

CHALMERS



SIMPLIFY AND
ENRICH
EVERYDAY LIFE

EXTEND AND
ENHANCE THE
CAR EXPERIENCE



BEFORE DRIVE

APPROACHING CAR

DURING DRIVE

LEAVING CAR

AFTER DRIVE

VOLVO WITHIN REACH

Investigating the user experience of Volvo On Call and exploring opportunities for future development

Master of Science Thesis in the Master Degree Program, Industrial Design Engineering

JENNIE BERGGREN
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Master of Science Thesis PPUX05

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ABSTRACT

There has been a shift in manufacturing companies from developing products and services that merely work well and are easy to use, towards also considering how to create positive user experiences. Volvo Cars is a company that strives for this approach in the design of both cars and car-related products and services, including Volvo On Call – a built-in safety assistance system accompanied by a smartphone app. The purpose of this master thesis project was to thoroughly investigate the user experience of Volvo On Call and how it influences the car experience. The aim was to explore opportunities for how Volvo On Call can be further developed and improved from a user experience perspective. This was carried out with a user-centered and experience driven approach in a two-step process consisting of the main phases Exploration and Creation.

Users were involved throughout the project. The major part of the first phase Exploration consisted of a qualitative user study. The goal was to achieve an understanding for how the Volvo On Call concept is experienced today by collecting and analyzing user narratives, and thereby identify possibilities for how the service can be further developed. The user study showed that Volvo On Call elicits overall positive user experiences, and adds another dimension to the car experience. It was concluded that the best way of improving and further developing Volvo On Call was to build on its already established values; simplifying and enriching everyday life when it comes to car-related activities, and extending and enhancing the car experience. Based on implications found in the user study, the Creation phase explored how these values could be achieved by incorporating a smart and more assistive behavior in Volvo On Call, as well as consider how the interplay with the car could be improved.

The end result was a User Experience Vision as well as a selection of early concept ideas, which were assessed in the form of storyboards together with users. This was done in order to get an indication of how the proposed functionality and behavior would be received, and how well it corresponds to the users' expectations. It could be concluded that a smart and assistive Volvo On Call is a viable and desirable continuation of the current concept within a near future. However, the proposed concept comes with new demands which need to be fulfilled in order to achieve the intended user experience. In addition, several possible directions for the future development of Volvo On Call were identified during this project, which highlights a need for making strategic decisions about how the concept should evolve, taking into account the holistic experience of the app and the car, the progression of technology development, and potential changes in the automotive industry.

Key words: *user experience, experience driven design, user research, Volvo On Call, Volvo Cars, product smartness, remote user experience, extended user experience*

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INTRODUCTORY CHAPTERS

The first chapters of this report introduce the project, its theoretical framework and process:

- Introduction
- Theoretical framework
- Process

01

INTRODUCTION

This chapter gives a brief introduction to the project presented in this report, including the project background, and its stated design challenge, purpose, aim, and delimitations.

1.1 BACKGROUND

The importance of a customer/user orientation in product and service development has been emphasized for decades. Offering relevant functionality forms the basis and with the introduction of interactive products usability design has become crucial. However, there is currently a shift taking place, towards creating products and services with a user experience approach, which refers to something larger than usability (McCarthy & Wright, 2004; Carroll & Mentis, 2008). Interactive systems and products must be well adapted to the lives of those who use them, they must fulfill the users' need for stimulation and personal growth, evoke memories, and communicate the users' self-identity to others (Karapanos et al., 2009). According to Jordan (2000), technological development must move beyond usability simply because "people are more than just users". Technology should bring enjoyment to the lives of the users and be something people can relate to by providing functional benefits as well as bringing emotional value (Norman, 2004).

The automotive industry has a tradition of researching vehicle safety, ergonomics, and usability of in-car system. However, due to the implementation of in-car technology, cars have become increasingly more connected and interactive. As a result, there is a growing interest for the topic of user experience also among car manufacturers (Gkouskos et al., 2015). Volvo Cars – a company which produces cars of various models in the premium range – has great interest in embracing the experience driven design process, when it comes to the car per se as well as additional products and services. One such service provided for Volvo's customers is Volvo On Call (hereafter abbreviated as VOC); a built-in safety assistance system within the car which is accompanied by a convenience-oriented smartphone app that allows the user to monitor and control the car remotely (see figure 1A). Volvo Cars is looking ahead to see how VOC could evolve during the next few years, with a great interest in how the concept as a whole can be further developed and improved from a user experience perspective. This background formed the starting point for this project.



Figure 1A. The Volvo car can be monitored and controlled remotely through the VOC app. Picture borrowed from www.blog.motorparks.co.uk (2015-07-27)

1.2 DESIGN CHALLENGE

When VOC was introduced to the market in 2001 it was one of the first car-based telematics systems that provided security, safety and tracking services directly in the car (Volvo Car Sverige AB, 2015). In 2011, VOC was accompanied by a convenience-oriented smartphone app that allows Volvo car owners to monitor and control the car remotely, for instance lock the car, start the heater, and access dashboard information. Since VOC was launched the concept has advanced from an integrated safety and security system to a solution that also allows the car owner to connect to the car and get access to a range of functionality. In addition, Volvo Cars has continued to develop connected services and today fully connected systems are available in all Volvo cars globally (Volvo Car Sverige AB, 2015).

Since the VOC app includes a host of solutions which give the user remote access to the car, VOC can be seen as providing a link between the user and the car when they are apart. The app itself provides a single-product and single-user experience, but since VOC is interconnected with the car it can also be argued that the app provides an additional experience of the car. The starting point for this project has been the hypothesis

that VOC, through its interplay with the car, contributes with a remote experience of the car across distances. As shown in figure 1B, VOC is positioned in the center as a 'mediator' between the user and the car. An important part of the design challenge is to explore and more in-depth understand the remote car experience through VOC. Further, it is essential to consider that the interplay between the different parts may contribute to yet another dimension of experience, i.e. the system as a whole.

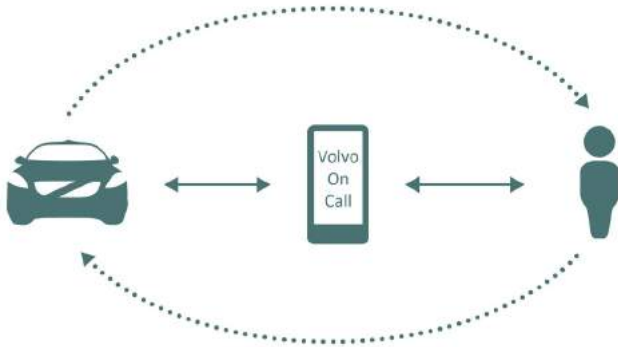


Figure 1B. An illustration of the interplay between the user, VOC, and the car; showing how the app provides a single-product user experience, yet interconnects with the car and thereby mediates between the user and the car.

1.3 PURPOSE AND AIM

The purpose of this project was to investigate the user experience of VOC, how it has evolved over time, and how it influences the car experience. The aim was to explore the notion of a remote experience of the car. Based on the findings, the project goal was to identify and explore opportunities for improving the VOC concept from a user experience perspective, and to transform key insights into a user experience vision, proposing a direction in which the VOC concept can be developed

further. Lastly, the goal has been to involve users to a great extent throughout the project, with the intention of making well-grounded decisions and draw legitimate conclusions according to a user-centered and experience driven design approach.

The project dealt with the following questions:

- How is the current VOC concept experienced, and has the experiences changed over time?
- What role does VOC play in the car experience, for instance is the car experienced through VOC?
- What aspects are relevant for achieving a good user experience of, with and through VOC?
- What opportunities are there for improving the user experience of, with and through VOC?
- In which direction(s) could the VOC concept be further developed in the future?

1.4 DELIMITATIONS

Due to the broad and exploratory character of the project, a number of delimitations had to be made:

- Main focus was set on the use phase of VOC, which means that for instance purchase and set-up procedures were not studied in detail;
- Considerations regarding branding and marketing were not included in the project;
- Some traditional product engineering considerations, such as technical solutions, had to remain outside the scope;
- Lastly, the user experience of VOC was mainly studied through narratives; less focus was set on the visual design of the graphical user interface and usability aspects.

02

THEORETICAL FRAMEWORK

This chapter introduces the field of user experience and includes a summary of theories and research that have formed the theoretical framework for the project.

2.1 INTRODUCING USER EXPERIENCE

Adapting technology to human nature is one of the main concerns when creating user-centered design (Hassenzahl, 2008). For long, focus has been on making products that are easy to use. However, due to the fast technology development good usability has almost become a prerequisite – people are no longer pleasantly surprised when products are usable but rather surprised when they are not (Jordan, 2000). Researchers mean that technology can contribute much more than just improved performance of tasks – it should add richness and enjoyment into people’s lives (Norman, 2004). This user-centric perspective on technology and design has been brought together under the term ‘user experience’, and will be further explained in the following sections.

2.2 FROM USABILITY TO USER EXPERIENCE

Usability is a quality that is linked to the actual use of a product or a service. The International Organization for Standardization (ISO) defines usability as:

“The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use.” (ISO, 1998)

The definition can be divided in two parts. The first part sets the boundaries for usability by stating that it is determined by the interplay between user, product, task and context. The second part is about the quality of use that is determined by effectiveness, efficiency and satisfaction. Both effectiveness and efficiency can be quantified in various ways, for example by task completion and time measurements. However, satisfaction is a subjective quality and thereby not as easily measured.

The field of user experience is sometimes described as an expansion or extension of usability, which attempts to go beyond the task and goal-oriented approach. User experience shifts attention from the product itself to the experiences that are created (with and) through the

product, which calls for a focus on the user and the subjective side of product use. Therefore when user experience is compared to usability, there is an overlap with the satisfaction-quality that considers the user’s subjective view.

ISO defines user experience as:

“A person’s perceptions and responses that result from the use or anticipated use of a product, system or service.” (ISO, 2010)

Compared to ISO’s definition of usability, the definition of user experience is more inclusive and has been criticized for being too vague. For example Hassenzahl (2008) describes it as *“an empty shell, ready to be filled with whatever one finds important”*. Hassenzahl (2008) defines user experience as a *“momentary, primarily evaluative feeling (good-bad) while interacting with a product or service”* and states that good user experience is *“the consequence of fulfilling the human needs for autonomy, competency, stimulation (self-oriented), relatedness, and popularity (others-oriented)”*. It should be noted that there is a similar term called ‘product experience’, which differs slightly from user experience as it refers to the *“affective experiences involved in human-product interaction”* (Desmet & Hekkert, 2007).

There is a great interest in the subject and there has been many efforts to further define and create theories of user experience.

2.3 USER EXPERIENCE - A MULTIDIMENSIONAL CONCEPT

User experience spans over various disciplines, such as design, business, philosophy, anthropology, cognitive science, and social science, which all study the phenomenon (Forlizzi and Battarbee, 2004). Many have advocated for using the term as an ‘umbrella’, where different disciplines can collaborate in order to create products, systems, and services (Cooper et al, 2014; Hassenzahl, 2008). A number of models and theoretical approaches have been developed to help understand what user experience is (e.g. Forlizzi and Battarbee, 2004; Hassenzahl and Tractinsky,

2006; Hassenzahl, 2008) and how experiences are formed (e.g. Forlizzi and Ford, 2000; Norman, 2004; Hassenzahl, 2008). In attempts to conceptualize user experience the majority includes a blend of instrumental aspects, such as usability, and non-instrumental aspects, such as emotions. However, due to the diversity of user experience the term is associated with a wide variety of meanings, and no cohesive theory exists (Forlizzi & Battarbee, 2004).

User experience is commonly described as rich, personal and subjective (e.g. Forlizzi and Battarbee, 2004). In line with this it has been claimed important to capture the fine nuances that make experiences significant for the user. User experiences may vary between individuals, e.g. because of different personal standards (Hassenzahl, 2003). Literature also picture user experience as dynamic and contextual. For example Hassenzahl and Tractinsky (2006) explain user experience as a consequence of a user's internal state, the characteristics of the designed system and the context in which the interaction occurs and where the internal state includes expectations, needs, motivation, mood and so on which entails dynamics.

Almost all approaches to user experience stress emotion as a vital part, and highlight that designing for user experience is not only about preventing negative emotions, but also to focus on positive emotional outcomes. Hence, emotions have a central position in many frameworks (e.g. Jordan, 2000; Norman, 2004; Desmet, 2002; Hassenzahl, 2008). According to Folizzi and Battarbee (2004) *“emotion is the heart of any human experience and an essential component of user-product interactions and user experience”*.

User experience is also portrayed as a broad concept. For example Cupchik and Hilscher (2008) state that user experience encompasses all aspects of the user's interaction with the company, its services and its products, because each interaction contributes to the totality. In line with this it has been argued important to study user experience from a holistic standpoint, and consider the chain of events that contributes to the user experience. For example Jordan (2000) calls for a wider perspective in order to understand what roles and values products have in people's lives and Forlizzi (2008) underlines that it is more than the actual product that influence the user experience, e.g. relations and co-existence of products and people.

Further, user experience is explained as a temporal phenomenon, which may change over time. Among others, Kujala et al. (2011) describe how user-product relationships can change over time and Karapanos et al. (2009) highlight that different user experience qualities, e.g. identification, novelty, emotional attachment, and usefulness, have different importance to the users at different times.

2.4 FIVE THEORETICAL FRAMEWORKS

As earlier stated, several frameworks have been developed to help understand user experience and emotional responses to product use. In the following section, a selection of five different theoretical frameworks will be described briefly, as their contributions have been used in various ways for this project. These approaches examine user experience and product experience from different perspectives and thereby focus on different aspects.

Jordan (2000) proposes a pleasure-based approach to human factors, where he highlights the potential pleasures that products can deliver. Jordan defines pleasure with products as *“the emotional, hedonic and practical benefits associated with products”* (Jordan, 2000). Based on a categorization made by Tiger (1992) Jordan (2000) highlights four distinct types of pleasures that people seek, namely physio-, socio-, psycho-, and ideo-pleasure (see figure 2A). Physio-pleasure is about the body and pleasures derived from the sensory organs such as smell, touch, and taste. Socio-pleasure has to do with enjoyment elicited from relationships with other people. Psycho-pleasure has to do with people's cognitive and emotional reactions and demands of using products. Ideo-pleasure has to do with people's values such as environmental responsibility, independence, and human rights. Jordan (2000) suggests that this four-pleasure framework can be used to help understand people holistically and to illustrate possible pleasures that products can deliver.

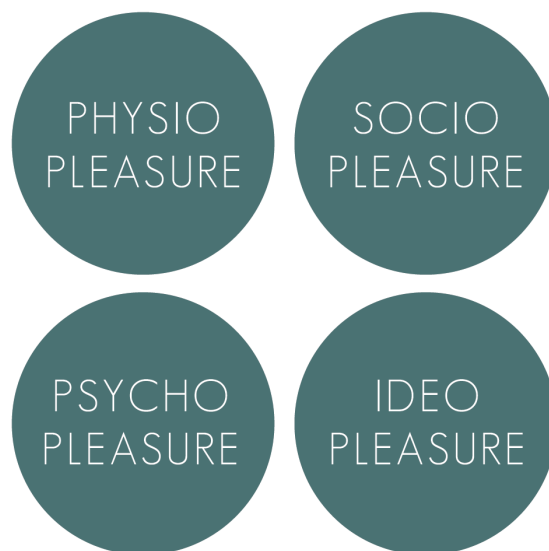


Figure 2A. Illustration of Jordan's (1999) four-pleasure framework.

Desmet (2002) introduces a basic model to product experience that describes how products can act as emotional stimuli (see figure 2B). The model, which is based on appraisal theory (e.g. Ortony et al., 1988, in Desmet & Hekkert, 2002), suggests that products do not elicit emotions per se but rather the emotion is the

result of an appraisal process, in which the individual appraises the product as favoring or harmful to one or several of the individual's concerns (personal motives). The characteristic of a product can either correspond or collide with the user's concern, which result in positive (e.g. happiness or satisfaction) or negative (e.g. anger or dissatisfaction) emotions of varying intensity. Desmet (2002) emphasizes four types of product appraisals; the sensorial appeal of the product, the legitimacy of an action represented by the product, the novelty of the product and the product in relation to an individual's goals. Understanding appraisal patterns that elicit emotion have been claimed helpful, for example when designing with intention to evoke or prevent particular emotions (Desmet & Hekkert, 2002; Demir et.al, 2009).

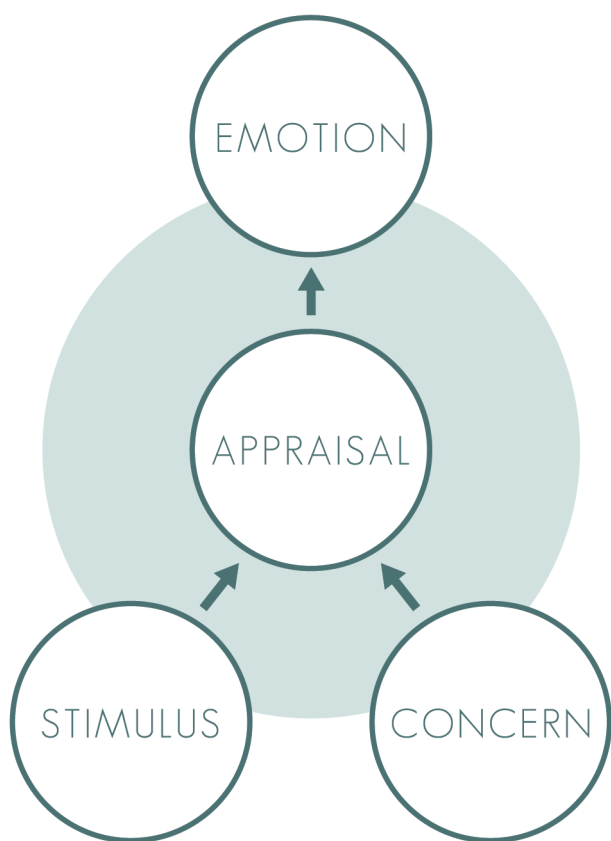


Figure 2B. Illustration of Desmet's (2002) basic model of product emotions. The model identifies three key variables in the emotion process; stimulus, concern, and appraisal.

With a background in cognitive science and psychology, Norman (2004) proposes a framework based upon theory of affect, behavior and cognition (see figure 2C). The framework includes three levels of information processing with corresponding design focus that are central for the product experience (Norman, 2004). The first level – the visceral – is the most fundamental level that involves biologically determined responses such as the “gut feeling” of liking or disliking something. The visceral reaction is immediate, preconscious and triggered by the initial sensory input. The second level – the behavioral

– is expectation based and has to do with pleasure of use due to a product's function, usability, and physical feel etc. The behavioral level concerns performance of well-learned behaviors and skills such as cycling or driving a car, which occurs on a subconscious level. The third level – the reflective – is the most complex level, as it comprises consciousness together with advanced cognitive skills such as the ability to interpret, understand, generalize, and solve problems. According to Norman (2004) all three dimensions are interwoven through any design and thereby play an important part in shaping the experience. Norman (2004) suggests that the framework can help provide a deeper understanding of the design process and the emotional impact of products.



Figure 2C. Illustrates Norman's (2004) framework that includes three levels of information processing with corresponding design focuses.

With a basis in human-computer interaction, Hassenzahl (2003) proposes a model that categorizes key elements of user experience, and describes people's goals and actions when interacting with products (see figure 2D). Hassenzahl (2003) suggests that each user assigns a number of attributes to a product during use, and states that user experience is the consequence of these attributes together with the situation and context in which the product is used. The model suggests (see figure 2D) that people perceive interactive products along two different dimensions; pragmatic and hedonic qualities. Pragmatic quality of a product involves 'do goals', which refer to the perceived ability to achieve a specific task with a product. Thereby, the pragmatic quality pose demands on the product's utility and usability in relation to the task. The hedonic qualities on the other hand concerns 'be goals', which refers to the product's ability to support human needs beyond the instrumental, such as “being special”, “being competent”, and “being independent”. The model further categorizes the attributes into manipulation, simulation, identification and evocation (see figure 2D). Hassenzahl (2003) states that the model can help understanding of how people perceive and value products, and that it can facilitate measurement of key elements of user experience.

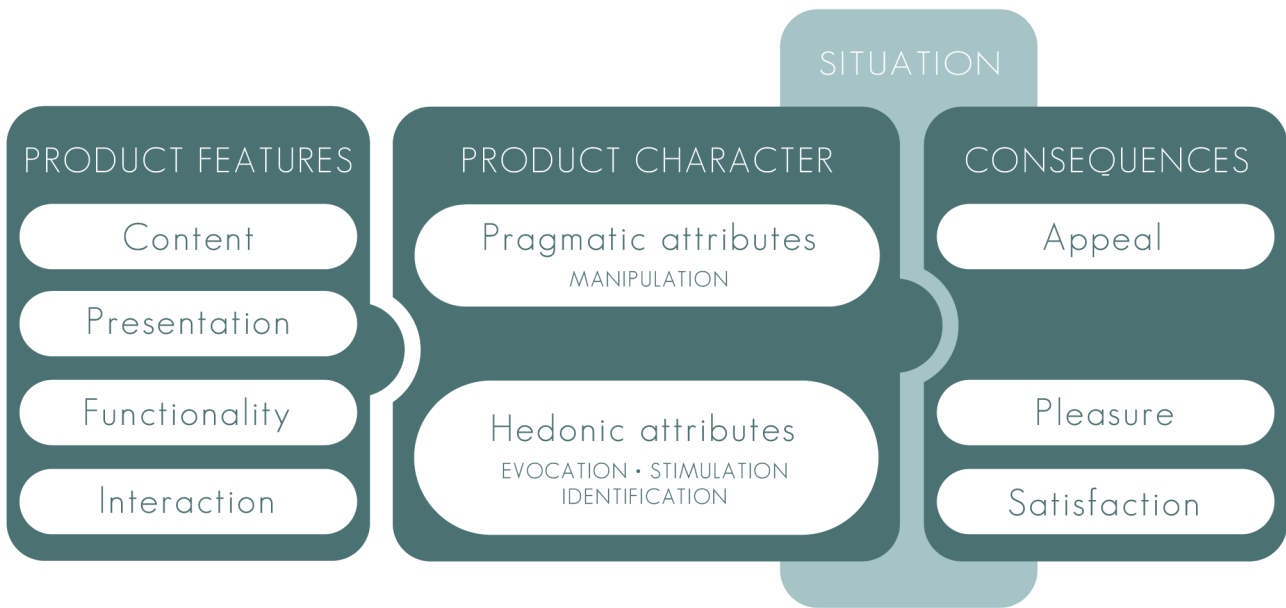


Figure 2D. Illustration of Hassenzahl's (2003) division of product experience into hedonic and pragmatic attributes from a user perspective.

The described frameworks primarily include a single-product and single-user perspective when studying experiences. However, as products are becoming smarter and more interconnected, researchers have advocated a need to broaden the scope in order to better understand how the co-existence of products and people influence experiences.

One example is the product ecology framework (Forlizzi, 2008) that looks at the relationships between products and people in a more holistic manner. Forlizzi (2008) states that it is more than the actual product that influence the user experience. According to Forlizzi (2008) each product has its own ecology. The ecology influences how the product is used and results in an individual experience when using the same product. Hence, Forlizzi (2008) suggests that there are factors in the ecology that could be analyzed in order to understand how people make social relationships with products. Figure 2E shows a schematic illustration of factors in the product ecology, these include; product and surrounding products, person or people who use(s) the product, activities, and social and cultural context that exist in time and place. Forlizzi (2008) states that the factors in the Product Ecology are dynamic and interconnected in numerous ways. Further Forlizzi (2008) explains that new products can change an existing product ecology, and in extreme cases even cause the ecology to break down, e.g. because activities are modified and new ones are developed.

2.5 ANALYTICAL VERSUS HOLISTIC APPROACH

As explained there are various ways to approach user experience and many methods and tools have been developed for use in empirical studies. The following text discusses two different approaches, here called the analytical and the holistic approach.

The analytical approach views user experience as the sum of its parts, meaning that the aspects that constitute the phenomenon can be studied separately in order to examine the whole. According to Karapanos (2010) this approach is dominant in usability studies where effectiveness, efficiency and satisfaction constitute the whole. This perspective is argued to be frequently used also when studying user experience, especially in fields that have a strong usability tradition and when comparative evaluations are desired. Predesigned scales, questionnaires, close-ended interviews and physiological measures are examples of instruments that can be used in order to study aspects of user experience from an analytical approach (Karapanos, 2010).

Compared to the analytical approach, the holistic perspective underlines the richness of user experience and highlights that it is more than the sum of its parts. Therefore it is argued that a holistic standpoint is essential in order to capture fine nuances of user experience (Karapanos, 2010). The holistic approach often supports the use of methods such as contextual studies, open-ended interviews, collection of narratives, and storytelling (Karapanos, 2010).

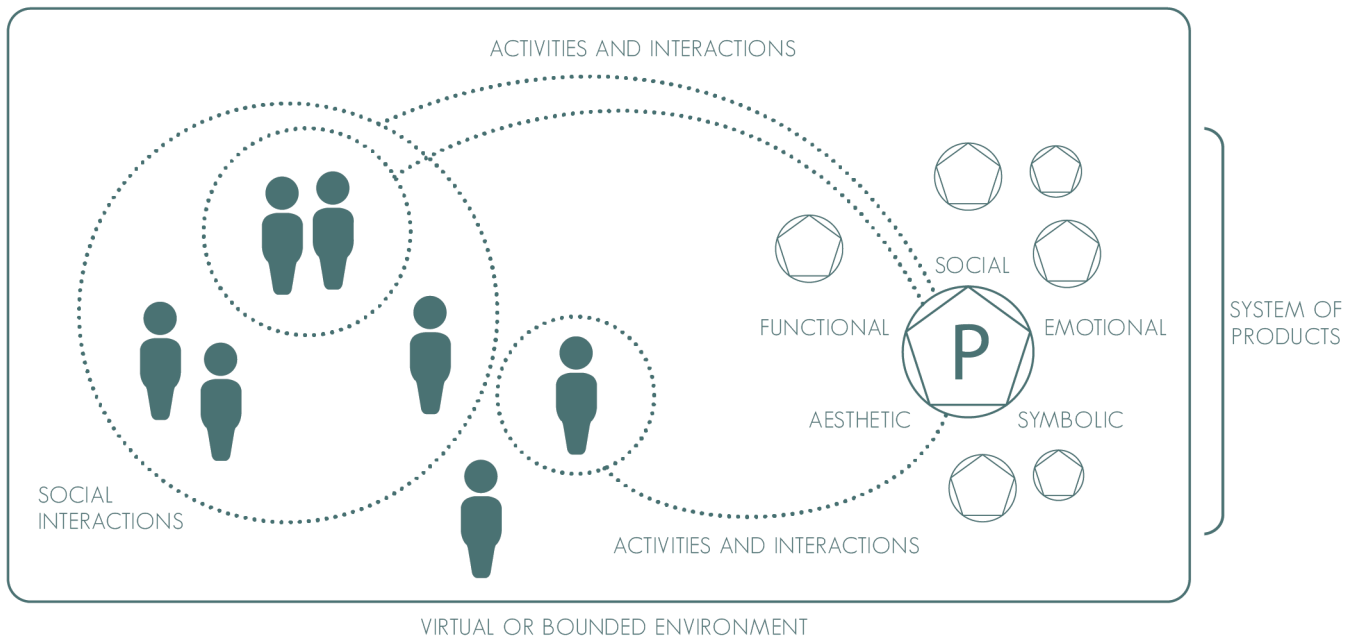


Figure 2E. Schematic illustration of Forlizzi's (2008) product ecology framework.

A critique of the analytical approach is that user experience is too rich in nature in order to be reduced to a set of variables (Karapanos, 2010). It is argued that user experience should be studied in its entirety in order to provide a more representative picture of the experience. However, an advantage with the analytical approach is that it facilitates studying various aspects of user experience without getting lost in the complexity, and the approach enables a study of specific aspects more closely which simplifies the generation of quantified and detailed data. Thereby it facilitates comparative evaluations and creation of explicit requirements regarding various aspects. However the validity of analytical measurements can be questioned since they often rely on the user's ability to understand and interpret the statements correctly. In comparison, the holistic approach often uses qualitative methods, which enable the users to express themselves more freely and also bring up factors that haven't been brought up by the interviewer. This instead puts demands on the interviewer to be attentive, unprejudiced and able to interpret what's being said.

2.6 CONCLUSION

Literature highlights user experience as rich, personal and subjective, and in line with this it was relevant to include theory that incorporates the user's self and processes that occur when interacting with a product, e.g. level of information processing (Norman, 2004) and individual concerns (Desmet, 2002). User experience is also portrayed as a perspective that shifts attention from the product, to the user and the drivers of positive experience.

Therefore it was relevant to include theory that highlights dimensions to consider when designing for 'good' user experience, e.g. hedonic qualities (Hassenzahl, 2003) and pleasures (Jordan, 2000). Further, as user experience encompasses all aspects of the user's interaction with a product and since VOC consists of various parts it was vital to include theory that not only focuses on product use, but also considers the greater picture, in order to understand what role VOC has in the user's lives and what values it brings over time. Due to VOC's ability to interconnect with the car it was also relevant to study literature that discusses how co-existence of products and people influence the user experiences, e.g. product ecologies (Forlizzi, 2008; Jung et al., 2008).

However as earlier discussed no cohesive theory of user experience exists and since VOC includes various types of interaction there was no obvious choice regarding suitable theoretical approach for the project. Because of the broad scope it was argued as beneficial to initially include several perspectives rather than focusing on one theoretical framework when studying VOC. This inclusive approach was chosen in order to understand the complexity and thereafter be able to make an appropriate selection. Initially five theoretical frameworks were used (described in section 2.4) but later on in the project, when implications and opportunities had pointed out a direction, only one of the frameworks was chosen and used for the remaining phases of the project.

In the case of VOC it was especially central to understand the particularities at hand, because of the remote dimension and complexity described in the

design challenge. Therefore it was important to have an exploratory and open perspective in the beginning of the project. Further it was important to have a user-centered approach and include methods that help examine the subjective side of product use. Hence it was decided to initially use qualitative methods and focus on ‘user narratives’ when exploring the experience of VOC. Forlizzi and Ford (2000) describe user narratives as “experiences that have been formalized in the user’s head”

which is a way of portraying experiences retrospectively by the user. This approach was chosen to capture user experiences in relation to time, situation and context, yet aware of the inability to fully address user experiences, e.g. due to the difficulty to verbalize something that is complex, personal and subjective in nature. However later on in the project more quantitative methods were used, because it was relevant to assess and compare the current user experience of VOC with a new VOC concept.

03

PROCESS

This chapter presents the project approach, outlines the process and briefly describes its methodology. For each study conducted in the project, its purpose, aim, and procedure are described in detail together with the findings later in the report.

The previous chapter concluded that a user centered and experience driven approach was chosen for the project. Due to the complexity and possible unknown factors of the user experience of VOC, it was decided to initially have an explorative approach in the project, where important insights could help to guide the direction of the project. In accordance with this, the project was structured around two phases; exploration and creation (see figure 3A). The exploration phase aimed to explore the user experience of the current VOC concept, whereas the creation phase aimed to provide insights for how the user experience of VOC could be improved and further developed. The overlap between the two main phases, illustrated in figure 3A below, represents the somewhat shorter orientation phase which had the main objective to, based on the findings from the exploration phase, point out a direction for the remaining project. Each phase consisted of a number of activities, methods and tools, which will be described in the three following sections.

3.1 EXPLORATION PHASE

The exploration phase had the intention of gaining knowledge and understanding of VOC and its users, and was initiated by activities to get to know the existing VOC concept on a basic and functional level. Except for studying user experience theory (see chapter 2), the aim of the exploration phase was to investigate how users are experiencing VOC today, and exploring the possibilities for improvements and further development. In order to accomplish this, different types of research was conducted; an in-depth user study, company interviews, and an additional smaller interview study with car dealers. The major part of the exploration phase comprised the user study, which aimed to investigate the user experience of VOC, how it has evolved over time, and what influence it has on the car experience, as well as gathering and analyzing qualitative data regarding user attitudes, concerns and values. The study included in-depth interviews with 12 participants in order to gather user narratives using a collection of methods.

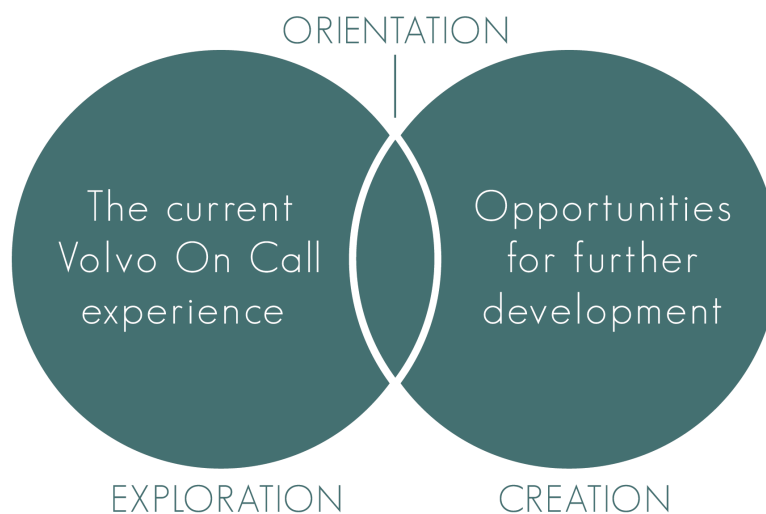


Figure 3A. Illustration of the process, including the orientation phase as an overlap between the two main phases.

3.2 ORIENTATION PHASE

The exploration phase was followed by a shorter orientation phase, where possible directions for the creation phase were mapped in three main directions. Important findings from the exploration phase were compiled and presented to company representatives, and in order to decide on the direction for the remaining part of the project a discussion was held regarding the possible directions, timeframe, focus, and delimitation. Furthermore, an appropriate approach for the creation phase was decided upon, which led the project to take a more strategic direction rather than proceed on an operational level. In addition, focus areas for concept development of VOC were defined in agreement with the company representatives.

3.3 CREATION PHASE

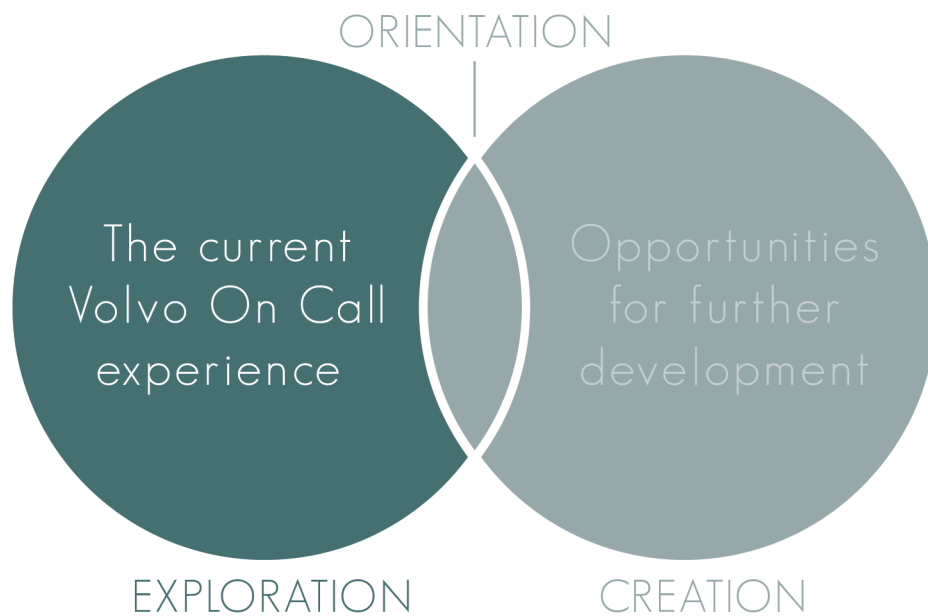
The creation phase was initiated by a concise literature study in order to create a common ground for the

remaining project regarding the chosen direction and focus. This was followed by a user focus group with the aim of learning about attitudes and opinions concerning the development of VOC, in accordance with the chosen development focus. Thereafter, in line with the strategic approach the VOC product ecology, including for instance context, people, and other products surrounding VOC, was analyzed by looking at the current ecology as well as exploring what changes might occur within the set timeframe. Initial ideation took place along with an ideation workshop performed with fellow master students, and several ideas were gradually combined into early concepts that developed organically according to the holistic approach of the project. A user experience vision for a future VOC was outlined, taking both previous and new findings into consideration. Some of the concepts were selected and illustrated in storyboards with the purpose of embodying the vision in scenarios, which were then used as a basis for assessing the intended user experience with VOC users.

THE EXPLORATION PHASE

The following chapters present the findings from the activities conducted in the exploration phase:

- Describing Volvo On Call
- Exploring the current Volvo On Call concept



04

DESCRIBING VOLVO ON CALL

As described previously, VOC consists of a built-in assistance system in the car and a convenience-oriented smartphone app. This chapter aims to provide additional information about the various parts of the current VOC concept, and how they are connected.

4.1 THE VOLVO ON CALL CONCEPT

VOC was initially introduced as a safety system in 2001. Today, the concept includes a host of functionality within safety and convenience solutions, with features ranging from tracking services and breakdown support, to remote heater starter and driving journal accessible in the app. As described previously, VOC consists of a built-in assistance system in the car, which is connected to a call center, and a smartphone app (see figure 4A). Section 4.2 will describe the app in more detail, whilst the other parts of VOC will be explained here.

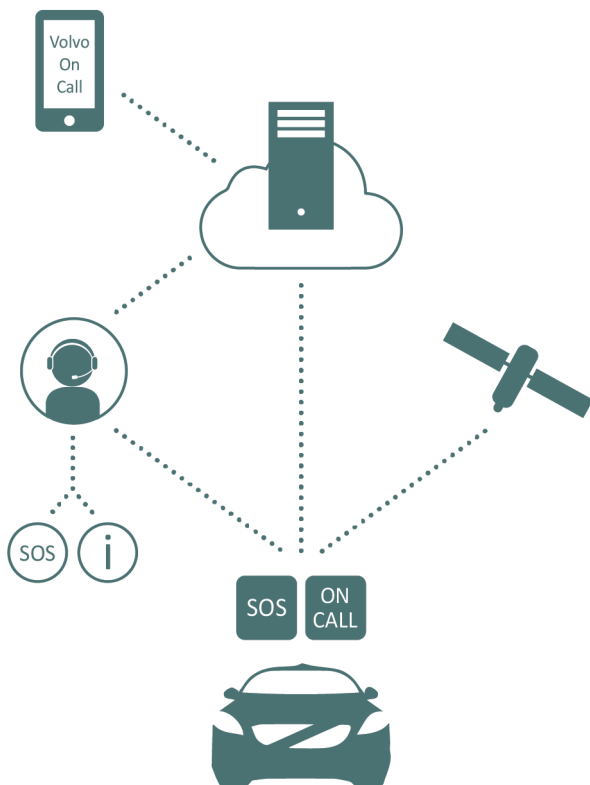


Figure 4A. Schematic illustration of the VOC system.

The built-in assistance system is connected to a call center, which the user can contact in case of an accident, breakdown, or theft. The call center is open around the clock and can be reached by pressing one of the two

VOC hardware buttons in the car (see figure 4B), or via the smartphone app, or by making an ordinary phone call. The red SOS button is for emergency situations, and these calls get prioritized. The call center can locate the position of the car, contact authorities and make sure that help of appropriate measure is sent. VOC also includes a built-in collision alarm which alerts the call center automatically, e.g. if the airbags have been triggered (Volvo Cars Support, a). The black On Call button can be used when the driver needs to get in touch with roadside assistance, for example if gotten a flat tire. In cases of theft, the car can also be tracked thanks to the built-in VOC system.



Figure 4B. The driver can reach the call center by pushing one of the hardware buttons, which are integrated in the car's ceiling.

Today VOC is available in 21 markets and there are currently around 230 000 active subscribers globally (Volvo Car Sverige AB, 2015). VOC is based on a subscription service that is free during the first three years and thereafter can be extended for two years. The customers also pay an additional cost for the hardware built-in the

car during manufacture, the sum varies depending on what functionality is included (Bilia, 2015). Since the functionality of VOC puts demands on the equipment in the car, the included functionality depends on the initial choices made by the customer and varies slightly from car model to car model. When VOC is included in a car, a personal SIM card is installed which can create a Wi-Fi hotspot in the car. This makes it possible to share the Internet connection to other devices in the car (Volvo Cars Support, b).

4.2 THE VOLVO ON CALL SMARTPHONE APP

The VOC smartphone app has become a central part of the VOC service, and is available for car models of year 2012 or later. Through the app the user can monitor the car at distance, for example to see the position of the car, get dashboard information, and check the driving journal which shows information about the latest trips. The app also enables the user to control the car remotely, for example it enables the user to start the heater remotely, lock and unlock car doors, and send destinations to the car's navigation system. For car models of year 2015 the app also enables the user to start the engine remotely in order to pre-condition the car during both hot and cold days (Volvo Cars Support, c). The VOC app is available for a selection of smartphones and tablets and can be downloaded for free (although the service is not). Recently an updated version of the VOC app was released compatible with wearable devices (Volvo Car Sverige AB, 2015).

4.3 THE FIRST ENCOUNTER WITH VOLVO ON CALL

An interesting part of the user experience of VOC is what happens in the early stages before the actual use; e.g. initial expectations and whether or not they are fulfilled. Although the project focused on the use phase, it was considered essential to look into this early stage briefly in order to establish a basic understanding for the current VOC concept. Therefore, as to learn more about these aspects a smaller interview study with car dealers was carried out, concerning how car dealers promote VOC, how often VOC is included in the purchase of a new Volvo car, and the customers' general interest in and expectations on VOC. The study consisted of three 15-30 minutes long semi-structured interviews held at Bilia Sisjön, at a department which specializes in selling Volvo cars.

The car dealers describe VOC as a good selling point when it comes to promoting the purchase of a new Volvo car. Somewhere between 70 – 90 % of the customers who purchase a new Volvo car choose to include VOC. Customers who choose not to include VOC usually want to keep down the costs, have a low interest in technology, or do not use a smartphone. According to the car dealers competing brands have no equivalent service to offer, due to the safety functions included in the VOC service. The car dealers claim that customers love VOC, and once they have started to use it they continue to include it in new cars as well. Most customers choose to extend the subscription of the service after the three years free of charge. Many people who are new to VOC have heard

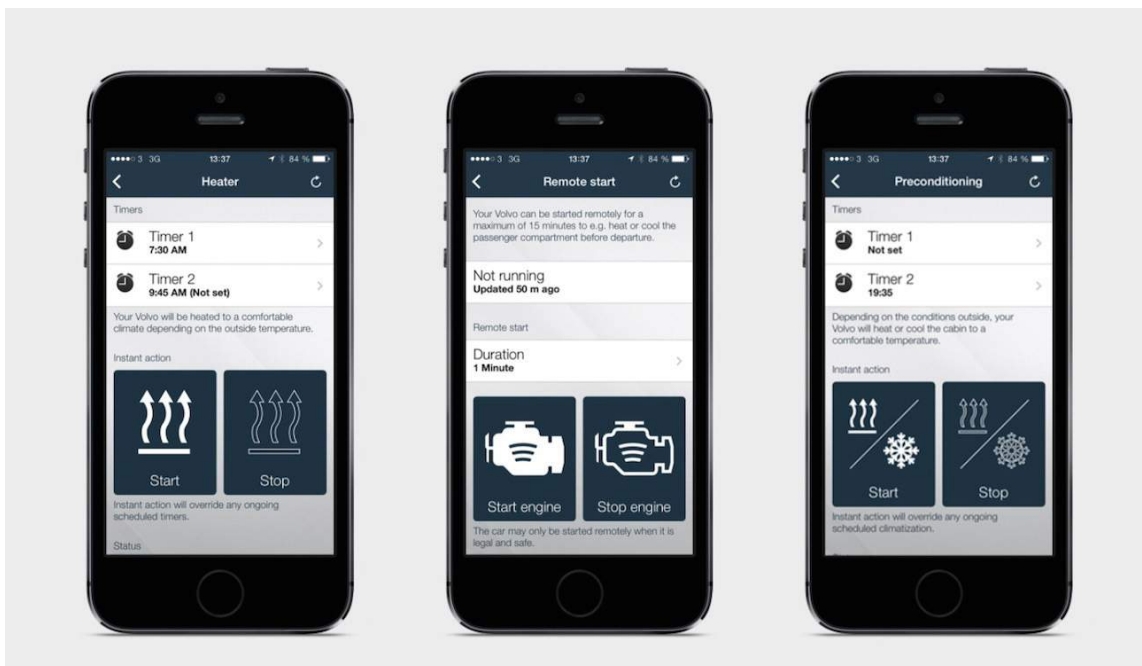


Figure 4C. Showing screenshots of the interface of VOC. Picture borrowed from www.thedetroitbureau.com (2015-07-27)

of the heater starter, but are less aware of the safety functions. When it comes to expectations, the customers are usually surprised and impressed by the functionality of VOC and seem to think that the ability to access the car remotely gives a premium feeling. Hence, the car dealers believe VOC still has some value of novelty despite it has been around for a while.

The car dealers agreed that the heater starter is the number one selling point when it comes to VOC, as well as being the most appreciated feature by the customers when using the service. Since the customers generally are less aware of the safety functions, the car dealers feel the need to introduce and promote the benefits of them to a greater extent. One car dealer explained:

“The customers are positive towards the safety functions, but it is the convenience of the app that makes them love VOC.”

When the customers come to pick up their new car, the car dealer helps out with the so-called handshake procedure where the customer logs into VOC for the first time and connects it with the car. Also, the car dealer usually gives an introduction to the call buttons in the car, as well as shows the most important features in the app. An issue pointed out by the car dealers is that the VOC server is occasionally down, and even though it happens rarely it causes problems both when they promote the app to new customers, and when helping the customers through the handshake procedure. This can lead to a negative first impression and an initially bad experience of VOC, and is

considered a severe issue especially since some customers get worried that there is something wrong with their new car.

4.4 CONCLUSION

The VOC concept consists of several parts which influence the user experience; a built-in assistance system in the car which is connected to a call center, and a smartphone app which provide the user with a range of functionality, including monitoring and controlling the car remotely. Although the service was introduced as a safety solution, VOC is today mostly associated with the convenience-oriented smartphone app. The remote heater starter is the primary selling point when it comes to VOC, and is both the most appreciated feature and what the customers mainly associate with VOC. However, the safety features are also considered important, and according to the car dealers these are what make VOC unique as a service.

It is common to include VOC when purchasing a new car, and customers remain loyal to the service and choose to include it also in later cars. People are generally happy about VOC, and find its remote functionality impressive and useful. The handshake procedure is important since it usually is the first encounter with VOC for new customers. If the procedure is disturbed due to reliability issues there is a risk of causing a negative first experience of the service. However, since the project focuses on the use phase of VOC, this will not be elaborated further in this report.

05

EXPLORING THE CURRENT VOLVO ON CALL CONCEPT

This chapter presents the purpose, method, and findings from the extensive user study which made up the major part of the exploration phase.

5.1 PURPOSE AND AIM

In order to investigate the user experience of the present VOC concept, an in-depth user study was conducted. The purpose of the study was to gather and analyze qualitative data in the form of user narratives regarding the user experience of VOC, with the aim of creating an understanding of the users' attitudes and values concerning VOC. Based on these findings, the aim was also to identify possible strengths and opportunities for improvements, and thereby get an idea of how VOC could be further developed.

The following questions were posed:

- What relation do the participants have with their car? Are they, for instance emotionally attached to their cars?
- How does VOC influence the car experience? Do the users experience the car through VOC?
- How is VOC used?
- How is VOC experienced by the users?
- If and then how has the user experience of VOC changed over time?
- How can the user experience of VOC be improved?

5.2 METHOD AND PROCEDURE

This section presents the method and procedure of the user study.

5.2.1 Participants

The user study was conducted with altogether 12 participants, 4 females and 8 males in the ages between 29 and 55 (see figure 5A). All participants worked in Gothenburg. Out of the 12, 10 were Volvo Cars employees recruited from a large group of VOC users who had previously volunteered for participating in user studies. Three out of the 10 were considered expert users, since they were involved in development work concerning digital user experience at Volvo Cars.

The participants were selected in order to achieve a distribution of gender, age, and use experience of VOC. One participant owned the car, whilst the remaining had company cars. As a result, most of the participants didn't pay explicitly for VOC, since that cost was included in their company car deal. The participants had varying car models, and therefore also slightly different functions included in VOC. However, in general the participants

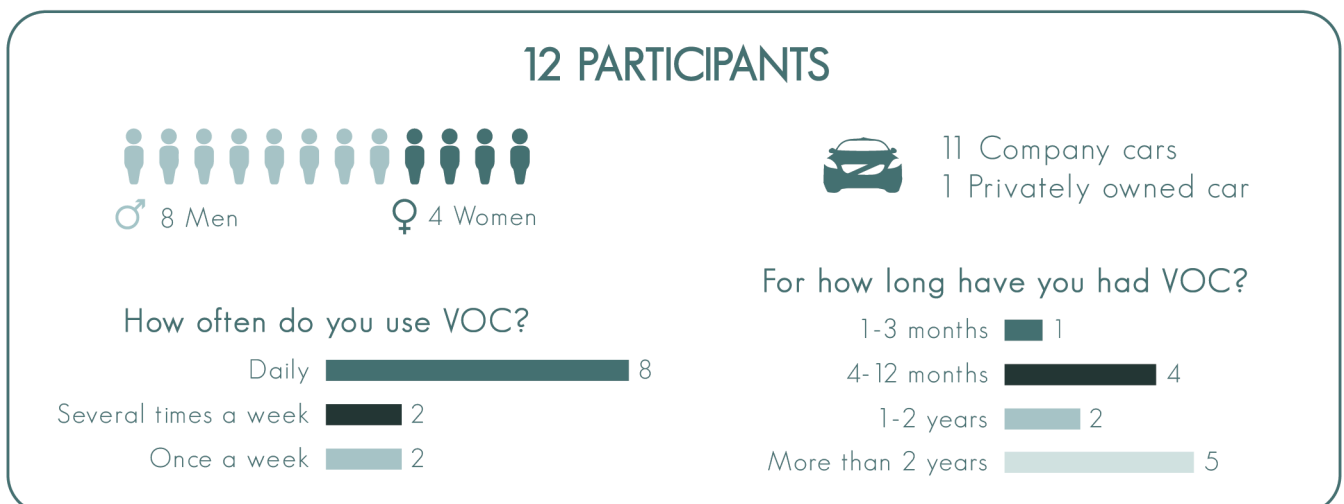


Figure 5A. A visual illustration of some of the statistics of the user study participants.

had extensively equipped cars and thereby also many of the VOC functions.

