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DIGITAL CO-CREATION

Linus Schaaf

Digitalization within Service Design:
Transformation from analog thinking towards digital doing

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Supervised Professor Satu Miettinen, Dean, Faculty of Art and Design, University of Lapland, Finland

Kaarina Määttä, Professor of Educational Psychology (emerita), Faculty of Education, University of Lapland, Finland

Dr. Gregor Stock, Volkswagen Group, Germany

Reviewed Professor Mauricio Manhães, Savannah College of Art and Design, USA
Professor Nicola Morelli, Aalborg University, Denmark

Opponent: Professor Nicola Morelli, Aalborg University, Denmark

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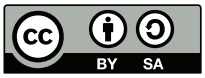

VOLKSWAGEN
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Abstract

The German automotive industry has accelerated its digital transformation as OEMs (Original Equipment Manufacturers) moving from car manufacturers towards becoming mobility providers, striving for new mobility solutions like offering Mobility as a Service (MaaS), Electric Vehicles (EVs) and Self-Driving-System (SDS). OEMs focus on expanding their core product-driven businesses to access service-orientated business models, the transformation from ownership towards shared mobility. Considering internal and external factors, this requires a new set of expertise, capabilities and an underlying approach to fulfill the demands in the complexity of human-centered development and front- and backstage alignment within the organization. At the same time, Service Design as a practice has risen in attraction by industry, being recognized and increasingly requested for its integration in the functions and divisions of the organization. The scale of Service Design in influence and impact has reached professional practice, making its way from a trendy buzzword to professional practice of turning complex problems collaboratively into tangible solutions. It is seen as a powerful opportunity for combining Business, Human-Centered Design and Engineering. Service Design establishes new ways of exploring business opportunities towards agile problem-solving but focuses on the 'doing' side towards further implementation.

The contribution of this industrial-based doctoral thesis shall define how Service Design can be deployed and implemented in the field of organizational transformation and mobility development in the era of digital transformation (Digitalization). This research approach seeks to acquire new knowledge on how the Service Design practice can be applied and executed to be perceived as a practical approach to improve the enterprise's processes and operating procedures and also provide a strategy to grow Service Design within the organization. This research has followed developing a pilot in a lean start-up approach of build, measure, learn with various business units and brands within the Volkswagen Group, this also implies that this research case study consisted of analyzing the Volkswagen Group needs for Service Design.

The '10X-Service Design Lab' (10X-SDL) has been designed as the framework of a combination of modular lab space, facilitation enhanced process, methodological driven tool box, operational model in alignment with a digital workflow and workspace striving for accelerated decision making. It is based on the hypothesis that the proposed framework enhances Service Design practice and, at the same time, it increases its attractiveness for business purposes. The 10X-SDL is designed

to accelerate project development in a human-centered and holistic way by an open workspace platform lead by facilitators on which project developers, participants, and stakeholders can digitally co-create products, services, systems, and strategies.

This research has been conducted as a case study within the Volkswagen Group from 2015 to 2019 in cooperation with the main partners of Service Innovation Corner (SINCO) of the University of Lapland and visual collaboration software company DEON.

Keywords: Service Design, Digital co-creation, Accelerated decision-making, Digital knowledge management, Visual collaboration, Digital collaboration, Digitalization, Organizational transformation, Service Design practice, SINCO, Hybrid working, Remote facilitation

Overview of chapters

Chapter 1: Research introduction presents the theoretical foundation on which the research relies and has given an overview about defining the field and characteristics of Service Design, especially its adaptive practice to perform as a transformative enabler for an organization. The research gap defines the dynamic context and situation in which Service Design is applied. This research is founded on research through Design and the implementation of Service Design inside an organization. It draws its strength out of applied theory in practice and vice versa. It describes how this study relates to general considerations about the production of scientific knowledge by positioning the study within theories of science. The research process and model has been defined for investigating the leading research questions. The chapter outlines the data conduct of cases and the specific methods applied for collecting and analyzing the research material.

Chapter 2: Awareness—Phase serves the purpose of exploring the context and situation, identifying problems and challenges, and discovering opportunities in the field to apply Service Design practice inside organization; describing the current situation in the organization and analyzing the need for Service Design depended of applied context.

Chapter 3: 10X-SDL | development documentation shows the documentation of the project development in aggregated form and states the highlights of the development as well as provides an overview about the functionality of the 10X-SDL.

Chapter 4: In-Use Phase describes and analyses cases conducted in the 10X-SDL, further separated in deploy and use phase. Each case is analyzed based on the data processing and enables to derive feedback from the user addressing implemented solution the 10X-SDL.

Chapter 5: Evaluation presents the research conclusion by relating the research questions to the research results presented and discussed in the previous chapters. The chapter positions and limits the research results concerning context and present knowledge and outlines future perspectives on implementing Service Design for practice.

Glossary

Terms and definitions are based on (International Standard, 2019). For this document, the following terms and definitions apply.

Accessibility | extent to which products, systems, services, environments and facilities can be used by people from a population with the broadest range of user needs, characteristics and capabilities to achieve identified goals in identified contexts of use

Customer | organization or individual purchasing property, products, or services, commercial, private, or personal use. A customer does not necessarily have a financial relationship with the organization

Effectiveness | accuracy and completeness with which users achieve specified goals

Efficiency | resources used concerning the results achieved

Emotional value | value stemming from emotion of stakeholders (3.9) through their interactions Note 1 to entry: Emotional value can be short term from a single or short, successful interaction, or it can be long term (trust and comfort)

Ergonomics, human factors | scientific discipline concerned with the understanding of interactions among human and other elements of a system (3.5), and the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance

Environment | physical, chemical, biological, organizational, social and cultural factors surrounding one or more persons

Fundamental value | value expected by stakeholders

Human-centered design | approach to systems design and development that aims to make systems more usable by focusing on the use of the system and applying ergonomics, human factors and usability knowledge and techniques

Job | organization and sequence in time and space of an individual's work tasks or the combination of all human performance by one worker within a work system

Knowledge value | value stemming from knowledge of stakeholders, through their interactions

Service | means of delivering value for the stakeholder by facilitating results which the stakeholder wants to achieve. Services can include human-system interactions (e.g. accessing a word processor through the web) and human-human interactions (e.g. a citizen interacting with a clerk at the post office counter). The results of the service can be intangible and tangible. Delivered value consists of fundamental value, knowledge value and emotional value

Stakeholder | person or organization that can affect, be affected by, or perceive themselves to be affected by a decision or activity. Includes, but not limited to environmental organizations, investors, communities, regulators, employees, specific employee groups and customers

System | combination of interacting elements organized to achieve one or more stated purposes

Task | set of activities undertaken in order to achieve a specific goal. These activities can be physical, perceptual and/or cognitive. While goals are independent of the means used to achieve them, tasks describe particular means of achieving goals

User | person who interacts with a system, product or service

Usability | extent to which a system, product or service, can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use

Organization | person or group of people with its functions with responsibilities, authorities and relationships to achieve its objectives. The concept of organization includes, but is not limited to, sole-trader, company, corporation, firm, enterprise, authority, partnership, association, charity or institution or part or combination thereof, whether incorporated or not, public or private

Workspace | volume allocated to one or more persons in the work system to complete the work tasks

Workstation | combination and spatial arrangement of work equipment, surrounded by the work environment under the conditions imposed by the work tasks

Abbreviations

DT | design thinking
FAQ |frequently asked question
HCD | human-centered Design
HMI | human-machine interaction
SD | service design
PoC | proof of concept
UI | user interface
UX | user experience

List of figures

Table of contents

1 Chapter: Research Introduction

This chapter presents the theoretical framework as a case study in the automotive industry and describes the contexts and situations in which this research has been conducted. It provides an overview of the Service Design field and how Service Design is adapting and adjusting depending on the context in which it is applied. This research has the purpose of exploring the context and situation to enable to identify problems and challenges to discover opportunities in the field to apply Service Design practice in the Volkswagen Group organization.

Since the starting point at the end of 2015, this research has aimed to understand in laddering thinking the diverse problem-need relations of the Volkswagen Group organization in the application and utilization of Service Design for business purposes. In this doctoral thesis, digitalization stands for transformation and impacts how Service Design is practiced. It follows the demand for such research and develops new solutions as well as approaches to reframe human-centered development with Service Design methodology for business development in the era of digitalization. Service Design reframes itself for new premises concerning its applied context and adapts its deployment for various forms of application and utilization in the organization. The knowledge gap in the current discussion in the field lies in **"moving from Service Design thinking towards Service Design doing"** (Grimes, 2016; Stickdorn, Lawrence, & Hormess, 2018). This emphasizes the need for reframing Service Design in the business sector, which has to function under other premises. Service Design as a discipline has to open and enrich the pre-existing development frameworks and fulfill business demands. The discussion about the transformation of Service Design and, for example, opening up to other frameworks for innovation and utilization of digital technologies is ongoing in the field.

1.1 Research preview

The scale of influence and impact of the Service Design discipline has reached professional practice and has found itself operating in new circumstances and environments to accomplish its goals. Considering the knowledge gap within the Service Design field, Service Design as a discipline still struggles to encapsulate the whole process of implementation and strategies for implementation, which can be explained by its being a young profession and often being put to use for early-stage

development. Furthermore, Service Design has encountered new challenges inside organizations in business and industry. The aim of Service Design in the industry is not just to create customer value; it is equally essential that the same amount of business value is delivered. Furthermore, Service Design faces complex challenges inside a large organization, especially if Service Design is still in a developing stage and has not reached a scaled stage of embedment in the organization. These cultural contexts demand that Service Design enable change. Its advantages lay in an open discipline that can combine different fields, methodologies, tools, and frameworks; it has a flexible and adjustable orientation to fit different premises and cultural contexts. Service Design is under constant development; it reinvents itself under the given purpose of application and utilization. It looks at the big picture, aiming for the creation of ultimately holistic experiences and, at the same time, therefore, has to create a better business. This means it has to translate intangible values into concrete actions and touchpoints, creating substantial value for customers and service providers at the same time. A significant role of Service Design in the industry provides facilitation to enable change through collaboration between various stakeholders; the front- and backend have to be aligned equally. The inclusion of all relevant stakeholders increases the probability of implementing change, enabling people to develop ideas, take ownership, foster commitment in continuous concretization, which leads to tangible solutions and increases added value in business operation.

Service Design has emerged from academia and is an academic discipline with roots in design research, incredibly empathic and participatory design (Bjögvinsson, Ehn, & Hillgren, 2012; Holmlid, 2009). A majority of Service Design research is applied and based on case-study research within companies or institutions, meaning bridging theory and practice as various practical design and design research methods are combined. This also strengthens Service Design in practice, as new methods and processes are continuously developed and expanded in fields from hardware production in industry to software development in business and even in service delivery in public administration. For Service Design in practice, service development and service delivery are designed around the end-user and stakeholders to deliver the most situation-relevant process and, as a result, create a customer experience (CX) that leads to recommendations and return customers (Miettinen, 2017, pp. 8–9). Service Design aims to create customer- or human-centered solutions in which the service development and service delivery process have to provide a logical, enjoyable, and memorable experience. To this end, Service Designers in the industry focus on not only recreational end-users but also professional users whose insights and their interpretation form the basis for value creation and business development. Service Design has a central coordinating role as facilitator between users and stakeholders in service development by **"acting as overall choreographers of the service experience" (Miettinen, 2017, pp. 4–5).**

Especially in the digital economy, the value of the co-creation process is immediate and rapidly developing. Service Design responds well to current and future changes in our physical and business environment, in which digitalization is rapidly progressing (Miettinen, Jylkäs, Tikkanen, & Jeminen, 2016). The paradigm change from analog to digital accelerates the creation of new digital businesses. Service Design offers developers instant value delivery tools that aim to gain and concretize a holistic customer experience in the everyday context and real-time use for companies; the direct contribution of Service Design is of value to both co-creation research and practice. **"Focusing on the iterative cycle of engaging users, using mock-ups and cheap prototypes, and evaluating the results in a development process, will result in a customer-driven and usable service solutions [...] Service Design is about concretizing abstract and/or immaterial content into something that can easily be shared, understood, discussed and prototyped together. It is about doing, making, and learning through practice. Service Design encourages trying and failing early" (Miettinen, 2017, pp. 4–5).**

Further, Service Design aims for growth: an increase in customer loyalty and discovery of new unique selling propositions (USP) to result in higher margins and reduced time to market. The application and utilization of the Service Design process in business should result in cost savings and additional revenue. Service Designers in the industry apply an outside-in and inside-out perspective by using tools as personas, journey mapping, and service blueprinting to determine user and stakeholder motivations to identify the needs for service opportunities or improvements (Miettinen, 2017, pp. 8–9).

Service Design in the industry has to accelerate and increase the outcome of development work by being investigative, analytical, visual, and collaborative at the same time. This means enabling the human-centered development of products, services, systems, and strategies through an open approach. Furthermore, it has to frame the collaborative effort to produce clear deliverables serving either as a direct-action plan for the current business process or to solve the problem of uncertainty in the early-stage development by increasing tangibility and applying continuous concretization. Further, it serves as an efficient knowledge-transfer mechanism to create alignment between the stakeholders across silos, as today's project setups often rely on embedded team approaches involving various internal and external stakeholders and skill sets. Simultaneously, it has to enable a deeper understanding and alignment of all stakeholders within the development process. This makes it more critical to ensure that everybody involved in a Service Design project shares a common view of the purpose and scope. To enable the organization to frame their Service Design initiates for implementation, Service Design must act in a human-centered way and involve all stakeholders in the front- and backend, not just the end-user. In this context, Service Design can be utilized for internal and external business processes across multiple customer relationships as Business to Customer

(B2C), Business to Business (B2B), and Business to Administration (B2A). Service Design practice lacks efficiency, and this provides an opportunity to increase business value. Diverse examples of influencing factors in the Service Design discipline can be given, yet they are still surprisingly analog experiences, and the main working tools of Service Designers are intense face-to-face exchange formats such as design sprints. Analog tools like sticky notes, printed journey maps towards blueprints, and whiteboards are still well-established working tools, resulting in adding many chores without value to the core problem even when new digital collaboration tools enable seamless workflows.

Figure 1: Digitalization stands for Transformation (Schaaf, 2020b)

The contribution of this doctoral thesis: **"DIGITAL CO-CREATION Digitalization within Service Design: Transformation from analog thinking towards digital doing"** has the strategic purpose of solving the problem of holistic business development and of producing solutions for effective and efficient Service Design practice in the context of application; by this means it will also improve, advance, and transform Service Design research through Service Design practice. This research is based on developing and establishing the **"10X-Service Design Lab" (10X-SDL)** within the former Volkswagen Group Digitalization department. The 10X-SDL is not just a physical space in a modular lab, but much more a framework combining a facilitation-enhanced result-driven process, methodology-based tool box, an operational model for high utilization rate, and enhancement through running on the digital collaboration platform **"DEON."** The 10X-SDL is a co-creation lab that enables the experiencing, design, and testing of services in a human-centered and holistic way by integrating all physical and digital tools needed for the Service Design process (see Figure. 1). The 10X-SDL is the further development of the approach of **"Co-creating Understanding"** of the Service Innovation Corner

(SINCO), which has been built as an experience-prototyping laboratory at the Faculty of Art and Design of the University of Lapland. This has been developed by prototyping methods and facilitating workshops within several Service Design case projects in business and public sector contexts since 2009 (Rontti, Miettinen, Kuure, & Lindström, 2012). It is a practical manifestation of the action research and development work done on the user-centric development focusing on the customer journey by immersing into the customer's point of view. The guiding foundation of the SINCO's physical facilities and working principles has been an approachable method for business teams to realize Service Design in practice.

10X simultaneously stands for **"10 times thinking"** and **"10 times doing." "Think 10X"** is the motto of former Google CEO Larry Page, referring to the search for ideas in an unbridled vision that is ten times as good as the existing solutions. The mission statement of **"Do 10X"** is to accelerate and increase the outcome of development work enabled by a digital workflow combined with a solution-orientated and result-driven process.

This research is conducted not only through a lab but to a greater extent by measuring how it is perceived and used by the organization and further adjusted for scalability. This discussion will be documented thoroughly, based on the development process as an invention and the implementation as an intervention in the **"10X-SDL"**. This research follows a service design approach with the essential aspect of a design object being introduced into the organization and continuously adjusted towards the user needs and organizational demands to perform in an optimal way for scalability. The objective has been to provide accelerated practice of doing, making, and learning in the 10X-SDL. Enabled by a digital workflow, it has created a more agile and customer-centric mindset in the organization by creating momentum through ease of use. The 10X-SDL has been set up as a pilot project and beacon for digitalization to enable business solutions and human-centered and design-driven operations. An important role is played here by digital technologies influence in how Service Design is practiced and positioned for business use in organizations. This case-study research follows a Service Design research model on how Service Design as an approach can be applied and utilized and how it can be deployed, implemented, and embedded in an organization. The Service Design research model serves as a research process and is consistent throughout understanding the needs and demands of the organization, discovering opportunities, defining the focus on goals, designing and delivering the solution, and deployment and use in alignment with constant iterative evaluation for professionalization. This industry-based research is firmly situated to be put to the best possible use in developing internal and external business operations—new research knowledge promotes business and service innovations that create added value in a multi-centric, efficient, and effective way. It has to be stated that the premises (see Figure 2) for 10X-SDL have demanded a holistic solution that overarches various disciplines and fields. For the Volkswagen

Group, the advantages of this approach lie above all in customer and employee focus, increased speed in development, and improved results for sustainable business development; a faster, more tangible, and more aligned way for creating valuable outcomes for the organization and business.

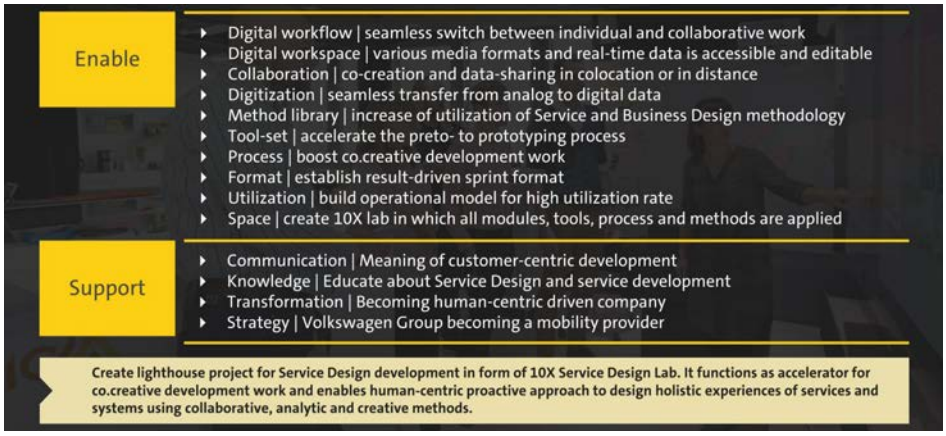


Figure 2: Premises for the 10X-SDL (Schaaf, 2020b)

As this industrial-based research approach is firmly situated in the field, its creation of new knowledge will provide operational significance for the Service Design practice and draw new knowledge out of the field for the Service design discipline. This research follows the field approach (Koskinen, Zimmermann, Binder, Redström, & Wensveen, 2011), meaning the investigation of Service Design addresses implementation in the context of real and specific Service Design projects within the automotive industry, learning more about the social system in the process of changing it: **"First and foremost a researcher, rather be part of the design team as a designer. Design practice describes situations where the design researcher participates in 'real life' projects as a means to understand the contexts, problems and potential solutions" (Fallmann, 2008).** Practice-based research is supposed to provide a systematic and comprehensive theoretical framework applied in practice. It investigates and evaluates the design work but also leads the research primarily to new understandings about the Service Design practice itself; as an integral part it falls within the general area of applied research and its strong influences lay primarily in action research (Brydon-Miller, Greenwood, & Maguire, 2003) as collaborative and iterative research feedback loops have been essential throughout the whole research process. Real-life context and interventions inside the organization have created immediate responses and instant knowledge, having a limited role as an observer but more as an actor of intervention. Real-world

aspects have been investigated, created and reflected upon in context. **"The main focus of the research is to advance knowledge about practice or to advance knowledge within practice" (Candy, 2006).** The research was conducted within the organization as a case study in the community of Service Design practice in a real-life context; this means the dynamic process consisted of analysis and change in real-time. Still, this doctoral research aimed for a solution- and result-driven orientation, determined by the organizational setting and coping with the vague, dynamic, and complex action field. Multiple stakeholders and participants have been great sources of information and knowledge, also serving to buffer preconceptions. This approach can be defined as practice research in action (Sevaldson, 2010), in this way changing design and community practices through actions through interactive, participative, collaborative, and applied research. However, this doctoral research also has to respond to the application of new technologies in practice and the development results of new practices. As such, practice is redefined and reinvented based on the push of new technologies introduced into the area of Service Design; technology-driven design (Sevaldson, 2010).

The process presents itself with multiple characteristics; different modes of Service Design operation are combined and appear together with other modes of research. At its core, this qualitative doctoral research has an overall highly participatory approach. An organizational problem in business operations is identified along an iterative process, a solution defined and developed to solve the problem, and the solution deployed, implemented, and validated in each step by user testing and further co-created. As a result, new knowledge is generalized in a transferrable form of bottom-up theory building based on abductive reasoning. This is the knowledge that is accessible to and arguable among peers **"by describing the relations between practice and research, between making and reflection and between implicit and explicit knowledge" (Sevaldson, 2010**).

This research engages Service Design practice and uses existing knowledge and experiences in the research process. The research recognizes multiple understandings for how to address implementation in Service Design projects and attempts to embrace this by combining different professional perspectives and theoretical perspectives in the research context and process. This also implies that the researcher has moved between two states of practice, the design practice and the academic practice. By applying an active-pragmatic role in the applied research, the results are influenced by the author's subjective perspective and the demands of the projects' objectives as defined by the organization. Therefore, the research never claims to present the 'whole truth'; instead it aims to produce plausible explanations and indications. This doctoral thesis involves a participatory approach; all feedback given regarding the 10X-SDL by the diverse participants and stakeholders played a significant role in the constant feedback loop. Former and related projects conducted before this doctoral thesis further built a firm basis. It is important to note that the

author himself has conducted not all the project work conducted and described in this doctoral thesis.

This case and research cross other disciplines in a holistic approach. It is a transdisciplinary design approach that strives for the fusion of disciplines, allowing work across disciplines in new and innovative ways. Transdisciplinary research is an intense and continuing process of diverse participation of practitioners (Held, 2016; Muratovski, 2016, p. 24). The **"transdisciplinary"** situation requires not just knowledge (observation, description, interpretation, understanding, etc.) of the world but its transformation; an adequate orientation or transformation of the knowledge is produced (Findeli, Brouillet, Martin, Moineau, & Tarrago, 2018). Although this doctoral research also has a substantial basis for a contribution in the form of the creative outcome, the research leads primarily to new understandings about practice. As design research is open for a critical discussion of its own project, it has to contribute to the process of framing the discipline and to the consolidation of design research (Scheuermann, 2016).

1.1.1 Positioning researcher and stakeholder involvement, and organizational setting

The former Volkswagen Group Digitalization department engaged in utilizing Service Design as an approach to develop better human-centered services, product-service-systems, business processes, and strategies. Service Design has to serve a hybrid role: exploitation and exploration. Exploitation serves the purpose in a corporation of increasing operational excellence in terms of improving the business process in the form of optimization, making it more lean, robust, and beneficial to the employees. Exploration stands for innovation, whereas Service Design has to have a very strategic impact on how new sustainable business models are developed, creating values for the customer and the business. This industrial-based Ph.D. project is firmly based on the need of the department to identify the best practices for business development in the era of digitalization to support business operations in increasing added-value for desirable, feasible, and viable outcomes (Brown & Kātz, 2009), as well as accelerate development, lower costs in the overall process, and support the accuracy of the human-centered and business-centered approach. This research is situated inside and funded by the Volkswagen Group Digitalization department and within the sector of Smart Mobility. The research partnership between the University of Lapland and the Volkswagen Group has its origin in 2015 and stands in relation to the author's industry-based doctoral research. It has to be stated that the author has a long-time connection with the University of Lapland as he has already completed his B.A. studies in Media Design as an Erasmus student at the University of Lapland in 2012, then continuing as a full-time M.A. student of Industrial Design with a focus on Service Design. He then further has enrolled in the doctoral graduate school (University of Lapland, 2018a). Throughout this time, the

author has gathered a deep knowledge about SINCO and been part of the SINCO project team in several University of Lapland research projects with Finnish SME businesses. The author has taken part in the Volkswagen Group doctoral program (Volkswagen AG, 2018c) with the academic partner of the University of Lapland. The program consisted of the dual approach of working at the Smart Mobility unit at Volkswagen Group Digitalization as a doctoral researcher in Service Design and being, at the same time, a Ph.D. candidate in the doctoral graduate school in the program **"Culture-based Service Design"** (University of Lapland, 2018b). The Volkswagen Group has also funded the research and the author has been, since the starting point, an employee of the Volkswagen Group. Throughout the 10X-SDL research, the author has filled several roles simultaneously as a researcher, project lead, and coordinator between stakeholders and partners, consultant, developer, facilitator, and Service Designer.

This multi-stakeholder research project consisted of several interdisciplinary partners such as the main partners, the Service Design lab (SINCO) of the University of Lapland, and the in-house Service Design agency, the Business Innovation Studio Volkswagen Group Services. It also involved external partners such as the visual collaboration software company DEON, the software company Microsoft, and many other internal partner units and the phases of development towards implementation. Figure 3 shows involved key stakeholders with their specific role in regards to this doctoral thesis and the 10X-Service Design lab research project.

CORE STAKEHOLDER	ROLE	INPUT
VW Group Digitalization	Strategic guidance	Mission, vision, branding
Smart Mobility	Strategic guidance	Purpose, objectives, mission, project supervision
University of Lapland	Conceptual development, support, service design education	SINCO concept, facilitation guide, methodological approach & framework, academic supervision
DEON	Software development, support, technical advisory	DEON software, new features, bug fixes, software support
Volkswagen Group Services Business Innovation Studio	Facilitation team	Service design execution | facilitation, feedback for processes, technology, software, methodology, tools, equipment, operational model | constant development
Future Center Europe	IT support	Organizational consultancy and technical advisory
ENABLING STAKEHOLDERS		
Media technology planning	Project management, hardware support	Support purchase process, hardware project management, further technical support,
Macom	Media planning consultancy	AV concept, technical blueprints, support project management
IT operation (DEON)	Operation of DEON software, software support	Operation of server and software distribution, internal development
IT technical support	IT support	IT set-up, hardware and software support
SUPPLYING STAKHOLDERS		
Office organization	Hardware supply	Furniture, space modules, support purchase process
Microsoft	IT hardware supplier	Surface device portfolio, hardware and software support
AVE	Hardware integrator	Set-up of technical hardware infrastructure, technical support

Figure 3: Overview of stakeholder's involvement in the 10X-SDL

ORGANIZATIONAL SETTING & CONTEXT

With the former CDO Johann Jungwirth, the former Volkswagen Group Digitalization department has been established to accelerate the transformation and establish supporting initiatives and impulses for the organization to become a leading mobility provider. This digital transformation has followed the vision of **"Mobility for all at the push of a button."** This mission consists of creating a digital ecosystem that offers a best-in-class human experience by delivering digital products and services that are exciting, easy to use and satisfy all mobility needs. In this way,

"Mobility for all" emphasizes its purpose of mobility as a Service (MaaS) solutions as a holistic approach considering all transportation modes and vehicles that deliver added value for the customer. Especially looking in the future of self-driving vehicles or autonomous cars, this will enable mobility for all by enabling mobility also for the blind, elderly and children (Jungwirth, 2018). The former Volkswagen Group Digitalization department serves as an umbrella function working together with and supporting the transformation of the 12 brands of Bentley, Lamborghini, Porsche, Scania, Man, Truck & Bus, Commercial Vehicles, Audi, VW, Skoda, Seat, and Ducati.

The department focuses on developing mobility services and product-service systems with a focus on sustainable business model innovation, new mobility services or those that go beyond the core business of automobile manufacturers as it is today. The department's clients are the different Volkswagen Group brands and partners. The business model proposals with the Proof of Concept (POC) are transferred to the partners to execute for scaling. Besides these innovation developments, the Smart Mobility team researches Business and Service Innovation and establishes how to optimize agile, lean, and human-centered frameworks to support their processes. In this interdisciplinary field of applied Service Design, Design Thinking, Scrum, and business development are crucial to success and new hybrid methodologies, technologies, tools, and processes are demanded. In the past, the department has developed, for example, the product-service-system **"Paketauto,"** running at that time under the name of "WeDeliver" at Volkswagen (Hentchel, 2018). This has enabled the customer to order deliveries directly to the car trunk.

Another example is the PickXGo-Shuttle project, a shuttle-on-demand service that targeted an improvement of Volkswagen employees' mobility offerings. **"Employees can use a smartphone app to enter their location and destination and book the shuttle service digital. Using a route optimization algorithm, travel requests are pooled together, the fastest route is planned and travel and arrival times are calculated individually. 'Our PickXGo shuttle is a rolling Service Design laboratory,' says Daniel Canis, project manager for the PickXGo shuttle in the Volkswagen Group. 'As a democratic and easily accessible form of mobility, the project is designed to make everyday life easier for our employees and at the same time actively involve them in the company's digital transformation process,' Canis continues. 'By bundling individual journeys, we will also achieve maximum vehicle capacity utilization, reduce traffic volume and CO_2 emissions per passenger.' PickXGo-Shuttle combines the flexibility of a private car with the environmental friendliness of public transport and operates in two modes: commuter mode 'PickXGo-Shuttle Commute' and short-distance mode 'PickXGo-Shuttle On-Demand.' With additional, innovative service concepts, such as the integration of parcel and dry-cleaning services as well as snack and beverage offerings, free Wi-Fi and smartphone charging stations in the**

vehicles, the project has the potential to become an attractive addition to one's own car. 'We will use our Wolfsburg location as a 'Living Lab' and involve our colleagues in the innovation process as test customers,' says Canis" (Volkswagen AG, 2017). Based on a human-centered design approach, the Smart Mobility team develops and tests new product-service systems in the field of mobility. Especially crucial is to learn about people's motivations and transport-related decisions, in particular environments, to create an understanding of people and their context so that it creates a holistic picture. Projects such as **"Fjord and Volkswagen Future of mobility study"** illustrate the approach behind this (Fjord & Volkswagen AG, 2018).

The team's actions are conducted following customer needs, economic viability, and technical feasibility. The department works in the early stage of innovation development, moving from customer needs analysis and translating these into business solutions. In its interdisciplinary setting, the actions consist of scouting and market analysis, identifying business potentials, creating the value proposition, framing and designing a suitable service and business solution. This happens during the process of a Lean Start-up approach (Ries, 2011, 2017) of building Minimal Viable Products or Services (MVPs) and running and learning from the pilot phase to define and iterate on the project objective.

1.1.2 Positioning in the research field

Concerning this doctoral thesis, two publications have to be especially mentioned as they have also based their case study in the Volkswagen Group organization in the same period. The researchers have maintained academic and private correspondence throughout the research periods.

First, the industrial Ph.D. project by Andrea Augsten **"Design Thinking and Organizational Changes—A case study in the corporate practice of Volkswagen"** (Augsten, 2020) maps the non-programmatic development of Design Thinking applications at Volkswagen Group. **"The analysis aims to determine how Design Thinking is comprehended and practiced by corporate employees while analyzing the challenges they experience as users in the application of this concept."** This study answers the research question: **"To what extent does Design Thinking contribute to organizational change in existing corporate practice if Design Thinking is understood and applied as a method?"** (Augsten, 2020).

The second is the industrial Ph.D. project by Titta Jylkäs **"SHARED PATH—Service Design and Artificial Intelligence in Designing Human-centered Digital Services"** (Jylkäs, 2020) with the research question: **"How is AI affecting the practice of service design and the design of digital services?"** The publication focuses on applying Service Design principles to AI-enabled services as they interact with users through text and voice interfaces and how they can be perceived as a gateway to complex digital service ecosystems. AI assistants are relatively new as

services and Service Designers face changes both in the design process and in their own role as a designer.

Furthermore, extending the relation towards the research topic of Service Design and its transformative impact on organizations, the following dissertations are stated, as they provide an overview of recent research in the Service Design field. The dissertation **"Service Design as a Transformative Force: Introduction and Adoption in an Organizational Context"** (Aricò, 2018) aims to clarifying characterizing the organizational environment and and the mechanisms for its adoption in such an organizational context within which Service Design is introduced. As Service Design needs to tackle a diverse range of pressing business challenges in its implementation, the study pursues the research questions: **"What are the elements characterizing the organizational context within which service design is introduced that influence its introduction and existence? How do the mechanisms that favor service design adoption in an organizational context operate?"** (Aricò, 2018)

The dissertation **"Designing for Service Change—A Study on how Designers address implementation of Service changes during Service Design project for hospitals"** (Raun, 2017) focused on the problem of the potential of service design being left unexploited as Service Design projects end up on the "concept shelf" and never result in actual change. Her findings for key implementation indicators as **"identifying the kinds of changes that are realistic to propose [...] promote implementation commitment by attempting to ensure that the involved stakeholders have a sense of ownership [...] attempt to deliver the project and its results to the organization in a manner that respond to local premises for further developing and implementing the proposed service changes"** can be supported by the research of this study.

The dissertation **"Systemic consideration of the influencing factors in the implementation of product and service design systems"** (Weisser, 2018) has aimed towards the topic of designing for impact. This means designing for implementation to improve the readiness of Service Design projects for implementation. The aim has been to prevent negative consequences and unrealistic expectations at an early stage, to preserve both the quality and reputation of the Service Design approach and the Service Designers. As a gap, Weisser has identified that implementing new concepts requires organizational and cultural changes in the organization for result-oriented implementations. This study can support her findings.

1.2 Defining the field: Service Design—a transdisciplinary practice

As a relatively young and transdisciplinary practice Service Design is under constant development and adjusting towards its context and situation in which it is applied. In reverse, this development also influences how Service Design is defined by its application and has influenced how Service Design under discussion in academia. A single definition of Service Design is not possible to capture or further is just accountable depending on the time of application. Each following chapter will describe how Service Design is defined and more guided by general principles as it is adjusted by practice and application. For this research case, it is crucial to understand the theoretical foundation of how Service Design is perceived and defined as transdisciplinary practice. This research also develops Service Design in theory and practice further throughout the new circumstances in which it is applied.

1.2.1 Service Design – a practice without a single definition

Since the beginning of Service Design has been first mentioned as a specific term (Lynn Shostack, 1982), Service Design has become its own transdisciplinary discipline and standing in relation to already established design professions and practices. But still positioning Service Design as a practical discipline and research field is difficult because of its adaptable nature and multiple influences it has absorbed or is connected to. Services are designed from various perspectives and disciplines by using different methods and tools. A consistent definition is hard to grasp, Service Design is more a constant evolving matter depending on the point of time and contextual application; technology, people, processes, organizations, culture, business sectors etc. all of them have an impact on how Service Design is practiced and perceived and throughout this process it is reinventing itself. Service Design might be just definable by the results expected considering each relational context or sector applied. The design community is in constant discussion about the differences between the various design specifications.

"The practice of Service Design can be described as a continual process of zooming in and out from detail to overview and back. Unfortunately this activity also means continually switching terminologies (Polaine, 2013, pp. 160–161)." Even the similar terms of **'customer experience' (CX) (Lemon & Verhoef, 2016)** and **'user experience' (UX) (Buley & Anderson, 2013)** contain implicit differences as not all customers are users and also more often a service provider and a service user can be the same at the moment. The varying terminologies and mindsets of this multi-disciplinary environment create ample opportunities for misunderstanding, a difficulty building a common way of examining and discussing all the elements of Service Design as it includes switching in the modes of thinking, work cultures and languages. **"Designers may use Interaction Design (IxD), User-Experience (UX), Information Architecture**

(IA) or User Interface (UI) design terminology to create and discuss the design of a digital touch point […] They may then need to switch to talking about service proposition in the terms used by business strategist and marketers (Pinheiro, 2014; Polaine, 2013, pp. 160–161)."

In 2011 (Stickdorn & Schneider, 2011) have defined, Service Design has in practice many synonyms, thus using different terminology and since there is no standard definition of Service Design, a single definition of Service Design might constrain this evolving approach. These statements and the ongoing discussion about differences and similarities is still somehow accountable considering the latitude of terminology for similar practices in the realm of Human-centered design approaches as Design Thinking, Holistic User Experience Design, Lean UX, Strategic Design (Calabretta, Gemser, & Karpen, 2016; Meroni, 2008), Experience Design (Newbery & Farnham, 2013).

The main question rises how Service Design positions itself towards Interaction Design as User Experience (UX), industrial design as product design, or even all customer experiences (CX) practices in a broader sense (Penin, 2018). As Service Design is a transdisciplinary practice, **"Design Thinking, as an integral part of Service Design, has an ability to create concepts, solutions and future service experiences that are usable and desirable for users and efficient and distinctive for service providers (Kuure & Miettinen, 2013, p. 1537; Miettinen, Rontti, Kuure, & Lindström, 2012, p. 1203)."**

A relation can be built with Design Thinking as a dependency on definition but also implying a diffusion. Looking into the analysis of DT in academic and practice discourse an even more comprehensive discussion can be identified. As (Johansson-Sköldberg, Woodilla, & Çetinkaya, 2013) have identified the different perspectives in '**Design Thinking - Past, Present and Possible Futures.**' In the academic discourse DT stands for **'designerly thinking'** which refers to **"the academic construction of the professional designer's practice (practical skills and competence) and theoretical reflections around how to interpret and characterize this non-verbal competence of the designers (Johansson-Sköldberg et al., 2013)." 'Designerly thinking'** links to theory and practice from a design perspective and is rooted in the academic field of design. But in the practical discourse, **'Design Thinking'** becomes **"a simplified version, a way of describing a designer's methods that is integrated into an academic or practical management discourse (Johansson-Sköldberg et al., 2013)."** In relation to Service Design, **"Design Thinking is used more when you want to translate a concept design for management to other fields […] Design Thinking is in many ways an abstraction of what design practice actually is (Sangiorgi, 2018)."** Design Thinking can be seen as a translation of designerly thinking into a popularized, management version of Design Thinking is often equated to creativity, a more superficial and popular character as Design Thinking is often limited to a toolbox with a focus **"on the designer's specific methods taken**

out of context, as tools ready for use, but the person using the tools must have the knowledge and skill – competence that comes with training – to know when to use them (Johansson-Sköldberg et al., 2013)."

As (Laursen & Haase, 2019) in **'The Shortcomings of Design Thinking when Compared to Designerly Thinking'** have stated the aim of Design Thinking is to export designers' ways of thinking to non-designers by providing a way of doing, the use tools and techniques. With this approach the problem occurs that it **"does not provide non-designers with sufficient guidance when it comes to selecting, adapting and using design tools and techniques in a 'designerly way (Cross, 1982, 2006)' (Laursen & Haase, 2019, pp. 15–17)"** concerning being able to engage situated actions that are fitted to the specific design challenge. **"Design thinking lacks the methodological approaches needed to ensure that the design thinking paradigm is embedded within any actions taken as well as to ensure that any actions taken in relation to a design thinking project are situated and fitted to the specific problems of that project (Laursen & Haase, 2019, pp. 15–17)."** This may explain why scholars outside the field of design criticize that 'design thinking' does not work.

