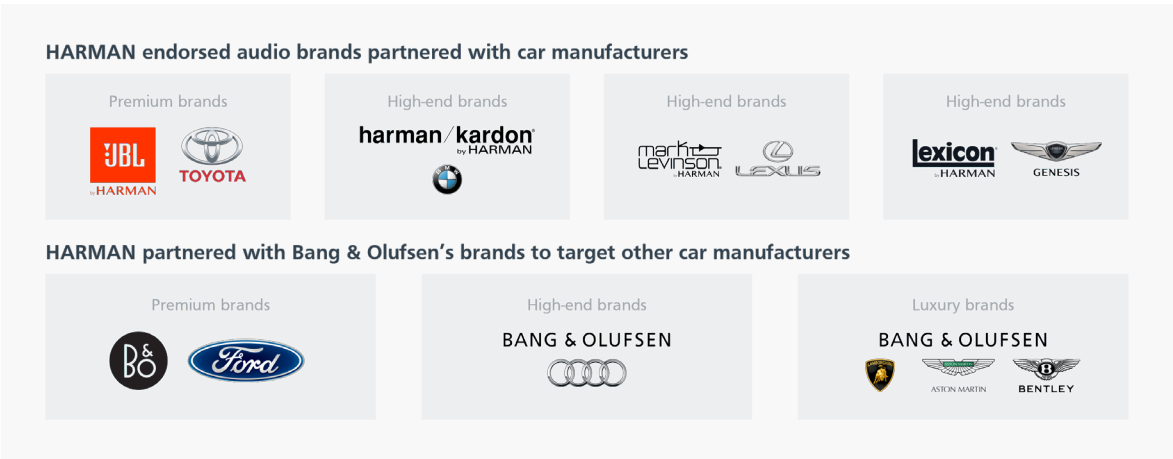


Figure 6: Overview of HARMAN Automotive’s partnerships with car manufacturers and audio brand Bang & Olufsen.

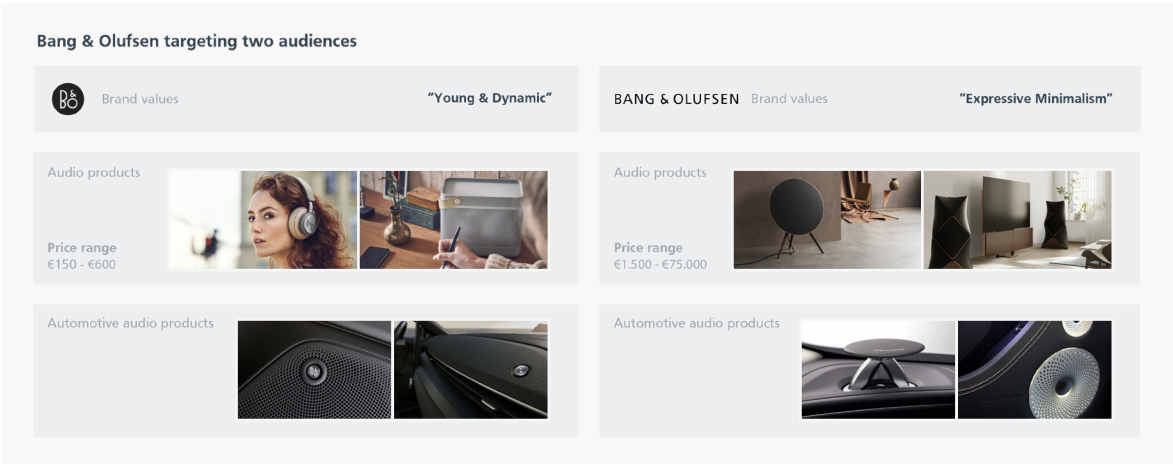


Figure 7: Comparison between premium audio brand B&O and luxury audio brand Bang & Olufsen.

The graduation project assignment contained a personal challenge, as the author had no clear vision of what 'strategy design' was. The next section elaborates on the author's understanding of strategy design, which is developed throughout the graduation project, and applied in this thesis.

#### 1.1.4. Strategy Design

Strategy as a noun refers to a "deliberate search for a plan of action that will develop a business's competitive advantage and compound it" (Henderson, 1989). In strategic design, we can provide the strategic goal, the conception that will develop a business's competitive advantage, recommendations for adjustments. These recommendations provide the basis for the design of a new competitive strategic goal that is tailored to the targeted organisation(s). In addition, strategic designers can finalise the strategic plan by creating a roadmap (Simonse, 2017) that shows the client how to compound to this new strategic goal. Figure 8 provides a visual of how strategic designers can interfere with a current strategy and design a new one.

This graduation project focuses on the design of a **new strategic concept** for the B&O Beyond proposition, which functions as the new strategic goal for a new strategy. This new strategic concept is referred to in this thesis as; **the updated 'B&O Beyond' concept**.

#### Competitiveness as an interactive system

This new strategic concept (core in figure 9) will be created by looking at a concept from a business perspective. Figure 9 is used in this graduation project as a tool to understand that competitive behavior functions as a system in which internal resources, external organisations, customers, money, and people continually interact (Henderson, 1989).

The first circle that is surrounding the core in figure 9 represents the concept's daily business context, which contains two types

of forces influencing the competitiveness of the strategic concept; is it possible for the companies involved to deliver the benefit to the concept's customers (left), and are the competitors able to do the same on the short-term (right).

The outer circle in figure 9 embodies how this strategic concept contributes to a longer-term plan or far future vision within the involved companies (left), and how the strategic concept becomes a strategic move that may help the involved companies to outperform competitors in the future (right).

The arrows surrounding this outer layer serve as the uncontrollable external factors that have an influence on both sides of the equilibrium; the shareholders' side (left) and the competitors' side (right). Relevant external factors in the macro-environment can be captured by categorising them through the well-known strategic management framework 'DESTEP analysis'.

The competitiveness of the strategic concept is dependent on the interaction of all elements illustrated in figure 9. Bruce Henderson, founder of Boston Consulting Group, states in his work 'The Origin of Strategy' that the act of strategy is linked to Darwin's "survival of the fittest" (Henderson, 1989). The strategic concept that adapts best to the competitive environment, displaces the rest.

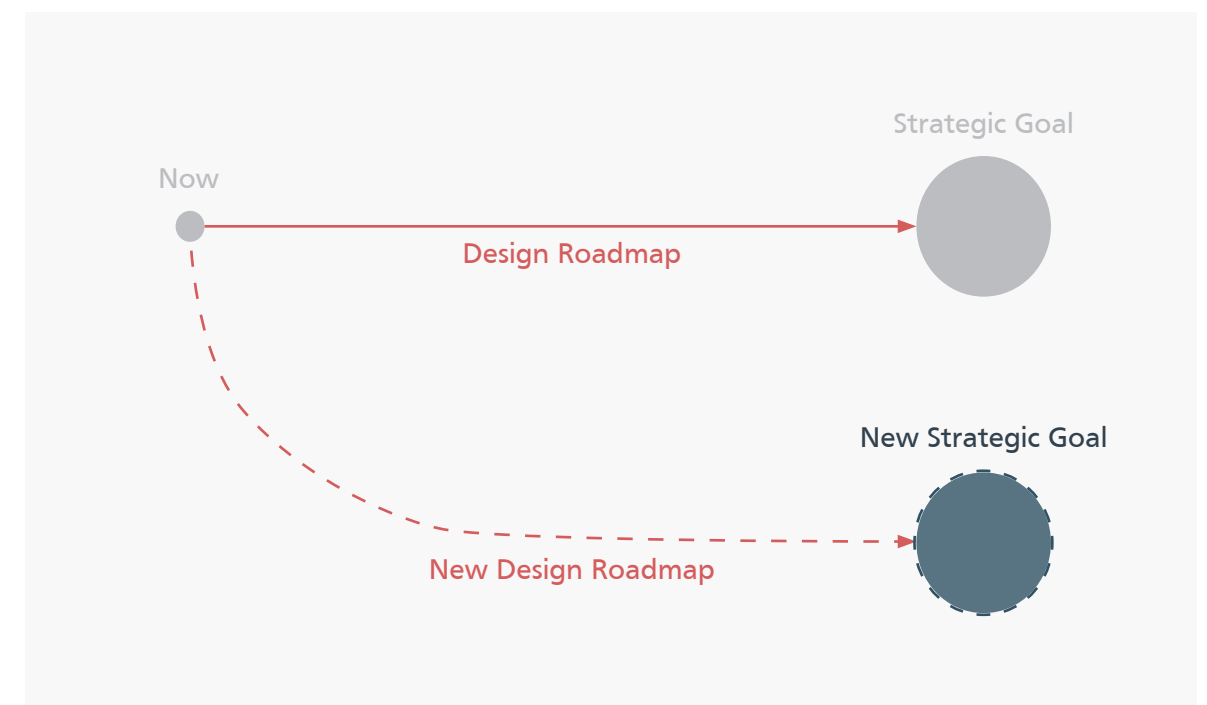


Figure 8: Visualisation of strategy as a plan of action.

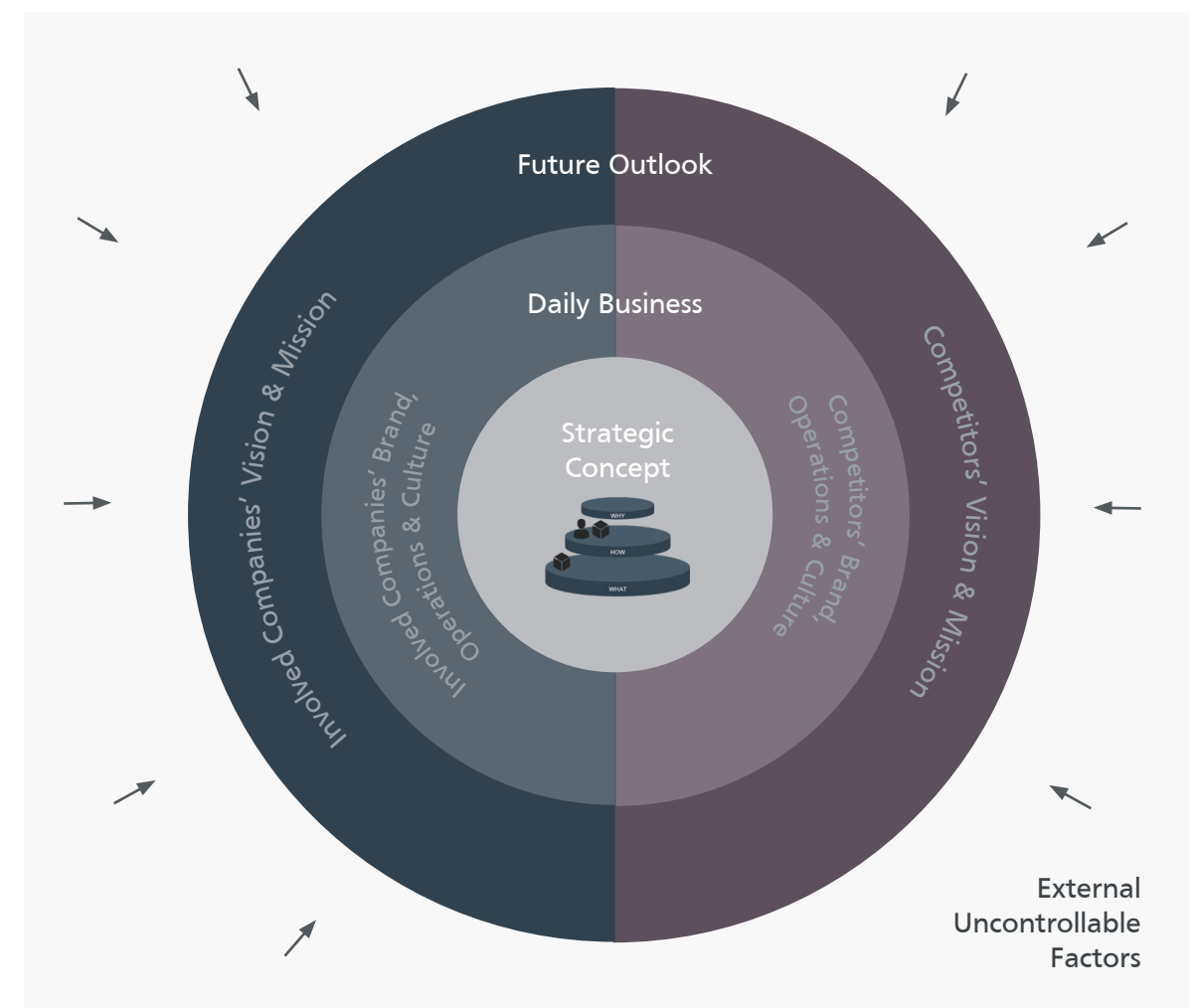


Figure 9: The considered elements for the design of the new strategic goal.

1.2 Project Approach

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The author’s interest in design-driven innovation (Verganti, 2009, 2016) (Austin & Beyersdorfer, 2007) and product-service systems lead to the approach of this graduation project. In agreement with the graduation project client, HARMAN Automotive, the decision was made that the updated ‘B&O Beyond’ concept would be a design-driven product-service system.

This subchapter elaborates on the definitions and benefits of ‘design-driven innovation’ (D-DI) and ‘product-service systems’ (PSS), and how the approach is envisioned.

1.2.1 Innovation of Meaning

Employing the D-DI method, radically new concepts can be created by innovating the meaning of an exciting product (figure 10). The meaning of a product can be defined as the reason ‘why’ people use a product, which is situated at a higher level of abstraction. To elaborate on this, the following paragraphs explain more about the abstraction levels of a concept, which will be referred to throughout this thesis.

Figure 11 explains that a concept can be divided into three abstract layers; what, how, and why (Sinek, 2009), which are placed within a context. The ‘what’ layer represents the embodiment of a solution to a person’s problem, this could be a physical product (i.e. a bike), a service (i.e. a bike repair service), or a combination of products and services; a product-service system (i.e. Swapfiets - offering you a bike that always functions).

The ‘how’ layer in figure 11, represents the interaction between the user and these embodiments of solutions; the way people obtain the solution to their problem. An interaction could be for example, in the case of your bike; unlocking the bike using your bike key. In the case of utilising the bike-sharing company Mobike, the

interaction will be different: first, you will need to use a mobile application to locate a shared bike, to then be able to digitally unlock the Mobike, to gain access to this means of mobility.

The final top layer in figure 11, ‘why’, represents the definition of the solution that solves the user’s problem. In the case of Swapfiets, the reason why a person would purchase a monthly subscription is that he/she desires to own a bike that always functions. To provide another example that shows the difference between similar solutions; a person would use a pay-per-use Mobike bike instead of Swapfiets bike, because he/she desires to have access to a bike in whatever urban area they are. This innovation strategy is relevant for businesses, as customers fall in love with the solution in itself, and not with a product that embodies the solution they are longing for (Verganti, 2016).

Benefits D-DI Method

Design-driven concepts distinguish themselves from Market-Pull & Technology-Push driven concepts, as the latter two methods implicate incremental change of meaning, which occurs at the ‘how’ or ‘what’ levels of a concept. However, Technology Epiphanies (top right corner in figure 12) are an exception, when a Technology-Push innovation strategy meets a Design-Driven Innovation strategy.

The D-DI method to provides the possibility to create new concepts that contain an “unbeatable competitive advantage” (Verganti, 2009). This may benefit HARMAN Automotive’s partnership with Bang & Olufsen and Ford today and in the long-term.

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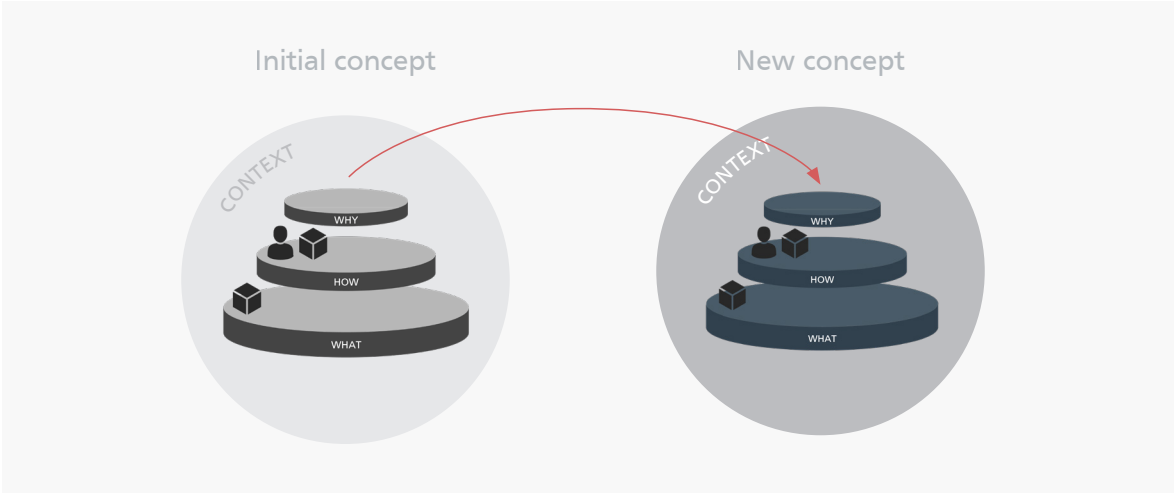


Figure 10: Radical innovation of meaning.

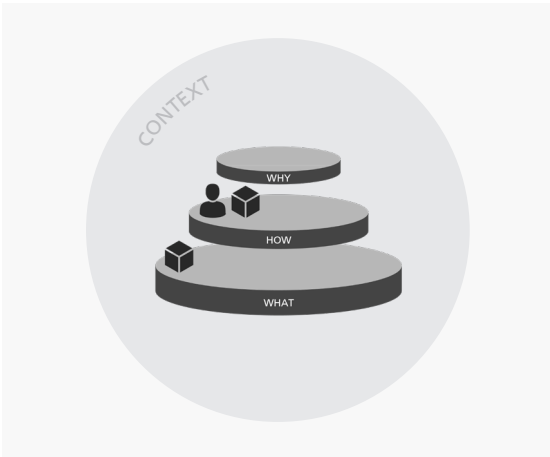


Figure 11: An abstract representation of a concept.

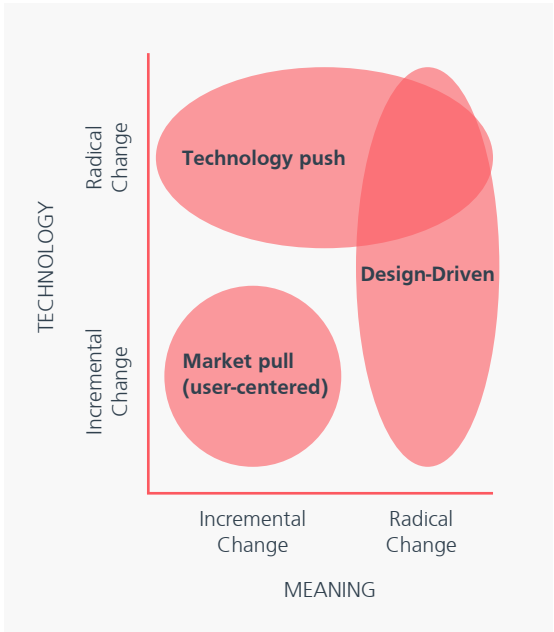


Figure 12: The strategy of D-DI



Inside-out innovation

The new determined meanings, the new 'why' use, are constructs of a novel vision. To create a novel vision, an inside-out approach is needed (figure 13) (Verganti, 2016) (Baha et al., 2018). This approach begins with the designer's personal vision, which will be expanded into a common vision through critique. Criticism will confront the designer's hypothesis with the hypothesis of others, and therefore a new, more powerful meaning that lies underneath will surface.

By innovating the abstract 'why' layer of a concept. Figure 10 illustrates that the initial concept's 'why' needs to be defined to be able to innovate this abstract layer. When a new 'why', reason to use, is determined, the new 'how' and the new 'what' abstraction layers can be designed.