The participants had different occupations and lifestyles, and varying interest and experience in technology. However, none of the participants claimed to be unaccustomed to or have low interest in technology. Most of the participants (8/12) used VOC on a daily basis. No interviewee used VOC every car ride, and no interviewee used VOC less frequently than once a week. There were some differences in how long the participants had been using VOC. One participant had only had VOC for one to three months, whilst 5 persons have had VOC for more than two years.

5.2.2 Data collection

For collection of data a combination of methods was used: interviews, reflexive photography, and the UX curve. For a visual illustration, see figure 5B.

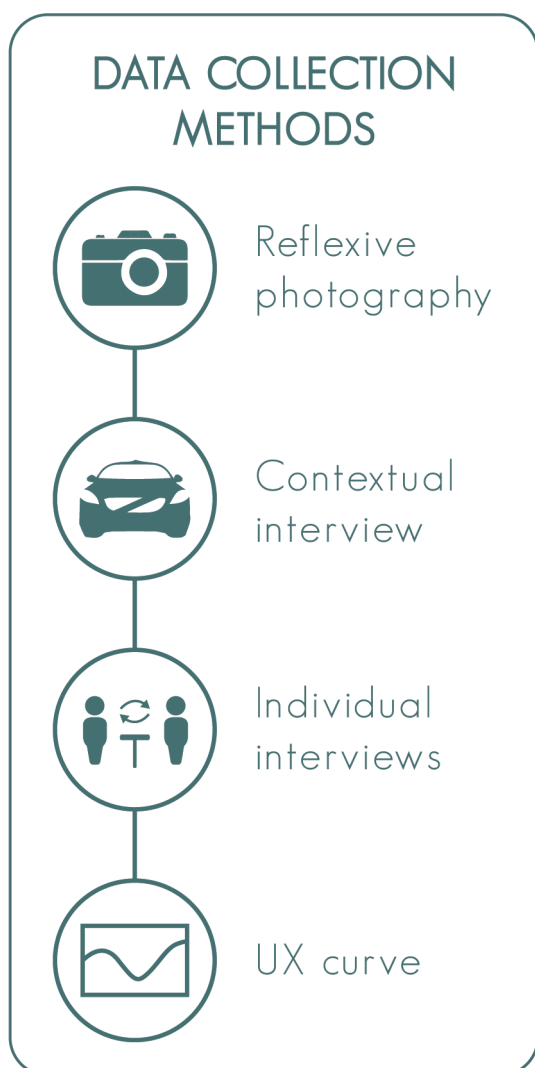


Figure 5B. A visual illustration of the procedure of the interview sessions in the user study.

Previous to the interview, which was the main part of each session, the participants were asked to document significant experiences of VOC during a typical day, according to the reflexive photography method (cf. Harrington & Lindy, 1999). The purpose was to trigger them to start reflecting on their experience of VOC beforehand, and hereby enable them to prepare for the interview. In addition, the photos were used as a mediating tool during the interview as the participants were asked to describe what the pictures showed and why they chose to document that specific event or feature.

Prior to the interviews a pilot study was conducted, which resulted in some rephrased questions and improvements of the interview procedure. The interview session consisted of several parts. Each meeting was initiated by a contextual interview (cf. Beyer & Holtzblatt, 1997) in the car regarding the user's relation to the car and how VOC influences the car experience. Conducting the interviews in the car was intended to provide a situated context which would stimulate the users to reflect on their experiences.

Next, an in-depth interview was held in a relaxed indoor environment, where the photos taken by the user in advance were used as a base for an initial conversation. This part of the session consisted of questions regarding VOC's role in the users' everyday life, how they use it and experience it, and what values it brings. Since the interviews were semi-structured the users were allowed to tell their narratives undisturbed, and it enabled a flexible way of asking questions at the most appropriate time. The users were asked open-ended questions, with the purpose to encourage them to speak spontaneously about their experiences with VOC. The aim was to be open-minded for whatever aspects would be highlighted by the users, and which could prove to be relevant for the project (cf. Jones, 1992). This method was used with the ambition to stay open to unexpected themes and results. The questions asked in the interviews have been compiled in appendix I.

The UX curve tool (Kujala et al., 2011) was thereafter introduced in order to investigate how the experience of VOC had evolved over time, by letting the users retrospectively tell stories of memorable experiences of and with VOC. The participants were given a short introduction to the UX curve diagram, where after they were asked to draw a curve representing how their experience of VOC has evolved over time since they started using it. The participants were instructed to explain the reasons to possible changes in the curve, and for each experience that stood out they were asked to make a mark on the curve and write a note of what happened. In addition, questions regarding wishes, complaints and thoughts about the future of VOC were asked, where the users could elaborate on their desires for how VOC could be improved.

5.2.3. Analysis

The interviews were recorded, transcribed in full and analyzed according to the KJ method, which is a bottom-up method for structuring qualitative data in order to find occurring patterns in a way that allows the data to “speak for itself” (Courage & Baxter, 2005). The UX curves were analyzed in relation to the user narratives. The categories that were found highlighted dimensions that proved to be important for the user experience, as well as implications and opportunities for improvements and further development. These categories were transformed into a number of user experience themes, which will be presented in the following sections.

Furthermore, the findings from the user study were related to theory by analyzing the emerged patterns in relation to four of the theoretical models covered previously in chapter 2; Jordan’s pleasure model (2000), Desmet’s product and emotion model (2002), Norman’s process-level model (2004), and Hassenzahl’s division of product experience into hedonic and pragmatic attributes (2003). This was done in order to see if something had been missed, and if new insights would surface and whether additional conclusions could be drawn.

5.3 FINDINGS

When talking to the participants in the user study, it was found that VOC elicit overall positive user experiences. Although the participants saw the app as the most apparent part of VOC, they also appreciated the safety features. On a scale from 1 (negative) to 5 (positive), the participants gave VOC an average score of 4.2 (median 4), showing that the overall attitude towards VOC is positive (see figure 5C).

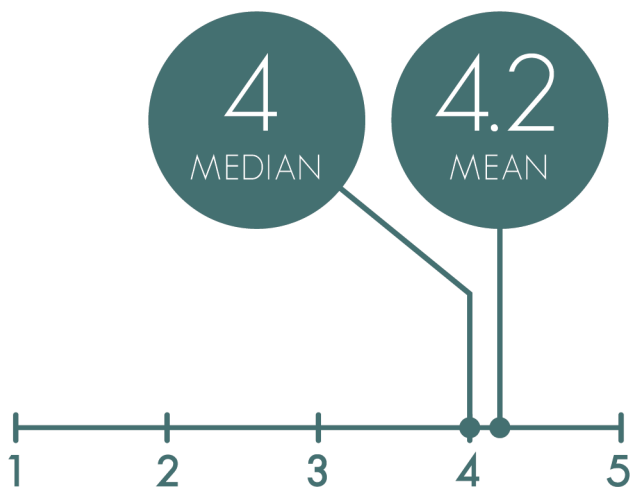


Figure 5C. On a scale from 1 - 5 the participants gave the current VOC an average score of 4.2.

The participants described VOC as convenient, helpful, and easy to use. However, stories about both positive and negative experiences with VOC were told. As described earlier, a number of experience themes emerged when analyzing the findings from the user study. In the following sections, the user experience of VOC will be presented accordingly. Lastly, the analysis of the UX curves together with the narratives will be presented.

5.3.1 Volvo On Call influences the car experience

As a first step towards understanding what influence VOC has on the car experience, it was important to investigate what kind of relation the participants had to their cars. The majority of the participants described their car as a transportation tool, with the primary purpose of getting them from point A to point B. However, for most participants the car is more than a mere means of conveyance. The car gives them freedom and flexibility, and the possibility to do things that otherwise would be difficult. Many described the car as a convenience, but also something that facilitates everyday life and enables them to save precious time.

Most of the participants stated that they don’t have a strong emotional bond to their car specifically, even though they appreciate and enjoy it. One participant explained that her car is replaceable since there are other cars exactly like it, and another participant claimed that any car that fulfills his needs would be sufficient. The participant who owned the car had similar attitudes. Some participants said that the reason why they aren’t emotionally attached to their car is because it is a company car, which gets replaced annually or every other year. The interviews implied that having a company car possibly differs from owning a car, since you make your choice from a limited collection and might prioritize practical aspects rather than aspects such as visual appearance. All in all, despite appreciating a good car experience the participants mostly had pragmatic attitudes towards their cars, and seemed more attached to the outcomes of driving the car rather than to the car itself.

The user study showed that VOC is highly appreciated by the users and the general opinion is that VOC is a vital part of the car experience. However, some saw VOC more as an optional add-on service rather than a natural part of (having) a car. All participants expressed that they appreciate the remote functionality of VOC which provides the possibility to control and operate the car regardless of distance. Many of the participants highlighted that the best quality of VOC is that it makes the car more accessible, not only when it comes to accessing status and information about the car, but also through the remote functionality of the app:

“VOC enables me to control and communicate with my car remotely, that is the best thing. It feels like I always have my car with me that way.” (P1)

A few participants pointed out that VOC is a service provided exclusively for Volvo car drivers, and this made them feel prouder of their car. The majority of the users believed that VOC strengthens the bond to the car, despite claiming that their relation to the car is pragmatic rather than emotional. However, even though many participants saw VOC as a close link to the car, they did not necessarily experience VOC as an extension of their specific car or as a part of the car’s identity. It was expressed that VOC provides added value, but feels somewhat detached from the car:

“Even though the car and VOC are linked and connected in many ways, I don’t really feel like I’m experiencing my own car when I am using the app. My experience is that VOC shows data rather than representing my car.” (P1)

In the interviews the participants were asked if VOC makes them more aware of the car. A common reflection was that since VOC is available in the smartphone, a product that they more or less always bring with them, the car gets more integrated into their lives. About half of the participants believed that VOC makes them more aware of the car. They explained that since the app enables them to see and do things with their car they consequently think more about it. They also mentioned that the notifications from VOC remind them of the car. The other half of the participants explained that VOC made them think less about their car, but in a good way. They meant that because VOC keeps track of the car they do not have to worry about it, since they trust they will get a notification if something is wrong.

As described previously, the participants in the user study experienced a sort of gap between VOC and their car and wished for a closer representation of the car in VOC. In addition, the participants highly appreciated being able to perform actions with the car remotely. In line with this, some participants wanted more remote functionality, for example being able to close doors, windows, and sunroof via the app. Some participants also wished for more information to be provided by the app, such as washer fluid level and tire pressure. An overview of wishes regarding functionality is presented in appendix II.

5.3.2 Volvo On Call provides convenience

All participants pointed out in one way or another that VOC makes their everyday lives easier and more convenient. According to the participants, VOC is the reason to why some tiresome chores and inconvenient routines around car driving are improved and to some extent eliminated, such as scraping windows or going

outside to turn on the heater during freezing mornings. As stated before, the remote functionality is one of the most highly appreciated aspects of VOC; the heater starter and remote lock function above all. VOC enables the participants to use the app to send a command to the car without having to disrupt the activity that is going on at the moment. In that way, VOC provides a flexible way of performing actions whenever it suits the user.

Another highly appreciated convenience factor of VOC is that it provides information about the status of the car, which means that the users don’t have to walk outside in order to check the fuel level or check whether or not the car is locked since the information is presented in the app. The participants explained that as a result of having access to relevant information and car status in the smartphone app, they don’t have to remember things such as registration number, mileage or fuel level. Since you carry the information with you in your smartphone, you are able to conveniently access it whenever you want instead of memorizing it.

It was common among the participants to appreciate that VOC is a smartphone app. Many participants experienced that some things are easier to do in the smartphone compared to in the car, and due to their frequent use of the smartphones the participants felt more accustomed to them than to their cars. Some participants even preferred using the send-to-car-function in the app rather than using the car’s navigation system in order to set a destination. Although not explicitly covered by the interview questions, the participants also mentioned that they had a positive attitude towards VOC when it comes to interface design and interaction. The app was described as easy to understand and use. However, it was pointed out that they saw possibilities in improving the visual design as well as the overview of the functionality in the app.

Many participants highlighted the convenience of being notified by VOC, since it makes them feel like they don’t have to worry about the car. They can relax and trust the app to let them know if something is wrong, and feel appreciation and gratitude towards these notifications:

“When I park the car at home, I usually have a lot on my mind. While unloading the car I make sure nothing is forgotten, and I keep an eye at my children at the same time. It is easy to forget to lock the car, so I rely on VOC to give me a notification if I forget it. That puts my mind at ease.” (P3)

Some participants experienced VOC as a form of luxury; an extra convenience feature they treat themselves with along with their car. Partly, the pleasant and luxurious experience of using VOC has to do with comparisons with other car drivers; friends or neighbors who have other car brands and therefore don’t have access to the

VOC service. It was pointed out that VOC is something not everyone has, and that enhanced the feeling of pride and joy:

“It is a wonderful and luxurious feeling when I don’t have to scrape the windows of my car on freezing winter mornings. It feels like I am being welcomed by a nice and warm car. It is satisfying to jump directly into the car and drive away whilst my neighbors stand scraping their car windows.” (P7)

Then again, most of the participants had had negative experiences due to performance and reliability issues with VOC. These experiences elicited emotions such as irritation, frustration, and dissatisfaction, which counteract the sense of luxury and convenience. Some explained that these experiences lowered their otherwise good impression of the service. According to the participants, the VOC app is not always up to date; this means that it sometimes shows incorrect car status or no status at all. Due to the delay of the status updates, many participants explained that they have to update the app manually in order to access the latest information. Although the majority of the participants seemed aware of the possible reasons behind these issues (e.g. server downtime or system bugs), they have the impression that the VOC app is slow and unstable from time to time.

The majority of the participants were unhappy with the amount of time they had to wait when using the VOC app. Most participants felt a need to monitor the app during its progress to make sure that the command reaches the car successfully. This is experienced as a lot of waiting, and the waiting becomes even more unpleasant when VOC sometimes fails to carry out the command. Additionally, the participants were unsure whether or not the app would continue to send commands to the car even if they would close it down. One participant, who was especially annoyed by this, explained that it felt like the app was blocking him from doing other activities on his smartphone.

The participants expressed a number of wishes concerning new functionality or how existing functionality of VOC could be improved. For example, there was a wish for a more advanced search feature in the send-to-car function, as well as being able to plan trips, save locations and routes, and share travel plans with other people. Yet another wish was that VOC could extend beyond the car by keeping track of external factors such as weather, road conditions, and traffic congestions in order to assist the user to take the optimal route and avoid unpleasant situations. Furthermore, the participants expressed that they desire simplicity, and they would find it beneficial to have all information gathered in one place. They pointed out that there is an abundance of apps and services, and that it is desirable to connect and integrate these to a greater extent. In line with this, many of the participants

highlighted that it would be beneficial if VOC could access their calendar and fetch information from other apps.

Many of the participants commented on the behavior of VOC. One common opinion was that VOC could be smarter in order to assist the users to a greater extent, since they saw a great benefit of being helped and reminded. They meant that instead of only presenting data, VOC could present the benefit of the data and make suggestions or take action, sometimes even without involving the user. Moreover, the participants wished for automatic updates and that the app can work independently in the background (i.e. not require supervision). The users were generally positive towards receiving notifications, and they thought VOC could help them in more ways by providing other kinds of reminders and suggestions. Many expressed that they have an issue with remembering things:

“I need apps that simplify my life by helping me to keep track of things, reminding me about what I have to do, and helping me with planning. Otherwise it’s just one more thing to remember.” (P1)

5.3.3 Volvo On Call is part of daily routines

After having become acquainted with using VOC, the participants explained that (new) routines were established around VOC over time and that they have gotten used to its convenience. A common opinion was that VOC is a small part of their lives, yet an important feature for the car experience. When asked if they would miss VOC, all participants said ‘yes’. Nevertheless, it was clear that some participants would miss it more than others. Many of them expressed that they wanted to have VOC in their next car because they have become accustomed to it:

“The expectations on comfort level increase all the time. This is my first car with VOC and I would never select a car without it now, since I have become accustomed and attached to it.” (P7)

The user study showed that the majority of the interviewees use VOC on a regular basis prior to and sometimes after driving the car. The general use pattern is to use the app either to perform an action or to find specific information. Some users open the app occasionally, just to look around, but this seemed to happen quite rarely. At low temperatures it is common that the remote heater starter is used on a daily basis, and it was obvious that this is the most appreciated and most frequently used VOC features among the participants. The heater starter proved to be a self-evident part of car-related routines, although it was common that the users forgot to start the heater prior to afternoon drives, compared to mornings when routines usually are more established. Depending on situation, the participants either use direct start or the timer feature to start the heater.

Besides the heater starter many of the interviewees often check the lock status of the car, and use the app to lock the car if needed. Apart from these functions, there were individual differences regarding what functions the users favored and used the most. 'Honk and flash' is an example of a function that is used more rarely. A few participants had used it in order to find the car at a parking lot, but most participants had just tried it out for fun. Some participants used the driving journal regularly, whilst a few didn't use it at all. It was common to use a set of functions, and generally the participants did not use all functionality of VOC although they were able to see the benefits. All participants knew about the SOS function, although some of them were unsure about what would happen if they pushed the On Call button:

"If something happens, I'm probably very happy to have VOC and the SOS button. However, I don't know what the On Call button is for, what is it?" (P11)

Since VOC plays a role in the everyday routines of the participants, it becomes a very negative experience when routines and habits are disturbed due to performance issues in the app. VOC has in a sense created a need among the participants, i.e. their morning routines depend on that the app performs accordingly to expectations:

"I believe that reliability is the biggest problem with VOC. It is very annoying when you need it and it does not work. It should just work, that is number one." (P5)

It was in general easier for the participants to accept an issue or error when being notified of the reason behind it than if not. One participant claimed that his negative reaction gets milder when he gets an error message, because then he is reminded of the fact that "VOC means well". Most of the stories about negative experiences had to do with situations when an action initiated by the user wasn't carried out. As the heater is the most appreciated function by the participants, it is also the main cause of disappointments when it doesn't work. Some of the participants pointed out that the heater starter often malfunctions during the first weeks of the winter season, probably as a result of high pressure on the system when all VOC users want to start the heater at the same time.

5.3.4 Volvo On Call is a lifeline

Although the participants saw the app and the convenience features as the most apparent part of VOC whilst the safety features stay more in the background, they put great safety value into the concept as a whole. The SOS and On Call functionality in the car make them feel safer and more secure on the road, and the app is satisfying neurotic needs by enabling the participants to check that everything is all right with the car, such as ensuring that the car is locked. It gives them a sense of control, and

thereby eases their minds. Even though none of the participants had any experience of accidents or situations where the SOS-button was used, most of them expressed gratitude towards the safety benefits of having VOC.

According to the participants, they don't think about the safety functions on a daily basis but they seemed aware of them and felt that it is reassuring to know that they are there when you need them. Some of the participants had used the On Call button in the car in order to get roadside assistance due to engine breakdown or flat tires. This doesn't happen regularly, but when it happens it leads to very strong and memorable experiences:

"Once I got a flat tire. I was able to drive the car home, but since it was my first time I had no clue what to do so I called the Call Center from the car. They guided me through the process, and sent for help. That was very helpful, and I remember it as a very good experience." (P12)

In relation to the well-established sense of safety and security associated with VOC, a few participants mentioned a possible integrity issue. There is a slight uncertainty about the information flow, who has access to the information and if it is used for other purposes than driver safety. Overall, this was something that some of the participants were aware of, but it didn't appear to influence their usage of VOC and they weren't worried to a great extent. Nevertheless, they provided examples such as "someone could hack the app, unlock the car and steal valuables", and:

"The safety aspect is a really good thing, although there is an integrity perspective. Basically someone can listen to everything I say in the car and keep track of where I am. I usually do not think about it, but it has crossed my mind." (P6)

As a result of the performance issues described previously, the participants experienced some trust and reliability issues with the VOC app. Several stories revealed that many of the participants feel a lack of trust towards the app from time to time, mostly due to connectivity issues. The participants mentioned that they sometimes get false alarms from VOC, saying that the car is unlocked when it isn't, or that the windows are open when they aren't. The participants also pointed out that they don't trust the app to be up to date, and as mentioned before they felt they have to manually update the app due to the delay of new information.

Another thing pointed out in the user study was the feeling of uncertainty when the app malfunctions when the participants feel they are unsure about the reason behind it. Some of them had their own personal explanations for why the errors occurred, while a few were clueless and worried if something might be wrong with the car. Nevertheless, altogether the participants view on VOC

was that the concept enhances the feeling of safety and security.

5.3.5 The social aspects of Volvo On Call

In the user study most participants described one or several rather unexpected social aspects of using the VOC concept. In line with what has been described earlier, that VOC is something that feels luxurious and unique, several participants explained that VOC had a show-off factor, meaning that they enjoy showing the VOC app to other people and telling them about the benefits of using the service. Some of the interviewees said that they enjoyed teasing friends and neighbors who don't have VOC and have to scrape the car windows. All in all, VOC had proven to be a nice topic of conversation in various situations. For example, none of the participants had been in a situation where SOS was needed but a few of them had heard stories from friends and colleagues about situations and accidents when VOC was of great help.

Many of the participants share their car with their partner, and lend their car to family members and friends from time to time. The participants appreciated the fact that VOC enables them to make sure their loved one arrives safe and well by keeping an eye on the car's location in the app. Even though someone else is using the car, the participants expressed that they thoroughly enjoy getting notifications and information about the car in order to check in on their loved ones. Several participants explained that they often get notifications that the car is unlocked when someone else is driving the car and that they therefore make contact in order to remind about locking the car. The user study also elicited stories where VOC users could start the heater or unlock and lock the car for someone else who is using the car, across long distances.

In some cases VOC lead to another form of social behavior; competing about who has the lowest fuel consumption. Some of the participants regularly checked their average fuel consumption in the VOC driving journal, and then compared with their partner or a friend. This happened for both sustainability and economic reasons.

5.3.6 UX Curve: How the user experience of Volvo On Call has evolved over time

When it comes to how the VOC experience evolves over time, many conclusions could be drawn from the user study. Accompanied by the UX curves drawn by the participants (see appendix III), the narratives both showed general patterns and individual differences. In the upcoming sections, the result of the UX curve analysis will be presented.

Positive user experience, yet dynamic curves

The curves were often drawn on both the positive and the negative sides of the diagram although most concentrated on the side representing positive experiences, which is in accordance with the high rating of the user experience given by the participants. In general, the curves turned out to be dynamic rather than stable, having highs and lows ranging from positive to negative experiences (see figure 5D). In general, VOC elicits positive experiences as long as there are no issues with the service. The lows in the curves which represent negative experiences are rather short-lived even though they can be quite deep.

It was also found that the frequency of use depends strongly on the seasons; the usage increases during wintertime and decreases during summertime due to the heater starter. These changes in frequency of use are shown in some of the curves as up and downs (see figure 5E). Since most participants primarily use the heater function they believe VOC has a bigger purpose during wintertime.

Despite the fact that most of the curves were dynamic, they generally indicated that the experience improves over time. According to the participants, the experience of using VOC is evolving in a positive direction despite occasional dips due to robustness issues. The participants had different explanations for the curves. On the one hand, most of them said that they enjoyed exploring and learning more about the app, finding new functionality and becoming more used to it as the time went by. On the other hand, some participants explained that the reason why the experience didn't improve significantly was because VOC had remained the same since the day they got it, i.e. any updates or changes to the service, functionality or visual appearance haven't been noticed.

Strong initial experiences

A pattern discovered in the curves is that the beginning of the use phase is often quite dramatic, causing either strong positive or strongly negative experiences. This is shown in the curves as a high peak or a low dip close to the starting point of the diagram (see figure 5D, E, F). These peaks and dips are often related to the user's expectations and whether or not they are fulfilled. There were differences between the participants in how high the expectations were at the beginning; some had been looking forward to getting VOC for a long time, and some just got VOC included in their company car package and didn't choose it intentionally.

Among the positive beginnings the participants mentioned the charm of novelty; when VOC is new it is highly enjoyable and interesting to try out all the functions and explore what you can do with it (see figure

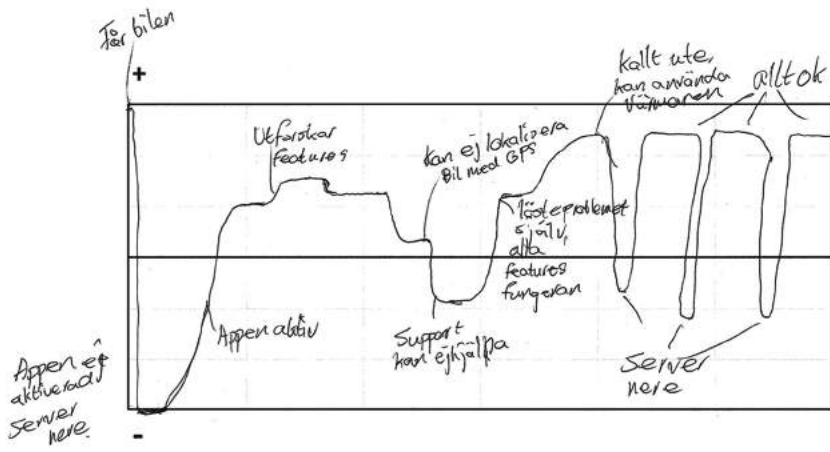


Figure 5D. The UX curves turned out to be dynamic rather than stable, although slightly growing and mostly concentrated to the positive side of the chart.

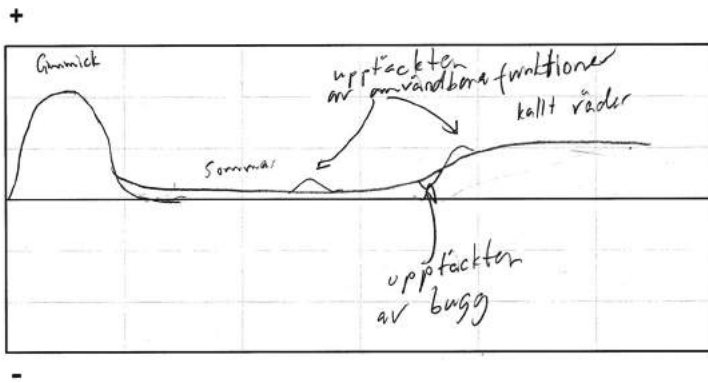


Figure 5E. The changes in frequency of use during the seasons were represented in some curves; highs for wintertime (when the heater is used) and lows for summertime.

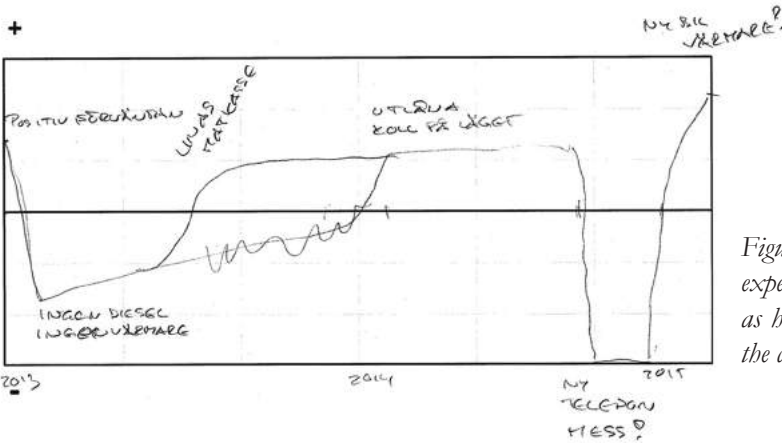


Figure 5F. Most participants had a strong initial experience of VOC, which is shown in the curves as high peaks or low dips at the starting point of the curve.

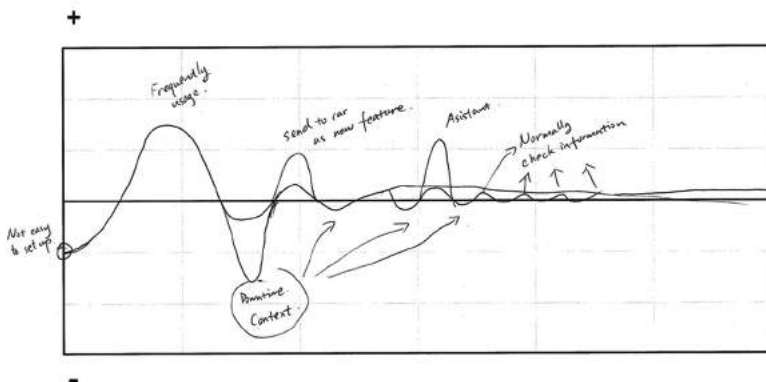


Figure 5G. Some participants highlighted the experience of using VOC for roadside assistance as a peak on the positive side of the diagram, despite the unpleasant event of e.g. a flat tire.

5E). Therefore, some participants explained that they used the app most frequently when they got it. Most of the participants said that they were impressed by how easy it was to understand and begin to use the app. The remote heater starter had a great wow-factor, and was the reason to many early peaks.

When the curves and the experience were negative to begin with, many of the participants were unhappy with the handshake procedure and described it as cumbersome. One participant explained that he thought the app would be in synchronization with the car already when he got it, so he was unpleasantly when it was not. A few participants had a negative first experience with VOC, since they couldn't complete the initial set-up due to server and connectivity issues. In addition, initial disappointment due to misunderstandings of what VOC functionality would be included in the car weren't unusual among the participants (see figure 5F).

Highs and lows

When it comes to the 'high peaks' of the curves, there are different stories behind the experiences. One common thing was that the participant discovered a new and useful VOC function, which elicited a positive and satisfying feeling. Using the heater starter during wintertime resulted in some peaks in the curves, but there were usually more specific and memorable experiences that gave rise to the peaks. Some experiences that stood out and therefore resulted in peaks are getting help from VOC in tricky situations, such as when the car keys are locked in the car, or using VOC to unlock the car in order to receive "Linax matkasse", which is one of several popular services where customers can make online orders of pre-composed food bags containing recipes and the corresponding ingredients for cooking meals at home. The bags are usually delivered to the customer's door, but in recent pilot tests the food bags have been delivered directly in the trunk of the customer's Volvo car. Through Volvo On Call, the customer can provide the delivery company with a digital key which gives them temporary access to the car.

A number of peaks in the different curves represent using VOC to call for roadside assistance for instance to get help and guidance when getting a flat tire. An explanation to why these experiences were highlighted is that they stand out from the everyday routine and that they are linked to negative emotions, such as worry and frustration. What is interesting is that even though the users had a negative experience they marked it as a positive peak on the UX curve, since VOC reversed the experience from something highly unpleasant by providing a convenient solution (see figure 5G).

Regarding the low points of the curves, these were first

and foremost caused by problems due to connectivity issues, bugs and errors, and system downtime (see figure 5D, G). For the participants, this means that VOC didn't work properly which inevitably resulted in unpleasant experiences. Many times the lows were caused by malfunctions in the remote heater starter. Other examples of lows are slow interaction, lack of feedback, and incorrect information in the app.

5.4 INSIGHTS AND IMPLICATIONS

The user study resulted in a number of insights and implications regarding the users' attitudes and opinions of VOC. Although it wasn't fully possible to address and further analyze all implications within the scope of this project, the following bullet points are considered important and interesting for further investigation:

- **A desire to have everything in one place:** The user study showed that the users desire a better overview regarding car-related activities and expressed positive attitudes towards having all information gathered in one place. The appropriateness of VOC as a possible hub that contains all car-related information could be investigated. Furthermore, the users expressed a desire for cooperation rather than competition between apps and services, which indicates an opportunity to let VOC utilize co-existing apps in order to provide pleasant experiences.
- **The users are positive towards intelligent technology:** It became apparent that the users compare VOC to other apps and consequently have expectations and requests on VOC based on the looks and performance of other apps. In line with this, the users had positive attitudes towards the development of in-car technology, such as car connectivity, and expressed a desire for a smarter VOC. A smarter VOC could mean being up-to-date, working independently, being able to relate to external factors outside the car, and having the ability to prevent and predict things, as well as make suggestions. This implies that it should be investigated how VOC can become even smarter, and by that provide an integrated and seamless car experience.
- **The users want to be assisted to a greater extent:** Many users experienced VOC as helpful, since it enables remote access and functionality, provides useful information and notifies in critical situations. However, the users felt that they in large had to interpret the data provided and draw conclusions themselves. In addition, users expressed that they appreciate solutions that facilitate their daily lives. More in particular, it was highlighted that when the users get informed that something is wrong and need to be addressed (e.g. an open car window) they want

to be able to easily correct it right away (e.g. remotely close the window in the app). This implies that, in line with providing a more effortless experience, it should be investigated how VOC could assist the user to a greater extent.

- **Everyone loves the heater:** The user study clearly showed that the remote heater starter provides great user experience for several reasons. It provides pleasure both physically and mentally as the user can enter a pre-heated car even though it is freezing outside, which feels nice, warm, and luxurious. Pre-heating the car also removes the need for scraping the car windows since snow and ice melt off the car. This functionality reinforces the value of VOC, and implies that the user experience of VOC could be improved if VOC were complemented with an equivalent feature to the remote heater starter with an equally great benefit.
- **The users are more accustomed to their smartphones than to the car's infotainment system:** The findings from the user study show that the users really appreciate that VOC is a smartphone app. Making the car accessible – one of the major strengths of VOC – is possible due to the fact that the app is available in the smartphone, a product the users carry with them most of the time. As a result of being accustomed to the interface of the smartphone, the users seem to prefer to do certain things in the VOC app rather than in the car, for instance use the send-to-car-function instead of setting the destination in the car's navigation system. This implies that it should be investigated if there are more possibilities to enable the user to perform actions in the smartphone instead of in the car. This also goes in line with the fact that the users are getting used to conveniently having non-stop access and information available at all times.
- **VOC and the car should support the user – not the other way around:** The user study indicated that the participants didn't desire to get more emotionally attached to their car or spend more time taking care

of it, instead they expressed that they appreciate that VOC keep track of the car and help to unburden the user. This implicates that focus should be on how VOC and the car together can help users in their everyday lives rather than focus on strengthening an emotional bond to the car.

- **It should simply work – robustness as a prerequisite for good user experiences:** Since VOC plays a part of everyday routines and habits, the users rely on the VOC app to perform according to their expectations. The UX curves showed that when VOC does not work it immediately influences the user experience negatively, but also affects the experience over time. Instrumental aspects of VOC, such as robustness, proved to be closely linked to trust, and when something doesn't function accurately it influences the overall experience negatively. This implies that it is important to improve the robustness of VOC today as well as prioritizing it in the future, since it is required in order to elicit positive user experiences. In line with this, users seem to favor less functionality with good usability and performance rather than increased functionality at the cost of decreased reliability.
- **Creating a good experience throughout the car journey:** One of the greatest values of the current VOC is when the user is far away from the car, because of the remote functionalities that provide feelings of control and security since the user can perform actions remotely which are then experienced in the car, for example starting the heater in order to enter a warm car. During driving, the user trusts the car to inform about things that need to be done, and after drive the VOC app is trusted to do the same. Hence, when looking at the whole car journey the car experience is strong before, during, and after drive. However, when the user is approaching or leaving the car the car experience is not as prominent. In line with this, users have expressed a desire to have a more seamless experience, which implies that this could be explored further in order to see how the value of VOC can be even better (see figure 5H).



Figure 5H. There is an opportunity to create a strong car experience also when approaching or leaving the car.

5.5 DISCUSSION

The following sections will cover a discussion on some of the findings from the user study. Firstly, the methods used for the user study are briefly discussed. Thereafter follows a discussion on how the user experience of VOC can be improved and which approach may be appropriate for this task. In addition, the findings of the user study will be discussed and analyzed in relation to four theoretical frameworks.

5.5.1 Method

The combination of methods used for the study was found to be successful in encouraging the users to speak freely and enabling them to retrospectively describe their experiences with VOC. The methods facilitated the collection of user narratives, which helped in achieving an understanding of the subjective nuances in the stories. When it comes to the UX curves drawn by the participants in the user study, they proved to be both a good tool for supporting the user when recalling past experiences, as well as useful material to analyze together with the narratives. However, it is important to keep in mind that user experience is highly complex, often personal, and depends on a wide range of aspects. Therefore, too much emphasis should not be put on the curves themselves, since they necessarily aren't accurately depicting the user experience when not accompanied by the narratives.

As a result of using the KJ method for analyzing the qualitative data collected in the user study, reoccurring patterns and conforming stories were found. Hence, the user narratives, including various aspects and dimensions of user experience, could be categorized into the five experience themes presented previously in this chapter. This was a useful way of thematizing the user experience of the current VOC concept, and proved to be an important step towards understanding what value VOC brings to the users. Altogether, the experience themes present a holistic view of VOC as depicted by the participants in the user study. However, the KJ method does not guarantee that all identified categories will be equal in scope, importance, or detail level. Hence, the experience themes cannot be claimed to be equally vital for the user experience of VOC, just as some aspects of the user experience are more essential and obvious than others. On the other hand, the themes are believed to reflect reality since their origin lies in the user narratives, which in turn were analyzed by using a method which allows the data to speak for itself.

5.5.2 Improving the user experience of Volvo On Call

One of the main objectives of the user study was

to find out how the user experience of VOC can be improved. By exploring how VOC is experienced today and what it could be in the future, several opportunities were identified. Different approaches for achieving an improved user experience were found, for instance:

- **Remove 'pain points' by addressing identified issues**, such as improving performance and reliability in order to avoid inconvenient and unpleasant experiences;
- Figuring out an **equivalent feature to the heater starter** in order to increase the usage and improve the user experience during summertime;
- **Introducing new features and updates** of the app more often in order to achieve an increasingly positive user experience

These alternatives for improving the user experience of VOC would be possible to investigate further and implement in a rather short time span. However, many implications were found which are relevant when considering long-term improvements and further development. When looking ahead into what VOC could be in the future, it is important to get to the bottom of what kind of experience would be desirable for the users rather than looking at how the current experience can be improved. Several user experience theorists point out that creating and designing for good user experience is not only about avoiding or preventing unpleasant experiences, but also about understanding the user, the context and what role the product plays in the user's life (e.g. Jordan, 2000). Instead of focusing on eliminating bad experiences or causing temporary peaks in positive user experience, VOC could be improved and further developed fundamentally and holistically based on the findings and implications from the user study conducted in this project. By building on the values of the current VOC, as well as developing the concept further, a viable path for the future VOC can be created.

Designing for a great user experience is about looking beyond the product and its functionality, to see what desires and underlying needs there are and to see what benefit and value the product should provide the user. The findings of the user study made it clear that users want functionality that is useful and meaningful, and desire solutions to problems and hereby make everyday life easier. It can be argued that this indicates that the users don't want to bring their cars into their lives; rather they want to bring their lives into their cars. Hence, when considering the future of VOC it is essential to contemplate what role VOC should have in users' lives, and how VOC and the car relate to other things surrounding the user. Only looking at the VOC app and how it influences the car experience is not considered sufficient for taking the

complexity of the user experience under consideration. All in all, when exploring the possibilities for the future of VOC, the value and desired outcomes of using the new concept should be the starting point rather than the single-product experience of the current concept.

5.5.3 The extended car experience

In the introduction chapter of this report, the thought of a remote user experience of the car was presented. The idea was that the VOC app provides a link to the car across a distance, and hence gives rise to a remote car experience despite the fact that the user is not in or near the car. As stated earlier, the VOC system elicits both single-product experiences (of the app and of the car) as well as a holistic experience of the system as a whole; how the different products interplay and relate to each other (see figure 5I).

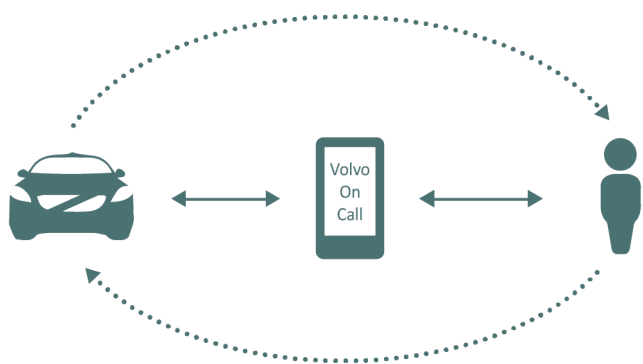


Figure 5I. The VOC system. VOC can be seen as an extension of the car experience, by eliciting a remote user experience of the car.

The participants in the user study were quite clear about the single-product experiences, i.e. what it's like to use the app and the car respectively. However, the remote experience of the car through the app seemed rather abstract to them, as if it hadn't really crossed their minds. However, when analyzing the user narratives it became clear that using the VOC app is part of the car experience, and that the users actually feel like they communicate with their car through the app. Further, the remote experience of the car has an impact on how the users relate to their cars. Since the remote functionality of VOC facilitates and simplifies car-related activities, it can be seen as highly influential of the car experience. VOC seems to make the car fit even better into the lives of the users and makes it easier and more convenient to have a car, and thereby VOC enriches the car experience. Hence, it can be argued that the notion of remote user experience was confirmed by the analysis of the findings of the user study. It was also pointed out that the app adds another dimension to the car, since VOC makes the car accessible regardless of distance.

On the other hand, the VOC app was experienced more as a remote control than an extension of the car,

possibly because the utility of the app come about when the user is rather far away from the car. Apart from the positive remote experience across distance, the users seemed to experience a non-physical gap between the app and the car; that the app doesn't provide an accurate representation of their specific car and that the interplay between the app and car isn't as smooth as would be desirable. Examples of possible reasons to this are the performance and connectivity issues, that the app doesn't represent the car visually, or that the communication between the app and the car is experienced as slow and unstable. Hence, there is an opportunity for improving the remote car experience by making sure that this gap is bridged. This is believed to enhance the feeling of bringing the car with you in VOC.

5.5.4 The layers of the user experience of Volvo On Call

The collected user narratives clearly highlighted the complexity of the user experience of VOC. When the narratives were analyzed, two types of experiences emerged; experiences that are directly connected to the inherent properties of VOC on the one hand, and experiences that arise as an outcome of using VOC on the other. The experience of VOC as a product, i.e. its properties and qualities, can be described as having a more general character and is rather easy to define. These experiences are often similar between the participants, since they can be directly derived from a particular aspect of VOC as a product, such as functionality (utility and usefulness), performance, interface and interaction.

The other type of experiences described by the participants had more to do with the outcome, benefits and value of using VOC, and tended to consist of dimensions on a more abstract level; for example accessibility, simplicity, reliability, safety, and social value. Since those are individual experiences and personal to a greater extent, they are likely to be more difficult to predict, define, and design for. This pinpoints the complex nature of the user experiences depicted in the user narratives, which is illustrated in a simplified manner as consisting of two layers in figure 5J. It is considered important to consider the different layers and how they constitute the whole when studying the phenomenon of user experience. For example, many of the aspects of the product experience of VOC gave rise to the outcome, value, and benefits of using VOC.

Similarly, Jordan (2000) refers to a hierarchy of consumer needs in the following order; functionality, usability and pleasure, and claims that a holistic understanding of what role a product plays in a user's life is vital for meeting the requirements for achieving the pleasure level. Norman (2004) makes another categorization by distinguishing

the visceral, the behavioral, and the reflective level, which can be considered similar to the illustration in figure 5J.

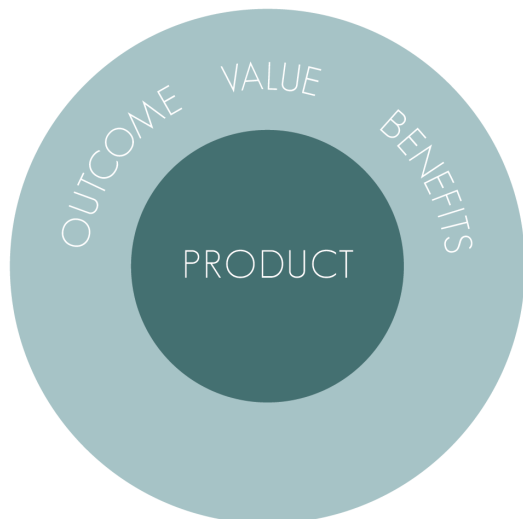


Figure 5J. The layers of user experience.

It highlights that when designing for user experience it is essential to consider all the levels since it is the product's entirety that is experienced by the user. In line with this, Hassenzahl (2003) distinguishes between pragmatic and hedonic qualities. Pragmatic quality calls for a focus on the product (its utility and usability) whereas the hedonic quality calls for focus on the users' self, i.e. why someone owns and uses a particular product. This can also be related to the illustration in figure 5J, with the product experience representing pragmatic qualities and the hedonic qualities belonging to the outer layer.

5.5.5 Relating the experience themes to theory

As described earlier, the findings from the user study were analyzed in relation to four theoretical frameworks. In this section, some examples from the user study are described according to some of the aspects covered in the chosen frameworks. The social aspects highlighted by the participants can be described in terms of socio-pleasure described in Jordan's pleasure model (2000). However, the social aspect of bragging about VOC to others can be argued to have more to do with ideo-pleasure; enjoyment related to a person's values and self-image. A parallel can also be drawn between the pleasure of conveying your self-image to others and the "be-goals" mentioned by Hassenzahl (2003), as part of the hedonic value of identifying oneself with VOC as a product.

Accordingly, a correspondence can be found between hedonic values and several of the experience themes; VOC as convenience and VOC as part of routines in particular. In line with striving for being efficient, modern, and identifying yourself as a person who is up-to-date with advances in technology, the experience

themes highlight aspects of VOC which fulfill such a need. All in all, when comparing the narratives from the user study with Hassenzahl's pragmatic and hedonic values of user experience (2003), both types of values proved to be important for the experience of VOC. The pragmatic quality of VOC, i.e. its ability to support the achievement of do-goals such as "warm up the car" or "find the car", proved to be a prerequisite for positive user experience. However, the hedonic qualities brought up during the interviews were described as the reasons for why the participants experience VOC as value adding and why they wanted to have VOC in their next car.

Hekkert and Desmet (2007) state that in order to understand emotional responses to human-product interaction, it is vital to understand the user's concerns, i.e. personal goals, motives, well-being, and so on, given the context in which the product is used. The user study showed variations regarding individual concerns such as appreciating the visual appearance of VOC or not. However, patterns could be observed in the user narratives which refer to more universal concerns. These concerns can be strongly linked to the identified experience themes, such as "it should be convenient and safe to have a car". However, it should be pointed out that although these concerns were shared by many participants, the elicited experiences were highly unique and personal. According to Desmet's model (2002), these concerns matter when the user appraises whether the experience of VOC is positive or negative. This was confirmed by how the users described their experiences in the user study.

As described earlier, Norman's model (2004) (consisting of the visceral, behavioral, and reflective levels) proved to be useful for understanding that the experiences of VOC could be seen as consisting of layers, and that more individual and abstract experiences, i.e. on the reflective level, often arise based on experiences on the visceral and/or behavioral level. According to Norman (2004) all layers play an important part in shaping the experience; hence it is relevant to consider having coherency across the levels. If considering VOC as part of the car experience, this conforms to what was found in the user study. Users do not only appreciate and desire consistency in the experience of VOC, but also in how VOC interplays with the car on the different levels of experience presented by Norman. Although many participants described VOC as an extension of the car, the narratives showed that VOC was often perceived as a remote control rather than as a representation of the actual car. In line with this, the users expressed that VOC has a different product identity than the car and is therefore perceived more as an add-on service than an integrated part of the car experience. Hence, this implies that a more coherent VOC-and-car-experience can be achieved by considering how all three levels together form and contribute to the experience as a whole.

When it comes to the applicability of the four user experience frameworks chosen as a base for analyzing the findings from the user study (i.e., Jordan 2000, Desmet 2002, Norman 2004, and Hassenzahl 2003), they helped in achieving a good understanding for the user experience of VOC. However, when comparing the data according to the various frameworks some aspects were hard to position, for example the co-joint experience of VOC and the car when working together. Also, none of the frameworks covered all aspects that had been found in the user study. For example, none of the models specifically included the time aspects of user experience which, in line with what literature suggests (e.g. Kujala et al., 2011), proved to be an important factor when studying VOC. Furthermore, all four frameworks focus on a single-product and single-user experience, which is not the case for VOC as it consists of various interconnected parts that often are used by more than one user. In addition, it can be argued that the four models don't cover the various aspects of the user experience of VOC when used separately. Similarly, although the experience of VOC could be better understood with the help of the various models, none of the models specifically describe the phenomenon of remote user experience.

5.6 SUMMARY AND CONCLUSION

The user study was successful in collecting narratives of how the participants use, experience, and feel about VOC. A range of different aspects of VOC was highlighted in the study, which together has aided in creating an understanding for the user experience of VOC. By providing remote access to the car, VOC proved to add another dimension to the car experience. The user experience of VOC seemed to improve slightly over time which was explained by the users as a result of gradually establishing routines around VOC, becoming more and more accustomed to it, as well as discovering new functionality. In order to summarize the most important findings from the user study, a very condensed description of each of the identified experience themes are presented below.

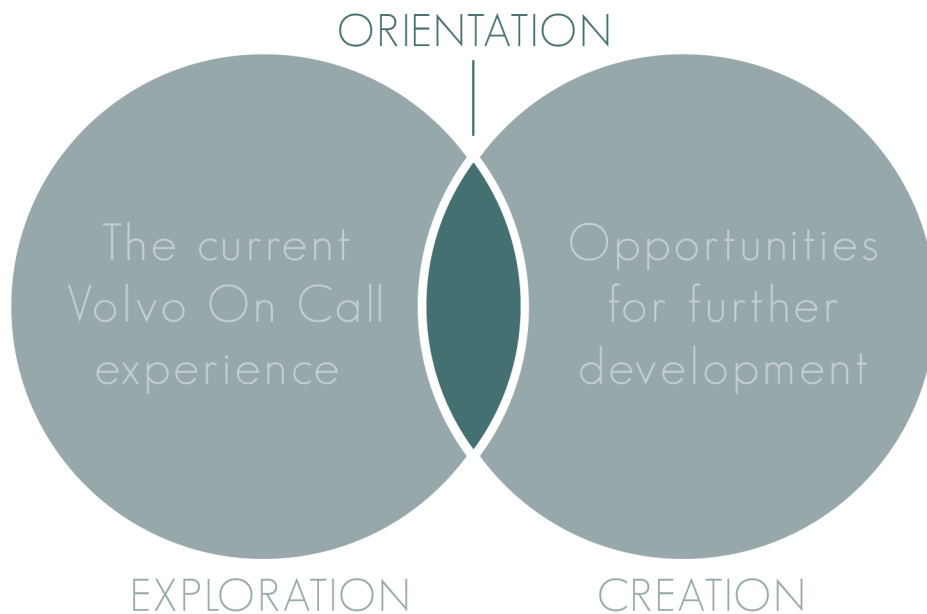
- **VOC provides convenience:** VOC proved to be experienced as a great convenience, much because it makes the car more accessible owing to the remote functionality. This allows the users to perform actions without disrupting ongoing activities. Avoiding car-related inconveniences contributes to a luxury feeling, where the heater starter is the most prominent example.