As (Carlgren, Rauth, & Elmquist, 2016) have built up on the previous research, they identified **"a need for a description that takes account of the various facets of use, so that Design Thinking can be seen as a process, or as methods, a toolbox, a mental approach, a culture or a mix thereof (Carlgren et al., 2016, p. 49)."** As (Carlgren et al., 2016, p. 48) with **'Framing Design Thinking'** have analyzed within the industry, five main characteristic themes were present across contexts and areas of application: **'User focus, Problem framing, Visualization, Experimentation and Diversity.'** Meaning taking into account what happens if a concept as Design Thinking becomes when it is utilized by and also adapted to different practices in various contexts. **"Each organization's understanding of a concept depends on a variety of factors, such as their needs, their sources of knowledge about the concept, and their organizational context, which allows and suppresses various aspects of use (Carlgren et al., 2016, p. 48)."** The result is multiple perspectives and in this way the key to understanding Design Thinking might lie in the interplay among its elements, rather than in a single element in isolation. In this context, the proposed understanding allows for an alternative framing of the whole which implies multiple dimensions throughout the process which is also accountable for Service Design.

With this in mind Service Design might distinct itself or more includes Design Thinking within as it is essentially about doing design in a **'designerly way (Cross, 1982, 2006)'** with a focus on tangible and result-orientated implementation. The overall aim is to enable consistently and also ensure or exceed expectations in each interaction along the whole journey till system which has to cover the holistic experience of: **"User, e.g. interactions with technologies; Customer, e.g. experiences with retail brands; Service provider, e.g. business operations;**

Human, e.g. the emotional effect of services that impact quality of life and well-being (Polaine, Løvlie, & Reason, 2013, p. 146)."

This also stands in relation that Service Design differs from the classic User-Centered Design, as it is not just focused in one direction. It is about **'designing with people and not just for them'** and with people does not just mean customers or users; it also means the people working to provide the service, all stakeholders who interact through different channels in different situations to provide the value (Polaine et al., 2013, pp. 55–149). Both Service Design and UX focus on the experience of the customer, but the approach towards it is different as UX might still often focus on one product, one thing and one user or just the relationship between only the primary user and service provider (Forlizzi, 2018, pp. 88–93). Here what also differs of Service Design towards Product or UX design is that **"the number of stakeholders as they are usually larger, the number and range of touch points broader, and all of these interact over time (Polaine et al., 2013, p. 58)."** In this way, a critical aspect of designing services is understanding context.

By **'zooming In and Out',** it has to be ensured that each element fits into the broader context. **"Our experience of UX design and interaction design is that the processes tend to be focused on individual touchpoints, and those touchpoints are, more often than not, digital and on-screen. This is in no way a criticism of these disciplines, we all have experience in them and use their processes and methods as part of the Service Design palette. It is more an observation of the areas that UX design and interaction design commonly engage in (Polaine et al., 2013, p. 101)."** Even if a common ground between Interaction Design (IxD) and Service Design is based on the similarities in material aspects. An integrating aspect of IxD in Service Design's focus is the interactive artifact as it is a part of a service while IxD's focus lies on the design of an interactive artifact. **"With Service Design the focus lays in business, innovation and strategy which implies a holistic approach to other design disciplines into a wider social and action context (Holmlid, 2007)."**

"The analogy between designing 'interactions' (user-device interface) and designing 'service interactions or 'service encounters' (user-service interface) is at the core of Service Design's identity and practice […] Service Design has moved from one-to-one to many-to-many interactions; from sequential to open-ended interactions (Junginger & Sangiorgi, 2013)." Service Design instead looks holistically across touchpoints and stakeholders. Meaning even if the same methods and approaches are used in UX and SD, Service Design differentiates by its multi-stakeholder or systemic view, having to consider whom and what might be impacted. It has a view on the value exchange in a flow instead and also implicitly its economic value.

(Junginger & Sangiorgi, 2013) promote Service Design as a second, third and fourth-order design activity in relation towards **'four different orders of design**

(Buchanan, 1998, 2001)': Service Design **"implies the understanding, analysis and the design of complex systems that require both analytical capacity to evaluate their parts and reciprocal interactions and relationships but also an integrative understanding of the ideas, thoughts and values that drive their unity and functioning as a whole (Junginger & Sangiorgi, 2013)."**

In general terms, Service Design has the ability and duty to contribute to the effectiveness of a service in terms of **'positive economic results, successful operations, or beneficial policy outcomes.'** Service Design has to consider not just the experiences as a crucial element but more so understand a number of factors alongside economics, operations, and domain expertise to create a sustainable or resilient model, which the combination of all of these that comprise the entire service proposition. **"The service proposition is essentially the business proposition, but seen from both the business and the customer/user perspective (Polaine et al., 2013, 124–146)."** In User-Centered Design contexts often might the business case not be considered (Forlizzi, 2018, pp. 88–93).

But also Service Design positions itself **"as an integrative form of design that dialogues both with the material practices of design and with the strategic and systems-orientated approaches (Penin, 2018, pp. 146–149)."** Service Design builds bridges across disciplines and combines analytical and creative capacities, by which Penin defines **"Service Design as essentially a own design practice (Penin, 2018, pp. 146–149)."** Service Design has the capability of the **'invention and intervention'** equally, the capability not just to envision preferred futures but further changing the current reality for the well-being of people.

As framing Service Design is continuing challenge as it overarches holistically disciplines and builds relation and combines new competencies for a higher purpose to create value for people, it might be just definable by its practiced principles than by single definition.

1.2.2 Service Design – a practice guided by principles

A definition of Service Design is hard to grasp depending on the time being formulated. Service Design develops and transforms itself also depending on its contextual and cultural application at a fast pace. Still, the definition by (Stickdorn et al., 2018, p. 27) is one of the most recent ones: **"Service Design is a practical approach to the creation and improvement of the offerings made by organizations. It has much in common with several other approaches like design thinking, experience design and user experience design. [...] It is a human-centered, collaborative, interdisciplinary, iterative approach which uses research, prototyping, and a set of easily understood activities and visualizations tools to create and orchestrate experiences that meet the needs of the business, the user and other stakeholders (Stickdorn et al., 2018, p. 27)."**

Service Design is a combination of many things simultaneously; it is a mindset, process, tool-set, a cross-disciplinary approach, and so on. As a mindset, Service Design is **"pragmatic, co-creative, and hands-on; It looks for a balance between technological opportunity, human need, and business relevance (Stickdorn et al., 2018, pp. 20–22)."** As a process, it is based on iterative cycles of research and development, **"as prototypes iterate into pilots and pilots iterate into implementation (Stickdorn et al., 2018, pp. 20–22)."** As a tool-set, Service Design is a structured process enabled by its tools to tackle wicked problems, to change perspectives on problems and to create a shared understanding; **"make implicit knowledge, opinions, and assumptions explicit (Stickdorn et al., 2018, pp. 20–22)"** As a cross-disciplinary approach, Service Design is co-creative with the purpose to break down silos. **"It is offering a shared, approachable, and neutral set of terms and activities for cross-disciplinary cooperation (Stickdorn et al., 2018, pp. 20–22)"** and to stimulate the development of a common language.

An overview can be provided by looking into the comparison of the two crowd-sourced publications of **'Service Design Thinking'** in (Stickdorn & Schneider, 2011) and **'This is Service Design Doing'** (Stickdorn et al., 2018). Already the evolvement of titles from **'thinking'** towards **'doing'** indicates a stronger focus on the applied practice. Five principles of Service Design were outlined in 2011 and later in 2018 revised to six principles which define the requirements how to design services. With **'Designing the invisible – an introduction to Service Design'** has Lara Penin (Penin, 2018, 150–155) has extended the framework introduced by (Stickdorn et al., 2018; Stickdorn & Schneider, 2011) in more depth of meaning for Service design. These principles indicate what Service Design stands for, but Penin goes one step further to introduce the perspective of capabilities and how Service Designers should act. Service Design is a connector of different disciplines and practices which also indicate a variety of capability which is needed for good practice.

This overview **'Core principles and capabilities for Service Design literacy'** summarizes the combined frameworks of (Stickdorn et al., 2018; Stickdorn & Schneider, 2011), (Penin, 2018, 150–155) and (Kimbell, 2018, p. 324).

1. "Human-centered: Consider the experience of all the people affected (Stickdorn et al., 2018, pp. 24–28)."

"Service design is people-centered (Penin, 2018, pp. 150–151)," Service Design being in its core user-centered, this approach **"relies on a close and continuous consideration of users, ensuring their needs and perspectives are central in the development process of the new product, service and processes (Penin, 2018, pp. 150–151)."** Just the difference for Service Design lays an expanded understanding of this term, which leads from user-centered to people-centered (being a synonym in this case also for human-centered). Penin explains this as **"users are people who**

belong to communities, families, cities and cultures and need to be considered in all the complexity determined by these relationships. Furthermore services are delivered by people, including front office and back office, Service Design needs to be deployed in relation to all the stakeholders who are involved (Penin, 2018, pp. 150–151).” A human-centered approach offers a common language throughout the service by which all stakeholders can communicate and understand each other. Furthermore all needs, demands, requirements of all stakeholders have been met that a value exchange across all is enabled and in the best case scenario leading to a Win-Win-Win situation for all parties.

In its quintessential capability to be able to fulfill the human-centered approach by **“active and empathic listening for understanding people, their cultural, social, economic realities, […] behaviors, needs, values and aspirations is core to service design (Penin, 2018, pp. 312–321).”** In short, to immerse into people’s lives to understand them within their social and cultural contexts. Empathy frames the capability **“to understand and share another person’s experiences, emotions, and conditions from that persons perspective (Penin, 2018, pp. 312–321).”** By deep listening, collecting the data to be able to analyze and understand their reasoning, reactions and belief systems.

2. “Collaborative: All stakeholders of various backgrounds and functions should be activity engaged in the Service Design process (Stickdorn et al., 2018, pp. 24–28).”

“Co-development, co-planning, co-designing, and value co-creation are key concepts in Service design (Kuure & Miettinen, 2013, p. 1537).” “Service designers do not create alone (Penin, 2018, pp. 312–321)” most importantly, support and enable participation from everybody. “**Service design depends on participation and co-design (Penin, 2018, p. 151),”** as participatory design practices are central within Service Design, it is an approach **“to understand people as partners which are involved throughout the design process (Penin, 2018, p. 151).”** The Service Design process relies heavily on the creativity of others and also being engaged from research to idea generation to prototyping towards implementation. As it involves service providers staff, users, and other relevant stakeholders facilitating these processes and collaborations is vital to the service design practice. **“With the rise of participatory design, user-centered design and the diffusion of co-creation sessions, these have become central to the designer’s work (Penin, 2018, pp. 312–321).”** Going further than just generating new service ideas much more important is to facilitate collective discussions that **“promote a shared understanding of the organization’s challenges ad reduce the barriers for the future adoption and implementation new ideas (Penin, 2018, pp. 312–321).”** Also considering the staff members which **“have chance to engage in creative and change making processes can be empowering and might have a long-lasting impact on the future of their work (Penin, 2018,**

pp. 312–321).” The key to productive co-creation engagements follows empathy, to guide focused conversations while allowing for creative freedom in balance. Service Designers consciously generate an environment that facilitates the generation and evaluation of ideas within heterogeneous stakeholder groups. Co-creation facilitates a smooth interaction or partnership between the stakeholders and customers with the purpose of adding value to a service.

3. “Iterative: Service Design is an exploratory, adaptive, and experimental approach, iterating toward implementation (Stickdorn et al., 2018, pp. 24–28).”

Kimbell emphasizes the importance of strategic wayfinding, meaning with the approach to iterative learning cycles, that new concepts, new knowledge and competencies are generated to react to change. This capability to improvise in relation to rapidly fast-changing environments creates the ability to respond to complex environments of high uncertainty (Kimbell, 2014, pp. 45–48).

4. “Sequential: The service should be visualized as a sequence of interrelated actions (Stickdorn et al., 2018, pp. 24–28).”

“Service design is communicated through service narratives (Penin, 2018, pp. 151–152).” Ethnographic methods support the Service Design process to document people in their current relationships and realities. These narratives capture the complexity of people’s lives with the objective of understanding them as services are dynamic processes, the time and rhythm of service influences the overall quality delivered. Sequences of change and need to be repeatedly reappraised from various perspectives. As the essence of design is an exercise to envision a preferred future, incredibly visual, nonverbal, and graphic representations of ideas are potent ways for facilitating understanding. They support sense-making towards the whole proposed service experience. As a matter of fact, the act of making stories is in itself a catalyst for invention as visual stories connect with people on an emotional level. Stories assist **“to articulate and communicate the insights during the research phase (Penin, 2018, pp. 312–321).”** They ease the processing of complex information and base reasoning. They create understanding also by reframing a problem. They serve and act as shareable representation and as a shareable object. **“They are vehicles for building empathy by sharing the conditions experienced by the different stakeholders who may not see and understand each other’s challenge (Penin, 2018, pp. 312–321).”**

5. “Real: Needs should be researched in reality, ideas prototyped in reality, and intangible values evidenced as physical or digital reality (Stickdorn et al., 2018, pp. 24–28).”

Service Design includes the material side as all services consist of material evidence as artifacts or touchpoints enable a specific experience in a service journey. They

function as service carriers that embody lived experiences on their own and carry this attribute as they **"become material proxies of intangible experiences (Penin, 2018, pp. 152–153)."** It is central to the Service Design process to define the material evidence and touchpoints, which requires to **"physically enable interactions but also are key to make them better, more efficient, more meaningful, and more desirable (Penin, 2018, p. 24)."**

Prototyping is the fundamental capability of testing used by Service Designers to support all stakeholders in the concretization of new ideas and further validation of how the solutions would perform in the real world. The objective is to minimize the risk of costs for resources and time ultimately. **"Prototyping experiences and its supporting artifacts, whether digital, physical or in a combination of both, using things such as physical props, low-and high fidelity digital prototyping, as well as enactments and simulations to capture better time-based interactions (Penin, 2018, pp. 312–321)."** Even if prototyping often focuses on experiences, all different aspects of all the service have to be considered in **"an integrated fashion with the business, financial and organizational modelling (Penin, 2018, pp. 312–321)"** as also business modeling and evaluation framework in the field of prototyping are integrated. **"What is crucial is the understanding not just the current or future experience of the user, but the implications of service innovation for an organization and its network (Kimbell, 2018, p. 323)."**

It is essentially a practical approach with a focus on doing. No service can be successful or sustainable if it is just creating better experiences, although it has to **"understand backstage processes and technological opportunities as well as the business goals of the organization (Stickdorn et al., 2018, p. 26)."**

6. "Holistic: Services should sustainably address the needs of all stakeholders through the entire service and across the business (Stickdorn et al., 2018, pp. 24–28)."

"Service design is holistic (Penin, 2018, p. 153)." Being holistic involves making sure that the value exchange provides service delivery with seamless integration of human experience. Nevertheless, even more, considering the whole system with all its different parts. **"It stands for integration, interconnectedness and harmony (Penin, 2018, p. 153)."** As services are complex and multidimensional, they can be experienced through multiple channels, which even have their origins in different parts of a given organization. **"A key challenge in designing of services is therefore how to integrate the system, process and touchpoints in a consistent and holistic way (Penin, 2018, p. 153)."** A great customer experience is ensured by the cooperation of different disciplines towards the goal of collective success. Enhanced customer experiences, employee satisfaction, and integration of sophisticated technological processes have to be aligned to pursue collective objectives.

7. "Organizational change-making (Penin, 2018, pp. 312–321)"

Service Designers develop **"pleasant and functional products, software, and services, but also to help organizations reimagine internal innovation cultures, provide strategic guidance and help them to make important decisions about their futures (Penin, 2018, pp. 312–321)."** Service Design affects an organization, management structures and also labor dynamics and with this managerial and organizational capabilities are crucial to Service Design. **"Measurement and evaluation are critical capabilities for designers to strengthen the relationship with senior management or policy makers and to prove the value of design intervention to the organizations and stakeholders (Penin, 2018, pp. 312–321)."**

Especially, **'Organizational change making'** has a stand-alone position even it builds up and is in direct relation with the other categories. **Service Design facilitates change and this change-making has to be seen as own core capability for the discipline. As Service Design is holistic, collaborative, human-centered and iterative, it carries in its core a transdisciplinary approach. Service Design aims to create something new as an invention and also optimizes something given as an intervention.** In any case, it works across silos in a transdisciplinary way. It is a bridge-builder inside the organization which introduces automatically change-making position in an organization. Service Design is making relations between different participants in society, system, organization or relatively economical and cultural context (Kimbell, 2018, p. 324).

The core capabilities of Service Design define the practice as the publication **'Service Design Capabilities (Morelli, Götzen, & Simeone, 2021)'** encompasses an overview. Defining it as essential core capabilities to inquire into context, provide perspectives on possible future situations and structure design processes:

- ➜ **"Addressing the context: identifying and responding to relationships between a solution and its context**
- ➜ **Controlling experiential aspects: empathizing with people and addressing experiential features of possible solutions**
- ➜ **Modeling: simulating, visualizing and experimenting with possible solutions before all the information is available and using the form to embody ideas and communicate values**
- ➜ **Vision building: imagining feasible, possible and desirable futures**
- ➜ **Engaging stakeholders: initiating and facilitating participatory co-creation processes**
- ➜ **Working across different logical levels: shifting from operative levels to different levels of abstraction**
- ➜ **Building logical architecture: articulating or identifying logical structures to frame problems and creative activities**

➜ **Open problem solving: identifying solutions across different logical domains and within uncertain and ambiguous contexts (Morelli et al., 2021).”**

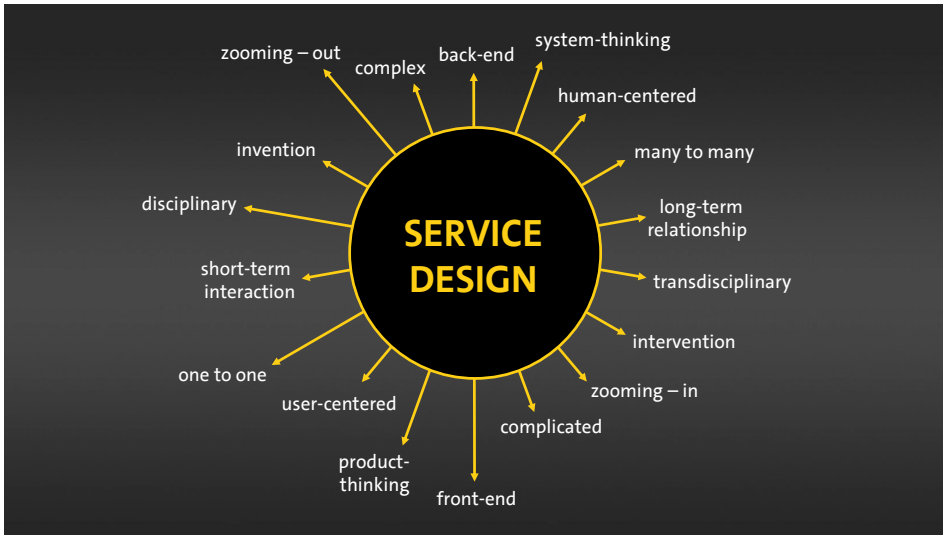


Figure 4: Service Design, a dynamic practice with a scope beyond (Schaaf, 2020a)

In summary, Service Design is a **‘dynamic practice with a scope beyond limits.’** As seen in Figure 4, it encompasses as the whole field as a connector of the extremes. It views the world as anything is a service, as the fundamental basis of value exchange. Value is experienced in the situation and context of use in the **‘moment of truth’** but seen as co-created with all actors interacting in the system. Service Design looks at a sequence of multiple actors in a service in order to optimize value delivery and creation by orchestrating the people, processes, technology. It integrates and operates in the functions and divisions of an organization with the objective to build bridges of organizational silos in order to engage them, secure their commitment and ensure participation. By combining perspectives e.g. as business, design and engineering, it creates and ensures successful and sustainable business models based on feasibility, viability and desirability. Service Design is a transformative approach by systemic thinking, sense-making and capacity building to organizational challenges. Service Design looks at the environment to help companies better understand and meet customer’s needs and expectations as it extends to all differently designed elements in humanizing and enable them to experience them in a holistic sense. Also, it is the hybrid role of the Service Designers target in its core the functions of an enabler (facilitator) and developer (designer) simultaneously, which means combining two dedicated competencies for strategic -, organizational - and business development.

Service Design applies constant iteration to form the intangible into tangible, the abstract into the concrete to anticipate a new reality.

1.2.3 Service Design – a practice adapting in its interacting context

Since its early development, Service Design has been adapting concepts and tools from various disciplines as well as design ones as product design, communication design, interaction design, etc. with the objective to enable and engage people in the design and transformation processes by investigating and understanding people's experiences, interactions and practices.

Since the '90s (Blomkvist, Holmlid, & Segelström, 2011), Service Design has been working towards introducing creative and human-centered approaches to Service Innovation; since then, it has been under a constant expansion of its application and research areas. Service Design can happen at different levels in the organization, enabling changes in the periphery of the organization as an exploration of new business field and towards changes within the organization as exploitation of own structure and culture. **"Understanding value and the nature of relations between people and other people, between people and things, between people and organizations, and between organizations of different kinds, are now understood to be central to designing services (Kimbell, 2011b, p. 51)."**

As (Blomkvist et al., 2011) have pointed out, Service Design is an interdisciplinary or even transdisciplinary field. Early research on Service Design has focused on connecting the field to other design disciplines. However, also to ground research in Service Design with knowledge of related fields, especially management studies stand out as service management, marketing, operations, leadership, organization change and innovation has had a strong impact. Furthermore, the systemic perspective has been an influence as representing a value in ontological models of product-service systems and multiple actors in service systems imprinted. Other research about design techniques, such as tools, visualization, processes, co-creation and evaluations of improvement to existing tools have been a broader focus of Service Design research (Blomkvist et al., 2011).

Several disciplines have converged in the designing of services: the arts, economics, the humanities, and technology. **"Within all these different disciplinary intersections, Service Design finds, borrows, and adapts many frameworks, methods, and tools (Penin, 2018, pp. 310–311)."** Penin describes Service Design's adoptive nature: Methods from ethnographic-inspired research practices and frameworks, field work and immersive participant observation are adopted. Service Design uses systems thinking and organizational change management, which have their origins in management and business. Service Design involves capabilities that originated from architecture and interior, graphic, and product design for the use of the creation of physical touchpoints and service-scapes. However, instead also require interaction and user experience design, user interface design, as well

as computer science and other technology-based specializations for the design of digital platforms. Service Designers create new experiences and may use methods and practices from theatre and drama. When Service Designers design motivational systems as rewards and incentives, they use theories coming from psychology and behavior change (Penin, 2018, pp. 310–311).

"It is important to note that the disciplinary apparatus behind the Service Design practice is never static but is an ever changing landscape that responds to the problems at hand […] Service Design is a transdisciplinary design practice, it deals with complex systems that require different skills and capabilities across various of media and spheres of human interaction. Service design also requires a capability for critically analyzing situated problems and formulating strategies for change (Penin, 2018, pp. 310–311)." As seen in Figure 5, in different directions Service Design moves from humanities to technology, from arts to economics, forming an expanding field for Service Design.

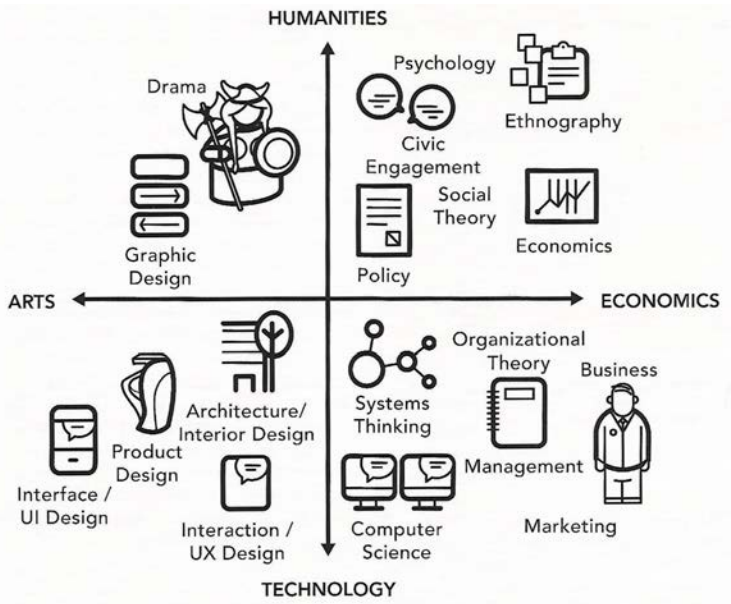


Figure 5: Service design disciplinar apparatus (Penin, 2018, p. 311)

By contextualizing research on Service Design, the significant differences across sectors, organizations, design studios or projects can be recognized. Allowing the variety of dialogues with other disciplinary fields, the influence of the broader system and other actors, as well as the daily and even minute dynamics and their interactions of designing implies, Service Design research becomes to a different level of depth (Sangiorgi & Prendiville, 2017a).

Service Design automatically promotes a multi-level and multidisciplinary theoretical landscape. As value co-creation is understood in the context of human action is follows the human-centered point of view, that **"values are bound in multiple systems of meanings that are constructed by the groups, communities, and other forms of human assemblies acting in their living contexts (Rytilahti, Miettinen, & Vuontisjärvi, 2015, pp. 86–94)."**

As in 2014 a study mapped the thematic fields of Service Design Research in the UK (Sangiorgi, Prendiville, Alison, & Ricketts, 2014), see fig. 6. It indicated that Service Designers are focused on more complex and strategic projects at different levels of service systems and networks, especially in application of digital and open innovation projects (Sangiorgi et al., 2014).

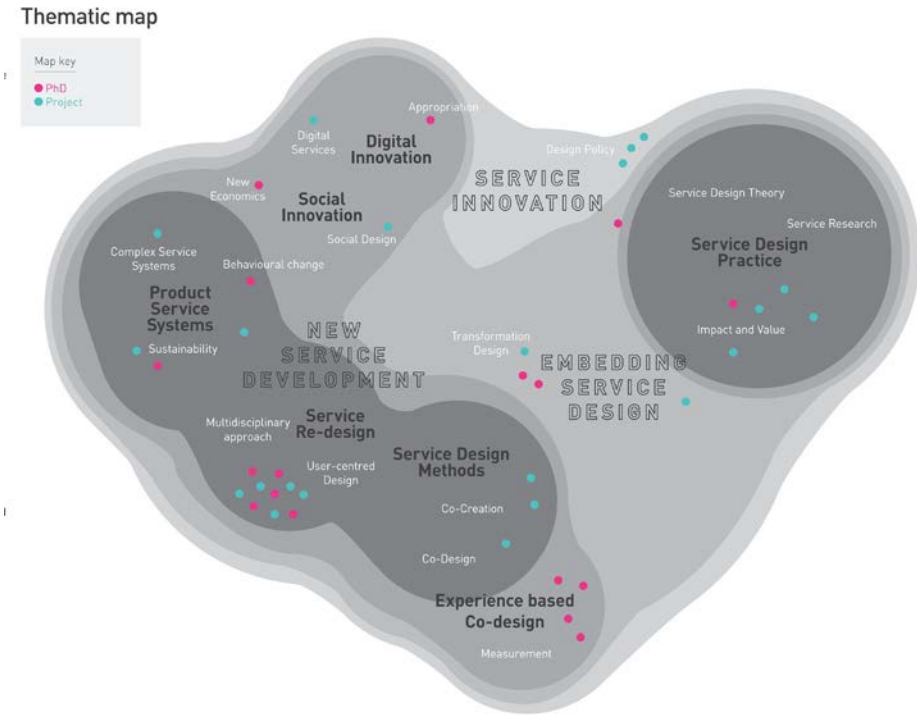


Figure 6: Thematic map of Service Design Research (Sangiorgi et al., 2014)

The study **'Mapping and developing Service Design Research in the UK' (Sangiorgi et al., 2014)** argues how increasingly relevant Service Design faces challenges in implementation and integration within existing organizational systems and their business cultures. A shift of focus towards impact and how to measure, evaluate and better integrate Service Design's contribution. The imperative for Service Designers is to recognize existing organizational practices as their

solutions are embedded in organizational systems. Such methodologies must build trust amongst stakeholders, reassure the industry and deliver tangible impact. One way to distinguish Service Design's impact is by considering the level of the design intervention within the system. There is the need to validate its adoption through evaluative frameworks that will provide a more substantial evidence base of its role for innovation. As stating, Service Design can be better implemented, embedded, measured and scaled up, the study identified general issues within Service Design.

Implementation issues lay in implementing Service Design solutions which should perform with and within existing organizations or communities. **"Furthermore the need to collaboratively scope each project, handling complexity, transferring skills, and engaging the right people from the start; when setting up new ventures, emphasis was on how to iteratively generate, adapt and develop sustainable business models (Sangiorgi et al., 2014);"**

Embedding issues: To embed design skills and approaches requires context and process sensitivity within organizations. Also a clarification needed for the specific role and contribution of professional designers; a definition of what designers provide that is different from other human-centered approaches or other professions, distinguishing between **'designing'** and **'designers'**. **"Embedding design approaches needs to consider measurement issues and differences in language and professional cultures that can prevent collaboration (Sangiorgi et al., 2014);"**

Scaling issues: Scaling up a solution or a design approach demands customization and adaptation, depending e.g. on the **'scoping'** phase **"to better develop solutions that could be implemented in different contexts with different needs."** Constantly adapting and developing the business and financial models for scalability which also raises **"the question of what can be standardized and simplified and what original qualities need to be preserved. Furthermore, how can the open-ended and creative approach of the innovation phase be balanced with the service delivery and management phases and teams? (Sangiorgi et al., 2014);"**

Measuring issues: "Integrating economic and quantitative measurements with more qualitative and social value metrics is fundamental, as designers need to gain credibility while acknowledging that their value cannot be captured with only quantitative and measurable criteria (Sangiorgi et al., 2014)." This demonstrates the importance of combining both metrics. A similar language and enabling convergence of diverse professional cultures are essential.

This finding aligns with **'Service Research Priorities in a Rapidly Changing Context'**, the high research priorities to leverage Service Design can be summarized **"in involving customers through participatory design and co-design to enhance service experience, to develop more autonomous and dynamic customer experiences, to innovate complex service systems and value networks, to enhance the involvement of multidisciplinary teams, to foster service innovation and**

mind-set throughout the organization, and also advance service prototyping to support rapid, customer-centric service innovation by aligning Service Design approaches with existing organizational structures (Ostrom, Parasuraman, Bowen, Patrício, & Voss, 2015, p. 153)."

Furthermore, the focus on the implementation of services is not yet an integral part of Service Design practice or in Service Design research. According to (Overkamp & Holmlid, 2016) four themes can be identified: **"implementation as part of the development process, which sees implementation as a part of going from a design (prototype) to a (final) product; implementation as strategy, which sees implementation as the delivery of generic resources that are designed and produced in parallel to the process of developing the implementation (strategy); implementation as design after design, the stage where the outcome of a design process is adjusted to an organization and vice versa; and implementation as change of practices, a perspective that focuses on implementation of new routines and ways of working. But these perspectives are equally relevant and should all be understood in order to be able to drive implementation successful (Overkamp & Holmlid, 2016)."**

As **'Expanding (Service) Design Spaces'** by (Sangiorgi & Prendiville, 2014; Sangiorgi, Prendiville, & Jung, 2017) state, any suggested change by designers has organizational implications, as any service provision is embedded within or connected to the organizations. This has the potential to create resistance inside the organization as it becomes increasingly evident when designers strive towards implementation. Co-design has been at the center of Service Design research and practice from its start. The collaborative nature of service has motivated an increased interest in the modes and value of engaging customers. This forms an increase in organizational learning of understanding the customer's logic and value creation context during service development. The increasing role of Service Designers can be seen in change processes, mainly when situated in an integrated position within the organization. The implications for Service Design practices lie in the challenge of developing higher context sensitivity. As an outcome, the appropriateness of the proposed innovation to the current situation and stage of an organization is to evaluate the feasibility and prioritize what to implement in consideration of current technology and cultural capabilities of the organization, considering the innovation compatibility or readiness. As a result, three characteristics in the expanding Service Design field can be stated in relation to their contribution to innovation: a process-orientated, outcome-focused and contextual exploration (Sangiorgi & Prendiville, 2014; Sangiorgi, Prendiville et al., 2017).

(Karpen, Gemser, & Calabretta, 2017) state that organizations need to create the necessary conditions which facilitate and enhance Service Design. But just limited research has been conducted for effective Service Design in the form of organizational capabilities, interactive practices and individual abilities out of

multilevel consideration. Service design practices have also not been considered sufficiently, particularly not in combination with Service Design capabilities while considering and theorizing their interdependencies. Furthermore, if an organization's collaborative capabilities evolve into a strategic imperative, it requires the support of related practices and individual's abilities for better Service Design. These responses to the needed organization's capability orchestrate the holistic and contextual way of optimizing the whole system, including all internal and external relevant stakeholders and resources. Service Design thereby considers and promotes the creative potential of various stakeholders through participation and inclusion. The organizational-level collaboration capability is supported by establishing a constructive interaction and ideation with users, clients and other stakeholders. It also influences the capability to anticipate and leverage change for pursuing future market opportunities with the potential of transforming existing markets and improving market conditions. Service Design can facilitate concepts to come alive in relatively short time periods, at manageable costs and without significant organizational interruptions. **"Hence, to avoid wasting stakeholders resources during the Service Design and to achieve coherence in designing the service system, a firm's capability to orchestrate and synchronize various resources, activities and stakeholders becomes critical (Karpen et al., 2017)."**

	Service encounter	**Value co-creating system**	**Socio-material configuration**
Contributing fields	Product design Communication design Interaction design Service marketing	Strategy Services marketing Service operations Economics Open innovation	Sociology Anthropology Computer supported co-operative work Participatory design
Emblematic concepts	Touchpoints Interactions Customer experience Service evidence Experience Design	Outcomes Competences Value constellation Multi-actor platform Exchange of resources Process Design	Participation Practice Interfacing Infrastructuring System design Local
Key actors	Users Customers Service staff	Resource integrators Platforms	Human actors Non-human actors
Value results from…	Interactions with touchpoints	Co-Creation within value constellation	Co-articulation of practices and institutions
Example methods and tools	User scenarios Customer journey maps Stakeholder maps Experience models Blueprints	Value streams Process maps Service models Blueprints Stakeholder maps Business models	Participatory design techniques Design games Ethnographic approaches

Figure 7: Perpectives on the object of Service design (Kimbell & Blomberg, 2017, p. 87)

Hence the complexity addressed by Service Design has increased due to the expanding field and views. As (Kimbell & Blomberg, 2017) state **"Service Design is emergent and heterogeneous."** Service Design, the concepts of systems design, science and technology studies, participatory design, service marketing and management have to be considered with the relation towards business and management, creative design and technology, social sciences with especially anthropology. There are different ways of thinking towards Service Design. (Kimbell & Blomberg, 2017) define three perspectives towards the object of Service Design (see Figure 7):

The service encounter: This perspective focuses on the people's experience, engaging interactions with digital, material and social touchpoints that shape the experience of service users. It stands in relation to other stakeholders, artifacts, places and technological systems.

The value co-creating system: A focus on enabling the dynamic exchanges of resources between actors and processes that achieve outcomes. The backstage processes that shape the operational delivery of service and assess outcomes brought into the view by the platform.

The socio-material configuration: "This lens proposes that together the constituents 'co-articulate' a service as it unfolds in practice, connecting material and digital touchpoints and people's experiences to participation in social practices (Kimbell & Blomberg, 2017)."

Levels of design	Organizational service systems	Value constellations	Service ecosystems
	Designing the service system at the organizational level	Designing service concept within the value constellation of offerings	Designing a service platform for co-evolution within the service ecosystem
Service concepts			
Interdependence	Interdependence between organizational processes, channels, people, technologies	Interdependence between network actors, involving both customer networks and provider networks	Interdependence among multiple ecosystem actors and institutions
Participation	Collaborative design across departments	Collaborative design across customers networks and provider networks Participation around developing value propositions	Participations around developing platforms as enablers of multiple actor's resource integration and value co-creation and ecosystem co-evolution
Emergence	Designing for organizational change and behavioral transformation	Designing for network openness and cooperation, and for many-to-many value co-creating interactions	Designing for agency and emergent co-evolution in the ecosystem

Figure 8: Service design levels and related system concepts (Sangiorgi, Patrício, & Fisk, 2017, p. 61)

As shown in fig. 8, three perspectives show three lenses of how Service Design shows the impact in an expanding field. Service Design has broadened its scope to design service platforms for the ecosystems by understanding, representing and designing the interdependencies between actors, system components and system levels. **"The implication of a higher visibility and in particular the work within more complex projects and service systems has led to a growing requirement for evidence of innovation exploitation and positive impact, but also to the need for multidisciplinary work (Sangiorgi & Prendiville, 2017b, p. 4)."**

"A service platform offers direct services to customers but also enables a community of contributors to build on top of the service platform to create new services that expand the ecosystem (Sangiorgi, Patrício et al., 2017)." This poses new challenges to Service Design, taking into account an increasingly open, uncontrolled and emergent environment while affecting the focus of designing as (Sangiorgi, Patrício et al., 2017) state: **at an organizational level: "design needs to engage with the processes of organizational change"**; **at the value network: "design aims to support more open strategies and collaborations across diverse partners, aiming for convergence"**; **while at the ecosystem level: "design works towards allowing and supporting agency and co-evolution which are at the basis of the development of the ecosystem itself."** This demands a new understanding of Service Design on higher levels of complexity as Service ecosystems require **"developing different approaches and tools, as moving from better-know Service Design processes within organizations to more strategic design practices (Sangiorgi, Patrício et al., 2017)."**

Also (Vink, 2019) introduces an expanded view with **'Service Ecosystem Design'**, the purpose of Service Design is to facilitate the emergence of value-in-context with the embedded feedback loop of reflexivity and reformation of the system, which is collectively designed by all actors. **"The viability of a system, are facilitated through exchange amid a self-organizing web of actors and resources. The key to this understanding is that the social structures within a particular context influence actor's perception of resources and determination of value. As such, the focus of design shifts from 'delivering value' to creating the context for value to emerge (Vink, 2019, p. 138)."**

Service Design multidisciplinary contributions form Service Design to transdisciplinary practice as it acts on various levels: **"On an organizational level, by enabling transformation processes within organization and creating new interfaces, new technology and new service delivery systems. On a network level, by identifying, supporting and enabling social innovation cases within society as a new service models and envision new forms of resources integration within value networks. On an ecosystem level, by facilitating institutional change based on new forms of service interactions between actors (Joly, Teixeira, Patrício, & Sangiorgi, 2017, p. 390)."**

As Service Design has expanded with a more articulated understanding of the dimensions of services towards the hidden organizational system and processes, Service Designers acknowledged **"implications of organizational transformation, when questioning deeper structures and values at the basis of the organization or when facing evident resistance to change (Sangiorgi & Prendiville, 2017b)."** Therefore Service Designers moved from the periphery of the organization towards the ability to create evidence of impact on planned change. **"These phenomena, together with a change in the way 'service' and 'design' are conceived, and the expansion of spaces, designers are approaching represent in our opinion the landscape that is promoting and pushing toward the redefinition of the field of Service Design (Sangiorgi & Prendiville, 2017b, p. 4)"**

Service Design acts on various levels and is applied in expanding complexity, from a single interaction towards building systemic platforms.

- ➜ **"Service as interaction: At this level, value is co-created by service beneficiaries (customers) and other actors interacting with them.**
- ➜ **Service as infrastructure: At this level, services are organized as open-ended support for the value co-creation process.**
- ➜ **Service as a systemic institution: This is the level in which broad cultural and social changes happen, and these frame the value co-creation processes and their related support infrastructure (Morelli et al., 2021)."**

At this point, the academic discussion is just one part of the identification of the knowledge gap and shows what Service Design's capabilities are as a transdisciplinary practice. This chapter has provided an overview of the Service Design field, how Service Design combines different disciplines in an overarching manner and in the same way, this also implies how Service Design has developed and adapted to a latitude of contexts depending on its deployed purpose. By this means, the Service Design research gap can never be captured entirely in the academic discussion due to its nature of being a practice that forms the discipline itself.