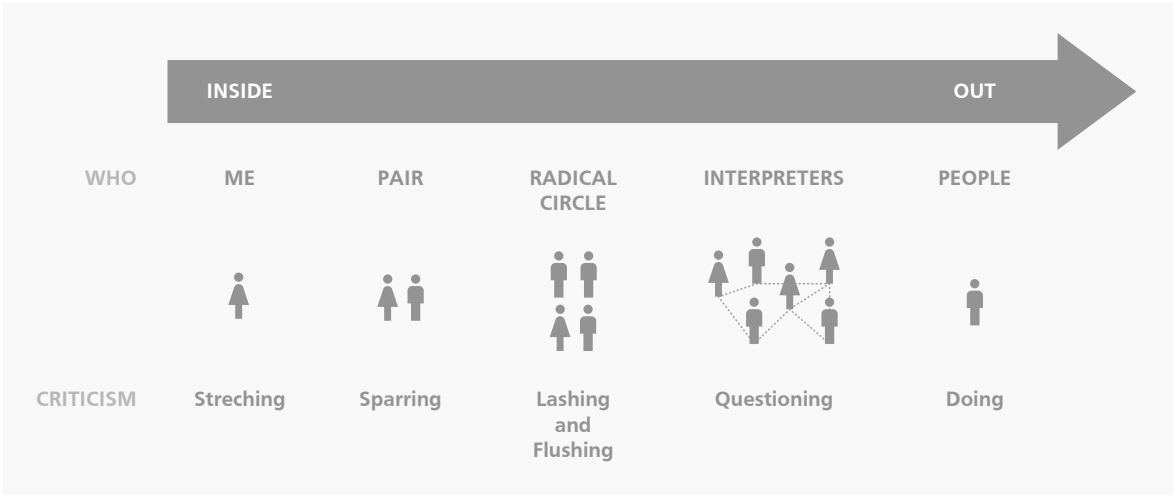


Figure 13: An inside-out approach to achieve a novel vision.

1.2.2 Benefits of offering a PSS

In this thesis, a product-service system (PSS) is defined as: "an integrated product and service offering that delivers value in use" (Baines et al., 2007). PSSs are known for being a more sustainable approach to business for society at large (Tukker, 2004) (Baines et al., 2007), and a means to offer a value proposition that is more easily differentiated among the competition (Baines et al., 2007).

Additional Business opportunities

A PSS proposition may include a freemium business model, which is a business model where users get to use a basic product or service for free, but must pay a fee for the premium version with additional features. In addition, a PSS value proposition has the potential to contribute to building unique relationships with clients and enhancing customer loyalty (Tukker, 2004). Therefore, B&O and Ford will be enabled to expand their current group of loyal customers, which positively impacts HARMAN Automotive's B2B2C business.

1.2.3 Envisioned Approach

The definitions described in this chapter, D-DI and PSS, are combined in the approach of this graduation project. This envisioned approach is presented in figure 14, which represents the D-DI, including a PSS result.

This designed approach aims to create a unique updated 'B&O Beyond' concept, that functions as the goal of a new strategy for HARMAN Automotive (figure 8).

The next chapter will elaborate on the initial 'B&O Beyond' concept (figure 14, left image), and will provide design opportunities for the updated 'B&O Beyond' concept (figure 14, right image).

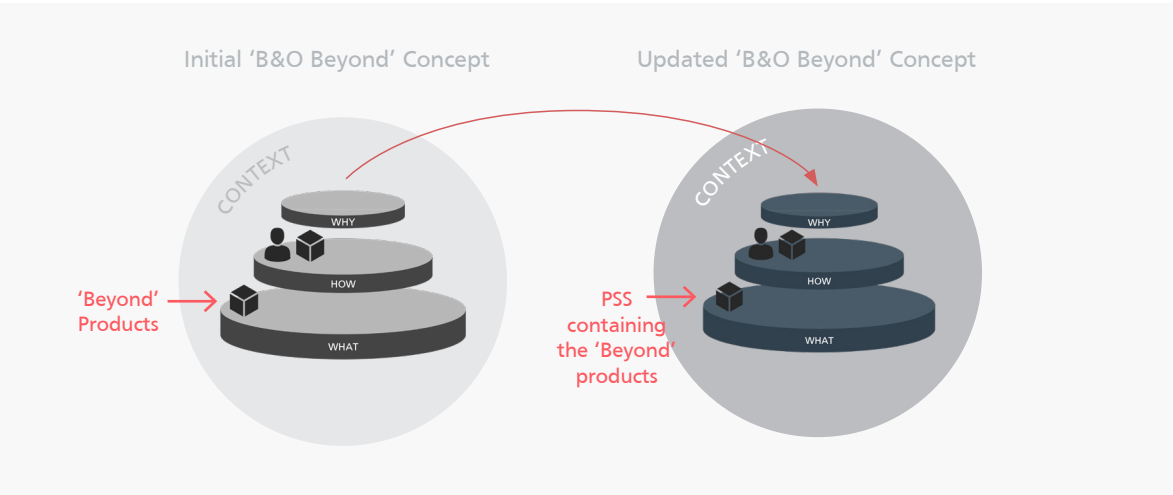


Figure 14: Visualisation of the combined D-DI and PSS approach to create the updated 'B&O Beyond' concept.



CHAPTER 2  
INITIAL CONCEPT ‘B&O BEYOND’

To innovate the initial ‘B&O Beyond’ concept, research was performed to understand how it came to its being. During a two-week visit at the HARMAN Automotive department in Denmark, multiple conversations (online and in-person) were held with employees of HARMAN and B&O. To gain insights on Ford’s perspective within the ‘B&O Beyond’ value proposition, an online interview was held with HARMAN’s Global Cross Channel Sales Director and Head of Business Development in the USA, who are in direct contact with the Ford USA sales team.

Figure 15 presents abstract representations of the ‘business context’ and ‘customer context’ design element of the new strategic goal as described in figure 9, which are used to structure subchapter 2.1.

Furthermore, design opportunities for the updated ‘B&O Beyond’ concept are captured within a design requirement list.

**Contents of chapter 2**

**Subchapter 2.1**  
Evaluation Initial ‘B&O Beyond’ Concept

**Subchapter 2.2**  
Design Requirements Updated ‘B&O Beyond’ Concept

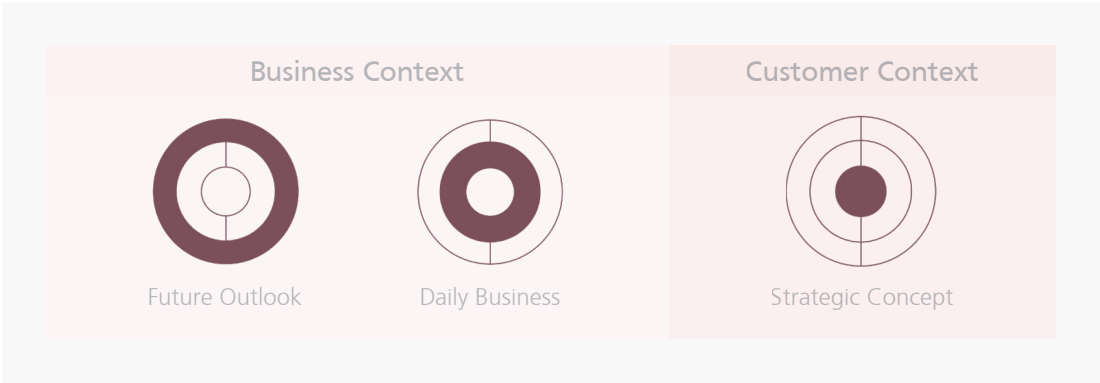
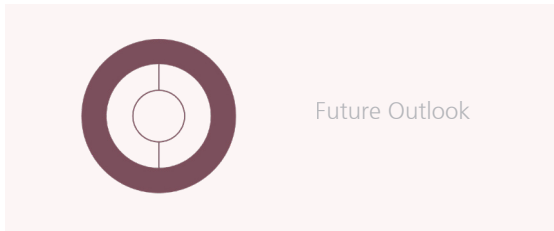


Figure 15: Abstract representation of the design elements for the strategic goal (ref. figure 9).

2.1 Evaluation Initial  
Concept 'B&O Beyond'

This subchapter aims to capture the 'B&O Beyond' value proposition, to learn about the motivations of the concept, and additional opportunities that may be pursued with the updated 'B&O Beyond' concept.



2.1.1 Future Outlook

As the HARMAN Automotive department is part of a larger organisation, HARMAN International (A Samsung Company), its future outlook is dependent on the vision and mission of the corporation.

HARMAN International

HARMAN's company mission is to make life more connected, entertaining, personalized, and productive. The execution of this mission is supported by its competitive strategy focussing on Operational Excellence, and company values: integrity, inclusion, teamwork & respect, innovation, and excellence.

The 'HARMAN International' company name derives from the audio equipment brand Harman Kardon, which was founded in 1953 by Sydney Harman and Bernard Kardon. In 1956 Harman

bought out Kardon and created HARMAN International. Over the years, HARMAN has anticipated the strategy of acquiring other companies to remain competitive. This strategy is still withholding today, however, HARMAN is now also targeting companies with other expertise, i.e. the automotive cyber-security firm TowerSec and automotive projected navigation system company Navdy, which were both acquired by HARMAN in 2016.

The numerous acquisitions provide HARMAN the intelligence to target a broad range of customer segments, varying between customers (B2C business) and companies (B2B business). To address these target markets, the organisation of HARMAN is structured into four divisions: Connected Car, Connected Services, Consumer Lifestyle, and Professional Solutions (figure 17).

HARMAN Automotive

HARMAN Automotive is planning to further develop its current business of offering branded audio solutions to partnered car manufacturers. Their 2025 strategic vision is to become the one-stop-shop for car interiors and to offer more experience-based solutions (Jørgensen, 2020).

All in All, figure 16 provides an overview of the mentioned strategic milestones, and a forecasted far-future vision (2040).



Figure 16: Corporate Strategy Roadmap HARMAN Automotive.

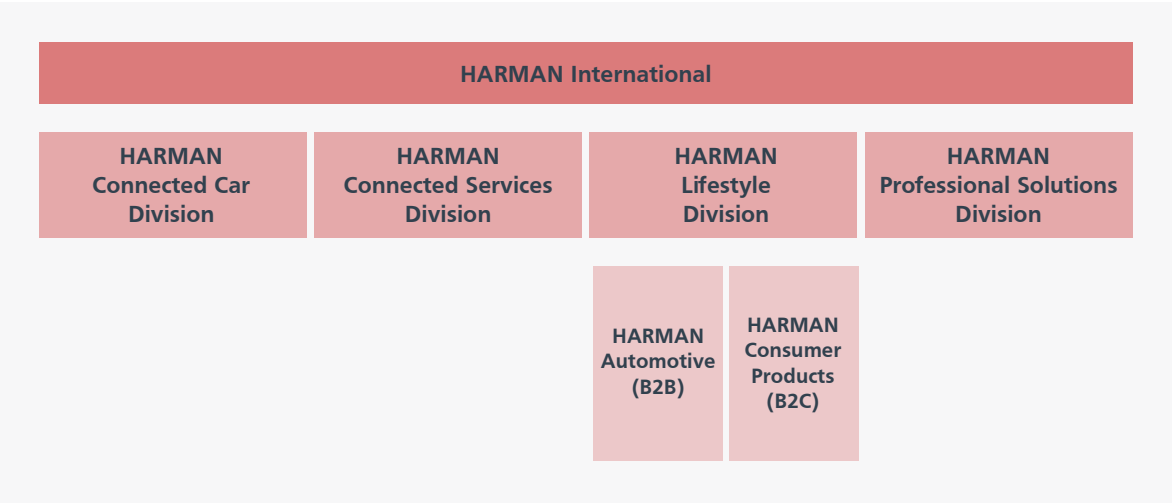
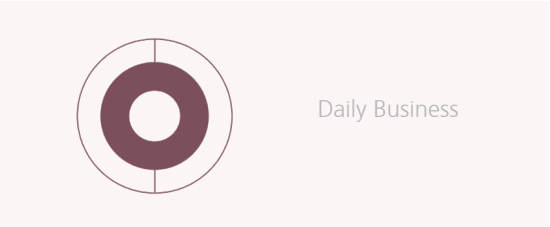


Figure 17: Positioning HARMAN Automotive in organisational chart HARMAN International



2.1.2 Daily Business

The 'B&O Beyond' value proposition is created for HARMAN Automotive's partnership with Bang & Olufsen and Ford. This section elaborates on the daily business context in which the value proposition operates.

Business Ecosystem

The 'B&O'-branded value proposition will be manufactured by HARMAN Automotive in collaboration with Bang & Olufsen and Ford. Whereafter, Ford offers the 'B&O Beyond' products to its dealers as an after-sales offering to the end-user (figure 18).

The independent Ford dealerships sell these after-sales products to new Ford F150 and Ford Bronco customers, but also to existing car model owners, who desire to upgrade their car audio system.

Business Opportunities 'B&O Beyond'

The strong partnership tied to the 'B&O Beyond' value proposition empowers the involved stakeholders to create unique value together. The following summarizes the supplementary business opportunities; The graduation project client, HARMAN Automotive, desires to offer a unique solution for its partners Bang & Olufsen and Ford, which has the potential to be tailored to its other B2B partnerships. Therewith, Bang & Olufsen desires to address customers in the U.S. with a unique 'B&O'-branded solution, which enhances their own manufactured products. Lastly, Ford also desires to offer its customers a unique and premium solution, which supplements their OEM car designs.

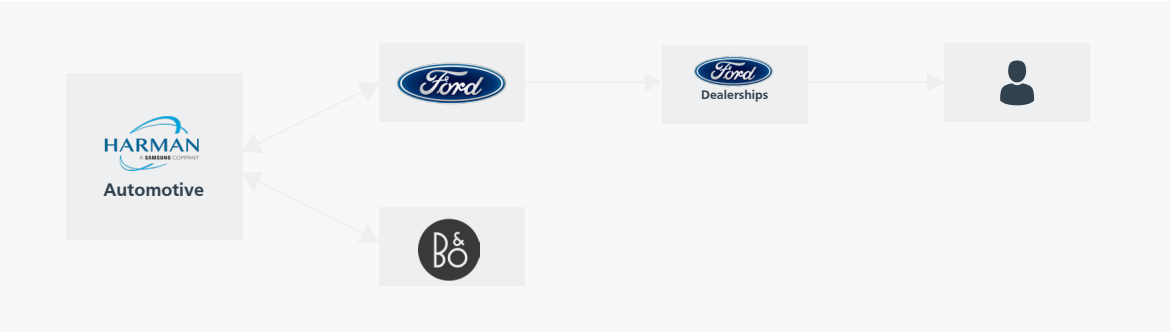
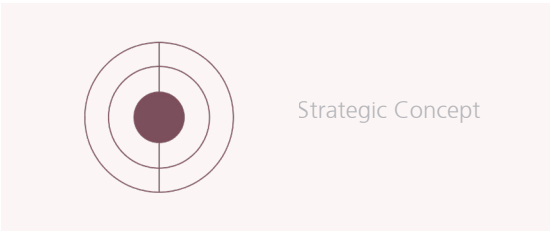


Figure 18: The TOS product category 'B&O Beyond' business ecosystem.



2.1.3 Strategic Concept

The ‘B&O Beyond’ value proposition contains two new ‘B&O’-branded audio products (figure 20); the Beyond 1 and the Beyond 2, which are designed for, respectively, the Ford F150 and the new Ford Bronco series that both target the U.S market.

The desired branding message of the ‘B&O Beyond’ product category is created by Bang & Olufsen, and relates to the core USP of the after-sales products (figure 19).

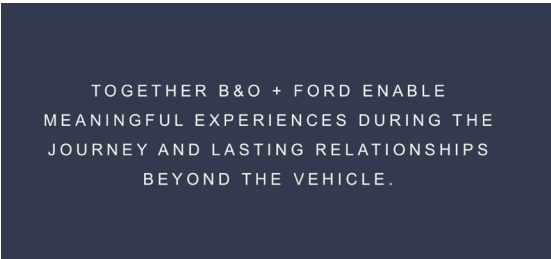


Figure 19: Branding message ‘B&O Beyond’ concept

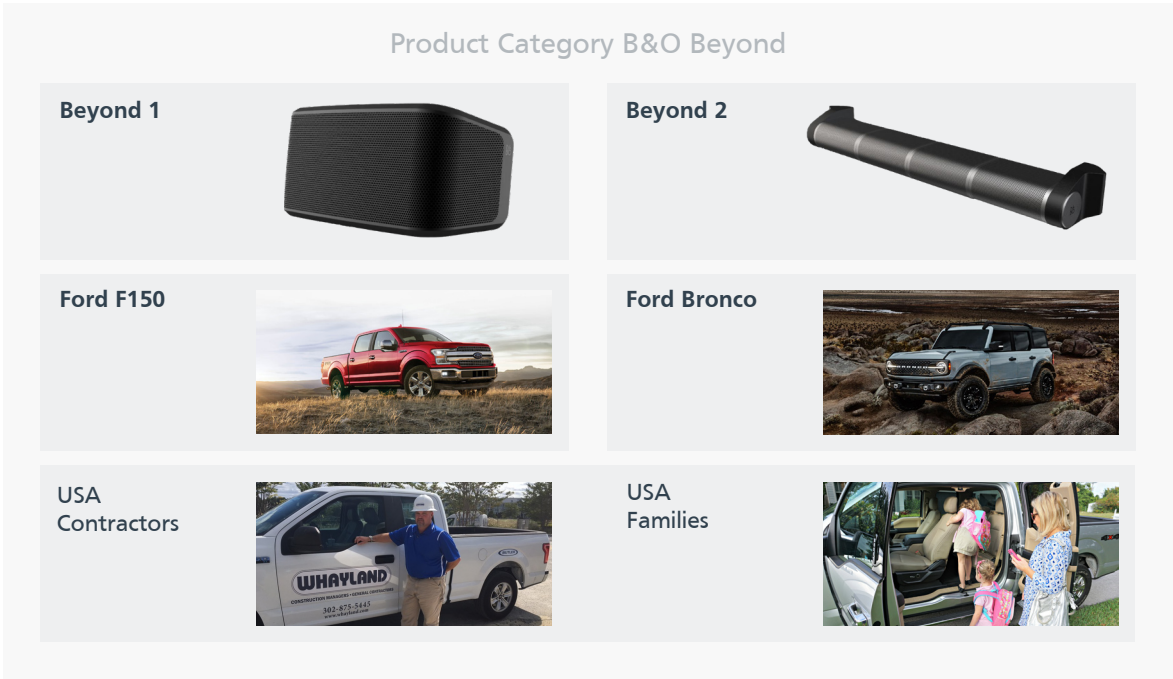


Figure 20: Overview of the TOS product category ‘B&O Beyond’.

Beyond 1

The Beyond 1 is a portable bluetooth speaker that functions, when docked into place, as a supplementary audio source within Ford F-150 models. In addition, during the docked-state, the Beyond 1 will be charged, therefore ready to be used when taken out of the vehicle.

This USP enables the Beyond 1 product to provide customers a powerful audio experience during their journey, and at their destination.

Beyond 2

The second after-sales product within the ‘B&O Beyond’ value proposition is a sound bar. The Beyond 2 is mounted into a fixed position within the vehicle, and functions as a supplementary audio source for the Ford Bronco models.

This unique ‘B&O’-branded sound bar contains the feature of directing the sound it produces towards the front car-seats, or towards the rear of the car. Therefore, it enables a powerful listening experience during your journey, and at your destination (i.e. enhancing your American tailgate party).

2.2 Design Requirements  
Updated Concept  
‘B&O Beyond’

This subchapter provides a list of design requirements (section 2.2.2) that function as guidelines during the creation of the updated ‘B&O Beyond’ concept. These design requirements capture the strengths of the initial ‘B&O Beyond’ concept and enable the companies involved to pursue additional opportunities.