- **VOC influences the car experience:** The ability to control and monitor the car remotely gives the car another dimension, and proves to add significant value. VOC enriches the car experience by providing a connection between the user and the car. However, since VOC does not seem to be experienced as an extension of the user's specific car there is potential for bridging the experience even more.
- **VOC is part of everyday routines:** By being a handy tool for car-related activities and providing highly appreciated functionality, VOC makes life easier for its users. The true value of VOC lies with its utility, the benefits it brings, and that it fits well into the users' lives. In line with being part of habits and routines, flawless performance is desirable in order to fulfill the users' expectations.
- **VOC is a lifeline:** VOC makes the users feel safe and secure, even though the safety features stay in the background. However, when needed, they cause strong and memorable experiences. Getting notifications and being able to check the car regardless of distance provides a sense of control. Reliability is critical when it comes to trusting the app, and some users were vaguely aware of the integrity perspective.
- **The social aspects of VOC:** VOC has been described as an indirect social link between people in several ways. The users feel proud of VOC, and point out its show-off factor. Other social aspects of VOC mentioned by the users are keeping track of loved ones who borrow the car and competing about who has the lowest fuel consumption. These social experiences around VOC were highly enjoyed by the users.

Although VOC elicit an overall positive user experience, the findings imply that there is considerable potential in improving and developing VOC further in order to design for even better experiences. Addressing the identified issues and fulfilling some of the users' wishes might be one way forward, yet a more profound approach is considered favorable. Taking the insights provided by this study into consideration, the user experience of VOC can evolve both by building on the values of the current concept but by exploring new possibilities and seizing opportunities for improvement. The experience themes are considered important building blocks for creating ideas and elaborating around the future user experience of VOC. The following chapter will cover a discussion regarding these themes, and which direction to head next.

THE ORIENTATION PHASE

The following chapter presents the decisions made in the orientation phase regarding direction, focus, and deliverables for the upcoming creation phase.



06

ORIENTATION PHASE

This chapter presents the alternative directions identified based on the implications and findings from the user study, and describes the decisions made regarding scope and focus for the creation phase.

By empirical, qualitative research, the user experience of VOC was studied during the exploration phase. However until now, the project had a wide and inclusive approach with the aim of keeping an open mind towards unexpected insights when studying VOC. The user study showed that many consider VOC as an important part of the car experience, and a range of opportunities for further development was found. As a next step, it was important to define the scope and choose a direction for the remaining project. This was the objective of the orientation phase. In order to decide in which direction the project should proceed, a discussion was held regarding focus, timeframe, and deliverables together with company representatives. The following sections provide a guide through the different alternatives discussed and the decisions made in order to prepare for the creation phase.

6.1 THREE POSSIBLE DIRECTIONS

When analyzing the implications and findings from the user study, it could be concluded that there are many possible ways in which the user experience of VOC can be formed and evolved. The core question for deciding on direction for the creation phase was what role VOC should be given. The possible directions for the creation phase were concluded into three alternatives, which are presented together with their pros and cons in the following sections.

6.1.1 The car as the primary experience

The first alternative was 'the car as the primary experience'. For this alternative, the car is considered to be the primary product and focus lies on the car experience. VOC can be seen as a mediator with the purpose of strengthening the attachment the user feels towards the car. As illustrated in figure 6A, VOC stays more in the background whilst bridging between the user and the car in order to strengthen the relation (see the dotted lines in the figure). The main objective for this alternative is to investigate how the car experience can be improved with the help of VOC.

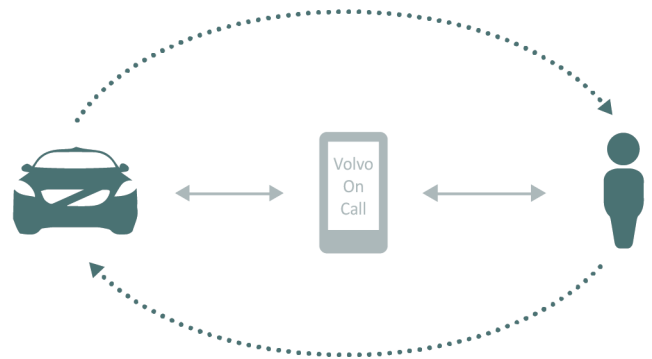


Figure 6A. The car can be seen as the primary product.

One of the major benefits with considering the car as the primary experience is that it opens up for possibilities for strengthening the product relation between the user and the car. However, what contradicts this is that the participants in the user study didn't express a desire for a closer relation to their car; rather they appreciated when VOC helps to keep track of the car so that they can focus on other things. The user study showed that the users, at large, don't blame the connectivity issues related to VOC on the car. However, there is a potential risk of giving the car a more prominent role within the VOC-car relation, because it is possible that the car gets blamed to a greater extent when the service is not working. This could mean a higher risk of damaging the user experience of the car. Hence, this direction was not chosen for the creation phase.

6.1.2 Volvo On Call as the primary experience

Another alternative is to view VOC as a permanent part of the experience, whilst the car can be seen as replaceable. This is a viable future scenario since carpooling, car sharing, and similar services are believed to increase in popularity due to environmental awareness, infrastructural development, and similar. In this scenario, alternative car ownerships could be explored; i.e. the car driver isn't necessarily the one who owns the car and VOC gets a more prominent role. As shown in figure 6B, the relation between the user and VOC is highlighted,

as it is VOC that fulfills the user's needs and elicit the primary user experience.

This goes in line with the users' desire to be able to bring their lives into their cars rather than having the car being the center of their lives. An advantage with taking this direction is that it deals with a viable future scenario, and focuses on how VOC could be the key to a good user experience even though the users are driving different cars, which they might have an even more pragmatic relation to compared to today. This alternative provides possibilities to strengthen the users' relation to VOC, and thereby also to the car. However, it should be highlighted that if VOC is given a more prominent role, this may somewhat overshadow the car's own identity. Although this is a highly viable future scenario, this direction was not chosen for this project.

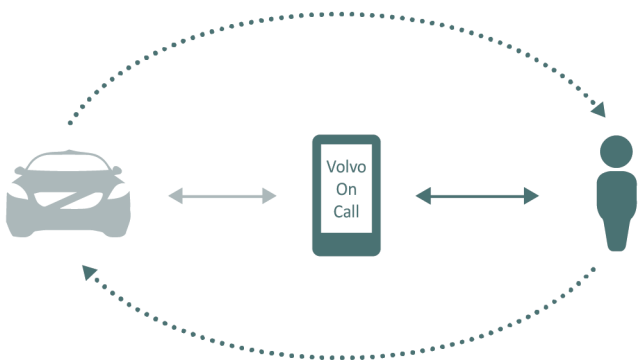


Figure 6B. VOC can be seen as the primary experience in a scenario where the car is exchangeable.

6.1.3 The experience of the interplay between VOC and the car

The third direction focuses neither on strengthening the relation to the car nor to VOC. Instead, it focuses on how the user experience can be improved by exploring the interplay between VOC and the car (see figure 6C). Hence, focus is not on strengthening attachment to a certain product since the roles of the products in the system are not strongly defined for the future. This alternative allows for exploring how VOC and the car can collaborate in creating an improved user experiences as a whole, where the role of each of them can depend on situation and context and thereby be seen as dynamic, i.e. vary between more or less prominent.

This third alternative has a strong user perspective since VOC and the car are studied as a whole in order to improve the user experience. A considerable benefit with studying VOC and the car as a system is that other factors that influence the user experience can be taken

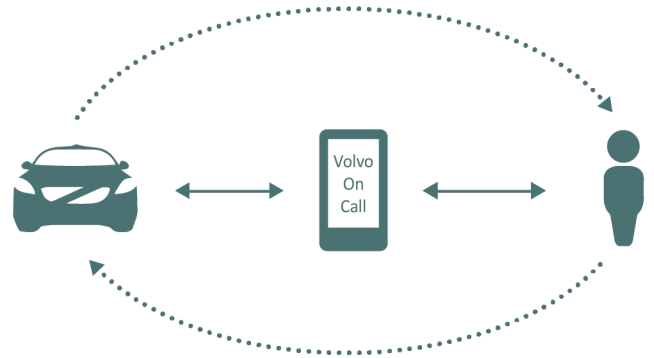


Figure 6C. Looking at the interplay between VOC and the car, hence the experience of the system as a whole.

into consideration, which was highlighted as important in the user study discussion. This direction can be seen as a natural continuation of the user study since it considers many of the topics that the users highlighted as important, for instance how VOC can interplay closer with the car as well as providing a better representation of the car. By exploring this line of thought, focus can be directed towards finding an appropriate dynamic that lays a foundation for good user experience. However, a drawback with choosing this alternative is that it opens up the scope rather than specifies and delimits it, which has consequences on what level of detail the creation phase can be expected to achieve. After considering and discussing the pros and cons of the three different alternatives, looking at the interplay between VOC and the car was chosen as a direction for the creation phase in accordance with the company representatives.

6.1.4 Consequences of chosen direction

As a consequence of choosing to direct the creation phase towards exploring how the interplay between VOC and the car could provide positive user experiences, the scope was again opened up for a range of possibilities. Hence, in line with this decision it was decided that the deliverables from the creation phase should convey the big picture rather than focusing on details. The deliverables were therefore set to create a general, yet descriptive, user experience vision for a future VOC concept, exemplified in a number of concept proposals at an early idea stage of development. In addition, the vision was supposed to describe VOC within a near future (five years). Consistent with exploring how VOC can be further developed, this direction enables development and assessment of a holistic user experience of the interplay between VOC and the car, as well as the consideration of other factors that influence the experience.

6.2 FOCUS FOR THE CREATION PHASE

This far, the direction (i.e. interplay between VOC and the car), deliverables (i.e. user experience vision and concept ideas) and timeframe (i.e. the near future) had been set for the creation phase. However, since the choices opened up the scope and provided little delimitation, it was also required to decide on a focus for the ideation and development work. As elaborated in the user study discussion, the most appropriate way of exploring the opportunities for how the user experience of VOC can be further developed is to build on the values of the current VOC, as well as looking into new opportunities. This entails that the fundamental values of the intended user experience is identified and used as a starting point, yet still having the current product experience as a base.

In order to identify a more focused goal, the most important findings regarding the current VOC were boiled down to experience themes, as presented in the previous user study chapter, and a selection of those provided a base for creating two user experience values. These values were considered as goals to strive for, i.e. what to achieve with the new VOC concept, and guided the ideation and concept development in the creation phase. Regarding the choice of focus, one opportunity frequently mentioned in the user study – to incorporate

smart and assistive behavior in VOC – was selected in agreement with the company representatives. Together with the user experience values, the focus yielded a basis for creating the user experience vision later in the creation phase. This process (illustrated in figure 6D) will be described more in detail in the following sections.

6.2.1 From experience themes to user experience values

As a result from the bottom-up analysis of the findings from the user study, five experience themes emerged from the narratives (for a short summary, see chapter 5.6). The user study showed that the overall user experience of the current VOC is positive, and it could be concluded that the users in general appreciate the parts that constitute the totality of VOC. Therefore, it was decided to continue building on the current experience themes of VOC when developing the concept further. However, within the scope of the project it was not possible to explore improvements and further development of all five themes. Therefore, it was decided to further explore three of them; VOC provides convenience, VOC is part of everyday routines, and VOC influences the car experience, since they were believed to have the best potential for bringing new ideas into VOC. The lifeline theme was considered as already well-established in the

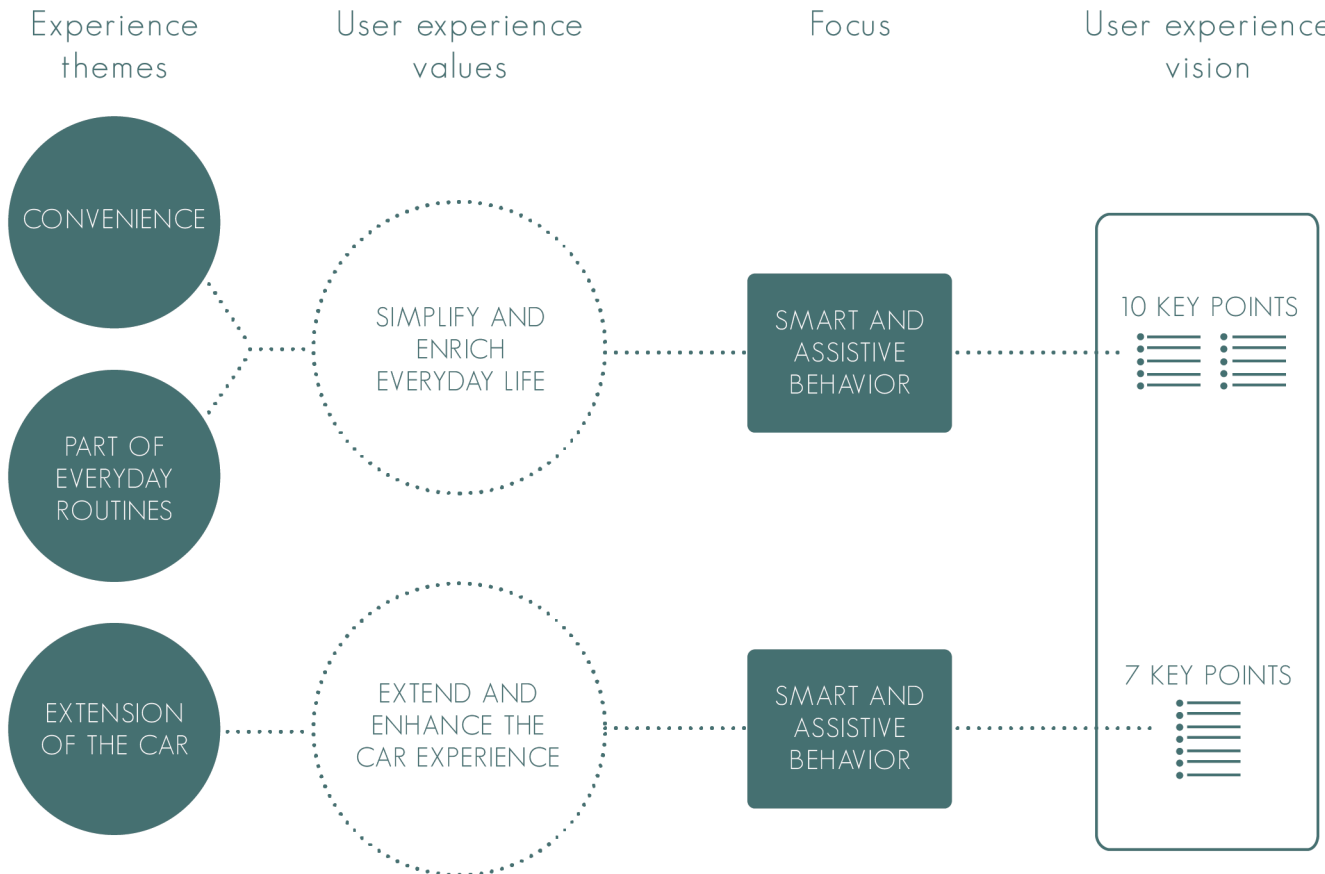


Figure 6D. The process of how three experience themes were transformed into user experience values, which provided a basis for the user experience vision (presented later in the report).

current concept, and the experiences related to the social connection theme were believed to occur even without explicitly designing for social aspects. The experience themes of the current VOC were transformed into two user experience values which describe the intended outcome of using the new VOC concept (see figure 6E).

This also brought 'new life' into the values, so that they describe the future VOC rather than the present concept. The user experience values were defined with the purpose of guiding the creation process and provide a basis for design decisions, as well as later give structure to the user experience vision. The values were actively emphasized throughout the creation phase, and are defined as:

- **Simplify and enrich everyday life:** VOC should make the users' lives less complicated by accommodating car-related activities to a higher degree, for example unburden users by removing tedious and unpleasant activities. Further on, VOC should enrich everyday life by making routines and habits around the car more convenient and enjoyable.
- **Extend and enhance the car experience:** VOC should extend the car experience by giving remote access to the car at all times, as well as representing the car to a greater extent. Additionally, VOC should enhance the car experience by providing a feeling that the car is always available for each occasion.

6.2.2 Focus on smart and assistive behavior

Although the user experience values describe the intended outcome of using the new VOC concept, a focus was needed for how to achieve this. According to findings from the user study, the users desired to be assisted to a greater extent and showed positive attitudes towards intelligent technologies. As agreed with the company representatives, this was believed to be an interesting topic to explore for a future VOC concept and an exciting way in which the user experience values could be achieved. Hence, the chosen focus for the creation phase was to explore how VOC could adopt a smarter and more assistive behavior in order to achieve the intended user experience. Due to this focus, the need for looking into the notion of product smartness was highlighted. This topic will be covered in more detail in chapter 7.

6.3 A PRODUCT ECOLOGY PERSPECTIVE

In line with the chosen direction for the creation phase, theory that considers a holistic approach to user experience was studied. As a result, the product ecology framework (Forlizzi, 2008) was chosen as a perspective for the creation phase. This perspective allows for consideration of how VOC fits into the lives of users, and how it relates to other factors in the ecology. As illustrated in figure 6F

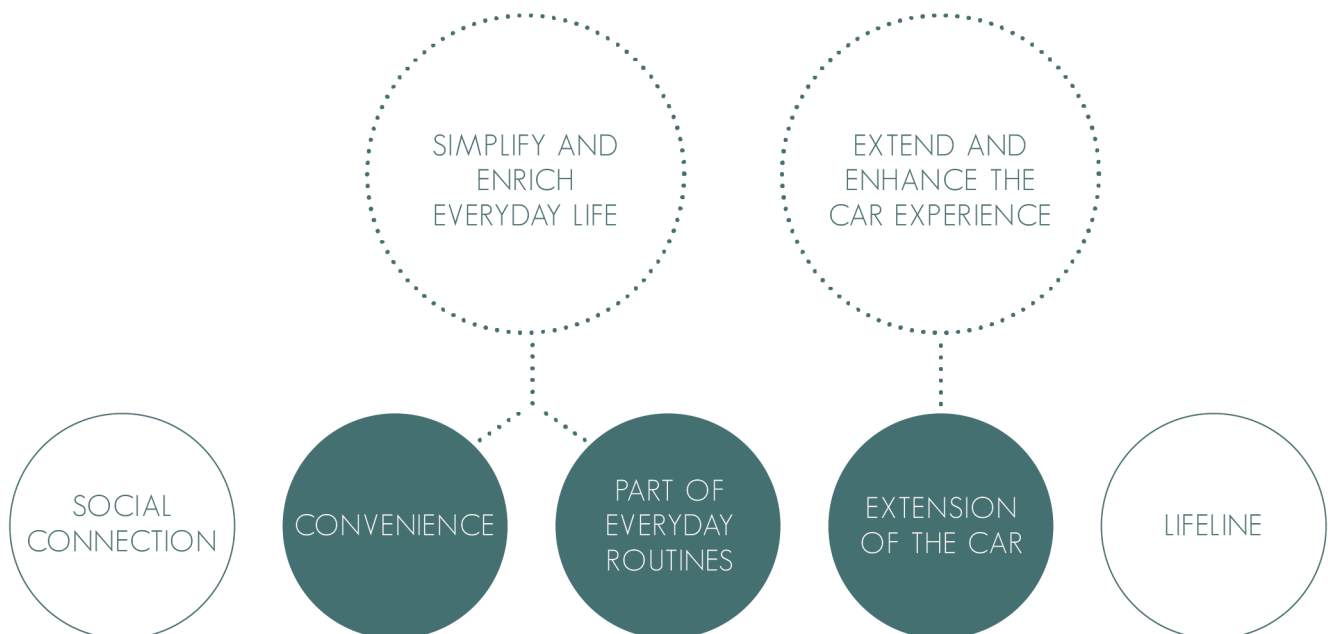


Figure 6E. Three chosen experience themes were transformed into experience values, describing the intended outcome of using VOC.

below, the VOC-car-system has been complemented by dotted circles, which represent external factors which influence the user experience.

Since there have been sparse empirical studies undertaken with a product ecology perspective, there are no clear directives on how to proceed when applying this framework. Therefore, the product ecology framework has been used as a perspective for analyzing VOC and its surrounding ecology, rather than a tool for deciding exactly how to design for the future of VOC. The framework has been used as an inspiration for analysis, and interpretations and modifications have been made in order to fit it within the project scope. The product ecology analysis will be introduced later in chapter 8.

6.4 CONCLUSION

To conclude this chapter, the direction for the creation phase was decided to consider the interplay between VOC and the car when exploring opportunities for further development. Furthermore, it was underlined that in order to design for a holistic experience of a future VOC concept, it is necessary to consider that VOC and the car co-exist with other products and services which might influence the overall user experience. Therefore, the product ecology was chosen as a perspective in which to explore how a smart and more assistive behavior could be incorporated in VOC in order to provide the intended user experience. Two user experience values – simplify and enrich everyday life and extend and enrich the car experience – were defined as the intended outcome of using the new VOC concept. The deliverables were

decided to constitute a user experience vision for a new VOC concept in accordance with the user experience values and chosen focus on product smartness, and conceptual ideas at an early development stage. The vision should be more general and descriptive, whereas the conceptual ideas should exemplify and convey parts of the intended user experience. In this way, the project could be completed by assessing whether or not the envisioned user experience could be achieved.

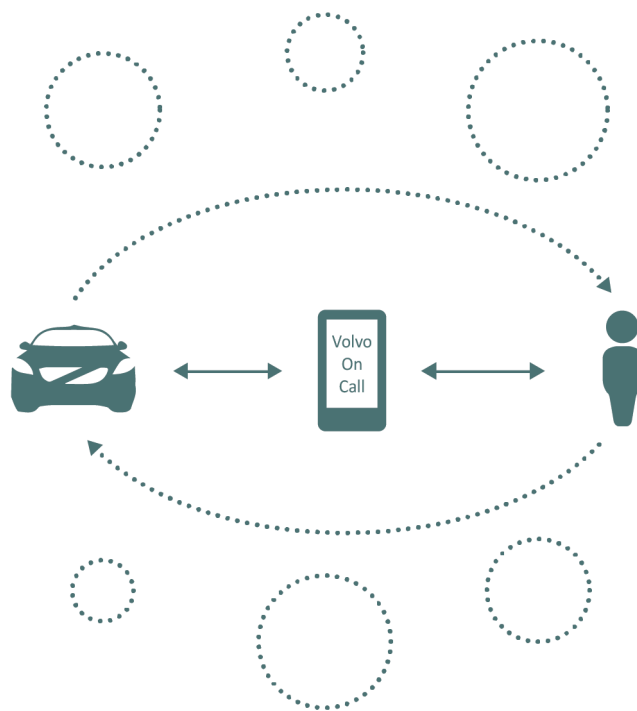
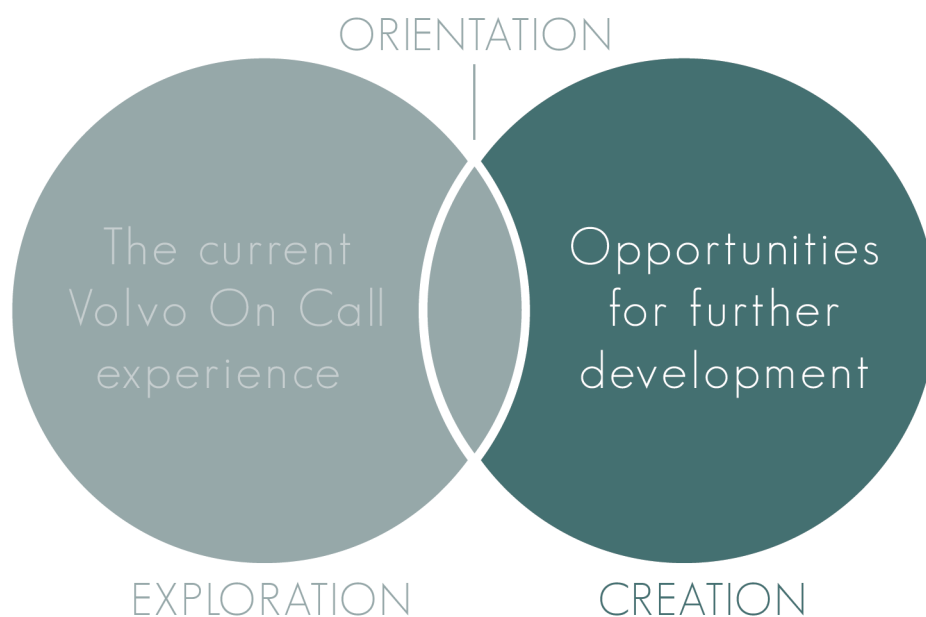


Figure 6F. The car – app – user system that also includes other factors as part of the ecosystem.

THE CREATION PHASE

The following chapters present the findings from the activities conducted in the creation phase:

- Exploring product smartness opportunities
- Analyzing the Volvo On Call ecology
- Creating a vision for a near future
- Ideating and developing early concepts
- Assessing the vision



07

EXPLORING PRODUCT SMARTNESS OPPORTUNITIES

This chapter explores the opportunities for incorporating a smart and assistive behavior in VOC by studying literature, exemplifying ideas, and presenting results from a focus group discussion.

7.1 PROCEDURE

Figure 7A shows an illustration over activities that were conducted when exploring product smartness opportunities for VOC.

Due to the chosen focus for the creation phase, the notion of smart products was investigated by studying literature. This was done in order to learn more about the concept of ‘product smartness’ as well as establishing a common ground for the remaining activities.

Literature highlighted opportunities as well as challenges, and it was considered important to investigate the topic further. A few selected ideas, based on wishes expressed in the user study, were exemplified with the help of scenarios together with sketches of the VOC app interface. The purpose was not to explore the specific examples as such; rather it was argued important to concretize the ideas in order to better understand how implementing product smartness in VOC could influence the user experience.

As important as to discuss experience opportunities, was to discuss challenges and possible negative aspects linked to product smartness. Therefore, in order to find guidance for the creation phase, it was decided to involve VOC users in a focus group to discuss the future of VOC and elaborate on a desired level of product smartness.

7.2 WHAT IS PRODUCT SMARTNESS?

Intelligent systems have previously mostly concerned computer based and robotic applications. However, in recent times consumer products and services, e.g. home control systems, connected cars, and mobile phones, can also be described as ‘smart’. A smart product has embedded intelligence and computing capability, which enables it to be aware of the user (Keyson, 2008). Due to the application of information technology, e.g. in the form of microchips, software, and sensors, smart products have the ability to collect, process, and produce information and can be considered to “think” for themselves (Rijsdijk & Hultink, 2009). Product smartness



Figure 7A. An illustration over activities that were conducted in order to explore and receive guidance for desired level of smartness for VOC.

can be seen as consisting of several dimensions of varying degree (Rijsdijk & Hultink, 2009; Keyson, 2008; Bradshaw, 1997 in Keyson, 2008), for example:

- **Autonomy:** the extent to which a product is able to operate in an independent and goal-directed way without user involvement.
- **Adaptability:** a product's ability to learn and improve with experience, and to respond and adapt to its environment over time.
- **Reactivity:** a product's ability to sense and react (i.e. directly respond) to changes in its environment.
- **Multi-functionality:** refers to the possibility that a single product fulfills multiple functions.
- **Ability to cooperate:** a product's ability to cooperate and communicate with other products in order to achieve a common goal.
- **Mobility:** to what degree a product can migrate between different host platforms.

Furthermore, a smart product is able to know about itself (its features, functions, and history), its environment, and about its users and their behavioral patterns (Mühlhäuser, 2008). Smart products obtain awareness of potential changes to their environment, which they also are able to interact with. They are designed to draw conclusions based on situation and context analysis, and are able to independently monitor their operational processes as well as act pro-actively and autonomously (Anderl et. al, 2013; Mühlhäuser, 2008).

7.2.1 Smart environments

Smart products co-exist embedded in the user environment (Keyson, 2008), where they are capable of collaborating and communicating with each other using existing Internet technologies (Anderl et. al, 2013). The number of interconnected smart products is increasing and research suggests that these products should be seen as inseparable from their environment, which commonly also is described as 'smart'. Mühlhäuser (2008) describes a smart product as an entity (tangible object, software, or service) embedded into a smart environment where smart devices continuously work together in order to attend to the user.

Closely related to the design of smart products are the notions of ambient intelligence, pervasive computing, ubiquitous computing, and Internet of things, which all can be seen as referring to the same general idea (Kuniavsky, 2010). It is about the integration of computational technology and the embedment of information processing and network communication into our everyday lives, allowing smart and connected products to co-exist in smart environments. Hence, technology is gradually and seamlessly merging into people's activities

and environments, and eventually they will not require the attention of the users as they do today (Keyson, 2008). Hallnäs and Redström (2002) describe this as a shift from 'efficient use' to 'meaningful presence'. Instead of focusing on the functional aspects or intended use of a system or device, it can be viewed from a 'presence' perspective which highlights the fact that the products are part of our lives in a more profound sense; "they are present in our lifeworld as part of who we are, how we live, and how we express ourselves" (p. 121).

7.2.2 User experience challenges

Some user experience issues can be identified in relation to designing intelligent products. For example, the credibility of the product's perceived functional performance could rapidly be lost if the system doesn't live up to the expectations of the user. Another issue is the user's sense of control. On this topic Keyson (2008) argues that; "The issue of control should be seen along a continuum from a product taking no action, giving suggestions and collaborating on tasks, and at the far end, taking action completely autonomously". Since smart products integrate multiple hidden functions, users often consider them as being complex. Studies have shown that products with higher level of autonomy is perceived as more difficult to understand and use compared to products with a lower level of autonomy (Rijsdijk & Hultink, 2009), hence it is important to consider the degree of transparency afforded by the smart product. Too much insight into how the product works technically might confuse the user, however too little knowledge of how the product operates could make the user less willing to trust it (Keyson, 2008).

7.3 FOCUS GROUP - INCORPORATING SMART BEHAVIOR IN VOLVO ON CALL

As described in previous section, smart products have embedded intelligence, which entails several dimensions of product smartness, e.g. autonomy, adaptability, multi-functionality, and mobility. Highlighted issues to consider specifically are the user's sense of control and understanding of the smart product. Therefore, it was considered important to involve users at this stage to discuss product smartness and the future of VOC. The following sections describe how this was carried out and present findings from the focus group discussion.

7.3.1 Purpose and aim

The aim of the focus group was to learn more about expectations, attitudes, and concerns regarding product smartness in general and a smart and assistive VOC in particular. It was also essential to investigate whether or

not a smarter VOC would fulfill real user needs that is seen as essential for achieving a good user experience. Due to the set time frame for the project, it was not possible to study the topic in detail, e.g. assessing various product smartness dimensions. The desired outcome of the focus group was to obtain guidance regarding what kind and level of smartness to aim for when designing for a future VOC. A secondary aim was to verify some of the findings from the user study regarding what relation the users have to their cars and what role VOC plays in the car experience. In addition, the participants were asked to elaborate on the fact that they all drove company cars, and how that possibly differs from owning a car.

7.3.2 Method and procedure

The focus group was structured around a PowerPoint presentation with prepared topics and questions in order to provide background information and guide the session. As explained earlier the discussion was based on a number of exemplified ideas in the form of sketches of the VOC app interface. The participants were encouraged to express their spontaneous reactions, feelings, and thoughts throughout the session, which lasted for an hour and a half.

During the session, the participants were introduced to a near future scenario where cars have a higher level of autonomy and the number of available smart products has increased. In addition, they were asked to imagine that both VOC and the car had a higher level of intelligence compared to today. Thereafter the participants were presented to the various examples of VOC demonstrating different dimensions and aspects of product smartness. The examples were illustrated as simplified VOC mockups of notifications or interfaces, and were presented with a corresponding scenario (shown in figures 7B, 7C, and 7D in subsequent paragraphs). The participants were instructed to disregard the visual design when assessing the examples, and were asked which example they preferred and why. The following aspects concerning smartness were covered:

- Decision-making, e.g. to what extent the app makes decisions without involving the user;
- Control, e.g. whether or not the user feels in control;
- Integrity, e.g. to what extent the user is willing to share data;
- Information, e.g. how and about what the user wants to be informed;
- Attention, e.g. how much attention the app should require from the user.

It was considered necessary to discuss the topics with users who are accustomed to the VOC concept and could imagine what it would be like if a smarter behavior was

incorporated in VOC. The participants were recruited from a list of Volvo Cars employees who had announced their interest for participating in user studies. The focus group had five male participants in the upper middle age who all met the selection criteria of using VOC on a regular basis, which was considered a requirement for being able to take part and comment on the topics covered in the focus group. The participants had company cars of various models that in general were equipped with a high degree of interactive technology.

7.3.3 Findings

Similar to the findings from the user study, the focus group participants didn't experience an emotional bond to their specific cars, since the car is exchangeable. However, it became clear that they highly value having a modern and well-equipped car and appreciate various hedonic aspects such as beauty, driving pleasure, and quality self-time, especially for those who spend a lot of time in the car. In line with the user study results, the focus group participants believed that VOC enhances and improves the car experience, and explained that they have great expectations on what VOC can become in the future.

Moreover, the participants believed that the fact that they have company cars has an impact on their relation to the car. Similar to user study, they explained that knowing that the car will be replaced before long may affect their relation to the car. Nevertheless, it was highlighted that owning the car doesn't necessarily guarantee emotional attachment. They clarified that there must be something out of the ordinary with the car in order to create a sense of affection.

First example

The first example was based on an idea that VOC assists the user when it is time for car service. Four alternatives were shown, displaying different levels of control given to VOC (see figure 7.B). The discussion was steered towards aspects such as decision-making and control, and evolved around questions like:

- Who should make the decisions in various situations, VOC or you?
- Is it OK if VOC take action without your involvement?
- In which alternatives would you feel that you have/don't have control?

and enables the user to accept the booking directly, would be an appropriate behavior for VOC. They argued that this alternative removes tedious activities whilst providing a convenient experience, without losing control.

Regarding the fourth alternative (see figure 7B), where

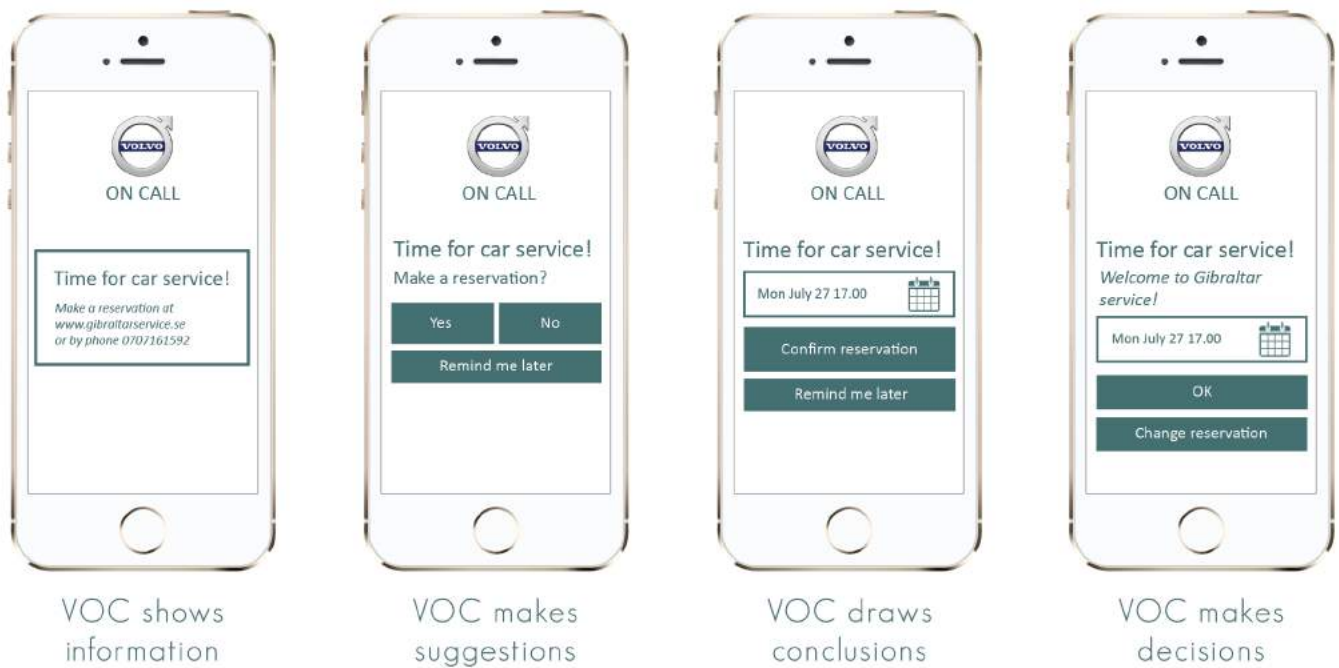


Figure 7B. The figure shows various levels of decision-making concerning car service booking. In alternative 1 VOC reminds the user that it is time for service and provides service-related information. In alternative 2 VOC gives a notification and provides a link to the car service booking system. In alternative 3 VOC propose a date and time that fits into the user's calendar, enabling the user to accept the booking directly. In alternative 4, VOC has carried out the whole procedure and notifies the user that the appointment is booked.

VOC carries out the whole booking process, the opinions differed between the participants. One participant favored this alternative since he liked the idea of VOC keeping track of things that need to be done, automatically accessing required data, and performing tasks for him. He believed it would be convenient if VOC carries out the action as long as he gets informed and have the ability to change it afterwards. Another participant saw drawbacks with this alternative, since he felt that he would have to monitor VOC to make sure that right decisions were made. He pointed out that VOC might make mistakes, and argued that being forced to correct or redo actions would be perceived as requiring more effort than carrying out the task himself. A common opinion was that the line between helpful and “creepy” behavior goes somewhere between alternative three and four. In sum, most participants were willing to allow VOC to collect information, access the calendar, and make suggestions. However, they wanted to accept the suggestion before it was carried out in order to feel in control.

Although not illustrated in pictures, the participants were also asked about their opinions regarding a similar behavior with the remote heater starter, i.e. VOC proposing to start the heater versus simply starting the heater based on previous use patterns. The participants had a more accepting attitude towards letting VOC perform this task on its own, compared to the previous example. Since they use this feature regularly they all thought it would be convenient if VOC would start the heater automatically. They argued that since they have rather established

routines, VOC could learn and adapt, and thereby make sure that their cars were pre-heated before each routine drive. The participants were also positive towards VOC accessing data from other apps such as alarm clock and scheduled activities in the calendar, in order to perform actions like this more accurately.

Second example

In the second example, aspects regarding user settings, personalization, and control were covered. These topics are relevant considering the likelihood that future cars have more functionality linked to VOC which would lead to increased complexity. Four different versions of VOC notifications were presented to the participants, all proposing to prepare the car for a drive in different ways (see figure 7C). The participants were asked to discuss upon questions such as:

- Who should control the settings, VOC or you?
- To what extent would you like to control the settings?
- Would you like VOC to learn and adjust to you in order to provide a personalized experience?

Regarding this example, the participants expressed that they generally dislike when there are too many choices and settings. For example, they highlighted that it is unpleasant to redo all the settings in the infotainment system each time they get a new company car. With the presumption that VOC includes more functionality,

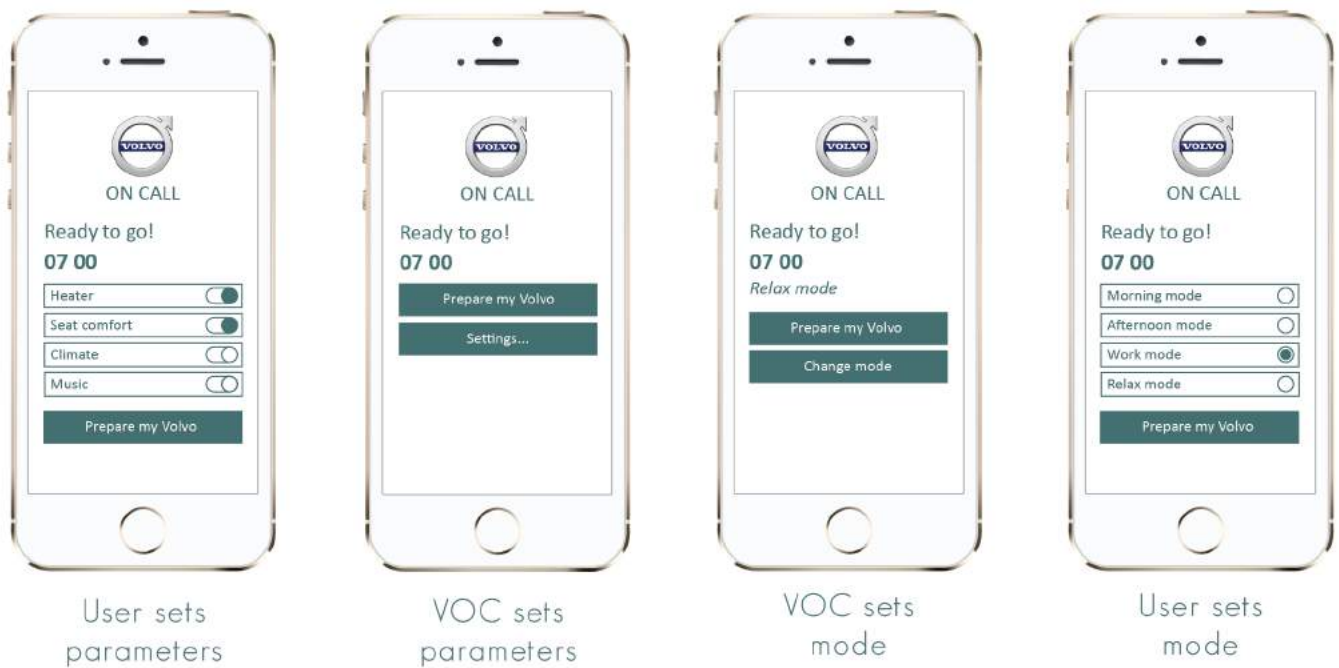


Figure 7C. The figure shows different ways of adjusting settings as basis for discussion regarding how to handle systems with high level of functionality. In alternative 1 the user chooses parameters. In alternative 2 VOC predicts the intention of the user and adapts to the common use pattern, hence the user doesn't have to do any settings. Alternative 3 and 4 is about clustering parameters into modes, and shows that either the user or VOC choose what mode to set up.

they would prefer most of the settings to be handled by VOC as default. Nevertheless, they highlighted that even though VOC makes suggestions and actions based on their user data, they want to be able to adjust the settings and thereby be in control. Additionally, the participants generally preferred to handle the settings thoroughly once rather than repeatedly, e.g. before for each drive.

A consequence of making VOC smarter is that various user data needs to be stored, therefore topics such as data privacy and integrity were discussed. The participants pointed out that nowadays it is common that systems collect personal data, therefore they are somewhat used to it and expect it to increase in the future. However, they highlighted that there is a “scary” side of sharing data, e.g. a risk of feeling surveilled and exploited, and explained that the benefits of sharing data has to be worth the risks. They believed that it matters who handles the information, i.e. if it is a trustworthy company or not, and that it is important to know the reason to why the data is stored in the first place. Regarding VOC, they were positive towards sharing data since they believed that it would provide considerable benefits, e.g. enable a smoother interaction, remove tedious activities, facilitate everyday routines, enable better synchronization with the car, and lead to positive experiences, e.g. feel taken care of, feeling updated, or feel efficient. However, they underlined the importance of data security in order for them to feel safe from an integrity perspective.

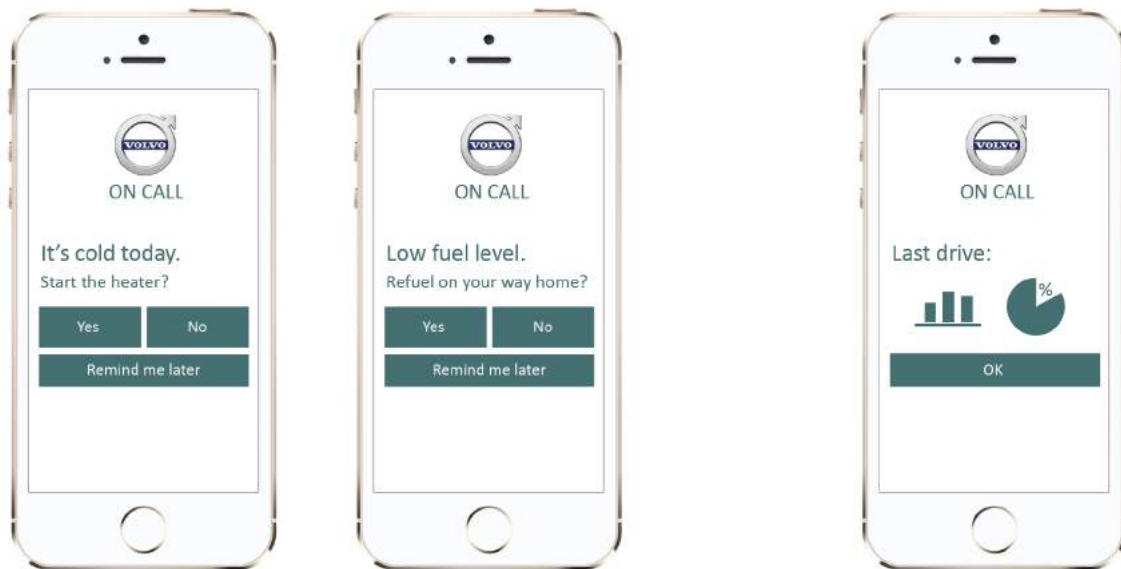
Third example

The current VOC only calls for attention in critical situations by sending notifications, for example if the car is left unlocked. If VOC would undertake a more active and assistive behavior, it is relevant to discuss how much attention the app should require and what type of information the users are interested in. Figure 7D shows examples that were shown to the participants when discussing the following aspects:

- How should VOC behave in various situations?
- What information is relevant to get from VOC, and how should it be presented?
- How, when and about what should VOC require attention?

The participants were in general positive to receiving more car-related information from VOC. They liked the opportunity for VOC to present information depending on situation and context, for instance providing warnings about problematic traffic situations prior to routine drives, but making sure not to disturb the user during a job meeting. The participants emphasized that even though VOC has adapted to their use patterns, calendar and such, it is important to be able to turn off or adjust the active part of VOC, for example turning off notifications temporarily when not wanting to be disturbed.

Regarding attention, the participants saw benefits of having different kinds of information presented in



VOC makes suggestions adapted to the user's habits, the car's status and external factors.

VOC reports and shows status updates regarding the car.

Figure 7D. The figure shows different examples of notifications VOC could provide the user. 1 and 2 show context-aware suggestions provided by VOC, whilst 3 shows an information update about the latest car drive.

different ways. Suggestions or critical information that needs to be handled right away can be received directly as notifications (see alternatives 1 and 2, in figure 7D), whilst less urgent information could be available within the app (see alternative 3, in figure 7D). It was emphasized that it is important that VOC doesn't disturb the users too much, since there are many other things in their everyday life that call for attention. Too many notifications would mean that VOC would bother them instead of helping out.

7.4 DISCUSSION

During the focus group product smartness was discussed from various angles. The participants expressed their expectations and wishes as well as attitudes and concerns regarding the future of VOC. However, the findings from the focus group were considered as guidance rather than decisive results. Product smartness is a complex topic, and within the scope of the project it was not possible to conduct a more profound study. Also it would have been beneficial to conduct more than one focus group, in order to be able to compare the results and agreement.

When recruiting participants for the focus group, the goal was to have an equal distribution of women and men in different ages. Nevertheless, it was only men in their middle ages who could participate and this should be considered when interpreting the results. All in all, thanks to the discussions on desired level of smartness, the focus group provided valuable insights and guidance regarding what user experience to aim for when developing VOC further.

7.5 CONCLUSION AND IMPLICATIONS

Product smartness can be seen as consisting of several dimensions of varying degree, e.g. autonomy, adaptability, multi-functionality, and mobility. Examples of important issues to consider in design are the user's sense of control and understanding of the smart product. During the focus group both opportunities for positive user experiences (e.g. feeling assisted, efficient, or special) and issues which could result in negative experiences (e.g. feeling monitored, stressed, or disturbed) were identified. All in all, the participants both desired and expected VOC to be smarter and more assistive in the future.

The participants liked the idea of a VOC app that suggests, informs, and reminds in order to assist car-related activities. However, it became apparent that preferences regarding level of smartness could vary depending on task and individual. In general, the participants were positive towards receiving suggestions from VOC, but were less convinced about letting VOC carry out actions without their involvement due to a sense of lack of control. It was a higher acceptance towards VOC independently performing actions linked to routine-based tasks, e.g. starting the heater, compared to more infrequent tasks, e.g. booking car service.

The participants saw benefits in including more functionality in VOC, however not at the expense of simplicity. The participants wanted every day activities to proceed smoothly, and would like VOC to adapt and act

based on the context. However, the results of the focus group showed that there is a fine line between helping and disrupting. The importance of feeling in control was underlined and the participants explained that they would always want the ability to adjust settings and turn off

notifications. The same applies to the issue of integrity; the participants prioritized convenience before data privacy as long as they feel in control and can trust the company's intention.

08

ANALYZING THE VOLVO ON CALL ECOLOGY

This chapter examines VOC from a product ecology perspective in order to provide an overview of the ecology around VOC and highlight important aspects to consider for future development.

8.1 OBJECTIVES

Before creating a vision for a future VOC concept, it was important to build awareness of the ecology (cf. Forlizzi, 2008) around VOC. Earlier findings showed that the user experience of VOC already extends beyond single-product and single-user experiences, and if VOC becomes smart and begins to interconnect with other technologies (as discussed in the previous chapter) it becomes even more important to consider VOC's role in the ecology.

Since an ecosystem is never fixed (Forlizzi, 2008) it was decided to examine the VOC ecology, at its current state as well as considering possible changes in the future. Since the user experience of VOC was presented in detail in chapter 6, this chapter focuses on covering aspects of certain importance which haven't been brought up before. The analysis was conducted by relating findings from the user study to Forlizzi's (2008) product ecology framework, as well as considering general trends and changes in society. The aim was to reflect on what changes are likely to lie ahead, and what influence they could have on the development of the new VOC concept.

The next section introduces the product ecology perspective, and thereafter the ecology of the current VOC. Further on, potential changes in the ecology that may occur within a near future (i.e. five years) are discussed, and finally the most important findings from the analysis are summarized in the form of implications.