1.3 Research gap: Understanding the context

This research has taken place inside the Volkswagen Group, which is undergoing a digital transformation (Digitalization) to become a mobility provider (Volkswagen AG, 2016) and is placed in the field of the early-stage development in the field of innovation. The following sub-chapters provide an overview of how the disruption of markets induced organizational change at Volkswagen and also in the way of thinking towards service logic. The cultural heritage has to be considered because it stands in direct relation under which premises Service Design as a discipline is placed inside the organization. Overall it is crucial to understand which are the reasons and circumstances for this transformation and how Service Design has the potential to be the right solution for this challenge.

Service Design itself can fulfill multiple roles in supporting an organization by balancing exploration and exploitation. This allows the organization to be creative and adaptable and also efficient in today's business and further also resilient for coping with tomorrow's changing demand. It describes **'Ambidextrous organizations'** (Tushman & O'Reilly, 1996) and the organizational challenge in which the research is situated, balancing **'Digital Innovation'** of the core business and **'Digital Disruption'** of new business is based on the overall organizational transformation called **'Digital Transformation'** (see fig 9). As the Service Design discipline has its core in a holistic approach, it is also culturally ambidextrous (Katzan, 2011); it can benefit the organization in diverse positions as in an optimizing role and explorative role.

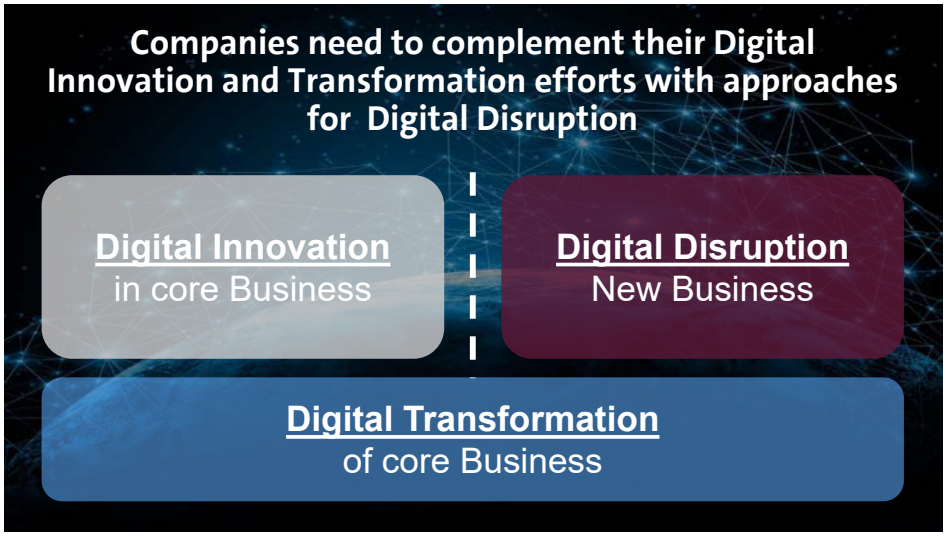


Figure 9: Digital Innovation and Transformation (Jungwirth, 2018)

As BostonConsultingGroup (Gauger, Gehres, Quinn, Schmieg, & Xu, 2017) stated the seven success factors in **'Building the Digital Car Company of the Future'** automotive manufactures face with the digital transformation a variety of challenges: **"The need for digital skilled people to bring new digital units to life while also an effective communication and change management program is essential to the adoption of new technologies and methodologies. Internal teams need to create work across silos and function and have end-to-end responsibility, decision-making authority and clear alignment mechanisms (Gauger et al., 2017)."** They have to leverage their and build new partnership ecosystems to resources and complement their capabilities and capacity to increase the quality of solutions and decrease development time. **"Developing technically feasible, comprehensive digital solutions that meet customer's demands requires an approach that involves technology, IT, and business functions (Gauger et al., 2017)."** The common denominator across functions has to provide a superior, consistent and seamless digital experience. This holistic approach is vital to enabling all parties to align all parts of the organization with a dedication to the customer experience. (Gauger et al., 2017).

Many organizations started relying on design activities to tackle product, service but also strategic innovation challenges and to envision possible futures for their industries by innovating, creating, and reshaping. The human-centered design (HCD) approach has been introduced in organizations by disciplines as Design Thinking and Service Design; both follow the same purposes of humanizing products, services, systems and processes. As the need of the organizations rises to innovate and to provide comprehensive solutions for their customers, this enables them also to overcome emerging given organizational barriers (Augsten, Geuy, Hollowgrass, Jylkäs, & Mäkelä Klippi, 2018).

The digital transformation of an OEM stands for constant change. The shift from selling vehicles towards selling the use of vehicles as a service is a big leap for an industry, not even mentioning forming into a mobility platform provider. The implication for the German automotive industry is to reinvent itself, their core business has to be transformed and also, new business fields and models have to be identified and explored. This development requests the self-understanding that within all structures, processes, practices and mindsets have to evolve towards a mobility provider. New business units for business innovation have to be established which follow the path of being extremely human-centered, flat in the hierarchy, agile and lean in operation, open for experimentation and prototyping. It requires companies to permanently modify their way of thinking and acting towards new market conditions and customer demands.

At the same time, the growth of Service Design has been accelerated and as a discipline, it has more and more gotten into main focus by business in the last decade. Fifteen years ago, Service Design was still a young discipline of practice and

carried out by a limited amount of smaller agencies. Service Design has grown into in-house departments in large companies operated internally. A Service Design for business approach identifies key customer drivers which impact customer's behavior and identifies customer-centric ways to achieve business objectives as lower cost to serve existing and new customers, increase customer retention, create new sales or up-sell opportunities, successfully launch product and service innovations into the market (Reason, Løvlie, & Brand Flu, 2016, pp. 6–7). This approach enables **"both to imagine radical solutions to complex problems and to implement many small incremental improvements that together create massive top-line and bottom-line impact (Reason et al., 2016, pp. 6–7)."** Furthermore, Service Design enables organizations to achieve internal understanding and alignment: high staff engagement and participation, more customer-centric focus, leading to increased market agility. This provides the positioning of a customer as an **"outside reference by not only to align people in an organization but also to deal with internal challenges around systems, processes procedures and policies (Reason et al., 2016, pp. 6–7)."**

In 2015, the Forrester study categorized about 70 service design agencies in five disciplinary areas: fuzzy front-end innovators, physical and face-to-face experience designers, digital experience designers, organizational change partners and business systems consultants. The holistic approach is embedded in the core of Service Design, being able to offer end-to-end experience design, often the agencies matching at least two or three patterns at the same time (Buley, 2015, 2–11). Also, the attraction has risen, especially by global management consulting firms and corporates in the acquisition and mergers of Service Design agencies. Increasingly being recognized that design should be an essential part of their offering which can integrate with their established competencies in business strategy and information technology consulting (Kirchberger & Bruce, 2017). In alignment with multinational enterprises pursuing design as in 2012, GE created the UX Center of Excellence and IBM planned to hire 1000 designers in a time span of 5 years (Merholz & Skinner, 2016, pp. 1–2).

The business value of design has been acknowledged in continuous iteration, a de-risk development by continually listening, testing, and iterating with end-users (Sheppard, Kouyoumjian, Sarrazin, & Dore, 2018). But by being able to provide the complete process with Service Design strategy, the scale of influence and impact of the Service Design discipline has reached professional practice and solidly routing into business thinking. It is seen as an increasing source of competitive advantage and business value (Sheppard et al., 2018). The advantages of this trend for Service Design can also be seen as an appreciation of its holistic and human-centered approach, which provides added value in an organization.

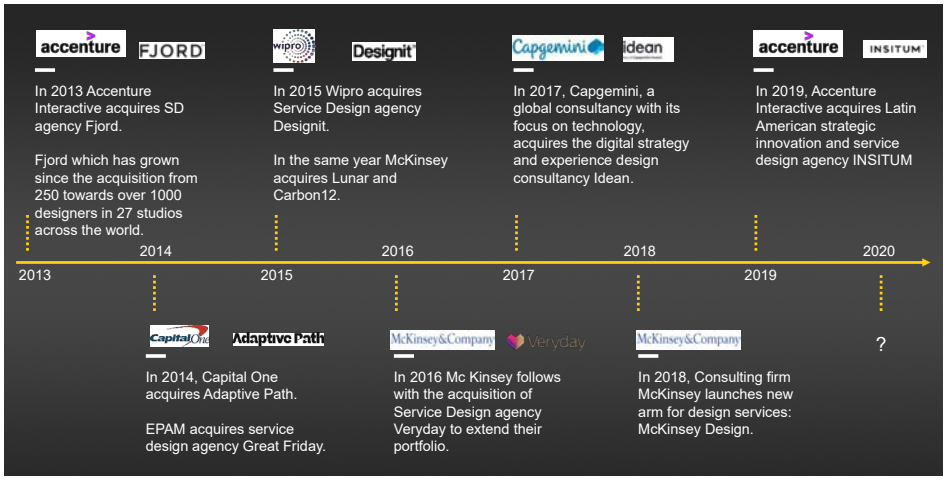


Figure 10: Overview about design agency acquisition by consulting firms (Schaaf, 2019b)

Figure 10 describes an overview about design agency acquisition by consulting firms as a timeline, in 2013, Accenture Interactive acquires Service Design agency Fjord. In 2014, EPAM acquired Service Design agency Great Friday and also, at the same year, Capital One acquires Adaptive Path. In 2015 Wipro acquired Service Design agency Designit. In the same year, McKinsey acquires Lunar for its product design expertise and follows in 2016 with the acquisition of Service Design agency Veryday to extend their portfolio. These acquisitions are part of a more significant trend of global corporations making significant investments to strengthen their design expertise. But also at the same time, Zilver and Livework join forces to increase the competitive advantage in growing and expanding capabilities (Buley, 2015, 1–2; Grimes, 2017, pp. 24–31). In 2017, Capgemini, a global consultancy with its focus on technology, acquires the digital strategy and experience design consultancy Idean with the reason that **"the customer demand is shifting: service providers who bring digital design, creativity, and agility to redefine the customer to help organizations identify new strategic opportunities and create digital design experiences that are based on a deep understanding of their users (Connatty & Biraud, 2017)."** In 2018, McKinsey & Company united the previously acquired three acquisitions – Lunar, Carbon12 and Veryday to launch McKinsey Design with a count of 350 designers spread across ten cities globally (Consultancy.org, 2018).

Also, an excellent example of this growth can be seen in Fjord, which has grown since the acquisition from 250 towards over 1000 designers in 27 studios across the world. Nowadays, Fjord works for multinational companies across telecommunications, finance, banking, energy and automotive sector. The role of design in business has increased dramatically; by this means Fjord works more and more together with CEOs and board-level executives who are interested in what

design can bring to strategy but also how design can drive innovation forward. In relation stands understanding of design and embedding with the organizational culture and scaling design within the organization (Design Council UK, 2018).

Service Design integrates within the functions and divisions in the organization and is a powerful opportunity for practical application for combining business, design and engineering. Service Design has come to age, it has found itself new operating ways in new circumstances and new environment to accomplish its goals. The merger of design and consultancy capabilities solved the re-occurring problem in Service Design practice of ending at the early stage of development, not being able to strive for implementation. It has been taking seriously and getting traction; by this means, the whole profession is maturing and it is becoming a part of how a business operates in a more customer-oriented form of business development (Engström, 2017; Grimes, 2017, pp. 24–31). Design is seen as a catalyst for innovation by business. Design's adaptability to continuously evolve environments is what makes its practice so relevant in times of change. The ability to align design with business interests and to communicate in business terms how design can add value. It has become a strategic resource for business. It can no longer outsource this crucial capabilitiy what is seen the rise of corporate in-house design teams working on Service Design (Muratovski, 2015).

Table 1. Distinctions within the VUCA framework

	What it is	An example	How to effectively address it
Volatility	Relatively unstable change; information is available and the situation is understandable, but change is frequent and sometimes unpredictable.	Commodity pricing is often quite volatile; jet fuel costs, for instance, have been quite volatile in the 21st century.	***Agility*** is key to coping with volatility. Resources should be aggressively directed toward building slack and creating the potential for future flexibility.
Uncertainty	A lack of knowledge as to whether an event will have meaningful ramifications; cause and effect are understood, but it is unknown if an event will create significant change.	Anti-terrorism initiatives are generally plagued with uncertainty; we understand many causes of terrorism, but not exactly when and how they could spur attacks.	***Information*** is critical to reducing uncertainty. Firms should move beyond existing information sources to both gather new data and consider it from new perspectives.
Complexity	Many interconnected parts forming an elaborate network of information and procedures; often multiform and convoluted, but not necessarily involving change.	Moving into foreign markets is frequently complex; doing business in new countries often involves navigating a complex web of tariffs, laws, regulations, and logistics issues.	***Restructuring*** internal company operations to match the external complexity is the most effective and efficient way to address it. Firms should attempt to 'match' their own operations and processes to mirror environmental complexities.
Ambiguity	A lack of knowledge as to 'the basic rules of the game'; cause and effect are not understood and there is no precedent for making predictions as to what to expect.	The transition from print to digital media has been very ambiguous; companies are still learning how customers will access and experience data and entertainment given new technologies.	***Experimentation*** is necessary for reducing ambiguity. Only through intelligent experimentation can firm leaders determine what strategies are and are not beneficial in situations where the former rules of business no longer apply.

Figure 11: Distinctions with in the VUCA framework (Bennett & Lemoine, 2014)

In summary, across many industries, the VUCA concept of volatility, uncertainty, complexity and ambiguity summarizes the current situation (Bennett & Lemoine, 2014). Companies have to ensure agility to target volatility, increase information to reduce uncertainty, restructuring and flatten the organization to little complexity and lower ambiguity in the form of iterative way of working and experimentation (see Figure 11). Concerning this research, Service Design is positioned and is acting under these circumstances, which has an effect on the Service Design discipline. At its core, Service Design combines the key characteristics of being agile, explorative, coping with complexity, creating understanding, making it a suitable solution-orientated approach to tackle the digital transformation. On an organizational level, Service Design **"particularly manifests itself in a firm's capability to adapt and reconfigure […] a firm's ability to quickly respond to and successfully internally change for emerging or unpredictable market demands (Karpen et al., 2017)."** In fuzzy conditions, problems remain causally ambiguous and complex. As Service Design helps to make the intangible become tangible, it also exposes the drivers and outcomes of these problems, it serves to experience, to explain and make understandable (Karpen et al., 2017). **"This refers to the Service Designer's ability to execute projects that are explorative in nature and contain much ambiguity and uncertainty concerning potential contextual factors and outcomes. Ambiguity and uncertainty are common in Service Design, where designers are often confronted with a multitude of situational factors (Karpen et al., 2017)."** However, still, it has to adjust itself, develop itself further, being highly flexible and open to being able to deliver value in an efficient and effective way to the organization.

1.3.1 Transformation induced by disruption

The terms disruption, digitalization and business model innovation go hand in hand and lead to a paradigm shift of thinking. (Keuper, Schomann, Sikora, & Wassef, 2018, pp. 239–264) describe in **'Disruption und Transformation Management'** the situation that every company can come into fear of disruption and huge organization are endangered to become disrupted because they are not able to adjust quickly enough or even change their core business model, organizational structure and strategy. Disruption can be understood as an external shock by which a continuous adjustment towards market changes is not anymore sufficient; by this means, the adjustment of the established core business model is not anymore possible, which makes it obsolete and has dramatic influences on the company itself. Disruption has led to new (not existing) markets when disruptive business models occur, two characteristics come present: firstly, it is underestimated and the relevance of change by the established enterprise is not apparent; secondly, if the disruptive business model has reached critical mass, the rapid acceleration of scale arises or hyper scaling (Keuper et al., 2018, pp. 239–264).

"Prominent digital innovations such as Uber, Airbnb, and Spotify challenge the existence of established companies and cause severe systemic effects in industries and markets. Such radical digital innovation and its wider systemic effects are frequently referred to as digital disruption (Skog, Wimelius, & Sandberg, 2018)." The whole automotive sector is witnessing this paradigm shift. New ecosystem is being formed around traditional OEMs, as new competitors (as Tesla or Google), old suppliers, technology start-ups, venture capitalists and research labs are disrupting the automotive industry. The businesses are striving to become **'exponential organizations,'** utilizing digital technologies to increase speed and adaptability (Ismail, Malone, & van Geest, 2014). The former mechanical machine, the car, is being more and more converted into a computer. The connected car is creating a new basis for ecosystems along with the emergence of sharing platforms and being converted into a sensor platform. New companies are developing software and integrating the car with the smartphone; the new **'internet of vehicles'** is an extension of the emerging internet of things (Ferràs-Hernández, Tarrats-Pons, & Arimany-Serrat, 2017).

With the digital transformation also the value-added chain in the automotive industry is shifting from hardware focus as body, chassis, power train towards software and services. Including the accelerated automation rate in the industry, this movement is creating a significant paradigm shift. If hardware or a product is manufactured, it is with market entry finalized and furthermore replicated. Software instead is continuously a process of development and deployment in fast innovation cycles. Hardware and software development has to be pursued separately and simultaneously. This indicates that automobile manufactures have to change their product development and also focus at the same time on the development of software for new digital services. By this means, automobile manufactures establish new business units which develop and create a unique customer experience in the vehicle, on the digital platform and in the connected services (Jungwirth, 2017c). Furthermore, the automotive industry as potential future mobility providers has to open towards exponential technologies like cloud, Artificial Intelligence (AI), autonomous driving and mobility platforms. With the essay **'Software is Eating the World'** Andereessen has already predicted in 2011 that companies realize that every company is becoming a software company, regardless of their business. Over time a more significant part of their business is dedicated to create software and support and enable their operations (Andereessen, 2011).

(Brecke, Nazareth, Niederberger, & Ramsauer, 2017, 7–25) decribe the transformation in the automotive sector, as rapid technology change towards electric, digital connected and autonomous driven cars is also caused by the movement of changing customer demands and also governments pursuing a sustainable driven approach and changing regulations. However, four main trends are standing out in the automotive industry in combination: electric power-train, autonomous driving, connectivity and shared mobility. While connectivity and autonomous driving can

be seen as natural technology developments, in this case especially shared mobility and Mobility as a Service (MaaS) are exceptional as disrupting forces. The established core business model of selling a product is turned upside down; it introduces the paradigm shift from ownership towards service-based business models. However, electrification has a disruptive impact on the established after-sales business model. Electrification has a systemic impact on the production and supply network; it will replace the combustion engine, parts of the power-train, transmission and clutch system and make them obsolete. Furthermore, the whole supporting energy infrastructure transforms from a gasoline-based pump station network into an electric charging system. MaaS has even more impact because it questions the automotive core business model of ownership itself; the demand for mobility does not depend on the vehicle; it is about getting the most convenient way from a to b. The new topics as human-machine interfaces, connected driving solutions and the creation of holistic end-to-end mobility experiences will be the new core competencies of automotive manufactures because this can lead towards differentiation in the market segments. Looking further in the future, the continuous development of the automotive along the five levels of autonomous driving is leading towards driver-less systems, in which the driver is completely replaced and no wheel is any more existing. This indicates that, continuously the needed attention by the driver decreases and as a result, not more attention is needed; the Self-Driving-System transforms the driver into a passenger. This introduces a shift from **'joy of driving'** to **'joy of being driven.'** The driver's place transforms into a passenger experience place. This new form of mobile living space enables activities as working, eating, sleeping while getting driven and primarily digital services as info- and entertainment become dominant. As soon as more free time can be utilized inside a vehicle, services as streaming of music, podcasts or video will become an element in the value chain of the customer's journey. In this way, the core competencies in the automotive industry have to be expanded to provide solutions for the coming holistic experiences in mobility (Brecke, Nazareth, Niederberger, & Ramsauer, 2017, 7–25).

"The 'autonomous car' already is becoming an area for service innovation (Blomberg & Stucky, 2017)" where automobiles offer self-parking services or even further open up 'Automated Travel' options where Service Design can have a significant impact. **"Services delivered through digital platforms and accessed via digital devices create dependencies on technology and change divisions of labor among service providers, recipients, among the human and non-human actors involved in the service exchange (Blomberg & Stucky, 2017)."**

Service Design can contribute to innovation in the digitized services sector and needs to define the new relationships of **"the design of data producing activities, algorithms and analytics that create new information, techniques to visualize data and make them actionable, thin client user interfaces that exposes the work of the machine to machine interactions, and even the digital devices that**

provide ubiquitous access to services […] Service Design must expand its focus beyond the 'service experience' to include these technology-connected design activities (Blomberg & Stucky, 2017)."

As mobility is an integral part of daily life, it has to be seen as a basic need; the demands towards mobility are complex, the solutions have to fit the context and situation in relation to people's needs (Jungwirth, 2017a). Shared mobility enables customers to have access and use vehicles as a service instead of being tied to one or several vehicles, which can be complemented by the shift from manual/assisted driving to autonomous driving, resulting in shared autonomy. Given this radical changing and demanding environment, organizations aim to expand and transform their business models in order to survive. It also induces how the German OEMs are following the transformation towards service-orientated business models as on-demand, per-use or subscription. The customer experience plays along and inside the living domains a major role.

Dr. Lars Heidenreich, former Head of Smart Mobility in Volkswagen Group's Digitalization division, states: **"It is not just the automobile that is being reinvented through the digital revolution. Mobility itself is being reinvented. The more freely designers are able to develop vehicles, the better and more consistently they will be able to adapt vehicles to people's individual lifestyles and personal wishes. Such a cross-functional melting pot of Digitalization and design, working hand-in-hand to create and implement the interior, exterior, and user experience design and engineering of our products and services is ground-breaking in the automotive industry. The work will be integral, direct and with an absolute focus on our customers, their needs wishes and dreams with design thinking and customer-centricity. We must, and we will execute on the software and services development with the same focus and attention to detail as successfully done on the hardware development (Martin Kahl, 2017, pp. 24–25)."**

Future mobility services and systems have to function on a dynamic platform on which all stakeholders, products and services can take place to fulfill their value proposition. Mobility as a Service platforms (MaaSp) aim to combine various modes of transport (e.g. public transport, car-sharing, ride-hailing, micro mobility, ...) in one seamless journey over one interface or customer touchpoint. The service portal forms the desired trip chain on behalf of a customer and enables the whole trip via a single payment or mobility package. As MaaSp covers all necessary mobility options which are needed to provide flexible and customized transport to different kinds of users, the fundament of new mobility services enables the possibility of seamless and reliable mobility without owning a car (Utriainen & Pöllänen, 2017). A MaaSp is combined and interconnected in an integrated systematic network to offer holistic solutions to serve individual customer mobility needs in a surrounding of seamless brand experience across all communications channels. A valuable mobility ecosystem has to provide a fluent journey for the customer, including access to all touch points,

a dynamic relationship and intersection into the customer living domains. As any disrupting business as AirBnB or Amazon has developed themselves as an aggregating platform of value exchange, also more and more mobility providers follow the platform approach, enabling the holistic inter-/multimodal mobility and a seamless customer journey across multiple mobility services. The platform or matchmaker approach is a business model that utilizes technology to connect people in an interactive ecosystem with organizations and resources in which value can be created and exchanged. A MaaSp is a business based on enabling value-creating interactions between external producers and consumers (Aapaoja, Eckhardt, & Nykänen, 2017). Network effects apply as the number of users of a platform have a direct impact on the value created for each user. A platform provides an open, participative infrastructure for these interactions and sets governance conditions for them. **"A platforms overarching purpose is to consummate matches among users and facilitate the exchange of goods, services or social currency, thereby enabling value creation for all participants [...] Because platform business create value using resources they do not own or control, they can grow much faster than traditional businesses (Parker, van Alstyne, & Choudary, 2016)."** As in Figure 8 shown, multimodal mobility platforms function as mobility aggregators which combine and integrate all available modes of transportation in one single platform. The customer just has to pick a destination and is offered the best solution for travel from A to B based on this situative-relevant need and / or preferences. In relation stands the demand platform providers to understand the customer needs to provide a valuable customer experience because of being the key differentiator in a competitive market. The future of mobility is based on the people's circumstances and their behaviors around mobility as archetypes, expectations and intermodal minds (Fjord & Volkswagen AG, 2018).

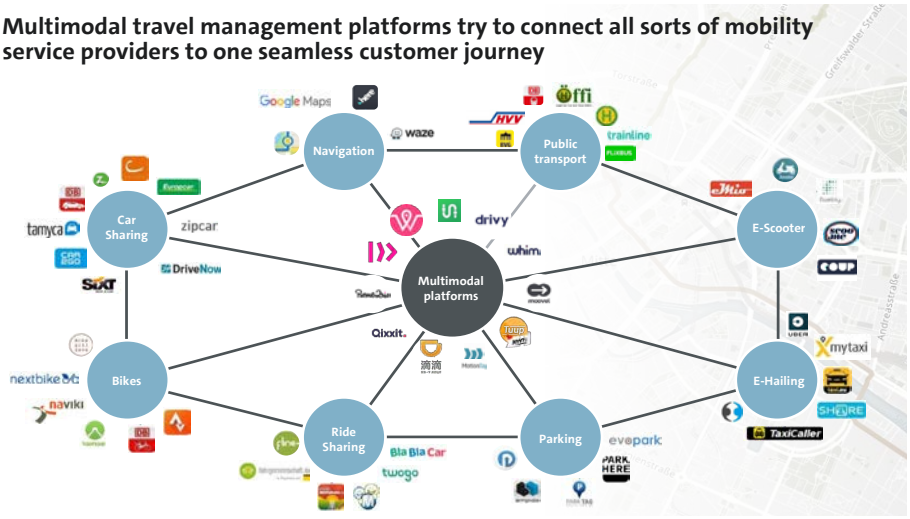


Figure 12: Multimodal travel management (Schaaf, 2018)

The digital transformation and the disruption of the automotive industry is seen as a chance and Digitalization leads companies towards human-centered development. Products, services or systems cannot be developed without a human-centered approach; the needs and demands have to be placed in the center of attention. **"Human Thinking is a holistic approach following the questions what problem does the design solve, how does useful is it, how desirable is it? Furthermore, the solution has to relate in a wider scope towards society, sustainability and essentially to people's life (Jungwirth, 2017a)."**

"Still it is common in the automotive industry to develop devices, vehicles and machines with an unacceptable user experience; developed by engineers for engineers but leaving the end-user out of scope (Jungwirth, 2017b)." But Human Experience Design (HX) plays an essential role in creating interactions between users, vehicles and the ecosystem. Rather than just focus on aesthetics, it is about how to design solutions with maximal reduction of complexity and perceived valuable in detail, intuitive handling and simplicity are critical. Especially new technologies in the era of Digitalization enable integrated solutions in-between hardware and software which function highly complex in the back-end but provide a seamless user experience in a simple unambiguous form (Jungwirth, 2017b).

1.3.2 Transformation hindered by legacy

The turn from a car manufacturer to a mobility provider requires an extended product portfolio, including services and systems. New forms of innovation are necessary, besides product innovations, new management and development ideas are needed, especially considering the domain of development of intangibles services.

The legacy of the automotive industry has to be considered to understand the challenging situation for change. Since the beginning, it has been dominated by scientific management or Taylorism (Waring, 1991) to optimize work activities by measuring time, cost, performance. Or later, Fordism, named after Henry Ford, focused on assembly lines for mass production and on standardization of products. It reshaped the social dynamics in a split between work and purpose (Pinheiro, 2014, pp. 19–20). Even later in the era of Toyotism, approaches like Lean, Six Sigma and Total Quality Management (TQM) have been implemented to constantly improve speed and quality in alignment with the reduction of waste and variety (Stamm, Neitzert, & Singh, 2009). Most mature industrial organizations are built on these principles and grew into what is perceived today as silos, structures and hierarchy. Business process re-engineering is a key tool for optimization and efficiency, removing waste from development and production processes and streamlining supply chains (Merholz & Skinner, 2016). Success in large corporations has traditionally relied on internal competitions for budgets, opaque agendas, hoarding information, a structure by function and standardization, which often are severe limits building a culture of design, innovation and leadership. Processes

were constantly optimized and occurring problems were identified and solved by engineers. These organizations have become silo-structured systems, with clearly defined responsibilities and top-down-thinking driven decision-making. Regarding car production and a constant business model primarily based on selling cars, this was perceived as the appropriate way of designing and managing an organization (Augsten & Marzavan, 2017a).

The study **'Change by design? Organizational Learning Barriers in the German Automotive Industry'** (Augsten, Gebhardt, & Maisch, 2016) describes the barriers inside the organization to shift towards a design-driven approach. The research and development departments in German automotive companies have been focused on engineering-driven improvements. **"This linear, technical product development process for car development has been strongly optimized in competencies, decision making, timing and quality measurement. The design of services and its ecosystem does not necessarily have to follow this path. The shift from product-driven manufacturer to a provider for mobility; by this means development for services requires a different knowledge framework as well as a different attitude to deal with complexity in a more network-structure, which is still little embedded in the current organizational structures (Augsten et al., 2016)."** The main reason for this limitation is pre-existing organizational structures that disable the workflow in Digitalization; the lack of experience in dealing with unknown proceedings, followed by the insecurity and responsibility for projects that need to leave the given path. The interviewees have often not been satisfied with the outcomes and their experience in the existing structures as limitations to contribute; constantly challenged within this contextual setting and proposing design methods as a possible solution to overcome these limitations. Even if the design-driven approach has democratized iterative and creative ways of working, it seems like personal preferences, judging, power, self-presentation and internal arguments are some of the findings when it comes to barriers of internal collaboration, meaning a less competitive environment would support innovation. Organizational barriers can be stated e.g., when it comes to ordering new material, simply meaning not working correctly.

Furthermore, the strength of testing and receiving feedback from users in real-time situations is seldom possible due to security restrictions. Projects are designed internally and there is no real market laboratory to test, iterate and optimize. Obligation to confidentiality needs at least an adaption to today's challenge. Otherwise, it will limit innovation and turn into a competitive disadvantage. The design driven-approach needs visibility, especially if it has to facilitate cross-department collaborations (Augsten et al., 2016). The linear process and associated management style, which worked perfectly in mere manufacturing times, need to be adjusted: from established hierarchies, specialized competencies, and responsibility to a learning organization, which can change and act on demand.

Looking further into the automotive industry, a similar study (Augsten & Marzavan, 2017b) focused on identifying the challenges which lay inside the automotive organization to facilitate this change. Human-centered approaches as Design Thinking and Service Design are utilized to design digital products and depend on agility, iteration, and interdisciplinary collaboration. Designing digital products demands a user experience and is therefore dependent on cross-silo collaboration and information transparency within the whole organization. As a temporary solution, the management has been addressing this challenge with laboratories, input from external consultancies, in-house start-up incubators, boot-legging projects, or by creating subsidiaries specified on the creation of new business models. Newly built organizational units as innovation labs aim to design and manage these digital products at the edges of the organization in the **'fuzzy front end phase'** of innovation. These new ways of working are based on principles like empathy, creative confidence, iteration, collaboration, experimentation, and fast failure for those working in innovation labs. Also, the utilization of digital collaboration tools is flexible, adaptable and compatible with the iterative mindset and working principles as being more resilient to failure. But introducing digital services and agile ways of working in a silo-structured, scientifically managed organization is bound to result in conflicts and uncertainties as any transformation initiatives do. While human-centered design activities are established in innovation labs, they have rarely embedded practices in the corporate headquarter; also stating these new ways of working, collaboration and knowledge transfer have become a challenging management task.

Additionally, these new demands are shaking up the foundations of the existing organizational innovation culture. Digital products within a different concern to human-centeredness are not traditionally developed along with current product life cycles and management principles of a car manufacturer. This further plays a crucial role in the evolving of collaborative, transparent practices. Transferring and scaling up such approaches reveals discrepancies concerning success criteria as Key performance indicators (KPIs), implementation processes, and general managerial ways of working. The traditional managerial role of centralizing information and being the sole point of communication between the team and top management is still embodied in the mentality of many managers today. Also, the pre-existing KPIs for the financial bonus prevent cross-silo collaboration and sharing principles. Human-centered practices are not yet embedded in an overall strategy at the top management or are not connected to supportive structural innovation systems. Human-centeredness as the designer's imperative is rarely aligned with the top management's strategic goals and rarely embodied in the organizational culture, meaning: humans go before numbers, processes, and structures. The inefficient interplay between innovation labs and headquarter is highly related to the organization's overall opposing view and understanding. This newly constructed

organization then collides with the reality of the old organization when it comes to the implementation of digital innovations (Augsten & Marzavan, 2017b).

As the research (Recchia & Kleeberger, 2017) states, Volkswagen started to apply Service Design at the Group Research Service Innovation Team in 2012. Throughout the technically driven heritage, the main focus of user-centered design lay on enhancing the usability of products rather than starting development with a user-centered approach, by this means starting development based on user needs. User-centered design played no major role, but throughout the upcoming challenges of shifting markets, new approaches as Service Design and Design Thinking got applied and the successful results became apparent towards management (Recchia & Kleeberger, 2017). The application of Service Design in the early stage innovation development of running pilots provided direct feedback and gave insight on how to adapt and, as a result, modify the assumptions to increase the quality of the concept continuously. Creating constant releases during the test phase supported learning about the changing behavior of the users. Empathic engagement with the customers not only provided a more profound understanding but also motivated the team towards refinement of the pilot in detail. Creating tangible results provided the basis of informed decision making and, in addition, improved understanding how are the requirements of costs, time and resources for the business solution (Recchia & Kleeberger, 2017).

As (Recchia & Kleeberger, 2017) share in the past, it has been difficult in the Volkswagen business culture with a legacy of no failure to establish the acceptance of iterative learning. Also, argumentations based on the human-centered approach for high customer satisfaction were not sufficient at that time. Business value in the form of cost savings and revenues had to stand in alignment with customer value. But this lead also to building up a more interdisciplinary team of many experts in strategic designers, business analysts and engineering to improve viability and feasibility of the running projects, working in the user-centered design approach towards business ideation and further business-case development. Also, opening up towards others in the organization, establishing links to other departments, providing a stage for exchange to break down silos has been essential to bring the movement of user centered-design forward. Even if the innovation activities were supported, the problem of transferring the project in form scaling appeared, the problem to implement innovation in a standardized process (Recchia & Kleeberger, 2017). Learning from five years of intense experiments and transformation, Service Design can play a major part in enhancing the integration of this new paradigm in the company's daily business and consolidated processes. **"the Service Design discipline will evolve from testing out new services and possibilities for Volkswagen into defining holistic service-economy systems and, thus, being able to influence a company's entire business strategy (Recchia & Kleeberger, 2017, p. 74)." In general since 2015, Volkswagen has pursued vigorously to enable this transformation in a sustainable way.**

In any kind of scenario, it forms the urge for transformation but not just in the way of technical know-how but much more for the enterprise culture itself. Also, it has to be considered that any transformation is unique depending on the organization has given size, legacy, and culture. OEMs will be forced to transform and this will impact all layers in the organization as creating capabilities and units enabling new services & products, organizational structure, steering process, culture and working space. Transformation is more than innovation. Many companies have started to build up external explorative units as innovation labs, start-up accelerators or venture capital units. These are mainly positioned outside the business core of the organization. They create external impact, but the value they bring is challenging to transfer inside the organization.

For long-term transformation, the change has to happen inside—the automobile organization model what is built along with the development and production processes in silos. Two main approaches have to be considered managerial **'top-down'** and systematic change management with the focus on the employee **'bottom-up'**; to achieve a successful change, both approaches have to be applied in alignment (Brecke et al., 2017, 32–58). Many organizations have started with the inducement of agile, lean or user-centered methodologies, which supports the cultural change towards an iterative and fail early attitude in the organization but this is insufficient to embed transformation or change fully. Many different success factors have to interplay in all layers of the organization. The transformation has to be meant holistically. No area in the organization should be without any change. The transformation core has to be strongly enabled by the company ownership side, CEO, top management with all relevant stakeholders; this group has to act in a receptive approach to accepting the organizational learning process and open mind of trying new forms of practices. The transformational process has to engage all stakeholders as employees and customers actively. This enables to utilize the knowledge of the whole staff, that it suits cultural exceptions this has to be supported by a string internal and external communicational campaign. The dimension of culture is a center piece of transformation that happens in many layers, which needs a clear vision and mission. The sense of urgency for the transformation must be strongly promoted by top management to support the courage to change on all layers. A transformation process can easily take up two years, but until it reaches real embedment, it might take up to 10 years (Brecke et al., 2017, 32–58).

1.3.3 Transformation from goods dominant logic to service logic

With the rapid technological development, manufacturing companies are forced to attempt an integration of services in their product offerings to create more complete solutions (Costa, Patrício, Morelli, & Magee, 2018) and in order to stay competitive, many technology-driven companies are confronted with a situation of when a competitive advantage is gained based on a good user experience. Human-Centered-

Design (HCD) and in general, the human-centered approach has entered the industry along with Service Design in business. In the era of Digitalization and rapid change, companies have to implement more agile processes or be challenging to remain resilient towards market changes. **Multinational manufacturing enterprises strive for transformation, which is influenced by Service-Dominant-Logic (SDL) and the shift of Servitization towards new business models. Service-dominant logic (SDL) and Service Design are seen as a perfect match as "Service Design is the process of coordinating designed institutions and institutional arrangements to enable the co-creation of value (Manhaes, 2018, pp. 29–31)." Service Design facilitates value co-creation in a coordination process by being understood as an ideal process that delivers evolutionary actor-generated results (Foglieni, Villari, & Maffei, 2018; Manhaes, 2018, pp. 29–31).**

The term **'Servitization'** describes the strategy of manufacturers of increasingly offering services or customer-focused combinations (bundles) instead of products for adding value (Vandermerwe & Rada, 1988). Continuously they are moving into offering services integrated with their products as Product-Service Systems (PSS) (Costa et al., 2018). This impacts the organization of forming into a service organization (Baines & Lightfoot, 2013). A company moves from **'product thinking'** to **'system thinking'** (Cabrera, Colosi, & Lobdell, 2008; Jackson, 2001) when designing a successful PSS. **"It needs to be designed at the systemic level from the client perspective and requires early involvement with the customer and changes in the organizational structures of the provider (Baines et al., 2007, p. 1548)."** This transformation requires changes in all components of the business model and a change in the company's self-image and corporate culture. This includes companies adopting the customer perspective, addressing the customer's service needs in detail, and ultimately managing the transition from a short-term transaction business to a long-term relationship business.

With Product Service Systems (PSS), especially manufacturing companies have seen potential by providing an added value to new and existing business offerings. Attempting to ensure that **"value creation not only focuses on producing and selling physical products but also on producing and selling a mix of products and services to satisfy needs of the customers (Bhamra, Walters T., & Moultire, 2017)."** Service Design aims to enable companies to develop long-term relationships with their customers and help companies better understand and meet customer's needs and expectations. Considering the three steps of the Service Design model in manufacturing: the serviceability of product, service beyond the product and ultimately service business models are the differentiation strategy for manufacturing companies. At this point, value is defined in less concrete terms and more in intangible and dynamic services produced and consumed simultaneously. **"Service Design makes a useful proposition to achieving this goal as the user-centered approach requires these developments to be co-created with stakeholders, ensuring that**

the resulting PSS meets requirements fully and delivers the value (Bhamra et al., 2017).” A competitive advantage can be achieved by a match between consumer values and a unified PSS interaction experience (Bhamra et al., 2017).