2.2.1 Additional Opportunities

The following opportunities positively influence (directly or indirectly) HARMAN Automotive’s partnership with Bang & Olufsen and Ford.

- More customers will be attracted to B&O Beyond, when aligning the concepts ‘why’ layer with the ‘how’ and ‘what’ layers. Aligning these layers will create a more coherent concept that will benefit the customer’s acceptance rate.
- More customers are likely to purchase the B&O Beyond products when adding more USPs to the Beyond 1 and Beyond 2. With the current products it will be challenging to outperform the wide range of competitors that offer customers the same benefit, for a lower price (appendix 2 - A).
- The experience of the ‘B&O Beyond’ value proposition becomes more powerful when the branding message is part of a comprehensive vision that applies to all concept elements.
- Ford can offer its Ford F-150 customers an even more unique B&O sound solution, by making adjustments to the industrial design and placement of the Beyond 1 in the vehicle (appendix 2 - B).
- B&O can eliminate the risk of losing customers due to transformation of their brand reputation, by interchanging the Ford F-150 car model with another Ford car model that balances more with the B&O brand values (appendix 2 - C).

2.2.2 Design Requirements Updated 'B&O Beyond' Concept

The following design requirement list is created by and for the author as a guideline during the D-DI process. Figure 21 is structured in a way that the to be designed updated concept, will offer the graduation project client, HARMAN Automotive, unique value for its partnership with Bang & Olufsen and Ford, and will provide for additional (future) opportunities.

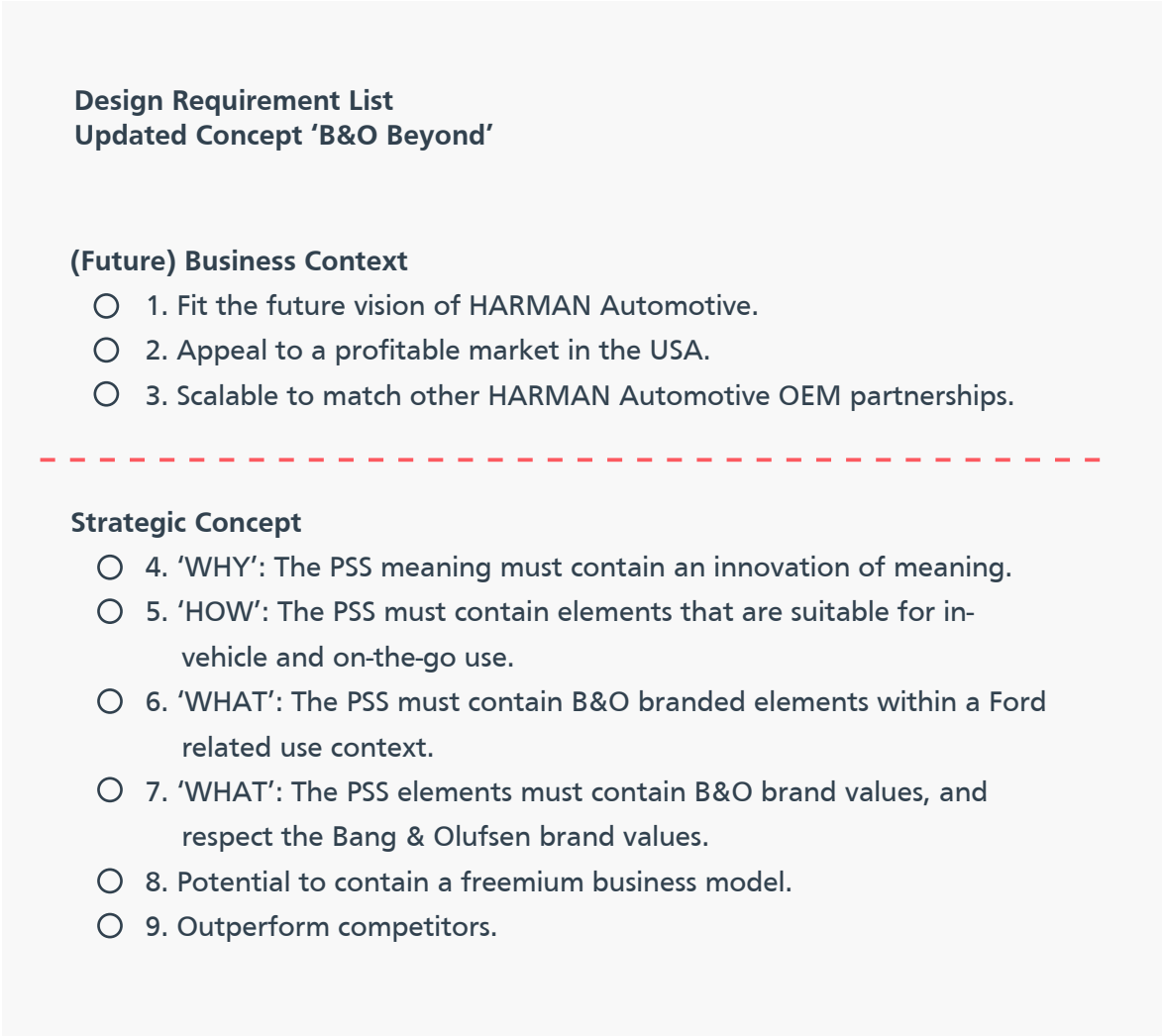


Figure 21: Design requirements for the updated 'B&O Beyond' concept.

The second chapter analysed the initial 'B&O Beyond' concept, and provided a list of design requirements for the to be designed updated 'B&O Beyond' concept that captures the strengths of the initial concept, and additional opportunities.

The next chapter, chapter 3, elaborates on the necessary research for inspiration within the D-DI process, and four strategic ideas that form the foundation of the updated 'B&O Beyond' concept. The third chapter represents the D-DI process; the pink arrow in the figure 14.



## CHAPTER 3

### BUILDING A NEW STRATEGIC VISION

In order for the new design to be a strategic concept that has the potential to outperform competitors today and in the future, a novel vision needs to be created by means of inside-out innovation (figure 13). The third chapter elaborates on the process for the building of this strategic vision for the creation of the redesign of B&O Beyond.

Subchapter 3.1 elaborates on the research performed to retrieve information that serves as foundation for the creation of the vision. Building upon this vision, subchapter 3.2 presents four ideas that were created to each fit one of three potential future scenarios. These four ideas were designed to provide for possible directions for the further development of the graduation project. Finally, subchapter 3.3 elaborates on which of these four ideas was proposed by the author and selected by the client to be further developed during the remaining time of the project.

#### Contents of chapter 3

##### Subchapter 3.1

Inspiration from Mobility, Urban Living, and Culture

##### Subchapter 3.2

Four Strategic Ideas

3.1 Inspiration from Mobility, Urban Living, and Culture

34

The research, that was fundamental for the development of the strategic vision, was focused on three domains: mobility, urban living, and culture. These three research domains are selected as they contain influential external factors (figure 9) that are relevant to the B&O Beyond value proposition.

Where the reasoning for the selection of the domain 'mobility' is straight forward, attention was also paid to developments and trends in the areas of 'urban living' and 'culture' as these domains influence how the potential customers can interpret and use the new B&O Beyond proposition, and therefore influence HARMAN's partnership with Ford and B&O.

Approach for Inspiration

The structure used to research the aforementioned domains is inspired by the documentary research method. This method refers to the analysis of documents that contains information about the phenomenon of study, where the researcher is responsible for the collection, analysis, and discussion of the research data, which is captured in various documents (Ahmed, 2010).

Collection Research Data

The data needed to study the three research domains was collected by means of interviews with industry experts (figure 22-A), desk-research throughout the project to continuously strengthen the new concept's vision, and additional sources (figure 22-B) to retrieve information on cultural trends.

Analysis Research Data

The gained insights were captured in an external structure, as required by the documentary research method (Ahmed, 2010). This structure contains a timeline (appendix 4), with the timepacing element constructed according to the megatrend

in the domain 'mobility'; the development levels of autonomous vehicles. To support the interpretation of the timeline, a graphic image was created that portrays the impact due to the developments and trends in the domains mobility and urban living (figure 23).

Discussion Research Data

Figure 24 shows a visual of how HARMAN Automotive's corporate strategy (figure 16) relates to the external developments captured in figure 23.

In order to develop ideas that will be relevant to HARMAN Automotive now and in the future, the indefinite 2040+ future vision (figure 24-B) was split into three scenarios that each represent a context for a redesign of the B&O Beyond proposition.

Creating scenarios enables capturing a wide range of possibilities in rich detail, and is used as a tool in corporatewide strategic planning and vision building, where it is used to help compensate for the usual errors in decision making - overconfidence and tunnel vision (Schoemaker, 1995).

The scenarios are related to a future where we include the development of shared and autonomous electric vehicles, as its essential to HARMAN Automotive's B2B (future) business. The scenarios are:

**Scenario A (deployable now)**  
Ford offers electric vehicles to customers for private use.

**Scenario B (deployable now)**  
Ford offers electric vehicles to customers for shared use.

**Scenario C (deployable in future)**  
Ford offers electric autonomous vehicles to customers for shared use.

Collection

Figure 22

All interviews were conducted by means of online video conversations.

**Domain Mobility**  
1. Elmer van Grondelle, (TU Delft) Expert Automotive Design & Strategy.  
*Notes interview: appendix 3-A.*

2. Peter Frans Pauwels, co-founder TomTom.  
*Notes interview: appendix 3-B.*

3. PostNL Future Cities Team.

**Domain Urban Living**  
1. Paul Vermeulen  
Professor Urban Architecture TU Delft

1. Museum "Bang & Olufsen", Struer, Denmark, visit 06/09/2020.

2. Exhibition "Live Better Lives" - Vandkunsten (2020), Utzon Centre, Aalborg, Denmark, visit 05/09/2020.

3. Documentary "White Riot" - Rubika Shah (2020), Eye, Amsterdam, The Netherlands, visit 21/09/2020.

4. Documentary Series "Droomland Amerika" (2016) - NPO, viewed online 09/2020.

5. Documentary "The Social Dilemma" - Netflix (2020), viewed online 09/2020.

Figure 22-A: Overview of conducted expert interviews.

Figure 22-B: Overview of performed cultural research.

Analysis

Figure 23

**2025 - 2030**  
Growing urban areas

**2040 +**  
Metropolitan regions

Figure 23-A: Growing & connected urban areas.

Figure 23-B: Electric powered & connected metropolises.

Discussion

Figure 24

**2025 - 2030**  
Growing urban areas

**2040 +**  
Metropolitan regions

Figure 24-A: Provide for this strategy in growing urban areas.

Figure 24-B: Provide for this strategy in urban metropolises.

35

3.2 Four Strategic Ideas

3.1.1 Three Scenarios, Four Ideas

Each idea that provides for a potential direction for the development of the redesign of B&O Beyond, is created for one of the three scenarios described in the previous subchapter. The four ideas are named as followed:

Approach for Creating Ideas

The D-DI Inside-out approach (figure 13) was applied for the creation of the four ideas, whereby design critique of the graduation project mentor guided the process of envisioning and interpreting (Verganti & Öberg, 2013) and ‘hill finding’ and ‘hill climbing’ (Verganti & Norman, 2014).

The four ideas were created to ‘check’ all design requirements listed in figure 21 (subchapter 2.2).

Scenario A, Idea 1 ‘B&O Beyond Location’
Scenario A, Idea 2 ‘B&O Beyond Family’
Scenario B, Idea 3 ‘B&O Beyond Sharing’
Scenario C, Idea 4 ‘B&O Beyond Mobility’

Scenario A, where Ford offers electric vehicles to customers for private use, contains two ideas (idea 1 and 2), as they both are targeted at the current target groups of the B&O Beyond proposition (figure 20). Scenario B and C contain ideas with no specific Ford vehicle or target group in mind, to consider more options.

This idea targets contractors who live in the outer urban areas of the U.S., they desire to ‘teleport themselves to their weekend activities’. They can do so by purchasing B&O Beyond Location, which offers them a PSS that contains an additional powerful portable bluetooth speaker for their Ford F-150 truck, and services that provide for a in-vehicle sound ambiance of their weekend activity, such as: ocean ambiance, nightlife ambiance, and city park ambiance.

Scenario A, Idea 1  
‘B&O Beyond Location’

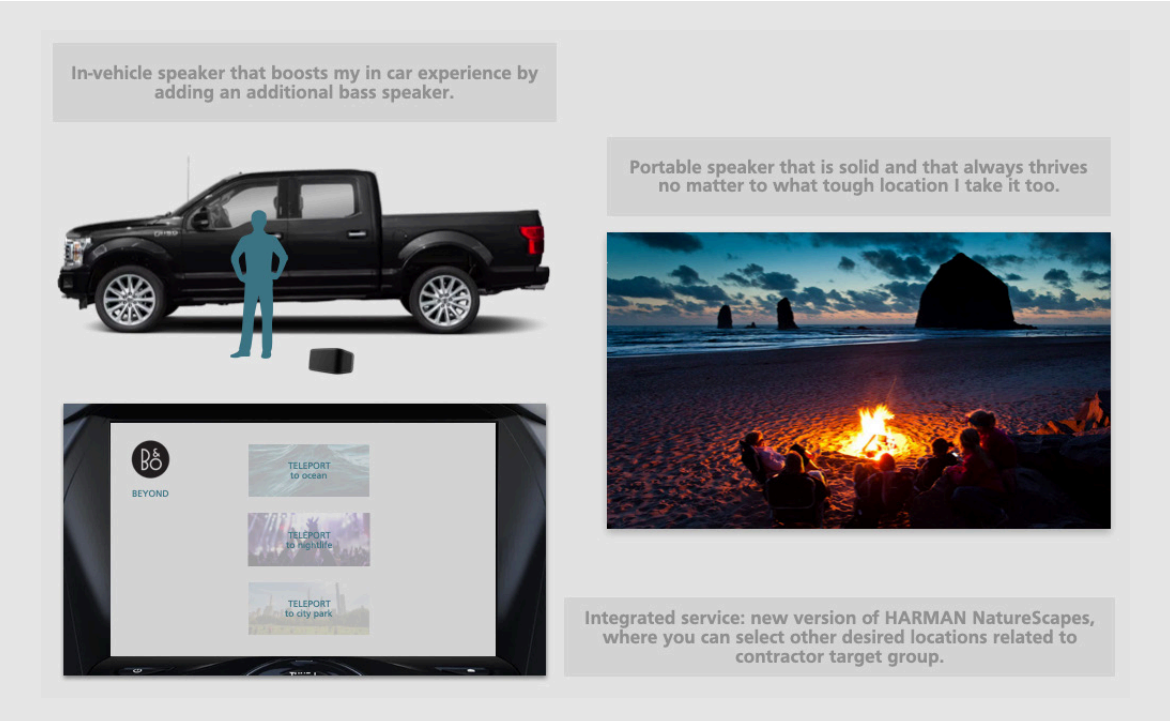


Figure 25: An overview of the PSS elements related to idea 1 ‘B&O Beyond Location’.

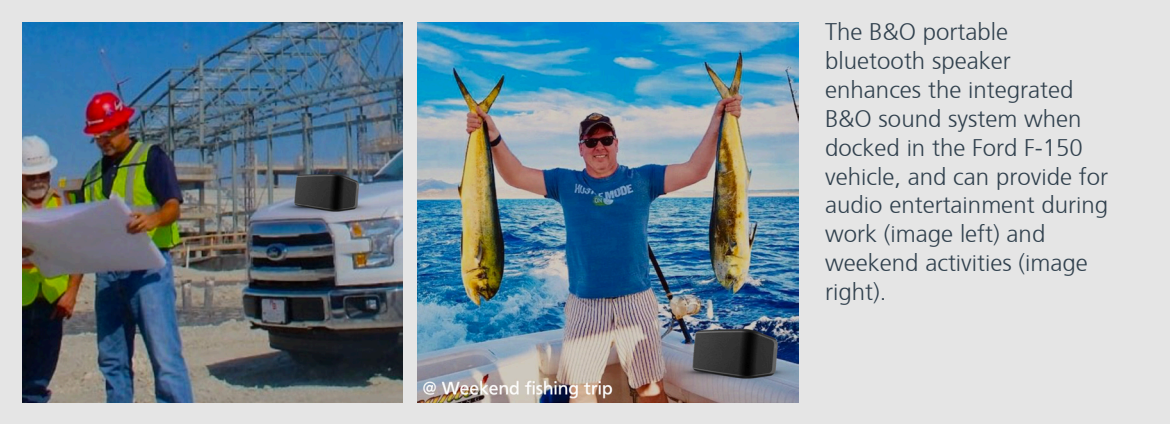


Figure 26: Use scenario of idea 1, targeted at the current B&O Beyond target group: contractors in the U.S.



### Scenario A, Idea 2 'B&O Beyond Family'

The second idea is created for families in the U.S. who desire to bond with each other on their weekend trips, during the journey and at their destination. The B&O Beyond Family idea contains a PSS that enables people to create two separate, or one big 'audio bubbles' for listening to music separately or together. This idea for a PSS solves the problem of keeping your kids entertained during long drives, while you can enjoy your own audio entertainment.

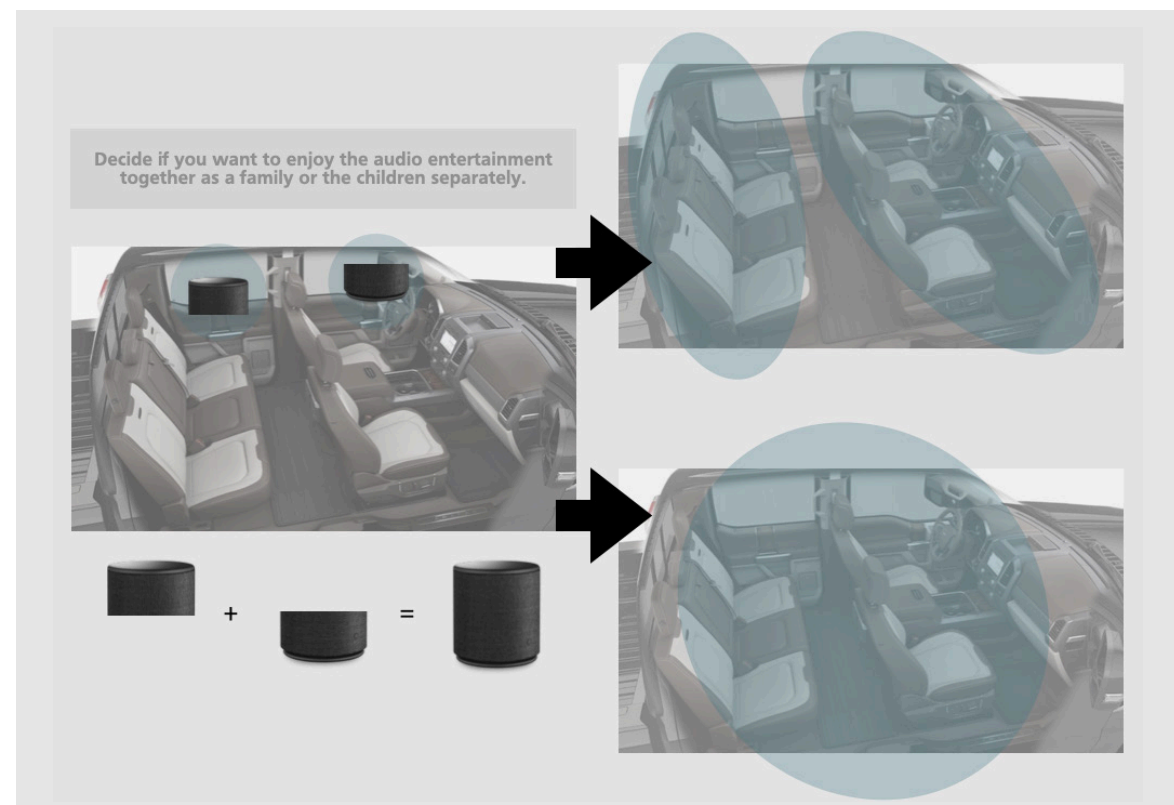


Figure 27: The additional B&O bluetooth speaker contains two parts that are docked separately in the Ford F-150.