8.2 INTRODUCING THE PRODUCT ECOLOGY PERSPECTIVE

As described in the previous chapter, people's lives are flooded by interactive products that are used for a variety of daily activities; e.g. communication, transportation, and entertainment. An increasing number of products are connected, exchange information and communicate with each other; creating networks of products, which can be seen as 'ecologies' that are part of an individual's life. When a new interactive product is introduced into a person's life it inevitably becomes part of the established

ecology (Jung et al., 2008). Accordingly, it is common for people to own multiple devices with highly overlapping functionality (Boedker & Klokmoose, 2012). However, due to the increasing competition among products, only those products that provide the greatest value will be sustained (Jung et al., 2008). Literature (e.g. Boedker & Klokmoose, 2012; Forlizzi, 2008; Jung et al., 2008) underlines the importance of studying products in relation to the ecology they are part of, especially when developing interactive and connected products as these experiences often are deeply interrelated. Understanding the interplay between products is necessary in order to understand their meaning and value for the user, which becomes more important as our product ecologies continue to grow.

Although literature highlights that interactive products should not be studied in isolation, there are sparse theoretical and empirical examples that describe strategies for dealing with interconnected products from a user experience perspective (Jung et al., 2008). Therefore it is a challenge to know how to proceed when studying a product in relation to its ecology. For this project, Forlizzi's (2008) product ecology framework was used as inspiration when examining the product ecology of VOC. As described in Chapter 2, the framework considers a specific product in relation to its ecology by looking at relationships between products and people in a holistic manner.

8.3 THE CURRENT VOLVO ON CALL ECOLOGY

Figure 8A shows a simplified illustration of the VOC ecology, where the VOC app is positioned in the center together with the user and the car. However since the user experience of VOC extends beyond single-product and single-user experiences there are also other products and people included in the figure. It is the relation between these elements of the ecology that are discussed in the following text. The findings are structured around the following themes; interconnected products and services, people, activities, and context in terms of time and place.

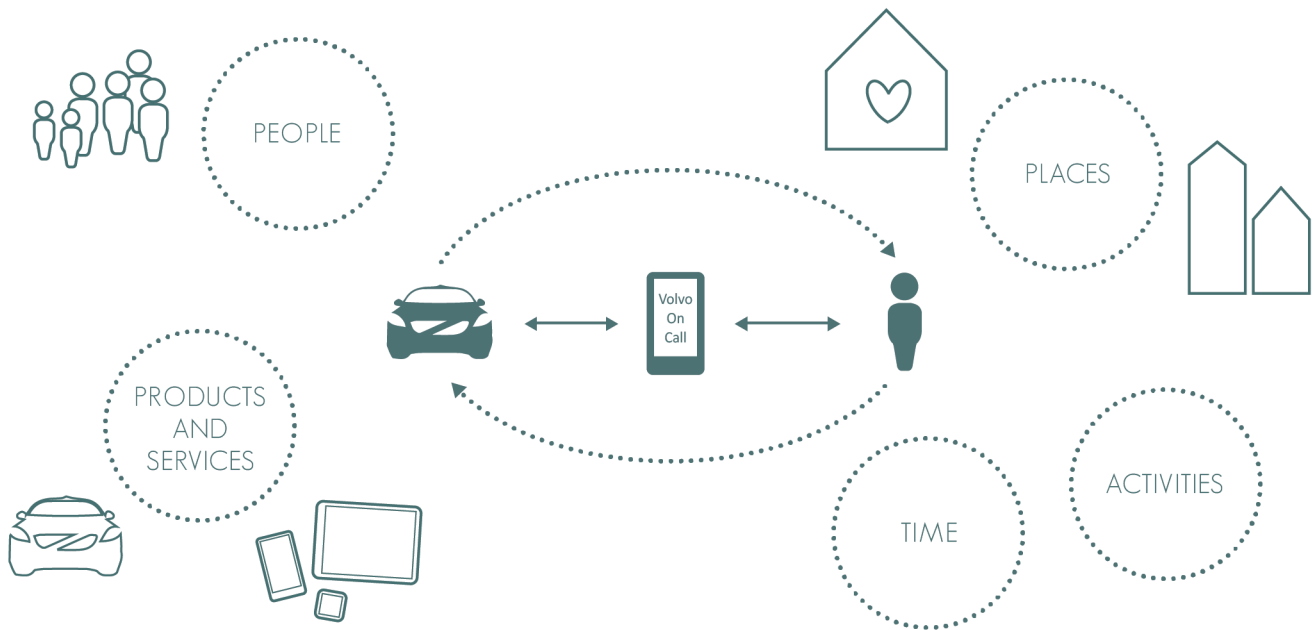


Figure 8A. An illustration the VOC product ecology, inspired by Forlizzi (2008).

8.3.1 Interconnected products and services

The VOC app is the central unit of the analysis. However, the VOC app itself gains its actual value through its cooperation with the car and by being available in a physical product, a smart phone, which also includes other apps that compete for the user's attention. In addition, the user study showed that there is often more than one car present in the VOC ecology; the users might have one car but they may also share one or several cars with others. In the current VOC concept it is possible to link different VOC accounts to the same car, but not to link several cars to the same VOC account.

If zooming out, the VOC-car system is currently not linking to other products or services in the ecology (with exception of the pilot trial of the grocery delivery service "Linax matkasse"). However, both the car and the smartphone are connected to other products and services why also these influence the usage and experience of VOC. For example the user study showed that it is common that users bring their smartphones and other technology into their cars where they use them for work-related purposes, entertainment, navigation, etcetera. In general the users appreciate when they can connect their technology with the car which was something that they wanted to do to a greater extent. The user narratives showed that experiences that take place when products are working together can provide a strong positive user experience; for example being able to continue to listen to music from the same playlist or being able to continue a phone call when entering the car.

A service that is interesting to discuss in relation to the

ecology of VOC is Apple CarPlay. Volvo Cars is one of many car manufacturers that has initiated collaboration with Apple in order to provide a system called CarPlay (available in the new Volvo XC90) which allows the users to access mobile content and apps within the car's infotainment system (see figure 8B). In the case of CarPlay, Apple's personal assistant, Siri, can be accessed as voice control and is allowed to perform a selection of actions in the car. This feature hadn't been introduced to the market at the time when the user study was conducted; yet some of the participants brought it up. Thus, the progress of Carplay and similar solutions are highly relevant to consider when looking ahead into the future and the development of VOC.



Figure 8B. Apple CarPlay in the new XC90 touchscreen. Picture borrowed from www.autoevolution.com (2015-07-27)

The car and the smartphone are traditionally used for different purposes and therefore carry different meanings for the user. However when studying the ecology it can be argued that due to VOC and other technology, actions that are normally performed by the car can now also

be performed by the phone, and vice versa. Therefore when developing VOC, it is relevant to consider VOC's possible impact on what meaning the users assign to the car, e.g. if VOC should be perceived as an extension of the car or as a remote control. Further, it became clear in the user study that the users in general appreciated when products in the ecology are interconnected, however it also showed that it is critical for the user experience that they work together harmoniously. Hence, since one of VOC's primary strengths is its interconnection with the car, the importance of providing flawless communication and smooth collaboration is underlined.

8.3.2 People

As illustrated in figure 8A, there are several people that may be part of the ecology of VOC. Firstly it is the primary user (positioned in the center of figure 8A) who uses VOC and drives the car. Secondly there might be additional users, such as a partner or child who occasionally drives the car, and thirdly there might be passengers, children, friends and other people that are part of forming the experience (e.g. neighbors that are impressed by VOC). The user study showed that the usage of VOC often is limited to a group of people in close proximity (e.g. the household) but as a consequence of the remote connection to the car people in the ecology don't have to be physically co-located, they can still share the perceived values and benefits of the service. Hence, due to the remote connection, it is relevant to consider that new types of social situations may occur.

The user study showed that it is common to share one or several cars within a family, and the narratives described how VOC could help in various social situations. Many highlighted the benefits of sharing cars, however those situations aren't always flawless; for example it was described as tedious to redo all the car settings when someone else had driven the car. Although the narratives mainly highlighted positive aspects regarding social connections owing to VOC there might be situations when social connectedness is not desired; for example if someone wants to stay private without showing the car's location via the VOC. All in all, social situations often have an emotional aspect and therefore also have considerable impact on user experience.

8.3.3 Activities

The connectivity of VOC, the car and other smart devices provides mobility and flexibility in the ecology. For example, via VOC the user can prepare a driving route and the information can be sent to the car, thereby the journey can be initiated by the user whenever and wherever needed. In line with this, the user study showed

that users highly appreciate when they can continue on-going activities even though transferring into the car, e.g. carrying out phone calls or playing music, which enable the car to become a place to work, a place for self-time etcetera. Furthermore, the user study showed that it is common to interconnect devices, and as these experiences are linked to more than one source they easily blend together. For example, in the narratives there were examples when the communication between VOC and the car didn't work because of poor network coverage, which caused the users to incorrectly believe that the fault resided in the car. Therefore, in order to achieve positive user experiences it is important that products are working harmoniously together, especially when it comes to the continuation of on-going activities.

8.3.4 Context in time and place

VOC proved to be a product which value is strongly dependent on time and place; for example if the user is in or far away from the car and performs a remote action with the car. While the in-car features provide a feeling of safety within the car, the users mainly described the experiences of the VOC app when being apart from the car. Further, the user experience of VOC varies over time, e.g. the user experience of VOC is season-dependent since the usage of the remote heater starter increases during wintertime. The time aspects were previously covered in the findings from the UX curve analysis, and it was pointed out that different aspects of user experience are of varying importance depending on how long VOC has been used. Concerning what value VOC brings in the long-term and its role in the user's life, aspects such as expectations and novelty proved to be linked to the initial experience, whilst aspects such as utility, convenience, and routines get more important as times goes by.

8.4 A CHANGING VOLVO ON CALL ECOLOGY

The product ecology of VOC can be expected to get even more complex, also within a near future. In line with advances in technology development it is probable that products that surround VOC users will be both smarter and more interconnected which could result in further overlapping activities. Due to the expansion of cloud-based systems and services, people will probably become even more accustomed to having access information at all times and are likely to assume they can perform actions directly on any device. In addition, it is likely that the number of smart products and devices (e.g. smart wearables) will increase which would mean that there will be more competitors to the smartphone. Hence, it might be advantageously to make VOC compatible with more smart devices in the future.

Regarding the vehicle industry, cars are expected to become smarter and both more autonomous and communicative in the future. Automation technology is adopted in stages and some elements of autonomy are already available today, e.g. the new semi-autonomous Volvo XC90 (Volvo Cars, 2015). Even though not all cars will be self-driving within five years, cars are expected to continue to become more autonomous and take over certain tasks from the driver (Bertoncello & Wee, 2015). There will most likely be a large increase in the number of connected cars on the roads, equipped with various sensors which enable collection and sharing of user data (e.g. McKinsey & Company, 2014). All in all, the transportation system as a whole can be expected to become more communicative and equipped with sensors to a greater extent, e.g. on streets, traffic lights, and signs. Consequently, there are possibilities for the connected car to become a rolling transmitter of information (Curry, 2014). For example, if cars were communicating with each other and with the infrastructure, the information could be used in order to optimize traffic flow, prevent accidents and similar. However, there are also possible risks linked to this development e.g. regarding digital safety and data privacy (McKinsey & Company, 2014).

In addition, a number of directives will be introduced by governments, such as 'eCall' (GSMA, 2012). For example, in order to prevent traffic accidents, the European Parliament voted in favor for the eCall regulation, which requires all new cars (2018 and onwards), to be equipped with eCall technology (European commission, 2015). The eCall technology has similarities with the built-in assistance system in VOC; it automatically alerts the nearest emergency center in case of a crash. In 2001, VOC was a pioneer in providing security, safety and tracking services built into the car. However, due to new regulation new cars will be equipped with similar technology, which for example may result in customers to consider the built-in assistance system of VOC as a standard feature rather than a value adding service.

Climate change is another topic which is expected to be looked at more seriously in the future. The narratives in the user study showed that the VOC users often consider environmental aspects when it comes to means of transport, although due to practicalities and convenience aspects they prioritize having a car. However, it is likely that solutions that facilitate a more sustainable behavior will continue to be encouraged in the future. Accordingly, it is relevant to consider how VOC could contribute in order to minimize the environmental impact whilst providing convenience. Further, car-pooling is expected to increase in various forms in a near future, in line with upcoming transportation networks and services. As earlier discussed, due to the remote connection to the car, VOC has great opportunity to facilitate and enrich the experience when sharing cars.

Further on, the number of interconnections between products and services can be expected to increase in the future, which could lead to user experiences that blend together. Today most industries foremost have a vertical development process, however in a near future we are likely to see an increase of cross-industrial collaborations (GSMA, 2012). For example, companies from the telecommunications and software sectors are already collaborating with the automotive industry (e.g. Apple, Ericsson and Volvo Cars). In line with the development of Apple CarPlay, smart devices are allowed to partly take over functionality within the car. Here, the automotive industry is faced with a great challenge to utilize the opportunities of beneficial collaborations, and still maintain and secure the control of the digital in-car experience.

8.5 IMPLICATIONS

The product ecology analysis gave rise to the following implications:

- **VOC should collaborate rather than compete:** It was highlighted that there is an abundance of products, systems, and services in the VOC ecology. Instead of competing for the users' attention, it is suggested that VOC could collaborate with other apps and services, and utilize the benefit of being closely interconnected with the car.
- **VOC and the car as an integrated experience:** People are used to their smart phones that they are carrying around and use for multiple purposes. It is convenient to access the mobile content in the car, and it could be argued that personal assistant systems such as Siri, Cortana, or Google now could replace and take over tasks performed by VOC today. Thus, the strength of VOC is that Volvo Cars controls both the development of VOC and the car, and thereby has an excellent position for creating a co-experience that could continue to strengthen the value of having a car. The user study showed that harmony, coherence and seamlessness are important when providing an integrated experience, and in line with this the holistic experience of the interplay between VOC and the car should be considered. It is the system as a whole contributes to the user experience.
- **Greater focus on convenience-oriented aspects:** The safety and security aspects were highly appreciated by the VOC users, although staying more in the background, whilst the more convenient-oriented features were providing the more apparent user experience. A consequence of new governmental regulations could be that customers start to consider the safety functionality of VOC as standard rather than value adding. This notion should be taken

into account when further developing VOC and an implication is to further focus on convenience-oriented aspects in order to enhance the user experience of VOC.

- **VOC should be available in several smart products:** In line with the fast technology development, it is probable that more smart devices than the smartphone will be present in the ecology which could lead to an explosion of possible interfaces in the future. This can be considered as a challenge as well as an opportunity. There is an advantage of ensuring that VOC is compatible with new smart devices due to the novelty aspect, yet this is something that needs to be prepared for. The implication is to prepare for providing VOC for various smart devices and include a functionality that enable users to access VOC seamlessly on different devices.
- **More than one user:** In line with increasing sustainability awareness, carpooling and more flexible ownerships of cars are expected to increase. Consequently, it is relevant to consider VOC's role in this development. There is a design challenge to handle multiple users, yet providing a personal experience. The implication is to consider if VOC could be the key actor in order to facilitate in situations related to this, and still enrich and enhance the car experience.

8.6 DISCUSSION

As described in chapter 7, smart products co-exist and collaborate in smart environments, which become more and more seamlessly merged into the lives of users. Development are heading towards a direction where products and services, and thereby users, are constantly connected and updated. The number of products and services are likely to increase, hence so are the complexity of the product ecologies. Although the user might have access to more smart devices, it is likely that the user wants to be assisted in handling all these different smart products and services. One thought for the development of VOC is some sort of central system in which the user can overview and control the different smart products and services s(he) uses. In a scenario where the user might have several smart products that collaborate or compete with each other, e.g. smartphone, wearables, smart home and smart car, there would be a possible need for assisting the user in handling these without having to switch between different systems.

However, as VOC provides great value when it comes to car-related activities, it is argued that it is more viable for VOC to stay car-related than spread out to include functionality for all kinds of things, home control for

example. This goes in line with the previous finding that the car is important in people's lives, but not necessarily a central part of it. Additionally, there are already established personal assistant services in connection to people's smartphones; e.g., Apple Siri, Microsoft Cortana, and Google Now, which may be even more common in five years time than they are today. This development may open up for collaboration between VOC and other products and services in order to provide value for the users. All in all, it is believed viable that VOC becomes a car-related hub but not a large-scale central system for 'everything'.

Moreover, it can be argued that users of several smart products are likely to desire an integrated experience, rather than being forced to switch between different systems all the time. Except for the idea of a central coordinating system, this implies that collaboration and interplay between different products, systems, and services are inevitable in such an ecology. Therefore, it is likely that people will continue favoring products and services that can do many things, and the idea of having everything accessible in the same place. This suggests that there is a great opportunity for opening up for collaboration between VOC and other products and services in order to provide value for the users.

The product ecology approach suggests that social relations are important factors. When considering the thought of a car-related hub, the importance of allowing for social interaction between different users was discussed. Reflecting upon the idea that each person has a personal central system, it is evident that these individual systems must be able to interplay and relate to each other which is seen as a great challenge considering the complexity of the product ecology surrounding one person. Similarly, since cars are often shared by several people and that there are indications that this might become even more common in a near future, it was concluded that it is important to take a stand on how VOC should handle multiple users of one car. More specifically, the collective experience of VOC is important to consider in addition to the individual experience. However, due to the time limitation of the project this aspect of user experience was excluded from the remaining part of the creation phase.

8.7 CONCLUSION

Although VOC practically could "be anything", the product ecology analysis underlines the value of VOC in connection to the car, especially since there already exists an abundance of systems that surround the VOC user. In line with this, people tend to choose solutions that solve tasks in the 'best' way. Taking possible changes in the product ecology into consideration as well as the fact that there already exist systems that aim to assist the

user in various tasks, it was concluded that VOC should coordinate, collaborate and link rather than replace or compete. VOC should utilize the benefit of being closely interconnected with the car, because that's where VOC is believed to have the greatest opportunity to excel.

The fact that VOC is inherent in a smartphone, a product that the user's always brings along, and that the car is connected open up for numerous opportunities. Since Volvo Cars produces both VOC and cars, the circumstances are advantageous for optimizing the single product experiences, but also the co-joint experiences where VOC and the car collaborate. This has been

highlighted as important for the user experience. As earlier stated, products need to work together harmoniously in order to provide a seamless experience. In line with this, it was concluded that focus for the VOC development should be on car-related activities. However, it could be argued that the VOC-car-system is currently isolated from the rest of the products in the ecology. If considering that users highly values solutions that simplify things in life, this implies that VOC should interconnect and collaborate with other parts of the ecology to a greater extent. Thereby opportunities for supporting car-related activities should be explored as well as how VOC can strengthen the car experience.

09

CREATING A VISION FOR A NEAR FUTURE

This chapter describes a vision for VOC in a near future, and aims to guide the development of VOC in a defined direction.

9.1 OBJECTIVES

According to the chosen focus and user experience values, a vision was created for the new VOC concept. The vision is the main deliverable of this report and takes all previous findings into consideration; from the user study, focus group, and product ecology analysis. The aim of the vision is to point out a direction for VOC and steer the concept development towards the intended user experience. The vision was given the form of a textual description, and describes key points of the intended user experience of a VOC concept in a near future. The key points mainly concern the behavior of VOC, and what prerequisites there are in order to achieve the experience of a smart and assistive VOC. Examples that illustrate how the vision can be used are given in the next chapter in conjunction with the ideation and early concept development (see section 10.5).

9.2 INTRODUCING THE VISION

The new VOC concept should be centered and designed

around the user. The vision is to simplify and enrich the user's everyday life, and extend and enhance the car experience with help of an assistive VOC (see figure 9A). As found in earlier studies in the project, the strength of VOC is its connection to the car. This is where the experience lies, and this is where the potential is for improving VOC by creating pleasurable experiences. The new VOC concept should therefore focus on making life more convenient and less complicated for the users when it comes to car related activities.

The functionality and behavior of a “smart assistant” should be used as the means to achieve user experience values, i.e. simplifying and enriching everyday life, as well as extend and enhance the car experience. This means that VOC should assist the user to a greater extent by smart behavior, and know the needs and intentions of the user by learning about use patterns, behavior, and habits. All in all, this smart and assistive behavior is supported by relevant and useful functionality. The following sections will describe key points in designing for VOC in line with the vision.

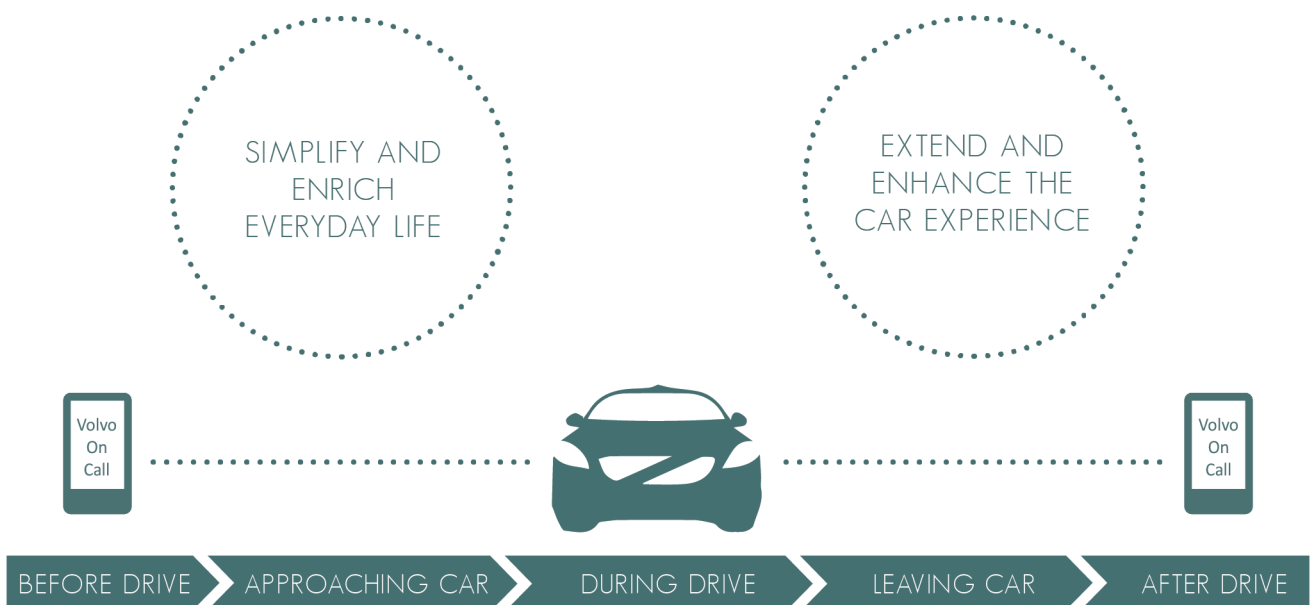
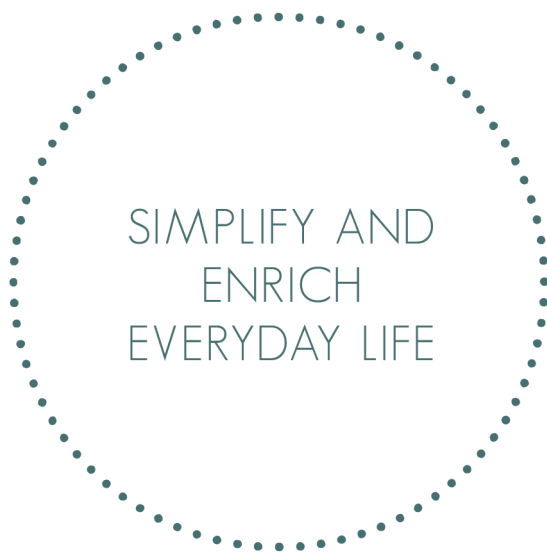


Figure 9A. Illustration that shows the vision to simplify and enrich the user's everyday life, and extend and enhance the car experience with help of an assistive VOC that mediates between the user and the car.

9.3 SIMPLIFYING AND ENRICHING EVERYDAY LIFE

The first user experience value is to simplify and enrich everyday life, which is illustrated in figure 9B. VOC makes everyday life easier and assists the user by accommodating car- and drive-related routines and habits, easing the mind of the user by removing the need for remembering things, and reassuring the user that if something happens, VOC will let the user know. Furthermore, VOC make everyday life more enjoyable by making routines and habits surrounding the car more convenient, enabling the user to handle things with direct control, and removing tedious activities and other friction points related to the car. Also, VOC embraces the opportunity to assist the user by being part of and creating new routines around the car, for example allowing collaboration with services provided by third-party companies.



Making life less complicated and more convenient by accommodating car related activities.

Volvo On Call is smart and assists the user.

Figure 9B. Illustrates VOC's user experience value to simplify and enrich everyday life.

In order to exemplify the vision, the smart behavior and some functionality of VOC is presented as key points:

- **Compatibility means accessibility:** In order to make sure that the functionality and information provided by VOC is accessible at all times, VOC should be compatible with a range of devices. This requires a responsive interface, i.e. an interface that adapts to each device, and is believed to provide a sense of accessing the car at all times. Cloud-based

functionality would enable users to initiate something using one device, and then pick it up and continue later on using a different device. In addition, it should be possible to handle several cars with the same VOC account, unlike today when you need one account per car.

- **Resourceful yet not overwhelming:** VOC shows a wide range of information about the car to a greater extent than today, but only things that are beneficial and considered useful for the user. In accordance with previous findings, the information shouldn't just be presented as raw data but in a way that makes it clear for the user how to utilize the information, e.g. as visualized statistics. Furthermore, the information should be presented in a way that isn't overwhelming the user, which could be achieved by transforming the data into useful and comprehensible information.
- **Alert and responsive yet keeping a low profile:** In order to fulfill expectations and requirements for a smart app, VOC is alert and responsive. However, when not being interacted with VOC modestly stays in the background and keeps a low profile, not disturbing the user unless something important comes up.
- **Remind and notify but not interfere:** As part of being the user's smart assistant, VOC provides occasional reminders and notifications in order to help the user. However, these notifications have to be delivered at the right time to avoid disturbing the user. There has to be a balance in how frequently notifications are given, and what they tell the user. In order to avoid interference with what the user is currently doing, the notifications have to be useful and delivered with good timing. There is a hierarchy in how and when information is presented, depending on what information it is and if it's relevant or not. Urgent information is provided as notifications, making the user aware straight away. Information such as car status can be accessed in the app, and some information is highlighted within the app. In order to allow the user to be undisturbed, it should be possible to turn off the notifications both temporary or continuously.
- **Proactive but the control remains with the user:** Even though VOC has a proactive behavior by predicting what the user needs and making suggestions based on this input, it doesn't take action itself. It will always be the user who makes the decision to initiate an action or carry out a command, either directly or indirectly, i.e. initiate an action straight away or by pre-setting actions for upcoming days. In this sense, VOC provide the ability to perform actions automatically for those users who desire that.

- **Adaptive yet consistent:** The app adapts to the user when it comes to behavior and content, but its interface will always remain consistent in layout and visual design. In order to ensure that the interface is familiar to the user, it doesn't change graphically or in terms of structure. Although the layout stays the same, the content can change depending on what information is interesting at that particular moment in time.
- **Knows the intention of the user but not in an intrusive way:** Due to the perceptive and predictive behavior of VOC, the app learns from previous history and picks up the habits and behavior of the user. However, there is an important integrity aspect to consider here, and a fine line between being helpful and being intrusive. It should be clear that VOC collects data in order to help the user and nothing else, and it won't happen without the user's permission. The user's personal integrity should be respected, as this is essential for the user's acceptance.
- **Intelligent yet simple and intuitive:** When it comes to the smartness of VOC, there has to be a balance between intelligent behavior and simple and intuitive interaction. It is important that the intelligence doesn't complicate things for the user, simplicity should always be prioritized. Despite providing help and assistance, smart and autonomous behavior might be experienced as complex and confusing for some users. Hence, it is essential to prioritize and ensure that also the app user interface is simple and easy to understand, and that the visual design makes it feel manageable. The users should feel invited to use the app, and should not be intimidated by the possibility of making irreversible mistakes.
- **Integrate and collaborate rather than replace things:** In order to simplify the everyday life of the user, VOC integrates, connects and collaborates with other apps and services rather than replaces or competes with them. VOC provides a link between those things, and allowing interplay enables fast and easy interaction for the user. Still, VOC is the number one car application and thereby doesn't give away the credit. In the end, the users don't want more 'stuff'. Hence, factors associated with being a Volvo car owner should be collected in one place and linked to a user account, enabling the user to access and handle things through the VOC app.
- **Location and situation aware:** VOC will adapt its behavior, suggestions, reminders, and provide different types of information depending on situation. VOC will collect data from the surroundings and keep track of the location of the user in order to enable itself to provide useful help.

9.4 EXTENDING AND ENRICHING THE CAR EXPERIENCE

The second user experience value is to extend and enrich the car experience, which is illustrated in figure 9C. The car experience is extended and enhanced by giving the user remote access to the car at all times. Furthermore, the car experience is no longer limited to the car itself; VOC enables the user to interact with the car both when far away from the car and when approaching, entering or leaving the car. Building on the sense of bringing the car with you wherever you go, the app should be a representation of the car rather than a remote control, bringing the user closer to the car. When in the car, VOC stays in the background letting the infotainment system be the primary interface. VOC augments the feeling of being one with the car, and ensures that the car is within reach regardless of distance.



Giving remote access to the car at all times, and ensuring that the car is within reach regardless of distance.

Volvo On Call is a representation of the car.

Figure 9C. Illustrates VOC's user experience value to extend and enrich the car experience.

- **Closer interplay between app and car:** With the new VOC concept the interplay between the car and the app is closer, with faster communication and more interaction. The interplay between car and app is immediate and evident, with a sense of close collaboration. The statuses in the app are updated continuously, ensuring that the user accesses the latest information without having to update manually. One

example could be to give the user the possibility to control and install the software and digital content of the car through the app, unlike today when this procedure has to be done in the car.

- **The car as a smart device:** In the user experience vision, the car has also been given a smarter behavior. The car can be seen as a smart device, which assists the user in everyday life. Just like other smart devices in the product ecology, the car allows the users to bring their content with them through the cloud, e.g. music, calendar, e-mail, and contacts. Instead of synchronizing or connecting another smart device to the car, e.g. a smartphone, the content is accessed through the cloud. However, there is a limitation as to which content and apps can be accessed in the car due to safety reasons.
- **The app as a representation of the car's HMI:** The app is an extension and representation of the car and its infotainment system. Today, the app and infotainment system are two separate systems, presented in different domains eliciting completely different user experiences. For the new concept to achieve its goals, it is fundamental to have the app and the system integrated to a greater extent. They are not separated as an app and a system; they are two interfaces representing the same thing. In this sense, VOC can be seen as a second HMI for the car, sharing a lot of the information and functionality that the car provides. Although there will be inevitable differences due to the fact that they belong to two completely different domains, the app and the car HMI can be far more similar when it comes to graphical design, visual expression, layout and system logic in order to provide a more coherent experience.
- **Seamless transitions:** As a consequence of letting the app be a representation of the car's HMI, the transitions between the app and the car's HMI need to be more seamless on a digital level; the user shouldn't have to initiate this unless she or he desires to do so. It happens automatically and the content is retrieved from the cloud. This would allow the user to continue an activity in the car's infotainment system that was initiated previously in the app. As a consequence of this flexibility, the car experience can be initiated before the user is even near the car, and then continued in the car. Hence, the transition between home and car, as well as that between app and infotainment system are experienced as seamless and thereby more pleasant.
- **Controlling the car remotely and directly:** The remote experience of the car is elicited by the ability to control and monitor the car even when far away from it. In the near future, it's likely that the user will be able to perform other types of tasks and have an even greater overview of the car and its status in the VOC app. Here, it is essential to provide a functionality that has a clear benefit for the user, either utility wise or for pleasure. In order for the user to feel in control and at ease, flawless communication between the car and the app should be strived for. Also, the user should be given the ability to have direct control, trusting the system to carry out actions. The system should let the user know if not succeeding. VOC doesn't merely present the problem for the user, but also how the problem can be solved. To the greatest extent possible, VOC should give the user the ability to address the problem immediately.
- **The car is prepared for the user:** VOC carries information about the user and carries the user's preferences and activities into the car. This is utilized in order to give the experience of the car 'preparing itself' for the sake of the user. Since the app and the car communicate with each other, the car is aware of the presence of the user and can provide a welcoming feeling by different means when the user is approaching the car. By keeping track of the user's preferences in VOC, the car is prepared and provides a personal experience, even if someone else has used the car in between. The user's preferences can be transferred to any car; a rental car or even a brand new car. It should be there for the user, and prepared when needed.
- **Personal yet not excluding:** Along with the close collaboration between VOC and the car, the app is a representation of the actual car. Compared to the VOC of today, it is ensured that the app is showing information and status of the user's specific car. In addition, the app carries knowledge about the user and is aware of habits, settings, and preferences. Hence, the app is personal to a greater extent than it is today. On the other hand, looking at the product ecology it is obvious that one user often uses more than one car, and that there are often more than one person using the car. In the future, car sharing is likely to increase, hence the importance of this issue. VOC provides personal experiences that should be possible to share with others. By this, the car experience is extended.

10

IDEATING AND DEVELOPING EARLY CONCEPTS

This chapter is about ideas and early concepts. At the end of this chapter, two examples are provided that illustrate how the vision can be used to guide the development in a direction.

10.1 PURPOSE AND AIM

The early concepts were created with the purpose of exemplifying functionality aspects of the intended user experience, as well as making it easier to embody the smart behavior incorporated in the new VOC (as presented in the vision). The aim of the ideation was to generate a quantity of ideas by looking at the car journey as a whole from different perspectives (the car journey is explained later on in section 10.3). In accordance with an experience driven approach, the focus was on how VOC can provide the intended user experience of a smart and assistive VOC and achieve the user experience values through this behavior. Throughout the ideation sessions, the vision of a smart VOC, which simplifies and enriches everyday life, and extends and enhances the car experience was held in mind.

10.2 METHOD AND PROCEDURE

The ideation was initiated with a brainstorming workshop held with a group of seven master students within Industrial Design Engineering and Interaction Design. The purpose was to ideate around the car journey from the perspective of three different personas (see figure 10A), which are fictional characters, created to provide a joint understanding of a user group (Courage & Baxter, 2005). The personas were created with the aim of covering three different objectives that people can have during a trip; i.e.

work, family, or leisure time. In order to keep it simple the personas were made up of a few key points and used as a starting point for discussion.

The ideation was concentrated on two specific car journeys; the commute journey and the leisure trip. These two journeys were chosen based on the user narratives collected in the user study, where they were highlighted as two important types of trips. In order to prepare the ideation session, a short description of the characteristics of each journey was created (see figure 10B). The method was inspired by Adaptive Path's guide to experience mapping (Adaptive Path, 2015). Positive as well as troublesome parts of the journey were discussed. Both car journeys were considered to begin before the driver enters the car; i.e. also including what happens before, during, and after the drive.

The ideation was held around the notion of a 'smart product' rather than focusing on the existing VOC. The purpose was to liberate the thought from VOC as a smartphone app and by that avoid limiting the ideas to what an app can do. This was considered necessary since it is rather unclear what form(s) VOC can take in the future scenario, 5 years ahead. Furthermore, ideas were generated according to how the car journey experience can be improved by the interplay between VOC and the car. Some ideas were selected and developed further into concepts; however those also stayed at an early stage.



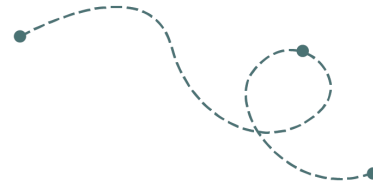
Figure 10A. Simple descriptions of three personas, covering three different objectives; work, family, or leisure time.

THE COMMUTE JOURNEY



- Commute between A and B
- Goal-oriented, routine-based driving
- Relatively short distances
- Commonly include short stops along the way; errands, activities, etcetera.

THE LEISURE TRIP



- The journey is more than reaching the destination
- Spontaneous, social driving
- Longer trips
- Commonly include longer stops along the way

Figure 10B. Short descriptions of commute journey and leisure trip.

10.3 THE CAR JOURNEY

A range of ideas was generated in relation to the commute journey and the leisure trip, by considering the different user objectives (presented in figure 10A). In the following sections, some of these ideas will be presented according to the different steps of the car journey; before drive, approaching or leaving the car, during drive, and after drive (see figure 10C on next page).

10.3.1 Before drive

Several of the ideas on how the experience prior to drive could be improved concerned initiating something at home and then carry on with it in the car; for example, starting to read the newspaper and continue to listen to the news in the car while driving. Moreover, many ideas were about aiding the user in the planning of the day by giving reminders and proposals. One specific example was to provide traffic alerts and suggest alternative routes in the case of traffic jams, accidents or similar. Another idea was to facilitate car sharing in the VOC, e.g. help people coordinate who should drive and what colleagues to pick up on the way to work.

10.3.2 Approaching or leaving the car

An opportunity found in previous studies was to explore how the interplay between VOC and the car could be improved, in order to provide a more seamless and integrated experience. Except for addressing issues concerning the experience of VOC as a product, another possibility is to look at the car journey and see if the shift between using VOC and driving the car could be made smoother. For example, to enable the user to continue with ongoing activities, such as writing e-mails or listening

to music in the car, it is important to consider the design of the transitions when entering and leaving the car. In addition, there were ideas focusing on how to provide a feeling of the car welcoming the user with help of VOC.

10.3.3 During drive

Many ideas concerned the car drive as a meeting place where the user socializes and has fun together with family and friends. Also a range of ideas on how people can be entertained in the car was discussed. In line with facilitating car sharing, there were ideas on utilizing the social aspect of riding together by bringing people who don't know each other together through VOC. One rather extreme idea was to merge the concept of car sharing with speed dating, by connecting people who are going in the same direction and are looking for new acquaintances. Also, the possibility to allow for professional business meetings with colleagues in the car was discussed.

The possibility of the car as an information provider filtering out information that is desirable and useful for the user in a specific situation was also brought up. The car could be a kind of information central where the user is updated on what happens in life but also in "the world". The general idea was that the car together with VOC could help the user to plan and prepare the day through a smarter and more assistive behavior, and not limiting this behavior solely to VOC. An example was to provide reminders in the car connected to the calendar, and being able to prepare for work while driving by having access to calendar, e-mails, and similar.

An additional thing brought up was that many people see the car as a place to unwind and relax, for example by listening to music or having some time alone for quiet

reflection. In line with this, an idea to provide different car modes emerged which would give the user the possibility to switch between modes based on mindset and mood (similarly to the drive modes available in Volvo cars today). However in line with having a smart car, the car itself can be aware about what the user is likely to want and thereby adjust its mode.

10.3.4 After drive

Although there were few ideas generated regarding after drive, the general discussion was that when the car has been left at the parking lot most people don't want to think about the car. Instead, like today, they should have the possibility to monitor and control the car at a distance and should be able to trust VOC to warn them and take appropriate measures if something is wrong. However, one thing brought up was the possibility to aid the users in evaluating their driving habits by building on the driving journal in the current VOC. By enabling the users to view both detailed and visually compiled information, e.g. graphs and illustrations, about their drives. VOC could assist them in comparing trips from an economic and environmentally sustainable point of view.

10.4 EARLY CONCEPTS

During ideation, some general ideas came up in line with the findings from the user study. For example, a smart behavior was believed to be achieved by an integrated system – both in VOC and in the car – based on adaptive technology that learns about the user and adjusts its content and behavior according to situation, context, and

external factors. However, in line with findings from the focus group the importance of allowing the user to make choices and control the settings was pointed out; the user should always be able to override the system.

The ideation resulted in a wide span of ideas ranging from improvements that could be implemented today to ideas that could be applicable in the longer term perspective. The many ideas were clustered in order to describe how several ideas together could provide a desirable user experience. These early concepts are presented in the subsequent sections, followed by two examples that illustrate how the user experience vision can be used to steer the development towards the indented user experience. Although, VOC as a smart assistant is not brought up as a concept on its own, it is present throughout the ideas since emphasis has been on generating ideas with this focus.

10.4.1 The car is there for the user

Several ideas addressed creating the experience of the car being there for the user, i.e. fulfilling and adjusting to the needs of the user rather than the opposite. The overall notion was to store user preferences and settings in VOC and explore a close collaboration between VOC and the car. One way to provide a sense of the car adapting to the user could be that it adjusts itself according to the user's settings regarding seat and mirror adjustments, temperature and seat heating, music or radio channel, drive mode, and so on. By being connected to VOC, the car can be aware of who is approaching the car, and based on the latest settings or manipulation made in VOC it

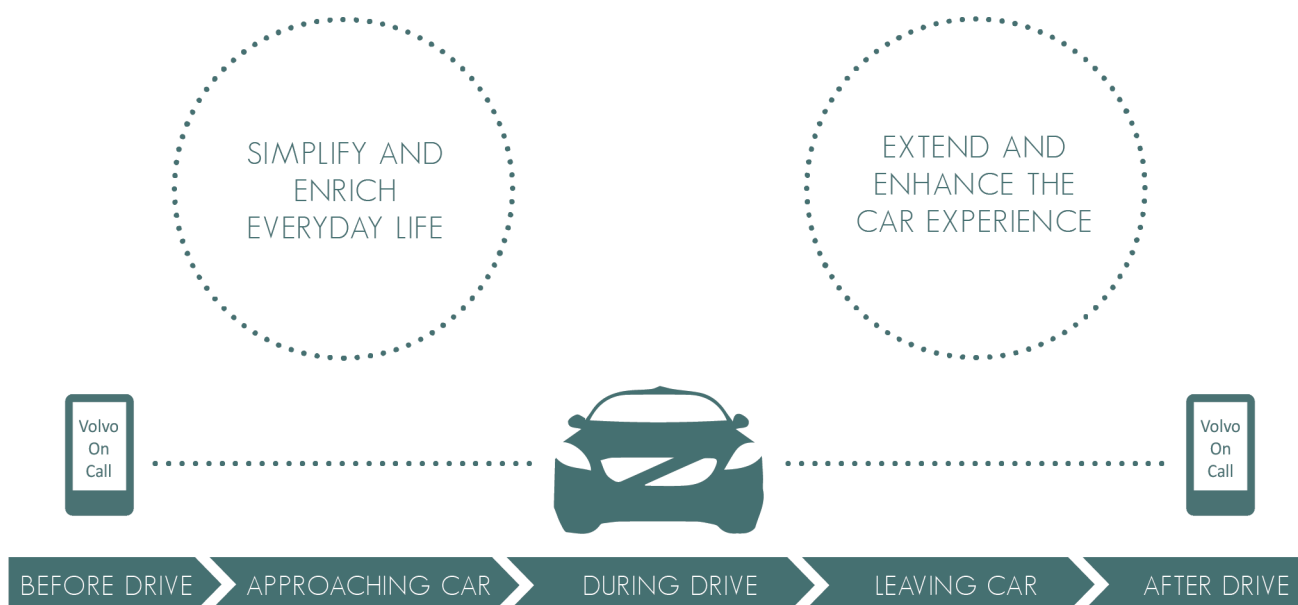


Figure 10C. Illustrating of five different steps of the car journey; before drive, approaching or leaving the car, during drive, and after drive.

can adjust itself. If the user's settings and preferences are stored in VOC continually, it enables the car to adjust and provide a personal experience for each drive. This is also applicable in situations when the user drives another car; a brand new car, a rental car or a friend's car – any Volvo car can adjust according to the preferences and settings in VOC (see figure 10D).

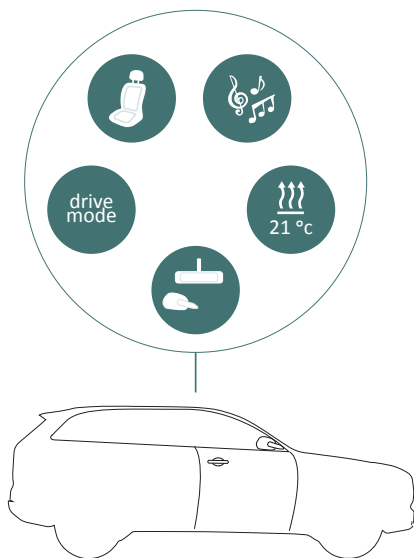


Figure 10D. Illustration where the Volvo car adjusts itself according to the preferences and settings in VOC to provide a feeling that the car is always prepared for the user.

In line with this, there were also ideas regarding how VOC and the car can collaborate in order to enable the car to notice the presence of and prepare for the user. If the car could sense when the user is approaching, it could welcome the user by lighting up and unlocking itself (see figure 10E). As explained previously, the transition between VOC and the car's infotainment system is important when considering the user experience when entering or leaving the car. In order to provide a seamless transition, when sensing the presence of the user, the car can initiate the procedure of synchronizing VOC with the

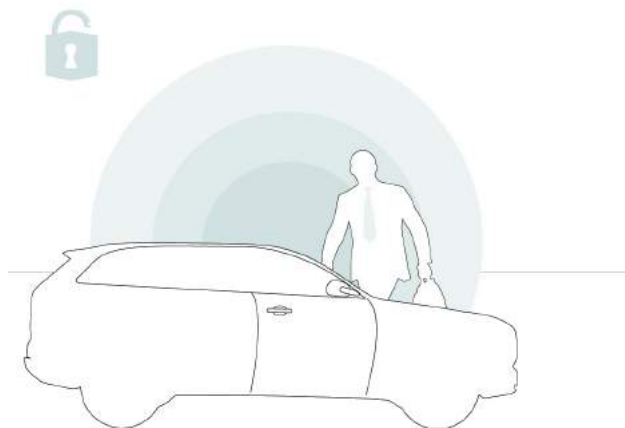


Figure 10E. If collaborating with VOC, the car can sense the presence of the user and provide a welcoming feeling in several ways.

car so that it is done when the user is seated. This is likely to result in a pleasant and more harmonious experience. Accordingly, the user's digital content (e.g. travel route and play list) can be synchronized with the car automatically.

However, there are other use cases where the user can approach the car without the intention of driving, for instance to fetch something from the trunk or to simply pass by the car. In these situations, if the car automatically starts to synchronize and make itself ready there is a risk of disturbing the user. Also, some preparations (e.g. pre-conditioning the car) would (probably) need more time than it takes for the user to approach and enter the car. In order to address this, VOC could, based on use patterns, suggest to the user to "prepare the car" (see figure 10F). This means that the car would start synchronizing and adjust the temperature, and other settings in time, as well as knowing who will be driving the car. Thereafter, VOC can 'wake the car up' when the user is approaching it.

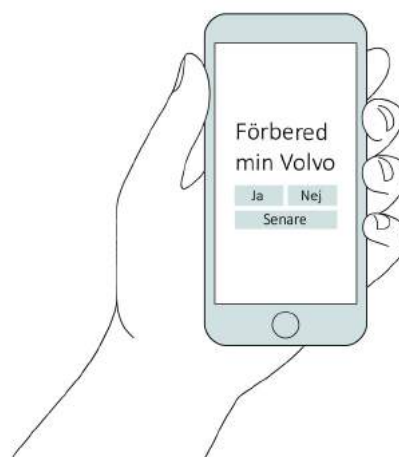


Figure 10F. Based on previous use patterns, VOC can be aware of when the user is likely to drive the car and make suggestion and prepare the car for the user.

10.4.2 VOC represents the user's car

Several ideas emerged on how to bridge the "gap" that the users experienced between the VOC app and the car, for example that they didn't experience their specific car when looking at the app and hence didn't get the kind of personal experience many of them wished for. One way to achieve a more personal VOC experience is to provide the feeling of the app presenting information on and control over the user's specific car. Some ideas on how to achieve this include providing a closer resemblance to the actual car, i.e. not showing it as a generic icon but instead visualizing the specific car model with the correct color etc., and make further efforts to reproduce the atmosphere of having a luxurious quality car.

Furthermore, the idea to provide a clear overview of included functions and add-on services in the specific

car was discussed. Since both car and VOC are likely to include more functionality in the next few years, this in itself is also thought to provide a closer feeling to the car, such as if the user was able to register washer fluid level, tire pressure, and fine-tune the temperature in the car through VOC. Another thought was that enabling the user to follow the car in real-time in the app would bridge the gap between the app and the car, compared to today where the user only sees the position of the car when parked. To actually see the car is believed to cause more of a “my car” experience in VOC. Additionally, augmented reality technology could be used in VOC, where the virtual information about the car and its surroundings can be overlaid on the real world. Examples include enabling the user to “scan” a parking lot in order to find the car instead of looking at the map (see figure 10G), or enabling the user to use VOC in order to “scan” the car to see if everything is OK or needs attention.

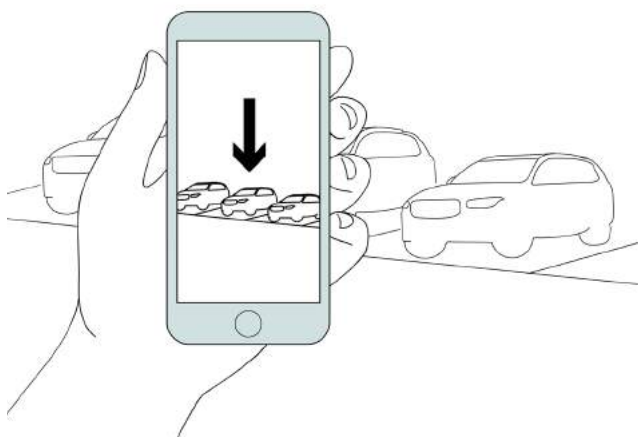


Figure 10G. The idea to enable the user to “scan” a parking lot in order to find the car instead of looking at a map.

Another way of connecting the VOC app more to the car could be to integrate the app with the infotainment system to a higher degree. For instance, allowing the user to control the digital content and software in the car through VOC, for instance download and initiate updates or access the navigation system, would allow to make changes in the car while comfortably sitting in the sofa at home. Controlling the digital content could mean to widen the send-to-car-functionality, so that it in addition to sending a destination to the navigation system also includes music, podcasts and such. Taking it even further, the digital content could be accessible in the car automatically without the need to manually initiate the send-to-car-command.

10.4.3 Travel planner

A common theme among the ideas concerned enabling the user to prepare trips or routes in VOC. All in all, these ideas meant that VOC can enhance the car experience by being an extension of its navigation system; allowing

the user to start planning a route in VOC which is then taken over by the navigations system in the car. Thereby the enjoyment of an upcoming journey can be initiated before setting of the trip. The user can start the planning at home, and then carry on and make changes while driving (see figure 10H). It is considered important to enable the user to have overview and the possibility to easily edit the plan meanwhile driving, since needs can change during a journey. In short, these ideas constitute a type of travel planner, which can be useful both for everyday driving and leisure driving.