The transformation towards an experience economy makes service innovations ubiquitous and essential for creating economic growth. Manufacturers are shifting their practices from a Goods-Dominant-Logic to a Service-Dominant-Logic (Lusch & Vargo, 2016; Vargo & Lusch, 2004, 2008). Shifting from considering value as embedded in goods towards consumed at the point of service delivery as **“considering value as co-created with users in their own context of use and in interaction with a wider array of other resources and services, suggests a change in the business logic of an organization (Sangiorgi & Prendiville, 2017b).”** Since the introduction of the terminology **‘Designing for Service’**, described the act of design with **“constructivist approach to doing design, with a view that the distinction between goods and services is not important […] and rather sees service as the fundamental basis of exchanges of value. […] the purpose of the designers’ enquiry is to create and develop proposals for new kinds of value relation within a socio-material world (Kimbell, 2011a, pp. 49–50).”** Nevertheless, the key difference between these two logics is described as a different ways to perceive value. Value being embedded within goods and exchanged at the point of delivery and/or value being in their context of use co-created with and by customers. This implies the adoption of a customer-centric approach. The Service Logic’s attention lays on how it can better serve customers by support their own value-generating processes in the form of being a facilitator for value-in-use; the interaction of customer’s value creation and value fulfillment by enabling the company’s co-creation of value with its customers (Svensson & Grönroos, 2008). Design for Service contributes to Service Logic **“by widening and deepening the understanding of resource integration and value co-creation and how value is assessed and experienced by actors in different contexts (Wetter Edman, 2014b; Wetter-Edman et al., 2014).”**

As shown in Figure 9, the Service-Dominant-Logic approach of value-in-use is the fundamental basis of economic activity (Kimbell, 2014, pp. 43–48) which focuses on the understanding of value co-creation, an exchange of resources between actors for mutual benefit, but the value is determined from actor’s perspective and not by one dominant actor. Furthermore, value emerges in use which implies that service requires access to resources and not ownership (Kimbell, 2014, pp. 43–48). This also creates an understanding of how value unfolds from a customer’s experience in the context over time in practice, **“to experiences instead of transactions, and to events instead of objects (Kimbell, 2014, pp. 43–48).”** It requires learning from how actors experience and understand value within their own contexts and within that value-creating processes are dynamic, interactive and non-linear (Kimbell, 2014, pp. 43–48). The transformation from product thinking to service thinking happens

along the lines of how value is perceived. Value is perceived in the situation & context of use in the **'moment of truth'** in the interaction. (Sangiorgi, 2013, pp. 98–99) states that this focus on more interactions, benefits and exchanges automatically introduces an enhancement of organizations looking in the capability **"to explore and understand people's needs, the value co-creation context and practices to identify opportunities for innovation (Sangiorgi, 2013, pp. 98–99)."**

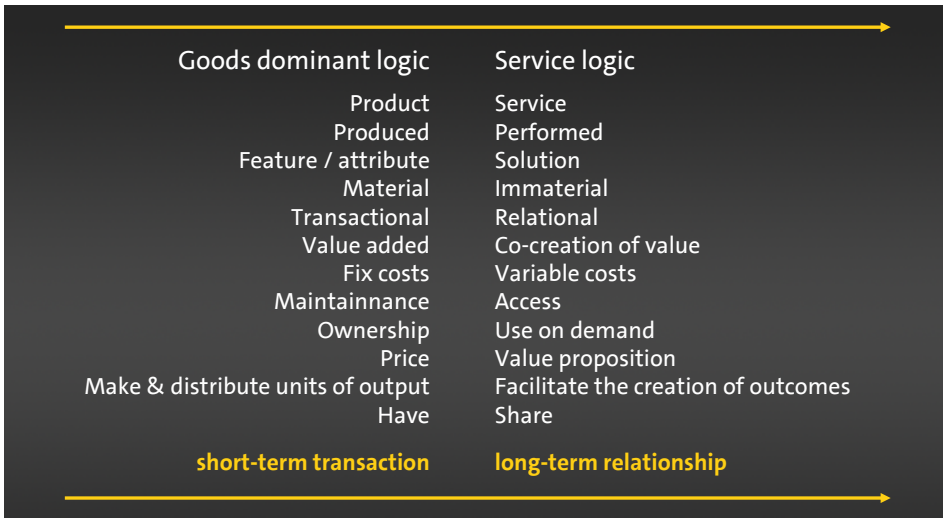


Figure 13: Transformation from Goods dominant logic to Service logic, based on (Moritz, 2005), (Lusch & Vargo, 2016; Vargo & Lusch, 2004, 2008) (Schaaf, 2019c)

Especially in Service Management interactions are seen as **'the moment of truth'** of services, **"the moment when the value in services is constituted (Penin, 2018, pp. 24–25)."** The act of perceived value of the service for people happens in the moment of truth in the interaction which is crucial in determining who **"at that point are able to assess results against cost and effort of the service provider (Penin, 2018, pp. 24–25)."** But Service Designers are just able to design **"the conditions for interactions to happen but never the interaction itself (Penin, 2018, pp. 24–25)."**

Implementing a Service-Dominant-Logic for a manufacturing organization requires a change in the way organizations innovate and develop their business (Sangiorgi, Lee, Sayar, Allen, & Frank, 2016). The challenge for the business leaders is to move away from the **'In-side out'** thinking which tends to dominate technical organizations that have excelled in engineering and product design (Sangiorgi et al., 2016). Instead, Service Designers design tangible and intangible touchpoints but also the relations of touchpoints within a journey and a system. The user experience

value is drawn by observation of the user's behaviors. Consequently, HCD processes and methods have been adopted in Service Design as Service Designers are involved in the early phase of the innovation project to identify problem areas. The focus of their work here is to design service interactions, which provide better experiences for users. This view has led to the direct involvement of users in the design process as **'co-designers',** by providing valuable contributions to the design and innovation process. E.g., users share their experiences and express their opinions and ideas with the help of visual and creative techniques in workshop settings. For the success of delivering product/service solutions, an **'Out-side in'** approach must be adopted in order to ensure value creation in the customer's or industry's supply chain. This requires collaboration between stakeholders and, most importantly, the customer who is part of the co-creation process. For product organizations, this requires a significant mindset change and transformation as not only adding Service Design to their product design expertise but more merging the two disciplines that profitably, outcomes and results are seamlessly created for the customer and organization (Sangiorgi et al., 2016).

New services require a different development approach by shifting from the practice of product-centric manufacturing towards a service-centric orientation. (Calabretta, Lille, Beck, & Tanghe, 2016) state that manufacturers profoundly face cultural and capability transformation to develop or acquire the necessary tools and techniques for designing service offerings and have to facilitate a change of corporate mindset towards a more service-oriented one. In summary, to implement this transformation in general effect, it has to be acknowledged that it requires a trasnformation in the organizational culture, strategy and structure. Designing services or product-service-systems is significantly different from designing products, given the intrinsic fuzziness, complexity and intangibility of services. By introducing a human-centered and design-driven innovation process that is more suitable for developing new services, design professionals enable and implement transformation. For example, the Service Design process provides concrete directions on implementing the transition to more service-oriented competitive strategies, overcoming the key challenges to its effective implementation. They support the organization with a deeper and more accurate understanding of user needs and satisfiers; a strong customer centricity (Calabretta, Lille et al., 2016).

1.3.4 Transformation enabled by Service Design

Many manufacturers crumble with co-designing inducing change, even if all Service Design processes should lead to change and involve people affected by the change and comprise the machine running the business. Organizational empathy allows Service Designers to understand possible mechanisms of habit creation and as result, Service Designers find themselves working in leadership, process development, organizational change and policy making. **Service Design is related to change or**

changing making. Service Designers have to view their problems in the social environment empathetically (Rönnholm, 2017, pp. 84–90).

Transformation and change are constantly interconnected with Service Design in the industry. The goal of Service Design is to discover challenges, create opportunities, develop and improve processes. It is natural that Service Design creates pressure for the organizational structures and processes e.g., new service solutions may require an organizational change in processes and ways of working. Service Design facilitates change and the importance lies in understanding and creating awareness of its necessity. **The inclusion of staff and increased collaboration inside the organization increases the probability of implementing change, enabling people to develop ideas, take ownership, and form it towards commitment (Miettinen, 2017, p. 8).** Especially in organizations, Service Design supports the design and delivery of value propositions that respond to the customer's needs in a concrete way, enabling an understanding of the customer's living domains, translating in-depth insights into the cultural context and systems of values and meanings solutions. Service Design creates business opportunities and revenue around user's profiles and behavior patterns systematically, concerning single services towards an ecosystem including all stakeholders (Miettinen, 2017, pp. 8–9).

Also (Deserti & Rizzo, 2014) argue that **"innovation can be fully developed and exploited only 'inside the box' by considering the organizational context (company), the technological and productive context (technology and production), and the context of use (society and market)."** The innovation booster lies in managing innovation projects using a situated design culture that radically can change companies, competencies, processes and also transform people in organizations. This implies the necessity of rooting design deeply within the enterprise but also considering that it takes both a long time and the ability to adapt it to the specificity of the situation and context (Deserti & Rizzo, 2014).

Pelin Arslan, senior Service Design manager at Autodesk, a leading 2/3D software company, describes the challenges of transforming from engineering - and policy-driven legacy. Autodesk is shifting towards a user-centric approach that integrates new technologies as cloud-based collaboration services and subscription-based business models. With the recent transformation in technology and business, issues related to these fields are becoming more complex and demanding, as are customer expectations. There is a great need for new design methods to look at the big picture and tackle new business and customer problems across connected journeys. **Service Design offers toolsets that enable organizations to understand these complex problems, define better business goals and ultimately create holistic experiences.** Challenges occur for organizations in applying these toolsets and if the culture is ready to accept new ways of looking at problem-solving in service innovation. Services Designers connect people, processes and users by initiating new and innovative ways of collaborating involving internal and external stakeholders. The

use of the Service Design approach leads to multiple perspectives that can motivate significant changes in designing and executing holistic solutions, creating alignment between users goals and company processes, and creating empathy not only towards users but also with employees, who interact with customers on a regular or daily basis as part of their jobs (Arslan, 2017, pp. 25–26).

With Service Design applied in the industry, the core question arises how the use of Service Design can create additional value in business. Service Design can help provide sustainable value propositions and secure implementation by integrating feedback loops and engagement models, working cross-functionally with stakeholders to ensure holistic solutions. Service Design provides customer focus and employee participation and deals with internal challenges concerning systems, processes and policies. This identifies a gap in how to operate in practice. It is crucial to create new engagement models with internal and external stakeholders to understand the impact of Service Design in an organizational setting. **Research and strategy must be translated in actionable impact, a translation of user needs and business goals into purposeful programmatic solutions which deliver high-quality outcomes for and from the users while bringing value to the company. Service Design needs to be fully integrated into a large scale program to drive change into an organization (Arslan, 2017, pp. 32–33).**

As Service Design projects have a firm foundation in reality as **"Service Design is intensively practical, a pragmatic activity and inherently holistic (Stickdorn et al., 2018, 14–15)",** Service Design has moved increasingly **"into the center of strategic attention, respective capabilities, practices, abilities and their constellations become foundational elements for the future success of firms (Karpen et al., 2017)."**

Service Design has become increasingly complex as services are co-created in networked constellations involving multiple actors, orchestrating the people, processes, technologies, frontstage and backstage. Service Design is a multilevel approach (Patrício, Fisk, Falcão e Cunha, & Constantine, 2011). In the ubiquitous interaction in the context of smart technologies of an interconnected world, **"customers, employees and service providers form value networks and service ecosystems, meaning that what was originally dyadic interactions between providers and users now evolve to complex many-to-many interactions. A service also becomes a facilitator and enabler of value co-creation among multiple actors (Sangiorgi, Patrício et al., 2017)."**

(Covino & Bianco, 2018) argue, Service Design is a natural complement to digital transformation. Service Design needs to evolve and adapt by becoming more available at all levels to non-designer practitioners, building a design culture inside and outside the organization. This also means a massive evolution inside companies that struggle with the complexity of their organization and redesign anything that employees operate, interact with and manage structure, metrics, incentives, culture,

processes, etc., to deliver on the customer experience. **"In an environment in which design increasingly determines whether a product, solution or business will succeed, there will be ample opportunities to assist clients in reimagining their business and deliver design-led business transformation from end-to-end. This means delivering** solutions that include digital strategy definition, omnichannel experiences. **The future of Service Design as a discipline inside larger organizations depends on the ability to extend the reach of design, stretching practitioners to embrace a larger context, widen their overall perspective on business issues, increase their understanding of implications and long-term impacts on a project (Covino & Bianco, 2018)."**

In connection, the demands for service quality and satisfaction have been increasing, thereby making the experience of value creation a top priority for organizations across all sectors. **"Customer satisfaction and likelihood to recommend are the two most tracked measures (Andreassen et al., 2016)."** However, in order to understand the value in use, a major challenge for businesses is to understand better the processes and context that affect the customer's experience. In this relation, Service Design serves as a value-enhancer of quality in order to enable and enhance the service experience from the customer's point-of-view to improve customer satisfaction and organizational performance. **"Service Design functions as a lens on various touch points along a customer's journey, taking the customers' perspective and representing an outside-in approach which enhances the overall customer experience [...] The firm's organizational structures, processes, and culture will be impacted by implementing an outside-in perspective [...] It does have a crucial role to play at various stages of the chain of events leading up to customer experienced value and organizational success (Andreassen et al., 2016)."**

(Stickdorn et al., 2018, 14–15) state that, along the way of constant iteration, Service Design is an approach of rapid experiments and prototyping to test possible solutions quickly and cheaply while generating new insights and solutions. Service Design provides the mindset and workflow of the design process by the iterative approach of decision making, revolve range of options and rely on a structured process of improvement. Service Design addresses the entire value ecosystem with a holistic focus on end uses, other business, internal partners, or stakeholders. In this way, Service Design provides organizations a path **"to balance their experimental, operational, and business needs in a robust but approachable manner, offering an unusually powerful common language and tool set for projects that include, empower and mobilize a wide range of stakeholders (Stickdorn et al., 2018, 14–15)."**

This also targets the challenge within multinational enterprises (MNEs) that communication and collaboration have become difficult; slow development processes do not match changing customer behavior. As a result, they have

implemented silos and departments that have individual budgets and strategies that may conflict. For Service Design in the industry, considerable redesign work to accommodate new processes, strategies, and partners. **"Service Designers in industry are challenged to facilitate a cultural and behavioral transformation in technology and engineering orientated companies which are changing from technical to human-centered thinking (Miettinen, 2017, pp. 3–4)."**

Service Design has long been recognized as a user-centered approach to shape experiences, but little attention has been paid to how a **'facilitating relationship' impacts actual operation in relation to organizational elements; the transformative impacts are not clearly conceptualized.** Even if Service Design has served in practice as an approach to business and culture transformation. Service Designers shall use their sensibilities to maximize the potential of the Service Design discipline to interpret user's needs not only for idea or concept generation but also for service implementation and system change. The impact of Service Design can be considered in relation to its contribution to organizational change (Yu & Sangiorgi, 2018).

Creating awareness of Service Design and the use of this approach in the industrial context still requires promotion across the organization. The role of a Service Designer in an industrial context is not limited to the operational activity of developing new services based on collected user insights. Facilitation as an activity along the whole Service Design process to improve understanding of relations within projects and processes plays a central role. This implies, Service Design builds a bridging role across a broad spectrum of areas. **Service Designers foster a deep understanding of the user's and stakeholder's perspective to improve functionality across the organization. Co-design workshops with stakeholders and users lay the foundation to enable people to develop more complete solutions (Miettinen, 2017, p. 6).**

Thinking of co-design allows exploring the underlying critical participatory practices. Especially Service Design is enabled by participatory design practice for overcoming resistance to change. The practice of involving users and stakeholders throughout the Service Design process is well established. Practicalities of participation include: identifying people to approach, designing methods to engage them, securing their commitment, designing methods to ensure maximum participation (Collins, Cook, & Chouheir, 2017).

A successful realization of change of practices requires these actors to have a shared mental model of change, both for themselves and for the collaboration with other actors. The successful realization of implementation involves a change of practices for actors in the service systems where value is co-created. It requires connections between service actors and a shared understanding among these actors regarding the change of practices (Overkamp & Ruijs, 2017).

As (Bailey, 2012) in **'Embedding Service Design: the long and the short of it'** describes, the design readiness of an organization is a measure of its awareness and the

potential to embed design which also needs to become design practice and develop cumulatively within the organization. Service Design capabilities have to be embedded within the processes, working practices, and business culture in the long-term. **Especially workshops not only support to disseminate and embed Service Design thinking and methods, but at the same time, they also allowed the Service Design team to learn more about how the organization really worked to understand what needs to be done and how it can be improved. "Behavioral change can be initiated through raising awareness of design practices and disseminating design tools and methods through projects and workshops."** Bailey states that **'functional learning'** is the ability of learning, how to deliver and develop the service offerings in practice and to deliver value to the business (Bailey, 2012). This stands in direct connection to the need **"to acknowledge that designing services often involves redesigning systems or redesigning the organization themselves (Penin, 2018, pp. 134–135)."** The design legacies and design agendas already pre-existing in the organizations, whether good or bad, efficient or not, need to be recognized by Service Designers to be successful in leading change for implementation (Penin, 2018, pp. 134–135).

In relation, (Junginger & Bailey, 2017) in '**Designing vs. designers: How organizational design narratives shift the focus from designers to designing**' state, services are deeply embedded within an organizational system and the success of the service often depends on the Service Designer's ability to effect changes in the organization that develops and delivers that service. This means that Service Designers take effect in a wide range of organizational design activities, practices, methods and concepts in their project work. Acknowledging the kinds of designing that are going on within organizations can open new opportunities and possibilities for service designers to facilitate and promote significant transformations and changes. **"Methods, including co-design, co-creation and co-production have been appropriated to inquire into and to facilitate this direct engagement with an organization design context […] The Service Designer's ability to make sense of the requirements and expectations of the various stakeholders involved, not just the customer or end-user, and their ability to visualize and communicate those expectations in the form of meaningful service experiences has to be considered in the context the organization's current internal practices and its capacity for change (Junginger & Bailey, 2017)."** The historic pretext has to be considered as previous efforts, decision making towards earlier design approaches and experiences (Junginger & Bailey, 2017). Furthermore, also organizational design context has to be considered as it describes the current design environment of an organization as the network of actors involved and affected by processes and decision making. These insights about the current values that drive and guide an organization's development efforts can lead to **"ways to overcome disciplinary and management boundaries in order to bridge the divisions between separate specialized narratives and frameworks (Junginger & Bailey, 2017)."**

Again this targets the challenge within multinational enterprises (MNEs), which are similar to governments or policy makers who also face a number of considerations and challenges while first embedding Service Design in practice. 'Service design in policy making' by (Buchanan, Junginger, & Terrey, 2017, pp. 193–194) states, in these structures of complexity and constraints Service Designers are confronted with a demand for proof meaning a requirement of evidence of impact for the organization. Also, broader political contexts have to be considered and aligned with design initiatives. **Service Designers need to acquire relationships across organizations and knowledge of processes to understand the external impacts that might affect their projects.** Furthermore, the resistance to cultural change is apparent. Just the engagement with customers, users or other stakeholders can be perceived as risky. Hereby expectation management plays a crucial role in coping with the problematic situation. **Due to the lack of familiarity with design, the understanding of the value of design is not self-evident, here Service Designers responsibility is to clearly communicate and create awareness for the capability of Service Design. This also leads to confidence inside the organization to try new methods and approaches; by involvement in the process of Service Design the existing organization can be enriched with skills of design (Buchanan et al., 2017, pp. 193–194).**

At the same time, new guidelines and standards for good business practices have occurred and proclaiming the **'The human-centered organization'** (International Standard, 2016, v) **"to reflect that the design of the product, system, or service takes account of human characteristics both to minimize risks and to optimize wellbeing and performance."** The term **'human-centered design'** as an approach is **"system design and development that aims to make systems more usable by focusing on the use of the system; applying ergonomics, human factors, and usability knowledge and techniques (International Standard, 2016, v)."** But also in this way the term **'human-centered'** is used **"to reflect that organizations not only have an impact on their customers (the users of their products and services), but also on their employees, their families and the wider community (International Standard, 2016, p. 8)."** As the (International Standard, 2019, p. 6) defines, **"value is 'co-created' among stakeholders, and the benefits are realized by all parties […] a 'Human-centered organizations' and their stakeholders co-create values through their relationships and interactions."** Co-creation values are categorized into fundamental value, knowledge value, and emotional value. Even if the benefits for transformation seem obvious towards a **'human-centered organization'**, several business benefits are stated in the ISO 27500. The indicators to better organizational performance, including organization financial performance, customer experience, and service to the community:

- ➜ **"improved operational effectiveness and efficiency and increased likelihood of achieving business objectives in a timely manner;**

- **products and services that are easier to understand and to learn how to use, thus, increasing uptake and reducing support costs;**
- **increased accessibility for staff and customers;**
- **reduced risk of poor product design and the associated financial consequences;**
- **more excellent responsiveness to customers and to the market;**
- **enhanced health and safety as well as environmental protection;**
- **enhanced customer confidence and trust with increased customer loyalty;**
- **increased owner, shareholder, and member confidence and trust and enhanced reputation;**
- **greater staff confidence and trust, which help to improve motivation and loyalty, as well as reduce staff turnover (International Standard, 2016, p. 9)."**

The goal of Service Design projects is to create a readiness for change inside the organization as the organization's ability to change influences or even is the baseline for implementing new service. In this way, **Service Design projects have to take account of organizational change process principles, as "stakeholder management and involvement, journey over destination, and change from within (Lønvik, Pettersen, & Verhulst, 2016, p. 9)"** are critical enablers for the success of Service Design. Service Design itself is today acknowledged as a driver for transformation: all participatory design practices are actually considered a discipline with a transformational role because of its capacity for systemic thinking, sense-making and capacity building. As (Cautela, Meroni, & Muratovski, 2015) define in **'Design for Incubating and Scaling innovation'**: Systematic thinking **"incorporates strategic thinking and the capacity to work with communities representing diverse interests and positions, to make them align and eventually converge into a joint initiative."** Sense making **"is an outcome of scenario building, envisioning opportunities and strategic conversations around new possibilities. [...] Capacity building is about empowering people through design, using approaches, methods and tools from participatory design, co-design and design thinking (Cautela et al., 2015)."**

In this way, organizational issues are to be among the emerging issues that will shape the future development of Service Design research and practice. Service Design is about a continuous transformation that challenges existing business logic and focuses on aligning business values with customer values. **Service Design projects have to lead towards more collaborative innovation processes by engaging service development, service evaluation and change processes in a continuous transformation (Sangiorgi & Junginger, 2015).**

There is a need for Service Design to expand from concept development to implementation of involving organizational changes. It has to move from talking

and analyzing towards doing and in order to take action. Service Design remains something that is used only to create better customer experiences without optimizing value to create a more profitable business. By this means, not all necessary perspectives are included for the creation of sustainable business value concerning implementation, in which one research gap in Service Design lies. **Services are constructed relationships, a co-creation forming interactions. Frontstage and backstage processes and experiences need to be aligned to function well, Service design is a holistic approach looking at customer's experiences and service provider processes; emphasizing that understanding, developing and delivering a great customer experience are developed together (Vaajakallio, Mattelmäki, Roto, & Lu, 2017, pp. 17–24).** Service Designers that were initially been focusing on early stages of service innovation are challenged to contribute to service implementation and change. This creates pressure to develop metrics that are able to measure impacts by which generated in service or social settings. Also, this implies a shift within Service Design from a focus on improving customer-service interface interactions towards exploring and contributing to the ideation of new service configurations, business models and increasingly touching on issues of organizational and social change (Sangiorgi & Prendiville, 2014; Sangiorgi, Prendiville et al., 2017).

The work of the Service Designer consists of **"conscious participation, collaboration and on-going efforts for change and transformation or an approach to innovation that can be integrated, developed and embedded within existing communities of practice, whose aim is to co-create solutions that are better able to support people in their life and society as a whole (Sangiorgi & Prendiville, 2017a, p. 254)."** The general question arises how Service Designers can develop their empathic approaches further, interpret and relate to these complex innovation settings, and work towards sustainable transformations. **"The industrial Service Design process has to be embedded into existing corporate structures and processes. The role of the Service Design is to negotiate and initiate Service Design within these structures and find spaces where Service Design thinking can be used (Miettinen, 2017, pp. 9–10)."**

As the research gap states, the difficulties and challenges how to implement Service Design in a sustainable way inside an organization. It also shows how organizational premises hinder the transformation. In relation as (Augsten, 2020, pp. 205–208) has investigated the implementation of Design Thinking inside of the Volkswagen organization, she states **"For the current rise of Design Thinking in the industrial context, this study shows the need to take into account the environment in which Design Thinking is applied, and to train practitioners to understand and apply Design Thinking techniques and methods adaptively (Augsten, 2020, pp. 205–208)."** She argues that DT has not been pursued in companies with a comprehensive approach but rather understood as a technique

or method that is applied selectively. The research results indicate concepts such as Design Thinking first (must) be transferred into a managerial-technocratic fit to be accepted in producing organizations. This it indicates "**a desire to further systematize human-centered, intuitive and explorative approaches in order to make them applicable in established industrial companies. But in this form of systematization, however, they lose aspects of wholeness and do not live up to a human-centered design claim (Augsten, 2020, pp. 205–208).**" The examination of Design Thinking and its effectiveness in the field of organizational change shows that focusing on people and their needs and fears is once again receiving a new form of attention to implementing change in a sustainable way.

Figure 14: 24 influencing factors for implementation of Service Design (Weisser, 2018; Weisser, Jonas, & Mager, 2018)

In further comparison, the research **"Systemic consideration of the influencing factors in the implementation of product and service design systems (Weisser, 2018)"** has aimed towards designing for impact means designing for implementation to improve the readiness of Service Design projects for implementation. The aim has been to prevent negative consequences and unrealistic expectations at an early stage, to preserve both the quality and reputation of the Service Design approach and the Service Designers. As a gap she has identified that implementing new concepts requires organizational and cultural changes for the organization for result-oriented implementations. (Weisser, 2018, pp. 189–190) states, the potential for differentiation of Service Design from other disciplines such as classical organizational consulting lies in design-specific skills such as prototyping and the visualization of complex information. This supports organizations in their process of finding and deciding on meaning. **The acceptance for change by employees is increased and organizational learning is made possible.** However, the existing Service Design competencies are not sufficient to be guarantee sustainable implementation. Service designers who want to enable organizations to lead implementation projects sustainably **"must acquire skills from organizational consulting, especially business management and systemic consulting (Weisser, 2018, pp. 189–190)."** Furthermore, the research states, **"the ability to connect with top management in companies ('business experience') and employees at all hierarchical levels must be ensured throughout in order to be able to work efficiently and innovatively and successfully in temporary project organizations and beyond (Weisser, 2018, pp. 189–190)."** As an outcome she has offered a comprehensive analysis and structure of the influencing factors in the implementation of projects (Weisser et al., 2018; Weisser, 2018). As in Figure 14, the 24 factors have been divided along with her proposed KUER process model into four main activity categories: clarification, interventions, support, and alignment.

Service Designers have to acknowledge that they have the opportunity to impact conversations and thus address implementation every time they interact with the organization. They have to identify the people from within the organization who will need to change their ongoing conversations to make change happen and services improve. They have to create situations and support change how people are thinking and relating. This purpose of changing and creating new conversations within and between people is resulting in increased motivation for changing, in result **"to affect their commitment, willingness and ability to make changes happen (Raun, 2017, 2018)."**

As Service Designers want to address implementation, they also have to affect the **'ongoing conversations'** within organizations. **"Perceiving organizations as conversations implies that our role as Service Designers becomes one focused on changing the ongoing conversations within organizations for the purpose of creating better services (Raun, 2017, 2018)."**

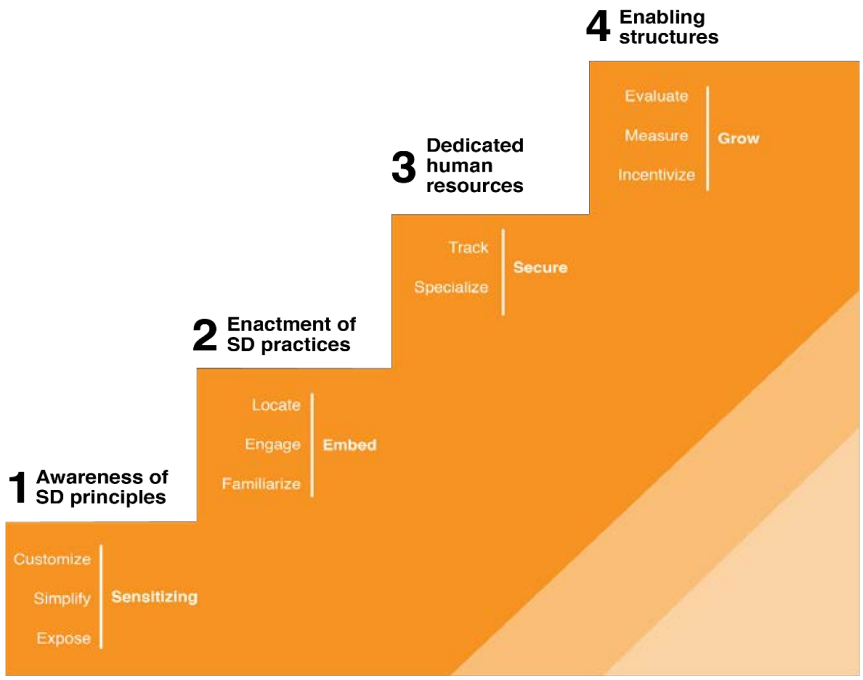


Figure 15: Transformative model of service design adoption. (Aricò, 2018, p. 213)

In (Aricò, 2018, pp. 194–213) research **"Service Design as a Transformative Force: Introduction and Adoption in an Organizational Context"** is based on the case study about the Telenor, communication company, by investigating how to implement Service Design inside the organization. As Figure 15 shows, the developed model suggests a laddering approach of creating awareness, enactment, dedicated staffing and enabling structures to grow inside the organization. The first layer suggests that Service Design principles need to be exposed to their potential impact on the organization. Simple, effective communication is key to introducing Service Design as it should give way to simplicity and effectiveness within context by visualization as a powerful tool to simplify and communicate complex concepts and abstract principles. The research emphasizes, **"Customizing the content requires an in-depth knowledge of the different key stakeholders, the context within which they operate, and the power plays they are engaged with (Aricò, 2018, pp. 194–213)."** In other words, it requires empathizing with all key stakeholders. The second layer, focuses on embedding Service Design practices by engaging people to enable Service Design practices to be embedded within stakeholder's habitual actions and routines. This also refers to the need to locate the right people and projects to start and sustain the embedment of key service design practices. The findings suggest that prioritizing projects and locating those that have a higher potential to impact customer experience is also essential. The third layer focuses on securing Service Design through human resources, as one of

the major challenges is having Service Design specialists enact those actions. Service Design requires professionals familiar with the tools and methods to be enacted, which is paramount for sensitizing and embedding to occur. **"The capacity to navigate highly uncertain and chaotic terrains, facilitate contributions from different stakeholders, empathize with customers or users, and effectively visualize concepts are all examples of skills that cannot simply be learned on the spot. Thus, findings indicate that ensuring the right number of specialists is paramount to be able to introduce and embed service design effectively (Aricò, 2018, pp. 194–213)."** The fourth layer suggests the focus on enabling structures as employees are not stimulated to innovate and experiment as these do not value characterizing the dominant organizational frame. **"Findings suggest that setting up measurement systems that can evaluate the success of Service Design outcomes is of paramount importance to ensure key practices are embedded correctly […] requires a detailed evaluation of those structures that represent a priority to be able to develop Service Design work effectively and consistently in the long run (Aricò, 2018, pp. 194–213)."**

This research builds up new knowledge through Service Design practice, which is firmly founded on the organization's needs and demands. The research connects with the knowledge gap in the Service Design research field concerning change and implementation. **Still, a lack of knowledge can be specially identified considering how Service Design is practiced and shall be performed within the organization in the industry for business purposes to be perceived as valuable as each context's perception is bounded to determinants. A substantial focus shift occurs towards the demand to deliver internal and external business value and focus on customer value, even if both are intertwined.** For Service Design in practice, it is crucial to ensure customer-centricity at a practical level throughout a human-centered approach in the organization with the objective for the outcome. **All tangible results must be translated into actionable impact, business goals formed into a purposeful programmatic solution. In this case, Service Design has to enable change for transformation inside the organization.**

Furthermore, Service Design has to go all the way to strive for implementation; Service Design in practice turns thinking towards doing, translates user needs into business solutions. A gap in the Service Design process can be identified, which is ends too early and does not consider the phases of deployment, implementation of new and/or optimized solutions. But also, the Service Design practice itself has to be embedded into the organization and culture. Especially, as service implementation is complex and multi-facetted, Service Design practice has to be integrated into the form of frameworks and methodology into the organization and existing business processes and define new processes. In this connection, the advantages of new digital technologies play a major role in making Service Design practice effective and efficient in its working procedures but also enable accessibility that Service Design practice can reach more comprehensive parts of the organization.

1.4 Research questions

This doctoral thesis focuses on how digital transformation influences Service Design practices for business purposes, especially connected to the frame and enables design-led innovation through technology-enabled co-creation. An understanding of Service Design also interconnects the implications of digital transformation and ongoing practice of designing and, even more, stand in relation with the field of social and digital innovation and participatory design. The exploratory approach aims to provide insights to understand how Service Design is applied in actual business practice and identify hidden obstacles in the emergence research topic. In this research, Service Design as an approach and methodology has been applied towards the context and is about to make Service Design easily usable for the corporate organization. This research aims to embed Service Design inside an industrial corporation with a legacy of engineering culture. The question of **"how to embed designer's skills and approaches in organizations is still a fundamental one (Sangiorgi & Prendiville, 2017b, pp. 7–8)."** Service Design practitioners are increasingly asked to provide training and Service Design tools. Nevertheless, to enable sustainable change in the mindset of organizations is complex and not the result of quick design collaboration. Especially considering the needs and demands of organizations today by intensely focusing on the enablement of service innovation and new service development, the research follows **"The interesting aspect of this call for integrating designer's skills and mind-sets in this multidisciplinary practice of designing for new services is the acknowledgment that design approaches could have a framing and integrating role to new service development, given their human-centered, flexible and creative approaches to innovation (Sangiorgi & Prendiville, 2017b, p. 8)."** This doctoral research develops new approaches in perspective and thus contributes to the still-young scientific discourse on Service Design and organizational changes in the German automotive industry. The chosen knowledge-driven approach lends itself to qualitative, empirical data collection in complex, dynamic and largely unexplored environments. This applies to the corporate practice of the Volkswagen Group, which serves as a case study in this study. The broader focus of the research lies in how Service Design practice has to be made accessible, enabled for use and executed be sustainably implemented; Service Design has to establish a bridging role in between multiple demands of business e.g., concerning its given running processes cultural setting and organizational structure. As 10X-SDL is placed in the digital transformation of the organization, it has to juggle and align various aspects at the same time; expectations of the outcome, people's capabilities to evolve, meaningful methodology, IT infrastructure and conditions of space. This means providing the right tools; this transformational process should aim to deliver value in the form of enablement and be open-minded for continuous lean development and within

a contextual application. This belief is manifested in the following main research questions, which guides this research study:

RESEARCH QUESTIONS

R1 | How does Service Design practice has to be applied and executed to be perceived as a valuable approach for business purposes for the organization?

R2 | How does Service Design practice has to be enabled to overcome organizational barriers to create change inside the organization?

The research questions are answered throughout the development towards the implementation and evaluation of the 10X-SDL. The 10X-SDL functions as a **'digital experience demonstrator'** (Rontti & Lindström, 2014) in action to enable Service Design practice inside the organization. This research aims to inquire knowledge based on the interaction with and reflection on the 10X-SDL as manifested Service Design solution by the organization. This also serves as a guiding principle of the iterative improvement of the 10X-SDL to create the organization's fit as Service Design solution. The main research questions include a variety set of sub-questions which are answered along with guiding the Service Design Research process (see Figure 16).

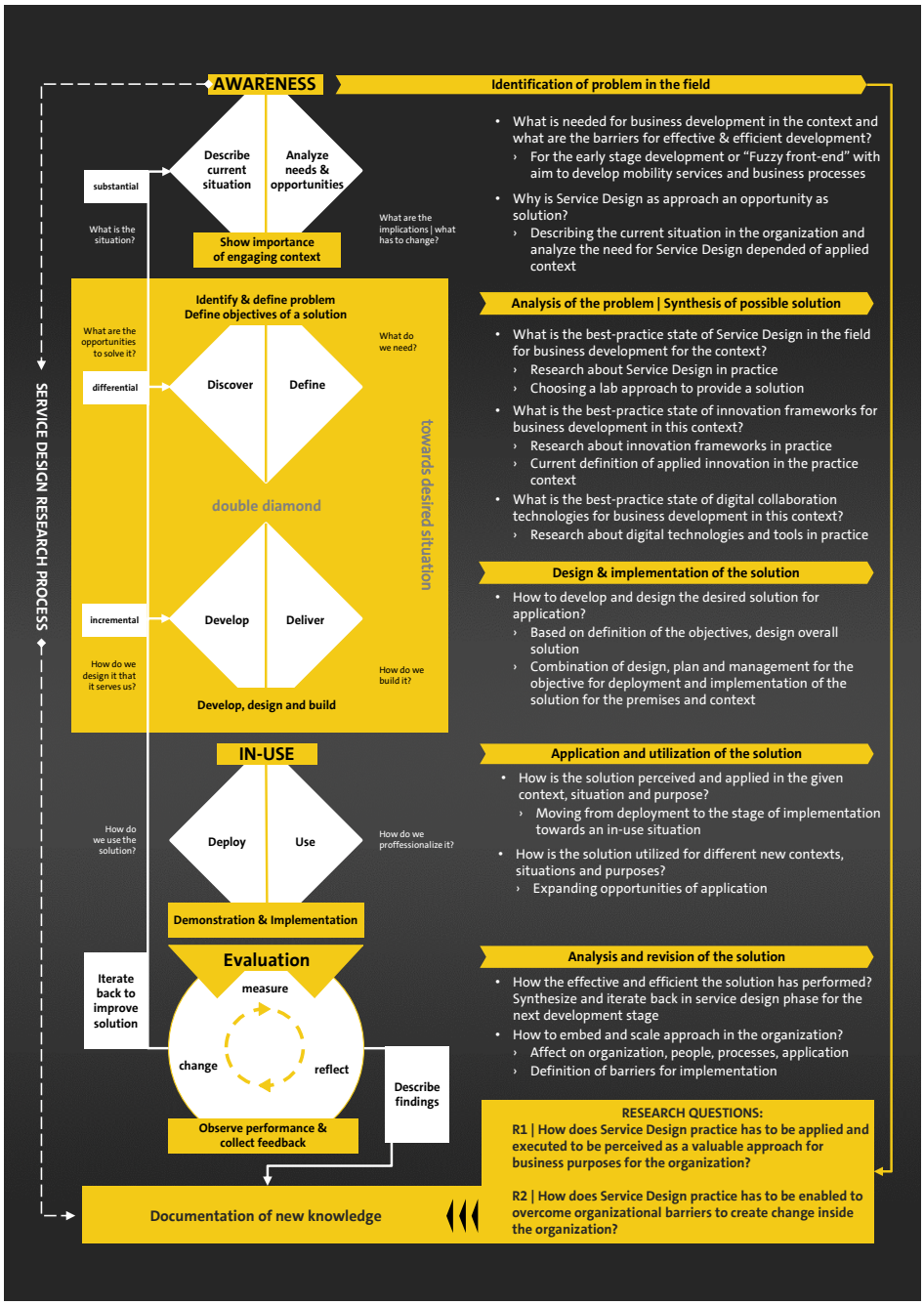


Figure 16: Service Design Research Model as process to answer research questions (Schaaf, 2018b)

1.5 Research approach: Research through Design

This study is based on how to address the application of Service Design practice as a valuable approach for business purposes in order to overcome organizational barriers for implementation. The research focuses on Service Design in practice and stands in relation to supporting the organization's Digital Transformation. As this research has its foundation on practice intending to solve practical problems, it starts with investigating a specific problem situation defined by the situation and context. Along the whole process, the focus is to create an understanding of the relationship between people and the solution in the field. The field here is defined by the people's organizational environment in which the Service Design in applied form of the 10X-SDL. This research is based on an industrial Ph.D., it is building knowledge by theory and practice in combination. Knowledge gets produced through the application of theory in practice and vice versa.