Figure 28: The two parts of the B&O speaker can be taken out of the Ford F-150, to enjoy music at your destination.

### Scenario B, Idea 3 'B&O Beyond Sharing'

B&O Beyond Sharing is created for people who live in dense urban areas, who desire to 'share moments within their community'. This idea for a PSS contains a small B&O portable bluetooth speaker with integrated GPS sensor, and a service that provides people access to a database of shared moments. A moment is a data-

bundle of a recommended location with selected music that enhances that specific location, which you can navigate to with your Ford car, and enjoy with the portable B&O speaker.

The B&O speaker has an additional function of providing access to audio entertainment that is shared by the people using this specific shared vehicle, or by easily flipping the product and redocking it, the user is provided with access to his/her own audio entertainment preferences.

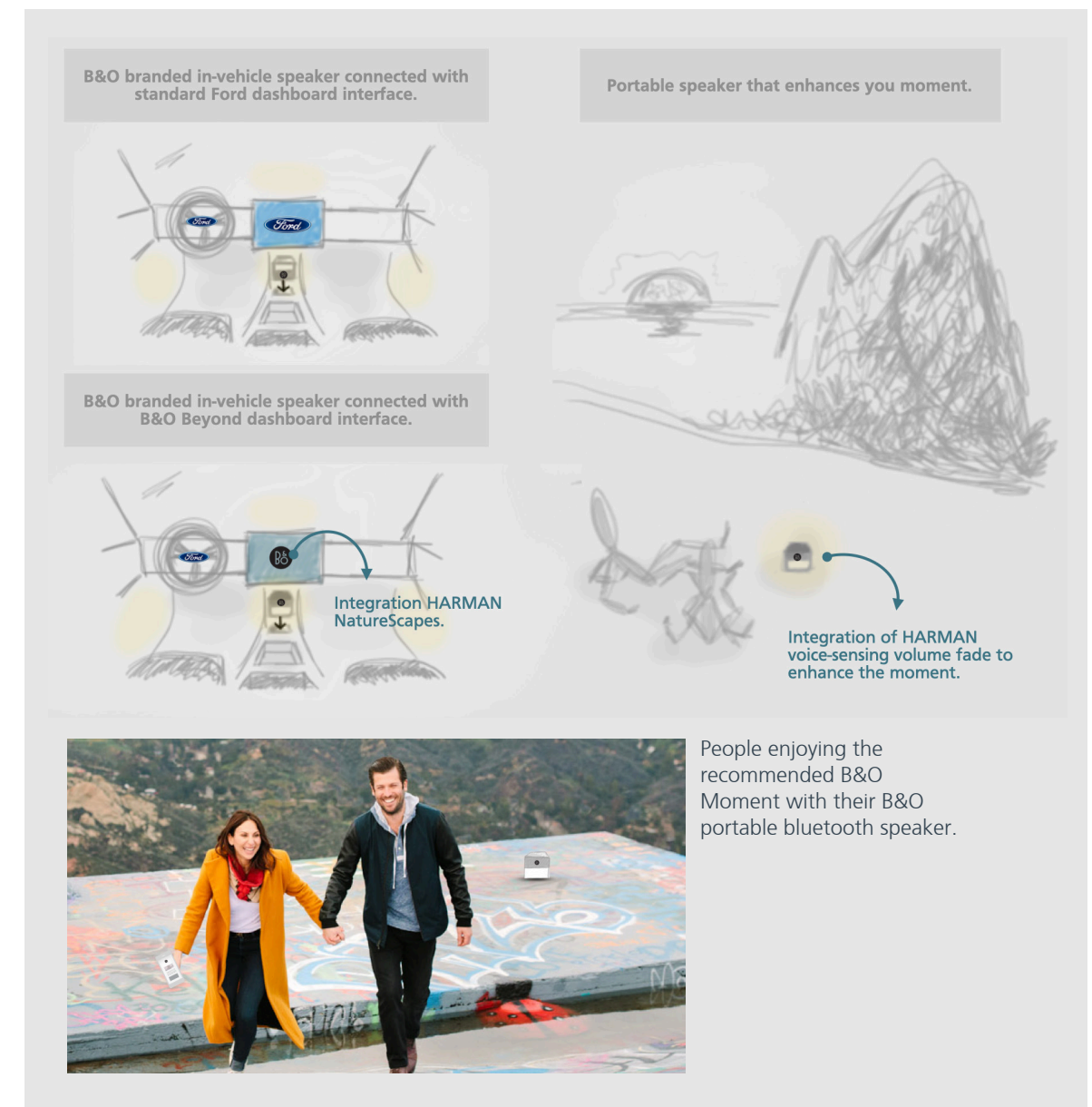


Figure 29: Overview of idea 3 'B&O Beyond Sharing'.



### Scenario C, Idea 4 'B&O Beyond Mobility'

The fourth idea is created for scenario C where Ford offers electric autonomous vehicles to customers for shared use. As 70% of all people will live in cities by 2030 (Khanna, 2016), this idea could provide for interesting value. B&O Beyond Mobility provides a PSS that enables people to 'listen to their own music in the public

space together with unknown people'. The PSS contains multiple B&O public speakers, and a service that provides subscribed people access to use all B&O audio points throughout all urban areas, including the fixed speakers in the shared autonomous Ford fleets.

The B&O product contains a feature that communicates with the surrounding people if the listener is open to company for enjoying the music together.

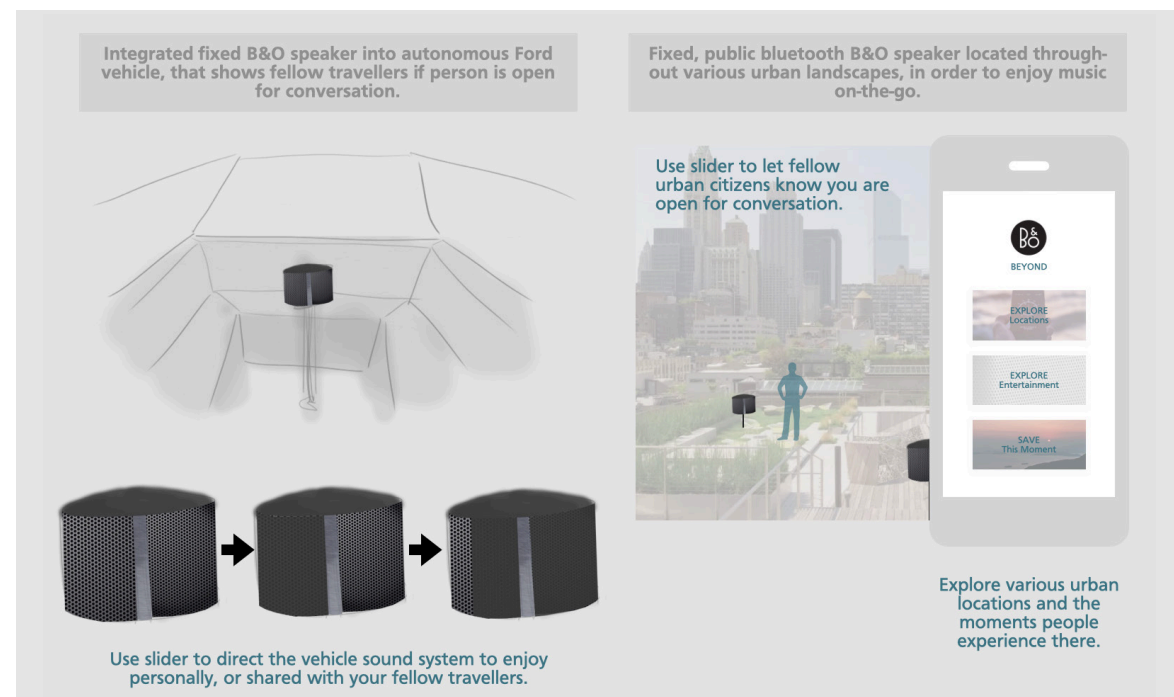


Figure 30: Elaboration idea 4: 'B&O Beyond Mobility'



Figure 31: Use scenario idea 4: 'B&O Beyond Mobility'

### 3.2.2 Evaluation Ideas

All four strategic ideas were evaluated by means of the design requirement list presented in figure 21 (appendix 5). The first two ideas, 'B&O Beyond Location' and 'B&O Beyond Family', did not comply with all listed requirements. Therefore, they were not considered to be further developed into a concept.

The last two ideas, 'B&O Beyond Sharing' and 'B&O Beyond Mobility' did comply to all requirements, and provided additional benefits. Figure 32 presents the 'checked' design requirement list for idea 3 'B&O Beyond Sharing'.

### 3.2.3. Idea Selection

The idea chosen to pursue as a direction for further development of the updated 'B&O Beyond' concept, was idea 3 'B&O Beyond Sharing'. This decision was made, based on the evaluation of the 4 ideas regarding the design requirement list, and elaboration with the representative of the graduation project client company. The 'B&O Beyond Sharing' idea had a preference over idea 4 as the selected idea was deployable now, and had the potential to attract more B2B partnerships.

The following chapter, presents the final updated 'B&O Beyond' concept (figure 14, right image), which evolved from the 'B&O Beyond Sharing' idea, and the inspiration from the ideas that were turned down.

### Design Requirement List Updated Concept 'B&O Beyond'

#### (Future) Business Context

- ✓ 1. Fit the future vision of HARMAN Automotive.
- ✓ 2. Appeal to a profitable market in the USA.
- ✓ 3. Scalable to match other HARMAN Automotive OEM partnerships.

#### Strategic Concept

- ✓ 4. 'WHY': The PSS meaning must contain an innovation of meaning.
- ✓ 5. 'HOW': The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✓ 6. 'WHAT': The PSS must contain B&O branded elements within a Ford related use context.
- ✓ 7. 'WHAT': The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- ✓ 8. Potential to contain a freemium business model.
- ✓ 9. Outperform competitors.

+ Enable a competitive advantage for Ford in the car sharing business.

Figure 32: Idea 3 'checks' all design requirements for the redesign of the B&O Beyond proposition.

## CHAPTER 4

### UPDATED CONCEPT 'B&O BEYOND'

Throughout the D-DI inside-out approach (figure 13), 'design critique' was provided by the representatives of the companies involved in the 'B&O Beyond' value proposition, and the TU Delft supervisors. This feedback guided the selected 'B&O Beyond Sharing' idea into a final design that benefits the addressed customers, and the stakeholders of the 'B&O Beyond' value proposition.

Figure 33 presents again the abstract representations of the 'business context' and 'customer context' design elements for the strategic goal that are described in figure 9. In this chapter they are used in the opposite order, to elaborate on the value the updated 'B&O Beyond' concept provides for the customers, and the stakeholders involved.

#### Contents of chapter 4

##### Subchapter 4.1

Customer Value Updated 'B&O Beyond' Concept

##### Subchapter 4.2

Stakeholders Value Updated 'B&O Beyond' Concept

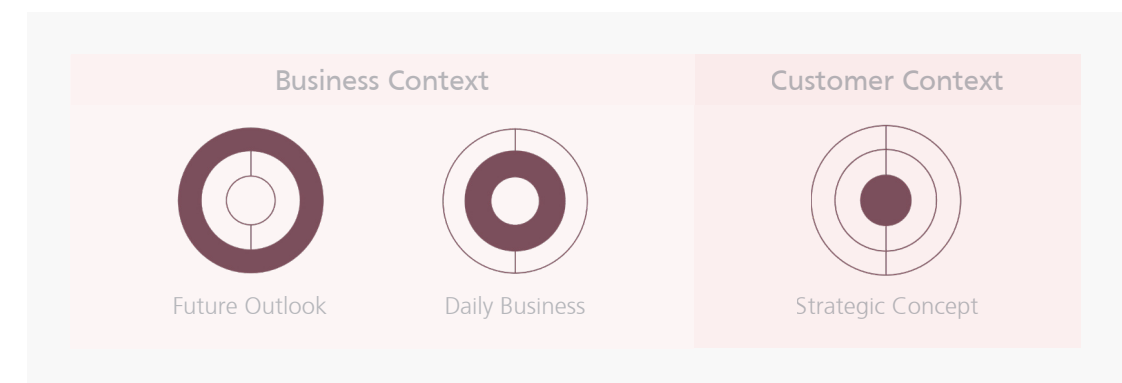
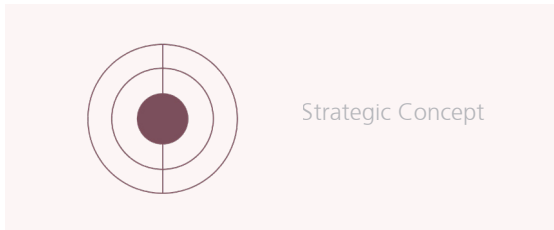


Figure 33: Abstract representation of the design elements for the strategic goal (ref. figure 9, 15).

### 4.1 Customer Value Updated ‘B&O Beyond’ Concept

Throughout subchapter 4.1, there will be elaboration on the desirability and uniqueness of the updated ‘B&O Beyond’ value proposition, by exploring the following question; does ‘B&O Beyond’ provide customers a solution in a more appealing way than competitive solutions?



#### 4.1.1 Targeting Various Customers

The updated ‘B&O Beyond’ concept contains a PSS that targets a wide range of customers. The various target groups that will be addressed with this new value proposition are presented in figure 34. These target groups include current and potential Ford customers, and are matched to Bang & Olufsen’s customer categories; ‘Gen Z’, ‘Careerist’, and ‘Well-Established’.

The ‘B&O Beyond’ PSS concept focuses on three key target groups and two additional target groups, as each type of customer utilises Ford mobility and ‘B&O’-branded products in a unique way that conforms with their lifestyle.

#### A Solution for Clearing Your Thoughts

The updated ‘B&O Beyond’ concept provides all of these target groups a means to relax. ‘B&O Beyond’ provides the Millennial and Gen Z age group a solution to relieve them from their stressors (Bethune, 2019). Furthermore, the new PSS provides for fulfillment of each of their human psychological need of ‘novelty seeking’, which releases dopamine.



Figure 34: Overview of the personas that represent different ‘B&O Beyond’ target groups.

4.1.1 The PSS Concept 'B&O Beyond'

The embodiment of this solution is wrapped into 5 different 'B&O'-branded value propositions, each addressing a different target group. Together these value propositions make up for one PSS that empowers people to **elevate their life with meaningful adventures**, by recommending B&O Moments (figure 35).

Figure 37 must be viewed from the centre, where the 5 different target groups are located. When a person purchases one of the B&O Beyond value propositions (lower part figure 37), containing a product and an application for your smartphone (and car dashboard interface for 4/5 target groups), they gain access to an exclusive C2C digital platform (top

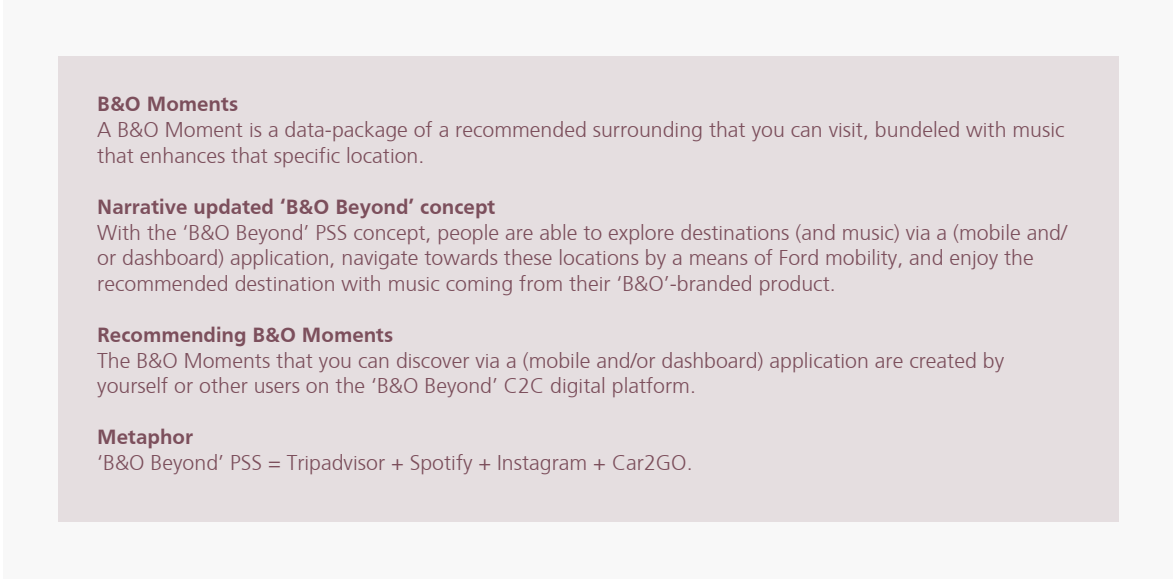


Figure 35: Elaboration on B&O Moments and the 'B&O Beyond' PSS.

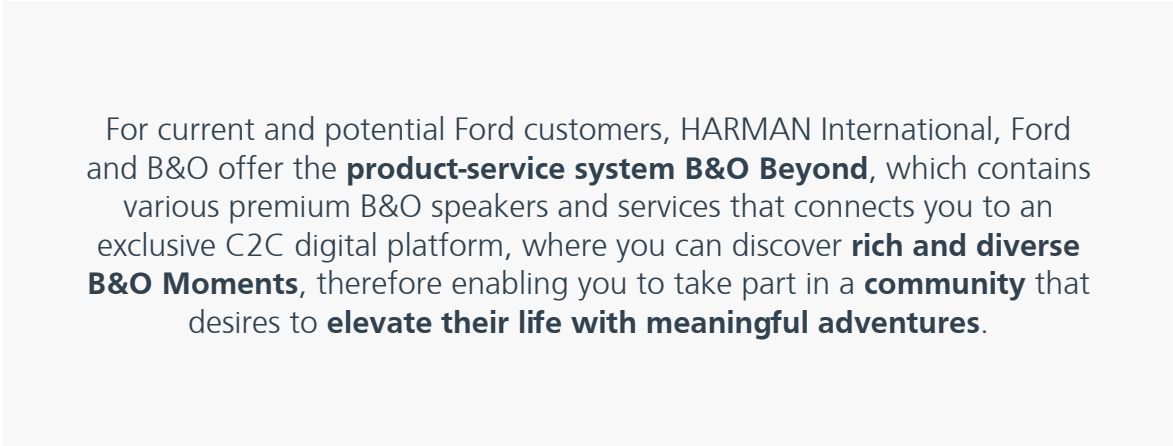


Figure 36: Positioning statement of the updated 'B&O Beyond' concept.

part figure 37). Via this digital platform, the target groups can make use of various services that are all related to the core interaction; recommending each other B&O Moments.

With each value proposition, a person is able to enjoy the B&O Beyond experience. This experience contains 5 steps that can be experienced in any particular order; **discover, navigate, enjoy, create, and share**. Figure 38 provides an overview of the B&O Beyond customer journey, and the correlated wireframes of the B&O Beyond mobile application.

To sum up, the updated 'B&O Beyond' value proposition is captured in a positioning statement (figure 36).