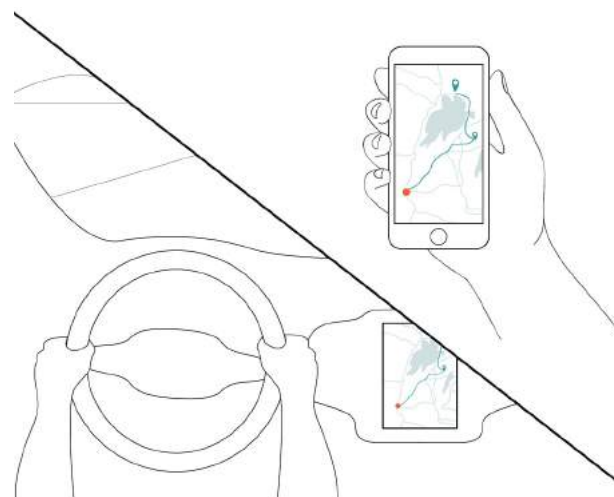


Figure 10H. As a travel planner VOC can be an extension of the car’s navigation system, allowing the user to create and edit travel plans either in VOC or in the car while driving.

Being an extension of the car’s navigation system, VOC enables the user to plan the route in advance similarly to using it in the car; setting destinations, plan stops along the way, save POI:s (Points of Interest), and name favorite spots on the map. In addition, more map functionality such as showing restaurants, rest areas, and pretty sights were also thought to provide a useful and enjoyable travel planner. The importance of being able to filter out what is shown on the map was emphasized. Aiding the user in the choice of which route to take was also discussed. Instead of only showing options based on estimated mileage and time, VOC could provide alternatives based on different criteria; fastest, safest, main roads or small roads etc. One thought was a kind of forum for VOC users to share travel inspiration, road trip tips and ratings with each other. These are examples of features that might be of benefit during leisure trips.

In a near future, it is likely that VOC as well as the in-car navigation system are able to keep track on external factors outside the car, such as weather, other cars, road conditions, traffic situation, and so on (see figure 10I). This information can be utilized in order to forewarn the user if a different route than normal is required, or if the travel plans need to be changed. This comes in handy

regardless if the user is commuting or road tripping, and since VOC and the navigation system are aware of the traffic flow it can guide the driver to the least congested route to the destination.

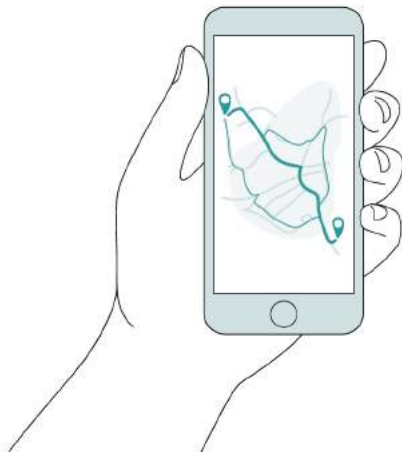


Figure 10I. The user can be guided to the least congested route, either by VOC or the navigation system in the car.

When it comes to everyday commute, the travel planner should, in addition to guiding the user to the fastest way to work, also help the user with other things, such as finding an available parking spot or the nearest or cheapest refueling station. Further, as described before, it is likely that some car drivers will look for alternative means of transport in the future, for example for sustainability reasons. One possibility is to use public transport for a part of the commute trip, such as driving the car to a connection point and then take the bus, train or car-pool the rest of the way to work. Here, VOC could support the user by coordinating the trip as a whole, including the departure time and possible delays of the public transport.

When ideating around the idea of a travel planner, the importance of considering the social aspects of both commuting and road tripping were brought up. In relation to facilitating car sharing or carpooling as mentioned before, VOC could aid in coordinating who should be picked up, when and where, and in what order. A temporary link could be sent to intended passengers, so that they can follow the position of the car and get an estimation of when they will be picked up. When planning a longer trip with several people, the travel planner can allow for the travellers to contribute with proposals for destinations and detours along the way. In line with this, the travel plan should be possible to share with other people, including non VOC users.

10.4.4 A unitary Volvo experience

In concordance with expressed desires in the user study to have all car-related things gathered in one place, some ideas concerned various ways to achieve a coherent

and unified experience of VOC, the car, and the Volvo Cars brand. Today, the users need different accounts for different things, for example there is a Volvo ID for VOC and My Volvo on the web. The idea is to merge these into one single account where the users have access to everything concerning their car, including for example the owner's manual and customer support, in order to provide a better overview. In doing this, there is an opportunity for Volvo Cars to utilize VOC in order to directly communicate with the users, either to inform, receive feedback, or for commercial purposes. However, it is important to consider what the users would gain from this in order to secure a pleasant user experience. For example, this could enable users to get in contact with the company and communicate their opinions and wishes, hence providing a more direct communication channel between customers and company.

One specific idea that followed was to let VOC assist the user in handling car service bookings. This could include to notify the user when it is time for car service in the car (see figure 10J). VOC can fetch the data from the car and show the user how long it is before it is time for car service. VOC can even propose a date, time and station based on the user's calendar, position and next available time, and provide a direct link to the car service station so that the booking can take place directly in the app, removing the need to look everything up by yourself. Furthermore, VOC can guide the user to the station, provide information about what will be done to the car and how much it will cost. Afterwards, the user could be able to view the service history in the VOC app.

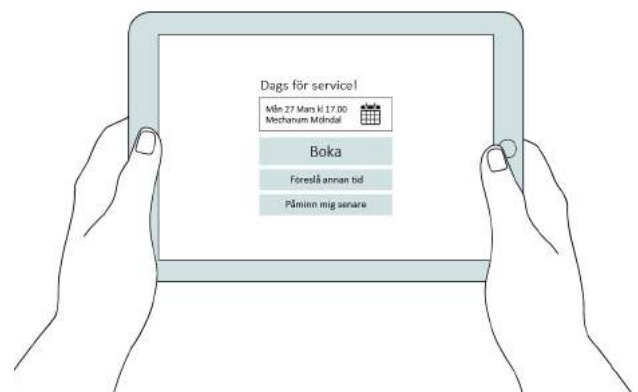


Figure 10J. VOC can assist the user in making car service bookings.

10.4.5 Premium services

Another theme during ideation addressed enhancing the VOC experience by making it feel more luxurious. In line with developing cars for the premium segment, the level of service should follow. As a premium car owner and customer you might expect a certain level of convenient services that matches the premium level

of your car. The overall idea was to make VOC a key actor in providing different services linked to the car. For example a temporary access key could be given away through VOC, which would lead to a range of possibilities for collaboration with other actors in order to provide convenience and pleasant experiences. The general thought was that premium customers want to avoid unpleasant and inconvenient activities to a greater extent than others, for example cleaning and refueling the car. If temporary access can be given to the car, such chores could be done by cooperating enterprises to Volvo. Moreover, utilizing the possibility of a temporary access key, the car can be picked up and returned, for instance by service technicians so that the users do not have to drive their car to the car service station. This could also lead to more convenience services similar to the test round with 'Linäs matkasse', where VOC users could get food, dry cleaning, parcels and such delivered directly in the car.

10.4.6 Eco-guidance

The eco-guidance ideas go hand in hand with the users' self-image of being efficient, cost aware and environmentally sustainable. As mentioned before, the idea of altering the current driving journal in order to present the data in a more graspable and useful way for the users came up when ideating around an improved after drive experience. Today, the driving journal comes in handy when the user wants to see average fuel consumption and covered mileage, for example for extracting data when reporting a business trip. However, the data is presented as a list of units and numbers. The idea is to compile and transform the data into visual statistics which make the information more understandable, enabling the user to evaluate driving habits and comparing different trips more easily (see figure 10K).

However, detailed information and raw data can still be included in VOC. In order to assist the users from both an economic and sustainable standpoint, VOC could



Figure 10K. VOC can compile information in a way that assists the user in evaluating and comparing different car trips.

advise them on how to improve their driving behavior in order to reduce their fuel consumption and CO₂ emissions based on this data. Visual design can make it easier to get an overview and more convenient and easy to comprehend.

10.4.7 On the road

As a result of ideating around the car journey as a whole, some ideas concerned the in-car experience. Many ideas concerned how the drive itself can be improved, although not necessarily by or through VOC. However, one idea about VOC specifically was that it could function as a remote control in the car, allowing either the driver or the passengers to control media services and displays from a smart device. This matches the idea of the car as a place for entertainment, especially during longer trips and in social situations. Parents can be relieved by a system that engages and entertains the children during the drive; an idea about utilizing augmented reality in order to enhance the car experience was discussed, for example by learning about the surroundings. The car can give suggestions about ongoing activities and attractions along the way and by that encourage the user to do something fun.

10.5 ILLUSTRATING HOW THE USER EXPERIENCE VISION WAS USED

In this section, two of the ideas presented earlier are chosen as examples in order to illustrate how the user experience vision (presented in chapter 9) was used to guide the development of VOC towards a desirable user experience.

In figure 10L, the first example illustrates a scenario when the user is having breakfast and is about to take a routine drive to work. According to previous findings many users have difficulties remembering to carry out certain task with VOC as a consequence of their busy everyday life, such as pre-heat the car, which causes negative emotions. Therefore, a solution was created that goes in line with the user experience values to simplify and enrich everyday life and enhance and enrich the car experience. In this scenario, VOC notifies the user with a suggestion to prepare the car (which includes all the user's personal car settings and preferences); a task that the user can perform directly in the app by one single command. This behavior of VOC would be compatible with several key points presented in chapter 9, for example proactive but the control remain with the user and remind and notify but not interfere. VOC notifies the user as part of having an assisting behavior, whilst the user keeps control by executing the final action. VOC provides the notification at the right time when the information makes sense in order to not interfere.

The other example in figure 10L illustrates when the user is about to take a routine drive to work, and someone else has used the car before. Here, VOC aids the user by removing the need for the tedious task to redo all the settings, such as mirrors, seating, in-car climate, and infotainment system. Again, the solution was created in line with the user experience value to simplify and enrich everyday life and enhance and enrich the car experience. Since VOC always carries the preferences of the user it aims to provide a personal in-car experience for each drive, regardless if the car is shared between multiple users. This goes in line with the key point to provide a feeling that the car is prepared for the user and that is personal yet not excluding.

10.6 DISCUSSION

The ideation sessions resulted in a range of ideas concerning how the user experience of VOC can be

improved in interplay with the car and according to the user experience values. The ideas varied between more specific and more holistic, but overall the ideas were in line with the focus on exploring what a smarter and more assistive VOC could mean. Although focusing the ideation around the car journey generated a lot of ideas, it was considered important to also look into how VOC can be improved in other car-related situations, such as when booking car service. As a consequence of ideating around the car journey as a whole, some ideas concerned how the experience of the drive itself can be improved. The current VOC doesn't include the drive but these ideas show opportunities for improving the car experience as a whole. Considering how the drive experience can be improved is part of the car experience; hence it concerns the VOC experience as well.

Regarding the ideas, one might argue that there is a contradiction between expanding the car's navigation



Remind and notify but not interfere

"My problem is to remember. Sometimes I put reminders on my phone to remember to start the heater in the afternoon."

The car is prepared for the user

"I want VOC to learn about my preferences. I do not want to spend time to make the settings every time."

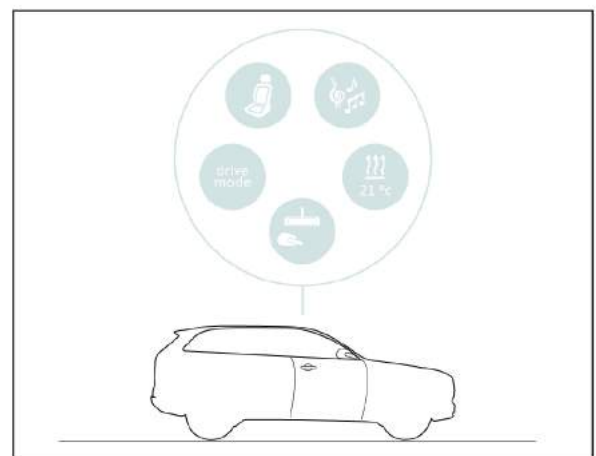
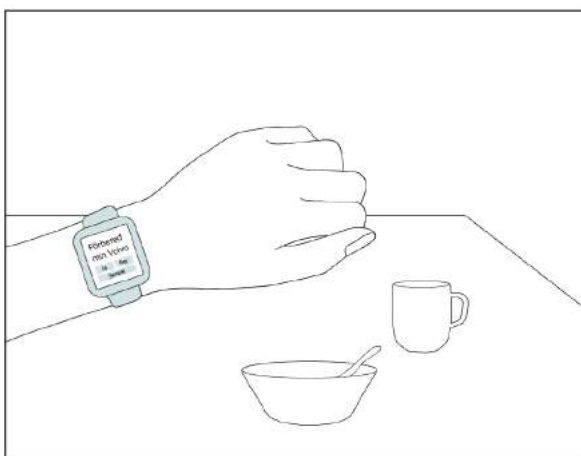


Figure 10L. These two examples illustrate how the user experience vision, values, and key points can guide the concept development towards a common direction. Each example correlates to a quote from a participant in the user study. In the first example to the left, VOC notifies the user with a suggestion to prepare the car directly within the app, based on previous use patterns. The example to the right shows how VOC is carrying the preferences of the user to provide a personal car experience.

system into VOC and letting VOC collaborate with other apps. One might question why the navigation should be brought into VOC, instead of utilizing any other navigation app and bring that into the car. VOC is considered to have a great benefit due to its connection to the car and access to driving data and car status, which is an advantage compared to other navigation apps. Furthermore, previous findings show that users appreciate having different functionality gathered and not being forced to switch between different systems and applications. Hence, if the users already have paid for the navigation system in the car it is a natural continuation to provide a travel planner service within VOC to facilitate for the user and enrich the car experience. This assumes though that Volvo Cars stays in the forefront when it comes to navigation support systems. Again, it becomes evident that VOC's future strongly depends on other development of the car.

Another interesting question concerns the users' preference for using their smartphones. In a future scenario users are likely to presume they have access to their 'digital content' anywhere and anytime regardless of what device they use. If the infotainment system in the car doesn't provide this access, the risk is the users will turn to another smart device instead. In order to make the users want to use the in-car technology rather than use other smart devices that are brought into the car, it is vital to consider how the transition between the nomadic smart device and the infotainment system can come about smoothly and effortlessly. Also, in order to enable the user to access the digital content easily, another important thing is to consider the coherency between the different systems. If the infotainment system is experienced as difficult to use and understand, or if the systems are very dissimilar in terms of user interface design and interaction, the user might still prefer to turn

to the system s(he) is more accustomed to, which is highly likely to be the smart device.

According to an experience driven approach, the ideation and concept development was concentrated on how the intended user experience can be achieved based on what value VOC could provide the users. Nevertheless, many ideas took the form of proposed features and functionality, which were considered unavoidable since those are building blocks for creating the experience in the first place. However, due to the time scope of the project, it was not possible to evaluate the early concepts against each other or to explore possible combinations. The concepts do not necessary compete against each other since they are not believed to lead to the intended user experience on their own behalf. Instead, a combination of useful functionality, together with the holistic concept and behavior of a smart and assistive VOC, are believed to achieve this.

Within the limited project time it was not possible to create a complete, final concept for VOC. Instead focus was on providing a holistic understanding and a user experience vision for VOC which could be accomplished within a near future. Therefore, instead of finalizing one of the early concepts, several ideas were used to embody the vision for a final user experience assessment. In line with the examples provided in section 10.5, the ideas were compared to the user experience values and key points, and thereafter put into context by means of different scenarios. Thereby the overall concept of a smart and assistive VOC could be assessed, and at the same time a selection of ideas could be further explored. Therefore with the aim of getting an early indication of whether or not the user experience vision could be achieved, a final study was conducted.

11

ASSESSING THE VISION

This chapter describes the final user experience assessment conducted in the project, including purpose and aim, method and procedure, findings, implications, and conclusions.

11.1 PURPOSE AND AIM

With the aim of assessing the user experience vision, a final study was conducted. The goal was to make an early assessment of the intended user experience and to get an indication of whether or not the user experience values could be achieved. The study aimed to gain insights on the users' initial reactions and attitudes towards the presented concept and towards the level of product smartness incorporated in VOC. Also, the assessment was thought to provide recommendations for future work.

11.2 METHOD AND PROCEDURE

The user experience assessment study was carried out with a more quantitative approach, by sending out two stand-alone storyboards depicting different aspects of a smart and assisting VOC concept described in two different stories. The storyboards were accompanied by an online questionnaire, where 46 VOC users were asked to rate both the present VOC and the new concept as presented in the storyboards on a number of aspects concerning user experience. In this way, it was possible to reach out to many participants in a resource and time efficient way.

11.2.1 Storyboards

In order to depict the intended user experience of a smart and assistive VOC, two storyboards were created where the smart behavior and a selection of ideas were exemplified in two stories showing how VOC can be used in different scenarios. The two storyboards depicted the same VOC but for different car journey, which enabled the participants to be introduced to different functionalities. The first story was about how VOC assist the user in everyday life and during commute to work, while the second story described a leisure trip where VOC helps out with travel planning etc. The storyboards can be seen in their entirety, i.e. as presented to the respondents, in appendix IV and V.

There are two different approaches to presenting storyboards; either show all images simultaneously or present it as a slideshow where the images are shown sequentially, one after another (Buxton, 2007). Since the storyboards were sent out to the respondents digitally, the slideshow approach was chosen. This also enabled to tell the story in simple illustrations (see figure 11A), text, as well as voice narration. This was done in order to enable the participants to understand the story by looking, reading,

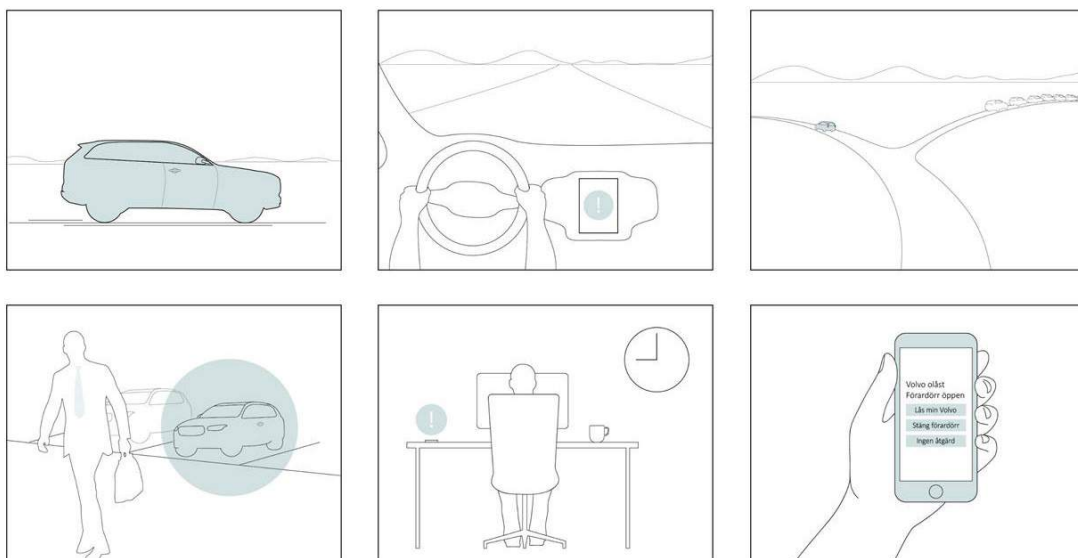


Figure 11A. Some examples of the images shown in storyboard 1, depicting VOC in an everyday life scenario.

and listening. Also, by including voice narration it was thought to increase the chance of the participants actually taking part of the whole story. Storyboards were used to support the participants in envisioning themselves to use the new VOC concept and imagine what value it would bring into their lives. Both stories begun by introducing the participants to the year 2020, and describing that the cars in general have a higher degree of functionality, connectivity, and autonomy compared to today. VOC was said to include all the current functionality as well as new functions and behavior.

As described previously, the early concepts were created in order to exemplify functionality aspects as well as making it easier to embody the smart behavior incorporated in the new VOC. Due to a wish to maintain an appropriate length of each storyboard, a selection among the ideas had to be made. The user experience vision (presented in chapter 9) was used as guidance, both when selecting the ideas and when incorporating the smart behavior in VOC. Although all the early concepts were designed in line with the user experience vision, some ideas were considered more supportive of the smart behavior and thereby more suitable for conveying in the form of a storyboard. Also, it assured that the early concepts chosen for the storyboards could be combined to fit into a user experience journey that was presented in the storyboards. In addition, since the assessment was supposed to provide an indication on the holistic experience of the new VOC concept, it was prioritized to touch upon a range of concept ideas rather than present a few ideas in detail.

Storyboard 1: Volvo On Call in everyday life

The first story was about how VOC actively assists the user in everyday life by providing notifications and warnings as well as making suggestions. This was believed to be central in the new VOC and a good way of displaying its smart behavior. The following aspects and ideas were included in the first storyboard:

- VOC is accessible in multiple devices (smartphone, tablet);
- Suggestion to prepare the car in the form of a notification, based on previous use patterns;
- The car prepares by adjusting seat settings, climate, music, etcetera;
- The possibility to postpone the suggestion to prepare the car;
- The car welcomes the user by lighting up and unlocking itself;
- Seamless digital transition which is initiated when the car senses the presence of the user;
- Smart and context-aware navigation system which warns about traffic situation and suggests a different route;

- Getting a warning that the car is unlocked and a door is open, the user is given the possibility to lock the car and close car doors directly in the notification;
- Checking the least congested route home within the VOC app;
- Reminder to book car service with a proposed time and date according to the user's calendar, which can be accepted or declined directly in the notification;
- Information about the car is shared between family members within the VOC app

Storyboard 2: Volvo On Call during a leisure trip

The second story depicted how VOC can aid the user when planning a leisure trip with the car, as well as during and after the trip. Again, the smart behavior of VOC was depicted throughout the story, which also illustrated some ideas of functionality:

- VOC is accessible in multiple devices (smartphone, tablet, smart watch);
- Travel planner functionality, including sharing the travel plan and the car's position with other people;
- Suggestion to prepare the car in the form of a notification, based on travel plan;
- Seamless digital transition which is initiated when the car senses the presence of the user;
- The navigation system is extended into VOC, and the user is able to make changes to the travel plan in the car as well as in a smart device;
- Receiving a warning about low fuel level, the car proposes several alternative fuel stations;
- VOC provides compiled information about the trips, which enables the user to compare different aspects.

11.2.2 Questionnaire

The respondents were guided through the assessment process and were asked to rate and comment on different aspects linked to the user experience vision alternately to taking part of the storyboards, one at the time.

First, the respondents were asked to rate their experience of the current VOC. This was done in order to enable comparison between the current and the new VOC concept. After taking part of the first storyboard (VOC in everyday life), the respondents were asked about their first impression and whether or not they would like to use the presented VOC concept. They were also asked about what they liked and disliked the most. Then, the procedure was repeated for the second storyboard (VOC during a leisure trip). As a next step the participants were asked to consider the new VOC concept as a whole, instead of as two separate stories. They were asked to rate the new VOC concept in the same way as they had the current

one. Further they were asked whether they preferred the current or the new concept regarding different aspects linked to the intended user experience. At the end of the questionnaire, the respondents were asked to rate the method of assessment as well. The questionnaire can be found in its entirety in appendix VI.

When designing the ratings in the questionnaire, the user experience vision (including values and key points) was used as a basis. Different words and statements were carefully selected with the aim of giving an indication of whether or not the user experience values could be achieved through VOC. For example, the words “useful”, “simple”, “helpful” and “fun” were chosen to assess the value of simplifying and enriching everyday life. Similarly, the statements “I experience VOC as an extension of my car” and “I believe VOC makes it more fun to have a Volvo” were chosen to assess the value of extending and enriching the car experience.

The ratings were given the form of semantic word scales according to the semantic differential technique, which involves presenting pairs of opposite adjectives at either end of a scale (cf. Tullis & Albert, 2013). As explained, the word pairs were chosen in accordance with the intended user experience, consisting of for instance ordinary – exclusive, complicated – simple, and unnecessary – useful, and the respondents were instructed to mark the point on the scale they believed described VOC the best (see figure 11D).

In addition, Likert scales were used, a measurement tool where the respondents rate their level of agreement with a number of statements on a scale usually ranging from “I completely disagree” to “I completely agree” (Tullis & Albert, 2013). The statements were based on previous findings as well as issues that were considered important for assessing whether or not the intended user experience is a viable goal (see figure 11E). Furthermore, the participants were given the possibility to comment freely throughout the questionnaire. This was done in order to make it possible to relate some of the comments to the ratings and was a way of finding possible explanations for why the participants gave the ratings they did.

11.2.3 Participants

Once more, the participants of the study were recruited from Volvo Cars. Hence, they were all Volvo Cars employees with rather high interest in and knowledge of technology. They were all VOC users and out of the 46 participants, 35 % were female (16 persons) and 65 % were male (30 persons). Most of the respondents had been using VOC for more than two years (72 %), and none of them had used VOC for less than 4 months.

11.3 FINDINGS

This section presents the findings from the user experience assessment. First, the findings related to the comparison between the current and new VOC are presented. Then, ratings and findings regarding the user experience of the new concept are described, both regarding functionality, behavior, and value-bringing aspects.

11.3.1 Comparison between the current and new VOC

By asking the respondents to rate both the current and the new VOC regarding the same aspects, it was possible to compare their answers in order to see how their opinion about VOC varied. To begin with, when looking at the ratings given to the overall experience of the current VOC and the new VOC presented in the storyboards, the new VOC got higher rates than the current; a mean value of 8.5 compared to 7.1 (see figure 11B). Also, there is a higher concentration of ratings towards the higher score for the new concept, and more scattered responses for the current. However, in accordance with the previous user study, the ratings of the current VOC concept are rather high as they are.

After taking part of the two storyboards, the respondents were explicitly asked to choose between the current and the new VOC concept regarding four statements (see figure 11C). The results show that there was a clear preference for the new VOC for all statements. The majority of the respondents replied that they would rather use the new VOC than the current, and that they believed the new concept would provide the most positive experience. Moreover, the new concept was believed to simplify and enrich their everyday life to a greater extent than the current VOC which indicates that the new VOC is more likely to achieve the user experience values than the current concept.

An indication of how the user experience of VOC would possibly differ between the current and the new VOC is provided by the results from the semantic word scales. In order to enable comparison of the results, the mean value of the scores for both the current and the new VOC was calculated. The results show marginal differences regarding some of the word pairs with a tendency towards the positive side for the new VOC concept (see figure 11D). However, the mean scores for some of the words have increased noticeably, with almost one point each on the five-point scale (see the three markings in figure 11D). These changes show that the respondents rated the new VOC as more convenient, helpful, and fun compared to the current VOC, which goes in conformity with the intended user experience.

Rating of the overall experience of VOC

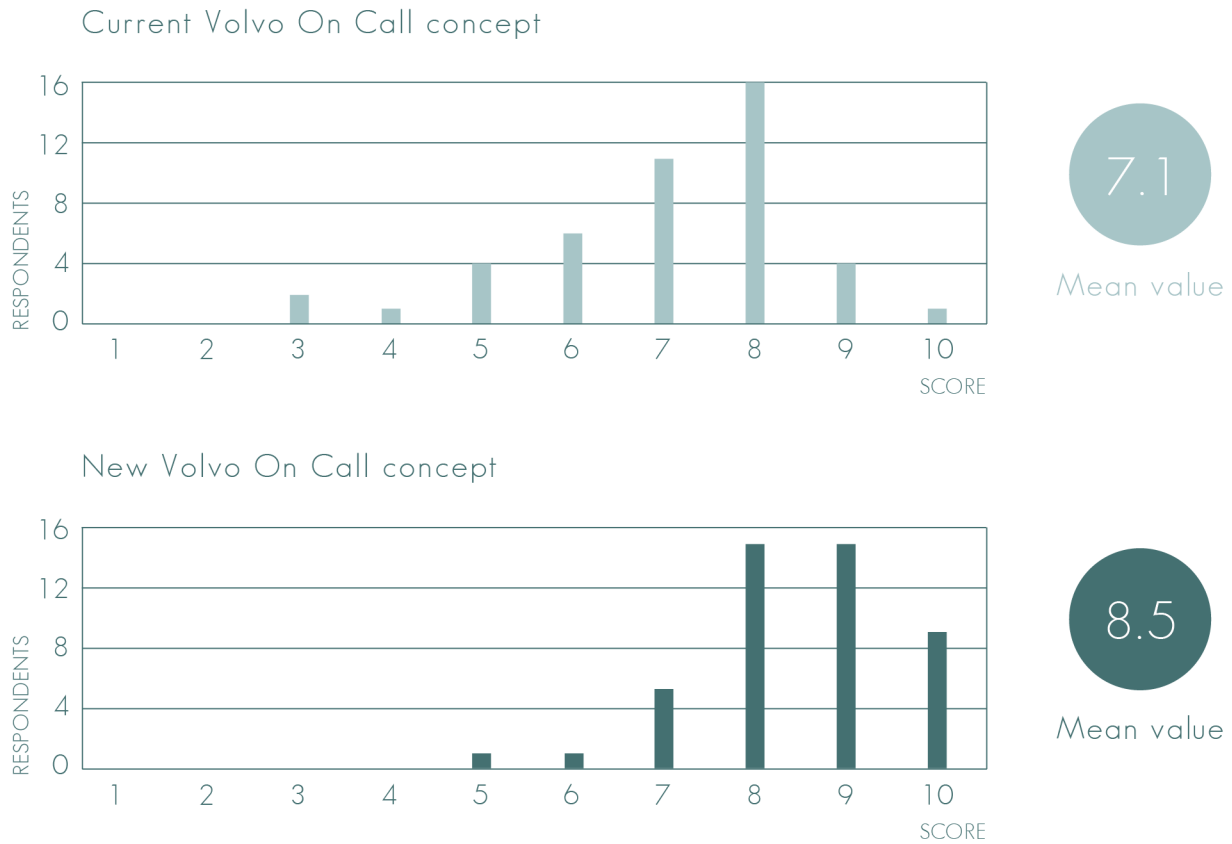


Figure 11B. Diagrams showing ratings of the overall experience of the current VOC, and the overall impression of the new VOC concept.

Comparison of the current and new VOC

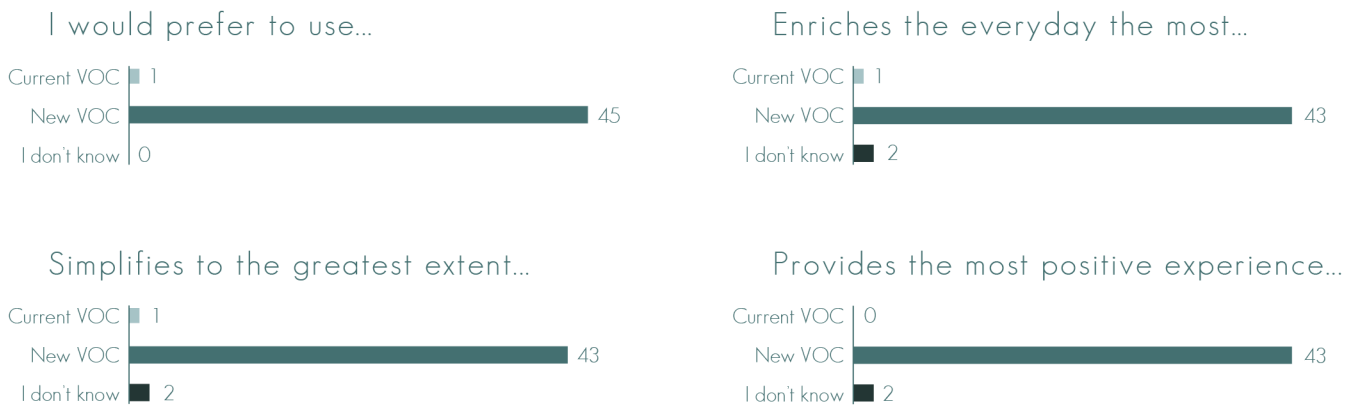


Figure 11C. When explicitly asked to choose between the current and the new VOC, the great majority of the respondents preferred the new concept.

Semantic scale results

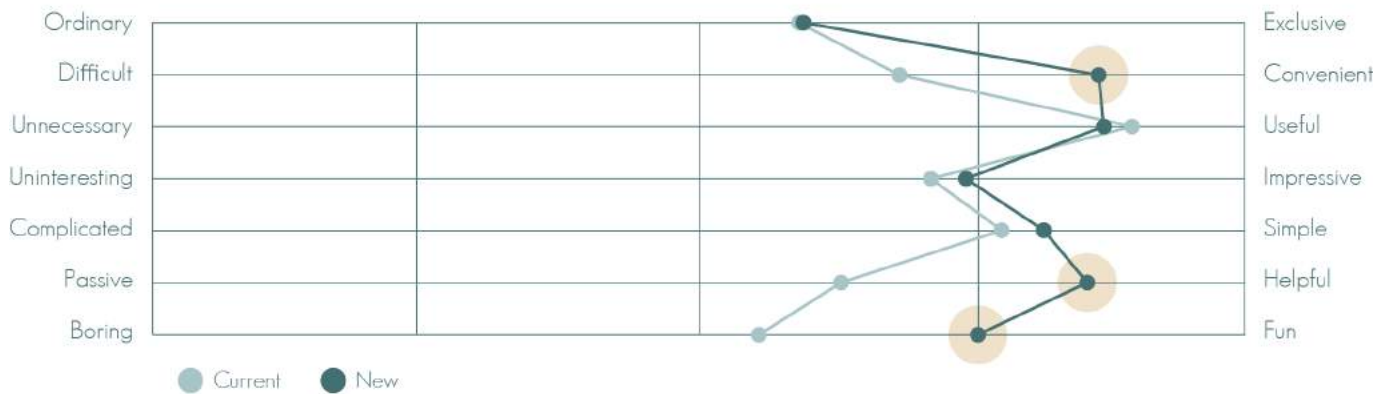


Figure 11D. Mean values of the semantic scale scores of both the current and the new VOC.

Likert scale results



Figure 11E. Mean values of how much the respondents agreed or disagreed with the statements in the Likert scale

When it comes to the Likert scales, where the respondents were asked to take a stand on a selection of statements, the results were similar to the semantic scales; the mean values were slightly more positive for the new VOC concept. Again, some mean values changed more significantly compared to the others (see the markings in figure 11E). For example, the participants agreed with the statement “I believe VOC enriches my car experience to a great extent” to a higher degree regarding the new VOC compared to the current. Also, the respondents agreed with the statement “VOC fulfills my expectations” to a greater extent regarding the new concept. This can be interpreted as if the participants believed that their expectations on the future VOC is fulfilled by the new concept to a higher degree than the current VOC concept fulfills their expectations of today.

Furthermore, the respondents seemed to think that the new VOC would make them feel safer, which is interesting since no effort were explicitly put on improving the safety aspects of VOC in this project. In addition, the change of mean value for the last statement, “I think VOC disrupts me too much”, indicates that the new VOC is perceived to be more likely to disturb the user compared to the current VOC. This was an expected finding, as a result of introducing a more active VOC which provides more and a higher frequency of notifications. However, since this concern is evident already at this an early stage, i.e. when the VOC concept is presented on this ‘primitive’ level, the importance of considering this issue when developing VOC further is clearly underlined. A concern for being disrupted was also highlighted in the comments made by the respondents. These will be presented in the following sections.

All in all, the results from the ratings showed that the respondents seemed to prefer the new VOC compared to the current. In addition, the new concept was given higher rates regarding most aspects linked to the intended user experience. This is indicated by the fact that the explicit comparison between the current and the new VOC matches the ratings given by the respondents regarding the storyboards in separate sections of the questionnaire.

11.3.2 The user experience of the new VOC

When looking at the comments made by the respondents, it became clear that the majority believed that the new VOC would provide an overall improved user experience. The respondents had positive attitudes towards a smarter and more assistive VOC. It was commonly expressed that the concept presented in the storyboards would be a natural continuation and viable further development of the current VOC. Hence, the assessment show – in accordance with previous findings – that the users were positive towards further developing VOC in this direction and that it goes well in hand with their expectations for the future. One comment was:

“This is a perfect continuation of VOC; useful functions that are not created because it is technically possible, but because they provide added value.”

Although the comments indicated that this is a feasible way forward, the results also show that the respondents have very high expectations on what VOC can evolve into by the year 2020. Some respondents found the concept depicted in the storyboards desirable much sooner. The expectations on VOC in 2020 seem to require new and

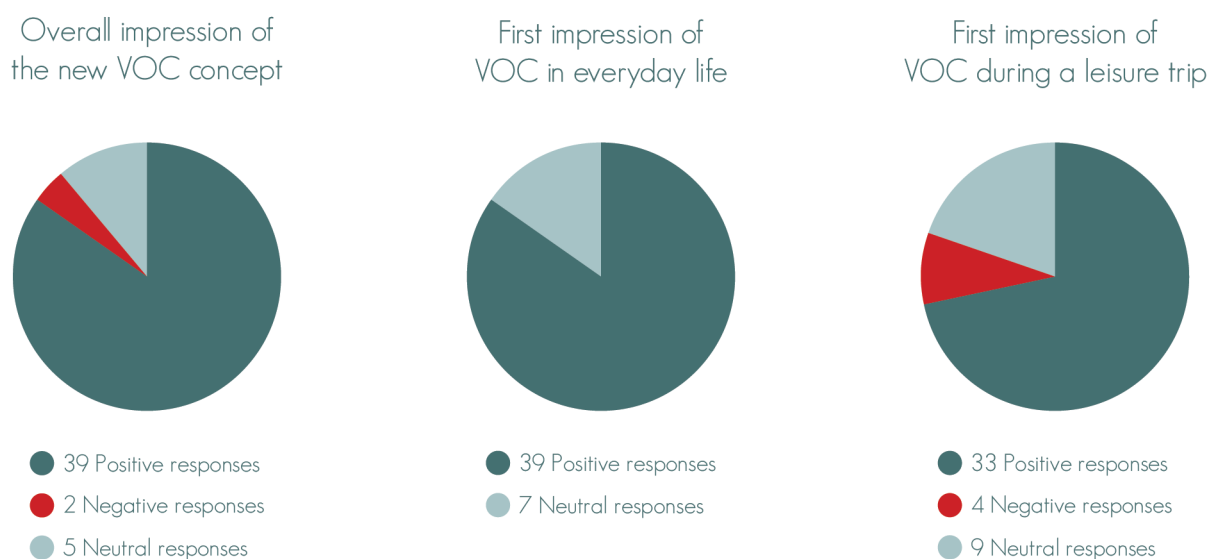


Figure 11F. The distribution of positive, negative, or neutral impressions of the new VOC concept as a whole, as well as in the use cases presented in the storyboards.

more ground-breaking functionality which give more of a 'wow experience', as some respondents were convinced that a number of the features will be 'must haves' before the year of 2020. One comment was:

"I would be disappointed if this is all that would happen with VOC within 5 years."

Since the new VOC concept was evaluated both as a whole and according to the two different use cases presented in the storyboards, the overall impression of the new VOC as a whole could be compared to the respondents' first impression connected to each storyboard (see figure 11F). Regarding the new VOC concept as a whole, the results show that the majority had a positive overall impression, but also that five respondents were neutral and two were negative towards it (see the first pie chart in figure 11F). In addition, the results show that none of the respondents had a negative first impression of the storyboard depicting VOC in everyday life (see the second pie chart in figure 11F). However, almost a third (28 %) of the respondents either had a neutral or negative reaction towards VOC during a leisure trip (see the third pie chart in figure 11F).

A possible reason for the negative impressions is that some respondents highlighted that they don't think the concept includes enough novel and innovative functionality, especially when it comes to the second storyboard where VOC assist the user as a travel planner. They pointed out that the technology and functionality is available already today, and that it therefore should be possible to implement in VOC earlier than by the year 2020. Also, a few respondents pointed out that they already use similar services, such as social navigation apps, which they are satisfied with. However, although the new VOC concept wasn't perceived as sufficient in bringing a value of novelty, it was clear that the respondents appreciated the benefit of having everything collected in one place rather than switching between different apps as they are forced to do today. Another possible cause to why the second storyboard resulted in more neutral and negative impressions could be the fact that some respondents didn't think they would have use for VOC in this way for various reasons. This will be elaborated upon in the next sections.

11.3.3 Functionality and behavior of the new VOC

When studying the comments made by the respondents, it becomes clear that there are overall positive reactions towards both the functionality and behavior of the new VOC. The respondents expressed that they see substantial potential in the concept since it includes useful functions. The attitudes towards the compatibility of VOC were positive, as well as towards the close interplay between

VOC and the car, and the fact that the car functions more as a 'smart device'.

Regarding the smart and assistive behavior of VOC specifically, the respondents seemed to find this highly beneficial. The majority of the comments regarding this showed great appreciation for a VOC that is predictive, takes initiative, makes suggestions, and show alternatives, and the respondents like the fact that all they have to do is to accept or decline the suggestion. Positive reactions were also found regarding VOC adjusting to the user by taking individual routines and habits into account, as well as predicting the intention of the user. Further, the comments described the new VOC with words like synchronized, integrated, active, adaptive, intuitive, self-learning, updated, and supportive, which goes well in line with the intended user experience. One respondent pointed out the smart and assistive behavior as a reason to why VOC can be experienced differently compared to today:

"The system is perceived as more active and therefore becomes a support, rather than a tool like it is today."

Although there were predominantly positive feedback regarding the functionality and behavior, it became obvious that the respondents had different preferences when it came to product smartness (compare the focus group discussions). Whilst some respondents seemed concerned about possibly being disturbed by too many notifications and warnings, others expressed a desire for more notifications since they found them helpful. Some respondents even wanted a higher degree of autonomy, i.e. that VOC can take care of things on its own without asking for permission.

11.3.4 Perceived value: benefits and outcomes of using VOC

The majority of the participants expressed positive responses regarding the perceived value of the new VOC. The concept was believed to be convenient and helpful, as well as to facilitate everyday life and make the car ownership more pleasant. The functionality and smart behavior were thought to provide added value both to VOC and to the car, and were believed to solve everyday problems such as forgetting to start the heater. In addition, some respondents highlighted the value of being able to begin the journey before entering the car, for instance planning a trip, preparing the car, or getting traffic information. In addition, most respondents seemed positive towards using VOC in a more active way, and the majority answered that they would like to use the new VOC concept (see figure 11G).

However, as can be seen in figure 11G, there were four respondents who were unsure if they would want to use

the new VOC or not. Regarding VOC in everyday life, those persons commented that they are unsure due to integrity concerns, wishes for more novelty, or uncertainty of whether they would use it or not since they only use the current VOC occasionally. The persons who were unsure about using VOC during a leisure trip commented that they simply didn't like the idea and therefore wouldn't use it, or that they saw it as limited to holiday trips, which take place rarely in comparison to daily car drives.

Would you like to use the new VOC concept?

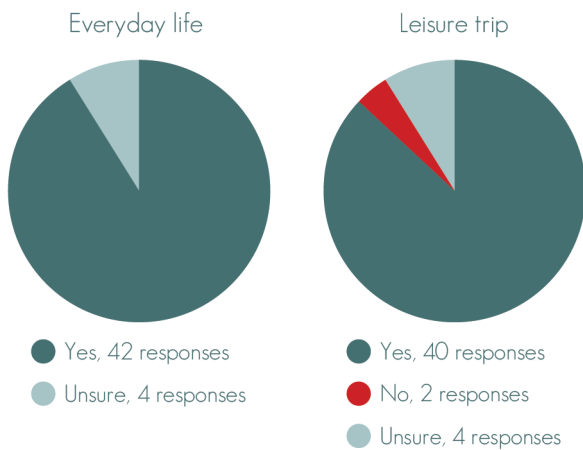


Figure 11G. The majority of the respondents want to use the new VOC concept.

Although many respondents pointed out that they were positive towards the travel planner and liked that the car's navigation system is available in VOC, some respondents didn't find this useful for them personally. The comments show that some want to be spontaneous and avoid planning vacations in detail, and in general find it stressful to be constantly connected or disturbed by notifications. There was also a concern that an active and assistive VOC would take focus from the trip itself. Unfortunately, the respondents who said that they wouldn't like to use VOC during a leisure trip didn't comment on their answer; hence, no explanation to their response could be found. However, it is likely that their concerns are similar to those who were unsure.

11.4 IMPLICATIONS

Several implications could be found in the results from the user experience assessment:

- **A smart and assistive VOC seems to be a viable way forward:** All in all, the assessment shows that the respondents had positive reactions towards a smart

and assistive VOC when it comes to functionality and behavior, as well as the expected outcome of using the concept in everyday situations. The new concept was thought to provide an improved user experience and was given higher ratings, both regarding the overall impression and certain aspects linked to the user experience vision, compared to the current VOC. The results show that a majority of the respondents preferred the new VOC, which indicates that this is a viable future concept for VOC which would be interesting to investigate further.

- **There are high expectations on what VOC could be by 2020:** Although the absolute majority of the respondents was positive towards the new VOC, a common opinion was that the concept didn't include enough novel and innovative functionality for the year 2020. This indicates that there are higher expectations on how VOC can evolve until then, and implies that the concept presented in the storyboards is considered desirable sooner than year 2020.
- **VOC compete with other apps and services:** The results show that some respondents found the travel planner functionality unsatisfying regarding the novelty aspect, since they already use this type of service today in the form of smartphone apps. This implicates that VOC would compete with established services to which the users are already accustomed. Hence, if this functionality would be introduced in VOC there is a challenge in making it so good that the users would prefer the VOC version instead of what they use today. Although the results show that the respondents appreciate the benefit of having everything collected in one place, this might not be enough to 'win them over'. However, the results show that integrating VOC with the car's navigation is considered desirable by most respondents, since it is considerably more convenient having it accessible at all times. In doing this, it is important to make sure to provide competitive functionality that provides a better experience than the competition does.
- **Users have different preferences regarding product smartness:** In line with findings from previous studies conducted in the project, the comments show that the respondents had different preferences, attitudes, concerns, and acceptance levels when it comes to different aspects of product smartness; control, integrity and data privacy, active (or disruptive) behavior, and autonomy. Again, this underlines the importance of studying this complex issue further in order to better understand the diversity of users and how to address this when developing VOC further.

11.5 DISCUSSION OF PROCEDURE

A central issue of this assessment was the challenge of evaluating the user experience of something that doesn't yet exist. In line with having the value and benefits of the experience as a starting point, the end result in this project was a user experience vision and a number of early concepts. Taking the development to a point where these could be turned into a prototype, which could be evaluated on a product level, i.e. with a user interface and interaction patterns, was outside the scope. Hence, the user experience needed to be presented for the respondents without having access to the actual product. In the end, it is believed that the method used for the assessment was a good way of gaining insights at this early stage of development.

One might question whether the respondents were able to comment on the new VOC from an experience point of view; in a sense, the respondents experienced the *thought* of using the new VOC rather than actually using it. One could also argue that the storyboards provided a simplified and flawless version of a reality where someone else experiences the new VOC; hence the ratings and comments are based on an experience that is not self-perceived and not fully realistic. In addition, it should be pointed out that the respondents were asked to compare the current VOC with a *vision* for a new concept with an intended user experience; hence when choosing between them it is easy to favor the vision, which might be the reason to the clean-cut results. However, a lot of effort was put into making it as easy as possible for the respondents to imagine what it would be like to use the new VOC. Also, it was made sure that aspects that might result in a negative response were incorporated in the storyboards. For example, in one of the storyboards VOC suggests an action at the wrong time, and the user has to postpone the notification for later. All in all, the findings from the assessment are believed to provide at least an indication for how VOC users might react to a smarter and more assistive VOC. They also hint that the proposed user experience values actually are achievable through a VOC concept with this behavior and functionality.

Although there are limitations in measuring user experience through ratings and numbers, this was considered necessary to achieve quantitative results from many respondents. Reaching out to a number of participants was believed to be the most suitable way of gaining insights on whether the development is heading in the right direction or not. In addition, there lies great value in enabling the respondents to be anonymous when rating the new VOC concept since social biases are reduced, being less critical due to the circumstance that students developed the concept. Furthermore, this initial indication of how the new concept is received by the users provides the possibility to check the viability of

this development path at an early stage, limiting the risk of developing a service that eventually turns out to be undesirable or badly fitted for the users and the context of use.

Regarding the validity of the assessment, it should be pointed out that the storyboards and questionnaire were sent out to the respondents as stand-alone documents. As a consequence, the respondents had to follow the instructions and interpret the questions, and in turn their answers and comments were interpreted. However, the questionnaire finished by letting the respondents rate to what degree they believed that their answers represented their opinions correctly, and whether or not they found it easy to comprehend the stories and the concept as presented in the storyboards. The majority of the respondents responded that they did (see figure 11H), which indicates that the results are a proper representation of their actual opinions about the new VOC concept.

I believe my responses represent my opinions correctly.

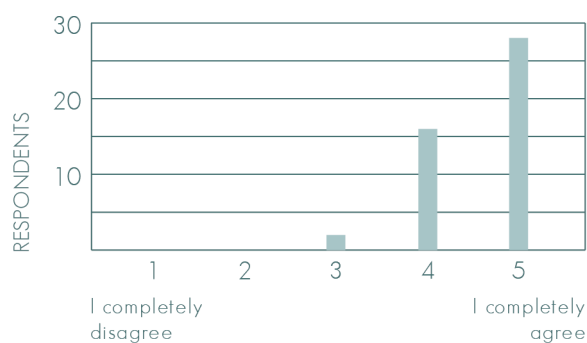


Figure 11H. The majority of the respondents believed their responses correspond well to their opinions.

When it comes to the reliability of the assessment, it should be highlighted that a range of factors could have affected the responses. This is a specific issue for evaluating user experience, since the experience itself is affected by the person's internal state as well as external factors. For example, if a respondent recently had a very bad experience with the current VOC, this might have affected the ratings given throughout the questionnaire. However, since the majority of the respondents had been using VOC for a longer period of time, this might not be an issue since the user experience had been evolving over time and was likely to be rather stable. Another circumstance that could have influenced the ratings of the new VOC concept was the fact that the respondents weren't informed that the new VOC concept would include more functionality than what was displayed in the two scenarios. Furthermore, when sending out the storyboards, the new VOC concept was called "the future VOC". Thus, it is possible that the choice of words could

have influenced the respondents' expectations before the test, such as expecting the concept to be more visionary due to existing in the "future", although 2020 is only four years ahead.