In reference to chapter **1.1.1 Positioning researcher, stakeholder involvement & organizational setting**, this study has been carried out as a single case study as a doctoral student in the corporate practice of the Volkswagen Group headquarters in Wolfsburg. This employment opens up a fieldwork period and, consequently, the possibility of data collection as access is not available in any other company and excludes comparative case studies. The procedure of this exploratory study is therefore designed as a single case study. As a company, Volkswagen meets the criteria of the uniqueness of a single case study. This uniqueness arises from its corporate history, its longstanding existence, the successful overcoming of crises and its worldwide expansion, which describes its position as the world's leading automobile manufacturer. At the time of the study, the extreme takes place from the general change in the automotive industry from a manufacturing company to a mobility service provider and the diesel scandal, which becomes public in the first year of the study and subsequently brings about corporate structural changes.

As the research strategy applied, this research utilizes a single case study approach to describe **"the richness of the phenomenon and the extensiveness of the real-life context (Yin, 2009)"**, defining it as complex phenomena within its contexts. In response, it is an essential tactic to use multiple sources of evidence, the establishment of a **'chain of evidence'** to describe the holistic and meaningful characteristics of the real-life event and the causal links with real-life interventions. In this case, placing the 10X-SDL inside the organization **"to describe an intervention and the real-life context in which it occurred"** and also defining it as a unique case (Yin, 2009).

Furthermore, this qualitative descriptive case study facilitates exploration of a phenomenon within its context as an approach to research by using a variety of data sources, **"these multiple sources are then converged in the analysis process rather than handled individually […] with each piece contributing to the researcher's**

understanding of the whole phenomenon (Baxter & Jack, 2008)." It describes the methods used to examine Service Design in corporate practice. The evaluated material consists of self-assessed group interviews of practitioners and participant observations while design sprints. Primarily Service Design practice pursues through engagement, in a collaborative project work it brings **"focus to various activities intended for sharing knowledge and expertise with an eye for influencing how it can be changed (Clark, 2013)."** The research is engaged in the process of doing design and throughout the reflection of the result in action. In relations stands Action Research, as it contributes seamlessly to new knowledge as it integrates along with design processes which are iterative and explorative in nature (Swann, 2002). **"Perceiving design as a form of montage also means recognizing that forming an understanding of the field (of use) is a collective endeavor that happens throughout the project […] through the creation, circulation, combination and transformation of knowledge pieces (Kjærsgaard, 2013)."**

An explorative, empirical and qualitative approach enables openness and therefore determines the methodological framework. Since the explorative study was conducted as an industrial doctoral student in the same company, the double role as Service Designer and researcher also provides implicit field knowledge. Within this framework, self-perception, attitudes, behavior patterns and interactions are worked out and their effectiveness on change is made visible. In order to do justice to this claim, ethnographic and interviewing methods are appropriate, as they can provide information on how the object of research is perceived and how it manifests itself in everyday corporate life. **"By returning to praxis as way of understanding action (Crouch & Pearce, 2012, 42–45)"** it follows the basis of **'praxis as a tool for research'**.

1.5.1 Research process: Service Design Research Model

In this research, an applied research model has been applied and focuses on expanding the **'double diamond'** (Design Council UK, 2005, Design Council UK, 2007) for research use. In this case, the research model has to fulfill the purpose to focus on understanding the current context and organizational problem, discover the possible solutions, define the solution based on the identified needs, develop and design the solution and further deploy and test the solution towards implement and scale the solution. The actual **'double diamond'** serves as in its original role as developing towards the desired situation. The solution is developed, hereby the 10X-SDL as an experience-able demonstrator of Service Design practice in the digital era. It consists out of the original steps of Discover, Define, Develop and Design (Design Council UK, 2005, Design Council UK, 2007). Even if the whole double diamond process is based on constant user feedback towards the single development as e.g., inquiry of feedback towards mission statement and branding, this phase can be mainly seen as the phase of creative development.

The data sources in this research consist out of multiple nature to fulfill different purposes in each step of the Service Design Research Model (see Figure 17), depending on the development stage of the 10X-SDL. The proposed Service Design Research Model can be compared with various other processes in research; in more detail, the different research processes will be described in **chapter 1.5.2 Balancing Theory and Practice**. However, e.g., similarities can be found in the **'Research-led information design process'** as it is supporting exploratory or evaluative field research. It consists of the steps of problem understanding, subject matter and audience understanding, analysis and synthesis, concept design and further continuing with the execution of prototype design in the form of detail design, implementation towards evaluation (Pontis, 2019, pp. 31–34).

The starting point of the Service Design Research Model is the **'Awareness phase'** of exploring and analyzing the current situation inside the organization to understand the needs and demands. This serves as framing the problem setting to the cultural context to describe the importance of the engaging context and situation. The purpose has been to explore the context, not only the behaviors but also the meaning behind those behaviors. The needs discover the problems to apply Service Design inside the organization. In this research case, understanding the needs of business development in relation to the current barriers for effective and efficient development is essential and to identify how Service Design is seen as an opportunity for business development.

Secondly, the research conduct through Service Design practice is predominantly based in the phase from '**Discover, Define, Design and Deliver.'** Hereby **'designing-by-doing'** has occurred by a single overarching performance (Ewart, 2013). A constant need for adjustment was driven by the nuanced understanding of the potentials of new solutions fitting for the 10X-SDL in relation to the environment and organization placed in. Constantly re-moving uncertainties and combining a role of Service Designer, producer and user. As the **'designerly way of doing,'** Design is seen as part of the performance of making (Ewart, 2013).

Thirdly in the **'In-Use'** phase, the purpose has been to validate the 10X-SDL. Usability testing provided direct feedback to be able to iterate on the solution; to uncover the pain points in interaction. In both cases, the interviews have taken place directly after the Service Design workshops in which the whole group of participants has been interviewed. Furthermore, participant observation has been in an additional source of information.

The **'In-Use'** phase is the actual starting point for deployment of the solution inside the organization under real-life premises; direct participant feedback based on interaction with the solution is received and documented. With deployment is meant, the first phase of application of the solution in the context, still being a demonstration under the conditions to determine the best way of usage with the

focus in solving failures of technical, organizational, processual, methodological, communicational matter.

The actual **'Use phase'** describes a later quality stage in which the main failures are removed and the solution is so far iterated that a professional state is reached, a stage of implementation. In relation to a software development perspective meaning (Boehm, 1988), the 10X-SDL prototype has reached operational status and is implemented as Version 1.0. Throughout the whole **'In-Use phase',** the iterative evaluation cycle of measure, reflect and change is applied to validate the solution but also develop the next step in research. This evaluation loop provides the basis to increase the quality and to improve the solution in three levels if incremental (minor adjustments which are easy to fix), differential (minor research is needed to discover a solution) and substantial (following step developments with significant changes, restart of the research process to build up the next generation).

Additionally, in the evaluation of the 10X-SDL, the purpose has been to reflect on the experiences and learnings of the participants. These interviews have been conducted a minimum of six months after attending the workshops in the 10X-SDL by telephone in a structured manner. The participants have been chosen out of the previous attendants in the 10X-SDL sprints, focusing on group-wide feedback to generate multi-cultural business perspectives. The purpose of the final interview round has been to research the reach and impact of 10X Service Design Lab. With the focus to evaluate the usage and perception of 10X-SDL, the impact of the 10X-SDL sprints on the stakeholders work, challenges and barriers in applying the 10X-SDL approach in the organizational context, to acquire insights for ideal 10X implementation and how the role of internal agency in 10X-SDL approach should be considered. The results of the interviews enable to understand the impact of 10X-SDL, to identify the potential proceedings of the utilization of Service Design in the corporate group and at the same time also to identify the barriers for implementation.

Also, at the same time, throughout the reflection and interaction with the 10X-SDL as a solution in a real-life setting, new knowledge about Service Design practice is conducted; furthermore, each iteration with advanced quality level can provide new knowledge. This Service Design Research Model enables to build a link between the practical outcome for the organization and theoretical outcome for the Service Design discipline. The purpose is seeking a solution that Service Designers can approach design problems **'systematically,'** by looking at human, organizational and functional level problems like goals, needs, requirements, etc., and by progressing towards a more holistic solution; the advantages lay in the combination of established frameworks serving the research purpose but in the structured process which is solution orientated.

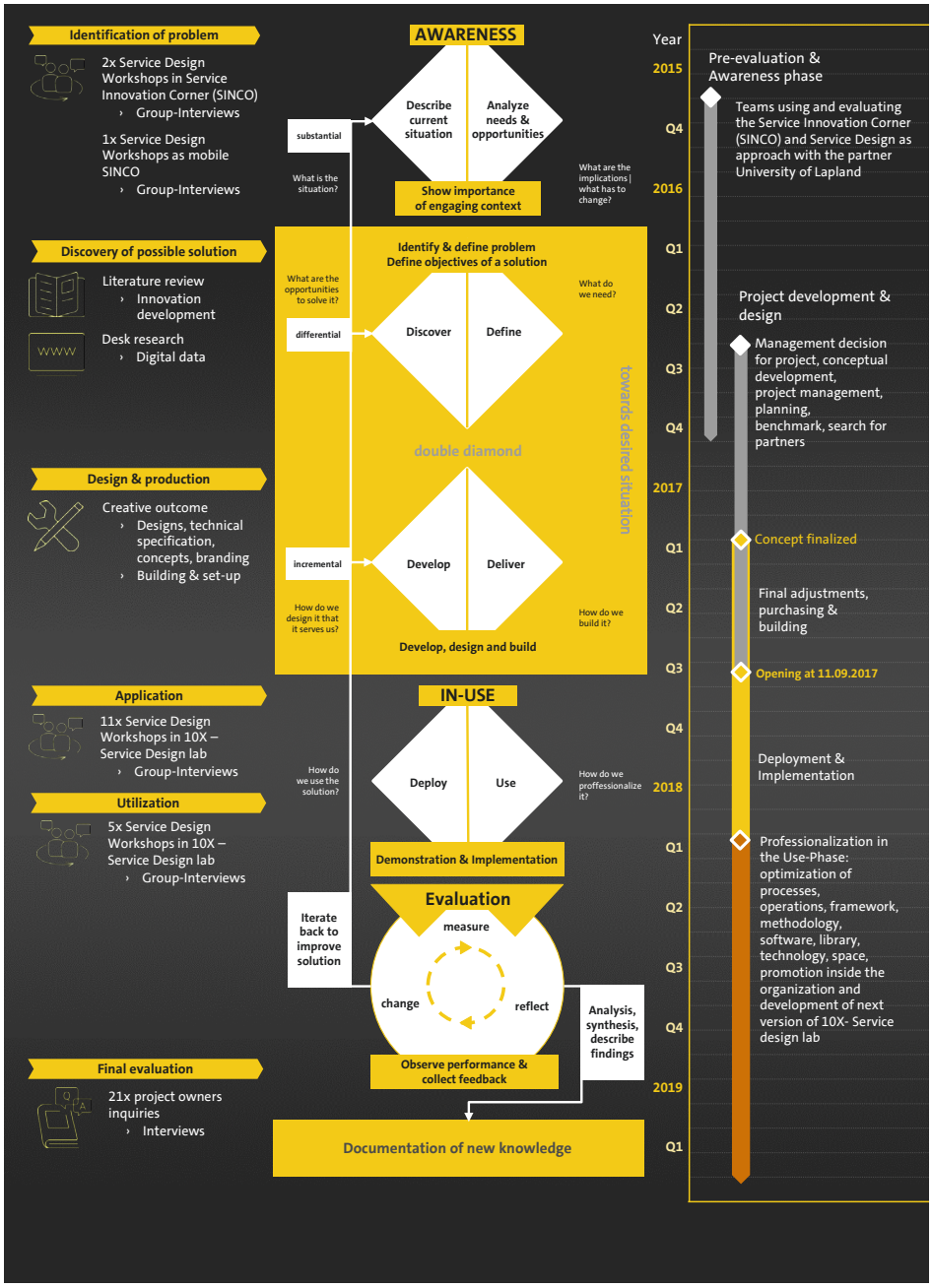


Figure 17: Data-sets and process along the Service Design Research Model (Schaaf, 2019a)

1.5.2 Balancing Theory and Practice

In research through design, the research object and method seem to merge seamlessly. The relationship of practice and theory construction offers differentiated and productive models to seek new ways of understanding knowledge production (Mareis, 2016).

The combining role of the designer and researcher identifies problems, selects appropriate goals, develops and implements solutions. The designer synthesizes and helps to solve problems; a designer moves thought to action. The systematic and methodical inquiry into practice constitutes design research; critical thinking and systematic inquiry form the foundation (Friedman, 2003). The collection and evaluation of the qualitative data and the interpretative conclusions must be shown plausibly.

Looking into the design research field, this approach of combining theory and practice has a history and stands in the relation of the schools of thought in design research. Still, since the discussion of **'Research into, for and through design'** (Frayling, 1993) has started, it is still ongoing. To position the thesis in Design Research, several schools of thought have to be considered. This research is influenced by John Dewey's Pragmatism (Dewey, 1910, 1938) towards his proponent Donald Schön's Constructivism (Schön, 1983, 1987) and Herbert Simon's Logical Positivism (Simon, org. 1968; 1992).

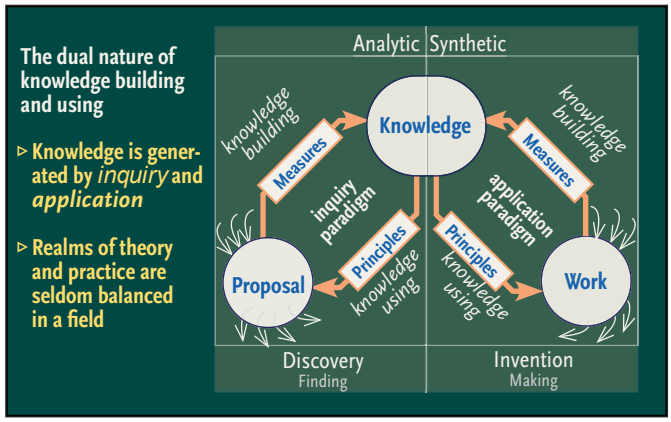


Figure 18: Dual nature of knowledge building and using (Owen, 2007)

As (Owen, 1998) describes in **'Design research: Building the knowledge base,' "knowledge is generated and accumulated through action [...] Knowledge using and knowledge building are both structured processes that contain and direct the production and evaluation processes."** Owen defines his criteria for knowledge building: **"Knowledge using and building for the purposes of application is an**

equally productive process; The processes of knowledge using and building are fundamentally the same for inquiry and application; determinations of value must be understood to derive from the value system underlying the discipline; Creativity, whether discovery or invention, is inspired by good questions and the basis for its quality is good research (Owen, 1998).” Applied Design Research follows this purpose, produces knowledge by the two sides of analytic and synthetic. It builds the basis of new knowledge while balancing theory and practice, but in general practice-based research through design has a difficulty to justify for itself a suitable research process as an underlying approach which is fitting for the discipline in relation to the purpose of the research. **“Research must be knowledge directed, systematically conducted, unambiguously expressed, data and methods be transparent and its knowledge outcome transmissible (Archer, 1995).”** But even if research through a practitioner must be recognized as situation-specific, meaning non-objective, its reliability is determined by its methodology (Archer, 1995). It may borrow and adjust other approaches to support its academic foundation and acceptance by other scientific fields. Methods and processes from scientific research are transferred into the field of design; to describe, understand, explain and perform design as scientific practice (Grand, 2012). Design research for itself is a distinct discipline in which approaches, methods, processes have to align with the purpose of research. Design research follows the same characteristics as of good research as in any discipline: **“Purposive - based on identification of an issue or problem worthy and capable of investigation; Inquisitive - seeking to acquire new knowledge; Informed - conducted from an awareness of previous and related research; Methodical - planned and carried out in a disciplined manner; Communicable - generating and reporting results that are testable and accessible by others (Cross, 2007).”** (Cross, 2007) argues further, with the aim to qualify as research, it has to serve the communication of some re-usable results based on the practitioner’s reflection. **“Research is guided through design process logic and design is supported/driven by phases of scientific research and inquiry. Only design research conducted under the designerly paradigm can contribute to design’s methodological development and its disciplinary stability/autonomy. Both depend on each other in a circular manner (Jonas, 2007).”**

(Frens, 2007) confirms that knowledge can be generated on two levels, research aspects of the solution themselves and also research the process of how these solutions came into existence. **“In a research through the design process, design methodology meets research methodology, and both contribute (Frens, 2007).”** Underlying research through design approach is the knowledge gained from these solutions, through experimentation, which can be generalized in the form of design specifications for future solutions and in theory of frameworks; highly experiential prototypes that can be seen as **‘physical hypotheses’**. **“When conducting research through design, both types of knowledge are intertwined. [...] solutions**

are designed to explore the implications of theory in context. The resulting solution is subjected to experimentation in real-life situations to understand the complex relationship of humans and designed reality (Frens, 2007).” Beate Schneider defines in **‘Design as Practice, Science and Research’** two categories of **‘Research in design’** and **‘Research through design,’** which can claim to be research disciplines. **‘Research into design’** aims for research into the discipline of design by analyzing design activity to arrive at universally verifiable findings.

Schneider argues, **“Researchers are scientific observers who avoid changing their subject wherever possible. It overserves its object primarily from the perspective of recognisability and generates new knowledge on this basis (Schneider, 2007).” ‘Research through design’** follows the act of designing as interdisciplinary and reflected design activity; from the identification of a research question, it approaches the world of its (research) objects primarily from the perspective of designability and changeability. **‘Research through design’** distinguishes itself from the standard design process in that the research questions are specifically related to research. Research through design belongs to the category of **‘research through practice’** or action research. Typically it involves the three phases of research, design and publication. Design research is distinguished by its use of qualitative research methods as observation, participatory research, qualitative interviews, diary entries, video recordings and experiential sampling. The design phase (design, realization, validation) follows various practical methods of design. Actions research involves systematic research through practical activities in design research, meaning the design artifacts which result in the generation of new information, forms, processes, concepts. Research through design generates knowledge by designing innovative artifacts, products, services, systems etc. and evaluates them in a validation process by conducting various experiments or tests in order to answer the research question. The applicability of knowledge is gained by but not restricted to the product on which research is being conducted and has to lead to publishing communicable knowledge. Research through design also involves experimentally improving designs, finding a novel way of controlling the design process and standardizing representation methods. During the publication phase, research through design has to meet the research standards shared by the various research communities. The research result generally consists of two integrals parts: a published text or report and a design artifact (product, model, various kinds of visual representations, etc.). The research procedures recorded data in a verifiable manner and made it available to a wider public. In order to produce new knowledge, research through design generates during the design process transferable, negotiable and communicable results in the form of e.g., design artifact along with published text in the traditional format of argumentation. **“Hence there are two lines of argument here: the discursive and the visual.”** These two parts have become scientific standard in advanced

design communities for defending their research project in the format of a Ph.D. thesis (Schneider, 2007).

Birger Sevaldson in **'Discussions and movements in design research (Sevaldson, 2010)'** introduces a systems perspective on the field of design research, which provides a holistic and dynamic view as a complex field where new ideas and positions are formed. There is a uniqueness to design in regard to a mode of knowledge production, where explorations, discoveries, innovations, and the generative are inherent features of designing. **"The creative practice itself is developing towards transdisciplinarity and emerging as a confident research area."** Research is carried out in context and in a mode of applied research. Multiple actors bring differentiated skills and knowledge, forming a transdisciplinarity; rapidly growing is co-design and strategies of involvement are becoming more defined. Research questions are formulated within the applied research in communication between stakeholders. Knowledge is built through designing, implying an iterative explorative and generative way of **'Research through design'** where the design practice is central in generating knowledge and practice serves a research purpose. Design research is measured according to its relevance to practice and, as such, contains both tacit and explicit knowledge and various modes of expression, which each relate differently to reflection. Stating that three ways in which design practice can contribute to academic research: **"Exploratory practice within a traditional model of academic research; Practice as a generator of relevant questions that are explored within the structure provided by the traditional model of academic research; Design practice that claims that it is academic research (Sevaldson, 2010)."** Especially, design dissertations have included a diverse set of design methodologies and approaches for their doctoral research. The establishment of appropriate structures for the the development and application of new design methods, process, techniques and procedures and reflection for research can be seen as manifold. This should not be seen as a critic, more an opportunity in finding the proper academic framework which is the perfect fitting for the purpose of research.

Joyce Yee (Yee, 2010) in **'Methodological Innovation in Practice-Based Design Doctorate'** has provided a selective review of design Ph.D. to identify and analyze the methodological innovation that is occurring in the field. Yee analyzed the philosophical approach, methodology, methods applied, thesis structure, research purpose and inquiry domain of six design Ph.D. (see Figure 19). **The study of practices and processes of design and also design process and the configuration of artifacts have been in the center of attention of researchers. The reflective practice method is evident in almost all of the case examples, which involves the researcher thought fully considering one's own experiences in applying knowledge to practice.** Additionally, the phenomenological approach was explicitly evident as phenomenological research. It focuses on the subjective experience of the individuals studied, understanding of a particular phenomenon by

inquiring into their experiences. This approach targets the objective as subjective by a researcher through the process of reflexivity in order to be aware of how research and background have an impact on the research (Yee, 2010).

PhD Examples	Ontological and Epistemological Influences	Methodological Influence	Methods
Anthony Dunne	Material critical theory	Critical design	Exploratory projects Reflective practice (see Note below)
Catherine Dixon	Pragmatic and applied	Design as research	Visual survey Reflective practice Peer reviews
Daria Loi	Postmodern and qualitative Constructivist paradigm Artistic inquiry	Methodological bricolage (dialogic research, storytelling, play, creative action, action learning)	Playful triggers Observation and interviews Reflective practice Exploratory installations Multisensorial writing Experimental techniques
Joe Eastwood	Phenomenological	Design as research	Interviews Fieldwork documentation using photograph, notes and audio recording Visual analysis Exploratory projects
Ramia Mazé	Critical and post-critical architecture	Criticality from within	Exploratory projects Reflective practice
Bas Raijmakers	Hermeneutics and phenomenology	Design as research	Literature studies Film studies Exploratory projects as case studies

Figure 19: Summary of PhD Examples: Philosophical and methodological influence (Yee, 2010)

'Pick and Mix' - Research designs have been deployed in all examples, which can be described as an assemblage that combines methods from the social sciences, humanities, and hard sciences to derive a suitable model of inquiry. The model requires to approach research methodology as an active element, rather than a passive, pre-defined model that can easily fit into the research project. The necessity of this approach is needed considering the lack of an established research framework in Design. However, **"this 'Pick and Mix' has become the established paradigm for design; methodological innovations emerge from the way a researcher combines established research methods with practice-based methods. [...] 'Reflective practice' seems to be the most popular choice for research that involves a practice-based element, where the process of designing is an integral part of the research (Yee, 2010)."** Yen suggests that students should evaluate existing practice-based processes and consider how to make them more **'systematic, rigorous, critical and reflexive, and communicable.'** The methods can be evaluated in terms of how they might link practice with research and vice-versa.

The creative combination of processes is not dissimilar to how innovative processes are developed in practice as shared processes such are investigative, iterative, and creative processes and also evident in both practice and research. This openess to methodological innovation ensures that the development of these methods is rooted within a research tradition. **As long as the ability is given to demonstrate that the research conducted is thoroughly argued and referenced, then methodological innovation will often be part of their eventual contribution to knowledge in the field (Yee, 2010).**

In the recent years of doctoral dissertations in Service Design research, a similar picture forms for the Service Design field. Naturally, Service Design doctoral research has a prominent focus on practice-based dissertations enabled by a case study, meaning Service design itself is a practice of designing in a pragmatic approach. Service Design dissertations followed a **'Pick and Mix'** research approach, meaning that it is partly tricky to categories the dissertations in one direction or another. Pragmatism plays a major role in contemporary design research. Applications of pragmatist perspectives, such as Pierce's concept of abductive reasoning, Dewey' pragmatism and Schön's constructivism are common. **All of the listed dissertations are strongly influenced by action research as participatory inquiry, which relates to the nature of the Service Design discipline itself. Furthermore, Phenomenology plays a consistent role to understand in an explorative way the experience of a phenomenon through interviews with subjects. All have defined a unique set of research methods for the purpose of their research, but just some have explicitly and comprehensively framed their academic research framework.**

This dissertation has developed an overall research process in relation to the Service design discipline and practice itself, e.g. expanding the 'double diamond' for academic research purposes. Reasons for this can be seen in the explorative research approaches in the field, which might not have been designing solution-focused.

1.5.2.1 Pragmatism | Theory-practice and reflection-action

This research highlights that hypotheses can only be tested in practical action, in experiential activity by experiencing, to solve the problem. In experimental research, a hypothesis is formulated and tested in practical activity, generalizations are based on the interactions between humans and the entities of the environment (Miettinen, 2000). **"When habits do not function, a problem, uncertainty and a crisis emerges and calls for reflective thought and investigation into the conditions of the situation (Miettinen, 2000)." Practice-based** research of Dewey's idea of inquiry (see Figure 20) points out the idea that the designer is itself is an ongoing inquiry: **"The 'pragmatic maxim' merges theory and practice in the sense that theories stem from practice; they do not exist in a separate and impermeable sphere of abstraction. The value of theories relies on the ways they help us grasp and act in the world. Theories are instruments for practice and**

must continuously be evaluated on this basis [...]. The pragmatist perspective implies a systemic understanding of situations and prompts us to consider users as resourceful actors who, just as designers, draw on interactive artifacts and systems to make sense of and transform their situations. This presents a highly situated perspective on human activity in which our reciprocal capabilities of action and reflection form the basis for sense-making (Dalsgaard, 2014)."

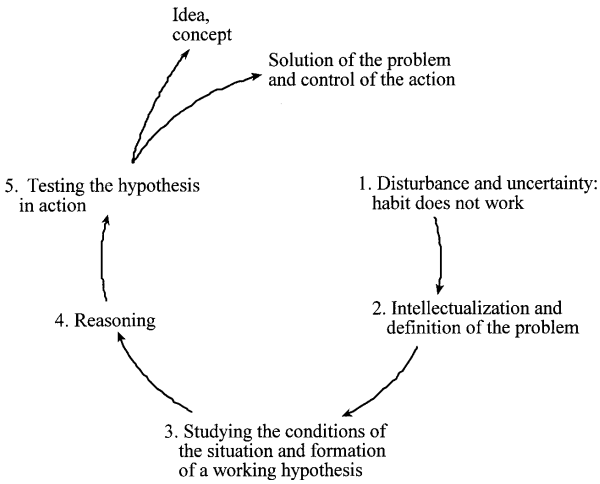


Figure 20: Dewey's model of reflective thought and action (Miettinen, 2000)

(Schön, 1983, 1987) as a proponent of Dewey's **'maxim of pragmatism'** can be understood as the application of these principles on the field of design, **"particularly with respect to the reciprocal relations between reflection and action [...] the experimental and iterative transformation of practice, and to the formation and ongoing development of habits and knowledge (Dalsgaard, 2014)."** Schön has challenged the positivist doctrine of Design Science and suggested a constructivist paradigm. **"He criticized Simon's 'science of design' for being based on approaches to solving well-formed problems, whereas professional practice throughout design and technology and elsewhere has to face and deal with 'messy, problematic situations.' Schön proposed 'an epistemology of practice implicit in the artistic, intuitive processes which some practitioners do bring to situations of uncertainty, instability, uniqueness, and value conflict,' (Cross, 2006)"**, which stands in relation to how to solve wicked problems (Rittel & Webber, 1973). Schön described design as **'reflective conversation'** as a process of '**reflection-in-action**,' a person constructing his/her reality and producing knowledge through design activity. Schön defining it as **'the artistry'** of design practice and **'reflective conversation with the situation.'** Problems are actively set or framed by designers

who take action to improve the perceived situation (Dorst & Dijkhuis, 1995). For Schön **"The design problem is not given, it is developed through the designerly inquiry through the ongoing interactions between subjects and surrounding environments."** The designer must engage with the design situation, resonates with the understanding that design is a situated within systemic activity. Through the ongoing design process in which various components of the situation **'talk back'** to the designer gain further understanding (Dalsgaard, 2014).

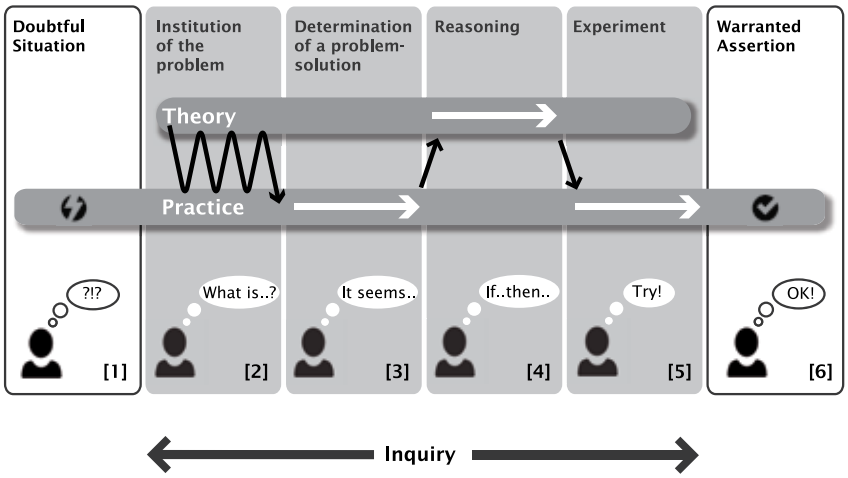


Figure 21: Theory of inquiry as applied research method according to Stompff 2012 after (Wetter Edman, 2014b)

Recent Service Design dissertations as Wetter Edman's **'Design for service'** have taken an approach emphasizing the importance of pragmatism. Inspired by (Stompff, 2012) to follow the pattern of Dewey's logic of inquiry (Dewey, 1938) as a base for the research process. This description is linear and does not describe the even more complicated and iterative relations between theory and practice. But Pragmatism offers an open process to continuously question and reframe the inquiry and understanding of the contribution in terms of relevance. **"It can be emphasized that the truth and quality of the research outcomes always need to be judged in the situation and through their usefulness [...] According to Dewey, a judgment of a successful inquiry is if the result, the final object can fruitfully be used in further development of thought and practice (Wetter Edman, 2014a)."**

As Stompff summarizes Pragmatism, **"a Deweyan inquiry embraces intuition, abstract reasoning and experimentation; whereas other scientific paradigms essentially pursue a detached position of the researcher, the premise of pragmatism is learning by doing: participating, cooperating, experimenting**

and influencing the subject matter." Objective reality is based on observable practical consequences rather than theoretical considerations; theory is considered instrumental to practice. **"The premise of an inquiry is that only by intentional intervening in the subject matter one can validate insights, i.e., by changing it. This opposes most scientific approaches, whereby the observer carefully refrains from intervening. An experiment in Deweyan logic is an intervention in the situation at hand, and not an experiment in a controlled laboratory setting (Stompff, 2012)."**

1.5.2.2 Design Science | The rational driven process of design

In a different perspective, Design Science proposes the rational-driven process of design. This paradigm has its origin in engineering and the **'sciences of the artificial'**, (Simon, org. 1968; 1992) introduced problem-solving theories which provided a framework of **'rational search process'** and scope of design science which focus on a paradigm of technical rationality and logical analysis following scientific laws to enable information processing to produce knowledge in the design process (Dorst & Dijkhuis, 1995).

Table 1. Design-Science Research Guidelines

Guideline	Description
Guideline 1: Design as an Artifact	Design-science research must produce a viable artifact in the form of a construct, a model, a method, or an instantiation.
Guideline 2: Problem Relevance	The objective of design-science research is to develop technology-based solutions to important and relevant business problems.
Guideline 3: Design Evaluation	The utility, quality, and efficacy of a design artifact must be rigorously demonstrated via well-executed evaluation methods.
Guideline 4: Research Contributions	Effective design-science research must provide clear and verifiable contributions in the areas of the design artifact, design foundations, and/or design methodologies.
Guideline 5: Research Rigor	Design-science research relies upon the application of rigorous methods in both the construction and evaluation of the design artifact.
Guideline 6: Design as a Search Process	The search for an effective artifact requires utilizing available means to reach desired ends while satisfying laws in the problem environment.
Guideline 7: Communication of Research	Design-science research must be presented effectively both to technology-oriented as well as management-oriented audiences.

Figure 22: Design-Science Research Guidelines (Hevner, March, Park, & Ram, 2004)

(Hevner et al., 2004) have defined the attributes for Design Science Research in the Information Systems Research Guidelines (see Figure 22). In its core design-science research paradigm seeks to create **'What is effective?'** with the following questions: **'What utility does the new artifact provide?'** and **'What demonstrates that utility?'** It focuses on the knowledge and understanding of a design problem and that its solution is acquired in building and application of an artifact. **"A purposeful IT artifact created to address an important organizational problem. It must be described effectively, enabling its implementation and application in an appropriate domain."**

Artifacts must accurately represent the business and technology environments. As emphasis for assessing the contribution lies in fidelity and ability to implement, being evaluated by a provided utility in solving problems and intended purpose (Hevner et al., 2004). (Karppinen, 2014) uses in his Service Design doctoral thesis **'Reframing the Relationship between Service Design and Operations'** the systematic Information Systems Research Framework of design science research approach to focus on combination with service engineering knowledge as a methodological frame for creating artifacts and testing them. He sees, **"the strength of the design science approach is the focus on improving the practice and the capability to provide results immediately relevant to the practice."** It mainly utilizes the existing theoretical background of the main areas of environment construction, design science research construction and knowledge base construction but also acknowledges the knowledge potential that is extractable from practice (see Figure 23). Importance plays here the iterative cycles of relevance, design and rigor strict guidelines for developing the design artifact and testing it. Karppinen combines it with the case study methodology supports learning from individual case contexts for acquiring experience throughout the project. He bases his research model on Design science research cycles (Hevner et al., 2004; Hevner, 2007).

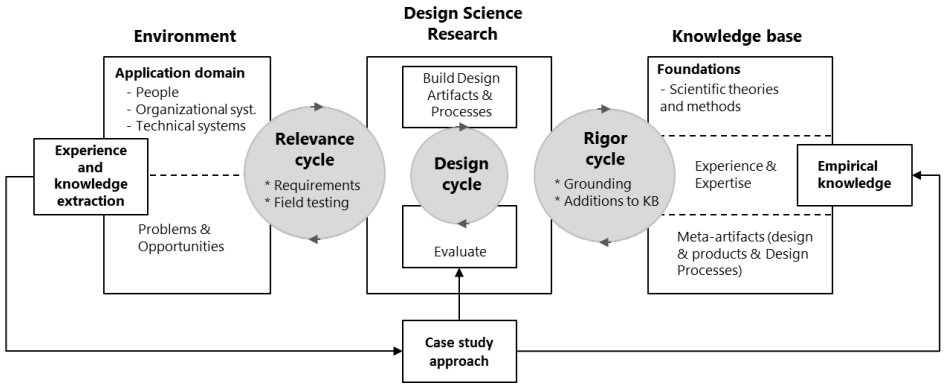


Figure 23: Karppinen's structure of research process based on Design science research cycles (Hevner, 2007) (Karppinen, 2014)

In Design Science, the design process is defined as a sequence of expert activities that produces an innovative product (i.e., the design artifact). Furthermore, the evaluation of the artifact in a feedback loop of information or iterative approach provides a deeper understanding of the problem in order to improve both the quality of the product and the design process (Hevner et al., 2004). **"Design is essentially a search process to discover an effective solution to a problem. The search for the best or optimal design is often intractable for realistic information systems problems, defining it as inherently iterative. Heuristic search strategies produce feasible, good designs that can be implemented in the business environment (Hevner et al., 2004)."**

Despite the strong focus on the sectors of Information System, Design Science research follows a rational utility focus of effectiveness, efficiency and also innovativeness of an artifact. Design science claims it addresses **"important unsolved problems in unique or innovative ways or solved problems in more effective or efficient ways (Hevner et al., 2004)."** It is the search for the highest quality solution to a problem in an iterative manner of build, measure, learn, which stands in strong relation to today's innovation practices of lean start-up way (Ries, 2011, 2017). **The justification is based on if it has addressed an important organizational problem, the implementation and application of the solution in an appropriate domain. Concerning generalizability and transferability of new knowledge, Design Science Research must be described effectively but is highly dependent on the artifacts application and situation placed.** Design Science Research emphasis on a neutral, detached, objective standpoint for which the researcher does not intermingle with his subject matter. **In this case, as dualistic position as an engaged Service Design practitioner-researcher, it is impossible to be an independent observer and an interacting practitioner simultaneously, a strict rationalist stance is a poor fit to study the activity of designing. For Service Design research, the importance of active participation in form facilitation is just one reason not being fitting for the Service Design discipline, meaning e.g., the value is set in the stakeholder alignment of being a valuable solution.**

1.5.2.3 Looking with two lenses | People and Performance

Despite the different heritage and positions of ontology and epistemology between Action Research and Design Science Research, similarities can be found in the process itself (Järvinen, 2007). Approaching research for Service Designers who use **'solution-focused'** strategies might follow Action Research (Brydon-Miller et al., 2003) as a compatible methodology for the process of **'Problem/research – analysis – synthesis – execution – production – evaluation.'** But it is not a linear process as the above suggests; the design process is iterative, a constant process of revisiting the problem, re-analyzing it and synthesizing revised solutions. **"A focus on collaborative performances seeks to provide an experiential demonstration of what is possible as a basis for potential action (Clark, 2013)."**

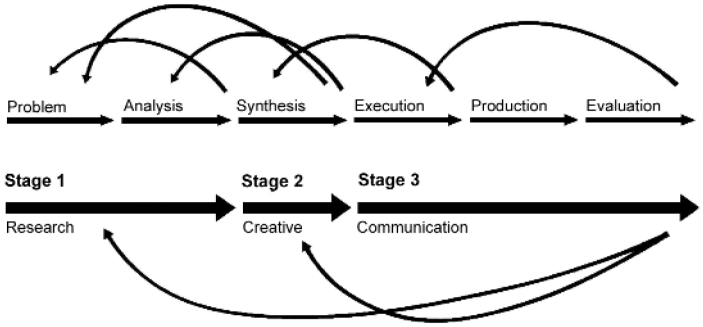


Figure 24: Action Research for design (Swann, 2002)

Action research (AR) is an appropriate methodology for any design project where the final outcome is undefined. The result of systematic is a visible documented inquiry, a synthesis by which all the parts of a problem are brought together in a holistic solution (see Figure 24). It is a practical research methodology that usually is described as requiring three conditions to be met: **"the subject is situated in a social practice that needs to be changed, it is a participatory activity where the researchers work in collaboration, the project proceeds through a spiral of cycles of planning, acting, observing, and reflecting in a systematic and documented study (Swann, 2002)."** The lens of AR considers how a problem in the social system has to be solved. It is based on practical problem solving and systematizing that to experience or reflect research. It is a highly interactive and involved research approach by doing research with people (Eriksson & Kovalainen, 2016).

The value of Design Science Research paradigm for the inquiry is to be found in the analytical design process to evaluate artifacts in a structured manner. It is firmly situated in Information System in the field of Computer Science and Software Engineering. DSR aims to understand, explain and improve on solutions by the analysis of the use and performance of designed artifacts, mainly focusing on purely technical problems which do not have direct and complex implications for the social systems within which they are be embedded. AR is mainly interested in innovations with significant impacts on social systems and the human context (Iivari & Venable, 2009). The Design Science Research Methodology (DSRM) (see Figure 25) is an applied process that includes six steps as problem identification and motivation, the definition of the objectives for a solution, design and development, demonstration, evaluation, and communication (Peffers, Tuunanen, Rothenberger, & Chatterjee, 2008).