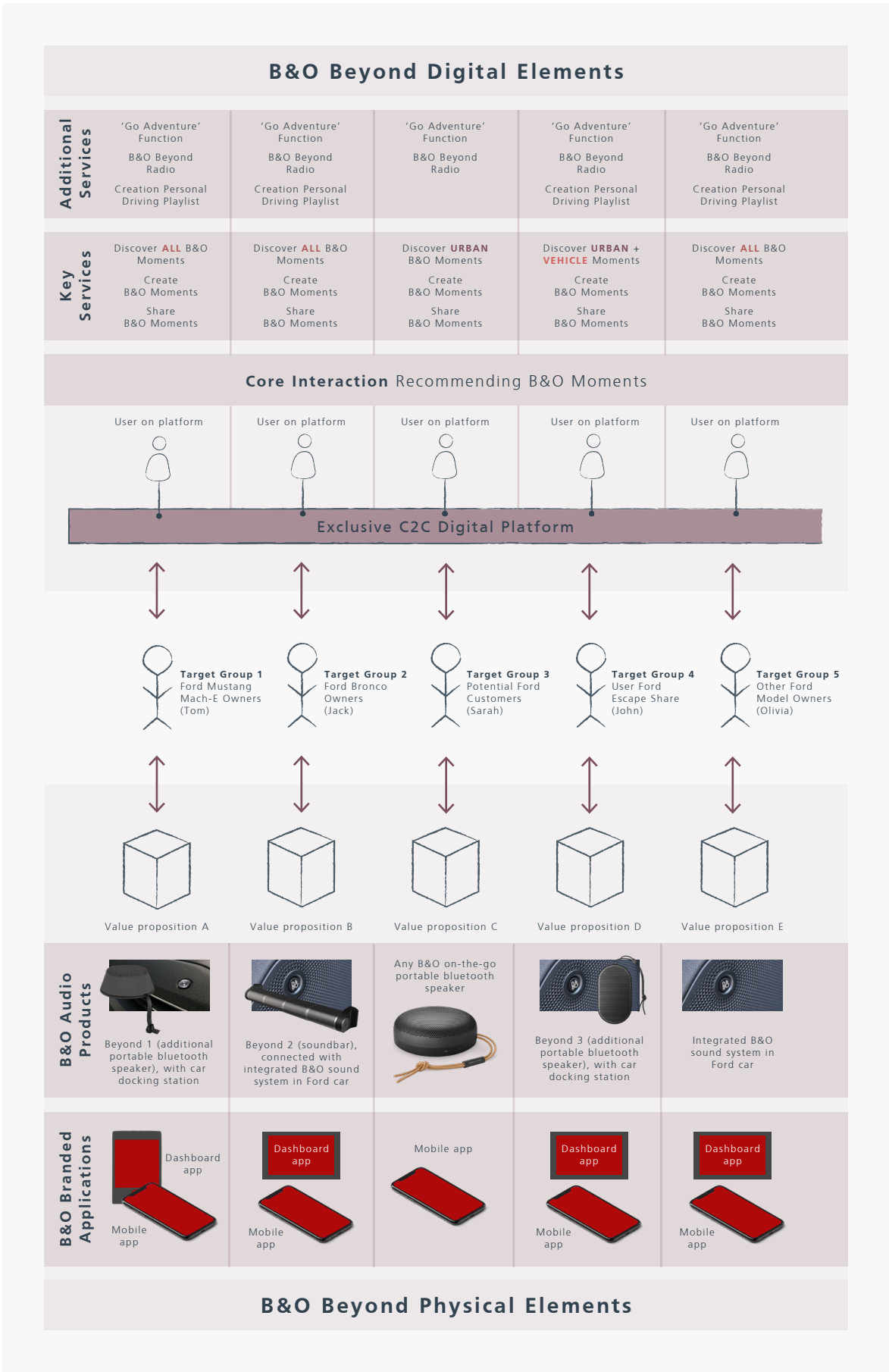


Figure 37: Overview 'B&O Beyond' PSS



**Customer Journey 'B&O Beyond'**  
The following customer journey applies to all target groups mentioned in figure 34. Within these following steps, **the key services** (figure 37, 'B&O Beyond Digital Elements') are presented.

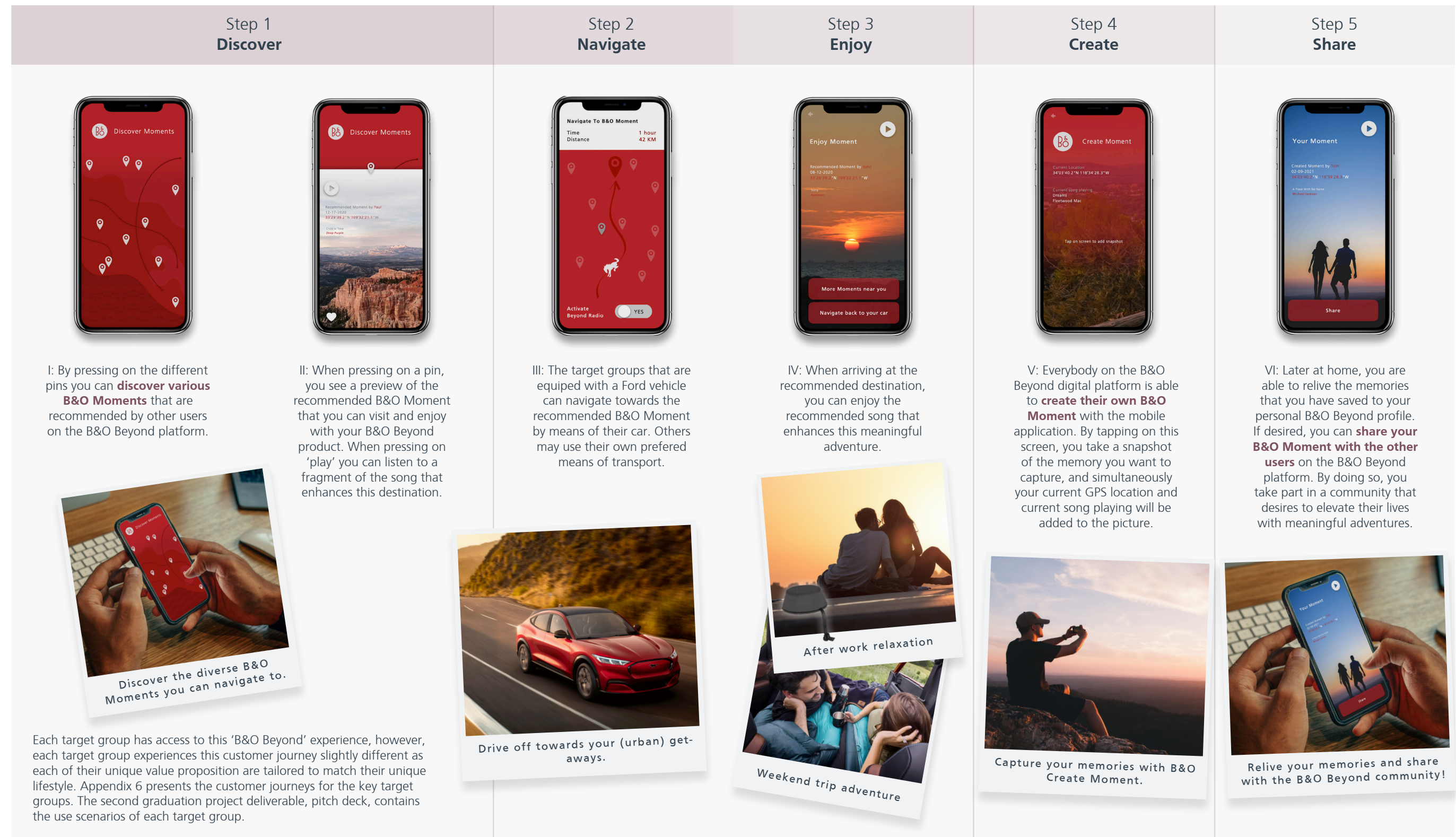
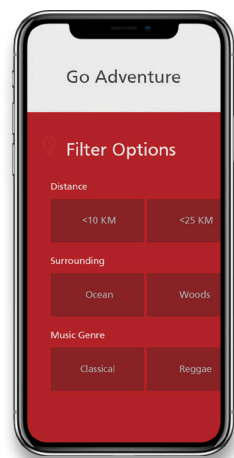


Figure 38: Customer journey redesign B&O Beyond.



Additional Services

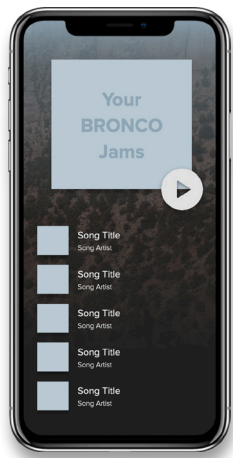
Presented below are the additional services of the 'B&O Beyond' C2C digital platform (figure 37).



**'Go Adventure' Function**  
This additional service enables the algorithm to select a B&O Moment for you to discover. You help filtering down the possibilities so you navigate to an unknown adventure you're in the mood for.



**B&O Beyond Radio**  
The B&O Beyond Radio contains a playlist of the recommended songs of the B&O Moments of the area you are driving through. This additional service enables you to discover new music at your destination, and during your journey.



**Personal Driving Playlist**  
When pressing the 'heart' button of the songs you are driving through with B&O Beyond radio, they get saved to a playlist within the partnered music streaming service.

Ford Escape Share

The fourth target group, represented by John (figure 37), uses the new car sharing service by Ford: Ford Escape Share. Adding B&O Beyond to Ford's car sharing service, provides Ford a competitive advantage in the car sharing business, as all other car sharing services focus on providing customers transportation from A to B.

With Ford Escape Share users are able to reserve a shared Ford vehicle for functional use (transportation from A to B) (figure 39, left image), or for leisure (figure 39, right image). When reserving a B&O branded Ford Escape Share vehicle, people who do not own a Ford car or B&O on-the-go product yet, are able to experience the B&O Beyond platform and taste the lifestyle of Ford and B&O.

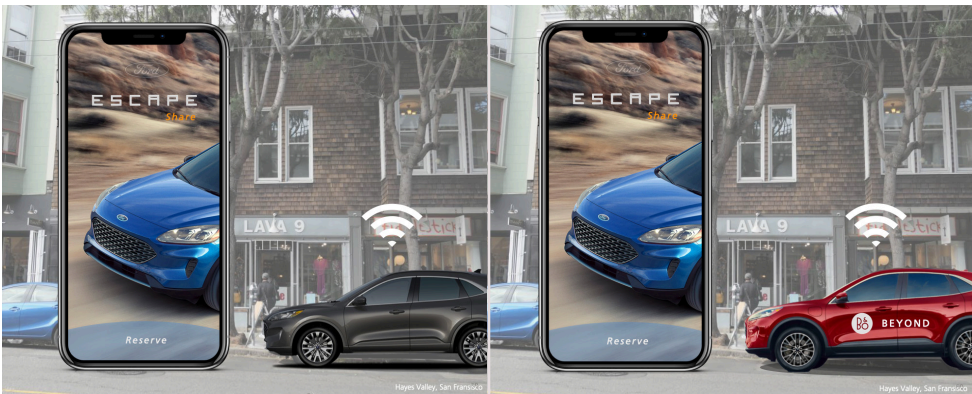


Figure 39: 'Ford Escape Share' car sharing service offers two types of vehicles; one for functional-use, and the other for discovering B&O Moments and the pleasure of driving.

New B&O After-Sales Products

The value propositions for target group 1 and 3 contain two new designed products: the Beyond 1 and the Beyond 3. Both products support the customer journey presented in figure 38.

The **Beyond 1** is an additional portable B&O bluetooth speaker, which will be charged when it is docked in the Ford Mustang Mach-E (figure 41). Simultaneously while docked, the bottom of the Beyond 1 speaker functions as an induction phone charger (figure 40).

When pressing the 'B&O logo', you undock the B&O speaker and you will be able to carry it with you to your meaningful adventures by means of the leather strap. At your destination you flip the product, and enjoy the recommended song or your personal music by means of the B&O speaker (figure 44).



Figure 40: Smartphone being charged via induction coil, which is integrated within the Beyond 1 speaker.



Figure 41: Beyond 1 seamless integrated design.

Figure 42: Portable function Beyond 1.





Figure 43: Cross section charge and docking station Beyond 1.



Figure 44: The Beyond 1 undocked.

Figure 43 presents how the bottom (coil integrated) of the Beyond 1 functions as an induction phone charger, and how the B&O product is undocked when pressing the B&O logo.

Figure 44 shows how the charged and ready to go Beyond 1 functions as a portable bluetooth speaker when enjoying meaningful adventures.

The **Beyond 3** contains the same features as the Beyond 1, however, the design is tailored to the new car sharing concept by Ford: Ford Escape Share (figure 39).



Figure 45: Beyond 3 integrated within car interior.



Figure 46: Beyond 3 used on-the-go.

#### 4.1.3 New Meaning 'B&O Beyond'

The new meaning of B&O Beyond is presented in figure 47. This new meaning is the new 'why' in figure 48, and functions as a 'red thread' through the entire PSS design.

The design-driven innovation method enabled the new 'B&O Beyond' products to outperform their initial competitive solutions (appendix 2-A).

However, the updated 'B&O Beyond' concept may now compete with other solutions, that offer people a similar 'why'. The next section elaborates on the new competition of the 'B&O Beyond' PSS concept.

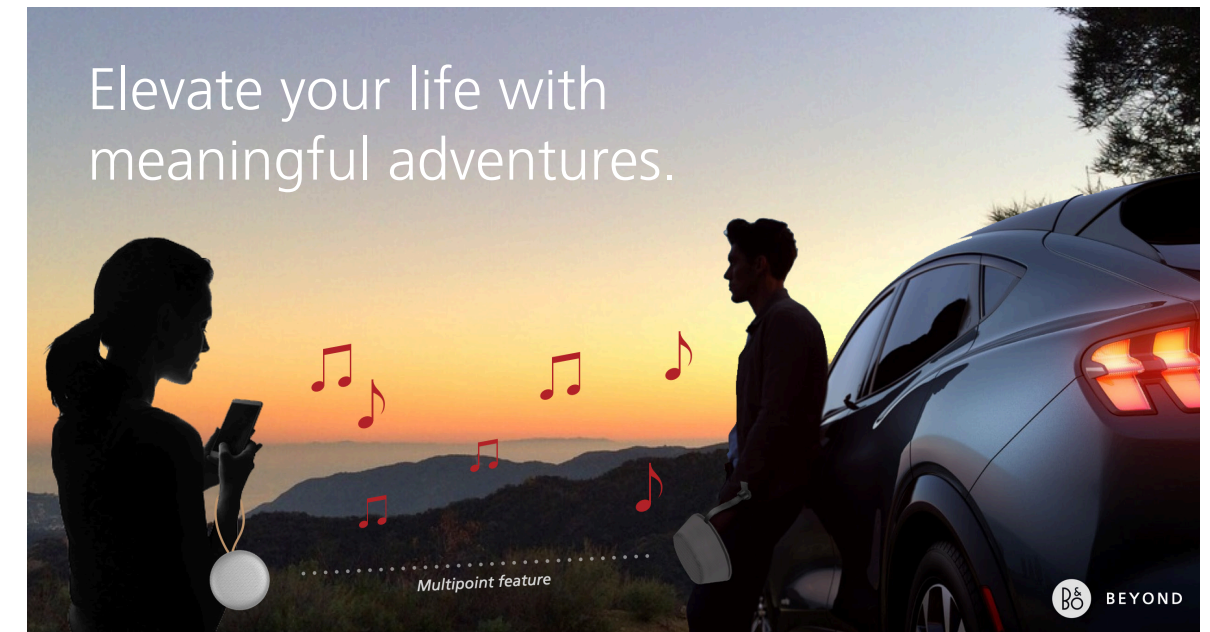


Figure 47: At a B&O Moment, you can connect your B&O portable speaker with the multipoint feature, in order to elevate your life, and enjoy meaningful adventures together with your fellow 'B&O Beyond' platform users.

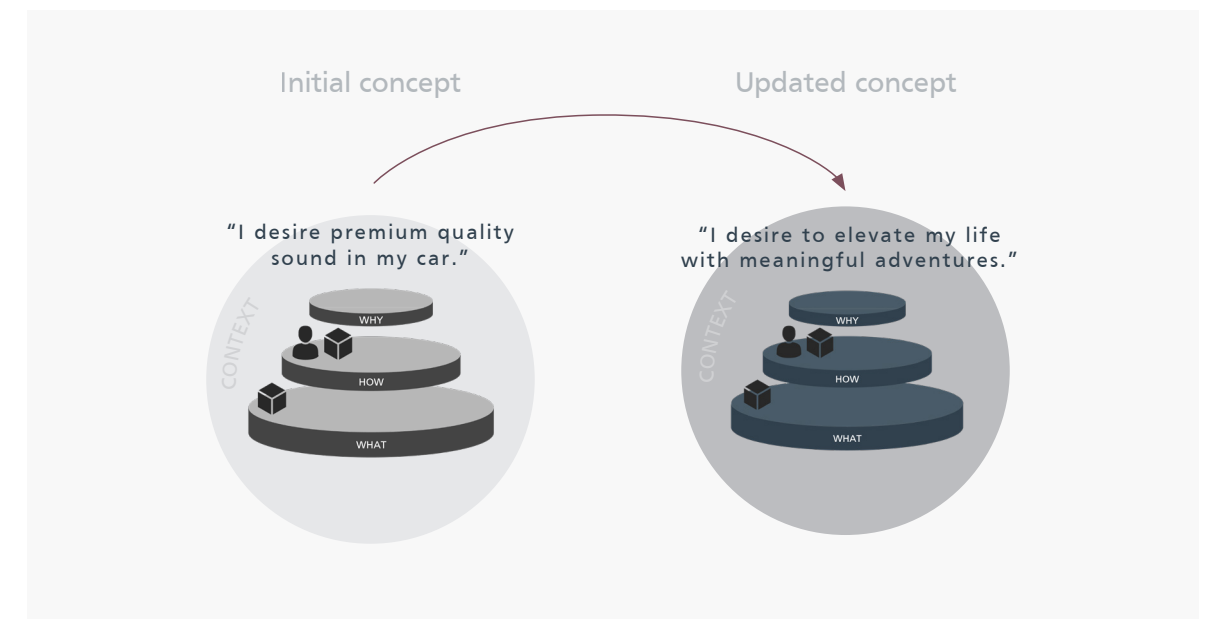


Figure 48: Overview of the innovation of the meaning of the 'B&O Beyond' concept.

4.1.4. Competitive Solutions

‘B&O Beyond’ contains a ‘functional result’ PSS, which is the type of PSS where a result is promised to the customer, and the provider can decide the necessary approach to deliver the result (Tukker, 2006). The functional result (‘what’ layer of a PSS) is a combination of the meanings presented in figures 49, 50, 51.

As the updated concept is the sum of competing solutions, it (in theory) outperforms other C2C platforms, PSSs, products, and services.

Everything considered, the ‘B&O Beyond’ PSS concept provides a desirable and unique solution, and ‘checks’ the predetermined design requirements (figure 52).

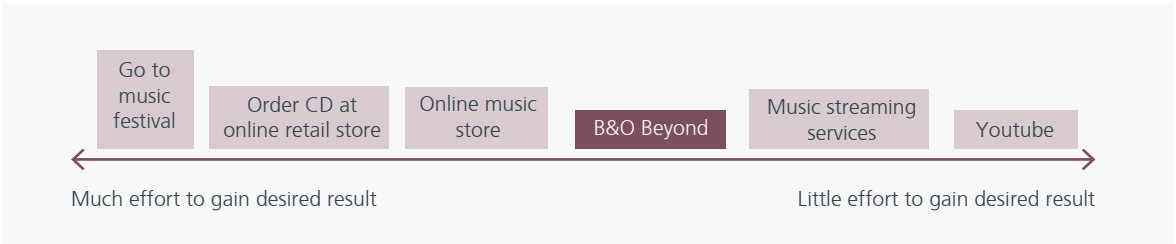


Figure 49: Competitive landscape of ‘B&O Beyond’ meaning A: “I desire to discover new music”.