Although not completely statistically correct, calculating the mean values of the responses was considered sufficient enough for comparing the results from the assessment in order to get an indication of whether or not the user experience vision could be achieved. It was not possible to perform a statistical analysis within the scope of this project but such an analysis could shed light on a more detailed level, for example how the responses are distributed, whether or not there is correlation between certain aspects or concerns, and if explanatory patterns can be found. In line with people having different preferences regarding product smartness, it would be interesting to for instance further investigate if integrity concern is correlated to a low acceptance towards autonomy.

11.6 CONCLUSION

According to the user experience assessment, a smarter and more assistive VOC seems to be a desirable continuation of the current concept. The majority of the respondents preferred the new concept compared to the current, and the results show that the new concept provides an improved user experience according to the vision. However, it became clear that there are high expectations on the future of VOC, and that some users expect VOC to include more novelty than presented in the storyboards in year 2020. All in all, the findings implicate that making VOC smarter and more assistive is a viable path for further development which should be further explored. However, they also highlight the complex issue of product smartness; that people have different preferences and attitudes regarding a smarter and more active VOC. Hence, it is suggested that also this should be investigated more in-depth.

CONCLUDING CHAPTER

This report is finished by a discussion and conclusion presented in the upcoming chapter.

12

DISCUSSION AND CONCLUDING REMARKS

The following chapter elaborates on the project; results and future challenges, the approach and overall process, as well as recommendations for further work.

12.1 PROCESS AND METHODS - DESIGNING FOR EXPERIENCE

This section discusses how the chosen approach and overall process have influenced the project and intends to provide insights that can be useful for similar projects.

12.1.1 Two-phase process

The project had the broad aim to explore the user experience of the current VOC concept and opportunities for how it could be improved in the future. In line with having such a broad scope, it was important to initiate the project with an exploration phase since it wasn't specified in what direction VOC should be developed from the beginning. Therefore, it was decided to structure the project around a two-phase process, where the findings from the exploration phase should help to point out a suitable direction for the creation phase. As shown in figure 12A, the exploration phase had the car-VOC-user system as starting point when conducting the research, whilst keeping an open mind for the possibility that aspects outside this perspective could emerge.

However, when analyzing the findings from the user study it became clear that VOC faces a possible shift; the question was whether or not it should become a smart and assistive product, which would influence the entire user experience of VOC and make it more integrated with the car experience. This notion was taken into consideration when choosing the direction for the creation phase. Considering the scope of the project, it could have been more time efficient to choose a more analytical and narrow approach, and thereby focus on fewer aspects of user experience. However, since the introduction of smartness and assistance is believed to be a viable path for future development of VOC, there was a need for considering more factors. Therefore, the decision was made to study the current and future ecology of VOC in the creation phase (see figure 12A). This decision led to a broadened scope, which was necessary since user experience theory with a single-product and single-user focus was considered insufficient for studying the complex ecology of VOC and the different user experience aspects. Thereby the project took a strategic direction rather than operational, delivering a user experience vision rather than a well-defined and refined concept.

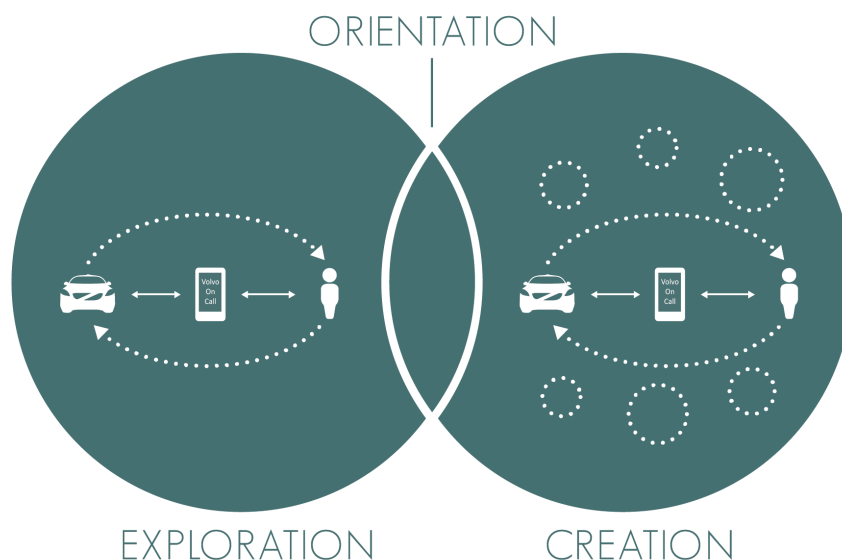


Figure 12A. An illustration of the two-phase process with different user experience focuses.

It can be concluded that maintaining a broad approach throughout the project helped to create a common ground for what kind of experience to design for. However, the inclusive perspective also required handling a considerable amount of information, data, ideas and thoughts, which entailed complexity and required time. In order to create a positive user experience it is vital to find ways to translate insights into actual product designs, and consequently it is not fruitful to only maintain a holistic approach. Therefore, for similar projects with longer duration, one might consider having a holistic and exploratory approach initially, and thereafter choosing an analytical approach in order to narrow down the scope and create a focus for development. However, due to the time limitation this stage was not reached in this master thesis project.

12.1.2 Combination of approaches

As discussed throughout the project, there are different strategies for achieving good user experience. According to the findings from the user study these strategies can be categorized in at least two different ways. One alternative when designing for experience is to have the product, in this case VOC, as starting point for the design process. Another alternative is to look beyond the product and its functionality and have the outcome of using the product, i.e. a user experience vision, as starting point when designing for experience (see figure 12B). Based on the insights from this project it is suggested to utilize both approaches in experience design projects, and iterate between them in order to shift perspective. It has proved advantageous in this project, since it bridges possible gaps between the vision and the prerequisites for achieving it.



Figure 12B. Illustration of two approaches; either having the product, its functionality, and its attributes, or the intended user experience and vision as starting point when designing for user experience.

Another benefit of working with both the product and the user experience vision as a base, is that everyone involved in the project strives for the same thing – to achieve the intended user experience. It could be argued that this is essential for being able to create a product or service that provides a coherent and unified user experience in the end. In addition, especially given the escalating dissemination of smart products and environments, this report underlines the importance of considering the product in relation to its ecology and reflecting on how 'the whole' contributes to the experience for the end user.

12.1.3 User research

In this report, it has been underlined that user experiences reside within the users rather than in the product itself. Consequently, an essential part of the project has been to include VOC users at various stages – in total 63 participants contributed with valuable insight throughout the process. Considerable effort was made in choosing suitable methods and tools to study and assess their experiences. However it is important to point out that due to circumstances in the recruitment process, the majority of the participants were employees at Volvo Cars and drove company cars.

Being an employee at Volvo Cars might result in biases which in turn affect the user experience, since VOC is a product developed and offered by the employer. Furthermore, it is very likely that employees at Volvo Cars have higher interest and more knowledge in cars and technology than other VOC users, since that's part of their profession. This circumstance, in combination with having some insight into the development process, might result in higher demands and expectations on VOC, and perhaps a greater acceptance of new technology.

Moreover, a consequence of having a company car is that the car is exchanged before the period when VOC is free of charge expires. Hence, most company car drivers don't pay for the VOC service. Additionally, the user study indicated that how a user relates to a company car differs from that when owning the car. Even though this doesn't necessarily mean that VOC is experienced differently, it should be considered when interpreting the results. A recommendation is therefore to continuously conduct user studies, focusing more on how VOC is experienced by car owners, paying customers, and people who aren't employed by Volvo Cars.

12.2 RESULTS, INSIGHTS, AND CHALLENGES

The following sections present a discussion evolving around the findings from the project, the future of VOC and upcoming challenges.

12.2.1 Was the aim achieved?

Owing to the extensive user study conducted in the exploration phase, the aim to explore the user experience of VOC, how it has evolved over time, and how it influences the car experience was achieved. In addition, throughout the activities and user studies possibilities for improvements and further development were identified. At the end of the project, users were invited to assess the intended user experience as expressed and depicted in the vision and the storyboards. The results provided an indication that the presented concept is a desirable continuation of the current VOC, and that the user experience values could be achieved through the concept. By involving users throughout the project, these findings and implications could aid decisions on the future of VOC.

This project has generated several deliverables. Firstly, the important findings and user insights developed in the different user studies conducted throughout the process have been thoroughly described in this report as well as presented at several occasions in parallel with the project. In addition to ideation based on the analysis, creating a user experience vision, and transforming and conceptualizing this into early concepts, the project was completed with trying out an experimental approach to evaluate and assess the results. Hence, except for resulting in traditional design deliverables, the project results also describe and propose a way of working with user experience design; the process that was planned and followed, and the approaches and methods used.

12.2.2 The future of Volvo On Call

As a consequence of working according to an experience driven approach, the end results in this project constitute a user experience vision and a number of early concepts. Although the vision is rather general, by combining it with some of the conceptual ideas it was possible to assess the user experience of the proposed VOC concept. Overarching user requirements could be identified and the assessment gave an indication that these were met by the presented concept. Due to the project time limitation, detailed requirements which appear at a product level, for instance requirements on usability and interface design, have remained outside the project scope. Hence, except for studying VOC holistically, it is important for future work to look closer at user needs and requirements on a more detailed level. The early concepts show various possibilities for what VOC could become, and the next step would be to evaluate the ideas to see if they are viable and whether some of them could be combined into a holistic concept. It is believed that VOC is and can be a scalable concept and some of the ideas and features presented in this report are possible to include in a future VOC.

Looking ahead, there are many potential changes in the product ecology which are important to consider when further developing VOC. The development towards a so called “smarter” society is evident and in line with the introduction of more smart products with mutual interrelations, VOC as well as the car need to adapt in order to fit into the product ecologies that will emerge. It is necessary to understand that the experience of VOC and the car occurs in relation to all other parts of the ecology, and hereby being able to know how to provide pleasant user experiences. Also, along with advances in technology development the VOC users’ attitudes towards product smartness might change compared to what was found in this project. An important question is how user attitudes and expectations on VOC will change as the progression of Internet of Things etcetera proceeds, and it is recommended to continuously conduct user studies in order to check how attitudes and opinions alter as time passes and smart products become more widespread and established on the market.

As well as anticipated changes to the product ecology at large, there are also expected changes in the automotive industry due to the development of autonomous, i.e. self-driving, cars. The fact that cars become more and more autonomous will in turn influence on the conditions and circumstances for how VOC should evolve. Therefore, it is essential to also consider what role VOC should play in a future scenario where self-driving cars exist, and make sure that the development of VOC doesn’t take a direction that contradicts the development of autonomous cars. It is clear that strategic decisions concerning the car will affect strategic decisions about VOC.

The future of autonomous cars is often pictured as if the cars are replaceable; that they drive around by their own and pick up people in order to drive them anywhere, a situation which resembles the taxi services of today. Although this makes the cars highly accessible, this scenario (together with other trends such as lower interest in ownership and increased sustainability awareness) suggests that car owning will potentially decrease. However, despite this there is an opportunity for Volvo Cars to utilize VOC in order to create pleasant and personalized car experiences. By enabling the users to carry their settings and preferences with them in VOC, as well as enabling them to access their digital content in the car, both the autonomous car experience and the Volvo Cars brand can be enhanced.

12.2.3 Remote user experience

The user experience of VOC can be described as elicited by a system where the app and the car interplay with each other. The user study showed that VOC and the car stand for single-product experiences, as well as a holistic

experience of the system as a whole. The users can reach the car through the VOC app, hence there is a ‘remote user experience’ of the car across distance. However, throughout the studies conducted in this project, it became evident that VOC was experienced more as a generic remote control rather than as a representation of a specific car. Hence, it could be questioned whether the users actually experience the car through the app, or if the remote car experience is something different than the car experience. During the creation phase, the development work partly focused on exploring whether the remote experience of the car could be turned into more of an extended car experience, by making the app represent the car to a greater extent using different means.

The notion of ‘remote user experience’ aroused during this project, and is a way to view the phenomenon of a user experience of one product through another. This is interesting in relation to how technology development is progressing, with increasing numbers of smart and connected products that co-exist in environments that are gradually merged into our lives. In a future scenario, systems or ecologies where one product can be remotely controlled and monitored, and thereby also experienced, through another is likely to increase. For example, there are similarities between the VOC-car-system and smart homes, which can learn and adjust automatically to its residents as well as being controlled through an app across distance. The phenomenon ‘remote user experience’ or ‘extended experience’ might be one way to describe what happens when a user experiences systems like these. Since no research or literature has been found on this notion, and due to the advances in technology development, this area is considered highly relevant to investigate further.

12.2.4 Challenges for further development

Although the viability of a smart and assistive VOC can be argued to be rather high as it is foremost based on technology that is available today, the concept puts demands on the car being equipped to a greater extent, for example with more sensors in order to support the collection of data. Also, it requires collaboration with third parties in order to have access to information on for instance traffic situation, weather, and departures of public transportation. In addition, the concept puts high demands on the products and services which it collaborates with, since harmony and seamlessness are essential for pleasurable user experiences. Hence, these demands need to be considered when determining the viability of the user experience vision and concept ideas presented in this report.

In the project, the notion of a smart and assistive VOC was explored, ideated around, and assessed. Although the findings imply that this is a viable path for future

development, there are other possible directions in which VOC can evolve. Except for the perspectives left aside in the orientation phase (i.e. utilizing VOC in order to strengthen the bond to the car or exploring what would happen if VOC is considered to provide the primary user experience), it was found that users become more and more accustomed to smart devices, such as wearables and other nomadic devices, and bring those into the car. Allowing for services such as Apple CarPlay goes in line with this, however this is somewhat contradicting the proposal to merge VOC with the car’s navigation system. It is important to take a stand on how to handle this; either effort could be put into making sure that the car, together with VOC, provides the best in-car experience, or the users could be allowed to use an optional smart device which can take over the car’s infotainment system, partially (as in CarPlay) or completely. There is an interesting contradiction here, which would benefit from being investigated further.

Throughout the studies conducted in the project, the diversity of user attitudes and concerns regarding product smartness has been evident. Although mapping out the differences among users has been outside the scope, there have been indications that this is a highly complex issue. For example, awareness of data safety is not necessarily linked to a low acceptance towards autonomy or a dislike of smart behavior. It is considered highly important to investigate this further, in order to gain more knowledge on how the introduction of smart behavior in VOC will be received by different users. For example, the smart behavior may need to be introduced gradually in order to allow people to get used to it, or perhaps the smart behavior should be optional so that it can be turned off by users who prefer a more passive VOC.

This project has identified an overarching challenge of improving the user experience of VOC and developing the concept further. The challenge is to find a balance between sustaining the highly appreciated simplicity of VOC, and introducing more functionality and a smart behavior. It should be pointed out that adding more features and functionality doesn’t necessarily guarantee a pleasant user experience. The studies imply that a common wish among the participants is to introduce more functionality, but not at the expense of simplicity. Another challenge is to maintain the simplicity whilst allowing VOC to handle multiple users. Although this was an important implication from the user study, it was excluded from the project scope due to time limitation. Likewise, the product ecology analysis showed clearly that the development of VOC must consider the fact that one car often is shared by multiple users. This suggests that the social aspect should be considered for further development of VOC, for instance how VOC could function in a social context with several family members or car drivers sharing the same car.

12.3 RECOMMENDATIONS FOR FUTURE WORK

To conclude the discussion, the following summary of recommendations is provided for future work:

- **Conduct user research continuously, foremost with people outside Volvo Cars** in order to further investigate the diversity of user attitudes and concerns regarding product smartness, and how these might change along with progression in technology development. It is highly recommended to study how VOC is experienced by non-Volvo Cars employees, Volvo car owners, and paying customers.
- **Determine the future purpose of VOC** in order to enable making a final decision on which direction the development of VOC should take. Although many answers and implications have been identified in this project, there are many things which need to be considered; such as how the progression of autonomous cars will influence the role of VOC.
- **Take the concept of a smart and assistive VOC further** by evaluating the viability of the different concept ideas, considering the costs of the demands that come with the concept. In addition, user needs and requirements should be investigated on product level, and the question of how VOC should handle multiple users is critical for further development. All in all, the feasibility of incorporating a smart behavior in VOC should be further examined.
- **Keep a combination of a holistic and analytical approach** when studying and designing for the user experience of VOC. This report concludes that it is essential to consider how VOC and the car relate to the product ecology and potential changes therein, as well as looking at different dimensions of the user experience in order to being able to handle its complex nature.

12.4 SUMMARY AND CONCLUDING REMARKS

The exploration phase in this project showed that the VOC concept is highly appreciated by its users and that it constitutes an important part of the Volvo car experience. The remote aspect of VOC proved to add another dimension to the car experience and it was shown that this additional dimension strengthened the bond to the Volvo car, yet it didn't seem to make the participant more attached to their specific car. Based on insights from the user study, opportunities for how VOC can be improved and further developed were found. It was decided that the creation phase should focus on exploring these opportunities for further development of VOC in a near future.

The user experience assessment implied that a smart and assistive VOC is a desirable continuation of the current concept. However, it also revealed that VOC users have high expectations on the future VOC to provide highly innovative functionality. Although previous findings show that users seem to prioritize convenience before data privacy as long as they feel in control and can trust how the data is handled, the diversity of user attitudes towards product smartness was highlighted in the assessment study. This needs to be further investigated in order to successfully incorporate smart behavior into VOC.

This report provides a basis for discussions regarding the future of VOC from a user experience perspective. This project has focused on the interplay between VOC and the car, and investigated how VOC and the car together can simplify and enrich the everyday life for the users, and how VOC can extend and enrich the Volvo car experience. Looking ahead, there are many potential changes in the product ecology, and the interplay between VOC and the car opens up for many possibilities. However, in order to provide further user experience it is important to consider the experience as a whole, including all aspects and factors. Therefore this report underlines the importance of deciding the future purpose of VOC by considering what role VOC should play in the product ecology that surrounds it.

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APPENDICES

APPENDIX I: USER STUDY INTERVIEW QUESTIONS

APPENDIX II: USER WISHES AND AREAS FOR IMPROVEMENT

APPENDIX III: UX CURVES

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APPENDIX I:

USER STUDY INTERVIEW QUESTIONS

The following questions were used as a base for the interviews in the user study. Please note that the questions are in Swedish, since the interviews were conducted in Swedish. The questions and notes put within brackets are help questions, i.e. these questions were only posed if it was considered necessary to help the participants to express themselves or to get them going.

DEL 1: INTERVJU I BILEN

Går det bra att vi spelar in intervjun?

Har du någon tid du måste passa som vi behöver förhålla oss till?

Upplägget består av 2 delar. Vi kommer inleda intervjun med att prata lite om din bil för att förstå vilken relation du har till den. Om det är möjligt kan vi genomföra intervjun i bilen eftersom vi kommer att börja prata om den. Sen kommer vi att gå in och fika och fortsätta prata mer om Volvo On Call och själva appen.

Bilens roll i vardagen

1. Skulle du vilja berätta om din bil för oss?
 - a. Vad tycker du är viktigt när det gäller din bil?
 - b. Vad har störst betydelse? (Varumärke? Prestanda? Utseende?)
 - c. Vad använder du din bil till? Hur ofta kör du den?
 - d. Är det fler än du som använder bilen och appen?
2. Hur skulle du beskriva din bil?
 - a. Kan du beskriva din bil med tre adjektiv? Det första du kommer att tänka på!
3. Vi är nyfikna på vilken betydelse din bil har för dig.
 - a. Vilken roll har din bil i din vardag?
 - b. Vad har du för relation till din bil?
 - c. Anser du att din bil bidrar till din livskvalitet? Hur?
4. Nu när du har beskrivit din bil,
 - a. Tycker du att din bil representerar dig?
 - b. Tycker du att det är viktigt att bilens identitet stämmer överens med din egen?

Volvo On Call som en brygga mellan dig och din bil

Nu har vi ställt lite korta frågor om din relation till bilen. Vi kommer prata mer ingående om Volvo On Call senare, men vill börja fokusera på hur tjänsten påverkar din relation till din bil.

5. Vi skulle vilja fråga lite kring vilken betydelse VOC har i relationen mellan dig och din bil.
- Tycker du att VOC påverkar din relation till din bil? Hur?
 - Skulle säga att VOC stärker relationen mellan dig och din bil? Hur?
 - Anser du att VOC får dig att känna dig mer fäst vid din bil? Hur?
 - Tycker du att VOC bidrar till att du är mer medveten om din bil jämfört med tidigare/utan VOC? (T.ex. tänker du oftare på bilen?)
6. Har du använt Call Center eller SOS-funktionen någon gång? Berätta gärna!

Finns det något du vill tillägga när det gäller VOC i relation till din bil? Finns det något du har kommit att tänka på som du vill ta upp innan vi går vidare?

DEL 2: INTERVJU PÅ "NEUTRAL" PLATS INOMHUS, FIKA

Tidigare har vi pratat om din bil och hur VOC relaterar till den. Vi har fokus på VOC från och med nu, och tänkte börja med att prata om bilderna du har valt ut.

Går det bra att vi använder dina foton i vårt arbete?

Under intervjun här nu får du väldigt gärna ha appen framme om du tycker att det är till hjälp.

Användning av Volvo On Call

7. Berätta om bilderna du har valt ut!
- Vad visar korten?
 - Varför valde du just dessa?
 - Finns det något annat du vill ta upp men som inte var möjligt att fotografera?
8. Hur använder du VOC under en vanlig dag?
- Hur ser användandet ut från morgon till kväll?
 - Hur ofta? När? Vart befinner du dig? (Hemma, i närheten av bilen, på jobbet?)
 - Händer det att du är inne och bläddrar i appen trots att du inte ska köra bilen?
9. Vilken roll har VOC i din vardag?
- Vad har tjänsten för betydelse i ditt vardagsliv?
 - Bidrar den till ditt välbefinnande? Hur?
 - Skulle du sakna VOC om tjänsten försvann?
10. Vad använder du VOC-appen till? Vilka funktioner använder du?
- Vilka använder du mest? Varför?
 - Vilka använder du minst? Varför?
 - Finns det någon funktion som du inte gillar? Varför?
11. Tror du att du använder VOC på något oväntat sätt som kan vara nytt för oss?

Användarupplevelsen av VOC

12. Kan du berätta hur det är att använda VOC? Hur du upplever VOC?
 - a. Du får gärna ge exempel på en viss upplevelse eller situation.
13. Vad är bäst med VOC? Ge gärna ett exempel och beskriv hur du upplever det.
14. Finns det något som är problematiskt med VOC? Ge gärna ett exempel och beskriv hur du upplever det.
 - a. Påverkar den negativa upplevelsen hur du använder appen?
15. På en skala 1-5, hur skulle du skatta din användarupplevelse av VOC? 1 = jättedålig, 5 = jättebra
 - a. Varför?
 - b. (Är upplevelsen överlag positiv eller negativ? Mittemellan?)
16. Kan du beskriva upplevelsen av VOC med tre adjektiv? (Beskrivande ord)?
17. Har du någon gång delat med dig av din upplevelse av VOC till andra, t.ex. berättat om appen?
 - a. Hur gick resonemanget?
 - b. Är det andra personer i din bekantskapskrets som har VOC? Pratar ni om VOC?
 - c. Skulle du rekommendera VOC till en familjemedlem/vän/kollega/bekant?
18. Finns det några fler aspekter som påverkar din upplevelse av VOC som vi inte redan har pratat om? T.ex. något som inte har med själva produkten att göra men som ändå har inverkan på vad du tycker om VOC.

UX Curve: Hur upplevelsen av VOC har förändrats över tid

Nu är det dags för en mer praktisk övning. Du ska få använda dig av det här pappret och rita en kurva som representerar hur din upplevelse av VOC har förändrats över tid.

Instruktioner:

- Den horisontella linjen representerar en tidsaxel som stäcker från första gången du använde VOC till idag.
- Den vertikala linjen motsvarar intensiteten av din upplevelse. Den övre delen är positiv, den nedre negativ.
- Tänk gärna högt och berätta medan du ritat.
- Ta din tid, ingen prestationsångest. Kurvan är bara för att illustrera och du kan få ändra i efterhand om du vill.
- Ett tips är att tänka tillbaka på den första upplevelsen du hade med VOC och markera ut den först.
- (Antingen kan du rita en kurva i ett svep som beskriver hur upplevelsen har förändrats med tiden, eller så kan du sätta ut punkter som du sedan drar en linje mellan.)

Frågor i relation till kurvan (om ej besvarade medan kurvan ritades):

Vi skulle vilja spola tillbaka och prata igenom kurvan en gång till. När vi pratar om kurvan skulle det vara bra om du kan namnge viktiga delar av kurvan så att vi kan spåra resonemanget.

19. Hur var din första upplevelse av VOC?
 - a. (Hur var det att börja använda och lära sig appen?)

20. Har du specifika exempel som har bidragit till hur upplevelsen av VOC har förändrats?

a. Vad beror vändningarna i kurvan på?

Vi tolkar kurvan och ser om det stämmer överens med användarens upplevelse. Om ändringar behövs görs dem nu.

21. Vad var dina förväntningar på VOC? Är de uppfyllda?

22. Använder du VOC lika mycket/mer/mindre idag som när du först skaffade det?

23. Vad tror du skulle förbättra användarupplevelsen av VOC?

a. Andra funktioner?

b. Underlätta vardagen?

c. Passa dig och dina behov?

24. Kan du komma att tänka på något med VOC som inte finns idag som skulle gynna/förbättra relationen mellan dig och din bil?

Tack så mycket för att du tog dig tid för att delta i vår studie!

APPENDIX II:

USER WISHES AND AREAS FOR IMPROVEMENT

In the user study, most participants expressed wishes regarding how current functionality can be improved as well as about new functionality. An overview of these ideas is given below.

MAP AND SEND TO CAR

- Save locations and routes
- Plan trips in more detail
- Share destinations to other people
- More advanced search feature: local events, monuments, fuel stations, fuel prices

DRIVING JOURNAL

- Better overview
- Data presented in a more accessible way
- Being able to save a complete journey as a whole, rather than as a number of shorter distances

REMOTE HEATER STARTER

- Being able to set the timer for the heater starter several days in advance
- Enabling remote heater start even if the car hasn't been driven for a while, e.g. after a holiday abroad
- Getting reminders about starting the heater

STATUSES, WARNINGS, AND DASHBOARD INFORMATION

- If the parking brake is activated or not
- Being able to check the surroundings of the car (i.e. birdseye view)
- Windshield washer fluid level
- Temperature inside and outside the car
- Tire pressure
- Notification when battery is low
- Reminder to plug in the charging cable

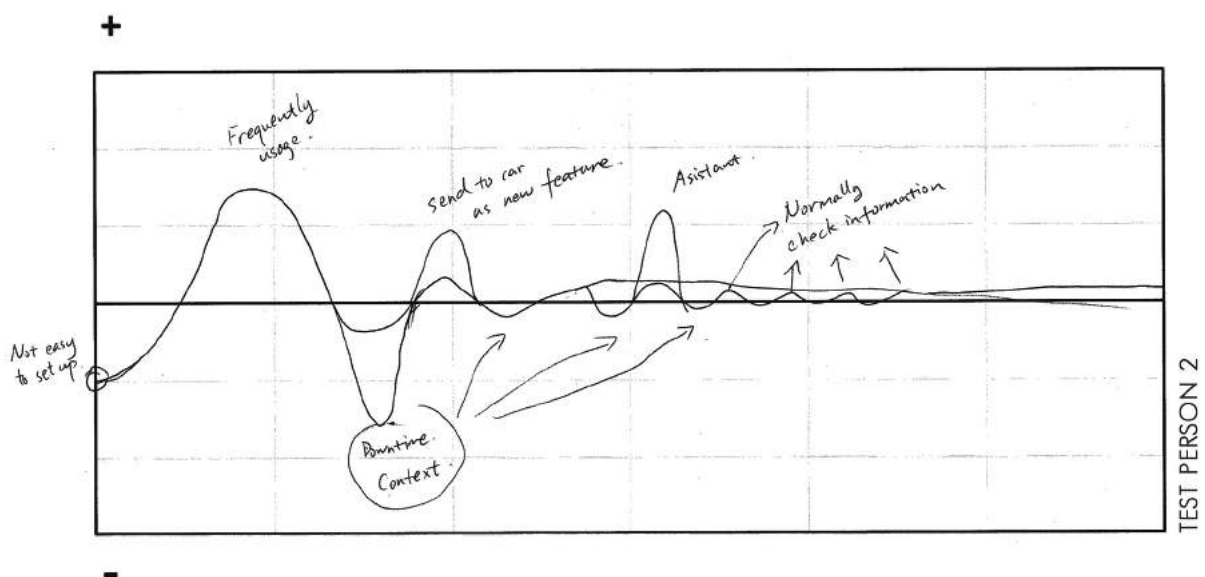
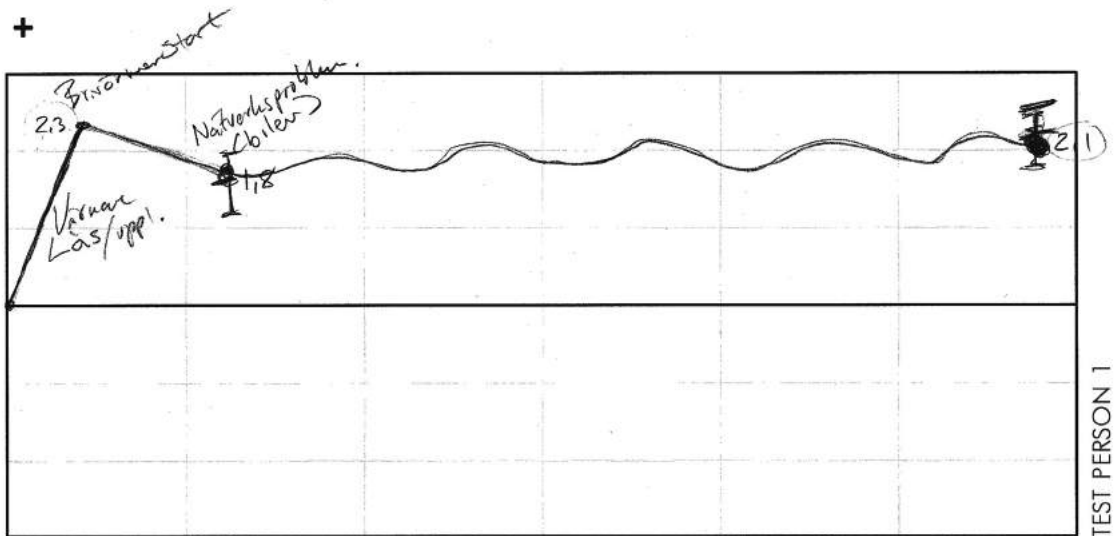
REMOTE FUNCTIONALITY VIA THE APP

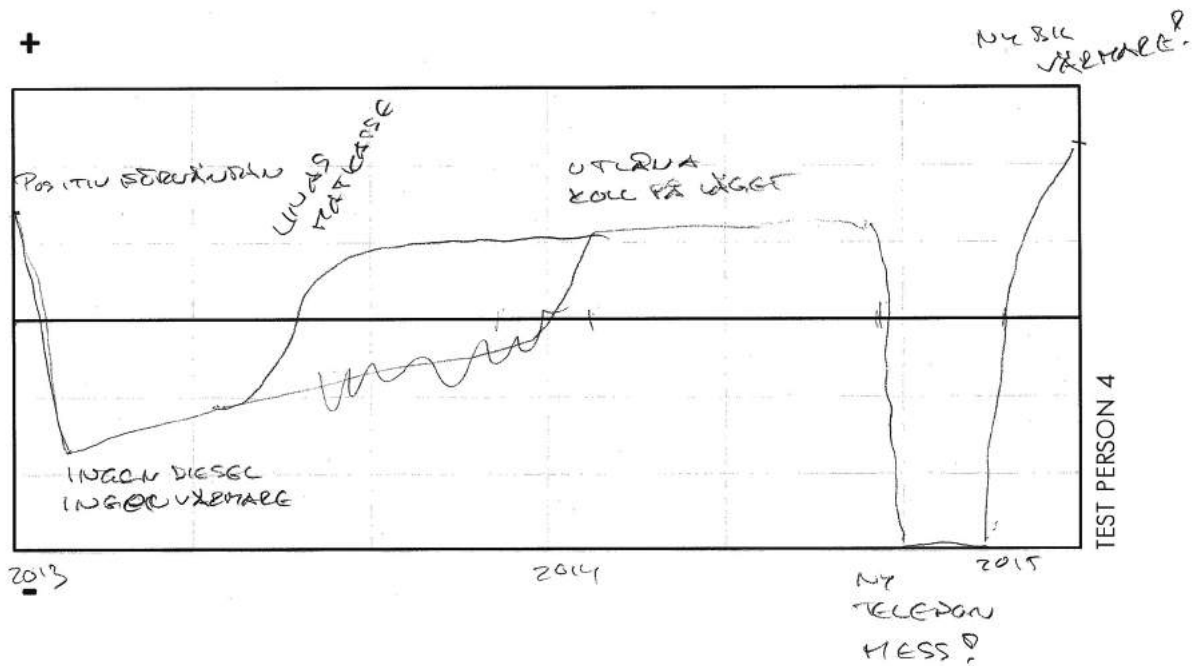
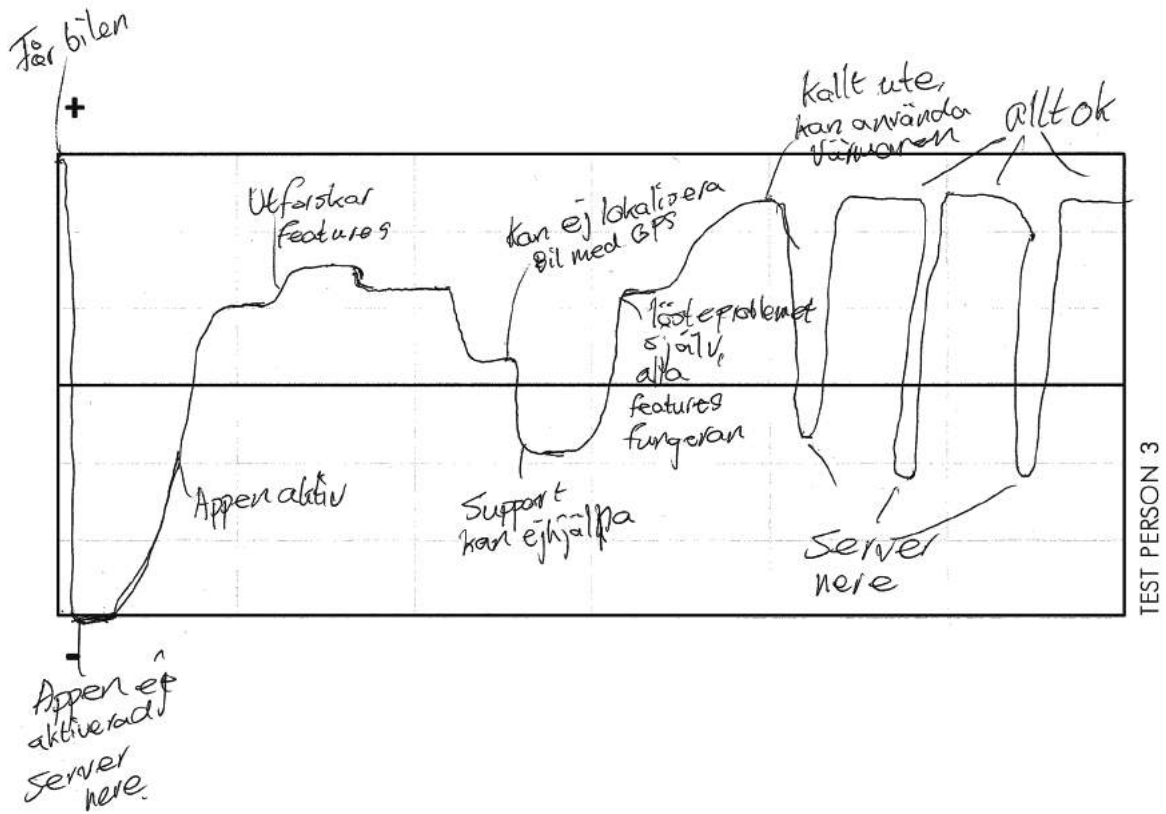
- Close doors, windows, and sunroof
- Start the engine remotely (at the time of the interviews, the remote engine start hadn't yet been introduced to the market)

APPENDIX III:

UX CURVES

In this appendix, all UX curves drawn by the participants in the user study are presented.



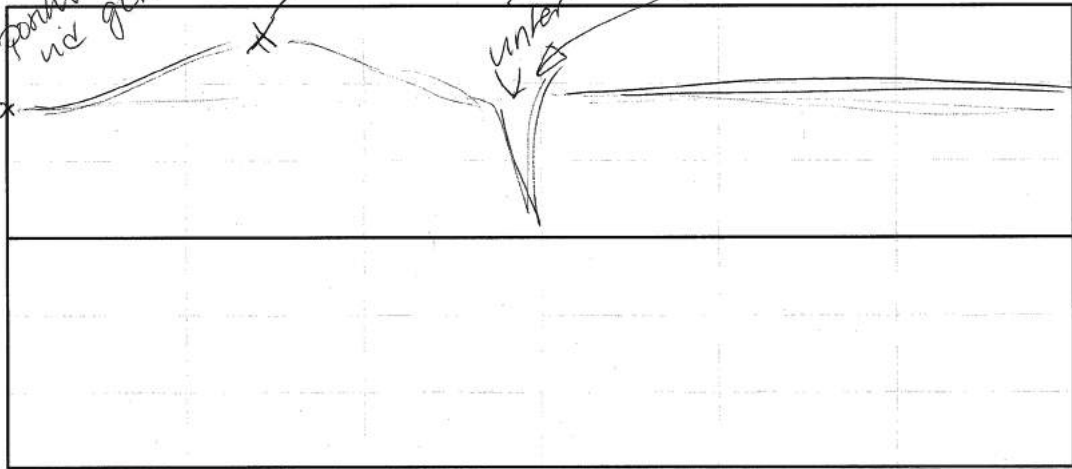


Bädder
bilarna
~ 4 st
mer förnuft
vid genomgång

markaste

linter
tröst

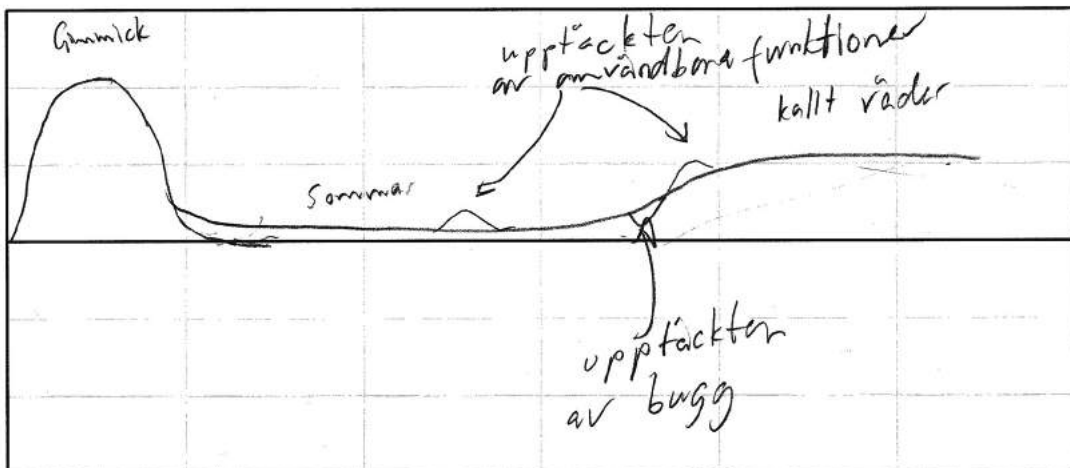
5 gånger
på 2 år



TEST PERSON 5

-

+



Gummick

upptäckten
av användbara funktioner
kallt väder

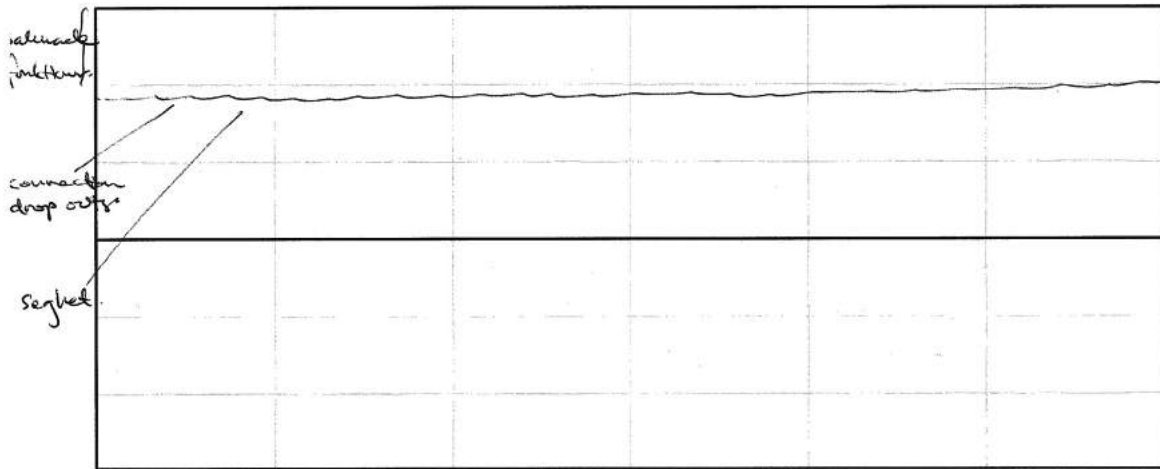
Sommars

upptäckten
av bugg

TEST PERSON 6

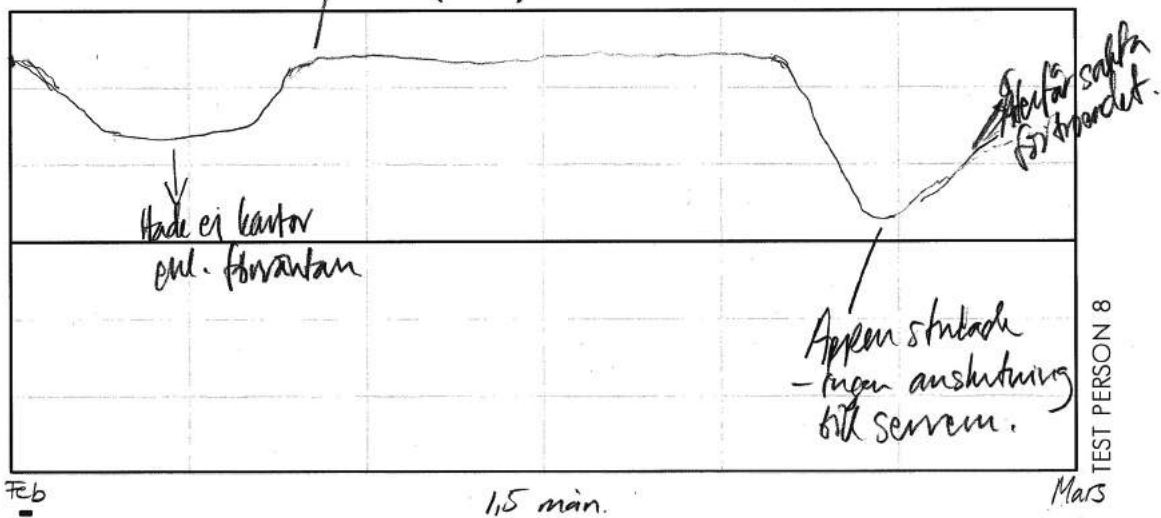
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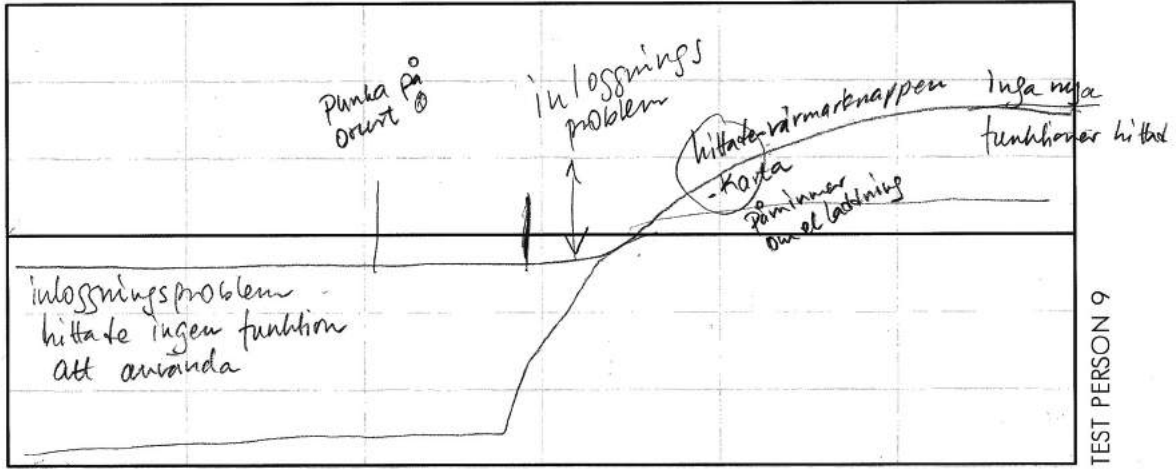


- iPhone 6 resolution.
 - Apple watch.
 - Indikatorer in andra appar/fönster.
 - Realtidsuppdatering indikatorer. IFTTT (+)
- predictive UI

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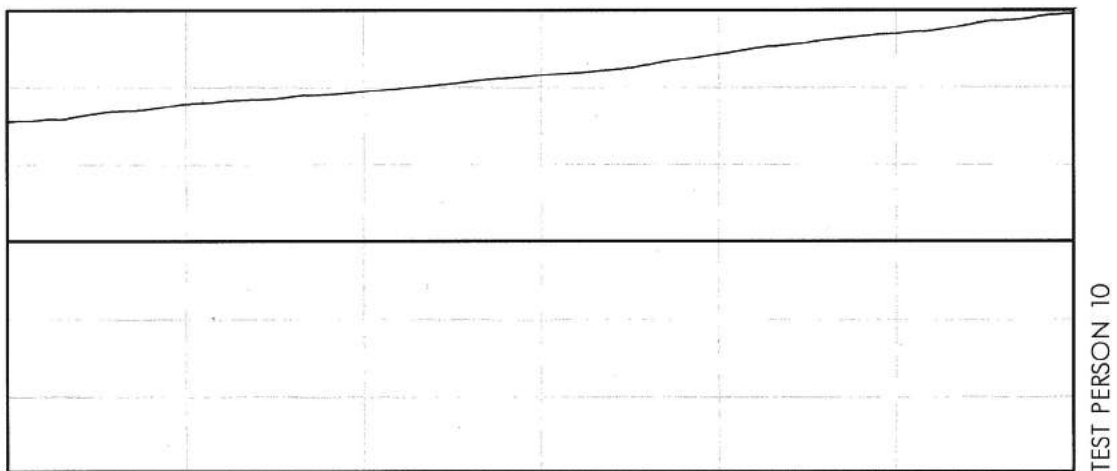


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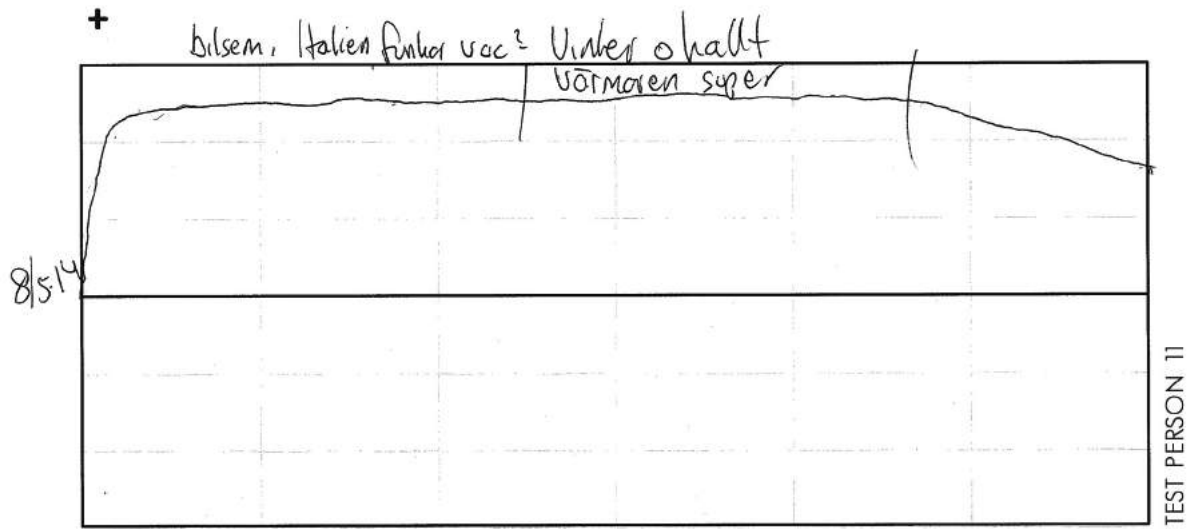


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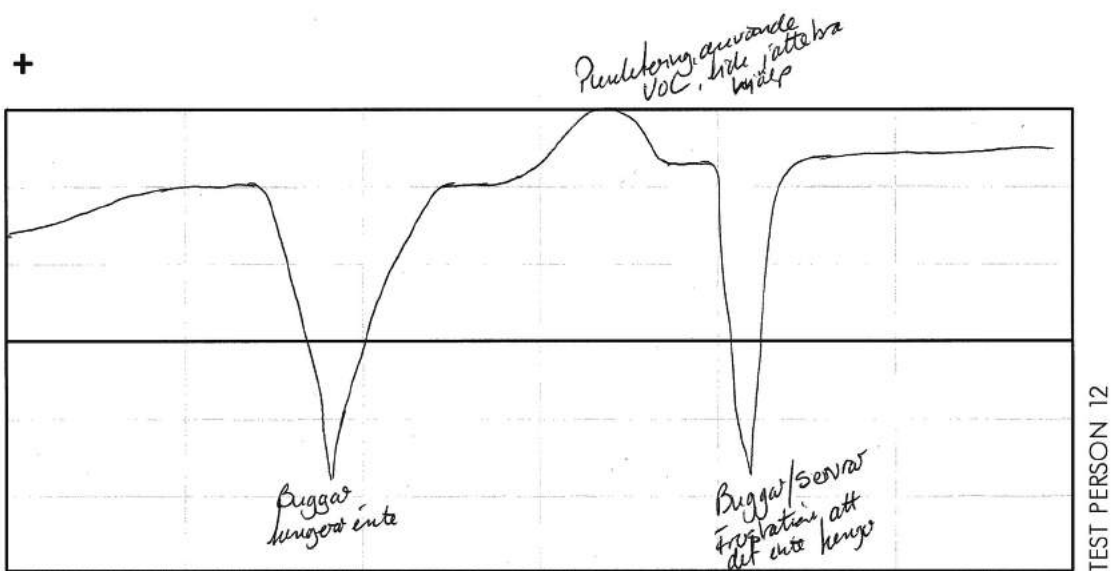
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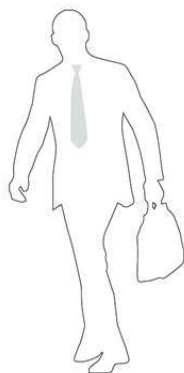
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APPENDIX IV:

STORYBOARD: VOLVO ON CALL IN EVERYDAY LIFE

The first storyboard used in the assessment of the intended user experience was about how VOC actively assists the user in everyday life, by providing notifications and warnings as well as making suggestions in order to support the user. Since the assessment study was conducted in Swedish, the texts in the storyboards are also in Swedish.