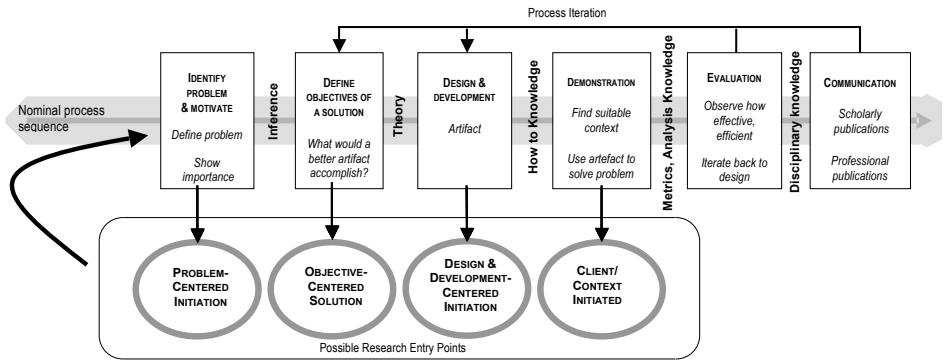


Figure 25: Design Science Research Methodology (DSRM) Process Model by Peffers, Tuunanen et al. 2008 (Peffers et al., 2008)

In conclusion, for Design Science the application of **'design practice'** is specified as **'routine design'**; the application of existing knowledge to organizational problems using best practice artifacts of existing in the knowledge base. In Design Science, the design practitioner itself is not considered in the design research process itself. As (Peffers et al., 2008) points out **"in Design Science Research, design and the proof of its usefulness is the central component, while in action research, the focus of interest is the organizational context and the active search for problem solutions. The difference is seen that Action Research originates from the concept of the researcher as an 'active participant' in solving practical problems (Peffers et al., 2008)."** Further, Hevner et al. argue that the key differentiator between so-called **'routine design'** and also **'design research'** is the clear identification of a contribution to the to the stakeholder communities and archival knowledge base of foundations, methodologies and the communication of the contribution; meaning, that design practice itself is not contributing to science (Hevner et al., 2004).

(Hevner & Chatterjee, 2010) revised this statement and argued about the difficulty to provide unambiguous and universally accepted definitions of design processes: **"Working definitions suggest designing is an iterative process of planning, generating alternatives, and selecting a satisfactory design."** Furthermore, he defined for Design Science including **'Design as research'** that it provides an essential strand of research that values research outcomes that focus on improvement of an artifact in a specific domain. Design research contributions may be clearly influenced by the opportunities and constraints of the application domain but seek a broader, more general understanding of theories and phenomena surrounding the artifact as an extended outcome (Hevner & Chatterjee, 2010). They continue, **"in contrast 'researching design' shifts the focus to a study of designs, designers, and design processes. 'Researching design' emphasizes increased understanding of design methods often independent of the domain. Their**

focus on methods able to articulate and follow the goal of generating domain-independent understanding of design processes, although their investigations have been focused largely in the fields of architecture, engineering, and product design (Hevner & Chatterjee, 2010)."

Thus, the paradigm of '**pure rational problem solving**' may be unsuitable for design studies in an understanding of design research. Furthermore for **"creative design is a matter of developing and refining together both the formulation of a problem and ideas for a solution, with a constant iteration of analysis, synthesis, and evaluation processes between the two conceptual design 'spaces'; problem space and solution space."** They are evolving, which identifies a problem-solution pairing. The designer needs to construct a design that transcends or connects the **'different discourses.' "A solution is created that needs to be evaluated from the standpoints of all and in practice, this often means that it should be acceptable to all the relevant stakeholders (Dorst, 2006)."**

The controversy still continues and the different schools of thought **'Simon's positivism vs. Schön's constructivism'** and leading back to the Dewey's pragmatism. Dorst and Dijkhuis in **'Comparing paradigms for describing design activity'** have analyzed the two basic and fundamentally different ways of approaching the design process and came to the conclusion that the designer will pursue a rational process-driven approach if the problem is clearly framed and follow strategies to solve them (Simon, org. 1968; 1992). But design as a process of **'reflection-in-action'** (Schön, 1983, 1987) works particularly well in the conceptual stage of the design process if the designer falls into trying problem-solution structures (Dorst & Dijkhuis, 1995). The expert quality of design practitioners lies in the ability to work along **'parallel lines of thought'**; **"to maintain an openness, even an ambiguity, about features and aspects of the design at different levels of detail, and to consider these levels simultaneously, as the designing proceeds (Cross, 2007)."** By this means, the designer as the practitioner follows more than the rational **'problem-solving-process'** and in a simultaneous manner, designing is a **'reflective practice,'** in the form of complementary strength following the two paradigms which causes the discipline to differentiates from others (Cross, 2007).

(Stolterman, 2008) states that science and design are different activities with different purposes, outcomes, and measures of success. **"Design has its own internal structure, procedures, activities, and components"** to deal with complexity which is also required as a highly disciplined and rigorous iterative process. **"A rational designer works on many alternative designs in parallel in an iterative way while going back and forth between the whole and the details. […] It is at the core of what it means to act in a rational, disciplined, designerly way (Stolterman, 2008)."** This demands appropriate approaches, methods, techniques, and skills. Design disciplines have to develop and foster their own designerly approach for education and practice (Stolterman, 2008). The discipline seeks to develop domain-

independent approaches to theory and research in design. Cross reasons with **"the forms of knowledge peculiar to the awareness and ability of a designer, independent of the different professional domains of design practice."** Design has its own distinct 'intellectual culture,' by this means avoiding design research to swamping with different cultures imported either from the sciences or the arts (Cross, 2006).

In conclusion, a pluralistic perspective has to be considered in Design, as (Johansson-Sköldberg et al., 2013) have categorized five sub-discourses, as shown in Figure 28: **1. "Design and designerly thinking as the creation of artifacts (Simon, org. 1968; 1992)." 2. "Design and designerly thinking as a reflexive practice (Schön, 1983)." 3. "Design and designerly thinking as a problem-solving activity (Buchanan, 1992) based on (Rittel & Webber, 1973)." 4. "Design and designerly thinking as a way of reasoning/making sense of things (Lawson, 2006); (Cross, 2006, 2011)." 5. "Design and designerly thinking as a creation of meaning (Krippendorff, 2005)."**

Founder	Background	Epistemology	Core Concept
Simon	Economics & political science	Rationalism	The science of the artificial
Schön	Philosophy & music	Pragmatism	Reflection in action
Buchanan	Art history	Postmodernism	Wicked problems
Lawson & Cross	Design & architecture	Practice perspective	Designerly ways of knowing
Krippendorff	Philosophy & semantics	Hermeneutics	Creating meaning

Figure 26: Comparison of Five Discourses of Design Thinking (Johansson-Sköldberg et al., 2013, p. 126)

Furthermore, (Johansson-Sköldberg et al., 2013) suggest that the answer lies in **"where and how the concept is used in different situations, both theoretical and practical, and what meaning is given to the concept […] Anyone wishing to make an academic contribution, therefore, needs to have this pluralistic perspective in mind, because without recognizing the plurality and identifying the specific perspective, it is impossible to make an academic contribution (Johansson-Sköldberg et al., 2013)."** (Redström, 2017) offers a new approach to design research driven by practice, experimentation and making. He refers to **'transitional theory'** by avoiding the static criteria and introducing fluid notions as designing is made for continuous change and enables diversity and pluralism (Redström, 2017).

In conclusion, **Service Design as an academic practice is firmly based on transdisciplinary practice; it has to reflect also a pluralistic approach. This research has combined different concepts: the best suitable process to create and test a solution by investigating the field in its socio-material system and dynamic organizational context.** In this research, the practical action or behavior and its effects on thinking and knowledge are the focus of interest. **"Investing the nature of design though the practice of design involves reflection on the functional element of manner (Buchanan, 2007)."** Furthermore, any previous knowledge of the field or theoretical arguments are constantly incorporated into the evaluation, forming preliminary concepts that are gradually refined. The balance between theory and practice is at the center point. The theory is developed from data derived from the data collection process from practice and transferred back through designing and applying the solution in practice. **"Design experience is a prerequisite for any real understanding the design activity itself (Dorst & Dijkhuis, 1995)."**

1.6 Data collection

Interviews belong to the established and most frequently used methods of qualitative social research and are characterized by three main features: **"Respondents must be expert for a specific subject area [...] the focus is on the knowledge and experience of the respondents [...] a praxis relation in the interview conduct (Flick, 2009)."** The collected data are mutually enriching and complementary, on the one hand by recording a development over a more extended period of time, and on the other hand by reflecting individual views of the practitioners at a certain point in time. Conducting interviews thus provides insights into the prevailing organizational coherences, processes and procedures in organizations. Qualitative interviews serve to acquire subjective perspectives and personal views to gain insights into interdependencies within social relationships in the work environment (Bogner, Littig, & Menz, 2014).

The format of Service Design workshops as design sprints is a constant reoccurring frame through this research process in which participants turned various forms of knowledge into tangible outcomes. These facilitated sprints supported the transitions directly from research to design by providing feedback towards the Service Design practice. Even if the participants have been working on various objectives and just partly on the development of the 10X-SDL case itself, it has provided a reframing of the practice through continuous involvement by the participants in the attempt to stimulate discussions about assumptions towards frameworks of Service Design practice. Hence, the goal throughout the research has been to develop shared practices and perspectives which trigger an impulse to the organization of activity and further an impulse for implementation. The role of a Service Design facilitator is to look for opportunities to organize performative processes, negotiating the collaboration of participants and facilitating activities. The objective has been to generate insights **'from explicit to implicit to tacit needs'** throughout the inquiry. **The combination of methods of interviews, observations and providing generative methods to the participants enabled to create a holistic picture of explicit, implicit and tacit knowledge (Pontis, 2019, pp. 67–82).** The collaborative format aimed to research the contextual interaction and furthermore enabled the detailed descriptions of activities, situations, participant's behaviors in relation to their produced results in the design sprints. Participating observations provided concrete support, for example by helping to experience the use of the term Service Design in actual field use. **The research followed the aim to identify patterns of interaction between actors, to familiarize the researcher with the field with its specific logic, manners, hierarchies and values, to provide information about the field that supports the further research process, to experience how employees apply Service Design internally, how they behave in the concrete application situation and how they react and how they deal with changes in everyday work.**

As ethnographic research plays a vital role as it enables an in-depth understanding of the social and cultural interactions within which organization and the practices in which the people act and experience (Crouch & Pearce, 2012, p. 101). Meaning the understanding of the context of the design problems, how they arise and are addressed. By systematically reflecting on the findings, this gained an understanding of the actual working practice in the corporate organization of Volkswagen Group. In this case, also to identify throughout the engagement with the designed object solutions how to be optimized and enhanced. A participatory approach is chosen to ensure relevancy for the praxis, which involves all relevant stakeholders in the design process to ensure the solution actually fits their needs (Crouch & Pearce, 2012, p. 151; Foth & Axup, 2006).

Overall the interviews created user insights into the design process (Portigal & McCracken, 2013). The qualitative group interviewing has followed a **'constructionist'** approach (Silverman, 2013) to identify the meanings as they have been produced through interaction. Qualitative interviewing has offered examining intertwined sets of findings: **"evidence of the nature of the phenomena under investigation, including the contexts and situations in which it emerges, as well as insights into the cultural frames people use to make sense of these experiences (Miller & Glassner, 2016)."** The interviews have been conducted in a semi-structured approach by using open questions with an active role by the interviewer. The guided approach has aimed as an initiator to start the conversation to conduct feedback in depth. Due to an open, free discussion atmosphere, the respondents have tended to be more willing, to express remarkable views with high information content. The course of the conversation has been deepened by specific questions. **The aim has been to study people's experiences as a social construction of knowledge (Eriksson & Kovalainen, 2016).** For the study, the interviews provide an insight into the individual ideas of employees and complement the participating observations with reports of experiences and perspectives. The interviews have been audio-recorded, transcribed and evaluated in order to perform an iterative data collection and evaluation.

The design sprints (see Figure 27) were selected on the basis that all Service Design sprints have been project-related and conducted for the Volkswagen Group or other affiliated brands which share a similar organizational challenge for human-centered development. The sprints were defined and recognized as Service Design projects to represent Service Design practice and being conducted by professional Service Designers who have junior to senior experience in Service Design practice—furthermore being focused on business development in a human-centric way for the development of new or redesigning existing business solutions. Each participant group within the design sprints have been chosen on availability and interest in Service Design and in the 10X-SDL, this mixture of group sizes from 4 - 20, included multiple expertise, functions, cultural backgrounds, hierarchical level, meaning it

provided a latitude the different perspectives as possible on the object of research and to analyze it holistically. These have been conducted and facilitated by Service Designers from Volkswagen Group Digitalization | Smart Mobility (including and mainly leading by the author of this doctoral thesis), University of Lapland | Service Innovation Corner (SINCO) team and Business Innovation Team |Volkswagen Group Services.

Notification: The cases conducted are grounded in the field of digitalization and mobility. They describe a spectrum of business practices within the organization. All 'critical' company data has been either removed or alienated due to business interest. Public accessible references have been stated if available. All documentation taken is indented for the purpose to show work practices of people, not the people themselves.

Sprint title	Unit	Objective	Date	Place	Phase	Data material
Urban Mobility	R&D	Ideation for urban ride-pooling mobility service	2-03.12.2015	SINCO, Rovaniemi Finland	Awareness	first-hand experiences, sound + video + photo recordings, interview transcriptions and project report, material
Urban Mobility	R&D	Ideation for urban ride-hailing mobility service	4-5.12.2015	SINCO, Rovaniemi Finland	Awareness	first-hand experiences, sound + video + photo recordings, interview transcriptions and project report, material
Mobility Ecosystem Design	R&D	Ideation for mobility platform	5-8.04.2016	MLC with mobile SINCO-Kit, Wolfsburg	Awareness	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Intrapreneur-ship Program	Worker council	Development of incubation and acceleration program, intrapreneurship	8-12.12.2016	SINCO, Rovaniemi Finland	Awareness	first-hand experiences, sound + video + photo recordings, interview transcriptions and project report, material
Multimodal Mobility	Mobility	Strategy workshop for mobility platform	27-29.09.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Digital Workplace	R&D	Inspiration for Collaboration Spaces	06.10.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Digital Employee Experience	HR	Strategy workshop	10-11.12.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material

AI Assistant	Customer & Retail	Ideation workshop	13.10.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Ride-sharing	Mobility	Service development	19-20.10.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Premium	Luxury	Workshop for service experience strategy	25-26.10.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Process optimization	Controlling	Business process improvement	10.11.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Ride-pooling	Mobility	Service process optimization	14-17.11.2017	10X-SDL, Wolfsburg	Deployment	sound + photo recordings, interview transcriptions and project report, material
Onboarding	Truck	Optimization of platform	20-23.11.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Intermediate evaluation		On the job training	27-29.11.2017	10X-SDL, Wolfsburg	Deployment	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Digital Access	UX	Experience optimization	21-23.02.2018	10X-SDL, Wolfsburg	In-Use	sound + photo recordings, interview transcriptions and project report, material
Mobility Experience Center	Experience center	Ideation	7-8.03.2018	10X-SDL, Wolfsburg	In-Use	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Innovation Development	Design	Business process optimization	27-29.03.2018	10X-SDL, Wolfsburg	In-Use	sound + photo recordings, interview transcriptions and project report, material
UX Guidelines	UX	Workshop for service experience strategy	8-5.05.2018	10X-SDL, Wolfsburg	In-Use	sound + photo recordings, interview transcriptions and project report, material
Personal Assistant	Luxury	Ideation for a virtual assistant	17-18.05.2018	10X-SDL, Wolfsburg	In-Use	first-hand experiences, sound + photo recordings, interview transcriptions and project report, material
Evaluation	21 x various lead-user	The reach and impact of 10X – Service Design Lab	10-12.2018	Group wide	Evaluation	sound recordings, interview transcriptions and project report, material

Figure 27: Table of all data sets as sprints and interviews

1.7 Data processing

The transcriptions of the group interviews and the documentation of the group work in the design sprints form the basis of the data analysis. As stated in Figure 28, the analysis of the text documents is based on a content analysis procedure and the interpretation of data or sense-making of generated data. Qualitative data processing has consisted out of several steps as code openly, clustering towards themes, mapping and building relations, summarization and condensation of findings. The aim in Atlas.ti, the qualitative data analysis software, has been to identify patterns, categories and themes based on each leading sub-research-questions. The transcribed group interviews have been coded with first markings certain parts of sentences, sentences or even sections of text and provide them with a superordinate, thematically summarized description. The coding phases are not to be understood as a linear sequence but characterize an iterative procedure and are to be understood as a "constant comparative analysis" (Boeije, 2002). The prepared data has been processed as generating codes, creating categories by clustering, identify themes, visualize connections to determine the findings (Pontis, 2019, pp. 129–136). In relation (Mayring, 2010) defines the qualitative oriented category-leading content analysis with the importance on the systematic approach for qualitative text analysis. **Research has to prove the model of processing, including iterative steps of abstractions levels by analyses units based on content analytical rules (Mayring, 2010).** Furthermore, this has to lead to a logical chain of evidence to support the observed outcome while these relationships have to make sense and be also be complete (Miles, Huberman, & Saldaña, 2014). The interpretation of data created **"meaning and significance to the analysis to explain findings and identify linkages among descriptive dimensions (Pontis, 2019, pp. 129–136)."**

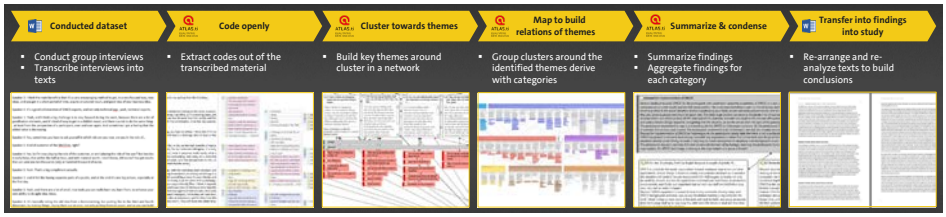


Figure 28: Process of qualitative data processing (Schaaf, 2019a)

The open coding breaks down the data material into the units of meaning with the aim of generating and obtaining an initial overview of topics, problem statements and interactions. Seemingly important aspects are marked, compared and categorized as this develops inductive codes from the data. The In-vivo-Codes is assigned to a term

occurring in the text and characterized as particularly meaningful. This has resulted in a multitude of codes that have been repeatedly restructured throughout the research process. Furthermore, the previous coding is condensed into categories in order to identify the core contents of the data material. These are linked on the basis of their properties and form a category while combing i.e., proficiencies, features or characteristics. The codes are recombined and mapped with the aim of identifying the central object of research in more detail, revealing mutually influencing factors and describing aspects of the context and their relationships to one another. The aim is to formulate the phenomenon with its respective concrete contexts, conditions and strategies and their concrete consequences in their relative references. Additionally, the visual inquiry of this research is connected towards the documentation along the whole research process as photos and partly videos have been taken. This has served to capture the project contexts, people relationships towards the workshops spaces, the interaction of people with the Service Design practice, building up the relation between people and practices. **"The key to successful photographic research is in understanding the social relations and subjective agenda which they are produced and the discourses through which they are made meaningful (Pink, 2013)."** But also strong influence has had the illustrations as info-graphics to synthesize the vast data inform of mapping; build up relations and correlations.

In conclusion, the findings are a combination of qualitative data processing based on group interviews and also actual documentation of working processes to be able to analyze in-depth the application of Service Design in the organization. Along with the Service Design Research model (see **chapter 1.5.1.**), this provides the explorative basis to develop and design the 10X-SDL and apply it in the organization. This combination provides atmospheric impressions of the communication style within the organization, interactions, working processes and decision-making structures in the business practice. It also shows articulated and thus deliberate organizational changes which have taken place in the context of the use of Service Design.

2 Chapter: Awareness—Phase

This chapter presents a case study that focused on the service prototyping process in the SINCO environment at the University of Lapland. The aim is to develop new information and insights about how a Volkswagen team perceives SINCO as an environment and Service Design as a practice. In addition, the influences of the service prototyping approach for mobility service and business process development have been in focus. **Chapter 2.1.1: Getting to know | Service Innovation Corner (SINCO)** examines which learning processes are enabled by SINCO and how the Service Design process is constructed when using the SINCO environment. **Chapter 2.1.2: Utilization of SINCO** is based on the actual use of SINCO by the Volkswagen AG Smart Mobility Team, who have used the SINCO environment and the mobile version of SINCO. The interview data were collected from 2015 to 2016 as they serve the purpose of exploring the context and situation, identifying problems and challenges, and discovering opportunities in the field to apply Service Design practice inside the organization. This describes the current situation in the organization and analyzes the need for Service Design as dependent on the context. The participants' behaviors and cultural legacy play a significant role and the meaning behind those actions; Service Design creates awareness that is useful for the organization.

Leading questions

- ➜ What is needed for business development in this context and the barriers to effective & efficient development?
  - o For the early-stage development or **"Fuzzy front-end"** with the aim to develop mobility services and business processes
- ➜ Why is Service Design as an approach an opportunity for a solution?
  - o Describing the current situation in the organization and analyzing the need for Service Design as dependent on applied context

Theory-driven content analysis was conducted through two rounds of analysis. The researcher first picked out key terms and phenomena that responded to the research questions and the main concepts to frame the findings to derive premises for challenges to implement the SINCO approach in the Volkswagen organization in **Chapter 2.2: Derivation of findings: Analysis of needs and challenges.**

2.1 Current situation: Description

In **Chapter 1.3.2: Transformation hindered by legacy**, the publication **"Service Innovation at Volkswagen—Putting services in the core of business"** by (Recchia & Kleeberger, 2017) describes previous situations, challenges, and the potential of applications of Service Design, especially with the purpose of business ideation and further business-case development. It also describes the difficulties of accepting Service Design in the organization. This people-centered, iterative, and service-logic approach to form customer value has had to compete with the product-logic legacy as business value driven by cost savings and short-term revenues. However, since the induced accelerated digital transformation happening in the German automotive industry at the end of 2015, a shift towards new approaches occurred. The acceptance of Service Design has benefited from this, but other means have also been adopted. As described in **Chapter 1.1.1: Organizational setting**, the Smart Mobility department of Volkswagen Group has been in a research partnership with the University of Lapland because of its interest in the SINCO. The department of Smart Mobility has had the purpose of driving the digital transformation forward, focusing on mobility services.

The specialty to experience prototype services as intangible concepts has sparked the interest to collaborate with the University of Lapland. The aim has been to bring the idea of Service Design to a higher level of awareness in the organization. The SINCO laboratory, with its physical facilities and working principles, has provided an approachable method for the business teams to realize Service Design in practice. By providing a sufficient multi-sensual reference with SINCO, the participants have been able to sense the service experience, create right and pragmatic ideas depending on situation and context, and create and improve services using what otherwise might have been left uncovered. In general, the SINCO allowed **"the company to better understand the design challenges and new ideas, as well as enabling them to participate in improving ideas rather than following passively alongside [...] in this way it is it important to take the client company members along the experience prototypes in some of the stakeholder's roles" (Miettinen et al., 2012, pp. 1210–1212).** The SINCO as service experience lab enables immersion into concrete customer experiences to determine pain points to create tangible business solutions further. At the same time, it can also be used effectively in organizational learning and development processes. **For companies, this approach can also reveal innovative solutions for business areas where testing ideas in practice is difficult or even impossible as prototypes can be used as a tool for concretizing the future vision (Kuure & Miettinen, 2013, p. 1543).** The first encounter of the Volkswagen team with the SINCO lab was in 2015. It enabled a deep dive into the methodological framework and setting. The team has had the opportunity to live through the customer journeys, to see and feel how to ideate, prototype, and in

general, develop in the lab as a surrounding. This kind of environment has proven to be very helpful while balancing the provision of all the opportunities to work creatively as a group, but with a focus on one space. Even if there was a natural skepticism at the beginning regarding looking playful, the team was impressed by the progress and results. **The team's immersion in the customer situation provided an "aha-moment" of understanding the needs of the customer. Further, the design sprint format provided a focus on progress.** The impact and effect of this collaboration can be seen in the transformational approach to become a service-orientated mobility provider.

Large companies primarily aim to discover the company's internal processes transparently by combining multiple perspectives in the co-creation session to **"bridge functional silos by bringing together representatives from different departments" (Miettinen, Rontti, & Jeminen, 2014).** These can be, for example, business development managers with a decision-making mandate, sales and marketing representatives, real customers, service staff members, other stakeholders in charge of the development of the technical system and/or internal processes for the development case, and Service Designers as facilitators. **"This serves as a rich knowledge transfer mechanism between the service design team, the company management, and the service staff" (Miettinen et al., 2014),** provides value to businesses through conscious and subconscious information exchange, and enables communication **"good practices and successes worth spreading across the entire company to the different stakeholders" (Miettinen et al., 2014).**

2.1.1 Getting to know | Service Innovation Corner (SINCO)

As Service Design is one of the strategic research areas at the University of Lapland, the Faculty of Art and Design has worked for several years with Service Design and service prototyping methodology. In 2009, the SINCO project started at the University of Lapland to recognize the problem that the **holistic approach of Service Design needs to consider the entire service experience instead of focusing on a specific part or a single view (Miettinen et al., 2012, p. 1202).** The SINCO enables gaining customer understanding to ideate and evaluate service concepts in an iterative, concrete, agile, and co-creative way by researching the field and analyzing existing service journeys throughout user experience simulation to form and develop ideas quickly and evaluate concepts collaboratively to concretize the holistic target picture (Rontti et al., 2012; Rontti & Lindström, 2014). The research and development work has focused on two different areas (Rontti et al., 2012): The first is how service prototyping can add value at various phases of the Service Design process and the second is the agile use of technologies to prototype customer journeys, service moments, and different touchpoints quickly and iteratively.

The important focus of the SINCO laboratory is to function as a learning environment in which students work alongside the project team, researchers, and other

involved stakeholders. Service Design supports **"the recognition, understanding, and development of the immaterial processes and resources related to learning and producing knowhow" (Kuure & Miettinen, 2013, p. 1538).** In Service Design, where the core of service development lies in the contextual understanding, the SINCO is its manifestation as the different Service Design tools in the lab enable contextual learning (Kuure & Miettinen, 2013, p. 1538). Simulations are used in SINCO as **"an effective way to cooperate, make processes and practices visible, and also learn new skills" (Kuure & Miettinen, 2013, p. 1539).** In this way, to simulate means creation of understanding by presenting, imitating, or pretending in relation to some situation, system, or model that is needed **"to support the experiential learning of design thinking principles and Service Design methods through doing" (Kuure & Miettinen, 2013, p. 1539).**

Figure 29: SINCO as space for Service Innovation (Rontti, Lindström, & Jylkäs, 2016)

As stated in Figure 29, the advantages of the lab can be seen in the balance of switching between experience, building, and analysis modes in one space to make available all tools needed in service innovation. SINCO targets the enabling of agile prototyping in the early phases of the development process, which provides advantages over prototyping in a real-life setting: **"In co-design sessions with multiple stakeholders this advances communication and learning combining the advantages of both contextual research and focus groups to generate customer insight and offer participants creative and safe opportunity to explore ideas instantly in action (Rontti, 2017a)"** Real service environments may often be in full use or not accessible, and confidentiality issues may also come

into consideration. Furthermore, to create early high-fidelity prototypes, tools and infrastructure have to be available to enable a fast creation process (Rontti, 2017a). The SINCO process as a whole shall **"enable the communication, testing and further developing of optional services, before launching them" (Rontti et al., 2012).**

A focus lies on the technologies that serve to analyze service situations in quick simulations and discover technological development opportunities through experimentation as the mock-ups enable rapid visualization, concretization, and evaluation of ideas (Rontti et al., 2012). The research around the SINCO environment has focused **"on developing new technology-assisted methods to prototype customer journeys, service moments and different touchpoints quickly and iteratively [...] The attempt to facilitate experience prototyping with technologies as well as innovative working principles including 'quick and dirty' prototyping, 'thinking with hands' and 'serious play'" (Rontti et al., 2012).**

Figure 30: Impressions out of SINCO (Rontti et al., 2016)

Service Design in its strategic role provides a broader approach for the co-creation of value that **"integrates service thinking, understanding the user in connection with service rationales and relations, and constructing service propositions SINCO prototyping allows the exploration of possible scenarios and the evaluation of ideas through actual experience" (Miettinen & Kuure, 2013).** Furthermore, this leads to using co-design methods to enable participation in concept test sessions **"to capture intuitive reactions, attitudes, goals, and needs" (Miettinen & Kuure, 2013).** As shown in Figure 30, this tangible experimentation enabled the concretization of the user's point of view as an experiential walk-through for representatives of the client company, which allow **"interactions to be designed and modified in such a way as to make services usable for customers and efficient for the company" (Miettinen & Kuure, 2013).**

As Figure 31 states, the Service Design guidelines at the SINCO cover a wide area, as identifying problems of an existing service involving customers, end-users, and stakeholders in use-case simulations based on current offerings leads to innovating new products, service, and business opportunities. **This fosters strategic decision-making by concretizing alternative company visions and strategies through customer experience simulations for business impact.** Further, implementation problems can be identified earlier, which leads to faster development cycles and less time-to-market. This has proven to be an inexpensive way to evaluate different service idea options through concretizing the effects of different parameters and KPIs on holistic user experience.

Figure 31: Service Design guidelines at SINCO (Rontti et al., 2016)

2.1.1.1 SINCO as a technology enabled co-creation space

The SINCO as **"a laboratory concept for hands-on service prototyping"** can be described as an environment and set of tools suitable for service experience prototyping. It is a mixed environment consisting of **"a showroom, theater, craft workshop and a modern meeting room. Culturally, it is a place where you are 'allowed' and enabled to do whatever is needed to concretize and test service ideas" (Rontti et al., 2012).** Together these create an inclusive laboratory concept for rapid service prototyping. In Service Design, service experience prototyping serves to discover the user experience along the customer journey or path, which consists of touchpoints. Service prototyping serves as an iterative concretization method by **"showing and testing things in practice for understanding, developing, evaluating, and presenting an idea" (Rontti & Lindström, 2014).**

In the Service Design process, service prototypes help understand by defining the design problems to be solved and enabling the evaluation of the service as useful and usable for the customer and effective and efficient for the service provider. By these means, service experience prototyping within service scape simulation **"adds value to customer insight by activating users' schema, enabling them to capture the intuitive reactions, attitudes, goals and needs along the service path" (Rontti et al., 2012).** Furthermore, the experimentations during the creative phase have supported **"the understanding and utilizing of technological possibilities, as well as the socio-emotional aspects of interactive systems" (Rontti et al., 2012).** In the evaluation phase, prototyping has also worked as a powerful knowledge-transfer mechanism wherein agile technologies enable the rapid setting-up of the desired service paths as higher-fidelity experience prototypes.

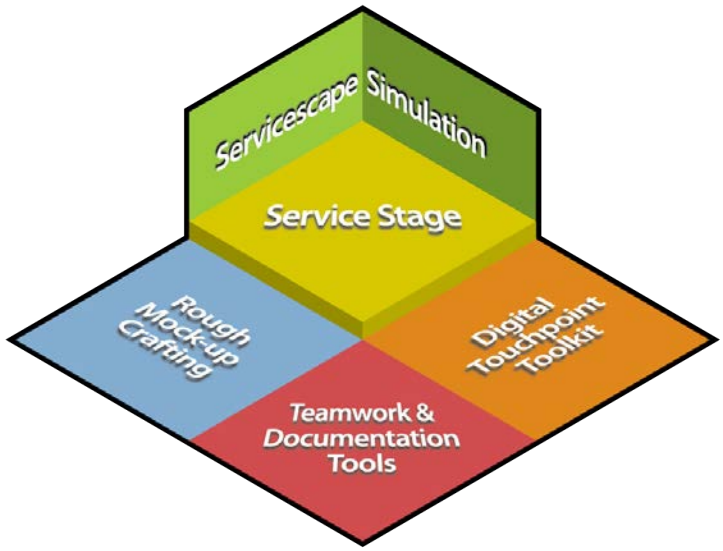


Figure 32: Key elements of SINCO service prototyping laboratory (Rontti et al., 2012, p. 233)

The SINCO laboratory can be conceptualized under the following terms: **"Servicescape Simulation; Service Stage; Digital Touchpoint Toolkit; Rough Mock-up Crafting; and Teamwork & Documentation Tools (see figures 32 & 33)" (Rontti et al., 2012).**

1. "Servicescape Simulation" serves in experience prototyping, while the projection setting and imagery view comprise the majority of the simulation to create immersive sounds and lights essential to the service provision. **"By changing the imagery view, and the lighting and sounds of the service scenes, the desired location of service moment can be brought to the service prototyping in a**

matter of minutes and saved for later sessions" (Rontti et al., 2012). For the purpose of multimedia surroundings, the application uses Microsoft PowerPoint with a dual-display adaptor **"to control background images, videos, sounds, and transitions, which, at the same time, build an entire service path" (Rontti et al., 2012).** This also enables authentic stimulation of the actor; as the team describes **"a queue number change presented as a blinking image and a sound clip for the prototyping customers sitting in a waiting room" (Rontti et al., 2012).** At the same time, the presentation also works as a platform for generating ideas such as those about the touchpoints related to the servicescapes of the customer journey. **"Concretizing the environment, where a service takes place, helps the participants to get perspective into the service being prototyped. By empathizing different stakeholder roles in prototyping, designers, customers or end-users can look at a service through different lenses" (Miettinen et al., 2012, p. 1207).** Content for the simulation is quickly found by internet research as (Google Street View and image search, Internet sound libraries, etc.), or taken as photos or videos at the actual servicescapes (Rontti & Lindström, 2014, p. 9).

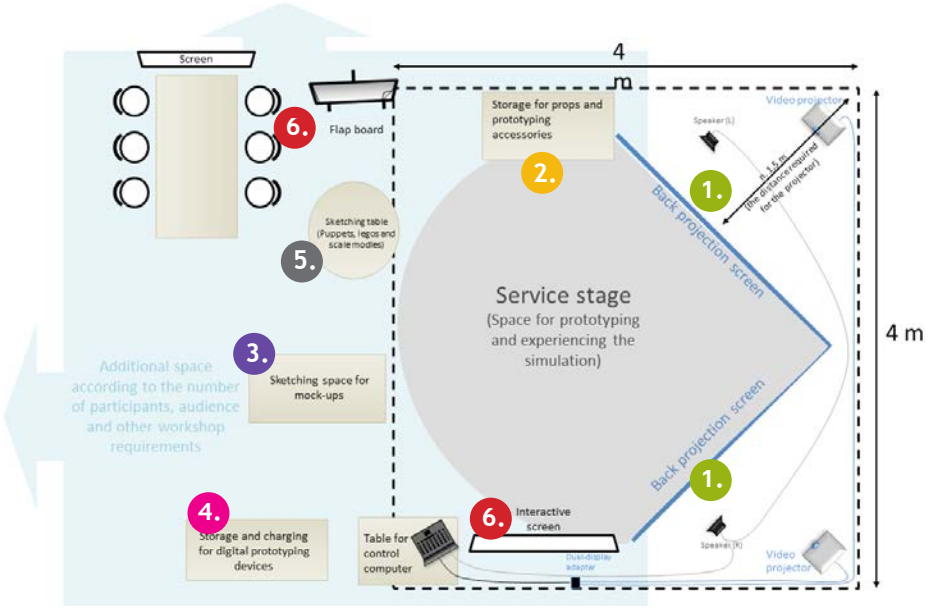


Figure 33: SINCO environment (Rontti & Lindström, 2014)

2. The actual "Service Stage" is dedicated to acting out scenarios and experiencing the servicescape simulation while a sequence of servicescapes is used as an experiential script by which customer journeys may be prototyped. **"The stage itself has a strong analogy to a theater stage, which allows acting, whether you**

should empathize with a situation presented with servicescape simulation" (Rontti et al., 2012) or take the role of another user or stakeholder. A space meant for role-playing is provided by which the suggestive physical structures and elements built on the stage complete the service simulation. **"Role-play accessories and props make it easier to empathize with the role and enact it with others" (Rontti & Lindström, 2014).**

3. "Mock-up elements" is based on the idea of using service prototypes to concretize features of elements from real service situations. These enable better realization of the service scene's physical aspects, such as desks, counters, or booths that play an essential role in the service. The **"Typical mock-ups for prototyping a service experience are, for example, signs, different types of machines and automats, paper prototypes of user interfaces, and scale models for sketching the overall service picture" (Rontti & Lindström, 2014).**

4. The **"Digital Touchpoint Toolkit"** is a set of handheld devices used to prototype ideas with digital content. These include **"differently sized mini video projectors; small speakers; mobile devices such as iPad; cameras; a large touchscreen; and a variety of accessories to mix and use the equipment in a versatile way" (Rontti & Lindström, 2014).** The aim of prototyping varies, but the typical use is to explore technological opportunities or to capture the realistic **"taste"** and feeling of a new idea. **"Digital prototyping tools are devices that can be used to quickly demonstrate interactive implementations on a service stage, or enrich mock-ups and role-play with audio or video content. The same equipment can be used in the customer understanding phase for collecting material, as well as for the documentation of prototyping workshops" (Rontti & Lindström, 2014).**

5./6. "Tools to support teamwork": The prototyping equipment should include a table with rolls of paper that are dedicated to sketching with models, floor plans, and a puppet theater (Rontti & Lindström, 2014). In general, the Service Design process and prototyping workshops generate a large number of documents on comments and ideas. The information should be placed near the service stage that supports group working, which may include whiteboards, flip charts, or interactive whiteboards. Furthermore, **(Rontti & Lindström, 2014)** state that separate negotiation tables and several teams working corners can be placed in the prototyping environment to create a more relaxing work atmosphere, and for remote meetings and documentation, a fixed webcam or video conferencing equipment should be installed based on need. **"The majority of the documentation tools are digital to encourage the teams to do as much as possible of the documentation in a digital format. Digital documentation is optimal for storing, editing, sharing and analyzing the documented materials. These tools include interactive whiteboards and several kinds of video and still cameras. Alongside the digital documentation formats, a lot of the documented material is still in physical**

form, such as paper, cardboard and foam objects that have been developed from ideation and documentation" (Rontti et al., 2012).

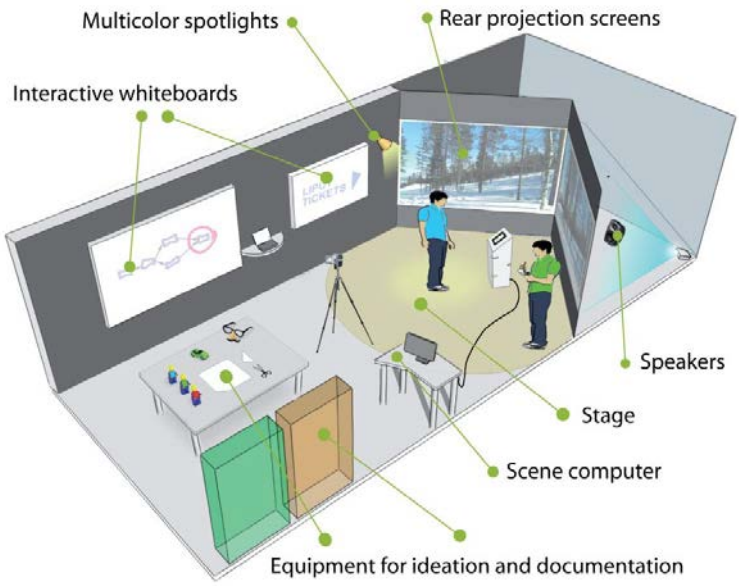


Figure 34: Overview about SINCO prototyping laboratory (Rontti et al., 2012, p. 232)

The aim is to emphasize the use of situation and context through the embodiment of the interaction and space. The audio-visual background simulation at a 1:1 scale and different physical props serve the process (Rontti, 2017a).