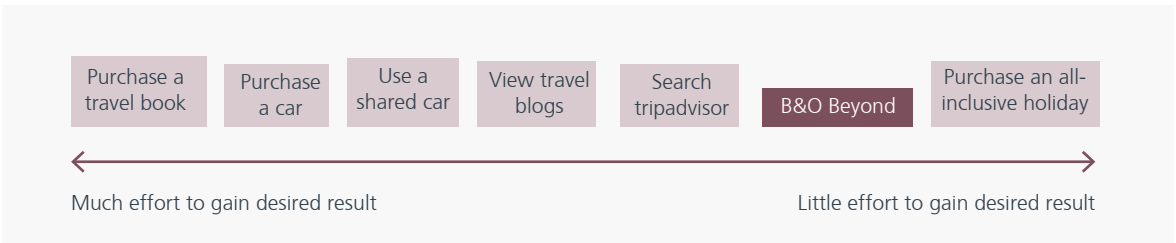


Figure 50: Competitive landscape of ‘B&O Beyond’ meaning B: “I desire to discover new locations”.

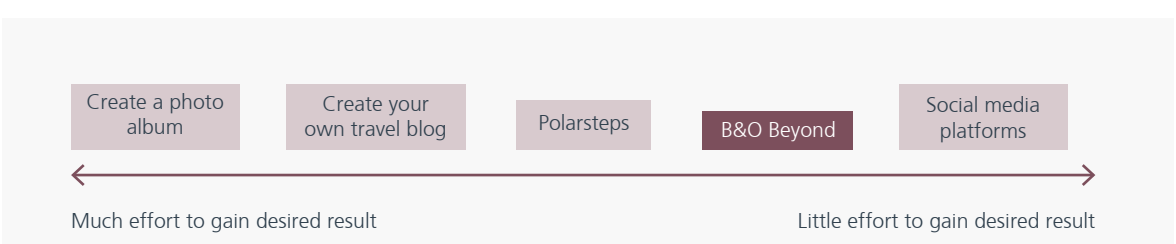


Figure 51: Competitive landscape of ‘B&O Beyond’ meaning C: “I desire to exchange memories with people”.

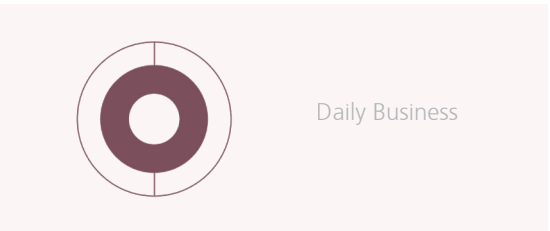
Strategic Concept

- ✓ 4. ‘WHY’: The PSS meaning must contain an innovation of meaning.
- ✓ 5. ‘HOW’: The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✓ 6. ‘WHAT’: The PSS must contain B&O branded elements within a Ford related use context.
- ✓ 7. ‘WHAT’: The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- ✓ 8. Potential to contain a freemium business model.
- ✓ 9. Outperform competitors.

Figure 52: Updated ‘B&O Beyond’ concept ‘checks’ predetermined design requirements.

4.2 Stakeholders Value  
Updated ‘B&O Beyond’  
Concept

This subchapter elaborates on what value the updated ‘B&O Beyond’ concept provides for HARMAN Automotive’s partnership with Bang & Olufsen, and Ford, by looking into the question; does it make sense for the involved companies to pursue the updated ‘B&O Beyond’ value proposition?



4.2.1 Daily Business Value

As the new concept contains a C2C digital platform, the customer is also integrated within the stakeholder assessment. The human-centered design (HCD) framework ‘desireability, feasibility, viability’ is used as tool to assess the value for each of the stakeholders involved in the updated ‘B&O Beyond’ value proposition.

Value Assessment Customers

Subchapter 4.1 elaborates on the customer’s **desirability** and **viability** of the ‘B&O Beyond’ PSS. The updated concept’s meaning, elevating people’s life with meaningful adventures, will enable people (who purchase a ‘B&O Beyond’ value proposition and have access to a smartphone - **feasibility**) to relax, and seek novelty. Furthermore, by 2025, car manufacturers expect to offer customers electric vehicles (EVs) for the same price as combustion engine vehicles (Pauwels, 2020). The increase of electric vehicles may cause a trend that benefits the interest for premium quality sound in vehicles, as the before excessive sounds of combustion engines are eliminated.

Value Assessment Involved Companies

Subchapter 2.1 presents the business motivations of each of the companies involved in the ‘B&O Beyond’ initial value proposition, which still occur within the updated concept. The graduation project client, **HARMAN Automotive**, **desires** to offer a unique and profitable value proposition for its partnership with Bang & Olufsen and Ford, which also has the potential to be scaled and tailored to their other B2B partnerships.

The ‘B&O Beyond’ PSS concept contains a unique solution (subchapter 4.1) that addresses a big U.S. market, and has the potential to be scaled globally within the Bang & Olufsen and Ford partnership, which enables access to a ‘billions market’. In addition, the new to be designed business model (combination of the business model canvas & the digital platform model canvas) may be used to create value together with HARMAN Automotive’s other B2B partnerships.

The updated ‘B&O Beyond’ concept provides a **desirable** value proposition for **Bang & Olufsen** and **Ford** as it offers a unique concept for the U.S. market, which enhances B&O’s own manufactured products and Ford’s OEM designs of the car models.

The **feasibility** of the PSS concept builds on HARMAN Automotive’s partnership with Bang & Olufsen and Ford, and each

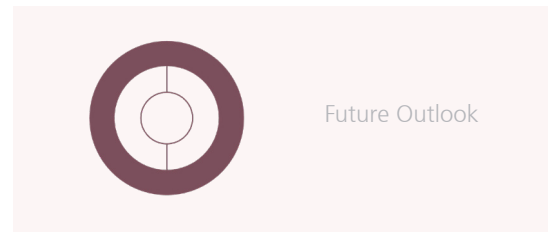


companies' many years of experience in practising their unique expertise. In addition, HARMAN International's Connected Car and Connected Services divisions may provide for the development of the 'B&O Beyond' digital platform and services.

The updated 'B&O Beyond' B2B2C concept enables a **viable** value proposition for all companies involved as the offered customer journey is constructed from B&O's and Ford's shared brand messages up. Therefore, the B2C involved companies maintain the brand values of their products within the 'B&O Beyond' value proposition, while respecting the brand values of both mother-brands.

The new PSS concept not only provides the opportunity to secure HARMAN Automotive's partnership with Ford and B&O today, but may also provide as a strategic move that may help outperform competitors together in the future, making 'B&O Beyond' also a **viable** solution for the graduation project client.

The next section elaborates on the future potential of the updated 'B&O Beyond' concept.



#### 4.2.2. Future Business Value Future Context

In order to envision a far future context, to project the potential future business value, this graduation project focused on researching developments in mobility, urban living, and culture (subchapter 3.1).

As the world population is growing, and urban areas are expanding and become more important (Khanna, 2016), urban designers run a trend of merging the functionalities (i.e. living areas, working areas, entertainment areas) of urban areas in order to provide for an accessible urban living environment (Vermeulen, 2020).

The need for improvement of traffic's impact on the environment, the high amount of traffic casualties every year, and the cost-inefficient ownership-model of private vehicles are driving the development of electric, shared, and autonomous cars today (Pauwels, 2020).

These developments provide for the following questions: "why would we want to use/purchase a car?", "why should we create after-sales products when the development of autonomous vehicles ask for integrated solutions?", and most importantly; "in what kind of society do we want to live in the future?".

#### (Future) Business Value

The updated 'B&O Beyond' concept provides an ambidextrous solution that enables flexibility to anticipate on the emerging developments and trends throughout its existence, while supporting the development of a far future vision (figure 53) that is relevant to HARMAN Automotive, Ford, and Bang & Olufsen. 'B&O Beyond' anticipates on the customer's

growing need for relaxation in urban environments, and enables B2C companies to translate their treasured brand values into unique experiences, and compete with (emerging) competitors.

#### Competitive Companies

Various (including non-automotive origin) companies (i.e. Apple's Titan, Amazon's Zoox, Tesla, Uber) are competing for a prominent position within the shared and autonomous future mobility environment. HARMAN Automotive's vision is to create the best experienced-based infotainment systems (figure 16), therefore it is the B2B company for car manufacturers to

partner with, in order to offer unique value today and in the future. Therefore, the three remaining design requirements of the updated 'B&O Beyond' concept are 'checked' (figure 54).

To conclude, the 'B&O Beyond' PSS concept provides a unique solution that supports HARMAN Automotive's partners to outperform competitors today, and in the future.

The next chapter, elaborates on how HARMAN Automotive may compound to the 'B&O Beyond' value proposition.

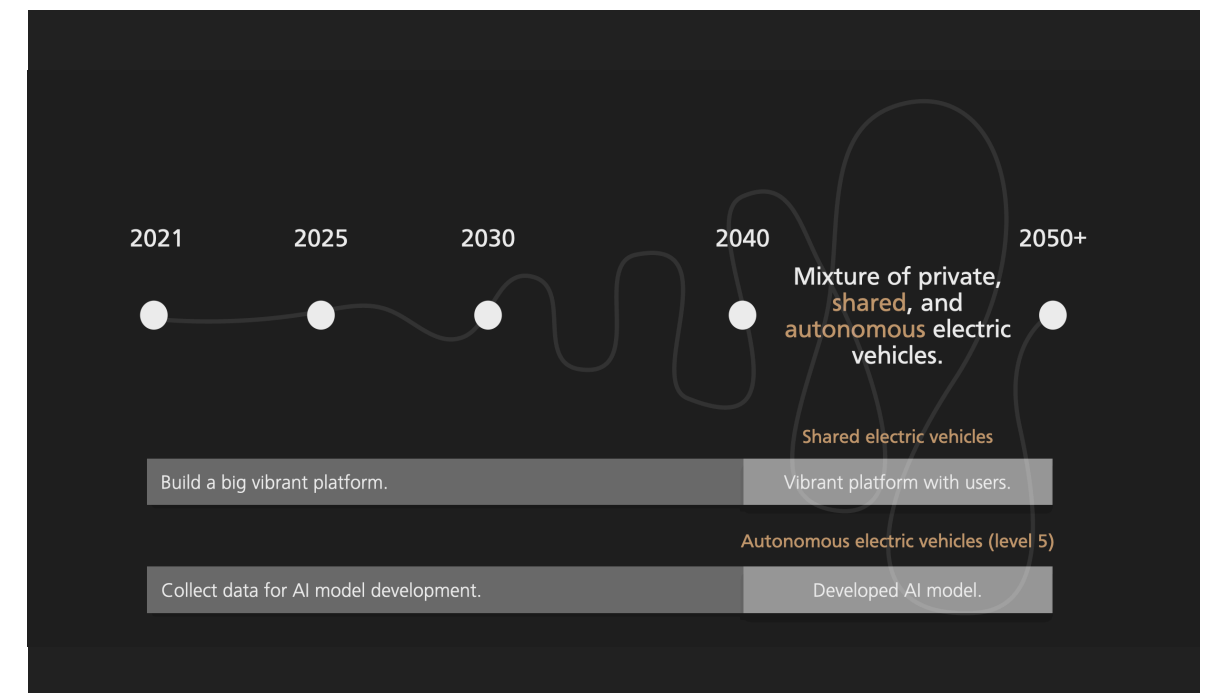


Figure 53: Future opportunity value B&O Beyond PSS concept.

#### Design Requirement List Updated Concept 'B&O Beyond'

##### (Future) Business Context

- ✓ 1. Fit the future vision of HARMAN Automotive.
- ✓ 2. Appeal to a profitable market in the USA.
- ✓ 3. Scalable to match other HARMAN Automotive OEM partnerships.

Figure 54: Future opportunity value B&O Beyond PSS concept.



## CHAPTER 5

### CONCLUSION

This graduation thesis presented the creation of the new goal for a new strategy for HARMAN Automotive's partnership with Bang & Olufsen's sub-brand 'B&O' and Ford. As the noun 'strategy' indicates a "deliberate search for a plan of action that will develop a business's competitive advantage and compound it" (Henderson, 1989), recommendations are provided for HARMAN Automotive to compound to "the conception that will develop a business's competitive advantage" - the updated 'B&O Beyond' concept.

Finally, this graduation project thesis will be concluded with a personal reflection on the design brief and graduation project process.

#### Contents of chapter 5

Subchapter 5.1

Recommendations

Subchapter 5.2

Personal Reflection

## 5.1 Recommendations

The previous chapter presents the updated design of 'B&O Beyond', which is a concept for a new goal of a new strategy (subchapter 1.2) for HARMAN Automotive's partnership with Bang & Olufsen and Ford.

The 'B&O Beyond' PSS design is still in a early concept stage, and needs to be further developed before it can deliver value to customers. This subchapter provides recommendations for the further development of the updated 'B&O Beyond' concept.

### Recommendations

**1. Validate customer's engagement in the value proposition throughout the innovation process.**

When discussing the risks with the graduation project client, the conclusion was drawn that the risks with the highest propability and impact are related to the customer's willingness to participate in the 'B&O Beyond' platform.

**2. Leverage 'B&O Beyond's platform for the various go-to-market strategies.**

Once Ford's and B&O's loyal customers engage with the 'B&O Beyond' platform, this channel can be utilised to promote other value promotions, in order to grow the amount of users of the platform.

**3. Collaborate with designers throughout the innovation process in order to preserve the concept's new meaning.**

In order to offer and communicate the new meaning of the 'B&O Beyond' PSS, designers must be involved throughout the innovation process to support the creation of the concept's vision.

## 5.2 Personal Reflection

I very much enjoyed working on this project, and I can say for sure that the result of this graduation project wouldn't be what it is, without the support and guidance of my graduation project client and TU Delft supervisors.

Looking back at the initial design brief I formulated (appendix 1), I learned a lot about designing unique and strategic concepts, but also about myself as a designer.

I have always enjoyed pushing boudaries with design, in order to create unique value for people. Over the years, I have realised that a lot of other things need to be considered in order to deliver that value to people. This project enabled me to create a tool (figure 9) that I can use to 'reality check' my ideas while designing, and a structure to communicate the created concepts to stakeholders.

Furthermore, learning how to design product-service systems enables me to combine my passion for all design disciplines, and my life-long interest in aesthetics and art.

I feel motivated to learn more about all elements needed to realise unique product-service systems that contribute to a sustainable and social future, and to apply this knowledge in my future designs.

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## APPENDICES

### Contents of appendices

Appendix 1  
Design Brief Document

Appendix 2  
Substantiation Design Requirements

Appendix 3  
Interviews Experts

Appendix 4  
Analysis Data Inspiration

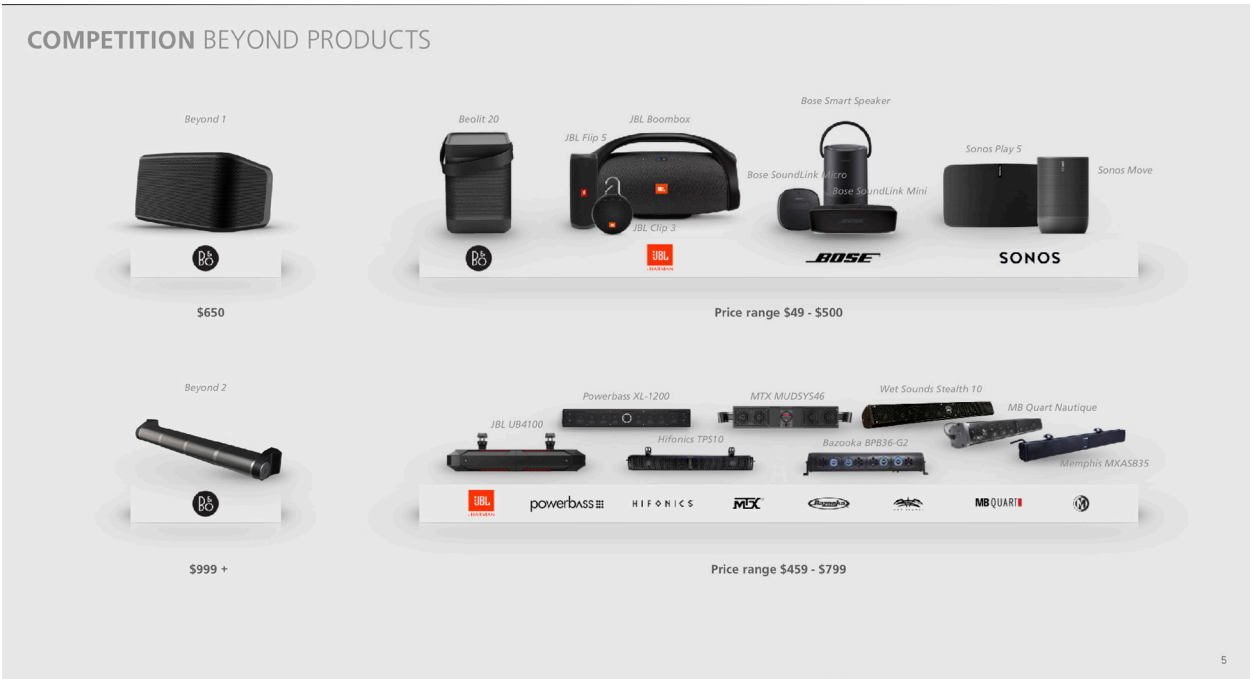
Appendix 5  
Evaluation 4 Strategic Ideas

Appendix 6  
Individual Customer Journeys



APPENDIX 1: DESIGN-BRIEF DOCUMENT TU DELFT

APPENDIX 2: SUBSTANTIATION DESIGN REQUIREMENTS



2A: OPPORTUNITY FOR D-DI



2B: BEYOND 1 DESIGN OPPORTUNITIES

# IDE Master Graduation

## Project team, Procedural checks and personal Project brief

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

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

### ! USE ADOBE ACROBAT READER TO OPEN, EDIT AND SAVE THIS DOCUMENT

Download again and reopen in case you tried other software, such as Preview (Mac) or a webbrowser.