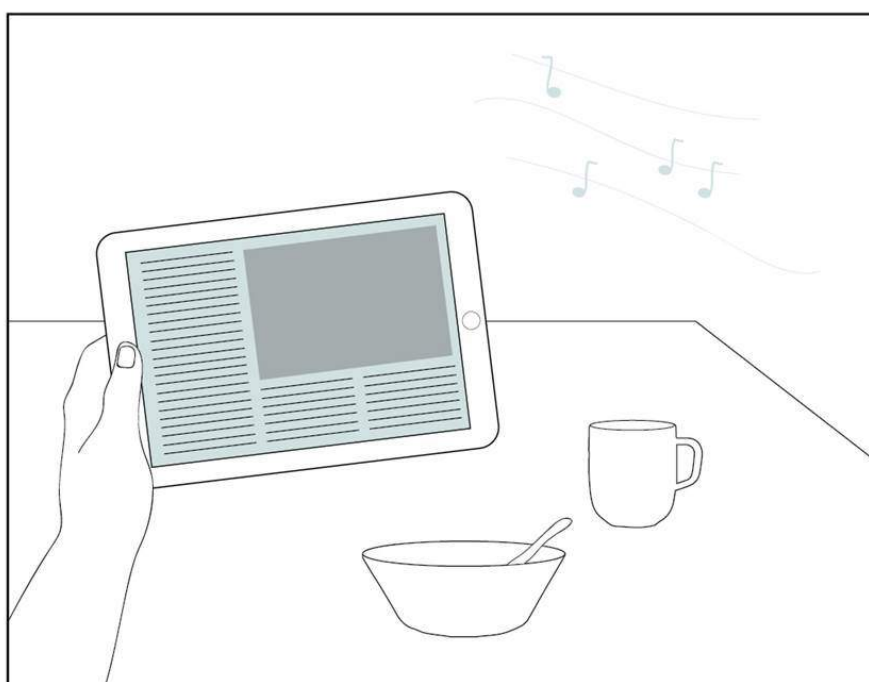
BERÄTTELSE A: Volvo On Call i vardagen



Här ska vi få följa Kristoffer under en vanlig dag. Han kör Volvo, använder Volvo On Call och jobbar på kontor.

Året är 2020, och generellt sett har bilar mer funktionalitet, är uppkopplade i högre grad och har fler autonoma inslag jämfört med idag. Volvo On Call har all den funktionalitet som finns i dagens Volvo On Call, samt nya funktioner och beteenden. Denna berättelse presenterar några av nyheterna.

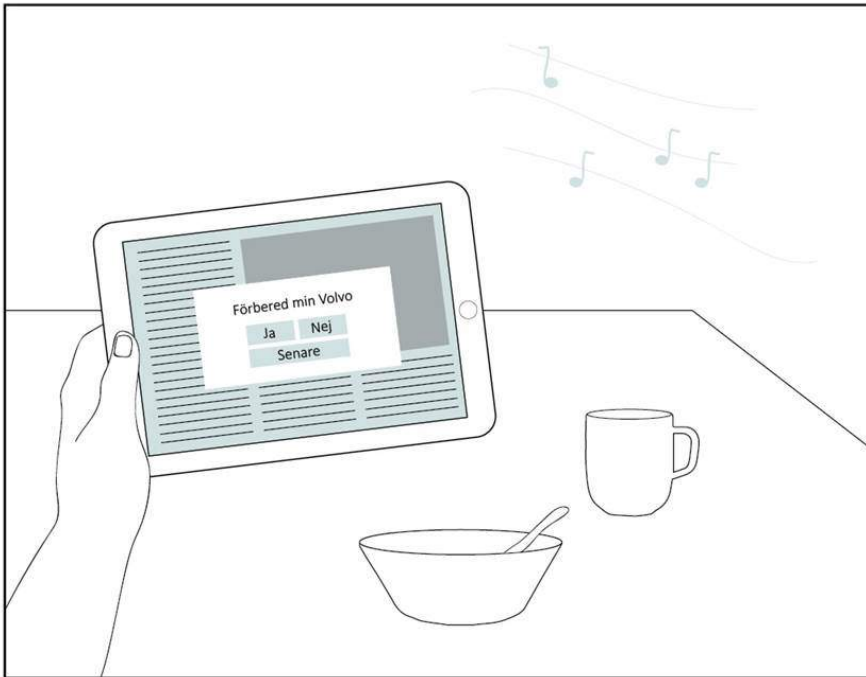
Dagen börjar med att väckarklockan ringer. Kristoffer vaknar och påbörjar sina morgonrutiner.



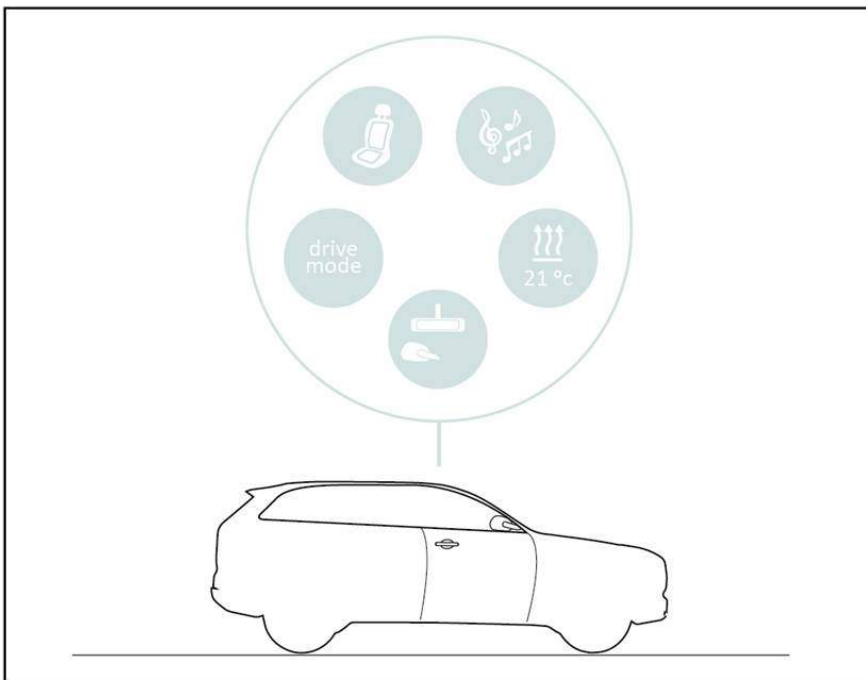
Kristoffer sitter vid frukostbordet. Han spelar musik genom Spotify, och läser morgonens nyheter på sin surfplatta.

Eftersom Volvo On Call vet att det är vardag och att Kristoffer brukar åka till jobbet runt den här tiden, får Kristoffer en notis.





Notisen föreslår att Kristoffer förbereder sin Volvo. Eftersom Kristoffer strax ska ta bilen till jobbet godkänner han förslaget.



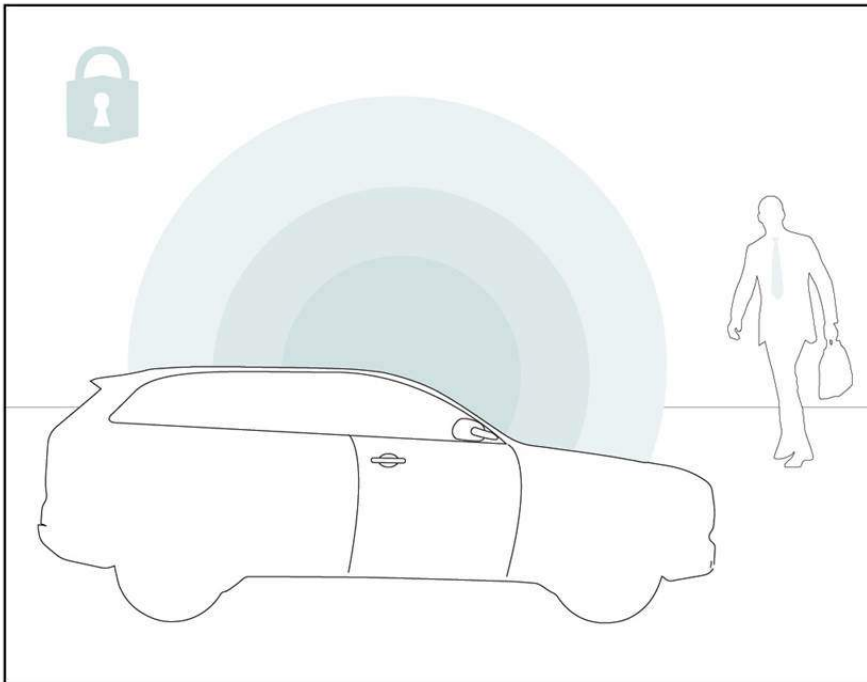
Medan Kristoffer fortsätter äta sin frukost börjar hans Volvo förbereda sig för honom.

Eftersom det är kyligt ute värms bilen upp. Sättes- och rattvärmare sätts på.

Förarsäte, ratt och speglar ställs in enligt Kristoffers preferenser. Detta behövs eftersom Kristoffers fru använde bilen senast.

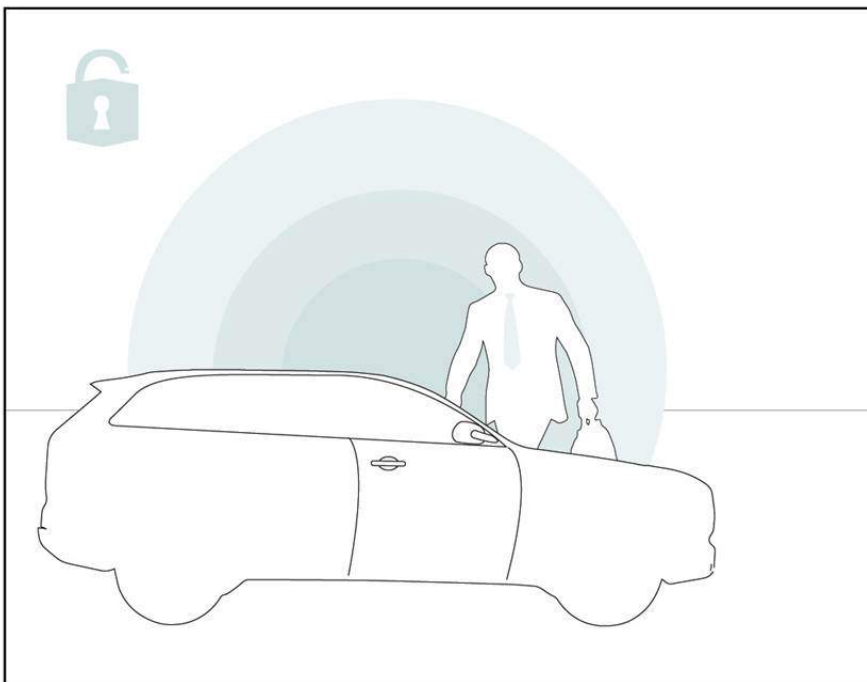
Bilen ställer även in sig på det drive mode som Kristoffer föredrar för morgonkörning, och ser till att hans musik finns tillgänglig.





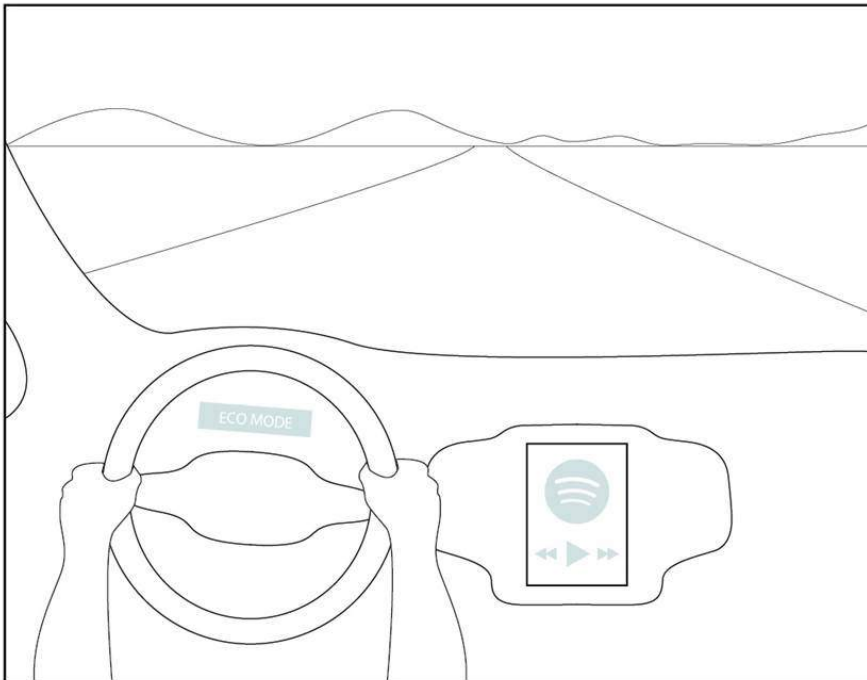
När Kristoffer är redo för att åka till jobbet går han ut för att sätta sig i bilen, som nu är förberedd och klar.

Eftersom Volvo On Call och bilen kommunicerar med varandra känner bilen av hans närvaro, och lyser upp sig för att välkomna honom.



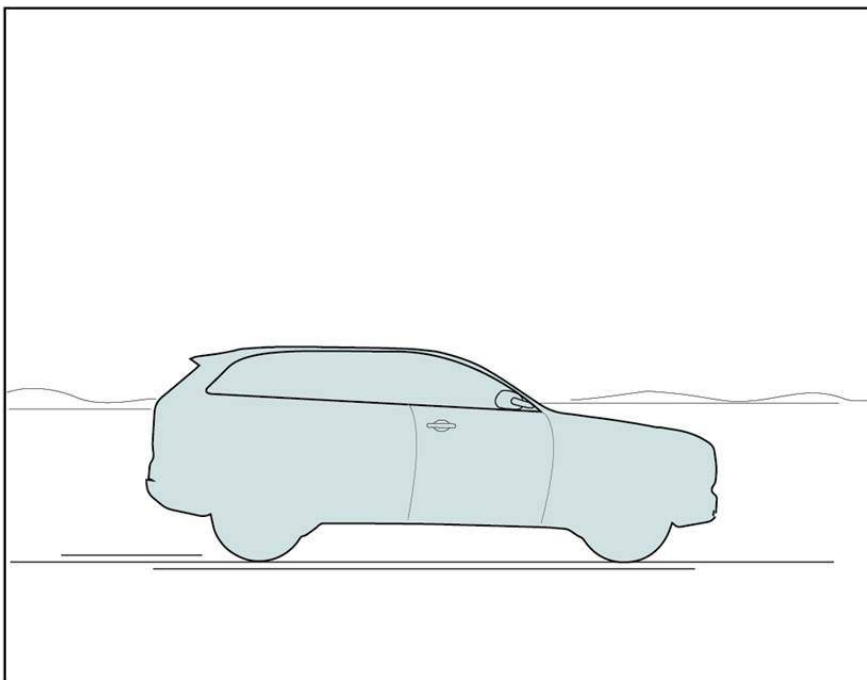
Bilen låser upp sig automatiskt när Kristoffer tar i dörrhandtaget.





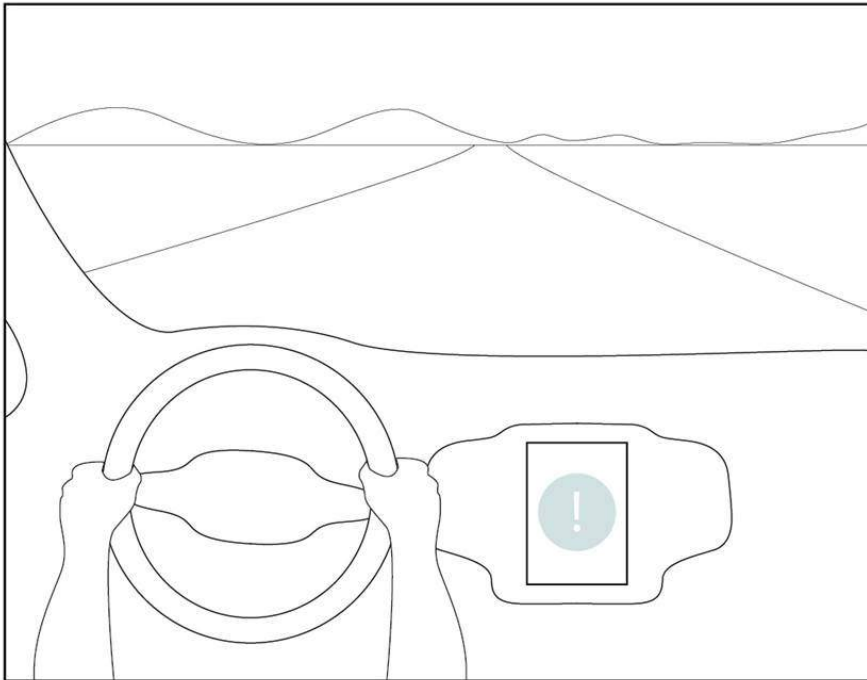
Medan Kristoffer sätter sig tillrätta i förarsätet och tar på sig säkerhetsbältet startas bilens infotainment-system upp automatiskt.

Innan han kör iväg trycker han på play, och Spotify börjar spela samma låt som han lyssnade på tidigare vid frukosten.



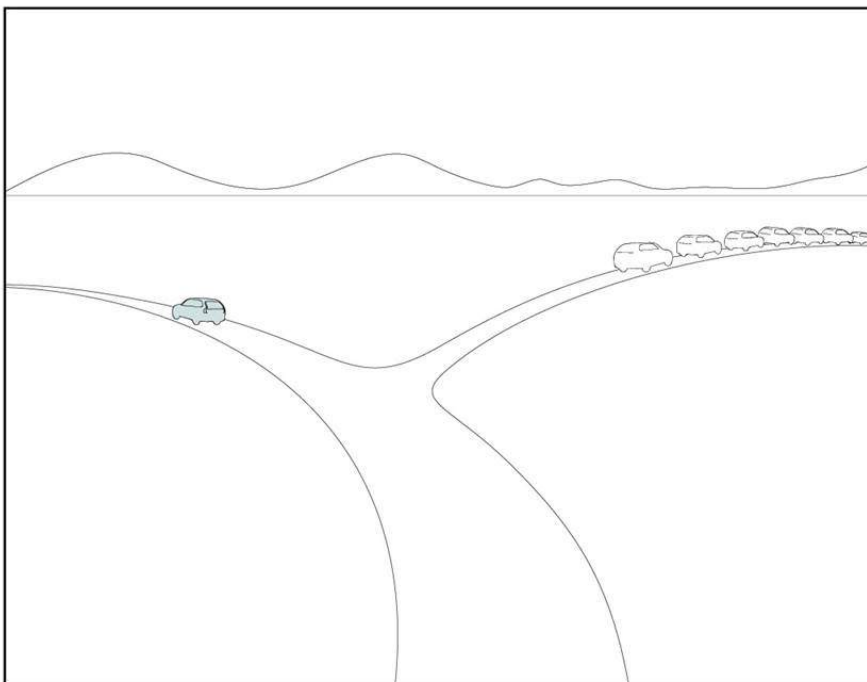
Kristoffer börjar köra mot jobbet.





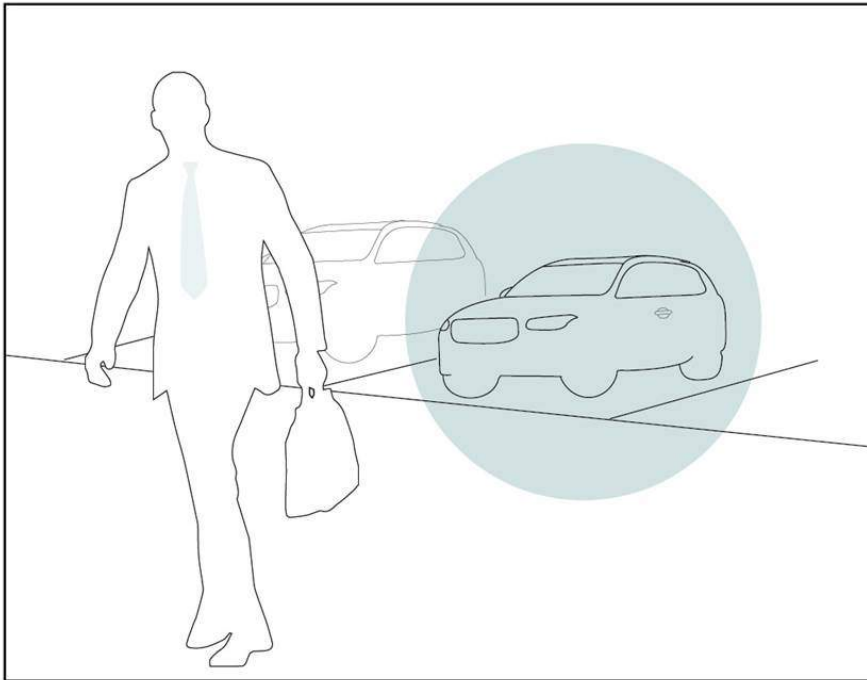
Efter att ha kört en stund får Kristoffer upp en varning i bilens navigationssystem.

Han får information om att det har skett en olycka som orsakat köbildning på den rutt han normalt kör till jobbet, och får en alternativ rutt presenterad för sig.



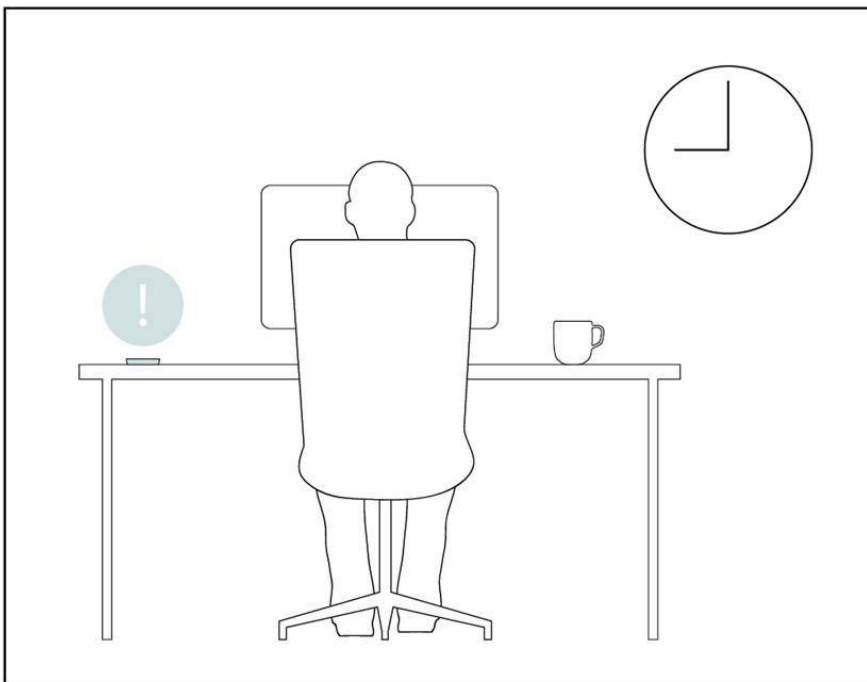
Kristoffer godkänner förslaget och blir guidad av bilens navigationssystem för att undvika att hamna i kön.





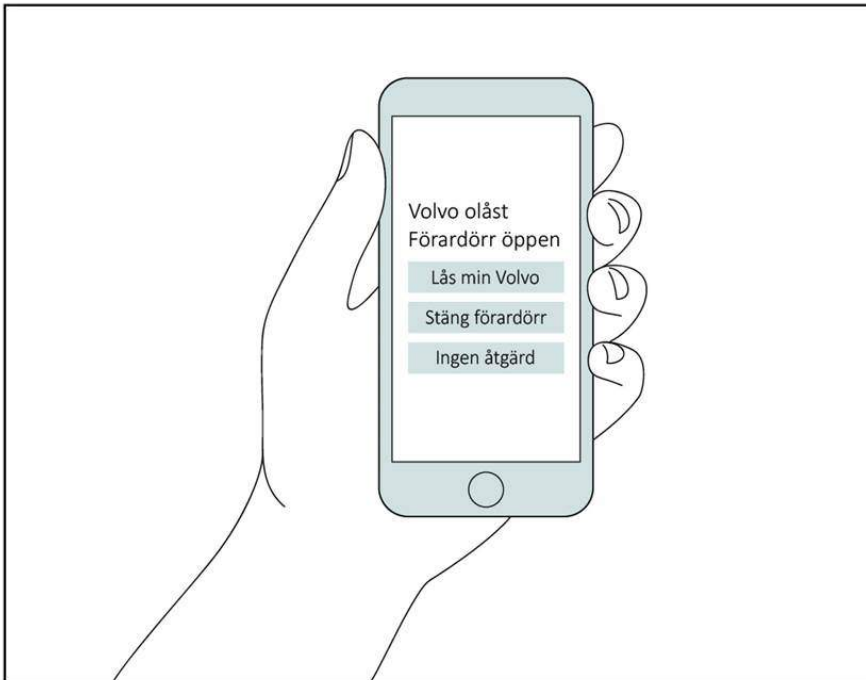
Kristoffer parkerar bilen vid jobbet och går till kontoret.

Han märker inte att bildörren inte stängs ordentligt, och eftersom han har mycket i tankarna glömmar han också att låsa bilen.



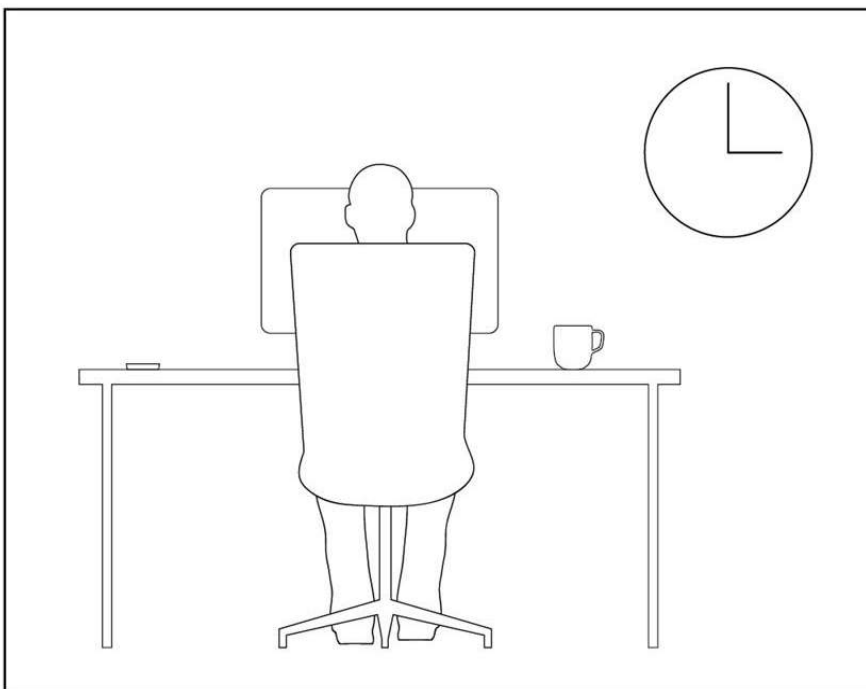
Kristoffer påbörjar sitt arbete. Efter en stund får han en notis från Volvo On Call.





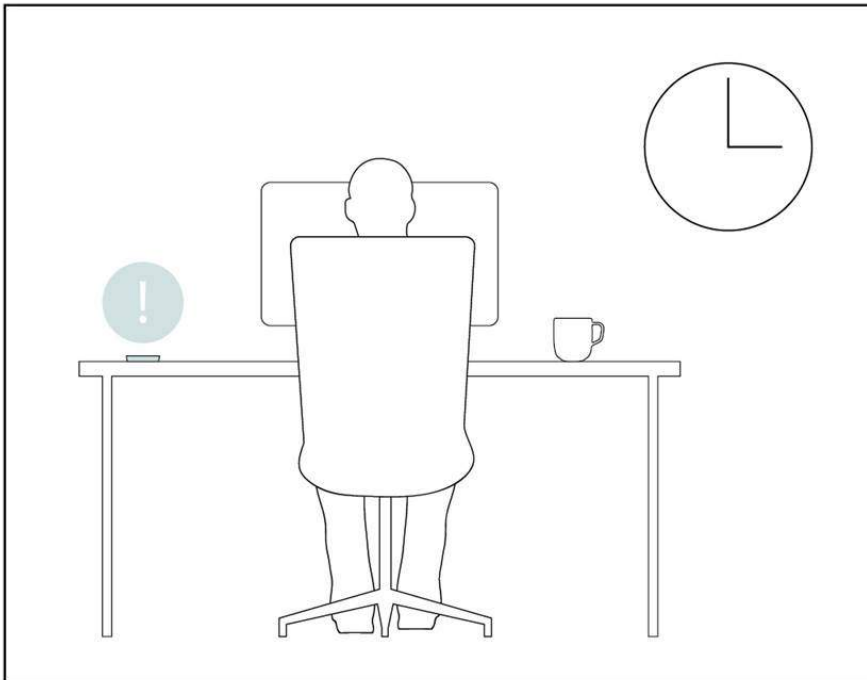
Notisen varnar för att hans Volvo är olåst, samt att förardörren är öppen.

Direkt i notisen väljer Kristoffer att både låsa bilen och stänga dörren.

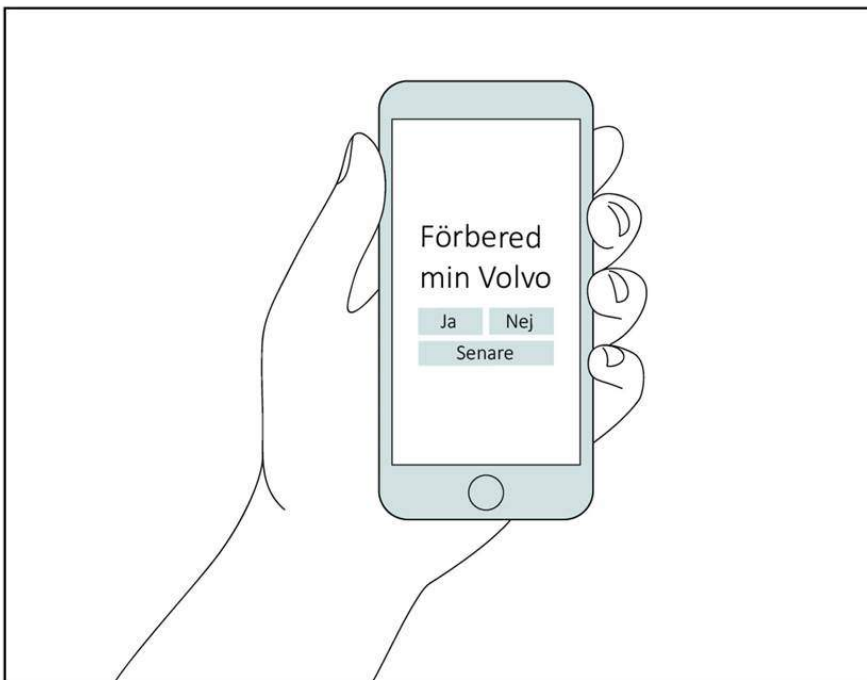


Arbetsdagen fortskrider och närmar sig så småningom sitt slut.





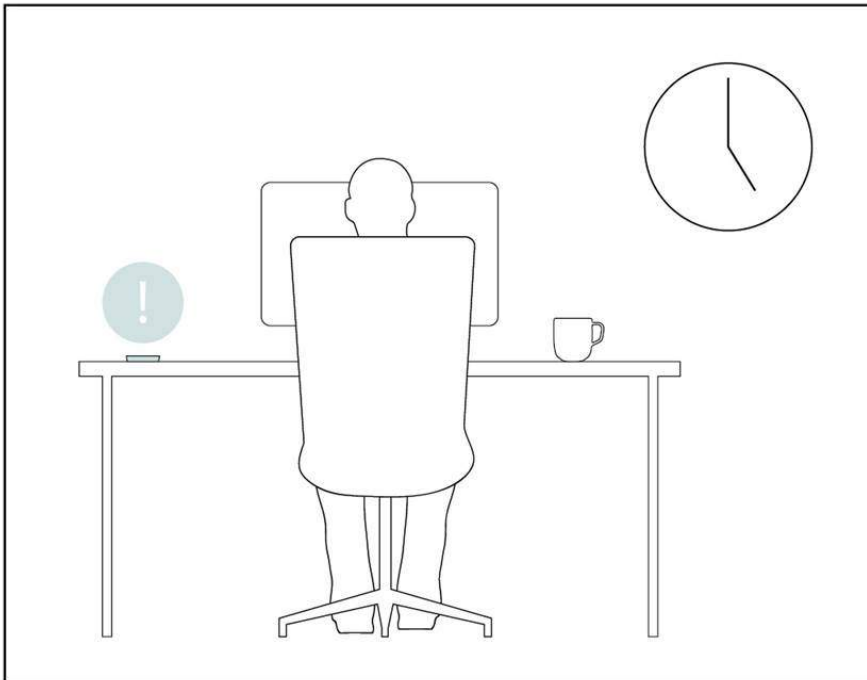
Kristoffer får en notis från Volvo On Call, eftersom han brukar lämna kontoret runt den här tiden.



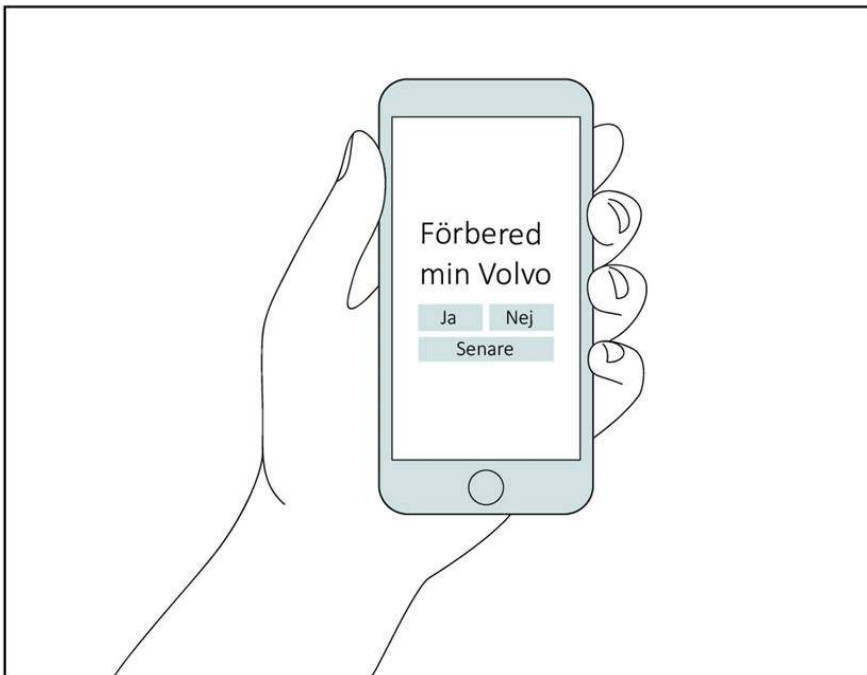
Notisen föreslår att Kristoffer förbereder sin Volvo.

Eftersom han har tänkt stanna kvar ett par timmar till väljer han alternativet att Volvo On Call ska påminna honom senare.



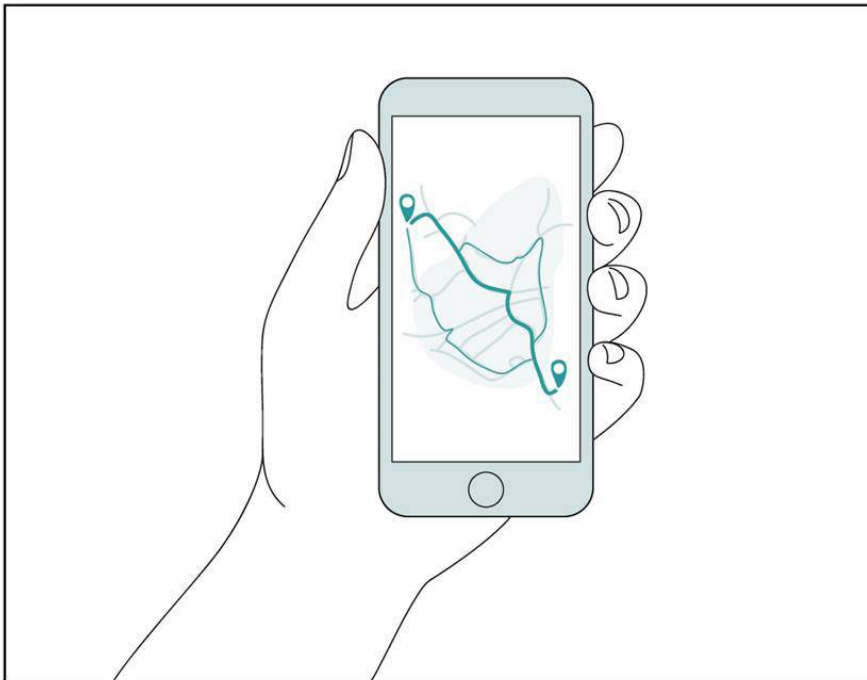


Ett par timmar senare får Kristoffer en ny notis från Volvo On Call.



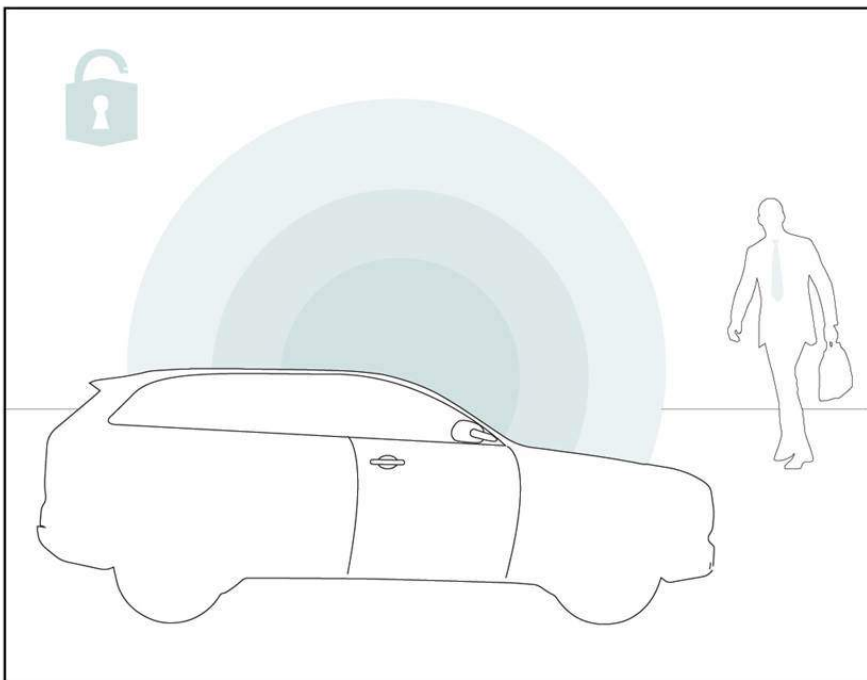
Den här gången väljer han att förbereda sin Volvo.





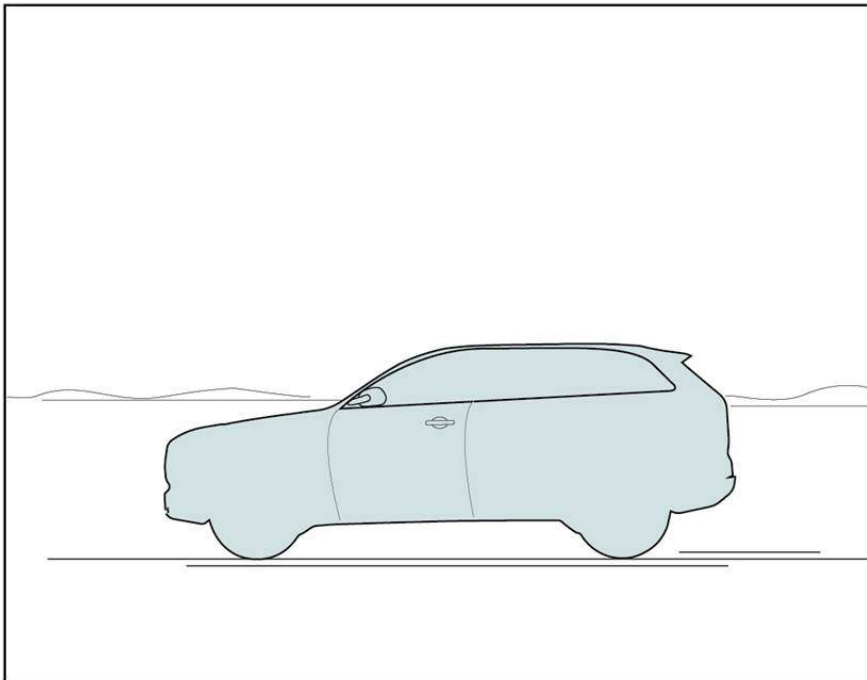
Eftersom Kristoffer ska åka raka vägen hem och vet att trafiksituationen kan vara problematisk vid den här tiden, går han in i Volvo On Call-appen för att kolla vilken väg hem som är mest optimal.

Volvo On Call vet vart Kristoffer bor och arbetar, och baserat på uppdaterad trafikinformation visar appen vilken rutt hem som är smidigast just nu.

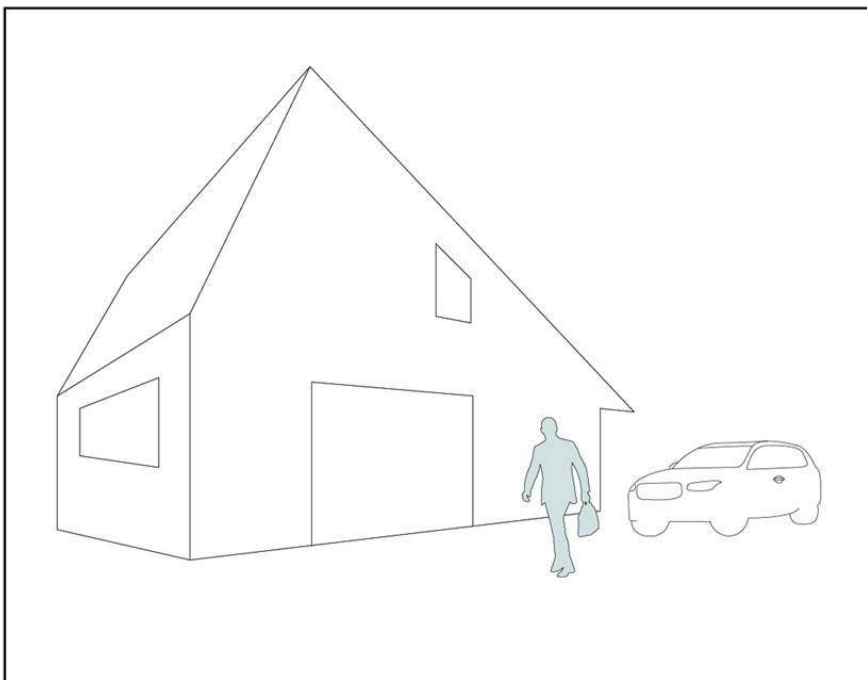


Kristoffer lämnar kontoret en stund senare, och välkomnas av bilen på samma sätt som tidigare på morgonen.



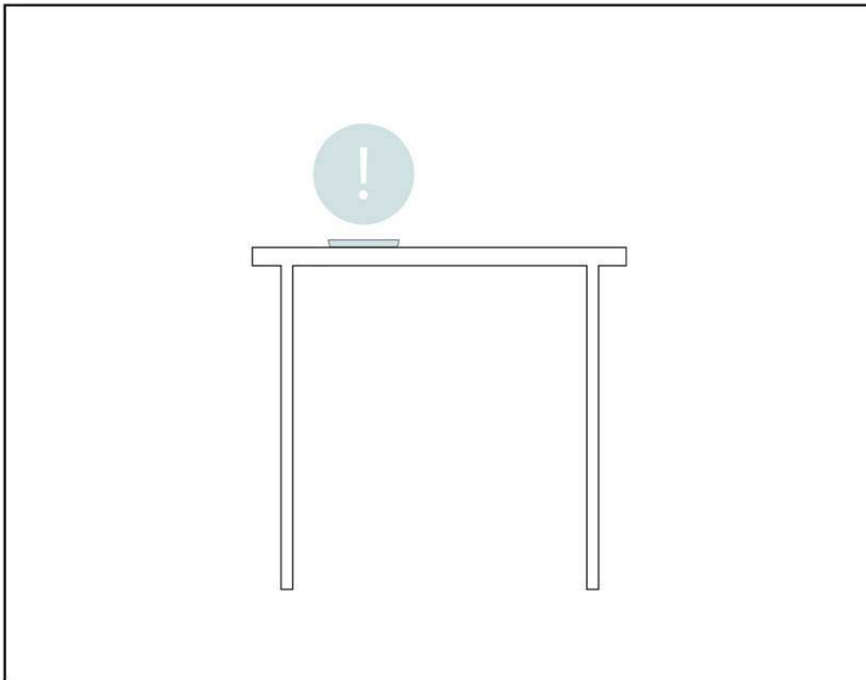


Han kör hemåt enligt den rutt
Volvo On Call föreslog.



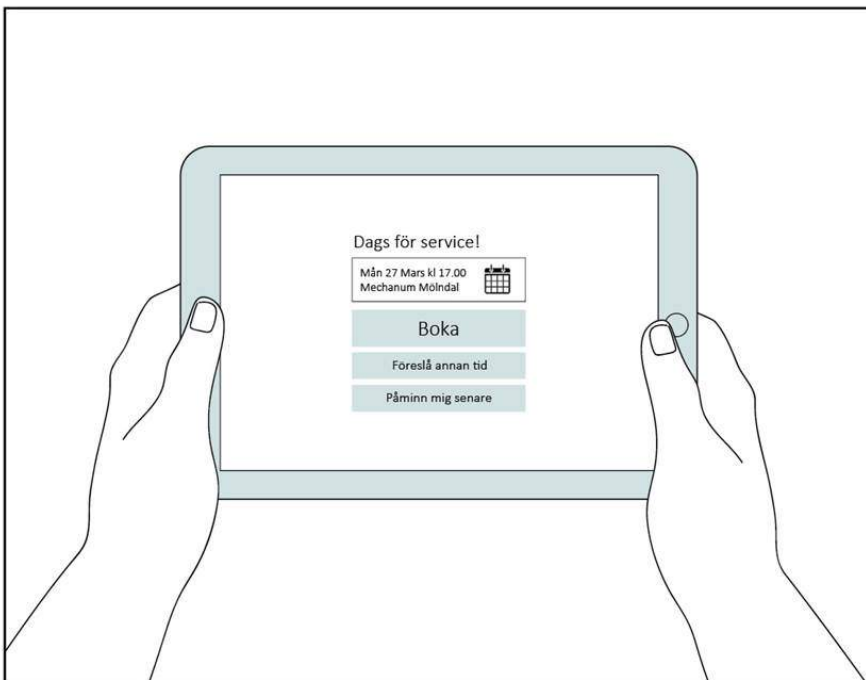
Kristoffer parkerar sin Volvo utanför
huset och går in.





Lite senare får Kristoffer en notis från Volvo On Call, och påminns om att det är dags att boka in bilservice.

Kristoffer hade glömt av att boka in service, eftersom det händer så sällan.

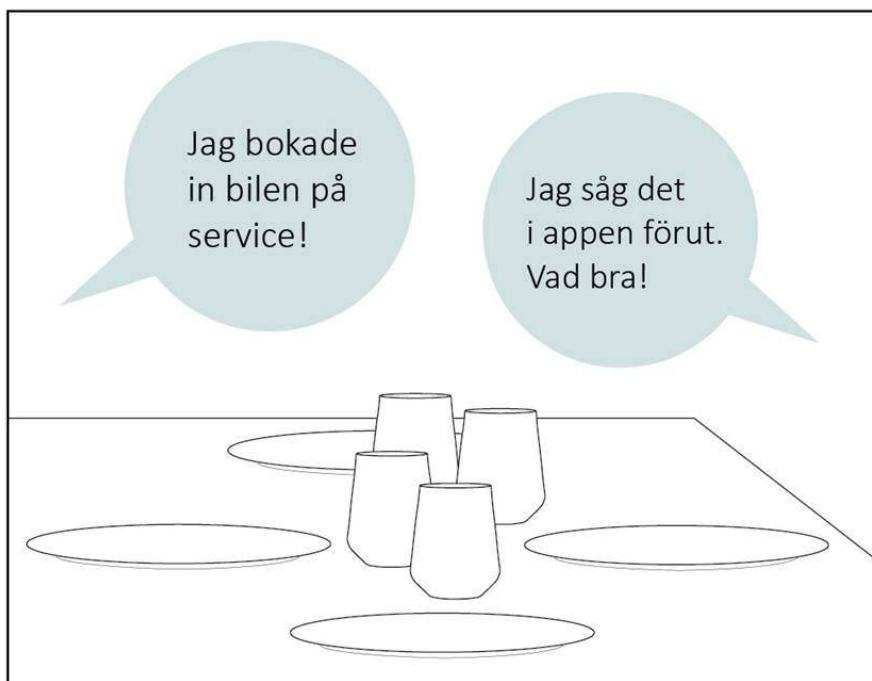


Volvo On Call föreslår en tid som är ledig i Kristoffers kalender och som matchar med en ledig tid hos serviceverkstaden.

Tiden verkar passar bra och Kristoffer väljer att genomföra bokningen direkt i notisen.

Bokningen läggs in automatiskt i hans kalender, och mer information om bokningen och hur han hittar till serviceverkstaden finns i Volvo On Call-appen.