As shown in Figure 34, it is firmly based on digital prototyping material, such as photos, videos and recorded sounds. The environment includes: **"interactive whiteboards (for notes, sketching and user interface prototyping); props and building blocks (used in role-play and rough modeling of physical environments); a scene computer (for controlling service scene backgrounds and service journey); rear projection displays (for quick creation of service scene backgrounds); multi-color spotlights and loudspeakers (for creating the desired atmosphere at service scene); craft equipment (for mock-ups and other tools for creative hands-on building); and user interface (UI) devices (for producing interaction design mockups and visual touchpoints)" (Rontti et al., 2012).** The technology serves the purpose that service prototypes can be developed and built quickly in a constant evaluation loop.

As (Rontti et al., 2012) describe, during the SINCO laboratory development and the case projects, challenges arise in changing the rigid working patterns of individuals and team members' heterogeneous technological expertise. The

purpose of the technology is to support and accelerate the prototyping making it possible to vary the means of concretizing ideas. This requires sufficient technical skills, especially in **"an academic operating environment that requires clear instructions, streamlining of the recurring set-ups and technical upkeep of the systems" (Rontti et al., 2012).** The use of physical props and mock-ups can not be entirely replaced by digital facilities but **"rather, the physical and virtual settings should supplement each other as an inventive mixture that helps concretize the issue being studied, communicated or tested with the prototypes" (Rontti et al., 2012).**

2.1.1.2 SINCO driven by agile design sprint process

The SINCO follows the overall double diamond process (Design Council UK, 2005) of discovering a problem, defining the area to focus upon to create a problem definition, then developing potential solutions (see Figure 35); this involves the transfer from uncertainty to certainty through understanding, that is, moving from **"designing the right things"** to **"designing the right."** While Service Design follows the model of Human-Centered-Design process, it can be applied **"to involve problem framing, information gathering and interpretation, solution ideation, development and evaluation in developing an existing service or in designing a new service solution" (Miettinen et al., 2012, p. 1203)**. Similarities can especially be seen with Innovation Design Engineering Organization's (IDEO) HCD approach of diverging (opening up the ideation to possible solutions) and converging (concentration of potential solutions) in a repetitive way but also keeping in mind that the solutions have to be desirable, feasible, and viable to be sustainable (Brown, 2008; Brown & Kātz, 2009; IDEO, 2015; VanPatter & Pastor, 2016). Furthermore, Stanford's d.school's Design Thinking process is built out of several steps including empathizing to understand the experience, defining the problem, ideating to generate ideas, and prototyping to build real solutions that at the end can be tested in an iterative mode to increase the quality of the overall solution (d.school, Hasso Plattner, Institute of Design Stanford, 2010). All in all, a latitude of development processes can be stated for Design disciplines in general or organizational and societal innovation, which mostly build on phases of problem finding towards problem-solving iteratively based on the discovery of human needs and demands (VanPatter & Pastor, 2016). The different process models may vary according to the purpose of each iterative step and the aspect of focus identified in the phases. **"The identification and discovery phase is about understanding the service context and the users, as well as the business environment of the client. The building, conceptualizing and creation phase is about visualizing, co-creation, participatory design and prototyping. The main aim in comparing service concepts is to find out what the profitability of the service would be and if the created services would be valuable to customers" (Miettinen et al., 2012, p. 1203).**

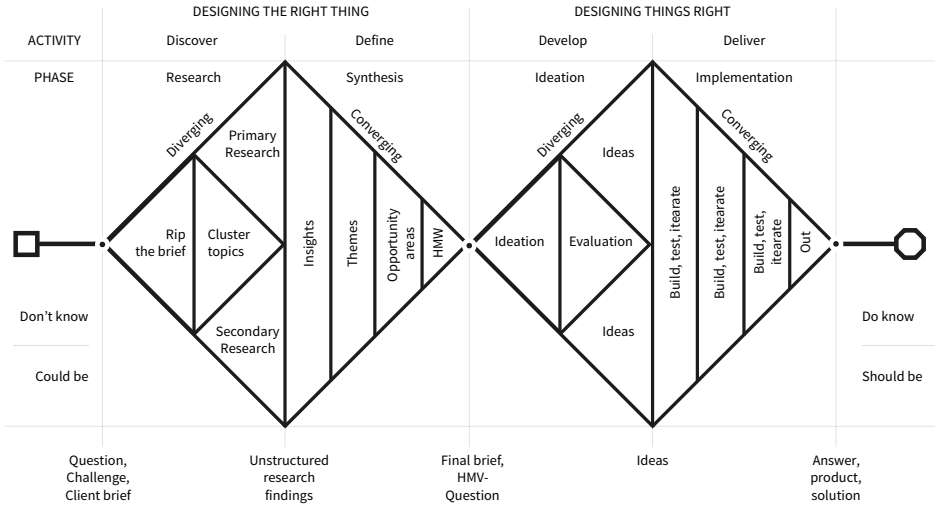


Figure 35: 'Double Diamond' detailed by Dan Nessler (Nessler, 2016)

While Service Design is an **"iterative cycle of design, test and measure, and redesign" (Miettinen et al., 2012, p. 1203)**, it also contains the implicit idea of innovation and can utilize **"several methods for concretizing new offerings or innovations even in the same development process" (Miettinen et al., 2012, p. 1204).** As seen in Figure 36, the SINCO sprint workflow is based in detail on a pre-sprint phase of data gathering and preparation for the actual sprint. Multiple methods are applied throughout the whole process, which leads to constant documentation in each step. The methods are chosen depending on the design challenge and objective. **"Experience prototyping and simulation workshops are at the core of the sprint model and serve as a platform for collaborative analysis, ideating, building and testing service journeys and transferring such knowledge to the stakeholders. Compact Service Design facilitation and the committed participation of the key internal and external stakeholders are, thus, essential elements of a successful agile Service Design sprint" (Rontti, 2016, pp. 15–16)**.

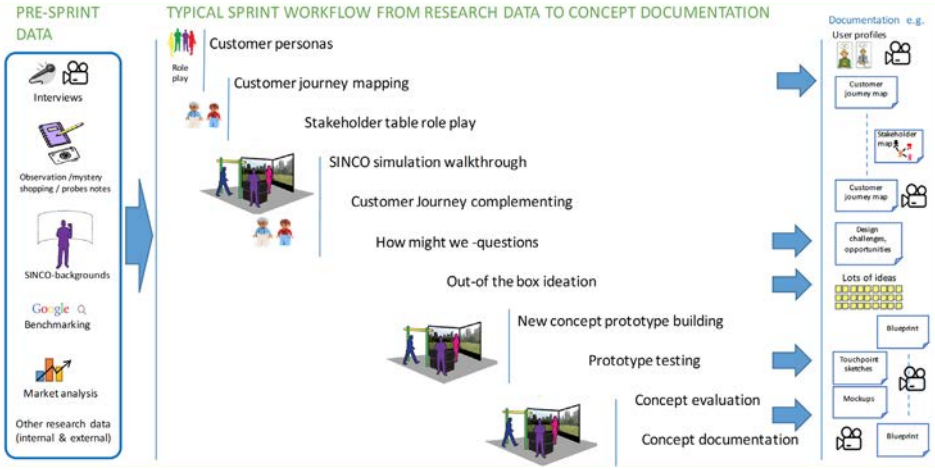


Figure 36: Typical SINCO workflow from research data to concept documentation (Rontti, 2017b)

As (Rontti et al., 2012) establish, the premises of the SINCO have been built on the factors that must be considered when developing and applying Service Design processes:

- ➜ **"understanding the Service Design challenge: the users, business environment and applicable technologies;**
- ➜ **observing, profiling, creating empathy for and co-operating with the users;**
- ➜ **including the clients, other stakeholders and the users in the process;**
- ➜ **creating ideas; prototyping; evaluating; improving; and visualizing during the whole process;**
- ➜ **implementing the services, and also maintaining and developing the services after implementation" (Rontti et al., 2012).**

As seen in Figure 37, the SINCO Service Design process is based on a mixture of field and lab work in which the workshop or design sprint format works in a reoccurring format that frames focus, impact, and speed. As (Rontti, 2016) describes, the aim of sprints was **"to explore opportunities through which new value could be generated for the customers and to improve their experiences along the entire service journey. The deliverables for the first sprint included feasible instant proposals for improvement to the identified problems in the current service journey. An even more important result was a shared understanding and a mindset change among the key personnel. The second sprint focused on the ideation of advanced improvement actions to upgrade the customer's experience, as well as to generate new service concepts based on the opportunities identified in the first sprint" (Rontti, 2016)**.

Figure 37: Service design process at SINCO in modular and interactive design sprint format (Rontti, 2016, p. 12)

The SINCO Service Design workshop format is based on the agile sprint model, which refers to a set period during which specific work has to be completed and a set of features is introduced. It refers to **"a short period of time during which design-driven innovation processes are conducted prior to the actual product or service development stages" (Rontti, 2016)**. The term **"sprint"** is borrowed from agile software development (Beck et al., 2001). The application of sprints as formats are found in agile approaches such as SCRUM (Foegen & Kaczmarek, 2016; Sutherland, 2014, 2018). In particular, the term "design sprint" (Banfield, Lombardo, & Wax, 2016; Knapp, Zeratsky, & Kowitz, 2016, 2018; Pinheiro, 2017) has been used especially in the context of a lean start-up philosophy in which the process of build-learn-measure stands in its core to build Minimal Viable Products (MVP) (Ries, 2011, 2017) or further, Minimal Viable Services (MVS) (Pinheiro, 2014, 2017).

Efficiency and speed are instrumental in achieving the right balance of quantity and quality of outcomes in SINCO sprints. By securing this objective, the framework of Design Sprints has been adopted, with the workflow consisting of three main steps: Before (Preparation), During (Sprint), and After (Synthesis of data). The preparation phase particularly consists of detailed schedule planning, aligning methods, and templates to prepare and apply while also considering the balance between inspirational phases (passive recipient) and co-creation (active participant). Overall, the building elements to tackle the design challenge in the process and further establish a creative surrounding for the participants have been defined.

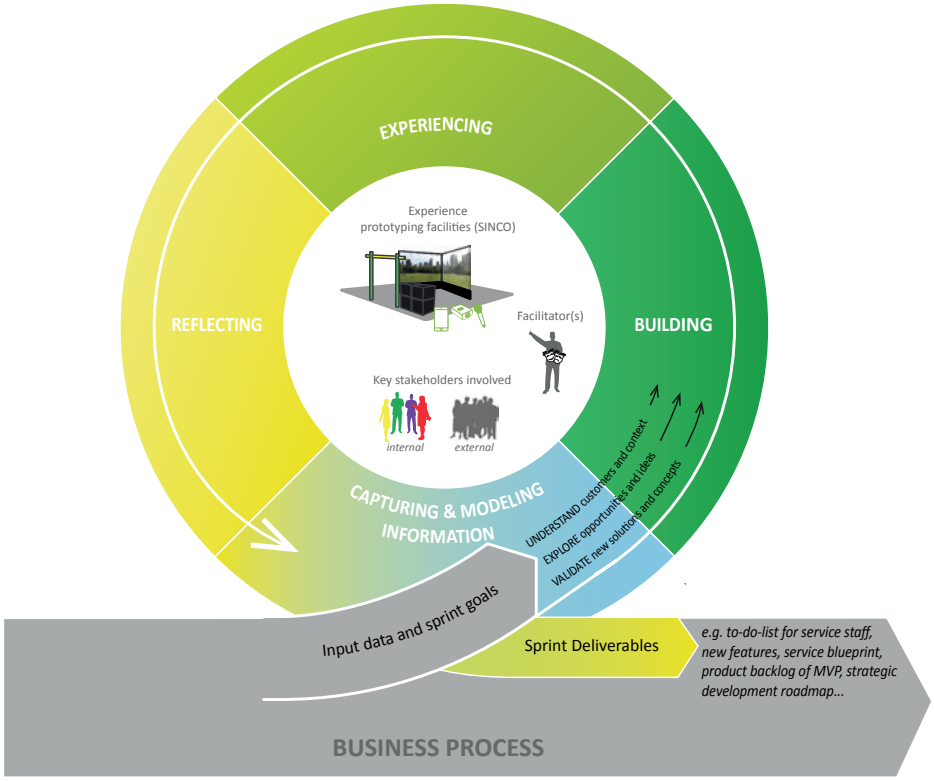


Figure 38: Agile Service Design sprint model (Rontti, 2016)

As Figure 38, **"Agile Service Design sprint model"** shows and as (Rontti, 2016, p. 15) states, the model reveals how Service Design **"can be integrated into any business or development process as agile sprints" (Rontti, 2016, p. 15)**, as accelerates the development of a more customer-orientated service journey. Several positive impacts of the Service Design sprints in the company from the customer point of view can be mentioned: the direct focus on feasible solutions with immediate improvement of the customer experience such as **"feasible instant development actions, new service features, minimum viable software products or identified design challenges and business opportunities" (Rontti, 2016, p. 15)**.

- ➜ **Improvement in redesigning the marketing and information channels**
- ➜ **Experiential and story-based service design concept implementation was launched in the company after the case**
- ➜ **Discovery of customer insights with guidance on how to put the changes into practice as an educational purpose for the whole company**

➜ **Customer insight presented in the simulation workshops induced, evoked, and encouraged empathy and encouraged a change in habits toward customer services, which has been dynamically integrated into the company's overall strategic development**

2.1.1.3 SINCO a facilitated environment

Service Design is used in development processes and organizational learning to induce transformational change. **The Service Designer's role is to work as a facilitator, use tools that connect the stakeholder's views, and enable and foster conscious learning throughout the process of collaborative knowledge construction (Kuure, Miettinen, & Alhonsuo, 2014).** Further, Service Design enables and fosters a continuing peer-to-peer learning process through its iterative working approach (Kuure & Miettinen, 2013, p. 1536). In the SINCO, learning happens through three connected elements: the Service Design process, transformative methods, and people (the participants and designer's activities). All of these elements have an influence on learning (Kuure et al., 2014, p. 474). In the SINCO, people co-create **"in service prototyping, experiencing, evaluating, and developing service propositions through a multidisciplinary and facilitated working approach" (Miettinen & Kuure, 2013)**. This is based on an idealized experiential learning cycle of concrete experience (feeling), reflective observation (watching), abstract conceptualization (thinking), and active experimentation (doing) as a recursive process that is responsive to the learning situation (Kayes, Kayes, & Kolb, 2005; Kolb, 1984).

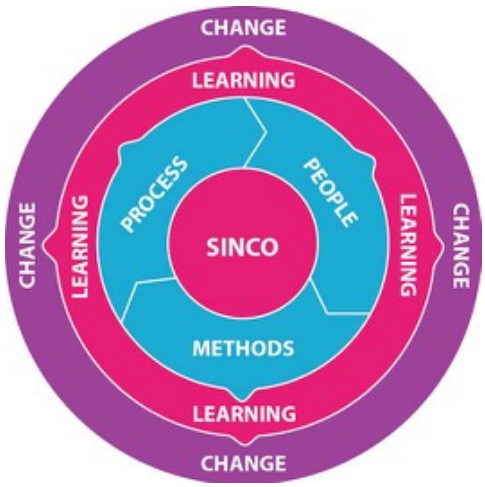


Figure 39: SINCO as a platform for learning and change (Kuure et al., 2014, p. 474)

The Service Designer functions as a facilitator of learning and change to find the right way of working and communicating so that people can work productively together and ideas become a reality (Kuure et al., 2014, pp. 475–476). As services may be complex, Service Designers play a central role **"as facilitators during prototyping sessions—leading the prototyping, making real the ideas of participants, and stimulating discussion and ideation by asking questions and altering the prototype" (Miettinen & Kuure, 2013)**. As (Kuure et al., 2014, p. 475) describe, learning happens mainly through action and is very practice-based at the SINCO. **"This generates a growing understanding of the problem or challenge at hand and in the point of view of other stakeholders" (Kuure et al., 2014, p. 475).** Ideas are easier to accept or reject when one tests them in practice, as opinions and decisions are based on reality, not just assumptions. This **"concrete doing"** also positively affects the attitude towards change; it is a tool against change resistance. Prototypes can help participants to remember past service experiences, look at the service and actions more closely, concentrate on details and see the opportunities, and try them out quickly and inexpensively to understand their own actions in certain moments. Through prototyping, it is possible to change existing models and replace them with new models of operation by dividing the whole customer journey into easy-to-understand service moments that again enhance learning and dispense with assumptions (Kuure et al., 2014, p. 475). In this way, Service Designers **"facilitate change and assist all stakeholders in understanding what the steps toward desired outcomes are" (Miettinen et al., 2014)** and follow the fundamental concepts of Service Design: **"Co-development, co-planning, co-designing, and value co-creation" (Kuure & Miettinen, 2013, p. 1537).**

As the Service Designer's responsibility, facilitation aims to ensure "value through involvement" for productive outcomes, with the proper structure and rhythm of the workshop. The facilitator's role is divided into three parts:

1. **"directing the participation and the script of the physical experience of the customer journey,**
2. **a rapid building of mock-ups 'on the fly' (both tangible and digital ones), and**
3. **documenting the findings and results" (Miettinen et al., 2014).**

The practical premises for co-creation sessions are a dedicated place and time, a skilled facilitator, and the active participation of stakeholders (Miettinen et al., 2014). As (Kuure et al., 2014, p. 476) describe, productive work in the SINCO must be based on extensive preparation work, with the group formation and activities playing an essential role, as everyone needs to be enabled to participate. The facilitator finds out what kind of group dynamics and roles exist in the group, as well as, crucially, identifies the key persons who have time to be active in the process,

have a positive attitude towards development and could act as agents of change in organizations after the service design case. Only when preparation work defines how the group should approach the subject, how to support participants to try out ideas, which methods challenge participants, how the timetable should be planned, and how space should be organized, making for example, preliminary visualizations of the service journey, can the group then properly start to create content together. During the workshop, the facilitator also needs to adapt to different situations, understand the context-sensitivity in conversations, and provide space for thinking, understanding, and learning. All this planning is very conscious work and aims towards facilitating learning and change (Kuure et al., 2014, p. 476). (Kuure et al., 2014, pp. 477–478) state that as expectations for Service Design projects are consistency, determination, and a specific change for the better, the demands towards a facilitator are multiple. Facilitators need to balance the work between details and a holistic view, for example, while working on the details of a touchpoint keeping the whole customer journey in mind. At the same time, the facilitator needs to cope with dilemmas and help the group to make decisions about where to concentrate according to their time budget, resources, and the views of different stakeholders. In addition, a neutral outsider view of the facilitator is expected throughout the service design process, in that they must analytically listen and provide feedback for the discussions related to the case (Kuure et al., 2014, pp. 477–478). Therefore, the essential skill for a Service Designer is empathy, to enable strategic and multidisciplinary innovation that implies **"a broader role for designers who are able to build bridges between different disciplines and transform knowledge into solutions" (Miettinen & Kuure, 2013).**

For facilitators at the SINCO, the competencies require **"a vast knowledge in different areas of design, including strategic design, experience design, industrial design and interaction design" (Kuure et al., 2014, p. 479).** Yet, through a multi-disciplinary and facilitated working approach, **"the most important ability of a designer is empathy connected with an innovative and solution-oriented approach" (Kuure et al., 2014, p. 479).**

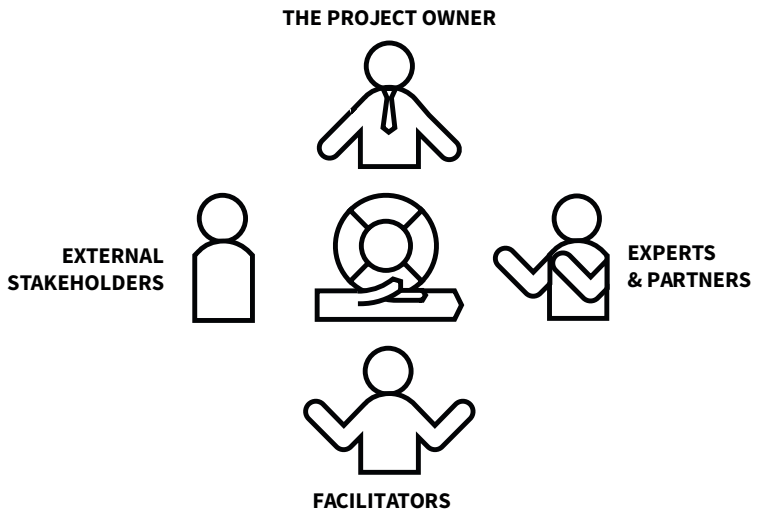


Figure 40: SINCO sprint participants (Rontti, Talsi, Savolainen, Helenius, & Schaaf, 2017, p. 10)

As (Rontti et al., 2017, pp. 10–11) describes, a design sprint is a defined limited timeframe and collaborative effort that produces clear deliverables serving either as a direct action plan for the current business process (e.g. product, service, business or ecosystem design, marketing, etc.). **"SINCO sprints are result driven events where the aim is more about doing together and learning about specific challenges: analyzing, concretizing, experimenting, demonstrating, testing and concluding findings as clear deliverables" (Rontti et al., 2017, pp. 10–11).** At the core of SINCO design sprints is the facilitation of experience prototyping and continuous concretizing, which also serves as an efficient knowledge transfer mechanism between stakeholders. As Figure 40 shows (Rontti et al., 2017, pp. 10–11) indicates that the ideal list of the SINCO sprint participants includes representative(s) of:

- ➜ **"The project owner (preferably with decision-making mandate)**
- ➜ **Experts from the service/product area: technical engineering, UX, marketing & sales, service production process**
- ➜ **External stakeholders: end-users/citizens, b2b customer, business partner/subcontractor, authorities**
- ➜ **Facilitators (2–4 service designers with 'the SINCO skill set')"**

BEFORE THE SINCO SPRINT

As defined in the **"Guide to facilitate SINCO Sprints"** (Rontti et al., 2017, pp. 16–19), comprehensive preparation is mandatory for an effective and efficient sprint. The facilitator team engages in close communication with the project owner as the project team's central counterpart. The SINCO team has to debrief and define what aspects need to be solved and agree on the sprint goals. Important elements and requirements (people, tasks, goals, features, places) need to be discussed and a preliminary schedule should be agreed on as it is the basis for the chosen methods, scenarios, use cases, as well as budget constraints. As SINCO design sprints are data-driven and research-based, a pre-research phase is also included, in which the facilitators guide the project owner team and other participants to collect data on, for example, qualitative user research such as interviews, mystery shopping, etc. or quantitative research such as market analysis, benchmarks, etc. This task forces the product owner team to conduct research on the customer reality, establish real-life references, and support data-driven decision-making later in the sprint. This also supports forming the common research question for the pre-research and for the whole SINCO design sprint and orientates everyone more exactly to the challenge.

In summary, the facilitators have to prepare a multitude of tasks so that the coming design sprint runs seamlessly and all tools and methods fulfill their purpose to create value. **"Pre-sprint research and design sprint agenda planning are important phases in order to maximize the benefits of the collaborative prototyping workshop" (Rontti et al., 2017, pp. 16–19).** Also to be considered is the assignment of roles and tasks as multiple persons participate in the facilitation of the design sprint. **"The main tasks to be assigned are guiding the workshop, building prototypes, supporting participants, and documenting results" (Rontti et al., 2017, pp. 16–19).** Furthermore, preparing method templates for the facilitators enables the team to collect appropriate deliverables from each workshop task. This ensures that the building equipment for the physical mock-up, the required prop elements, and the digital prototyping equipment is ready to use, as testing the operability of the background simulation is mandatory. It is further necessary to plan and prepare workshop roles for documentation such as note-taking, video recording or photographing in advance and provide consent forms to the team (Rontti et al., 2017, pp. 16–19).

DURING THE SINCO SPRINT

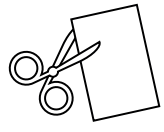
The Service Designer, as a facilitator, has several tasks during a sprint and has to be aware of the situation at all times. The facilitator functions as conductor of the **"sprint orchestra,"** for example, providing moderation of start, end, tempo, and nuances with the main aim to enable the participants to perform better or work

more effectively together (Rontti et al., 2017, pp. 20–21). The concentration is on the work process and simultaneous progress and rather than expressing his/her opinion towards the content, providing space for the participants' discussion. Keeping in mind that **"for the client, the results are more important than the process (Rontti et al., 2017, p. 24),"** some situations demand flexibility in the design sprint structure if the tasks and discussion take unexpected turns. Still, the timetable and deliverables to stay in focus. **Further, the facilitator leads with questions to stimulate new triggers, helps the participants immerse in the customer's point of view, helps in trying out and building prototypes quickly (which do not yet exist), and supports concretizing the data as documentation and determining which of these are unveiled during the design sprint (Rontti et al., 2017, pp. 20–21)**. The facilitator has to balance between asking questions and avoiding being a narrator, being objective and impartial and transparent, and being observant and providing objective feedback. The facilitator is also an instructor of design sprint tasks, providing instructions, overview, and the meaning of tasks but also being capable of going into detail (Rontti et al., 2017, p. 23).

The role of the facilitator can be demanding: **"the individual task responsibilities can vary based on the number, strengths and personality of the facilitators" (Rontti et al., 2017, p. 22).** As shown in Figure 41, specific tasks and roles can be defined in a design sprint as **"ideally an efficient design sprint is organized by two or three persons (one main facilitator 'The SINCO Master', one builder 'The Mockup Wizard' and one documenter 'The Scribe')" (Rontti et al., 2017, p. 22).** In addition, the **"project owner"** is also considered important as the focus on the deliverables or outcome of the design sprint is in their major interest for continuing project progress.

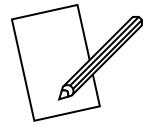
The SINCO Master

- The main conductor of a workshop agenda
- Responsible for giving tasks for the participants, activating and involving them into play
- Performing reflective questions and leading the usage of methods



The Mockup Wizard

- Is responsible for staging and concretizing things quickly and continuously on the fly
- Can rapidly and spontaneously build quick and dirty mockups both tangible and digital
- Helps participants to build and take roles on the stage



The Scribe

- Is responsible for writing down "everything"
- Good listener and observant
- Assists the sinco master with method templates and practical arrangements
- Takes care of stopwatch time table take roles on the stage

Figure 41: Facilitator - Specific roles and tasks in a design sprint (Rontti et al., 2017, p. 22)

AT THE END OF THE SINCO SPRINT

Throughout the constant coordination, the design sprint led to deliverables of gathered ideas of solving customer problems or identifying improvements, which usually consists of a massive number of data; each used a template of general ideas, remarks, or concepts, serving as documentation. At this stage, the group's collective priorities can be transferred into the following steps, which need to be selected for reprioritization and translated into roadmaps of future work packages. As a design sprint is just an accelerator of the overall development process to make ideas real, **"it is a kickstarter to understand, explore and validate concepts" (Rontti et al., 2017, pp. 42–56).** A key for improving design sprints is the feedback gathered from the participants to reflect the expectations, process, tools used, facilitation, and deliverables achieved.

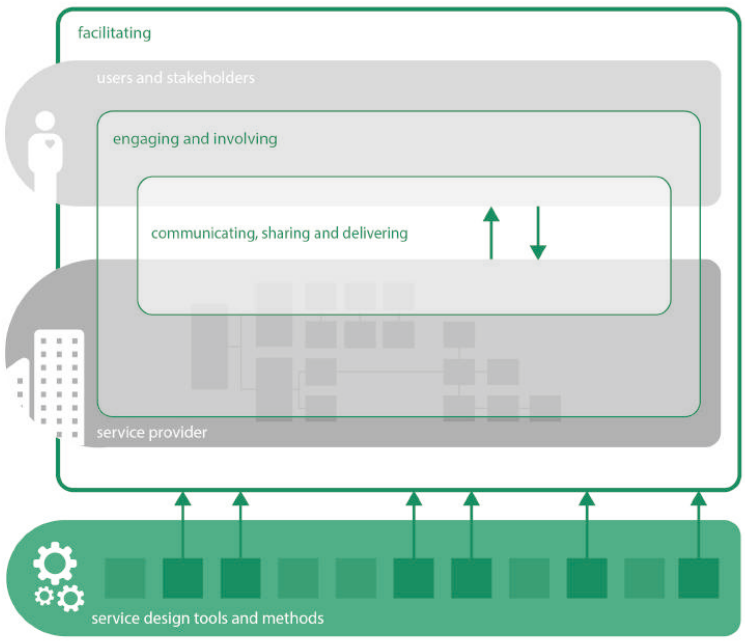


Figure 42: Examples of Service Design activities in a business context (Miettinen et al., 2016, p. 466)

In summary, the facilitator of the Service Designers must master the Service Design process to create a dialogue between stakeholders and users. This process of verbalizing and discovering both challenges and opportunities enables outlining new propositions and taking them to the market with the stakeholders (Miettinen et al., 2016, pp. 463–465).

As Figure 42 shows, **"working together to form a picture of the user journey enables employees to have empathy for their colleagues and to find solutions to create a more holistic service experience for customers" (Miettinen et al., 2016, pp. 463–465).** The aim is to understand the entire process and the overall customer journey. This work helps to strengthen the link between departments to enhance the service process. **"In addition to collaborative work through silos, effective internal communication can make a difference in increasing the understanding of the users and the ongoing projects within the organization" (Miettinen et al., 2016, pp. 463–465).** This clear structure and message can engage people to foster value co-creation in an organization.

2.1.1.4 Intermediate Summary

At SINCO, the users and stakeholders participate in the service prototyping activity where service propositions are experienced, evaluated, and developed further. Only if **"all three perspectives (what people do, what they say, and what they make) are explored simultaneously"** can an understanding and empathy be established with people (Sanders, 2002). SINCO focuses on understanding the user experience by ideating through building prototypes and learning through experimentation. The human-centered approach evaluates the holistically added value of usefulness, desirability, accessibility, credibility, findability, and usability on the basis of UX Honeycomb (Morville, 2004). In general terms, the interest of business in the experience value of co-creation is fueled by the desire **"to transform consumers into users so that the products and services they design, produce and sell will better meet people's wants and needs" (Sanders, 2014).** Co-design makes use of internal expertise; it saves resources and makes business processes more efficient.

At SINCO, the participatory methods support collaboration and facilitation of cross-disciplinary teams bringing together different players in an organization. **"By combining all the capabilities necessary to work towards the recognized goals involving a variety of people with different backgrounds in the process gives strength to the Service Design development and it also enhances commitment and engagement in the project. Working through silos and not only inside of them make the work more efficient, targeted and holistic" (Miettinen et al., 2016).** Furthermore, Service Design tools are flexible and adjustable to different contexts, which is the basis for the successful use of Service Design in business. Service Design balances, in a human-centered way, both the customer and employee experience **"by engaging employees more closely in their work community, by increasing their understanding more closely in their own work and by situating them into the customer journey [...] The improved employee experience is reflected in the user experience through the developed interactions between employees and customers, this engagement supports the transformational change that organization are facing when business models and thrust work-life**

are changing through digitalization" (Miettinen et al., 2016). At SINCO this organizational need is satisfied by the application of co-design with stakeholders.

For this research, it has been crucial to understand the framework and process of SINCO as it builds the foundation for the 10X-SDL. The advantages of the lab can especially be seen in the balance of switching between experience, building, and analysis modes in one space, with the availability of methodology and tools that are needed in service innovation. This "unique" combination has generated interest from the Volkswagen Group in getting to know the SINCO in a deep dive through personal experiences in the form of the SINCO design sprints.

2.1.2 Utilization of SINCO

This case study research focuses on the business development of mobility services and innovation processes inside the organization. **This provided the basis for understanding both the Service Designer's role in value creation and how the Service Design approach enables value creation. It served the purpose of creating feedback on the experiences with SINCO sprints and how working with Service Design could be utilized at Volkswagen but also what challenges are encountered with the adoption of Service Design based on the SINCO approach at Volkswagen.** The analysis of the findings defined organizational needs and premises under which circumstances a SINCO would have the potential to be implemented in a sustainable way at Volkswagen. This is the basis for how the SINCO has to be adjusted and expanded to function well in the Volkswagen corporate context and the further development of the 10X-SDL. The aim has been to come up with new information and insights about the influences of Service Design for business purposes. The findings will suggest ways to develop the method as a lab approach to support both transformational change in the organization and the learning process related to human-centered design. The group interviews conducted were based on discussions during and after the co-creation sessions and analyzed using qualitative content analysis to determine the organization's needs and demands of Service Design. The participatory observation was also used as a research method as the sessions were documented with both video and photos and project documents. The content analysis was conducted in four rounds, in which the researcher first selected key terms and phenomena that responded to the research questions and the main concepts related to the terms. The researcher read the transcriptions, looking for themes of new ways of working and learning; reflections on the SINCO and Service Design for business, facilitation, needs, and demands of the organization; organizational change and challenges; business culture; business opportunities; value and impact; and business processes. The themes have been marked, categorized, and clustered in terms of relations in a conceptual map and summarized according to major categories. Furthermore, the findings were analyzed to understand the significance and meaning to the research questions and research context.

➜ **For further information about the cases conducted and the context and see an overview of all cases, please visit Chapter 1.6. Data collection.**

2.1.2.1 Case | Urban Mobility | SINCO SPRINT 12/2015

In December 2015, two SINCO sprints were conducted at the University of Lapland in the Service Innovation Corner (SINCO) in Rovaniemi, Finland. The design sprint fulfilled the purpose of evaluating potential add-on business models for ride-pooling and ride-hailing services in the autonomous driving context. The premises related to the determination of routes to offer potential points of interest to end customers. The approach has also been connected to benchmarking existing market solutions and deriving further developments in new business models that could create additional revenue streams. The team carried out service safaris to benchmark and test mobility services from different perspectives: service environment, service moment, stakeholders, and technology. The creation of multiple potential customer journeys stood at the center of attention to derive suitable offers for further development. A focus was placed on the extra available time during the ride for the passenger as shopping, communication, reading, food, entertainment, charging.

The project also targeted how to define performance indicators for customer value and how the mobility services should function to be beneficial in customer perception. The design challenges for the Service Design focus have been: **"How do we create a mobility service that gives customers without their own car and with poor public transport connections first-class mobility?"** and for the business side: **"How can we create a system that is attractive for operators?"** As Figure 43 illustrates, the process consisted of two SINCO sprints building on top of each other.

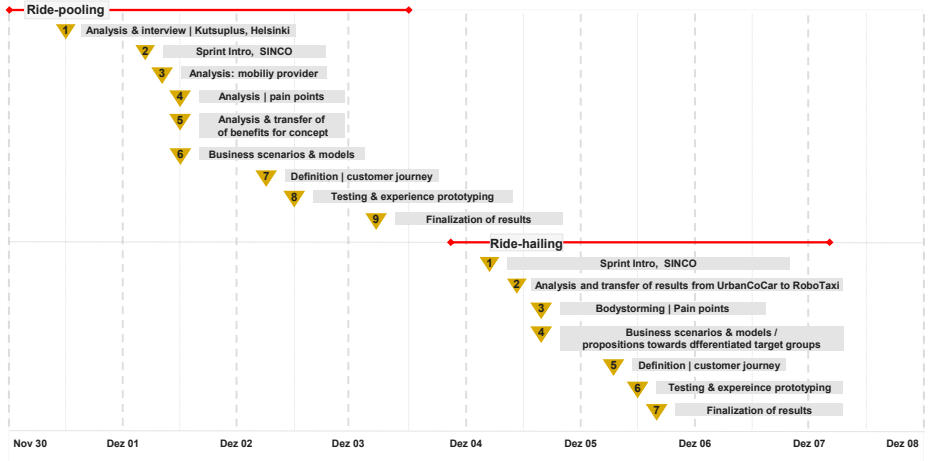


Figure 43: Timeline of SINCO sprints, December 2015 (Group-Interview of Case | Urban Mobility | SINCO WORKSHOP 12/2015, 2016)

As visualized in Figure 44, the methods used have included customer journey mapping and analysis as well as bodystorming exercises in the SINCO simulation enriched by fast prototyping to analyze pain points and ideate potential solutions. Additional business modeling played a major role in strategic decision-making. Existing services were compared and user journeys analyzed for future concept development. Services were tested in **"real environments"** to derive new customer perspectives. New service ideas and recognized opportunities were validated in walkthroughs of analyzed service paths.

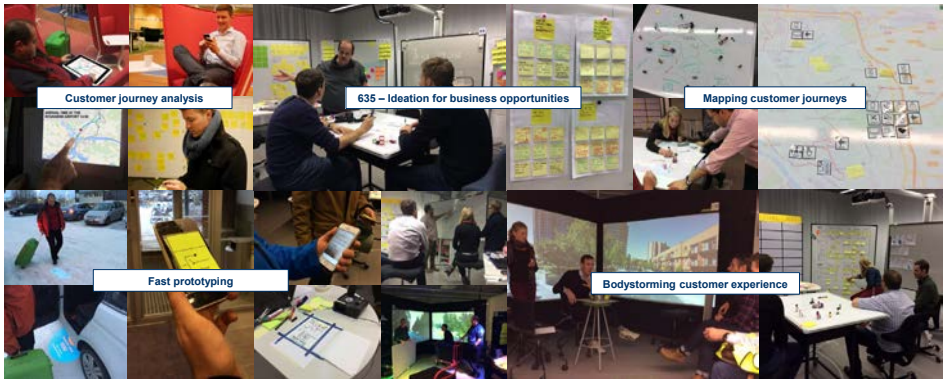


Figure 44: Methods & tools used in SINCO sprint (Group-Interview of Case | Urban Mobility | SINCO WORKSHOP 12/2015, 2016)

A comprehensive document for aggregation of all the relevant produced data served as an intermediate summary. It consisted of the service path in which service actions, touchpoints, user needs, user KPI, critical factors, operator requirements, and business opportunities were listed. Also contained were the design challenges with the ideation results and a first version of the ideal user journey.

In particular, this document provided an overview of multi-stakeholder relationships for the mobility service. At the same time, this visit served the objective to evaluate the SINCO as a lab and as a Service Design approach for business development purposes, and to further expand competencies inside the participating organization to improve their skills and knowledge of HCD approaches, as previous innovation management has been more strongly business-focused than customer-focused. The main interest was in the SINCO simulation and experience prototyping and how this approach, combined with customer journey mapping, could derive fast results in tangible form. Interest also centered on becoming familiar with video prototyping tools and methods for further prototyping.

CASE FEEDBACK

The group interview (Group-Interview of Case | Urban Mobility | SINCO WORKSHOP 12/2015, 2015) of the participants has shown the feedback towards using the SINCO to determine its value and address the challenges of a possible implementation of a SINCO in an automotive business setting.

VALUE OF SINCO: THE HUMAN-CENTERED WAY CREATES A HOLISTIC PICTURE

The participants valued the utilization of the SINCO as the application can be utilized in several areas and departments because it provides simulation. It enables increasing the quality of the solution before one goes outside for real-life testing. The SINCO's functionality of being able to immerse into and simulate customer experiences has been mentioned as among the main outstanding benefits by the participants. Roleplaying enables switching rapidly between different perspectives of customers, service providers, and other stakeholders with the objective of creating a holistic picture. This quickness has provided new perspectives for holistic conceptual development. The participants also stated that the SINCO has to be experienced to be understood as a form of iterative working, illustrates the meaning behind Human-Centered-Design, and that every kind of task has provided "a puzzle piece" that has led to a holistic picture of a potential solution.

VALUE OF SINCO: FLEXIBLE - LEARNING ENVIRONMENT

For the participants, the SINCO is perceived as a flexible environment that enables multiple learning dimensions for conceptual development. At the same time, working with tools in SINCO also enhances the ability and elevates the Service Design competence of the participants. The SINCO provides the immersion to build a relation to reality that is important to support conceptualization. The lab provides opportunities and possibilities to tinker with, test, and validate ideas. **It was seen as a combination of stage and workshop room; the flexibility of space and opportunities for the combination of tools in, for example, the integration of media was seen as beneficial.** The participants state that the method of working in the SINCO has to be enhanced; it has to be more encouraged to work in this agile approach to be able to more quickly push projects forward and produce qualitative content.