### STUDENT DATA & MASTER PROGRAMME

Save this form according the format "IDE Master Graduation Project Brief\_familyname\_firstname\_studentnumber\_dd-mm-yyyy". Complete all blue parts of the form and include the approved Project Brief in your Graduation Report as Appendix 1 !



family name \_\_\_\_\_  
initials \_\_\_\_\_ given name \_\_\_\_\_  
student number \_\_\_\_\_  
street & no. \_\_\_\_\_  
zipcode & city \_\_\_\_\_  
country \_\_\_\_\_  
phone \_\_\_\_\_  
email \_\_\_\_\_

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

IDE master(s): ☐ IPD ☐ Dfl ☐ SPD

2<sup>nd</sup> non-IDE master: \_\_\_\_\_

individual programme: \_\_\_\_\_ - - \_\_\_\_\_ (give date of approval)

honours programme: ☐ \_\_\_\_\_

specialisation / annotation: ☐ \_\_\_\_\_

☐ \_\_\_\_\_

☐ \_\_\_\_\_

### SUPERVISORY TEAM \*\*

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

\*\* chair \_\_\_\_\_ dept. / section: \_\_\_\_\_

\*\* mentor \_\_\_\_\_ dept. / section: \_\_\_\_\_

2<sup>nd</sup> mentor \_\_\_\_\_

organisation: \_\_\_\_\_

city: \_\_\_\_\_ country: \_\_\_\_\_

comments  
(optional)

⋮

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



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



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

**APPROVAL PROJECT BRIEF**

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

chair \_\_\_\_\_ date \_\_\_\_ - \_\_\_\_ - \_\_\_\_ signature  \_\_\_\_\_**CHECK STUDY PROGRESS**

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

Master electives no. of EC accumulated in total: \_\_\_\_\_ EC

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

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

☐ YES all 1<sup>st</sup> year master courses passed

☐ NO missing 1<sup>st</sup> year master courses are:

name \_\_\_\_\_ date \_\_\_\_ - \_\_\_\_ - \_\_\_\_ signature \_\_\_\_\_

**FORMAL APPROVAL GRADUATION PROJECT**

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

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

Content: ☐ APPROVED ☐ NOT APPROVEDProcedure: ☐ APPROVED ☐ NOT APPROVED

comments

name \_\_\_\_\_ date \_\_\_\_ - \_\_\_\_ - \_\_\_\_ signature \_\_\_\_\_

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

start date      -      -                                  -      -                                  end date

space available for images / figures on next page



introduction (continued): space for images

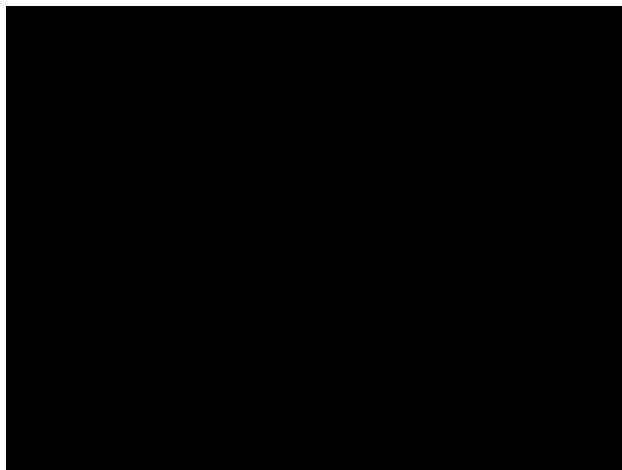


image / figure 1: \_\_\_\_\_

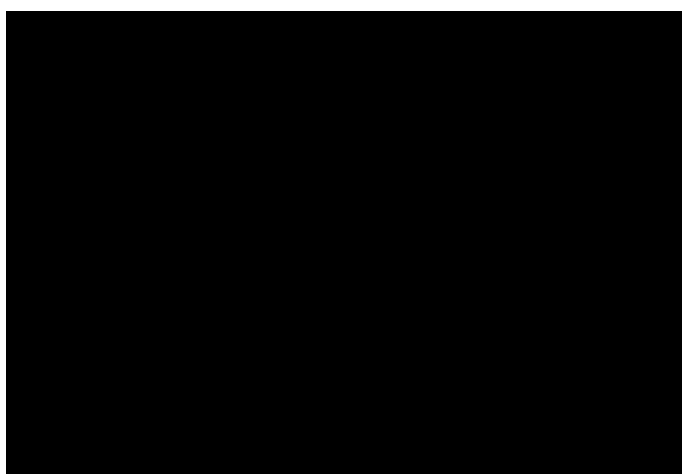


image / figure 2: \_\_\_\_\_

## PROBLEM DEFINITION \*\*

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

## ASSIGNMENT \*\*

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

## PLANNING AND APPROACH \*\*

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

start date      -      -      -      -      end date

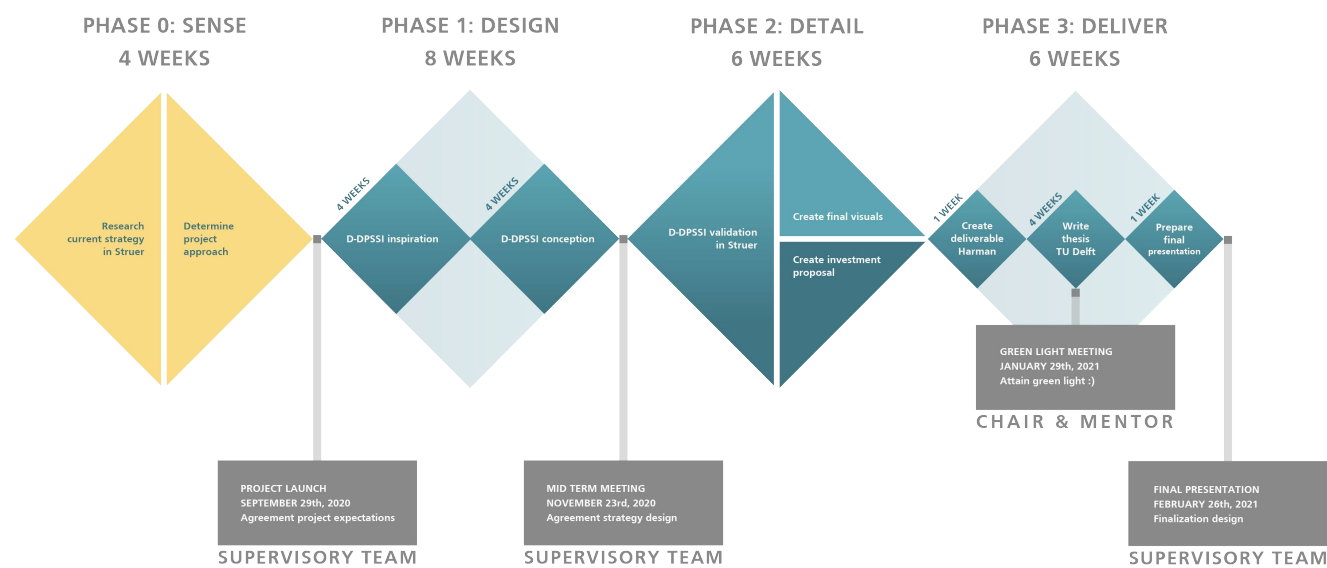
## MOTIVATION AND PERSONAL AMBITIONS

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

## FINAL COMMENTS

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

Appendix 1: Visualization phases project





Appendix 2: Gantt Chart Graduation Project

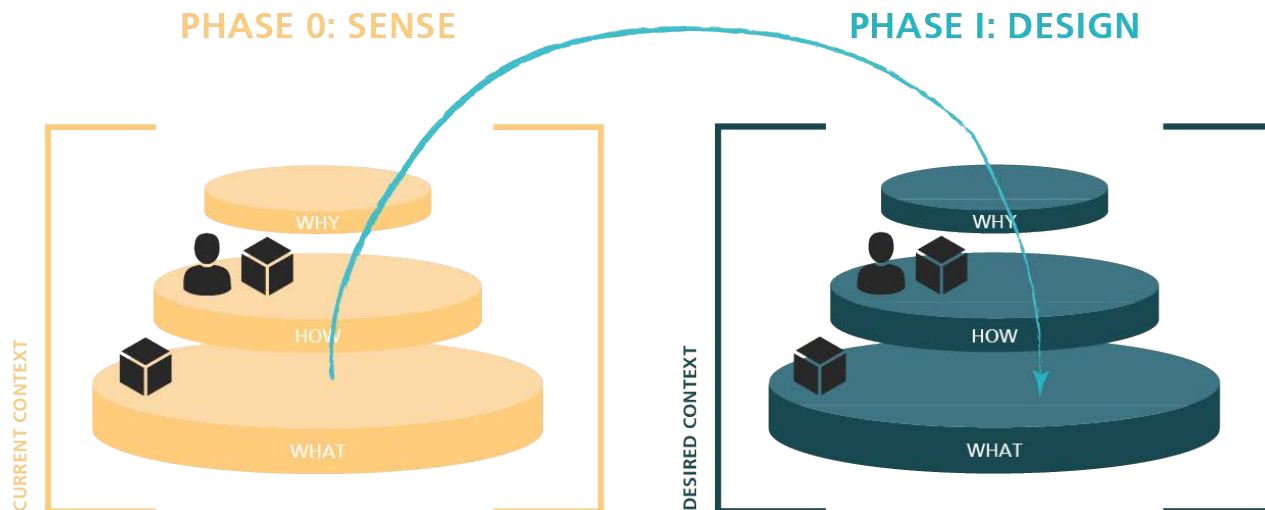
ACTIVITEIT	BEGIN VAN PLANNING	DUUR VAN PLANNING	WERKELIJKE BEGINDATUM	WERKELIJKE DUUR	PERCENTAGE VOLTOOID
PHASE 0: SENSE	0	0	0	0	0%
SENSE HARMAN	0	10	0	10	0%
Design brief document send	1	1	1	0	90%
Cannibalism analysis validated	0	1	0	0	40%
Initial pitch blocks validated	0	1	0	0	0%
State-of-the-art research @ HARMAN	0	1	0	0	0%
PREPARE DDI	0	10	0	10	0%
Image theoretical framework created	0	1	0	0	0%
Chapter: company & approach written	0	1	0	0	0%
Requirements interpreters listed	0	1	0	0	0%
Interviews planned with interpreters	0	1	0	0	0%

PROJECT LAUNCH					
PHASE I: DESIGN	1	40	1	40	0%
STEP 1: LISTENING / STEP 2: INTERPRETING	1	40	1	40	0%
Infographic findings					
Interviews interpreters created	30	1	0	0	0%
Slide: market & industry validated	39	1	0	0	0%
Slide: Vision & purpose validated	39	1	0	0	0%
Slide: Secret sauce (why Harman) validated	39	1	0	0	0%

MID TERM PRESENTATION	40	1	40	1	0%
PHASE II: DETAIL	40	30	40	30	0%
Slide: customer validated	70	1	0	0	0%
Slide: product validated	70	1	0	0	0%
Slide: pain validated	70	1	0	0	0%
Slide: user interaction validated	70	1	0	0	0%
Slide: benefits validated	70	1	0	0	0%
Slide: channels/touchpoints validated	70	1	0	0	0%
Slide: revenue model created	70	1	0	0	0%
Slide: competing solutions validated	70	1	0	0	0%
Slide: competing organizations validated	70	1	0	0	0%
Slide: timing validated	70	1	0	0	0%
Slide: Tractions validated	70	1	0	0	0%
Slide: Reached milestones validated	70	1	0	0	0%
Slide: roadmap validated	70	1	0	0	0%
Slide: revenue model validated	70	1	0	0	0%
Slide: key partners validated	70	1	0	0	0%
Slide: cost structure (bench marking & NPV) validated	70	1	0	0	0%
Slide: investment /ROI validated	70	1	0	0	0%

(STEP 3: ADDRESSING)	30	5	30	5	0%
Documentation for interpreters send	30	1	0	0	0%
PHASE III: DELIVER	70	30	70	30	0%
FINAL SLIDE DECK HARMAN	95	1	95	1	0%
Missing slides created	95	1	0	0	0%
Storyline slides updated	95	1	0	0	0%
Layout completed	95	1	0	0	0%
THESIS	95	1	95	1	0%
Chapter: introduction written	80	1	0	0	0%
Chapter: Phase 1: research written	80	1	0	0	0%
Chapter: Phase 2: design written	80	1	0	0	0%
Chapter: Evaluation written	80	1	0	0	0%
GREEN LIGHT MEETING	80	1	80	1	0%
Preface written	95	1	0	0	0%
Reading guide written	95	1	0	0	0%
FINAL PRESENTATION TU	100	1	100	1	0%
Text checked	95	2	0	0	0%
Images placement finalized	97	2	0	0	0%
Layout completed	97	2	0	0	0%
Prepared	99	1	0	0	0%

## PROCESS DDI WITH EXISTING PRODUCT(-SERVICE-SYSTEM)



## Appendix 4: How I will meet the required learning objectives

1

Effectively collect, analyse, integrate and generate knowledge required for the project;

Using the design-driven innovation method will oblige me to meet this objective.

2

Justify your choices with respect to used methods and/or approaches used in the project;

Besides the method and tool used for structuring the project process and final deliverable, other design methods/tools will be used to justify choices during the project execution.

3

Deliver a relevant project result. For design output this might mean a persuasive argument for the desirability/feasibility and/or viability of the design.

The project deliverable will contain an internal and external strategy to increase the chance of D-DPSSI concept implementation. By dividing feasibility, desirability, and viability into internal and external compartments (6 in total), the relevance of the concept will be tested.

4

Effectively and thoroughly communicate to, and discuss with, stakeholders involved in the project;

Besides continuous communication, weekly updates and mid-process presentations will enable good communication with stakeholders.

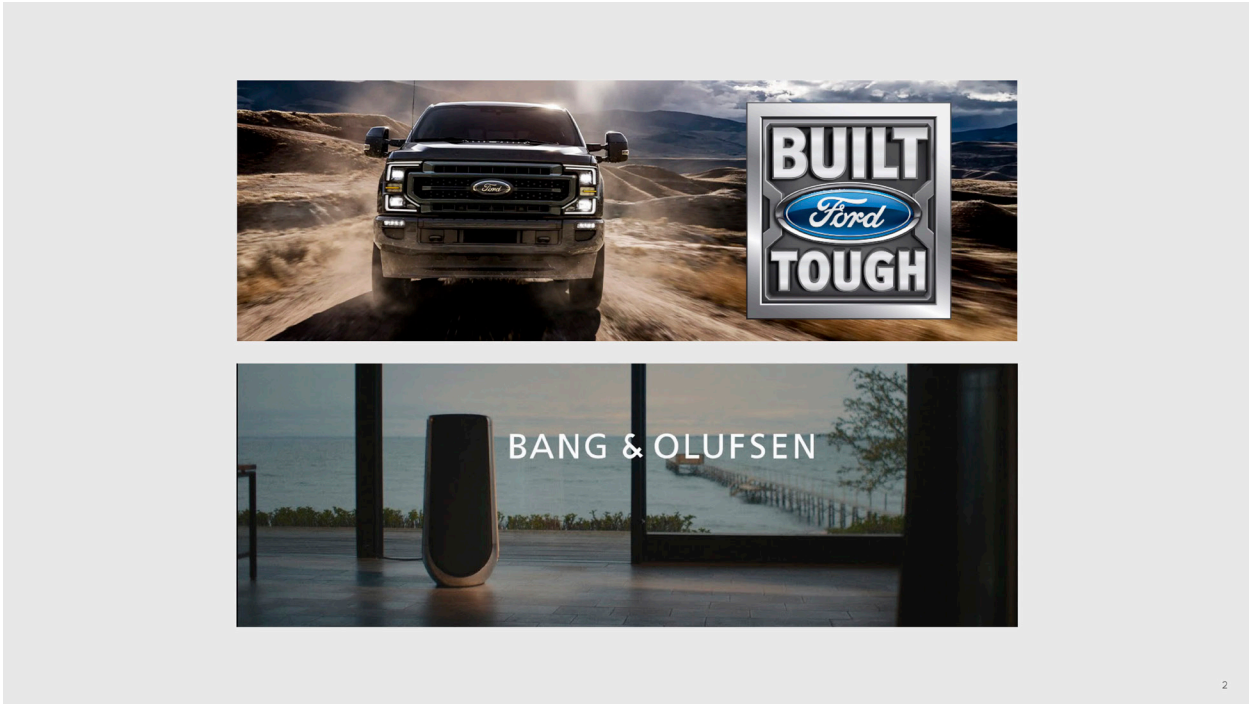
5

Manage a design/research project independently within the given time.

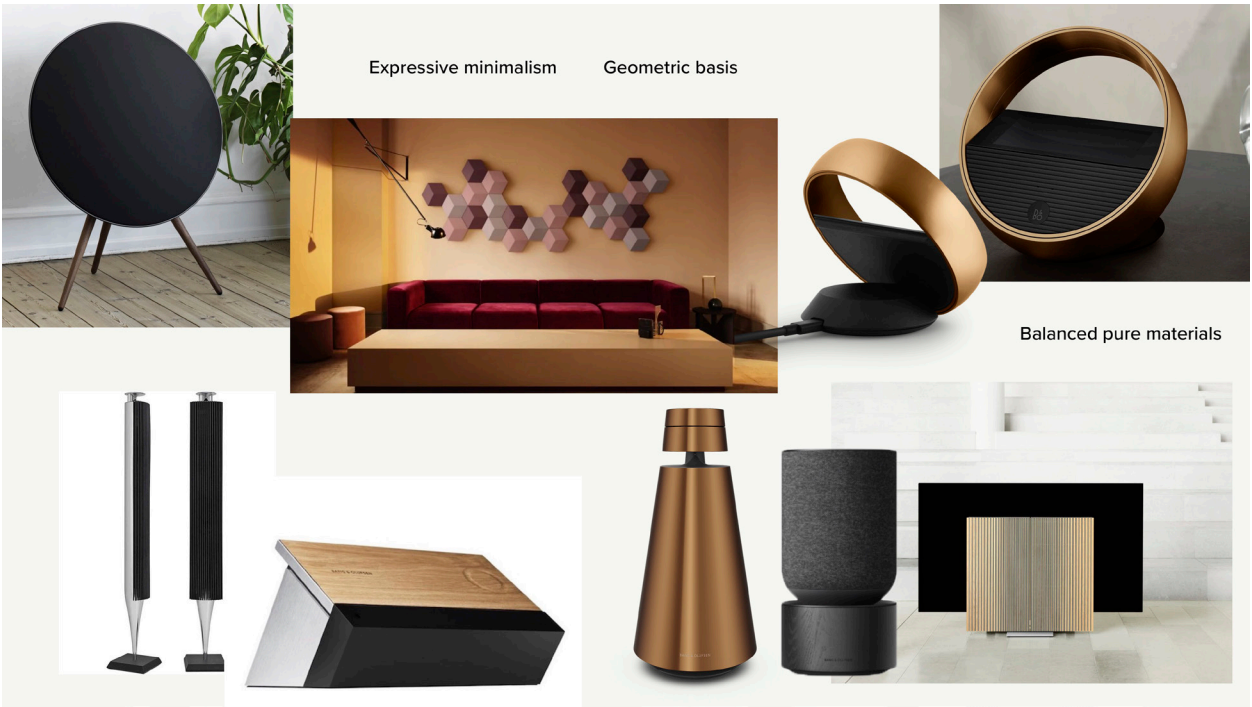
The Gantt Chart is designed by reverse engineering the project deliverables and focussing on the three DDI steps.