Kristoffer delar Volvon med sin fru, och senare på kvällen när de lagar mat tillsammans berättar han att han har bokat in bilservice. Hon svarar att hon la märke till det tidigare i sin Volvo On Call-app!



Här tar berättelsen om Kristoffer slut.

Var god gå tillbaka till frågeformuläret och svara på frågorna i del 2A!



APPENDIX V:

STORYBOARD: VOLVO ON CALL DURING A LEISURE TRIP

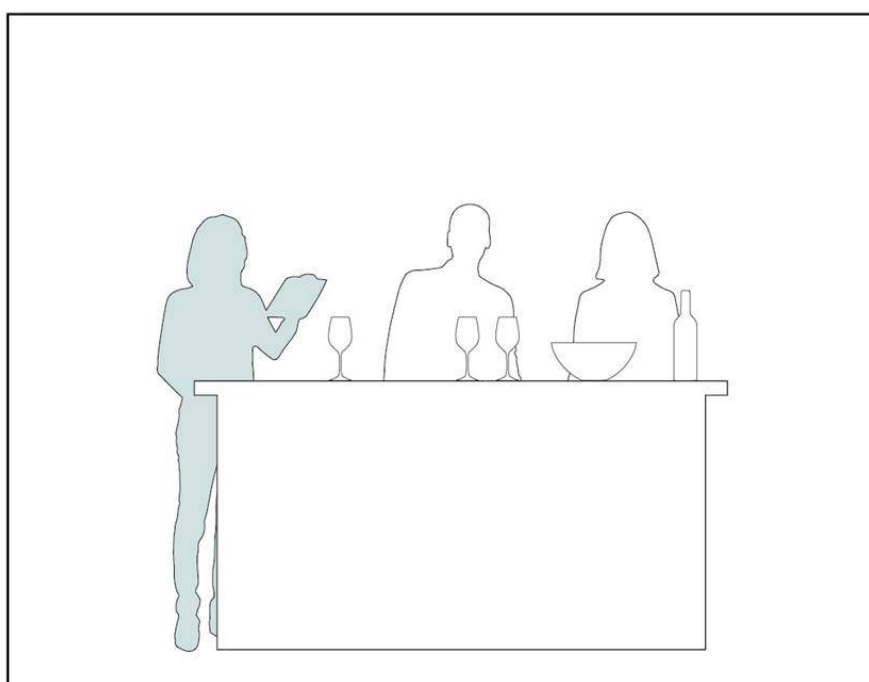
The second storyboard presented in the assessment of the intended user experience depicted how VOC can aid the user when planning a leisure trip with the car, as well as during and after the trip. Again, the smart behavior of VOC was shown throughout the story. Since the assessment study was conducted in Swedish, the texts in the storyboards are also in Swedish.

BERÄTTELSE B: Semesterresa till Värmland



Den här berättelsen handlar om Klara och två vänner som skall göra en bilresa till Värmland. Vännerna skall bo i en sommarstuga och träffas hemma hos Klara för att planera resan. Klara har en Volvo och har erbjudit sig att köra.

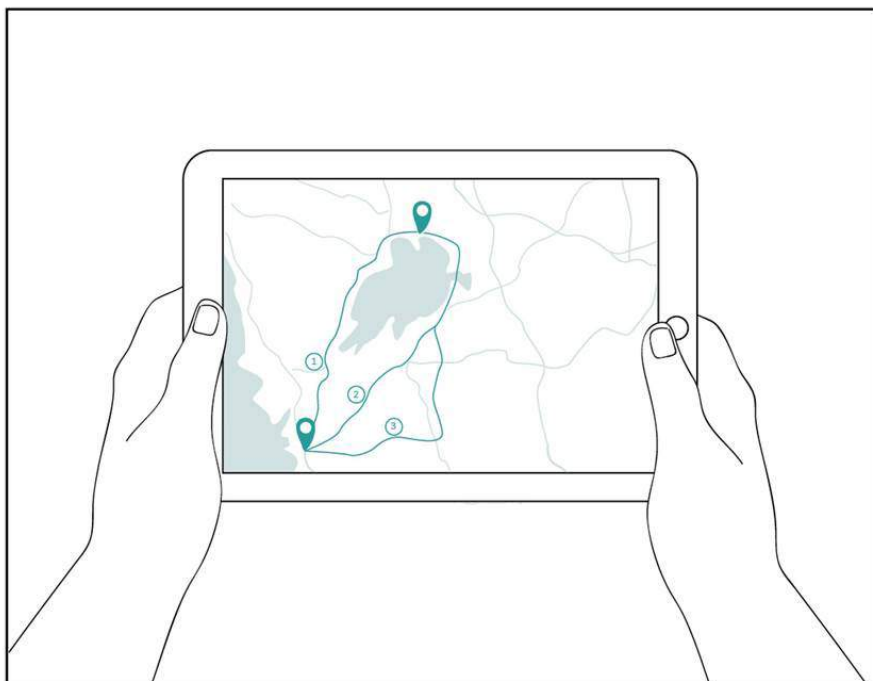
Året är 2020, och generellt sett har bilar mer funktionalitet, är uppkopplade i högre grad och har fler autonoma inslag jämfört med idag. Volvo On Call har all den funktionalitet som finns i dagens Volvo On Call, samt nya funktioner och beteenden. Denna berättelse presenterar några av nyheterna.



Klara använder Volvo On Call på sin surfplatta för att planera resan och för att ta reda på när de behöver åka.

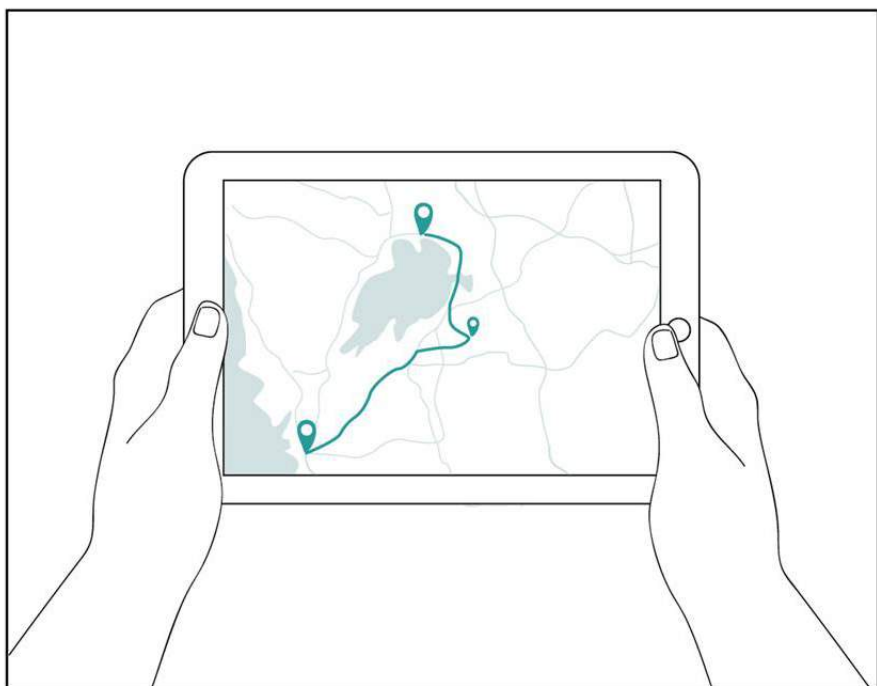
Klara knappar in destination, datum och önskad ankomsttid.





Volvo On Call visar förslag på olika resrutter, tider och trafikföreteelser. Baserat på detta kan vännerna bestämma vilken väg de skall åka.

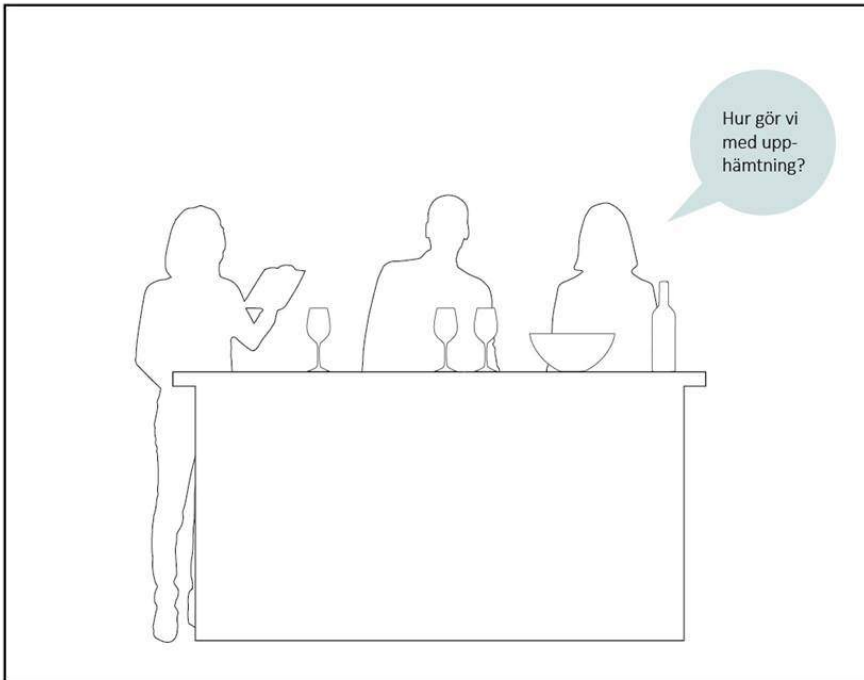
De väljer en av de rutter som föreslås, och får veta när de behöver åka för att vara framme vid önskad ankomsttid.



En av vännerna föreslår att de kan stanna och äta på en restaurang som hon tror ligger längs med rutten.

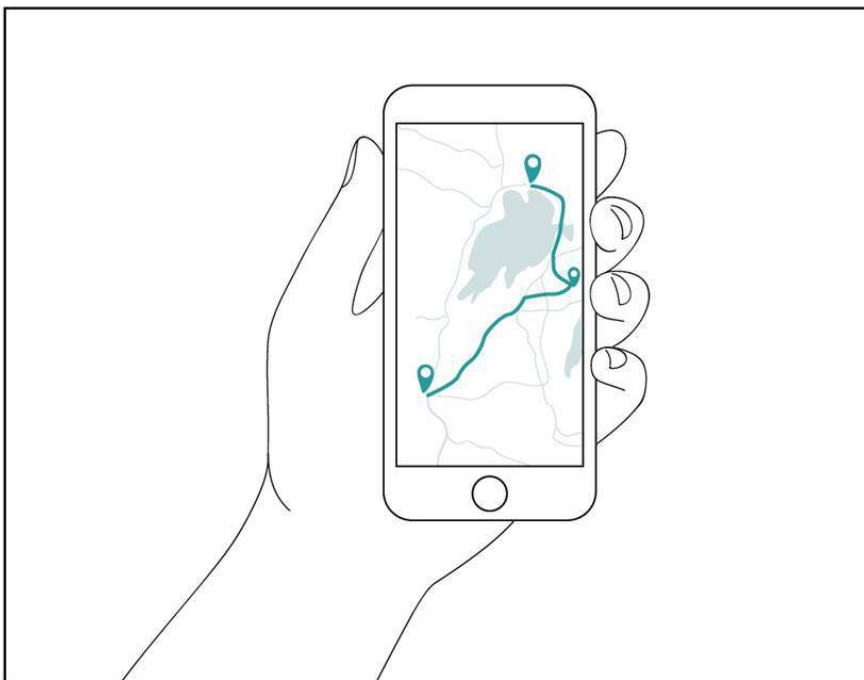
Klara använder Volvo On Call för att söka upp restaurangen och lägger till den som ett delmål på resan.





En av vännerna undrar hur de skall göra med upphämtning. De bestämmer att Klara skall åka hem till vännerna för att plocka upp dem.

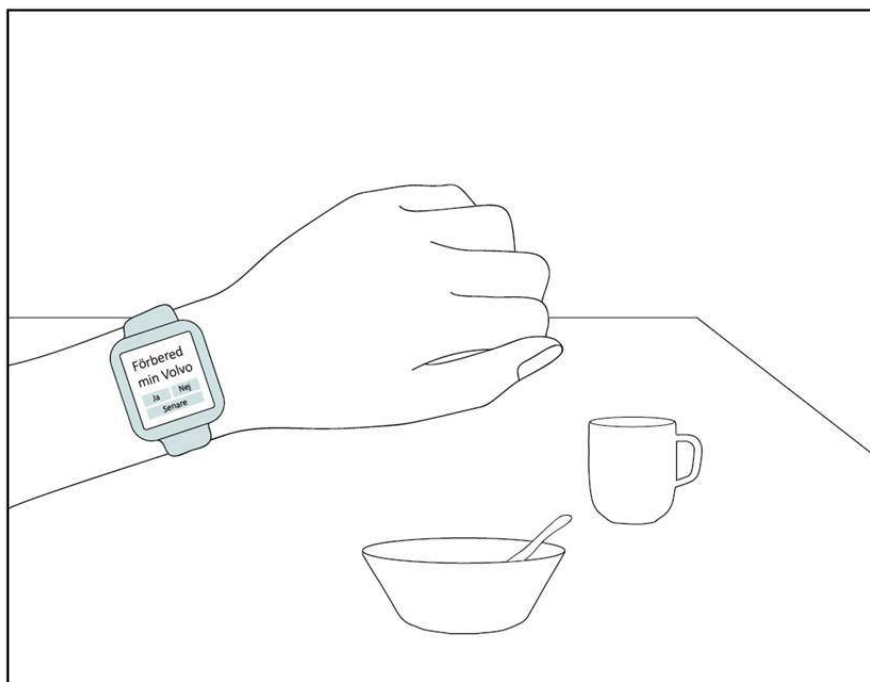
För att vännerna också skall kunna ta del av resplanen skickar Klara en länk till dem.



En av vännerna öppnar länken och ser den planerade resrutten på en karta. När resan startar kan vännen även följa bilens position i realtid.



Några dagar senare är det resdags!

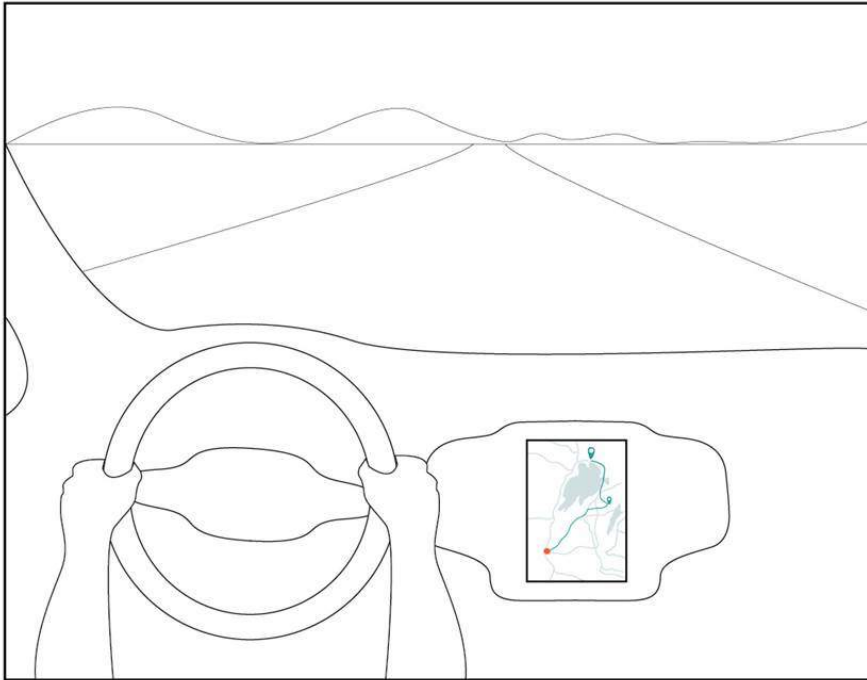


På resdagens morgon sitter Klara och äter frukost.

Volvo On Call uppmärksammar att det finns en resruttn inplanerad, och ger Klara en notis med en förfrågan om hon vill förbereda bilen.

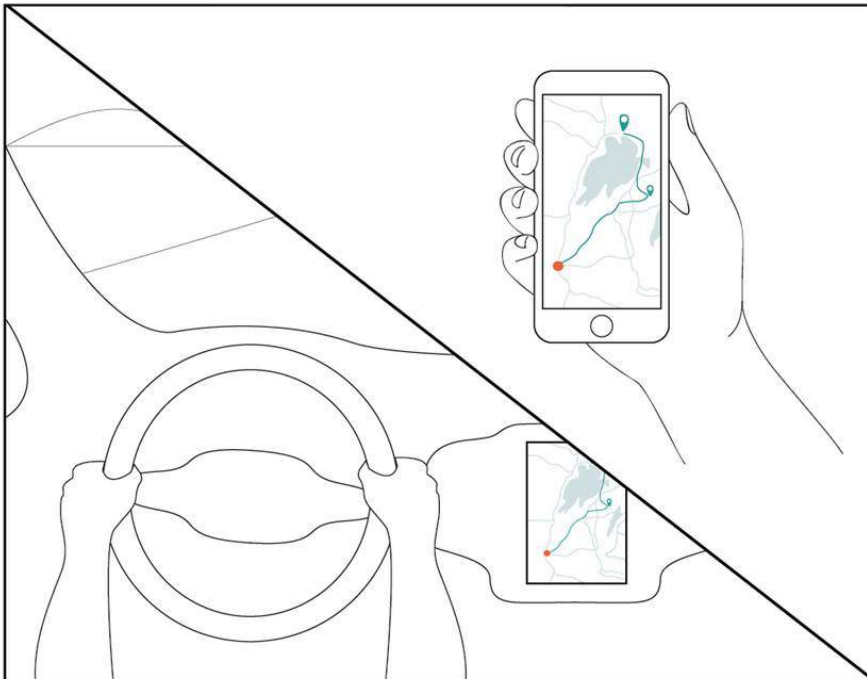
Hon accepterar förfrågan, och eftersom det är varmt ute ser Volvo On Call till att bilen är sval och förberedd vid angiven avresetid.





Efter att ha gjort sig färdig och packat in sina väskor i bagaget sätter Klara sig tillrätta i förarsätet.

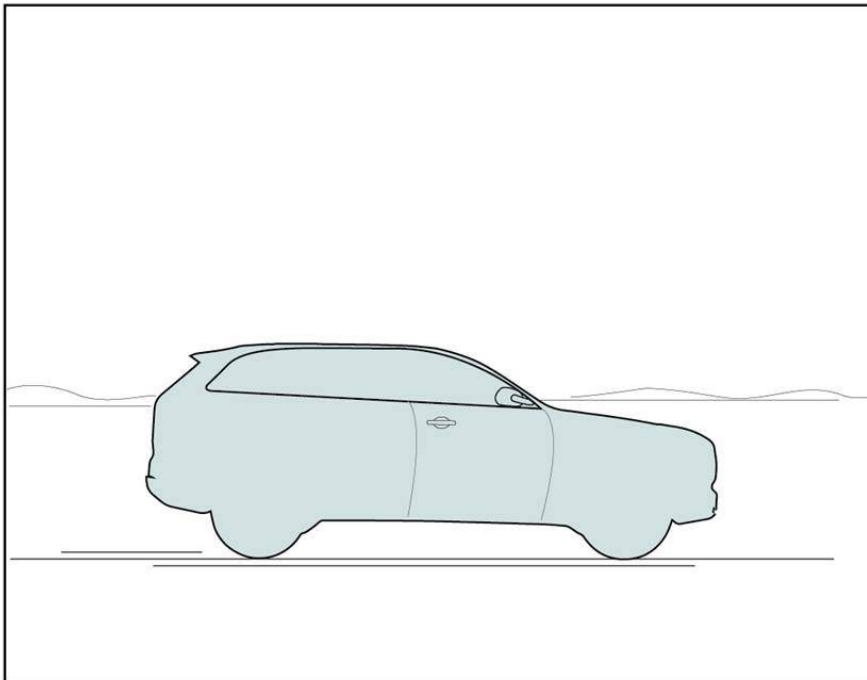
Resrutten finns förberedd i navigationssystemet. Klara är lite sen så systemet visar en senare beräknad ankomsttid. Hon börjar köra för att hämta upp sina vänner.



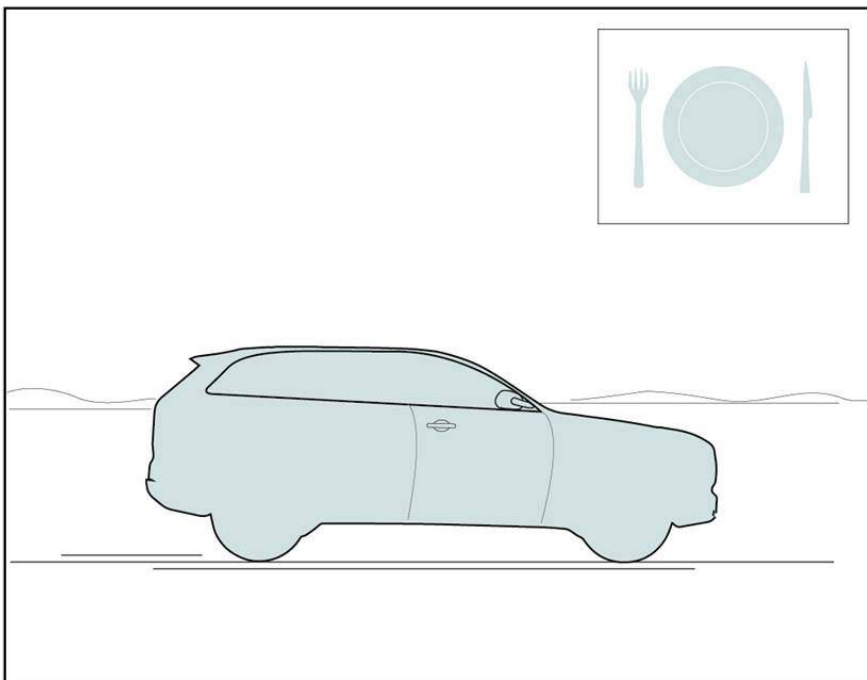
En av Klaras vänner har öppnat länken som Klara skickade. Han ser att hon är lite sen och passar på att packa ner det sista medan han följer bilens position.

Efter en stund ser vännen att Klara börjar närma sig och han går ut och ställer sig vid vägen.





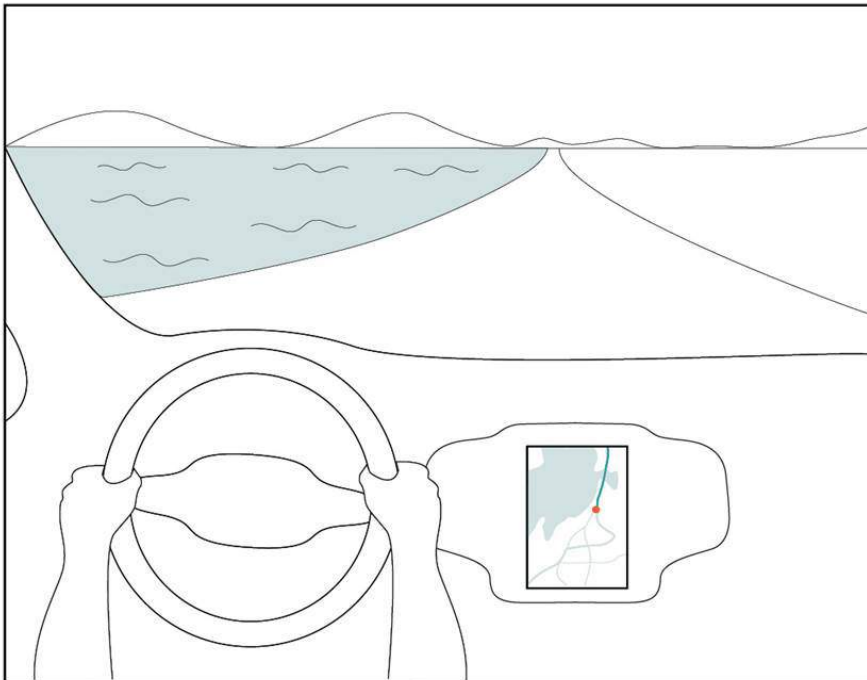
Efter att ha hämtat upp vännerna påbörjas bilresan mot Värmland.



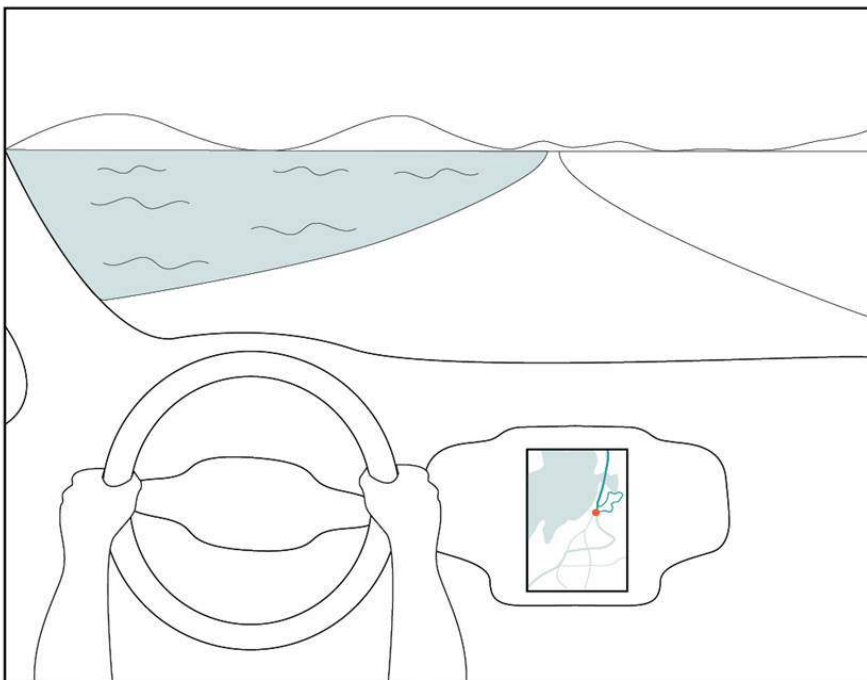
Efter att ha hämtat upp vännerna påbörjas bilresan mot Värmland.

Efter ett tag anländer Klara och vännerna till sitt delmål, restaurangen. De äter och fortsätter sedan sin resa.





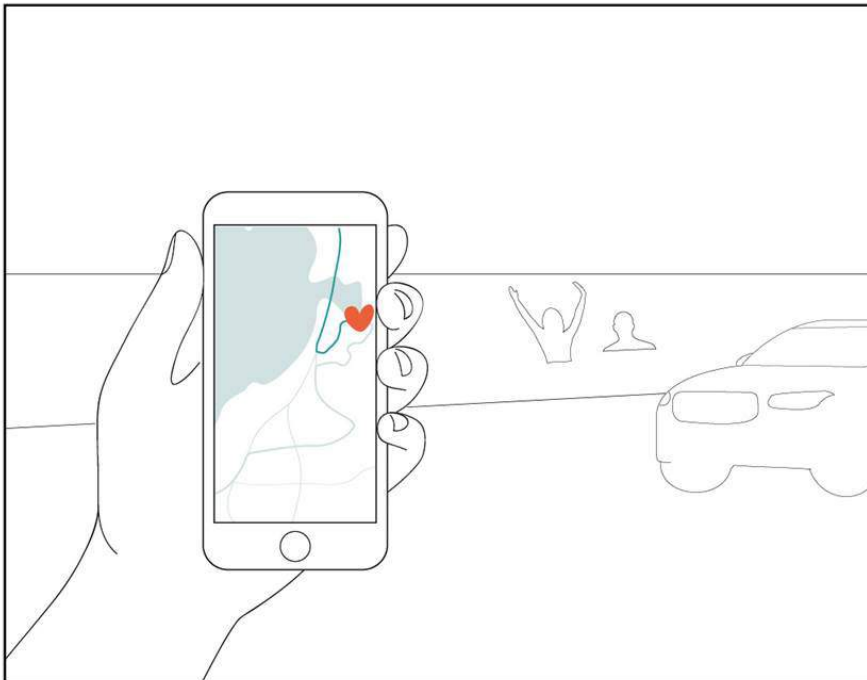
Efter ett tag åker de förbi en sjö. Solen skiner och en av vännerna föreslår att de skall ta ett dopp på vägen.



Klara använder navigationssystemet för att leta upp närmaste badplats.

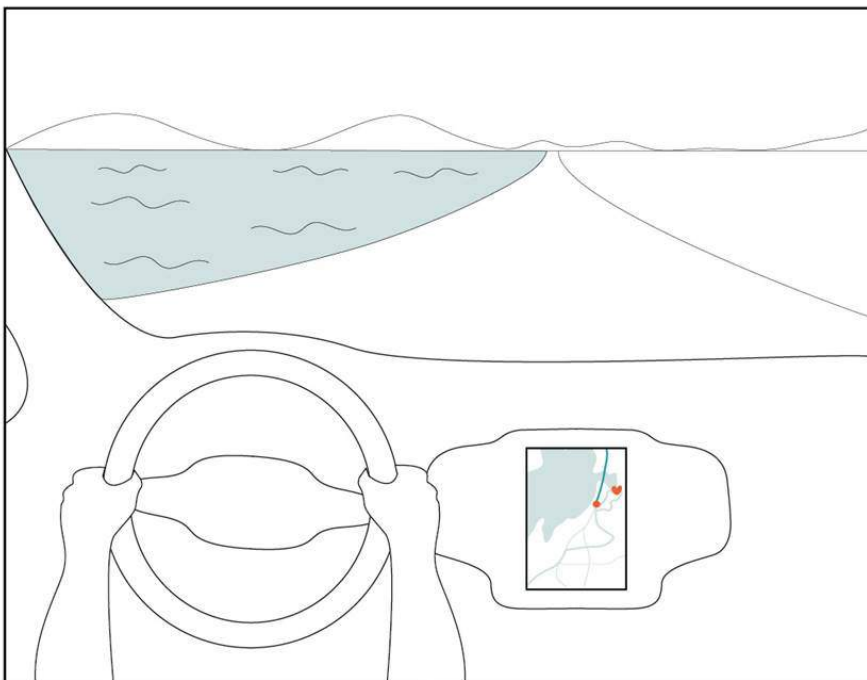
Systemet föreslår en badplats som ligger en bit bort. Klara lägger till badplatsen som ett delmål och blir guidad dit.





Vännerna anländertill badplatsen och badar.

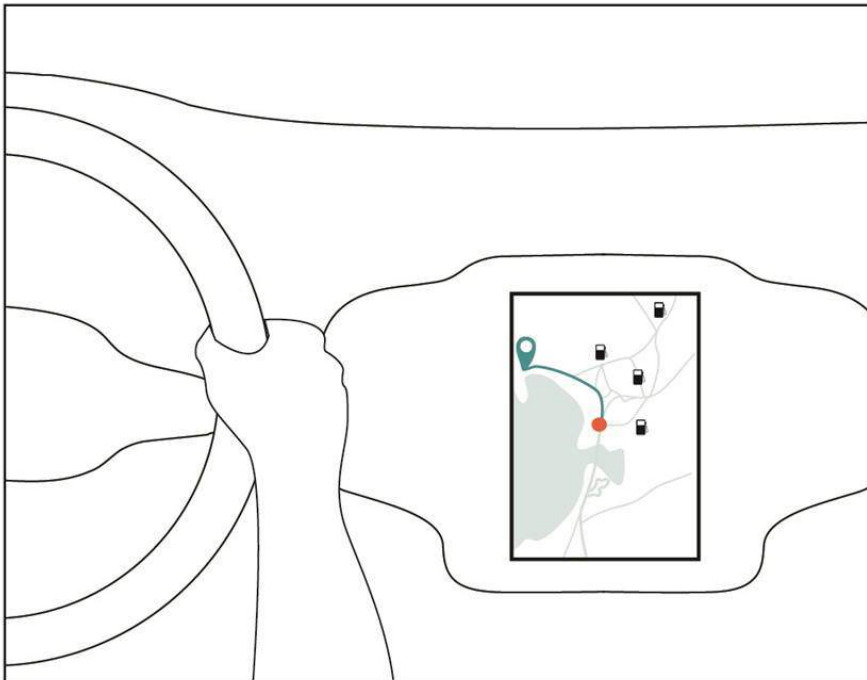
Klara tycker att badplatsen är värd att besöka igen. Hon namnger och sparar platsen i Volvo On Call.



När vännerna har badat klart kör de vidare.

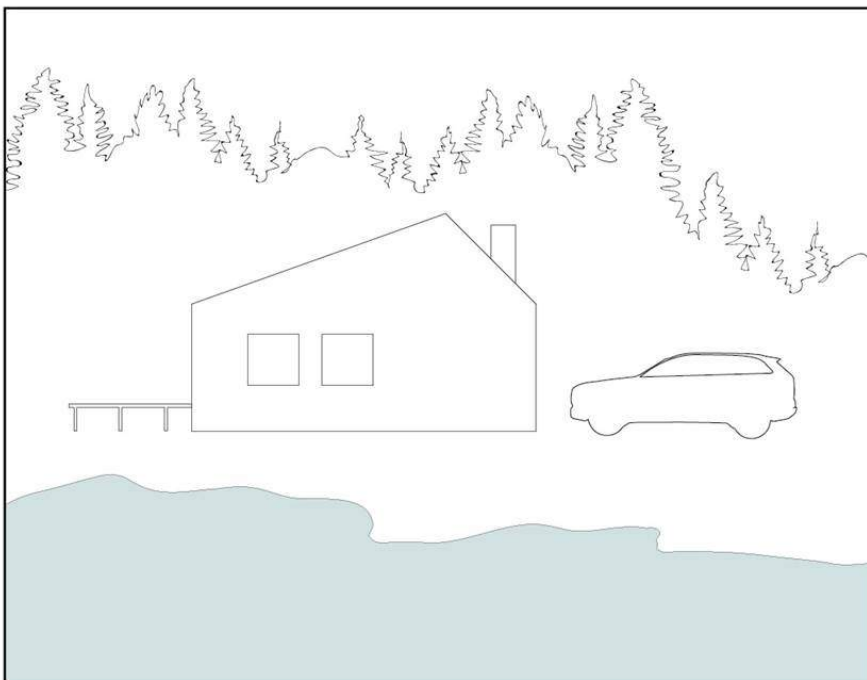
I navigationssystemet tas resrutten vid, och Klara noterar att badplatsen är sparad även där.





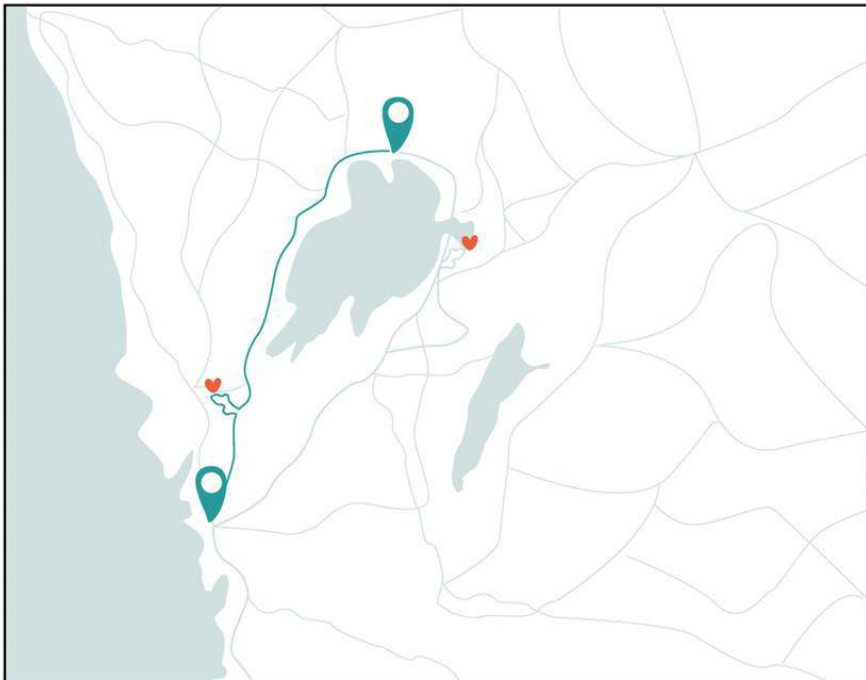
Efter en stunds körning indikerar bilen att det är låg bränslenivå, och ger förslag på närliggande tankställen. Klara väljer ett av förslagen och blir guidad dit.

Efter ett snabbt stopp kör de vidare.



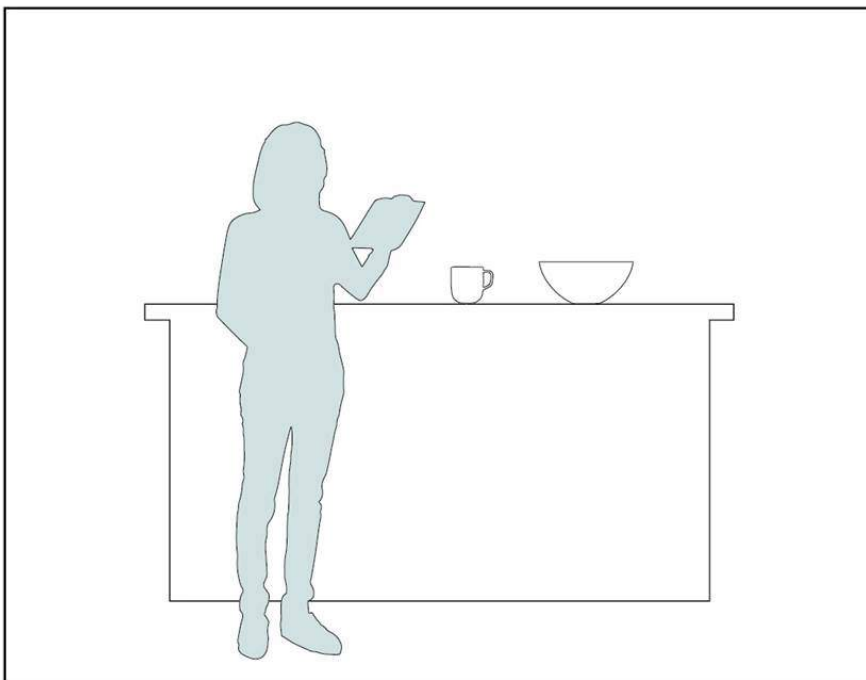
Efter en stund är Klara och vännerna framme vid stugan. De packar upp och har sedan en härlig semestervecka i Värmland.





När semesterveckan har gått väljer vännerna att köra en annan rutt hem. Klaras vän erbjuder sig att köra.

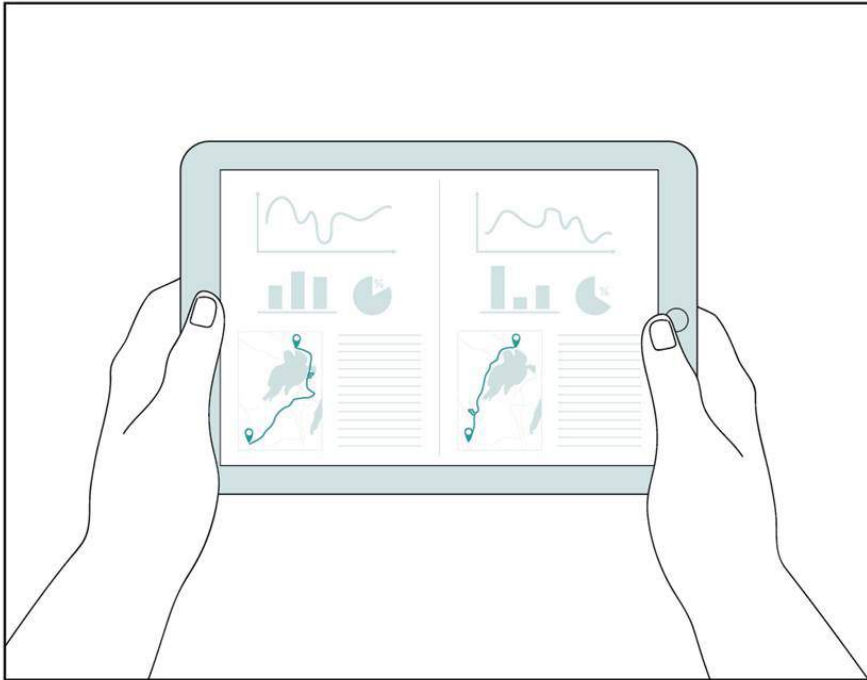
Vännerna bestämmer sig för att göra en avstickare för att besöka en loppis. Klara vill kunna hitta tillbaka dit, så hon sparar platsen i Volvo On Call på samma sätt som hon gjorde med badplatsen.



Väl hemma tänker Klara tillbaka på den härliga semesterveckan.

Hon öppnar Volvo On Call för att se hur mycket bränsle som har gått åt. Klara passar på att jämföra resrutten dit och hem.





Volvo On Call presenterar en sammanställning av de två resorna.

Klara kan se bland annat bränsleförbrukning, avstånd och miljöpåverkan, och kan på så sätt avgöra vilken rutt som var bäst att köra.

Klara upptäcker även att hon hade lägre medelförbrukning än hennes vän som körde under hemresan. Hon lägger det på minnet för att kunna reta honom nästa gång de ses.



Här tar berättelsen om Klara slut.

Var god gå tillbaka till frågeformuläret och svara på frågorna i del 2B!



APPENDIX VI:

USER EXPERIENCE ASSESSMENT QUESTIONNAIRE

The user experience assessment questionnaire is shown in the following pages. Since the questionnaire was sent out in Swedish, the questions are in Swedish here as well. Since the questionnaire was answered online, it looked somewhat different from what is presented in this appendix.

UTVÄRDERING AV NYTT VOLVO ON CALL-KONCEPT

Hej och stort tack för att du vill delta i utvärderingen av ett nytt Volvo On Call-koncept! För att delta i utvärderingen behöver du ha tillgång till berättelse A och B (finns bifogat i mailutskicket).

Utvärderingen behandlar dels dagens Volvo On Call, dels ett nytt Volvo On Call-koncept. Slutligen kommer också frågor ställas kring hur du ställer dig till det nya konceptet i jämförelse med dagens Volvo On Call. Utvärderingen består av följande delar:

- Del 1: Dagens Volvo On Call
- Del 2: Nya Volvo On Call
- Del 3: Jämförelse

Svara gärna så ärligt som möjligt, du är anonym. Tänk på att läsa igenom anvisningarna för frågorna.

Kön:

Kvinna / Man / Annat alternativ

Ålder:

0 – 29 / 30 – 39 / 40 – 49 / 50 – 59 / 60 +

Hur intresserad är du av ny teknik?

Ointresserad / Måttligt intresserad / Intresserad / Våldigt intresserad

Hur ofta använder du Volvo On Call?

Varje biltur

Dagligen

Flera gånger i veckan

En gång i veckan

Någon gång i månaden

Några gånger per år

Jag vet inte

Hur länge har du använt Volvo On Call?

1 – 3 månader

4 – 12 månader

1 – 2 år

Längre än 2 år

Jag vet inte

Del 1: Dagens Volvo On Call

I den första delen av utvärderingen ska du få svara på frågor gällande din upplevelse av dagens Volvo On Call. Var god markera på skalan hur du ställer dig till vart och ett av påståendena presenterade nedan.

Observera att frågorna gäller dagens Volvo On Call.

Jag tycker att dagens Volvo On Call är:

Alldaglig	1 - 2 - 3 - 4 - 5	Exklusiv
Besvärlig att använda	1 - 2 - 3 - 4 - 5	Smidig att använda
Onödig	1 - 2 - 3 - 4 - 5	Användbar
Ointressant	1 - 2 - 3 - 4 - 5	Imponerande
Komplicerad	1 - 2 - 3 - 4 - 5	Enkel
Passiv	1 - 2 - 3 - 4 - 5	Hjälpsam
Tråkig	1 - 2 - 3 - 4 - 5	Rolig

Jag upplever Volvo On Call som en förlängning av min bil.

Håller inte med alls	1 - 2 - 3 - 4 - 5	Håller med fullständigt
----------------------	-------------------	-------------------------

Jag anser att Volvo On Call berikar min bilupplevelse i hög grad.

Håller inte med alls	1 - 2 - 3 - 4 - 5	Håller med fullständigt
----------------------	-------------------	-------------------------

Jag tycker att Volvo On Call tillför ett betydande mervärde till min bil.

Håller inte med alls	1 - 2 - 3 - 4 - 5	Håller med fullständigt
----------------------	-------------------	-------------------------

Volvo On Call gör att jag oroar mig mindre över min bil.

Håller inte med alls	1 - 2 - 3 - 4 - 5	Håller med fullständigt
----------------------	-------------------	-------------------------

Volvo On Call underlättar i min vardag.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Volvo On Call gör att jag upplever bilen som mer inbjudande.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tycker att Volvo On Call gör att det är roligare att ha en Volvo.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Volvo On Call uppfyller mina förväntningar.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Volvo On Call gör att jag känner mig trygg.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag upplever att Volvo On Call stör mig för mycket.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Del 2: Nya Volvo On Call

Nu kommer det handla om det nya Volvo On Call-konceptet. Konceptet finns presenterat i form av två berättelser, där du får följa hur Volvo On Call används i olika sammanhang. Berättelserna finns bifogade i mailutskicket (Berättelse_A.pptx och Berättelse_B.pptx). Frågorna kommer ställas kring en berättelse i taget. Fortsätt att följa anvisningarna i detta formulär så guidar vi dig.

2A: Berättelse A

Nu vill vi att du går igenom dokumentet som kallas Berättelse_A.pptx som finns bifogat i mailutskicket. Det finns ljud inspelat till dokumentet, så du behöver använda helskärmsläget.

När du har gjort det så kan du svara på frågorna nedan.

Vad är din spontana reaktion på det nya Volvo On Call-konceptet?

Positiv / Negativ / Neutral

Varför?

Vad tyckte du mest om i det nya konceptet? Beskriv gärna varför.

Vad tyckte du minst om i det nya konceptet? Beskriv gärna varför.

Skulle du vilja använda det nya Volvo On Call-konceptet?

Ja / Nej / Vet inte

Varför?

2B: Berättelse B

Nu vill vi att du går igenom dokumentet som kallas Berättelse_B.pptx som finns bifogat i mailutskicket. Det finns ljud inspelat till dokumentet, så du behöver använda helskrämsläget.

När du har gjort det så kan du svara på frågorna nedan.

Vad är din spontana reaktion på det nya Volvo On Call-konceptet?

Positiv / Negativ / Neutral

Varför?

Vad tyckte du mest om i det nya konceptet? Beskriv gärna varför.

Vad tyckte du minst om i det nya konceptet? Beskriv gärna varför.

Skulle du vilja använda det nya Volvo On Call-konceptet?

Ja / Nej / Vet inte

Varför?

2C: Helhetsintrycket

Nu har du fått ta del av två berättelser som handlar om ett nytt Volvo On Call-koncept. I den här delen ska du få väga samman dina intryck från berättelserna A och B och tänka på det nya konceptet som en helhet. Skumma gärna igenom berättelserna igen om det behövs.

Hur skulle du beskriva ditt helhetsintryck av nya Volvo On Call (både berättelse A och B)?

Positiv / Negativ / Neutral

Varför?

Försök föreställa dig att du har använt det nya Volvo On Call-konceptet under en tid. Om du får uppskatta, hur tror du att din upplevelse av att använda konceptet skulle vara då? Svara genom att markera på skalan hur du ställer dig till vart och ett av påståendena presenterade nedan.

Jag tycker att nya Volvo On Call verkar vara:

Alldaglig	1 - 2 - 3 - 4 - 5	Exklusiv
Besvärlig att använda	1 - 2 - 3 - 4 - 5	Smidig att använda
Onödig	1 - 2 - 3 - 4 - 5	Användbar
Ointressant	1 - 2 - 3 - 4 - 5	Imponerande
Komplicerad	1 - 2 - 3 - 4 - 5	Enkel
Passiv	1 - 2 - 3 - 4 - 5	Hjälpsam
Tråkig	1 - 2 - 3 - 4 - 5	Rolig

Jag tror att jag skulle uppleva Volvo On Call som en förlängning av min bil.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle berika min bilupplevelse i hög grad.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att jag skulle tycka att Volvo On Call tillför ett betydande mervärde till min bil.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle göra att jag oroar mig mindre över min bil.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle underlätta i min vardag.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle göra att jag upplever bilen som mer inbjudande.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle göra det roligare att ha en Volvo.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle uppfylla mina förväntningar.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att Volvo On Call skulle göra att jag känner mig trygg.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tror att jag skulle uppleva att Volvo On Call stör mig för mycket.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Del 3: Jämförelse

I den här delen skall du få jämföra dagens Volvo On Call och det nya Volvo On Call-konceptet. Välj det alternativ som stämmer bäst in på påståendena nedan.

Jag skulle helst vilja använda:	Dagens Volvo On Call / Nya Volvo On Call / Kan inte välja
Underlättar i högst grad:	Dagens Volvo On Call / Nya Volvo On Call / Kan inte välja
Berikar vardagen mest:	Dagens Volvo On Call / Nya Volvo On Call / Kan inte välja
Upplevs som smartast:	Dagens Volvo On Call / Nya Volvo On Call / Kan inte välja
Ger mest positiv upplevelse:	Dagens Volvo On Call / Nya Volvo On Call / Kan inte välja

Hur skulle du skatta din upplevelse av dagens Volvo On Call?

Negativ 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 Positiv

Hur skulle du skatta din upplevelse av det nya Volvo On Call-konceptet?

Negativ 1 - 2 - 3 - 4 - 5 - 6 - 7 - 8 - 9 - 10 Positiv

Är det något du skulle vilja tillägga?

Tack!

Tack för att du har varit med och hjälpt oss att utvärdera ett konceptförslag för ett nytt Volvo On Call.

Vi har använt oss av en för oss ny och annorlunda metodik för att genomföra den här utvärderingen och är nyfikna på vad du tyckte om den. Syftet var att testa om det går att få en tidig utvärdering av en framtida upplevelse med hjälp av berättelser och bilder. Vi är tacksamma om du slutligen vill svara på fyra frågor kring den här utvärderingen.

Vänligen markera det svarsalternativ som stämmer bäst överens med din åsikt.

Jag hade lätt för att ta till mig berättelserna i det format de presenterades.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag anser att mina svar återger mina åsikter på ett korrekt sätt.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag tycker att det var lätt att förstå det nya Volvo On Call-konceptet genom att ta del av berättelserna.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Jag hade lätt för att ta ställning till vad jag tycker om det nya Volvo On Call-konceptet.

Håller inte med alls 1 - 2 - 3 - 4 - 5 Håller med fullständigt

Har du någon mer feedback som du vill framhålla?