2C: BRANDS ANALYSIS



Mother-brands brand associations



Research brand values Bang & Olufsen

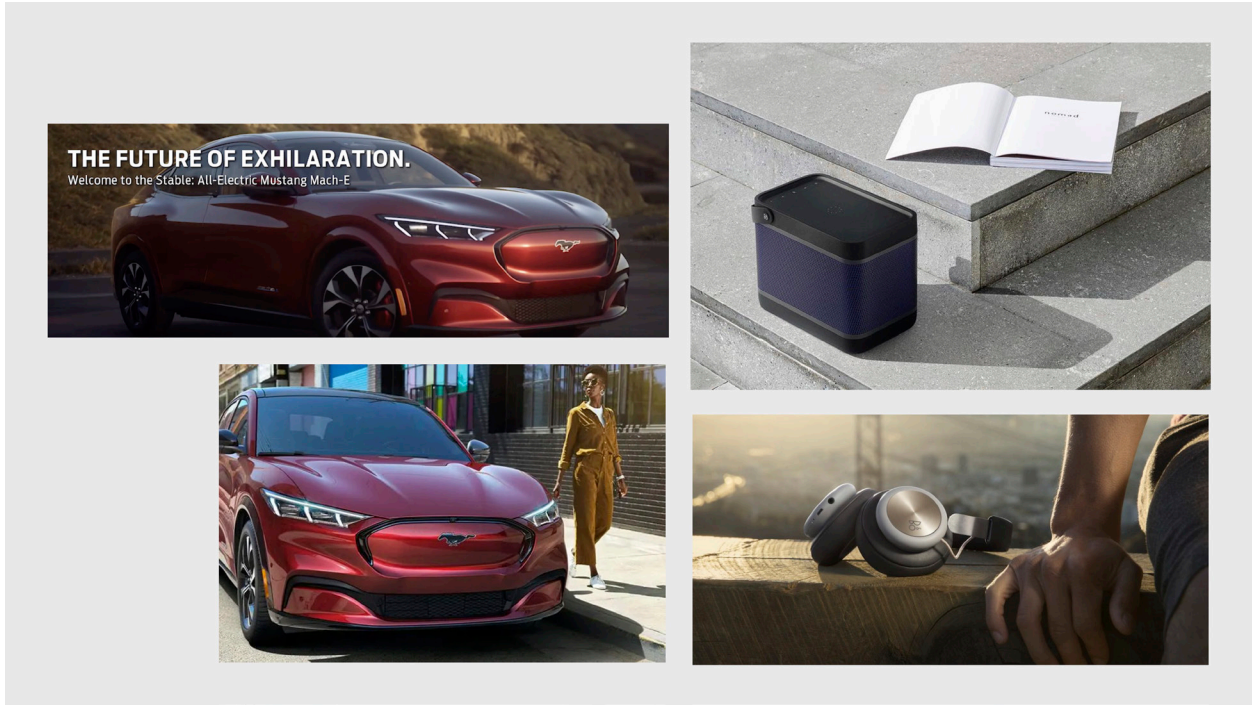


Research brand values Ford F-150

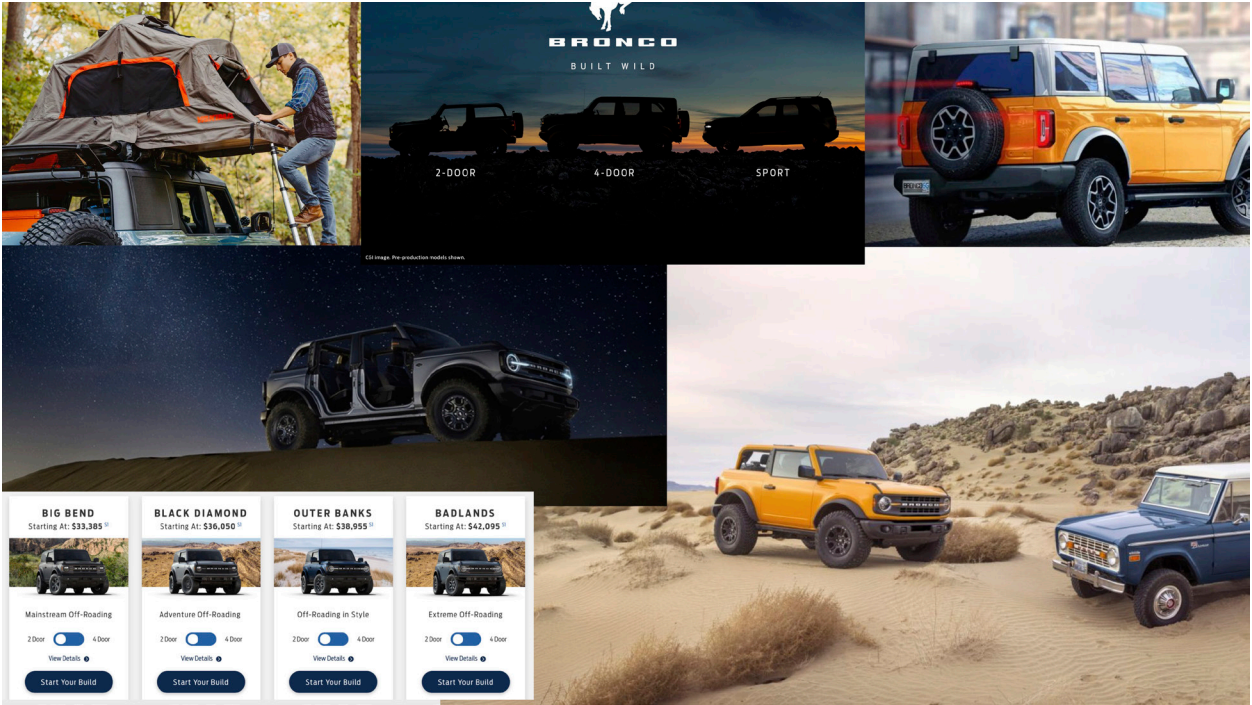


Research brand values B&O sub-brand





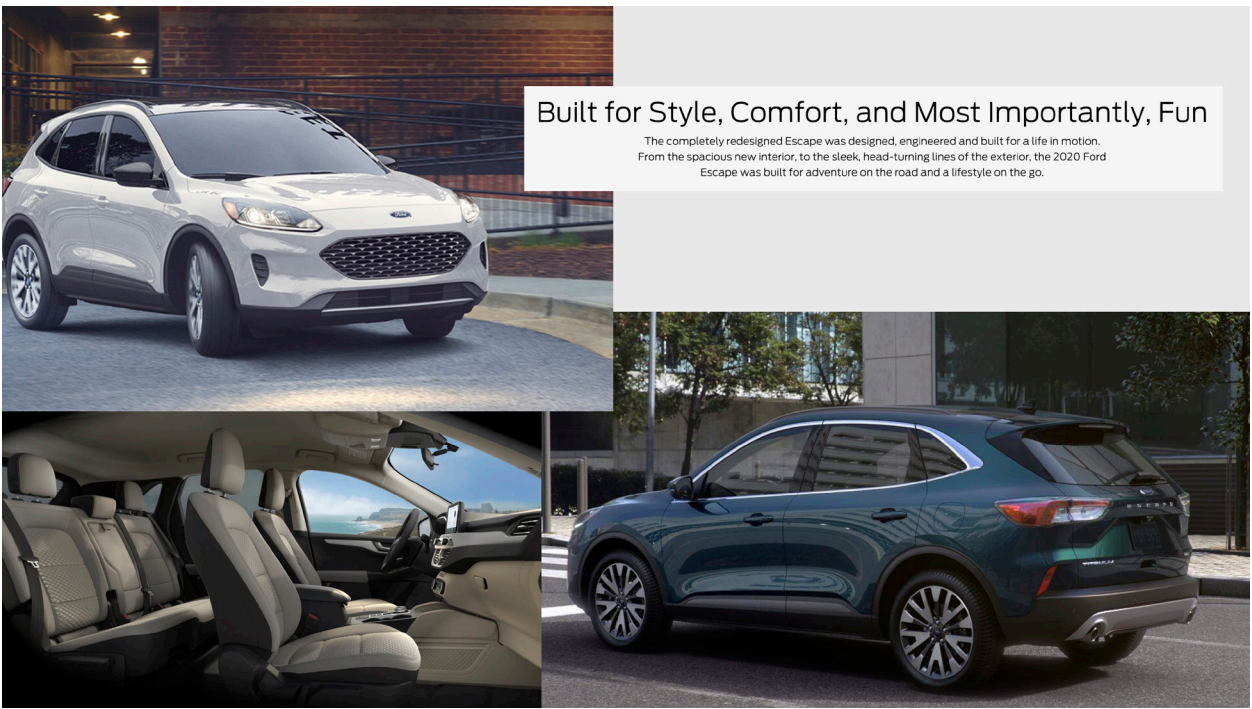
Match in brand values



Research brand values Ford Bronco



Research brand values Ford Mustang Mach-E



Research brand values Ford Escape



**APPENDIX 3: INTERVIEWS EXPERTS**

**3A: ELMER VAN GRONDELLE (MOBILITY)**

**3B: PETER FRANS PAUWELS (MOBILITY)**



APPENDIX 4: ANALYSIS RESEARCH DATA (TIMELINE)

		2020	2025 - 2030	2040 +
MOBILITY	Levels of autonomy cars	Level 1 & 2.	Level 3 & 4.	Level 5.
	Main location of use autonomous cars	Test locations.	Allocated areas on highways.	Urban areas.
	Development of AI infotainment systems for cars	The entertainment and navigation systems for future fully AI integrated vehicle infotainment systems are in development.	2025: The price of electric vehicles and combustion engine vehicles will be equal.	Autonomous vehicle level 5 contains fully integrated AI infotainment system.
	Adoption of electric vehicles			
URBAN LIVING	Urban purpose	Transportation-centred cities.	Human-centred cities.	Mega cities have more importance than the countries they are in. (Khanna, 2016)
	Urban planning	Growing trend of returning activities (in a different form) that where pushed out of the city centres between 60's and 90's.	Optimised use of space. Multi-functionality applied to various scales.	
CULTURE	Urban transportation means	Mixture of public, shared, and private owned urban transportation.	Mixture of public, shared, and private electric urban transportation.	Seamless integration of public, shared, and private electric (autonomous) urban transportation.
	Business	Big businesses is beginning to accept broader social responsibilities. (Economist, 2019)		
	People	Consumers increasingly embrace social causes and seek products and brands that align with their values. (IBM, 2020)  Growing acceptance of shared economy solutions. (Forbes, 2019)  "Anti-social" media drives our feelings of polarisation. (The Correspondent, 2019)		

APPENDIX 5: EVALUATION STRATEGIC IDEAS

Design Requirement List  
Updated Concept 'B&O Beyond'

(Future) Business Context

- ✔ 1. Fit the future vision of HARMAN Automotive.
- ✔ 2. Appeal to a profitable market in the USA.
- 3. Scalable to match other HARMAN Automotive OEM partnerships.

Strategic Concept

- 4. 'WHY': The PSS meaning must contain an innovation of meaning.
- ✔ 5. 'HOW': The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✔ 6. 'WHAT': The PSS must contain B&O branded elements within a Ford related use context.
- 7. 'WHAT': The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- 8. Potential to contain a freemium business model.
- 9. Outperform competitors.

IDEA 1: 'B&O BEYOND LOCATION'

**Design Requirement List**  
**Updated Concept 'B&O Beyond'**

**(Future) Business Context**

- ✓ 1. Fit the future vision of HARMAN Automotive.
- ✓ 2. Appeal to a profitable market in the USA.
- ✓ 3. Scalable to match other HARMAN Automotive OEM partnerships.

**Strategic Concept**

- ✓ 4. 'WHY': The PSS meaning must contain an innovation of meaning.
- ✓ 5. 'HOW': The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✓ 6. 'WHAT': The PSS must contain B&O branded elements within a Ford related use context.
- ✓ 7. 'WHAT': The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- 8. Potential to contain a freemium business model.
- 9. Outperform competitors.

IDEA 2: 'B&O BEYOND FAMILY'

**Design Requirement List**  
**Updated Concept 'B&O Beyond'**

**(Future) Business Context**

- ✓ 1. Fit the future vision of HARMAN Automotive.
- ✓ 2. Appeal to a profitable market in the USA.
- ✓ 3. Scalable to match other HARMAN Automotive OEM partnerships.

**Strategic Concept**

- ✓ 4. 'WHY': The PSS meaning must contain an innovation of meaning.
- ✓ 5. 'HOW': The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✓ 6. 'WHAT': The PSS must contain B&O branded elements within a Ford related use context.
- ✓ 7. 'WHAT': The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- ✓ 8. Potential to contain a freemium business model.
- ✓ 9. Outperform competitors.

+ Enable a competitive advantage for Ford in the car sharing business.

IDEA 3: 'B&O BEYOND SHARING'

**Design Requirement List**  
**Updated Concept 'B&O Beyond'**

**(Future) Business Context**

- ✓ 1. Fit the future vision of HARMAN Automotive.
- ✓ 2. Appeal to a profitable market in the USA.
- ✓ 3. Scalable to match other HARMAN Automotive OEM partnerships.

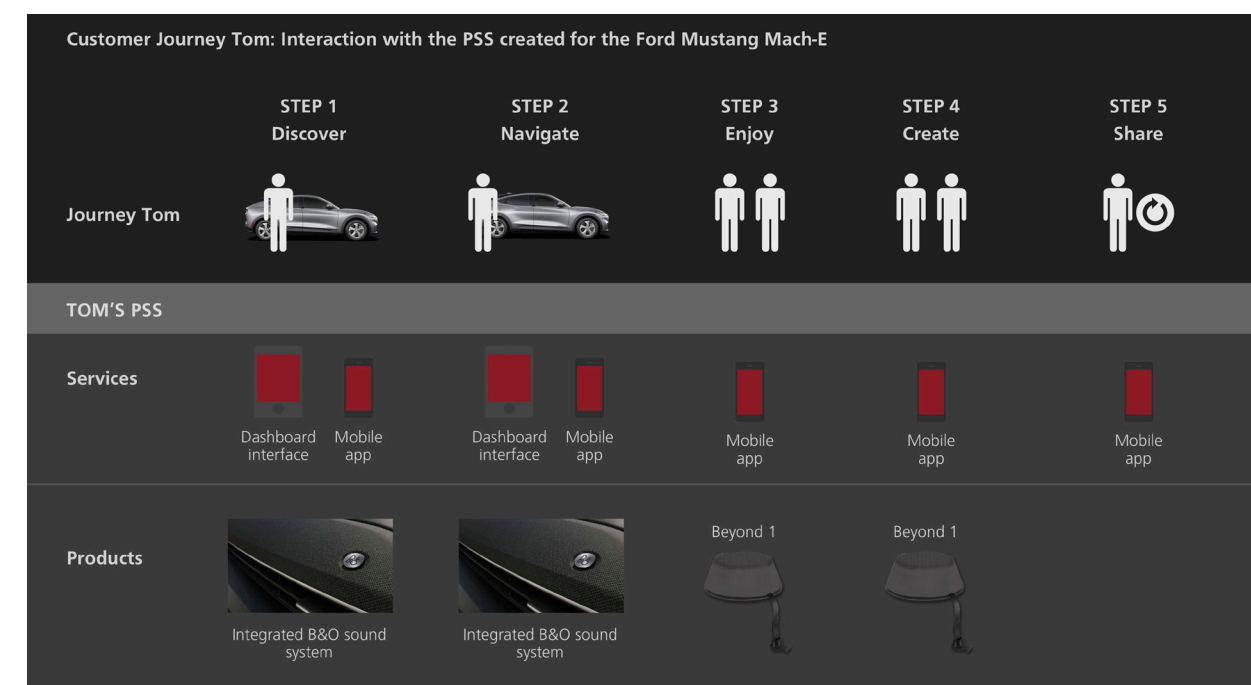
**Strategic Concept**

- ✓ 4. 'WHY': The PSS meaning must contain an innovation of meaning.
- ✓ 5. 'HOW': The PSS must contain elements that are suitable for in-vehicle and on-the-go use.
- ✓ 6. 'WHAT': The PSS must contain B&O branded elements within a Ford related use context.
- ✓ 7. 'WHAT': The PSS elements must contain B&O brand values, and respect the Bang & Olufsen brand values.
- ✓ 8. Potential to contain a freemium business model.
- ✓ 9. Outperform competitors.

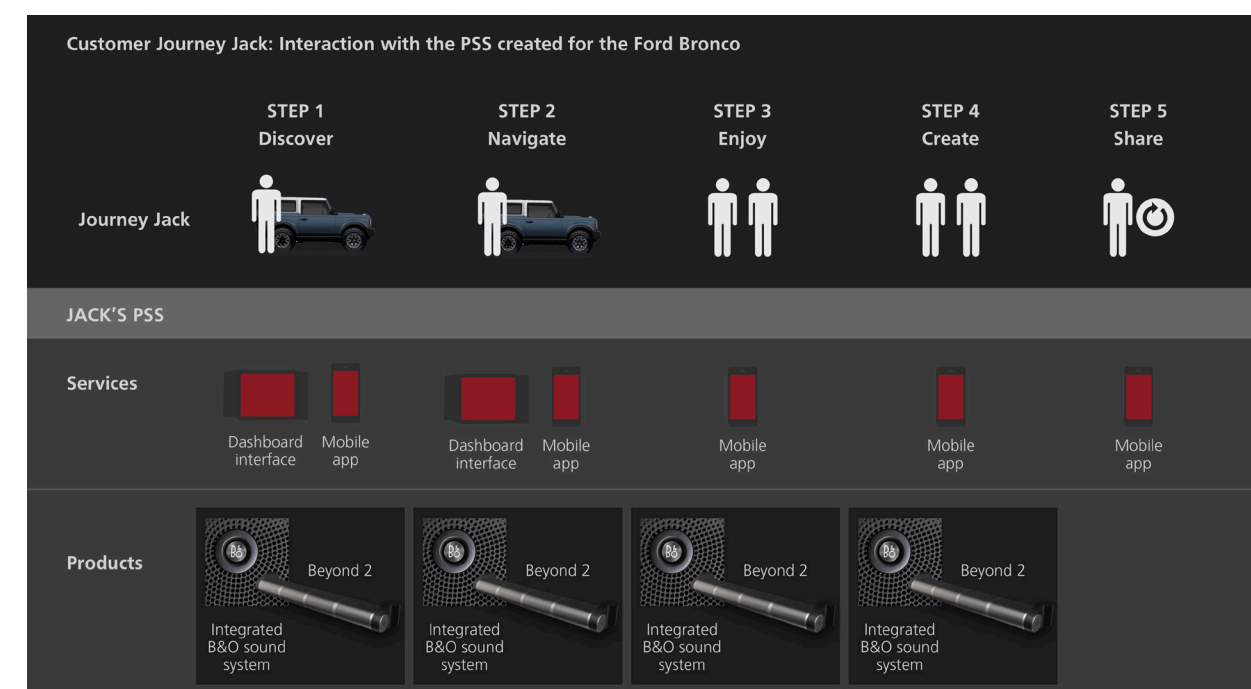
+ Possibility for B&O / Bang & Olufsen to claim niche market.

IDEA 4: 'B&O BEYOND MOBILITY'

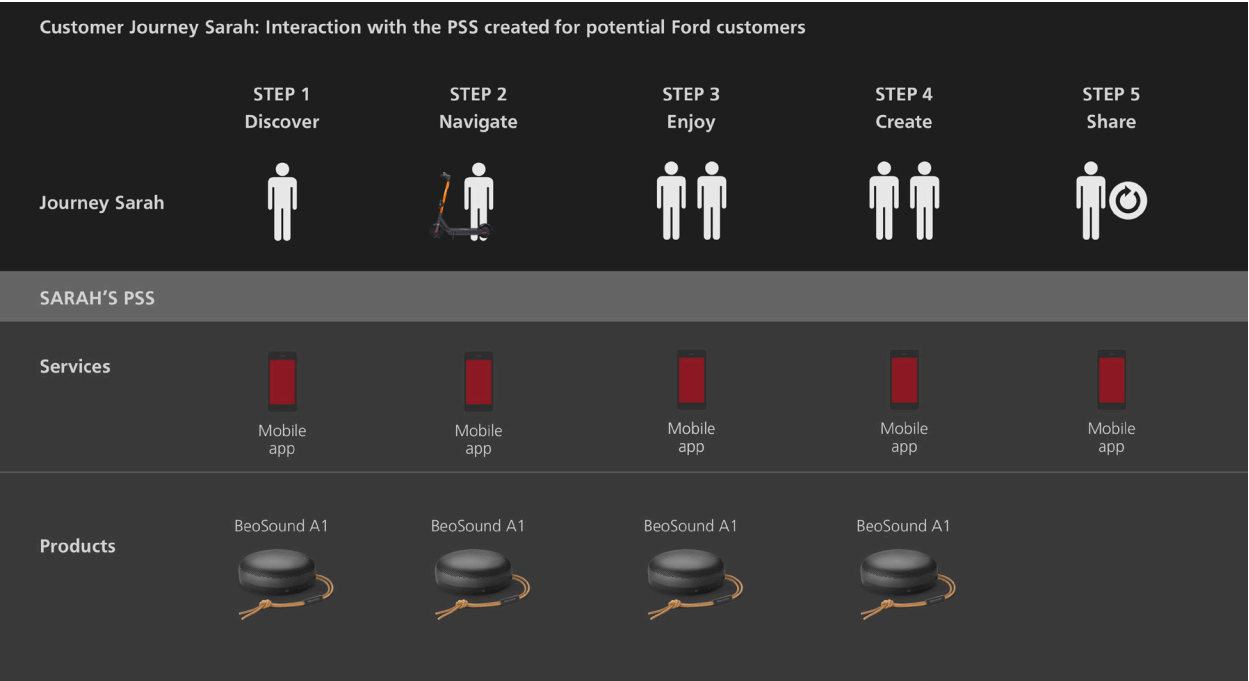
## APPENDIX 6: CUSTOMER JOURNEYS



## CUSTOMER JOURNEY PERSONA 'TOM'



## CUSTOMER JOURNEY PERSONA 'JACK'



CUSTOMER JOURNEY PERSONA ‘SARAH’