VALUE OF SINCO: FOCUS, IMPACT, SPEED

The participants stated that SINCO encourages a way of working in a short period of time and in a structured and focused manner with focus, impact, and speed. SINCO is perceived as its own sphere of working that enables a focus and not being distracted by the usual work. **As everything is accessible as "on-hand" in SINCO, this is a lot more time-efficient. It provides an iterative way to quickly discover what does not work without wasting money on it.** In this way, the SINCO enables the quick validation and early identification of failures; this can have an impact on resource savings in later project development. Further, it is more efficient and effective for project development to use the design sprint format to focus on one dedicated topic. The participants mentioned that concentration provides efficiency, a **"faster way to push projects further and produce qualitative content."** Further, the method of SINCO facilitation has demonstrated benefits in enabling collaboration inside the team that was not merely focused on technical support. In general, the group out focused their feedback on financial benefits, as the terms time, focus, efficiency, and cost-saving were reoccurring topics.

CHALLENGES FOR IMPLEMENTATION OF SINCO AND SERVICE DESIGN

As the business culture may be different in each organization, the participants mentioned that the **corporate "appointment" culture is based on separated one-hour blocks. This stands in contrast with the design sprint format based on full-day workshops with one focus. It is challenging to get all participants together even with a one-day workshop, as it conflicts with their usual schedules and agendas. The work culture of having parallel projects running and connected deadlines causes complexity in scheduling and dedicated time.** The parallel running of projects simultaneously means that it is difficult to focus on one topic, as projects have to be steered and coordinated at different building sites. Therefore, it is seen as mandatory for the participants to be disconnected from their everyday work to create focus. The **main issue in business corporate culture is seen as multiple projects running in parallel simultaneously of the week, which stands in contrast to the SINCO design sprint format.** A challenge is organizing the participants to participate in a design sprint as overarching timing issues occur. Organizational change is demanded that reduces the parallelism of projects and allocates more time to **"real"** work. The desired change would mean one project simultaneously, involving a substantial challenge to shift the organization to this work approach. The problem would be mitigated if one project was happening per week, but a substantial challenge lies in finding appointments in general. The meeting culture has to use short 30-minute meetings or four 1-hour meetings because the purposes are very different. One-hour meetings are seen as senseless. **The**

SINCO design sprint format has been perceived as an intensive way of working even within two days. It is suggested to have this format as a reoccurring sprint format in the development work. The participants requested the integration of more business-orientated thinking.

The aim of a SINCO sprint should be the basis for a business model, business plan, and financial modeling as it involves the definition of a product and service idea. It is requested to estimate all the costs, revenue streams, operating costs, and items included to build a professional business case. As the SINCO as space is seen as very flexible in its possibilities of combining furniture and tools, it is seen as a beneficial lab set-up. **The participants state that their usual offices do not support this advantage as existing corporate office spaces are static, dedicated to sitting in meetings and giving presentations.** Furthermore, as it is not common in the corporate culture to be perceived as playful at work, the playful-looking methods have to be demonstrated as beneficial to be accepted in the culture. In the reflection on the SINCO, the participants indicated that transformation has to happen inside the organization to enable forms of learning. They emphasize that it is mandatory to experience this kind of work to evaluate its benefit. It has been clearly and unanimously stated that working in the SINCO has been very different from their usual working approaches and formats in Volkswagen. A challenge lies in overcoming the organization's biases towards new ways of working; a new solution such as the SINCO has to provide efficiency and high-value effectiveness as the benefits of the SINCO have to be self-explanatory for management.

Furthermore, it takes time to convince the organization and the staff to be introduced to SINCO tools and methods carefully as they might not be experienced in these approaches. The responsibility lies in the hybrid role of Service Designer as developer and facilitator. Its status as a critical enabler for good team functioning has not been clear to the participants. Trust in the process has to be cultivated and the combination of methodologies, tools, and technology in the SINCO needs to be accompanied with guidance or it might confuse participants.

2.1.2.2 Case | Mobility Ecosystem Design | SINCO Mobile SPRINT 04/2016

Starting with telematics services in the automotive industry, the technology of sending, receiving, and storing information using telecommunication devices to control remote functions in vehicles has become a means in the automotive industry to create more value in the form of Product-Service-Systems or further Product-Service-Ecosystems for the customer. Throughout the influence of digitalization in the automotive industry, a vision has formed to establish a complete service ecosystem around the customer that creates new interfaces between product and customer. Digitalization provides new opportunities for interfaces with the customer. The accessibility has increased since the arrival of devices such as smartphones, but in comparison, a car as a mobility device is not yet fully connected. The central question,

therefore, arises: **"How can an automotive company provide value through connecting the car with other services in the most seamless, convenient, and valuable way for the end-user?"** The underlying vision is a user-centered approach that has to create meaningful value for the customer.

This SINCO sprint aimed to establish how Service Design can, as a methodological approach, support platform design with the organizational objective to conceptualize a mobility ecosystem. The goals and the objectives of the research have been to create an overview of business ecosystems as target and context for Service Design and to outline the basis for further research and development of services, processes, and methods that the organization can utilize for business purposes. A platform design has remained relatively unfamiliar to the organization. The challenges lie in the orchestration of the mobility platform and how to conceptualize the interconnectedness of all pieces in an overall ecosystem.

The **"mobility ecosystem design"** co-creation sprint with approximately 20 participants, taking place at the beginning of April 2016, utilized the mobile version of SINCO and has been conducted with the project aim of analyzing customer journeys in different use cases revolving around the topic of mobility platforms. Furthermore, the objective was to create an understanding of platforms and ecosystems, especially the meaning of "data." The schedule has been developed based on the management expectation to develop a comprehensive "big picture" and engage new stakeholders across the group, including experts in various relevant fields. Focusing on a mobility platform as a service raised the following questions:

- ➜ **The product-service-landscape is diverse and manifold; how can the complexity be reduced and how can potentially high-value use cases in mobility be provided for the customer?**
- ➜ **How did competitors establish their business ecosystems?**
- ➜ **What is the underlying architecture and what can we learn from it?**
- ➜ **What does an intermodal customer journey look like today and in the future?**
- ➜ **How are accelerators and enablers within the organization structure supporting the expansion of the ecosystem?**
- ➜ **How can a platform for multiservice business ecosystems be designed?**
- ➜ **How can a user experience that is seamless throughout the entire ecosystem be developed?**

Besides the sprint objective to produce a specific outcome for the mobility ecosystem, the sprint further served to introduce and present human-centered thinking in the form of the application of Service Design methods and tools in the framework of the mobile SINCO sprint. The research objectives have been to

investigate the possibilities of integrating Service Design as an effective and efficient sprint model in business processes.

The team accountable for planning the sprint content consisted of two involved parties, the Volkswagen Smart Mobility Team and the SINCO Team from the University of Lapland. As prior experiences with SINCO had already been introduced to the organization, this quickly led to a discussion regarding the best processes, applications, and methods to fulfill the management's expectations. The mobile SINCO sprint has been conducted at the offices at the Mobile Life Campus, Wolfsburg. The advantage consisted in the proximity to the Volkswagen workspace, thus enabling easy transport of props and equipment. The disadvantages have been the limited space available to set up the mobile Service Innovation Corner and enabling its purposeful use. In order to secure a diverse and competent group of participants, experts from various fields have been invited. Aiming to ensure that the colleges were able to attend the sprint and respecting conflicting calendars, the sprint schedule covering three days was divided into five blocks. Each session built upon previous work but at the same time was planned in a way that enabled participants to join only individual ones. The team participated as a whole group most of the time and thereby embodied the core team. The participants were sent an invite regarding the topic in order to familiarize them with the topic rather than spending time on its introduction during the sprint itself. The facilitator's roles throughout the sprint were determined upfront; furthermore, the role split for each task defined how to capture and document the results through audio and visual recording. Additionally, each session was closed with a feedback round with the participants. Aiming for a holistic picture and designing content for a mobility platform, the sprint content has been manifolded: informative presentations; simulation-based experience prototyping of an intermodal customer journey; stakeholder mapping in order to understand customer-provider interactions; and focus on the business side and how service providers digitalize their offerings on platforms and ecosystems, as can be seen in Figure 45.

06.04. Wednesday	Schedule	Content	Aim & methods	
08.30-08.50	Introduction	Welcome, Meet & Greet	Get to know each others, Warm up for hands-on working mood	
08.50-09.30	Presentation // SR	SINCO and service design	Introducing SINCO methods, tools & rules & case examples	
09.30-12.00	Customer journey analysis – Intermodality Facilitation SR	Experience prototyping of an intermodal customer journey "Rovaniemi-Wolfsburg" SINCO-Servicescape simulation // SR	- Understanding and contextualizing today's basis of intermodality - Making intangible information tangible along the journey - Identifying latent service opportunities & positioning existing future ideas - Outlining service ecosystem blueprint in customer point of view	WS1
12.00-13.00	Lunch			
13.00-13.40	Presentation // LS, JW	Business Ecosystems in the consumer electronics automobile sector in ecosystems // LS, JW	Sharing benchmarking insights about the recent trends and applicable approaches on ecosystem development on different domains - Outlining building blocks of a blanco ecosystem	
13:40-15.00	Ecosys. Design – Modelling / SR, LS	Transferring the Findings, from the core to a service network	Selecting applicable structures and ideas, Applying key findings into the intermodality SINCO-scenario, Enriching the ecosystem blueprint	
15.00-15.15	Coffee break			
15.15-16.45	Summing of the day // SR,LS	Summing up the insight of the day Me-We-Us: individual insights > pair/group summaries > common summary	Based on the days material, collecting the key: - design challenges ("how to"-questions) - aspects missing or still need for additional insight - Design drivers	WS2

07.04. Thursday	Schedule	Content	Aim & methods	
08.30-09.15	Presentation // FS	Business Logic & organizational structures behind business ecosystems	Sharing the fundamentals about the backstage of the smart mobility ecosystem	
09.15-09.45	Presentation // SR	Service as platform in ecosystem development	Everything as a platform approach, analogies from software development	
09.15-10.45	Backstage study: Supporting network for service ecosystems /SR	Prototyping the backend enablers and accelerators: VW as Platform for third party businesses, API for third party developers of Apps/technology solutions	-Mapping the value network of ecosystem stakeholders -Outlining VW smart mobility ecosystem as a B2B service platform / API through 3 use cases Methods: Ecosystem Actors map (table), role playing busines actors, complementing the ecosystem blueprint	
10.45-12.00	Determining organizational structure /SR,LS	Outlining / Complementing the organizational & b2b network view of the ecosystem blueprint	Summing up the backstage study: →listing further opportunities, customer needs, KPIs & design challenges through B2B view →Outlining organizational dependencies to customer experience	WS3
12.00-13.00	Lunch			
13.00-13.45	Ideation session /SR	Summarizing ideation themes / challenges, Generating solution ideas to top challenge	Voting of TOP 3 challenges, 6-3-5/OPERA	
13.45-15.00	Creating the customer experience future vision /SR	Building experience prototypes of the VW mobility platform 2025: Use cases: "Work-sleep-shop triangle", Home-holiday-home	SINCO – experience prototypes / mockups Creating Mobility menu / Service portfolio drafts	
15.00-15.15	Coffee break			
15.15-16.45	Summing of the day (LS,SR)	Determine the missing links and extend the ecosystem, Summing up the insights of the day	Filling the ecosystem blueprint / affinity diagram	WS4

09.04. Friday	Schedule	Content	Aim & methods	
08.30-11.00	Prototyping the future vision /SR	Evaluating the customer journey of the future vision Analyzing in/dependent value streams of the services towards the customer,	SINCO walkthrough with six thinking hats, personas & brand view. Resulting in: →refined service portfolio of the ecosystem →refined blueprint / big picture	
11.00-12.00	Determining feasibility	Analyze time horizons and define priorities	Prioritizing the service modules & dependencies in customer POV, technology roadmap and timeline	
12.00-13.00	Lunch			
13.00-14.00	Finalize – Future Ecosystem	Evaluate the achieved Big Picture of a smart mobility ecosystem	Discussion / specific heuristics, Coming up with executive summary / elevator speech of the smart mobility ecosystem 2025	
14.00-14.10	Coffee break			
14.10-15.15	Strategic vision	Create action plan to fulfill of smart mobility ecosystem 2025 & plan steps	Identifying missing/yet unclear points, defining next steps needed	
15.15-16.00	Feedback session	Feedback towards the workshop and methods	Group interview/discussion about the past three days workshop cycle and SINCO methods	WS5

Figure 45: Schedule of three days of mobile SINCO sprint, divided into five modules (Wenke, 2016, p. 66)

(Wenke, 2016) has documented the sprint in detail as part of his master's thesis **"Smart Mobility Ecosystem Vison—A mobility platform service design study,"** presenting the following data is part of his thesis. The author was project and research supervisor.

DAY ONE—SESSION ONE

The first session was set up to identify value potential in an intermodal mobility journey from a customer's point of view by concretizing the user experience of intermodal mobility. The day started with an introduction, presenting the context, previous work conducted, the methodological approach, and the previously described workshop aims. As shown in the following, the user journey experience from Rovaniemi, Finland, to Wolfsburg, Germany was presented in the form of simulation in SINCO based on photographs captured of each step in the journey. These moments were projected on walls utilizing the mobile SINCO equipment to portray **"A day in the life."** For the first task of the day, the participants were tasked to experience the SINCO walkthrough of the customer journeys in a role-play exercise; see Figure 46. This setup was complemented by several props used to enhance the role-play experience and enable the participants to better immerse themselves in specific situations, further supported by projected backgrounds and sounds. While each group conducted the walkthrough, the participants of the other groups were tasked to fill in templates with different points of view: customer needs, data, technology, development trends affecting the journey, and service business opportunities. After several walkthroughs in different scenarios, the notes were gathered and structured to provide the first basis of insights on what needs to be considered to provide a seamless customer journey. This session was concluded by grouping these notes according to a blueprint canvas on a whiteboard. This comprised all information gathered until this point and formed the first basis for the mobility platform development.

Figure 46: Introduction of customer walkthrough of mobility journey (Wenke, 2016, p. 68)

DAY ONE—SESSION TWO

The aim of session two consisted of transferring insights from other businesses and ecosystems into the mobility world and applying multiple perspectives to the topic. During the benchmark analysis presentation and even more so afterward, the participants became more and more engaged in discussing the current developments. This session started with the presentation of the platform benchmark analysis. For the participants, the aim was to evaluate and add insights as well as identify missing parts in the network diagrams; see Figure 47. Afterward, each participant explained the notes. The next task consisted of transferring the learnings of the previous benchmarking analysis to a Blanco ecosystem template.

The participants were asked on an ongoing basis to individually write down the "Top 3 Design Challenges" and form, from a customer's point of view, the ecosystem up to 2025 and beyond. Additionally, the participants were tasked to write down the top three aspects lacking insight/structure in the big picture of the ecosystem beyond 2025. The outcomes were discussed in pairs before being presented to the whole group. Based on these previous tasks, the participants had to derive a "minimal viable smart mobility ecosystem," which was supposed to condense their key findings regarding customer value into one offering.

Figure 47: Extending the platform maps with the insights from experts (Wenke, 2016, p. 70)

DAY TWO—SESSION THREE

The goal of this session was to outline services in a platform approach as well as collect B2B customer needs, business value creation, enabling third parties, mapping value streams, and stakeholder interactions. After introducing a business perspective to platform design, a presentation about business logic and organizational structures behind business ecosystems was given. The concept of SaaP (Service as a Platform) was also introduced to the participants. The presentation showed ways to extend the value for the user through the utilization of a partnership model. One main point emphasized was that services and apps are created by third parties, which supports the expansion of the ecosystem. A developer platform is, therefore, an accelerator for the ecosystem.

Utilizing impressions and learnings from these presentations, newly formed teams of three were tasked to fill in the **"Templates for service provider actor profiles"** and develop a third-party service provider scenario (e.g., cleaning company, bus company, etc.). In the SINCO-conducted role-play, each team member took a different role, either as a service provider or end customer. The role-play aimed to identify which service required which data and how a new partnership constellation could be beneficial to business. While roleplaying, the insights were written down and sorted on the actor map canvas table; see Figure 48.

Value exchange props like play-money complemented this information. Following the role-play, the participants were tasked to individually note the top three design challenges from a B2B customer's point of view as well as the top three critical insights in developing organizational structures and networks. This served as a basis for later review and complemented the blueprint, both end-customer and B2B, and the actor map.

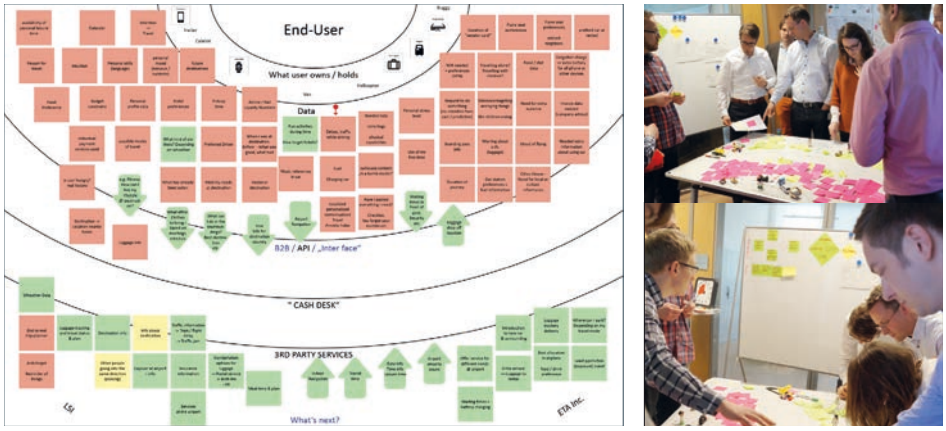


Figure 48: Taking roles for third party service (Wenke, 2016, p. 73)

DAY TWO—SESSION FOUR

The goal of this session was to generate service ideas for a future smart mobility ecosystem structure as well as the service portfolio. The introduction was followed by voting on the top three design challenges gathered in the previous session. The challenges with the most votes were tackled by developing solution ideas utilizing the 6-3-5 ideation method.

Based on these ideas (utilizing the "Template for building the scenario"), the participants, divided into two groups, developed user stories for the year 2025 with the use cases "work-sleep-shop" and "home-holiday-home," thus continuing to design an "All-in-one mobility solution," a bundling comprising a selection of services; see Figure 49.

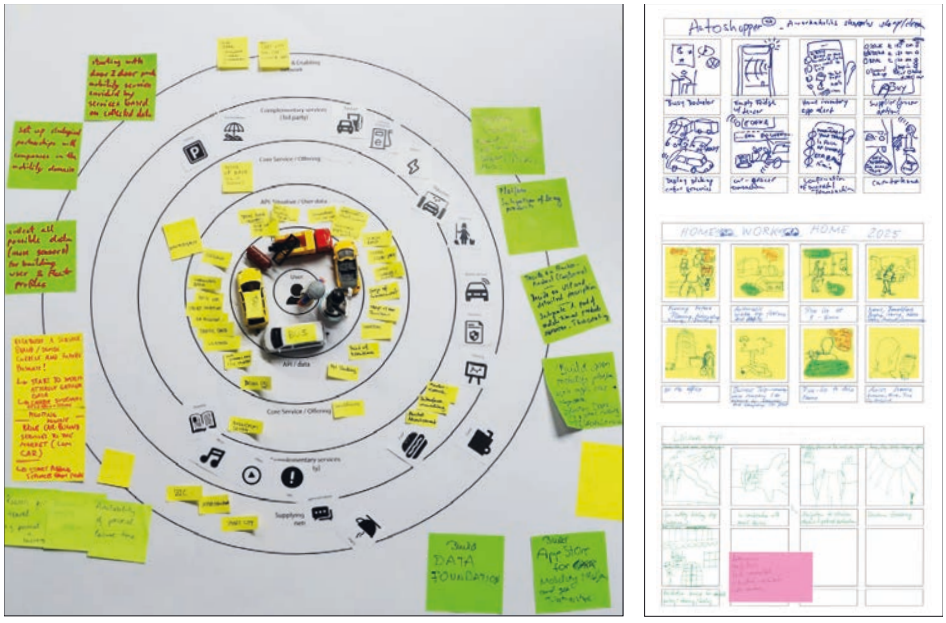


Figure 49: Mobility services as sub-services around the customer and storyboards of use cases (Wenke, 2016, p. 75)

The following session of experience prototyping in SINCO was conducted. In the following, the two mobility menus were combined in one chart, aiming to identify key touchpoints for the end customer. These were mapped on the user-data-service circle template. Another iteration of reflection and discussion followed. Insights still lacking in the "big picture" of the ecosystem for 2025+ were gathered.

DAY THREE—SESSION FIVE

The final block aimed to evaluate, refine, and process the pre-ideated services and concretize these throughout experience prototyping. After introducing the final day, three groups started to show their concepts for services in the SINCO simulation corner; see example in Figure 50. The other groups had to evaluate them based on different perspectives: facts, emotions, optimism, creativity, control, and negative critics. The service allowed the passenger carefree traveling without any duties to drive. The interaction with the surroundings (e.g., points of interest) was portrayed in screen projection; the passenger could interact with gestures. The service provider ensured optimal user satisfaction through continuous monitoring, use of historic user data, and individual preferences. Based on these, the provider created relevant offerings. The creation of advertisement posters helped to pinpoint the idea. The testing in the form of experience play provided in-depth insights. The template above shows a briefly visualized storyline based on the idea of a digital assistant functioning across multiple devices, with access to the customer's calendar, to organize daily trips.

Additionally, based on the users' routines and behavior, it would automatically set the alarm and present the customer with relevant information like weather forecasts and advice to prepare them for the pre-booked taxi. A broad network of services supports the user's experience of one mobility service. The user has easy access to whatever additional service offering he or she would like, resulting in a seamlessly integrated user experience.

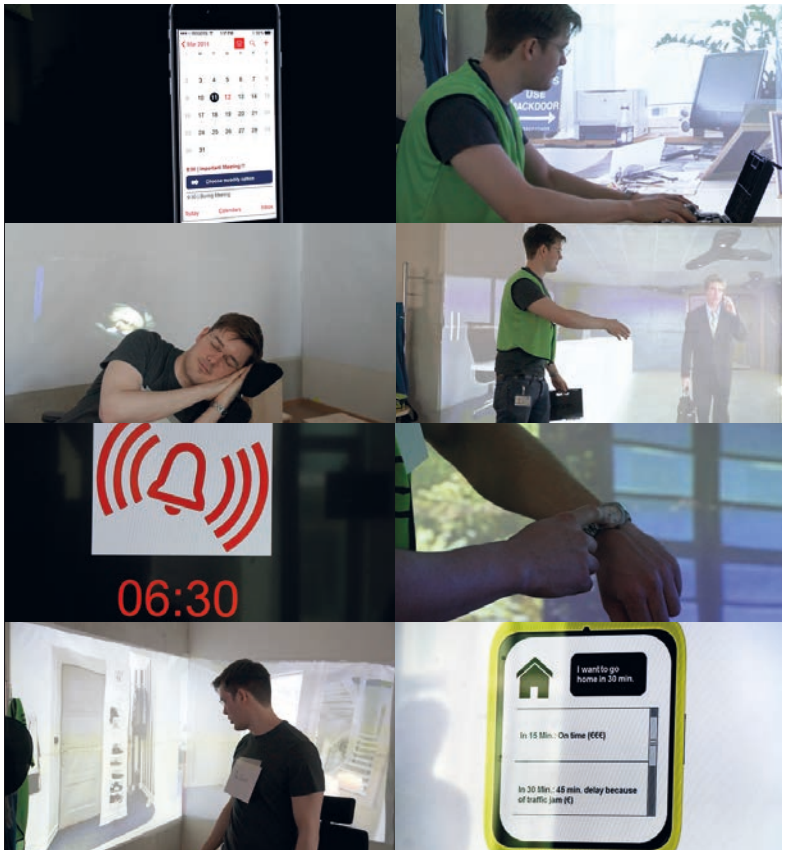


Figure 50: Example of experience prototyping of customer journeys in the simulation corner (Wenke, 2016, p. 77)

CASE FEEDBACK

This case utilized the mobile version of the SINCO lab approach with a focus on how to utilize experience prototyping and collaborative design as the core instrument and how to apply Service Design for platform design of mobility ecosystems. The group interview served the purpose of covering the theme of incorporating Service Design into a business through an agile co-prototyping sprint. Furthermore, it served as a feedback round addressing how Service Design is perceived and which challenges it faces as an approach compared to the pre-existing business practices and culture in the organization and how to implement SINCO at Volkswagen. This chapter is based on the (Group-Interview of Case | Mobility Ecosystem Design, 2016) and also (Wenke, 2016).

The understanding of Service Design is quite diverse depending on whom is asked in the Volkswagen organization. Service Design is mainly understood as

a toolset by many in conceptual development. It is understood as a user-centered approach but not as a human-centered approach. In comparison, widespread tools in the organization include the business model canvas, customer journeys, high-level versions of blueprints, and user research through observations of and interviews with customers. Also new is the combination of customer journey building with the deep dive into the scenario through immersion and thorough documentation of findings to make concepts visible and tangible. Furthermore, bridging different approaches that focus on user experience for strategy formulation has been perceived as new.

SINCO APPROACH

The experimentation with the methods and combination of different perspectives, especially applying a data perspective, has been seen as a valuable and completely different approach for the organization. This has meant a multi-centered perspective considering many stakeholders at once. The combination of very different levels of thinking at the same time was valued. The Service Design methods and SINCO proved to be working for the participants, enabling a playful way to establish access and empathize with the user and customer perspective. **The participants were amazed at how they quickly uncovered user insights and were able to rethink customer journeys; the process being perceived as fun and efficient. This helped in understanding and addressing user needs. The participants found it interesting to quickly build low-fidelity prototypes that could already represent a possibly valuable user experience. Concordantly, they admitted that the Service Design approach significantly accelerated the conception phase by convergent-divergent thinking.** For some participants, it was a very new approach of understanding the user in order to be able to imagine a service. Through further developing the service ideas in several iterative rounds, the concepts became increasingly precise and viable.

According to some team members' prior experiences with SINCO, **the efficiency is grounded in quick user immersion in combination with time dedicated explicitly to ideation.** Mixed opinions were expressed regarding the workshop speed, holistic approach, and targeting of different user and stakeholder experience levels. One side argued that the immersion into the user experience reality was highly effective as it provided a deep understanding of the situation and context. However, through working on different levels simultaneously, it has been pointed out that journeys are so unique for each subject that introducing new dimensions into the setting has implications for the user experience. Being provided enough time and concentrating step by step on one situation was more accessible for the participants. On the other side, some participants valued the balancing act of going deep into the details and alternating to the holistic overview as it enabled thinking about the abstract level of the ecosystem with its organizational aspects. This involved applying

different methods to create the fragments under the acceptance of not combining all parts within the SINCO sprint.

PLATFORM DESIGN

The challenge for Service Design lies in how to solve complexities in conceptualization as there is a transition between linear thinking and network thinking. On the detail level, the human-centered value of a service has to be defined, meaning this service targets a specific moment, situation, or scenario with the situational relevance that value transfer is enabled in the interacting parties. Here the aim with ecosystems is to create a holistic picture as it is a premise to combine different methods and multiple perspectives in one process by putting all actors on one table to enable value co-creation. The participants acknowledged that the ecosystem itself is demanding, ambitious, and challenging. In conclusion, setting the desired outcome according to a clearly defined horizon would have been beneficial to the process. The sprint and applied methods also functioned as a test of how to tackle the wicked problem of ecosystems and how to solve a big problem utilizing a new approach. For a further sprint dedicated to this topic, the participants expressed the wish to have a more defined, specific scope. The challenge is still to handle the information overload, as all parts have to be concretized and assembled back together but also then visualized in a meaningful network.

Even though experts of various projects within the group working towards platform design were present, the complementation of the **Blanco ecosystem** did not match the facilitator's expectations. While the provided platform structure was considered very valuable, easy access for the participants could not be achieved at this level of abstraction (e.g., platforms, business capabilities, and APIs). The mental models of the participants differed in regards to platform thinking. Two perspectives have been outlined: First, the user-frontend, which has to provide added value. Second, corporate-backend, which must follow the user's demands by providing value-fulfilling capabilities. During the further discussion, it has been suggested that the three sides of platform perspectives have to be determined to enable analysis: the customer perspective, capabilities/business perspective, and technology/data perspective. As the application of a multi-perspective approach led to confusion, one participant further suggested including the following steps in the ecosystem design process: analysis of the best-case customer journeys in multiple scenarios, creation of several ideal customer journeys, and then consolidating these findings on a platform as an all-in-one solution. The premise for this suggestion was the assumption that the essential customer journeys could cover more than 80% of the added value for the user.

An intensive discussion has started on the aggregation of data quality: **"How unique can data be?; "What data do you just provide?" "What data pools and**

origins can be accessed and how can they be combined?"; and "Does data have to be monetized and in which ways does it create business value?" The topic of data itself has been a natural access point for the participants. More and more insights were created when utilizing a stakeholder table, an analytical approach and a hands-on, playful experience. The gathering of overwhelming insights made clustering and sorting these necessary.

Further, stepping back enabled the perspective of a bigger picture of business opportunities. Based on the gathered feedback of the participants, the facilitators adjusted the methods toward a more hands-on approach. The challenge for the facilitators was to target complex and abstract topics but at the same time make these easily accessible, purposeful, and outcome-orientated.

Examining the customer experience in-depth while also adopting a holistic view has been a challenge. Thinking about abstract aspects, organization levels, and user experience at the same time has been challenging but still led to results. The participants had divided opinions. Some mentioned that the mixture of methods and working modes was beneficial to create a holistic picture, while others would have liked to have followed a more linear step-by-step approach to develop one topic iteratively. The Service Design sprint process was designed to be adjustable to the participants. Therefore, the discussion of **"hot topics"** could be given time. The process flexibility enabled reflection upon the given statements. This furthermore supported the team's learning process of a new way of thinking. In regards to the topic of ecosystems, the tasks seemed complex and the results were fragmented.

The utilized mix of business as well as service experience perspectives was needed as these need to go hand-in-hand in a viable, sustainable corporate service ecosystem. General questions needed to be addressed in a corporation are: **"What is the business model?" and "How is it integrated into the service and how will the user interact with it?"** Testing different business options is crucial for success and business value.

Even though the sprint did not work out exactly as planned, the participants perceived the outcome as very beneficial for new use cases, and valuable service concepts created for the customer. Despite some criticism, the pre-work has been acknowledged. This sprint was planned as an experiment on how to apply Service Design in the ecosystem context. Newly engaging with new topics like an ecosystem, strategic thinking, and business thinking was a complex endeavor. Tackling this has been challenging, and it was not confident that this approach proved to be valid.

Regarding the platform design approach, the participants have been able to create a shared understanding, a mutual picture of what an ecosystem means. This did not lead to a conclusion, but the creation of a holistic picture, in the sense that different levels of data, organizational architectures, strategies, and business models have been analyzed. For some, the outcome was more about personal reflection and future personal implications. They may not have seen the need for the "big picture," but

what might have to change internally. Different perspectives triggered new ideas. Reflecting upon the initial goals and the results of this sprint, the goals were not fully accomplished.

CHALLENGES FOR IMPLEMENTATION OF SINCO AND SERVICE DESIGN

Several challenges indicated the need for change in the application of Service Design in the SINCO approach at Volkswagen, as the participants and facilitators gave suggestions as to how to improve the SINCO approach for the business context.

TACKLING THE INFORMATION PROCESS HANDLING

While the participants highly appreciated the prepared visualization, clear structure, and format of the SINCO sprint, the introduction to sprint goals, description of context and status of work, individually reviewing and adding comments, and feedback regarding specific points in the document has presented a challenge. The benchmarks gave the participants the basis for discussion to engage with the topic much faster and discuss actual data. **It was seen as necessary by the participants that data is visualized to make it accessible and tangible for all participants. However, even if the different methods and mixture of working in different modes of media had a positive impact through enabling evaluation of all needed aspects and providing new ways of thinking in a more extensive scope, it also caused confusion.** Given the complexity of the platform design with the multiple layers of entities, it became an increasingly evident challenge to present this data understandably and to avoid getting lost in several documents. An aim was also to enable people unfamiliar with the document to quickly conceive the overall content and structure in order to gain feedback and confirm the data in feedback rounds. This also implies that the analog way of working is no longer sufficient because the vast number of data in different media formats has to be clustered and segmented and related to each other in a visual form. The participants commented that the complexity has to be broken down into simple tasks and journeys to form a structure as requested or needed to separate layer from layer to tackle them one by one.

Figure 51: Visualization on the walls (Group-Interview of Case | Mobility Ecosystem Design, 2016)

This also marks a significant challenge in knowledge work as more data forms and data formats are available, which need to be visualized to enable access for conceptualization or even just processing. See Figure 51 for a challenging situation for information processing in the mobile SINCO sprint.

DESIGN SPRINT FORMAT AS NEW TO THE BUSINESS CULTURE

The participants reflected that as the organization is trained to work in a waterfall project management system in a Taylorism-induced linear process implying organizational silos, **it needs to learn to adapt and trust the iterative working process and continuous development and improvement. The design sprint session was perceived as very intense by the participants, with the request for more time for discussion to exchange perspectives, as the total focus format is not common in the business culture.** With the SINCO sprint format comes a new working style of dedicated focus and the Pareto principle of 80/20, meaning not just targeting a topic for an hour or two hours a day but instead two to five days in a row. In comparison, the heritage of the existing business working culture is far away from this situation, as the usual workday is split into a multitude of tasks. **However, the SINCO sprint enabled and promoted the motivation for participants to learn a new process of iterative development.**

Further, the provided structure of clear task management and the time-boxed frame of the SINCO sprint was seen as beneficial to establish a flow for an efficient way of working. As design sprint formats place much more focus on creating outcomes for impact, they are also faster and more agile. Still, the participants acknowledged and were convinced that the ways to work have to

change and that the sprint format has to be repeated in a continuing format in the development process, as the sprint format advances in performance if there is full dedication without distraction, even though a key aspect of demand for efficiency, outcome, and deliverables lies in the business culture. The participants suggested a sprint format in which half a day would be for sprint and half a day for office work.

CHANGE IN BUSINESS LOGIC INDUCES CHANGE IN ORGANIZATION

As a corporation consists of many departments, it can become an endeavor to build up an integrated project team. The participants stated that for the success of a project, it is mandatory that for the multi-disciplinary team capable of running a project from start to finish, constant mutual understanding is essential. If the project has to be handed over to a different department, a powerful and early integration of the following partner is mandatory for the survival of the topic. If the transfer partner is not fully integrated, the chance of survival will be reduced and the successful transfer rate of the entire content will fall to a low percentage. As a service approach needs a multidisciplinary way of working in which service gets designed in a holistic, human-centered way, the SINCO sprints also revealed the benefits of interdisciplinary working, as different views were compared and flat hierarchy team dynamics were promoted among the participants. This created the appreciation that everybody could provide their unique perspective. This implies for the organization that experts, for example, in business, technology, design, marketing, legal, or purchases have to be connected to work better together. This induces a change in the organization, as new working processes and organizational team structures need to be established.

POTENTIAL FOR SERVICE DESIGN TO ALIGN MORE WITH BUSINESS

Demands were made that a more substantial business perspective is integrated into the SINCO sprint, especially prototyping and evaluation of different kinds of business models, payment modes, and the validation of viability through user research. A challenge was also mentioned as to how to visualize economic effects and value streams of service to prove the viability of the business, for example, estimating how value is transferred and who receives which part in a multi-stakeholder system of service, as this directly influences the value proposition for each stakeholder. Further issues raised by the participants were about the development of services, especially the assessment of business value created by adding services to products. Services involve estimating, for example, the user retention rate, net promoter index, and the lifetime value of a customer. Instead, prevailing core business KPIs have been based on the number of cars sold and what customers order additional features or equipment. Service Design has to incorporate this demand to enable value creation by supporting a stronger business perspective.

2.1.2.3 Case | Intrapreneurship Program | SINCO SPRINT 12/2016

The SINCO design sprint focuses on the internal corporate intrapreneurship program from the worker's council that supports the innovation project and practices inside the organization. "The Innovation Fund II promotes business models that go beyond the core business in order to expand the services and product portfolio" (Mitbestimmen!, 2019, pp. 4–5). The employees apply to the fund for monetary support to develop an idea that does not fit straight into the core business of his/her department but can be developed into a serious product, service, or development of business processes. The ideas are selected based on set criteria such as the impact on employees or benefits for the business. The selected applicants and their ideas proceed into development modules that help the applicant to develop the idea towards a prototype and a functional product or service with an implementation and business plan.

The recognized challenges:

- ➜ most departments are aware of the intrapreneurship program, but the applicants might not have a clear idea of how highly developed the ideas should be and therefore, many of them decide not to send an application as they think that they do not have enough information to support the idea
- ➜ sending the application depends to a large extent on the support from the team or department leader. Therefore, a human-centered approach has to be implemented to consider the perspective of multiple stakeholders across the whole department and the department leader as a customer
- ➜ the application process should be more transparent and applying should be easier and more customer-centric
- ➜ the brand of the intrapreneurship program is also obsolete and would need to be updated in order to be more recognizable

The four-day design sprint in the SINCO in Rovaniemi, Finland, at the University of Lapland targeted several objectives: improvement of the existing intrapreneurship program process to identify future areas of development as the incubation and acceleration internal fund had to be conceptualized; forming a holistic blueprint for the redevelopment and vision of the intrapreneurship program; the workshop should look at the topic from the applicants' point of view, but also include analytical thinking on how to create a functional service system for the intrapreneurship program.

Goals for the development:

- ➜ Increase the number of applications
- ➜ Higher quality of applications
- ➜ Higher attractiveness of the fund
- ➜ Professionalize the process

➜ Development/ideation of valuable extensions, such as incubator spaces
➜ Efficient use of the given funds
➜ Implementation phases that apply to the organization
➜ High transfer rate of funded projects into application and market
➜ The desired SINCO sprint tangible outcomes or work packages have been:
  - A practical model/blueprint on how to enhance the process
  - A visionary model on how the intrapreneurship program could look like in the future
  - Using the topic as content for an educational sprint to SINCO Service Design method. Also, Service Design education in the form of Masterclasses and learning by doing during the Design Sprint for the participating team
  - Getting to know the SINCO framework for evaluation in terms of whether Volkswagen should utilize the framework and lab approach for their own business purposes

To ensure a deep dive into the topic and enable data-based decision-making, the SINCO sprint required preparation. The preliminary research consisted of gathering data on the existing process and general background information about the intrapreneurship program and benchmarks about other corporate innovation funds in the industry. This followed the complete mapping of the current intrapreneurship program process as a basis for (re-)development and user research on previous intrapreneurship program applicants with the purpose to discover: **"How did they experience the current process, what were the pain points, and what worked well?"**

DAY ONE

The first day started with setting the topic and aims for the SINCO sprint and learning about SINCO and the use and application of Service Design in the University of Lapland while also establishing an overview of the current developments in the Service Design field globally. For the deep dive into the topic, the current IF2 process was presented with a Q&A and the benchmark provided an overview of the current developments in the industry; see Figure 52.

Figure 52: Introduction into the SINCO sprint for the intrapreneurship program and also deep-dive into the user research (Group-Interview of Case | intrapreneurship program | sinco sprint 12/2016, 2016)

The content analysis and clustering of the insights from applicant questionnaires formed problem statements to derive customer needs. This followed an analysis of the current process and placing the gathered pain points of the intrapreneurship program applicants. This has provided the basis for forming how-to-questions to improve the intrapreneurship program process in each segment, as shown in Figure 53. Further, the applicant's questionnaires provided insights into the kind of mental modal the applicants had, which could be aggregated in applicant profiles.

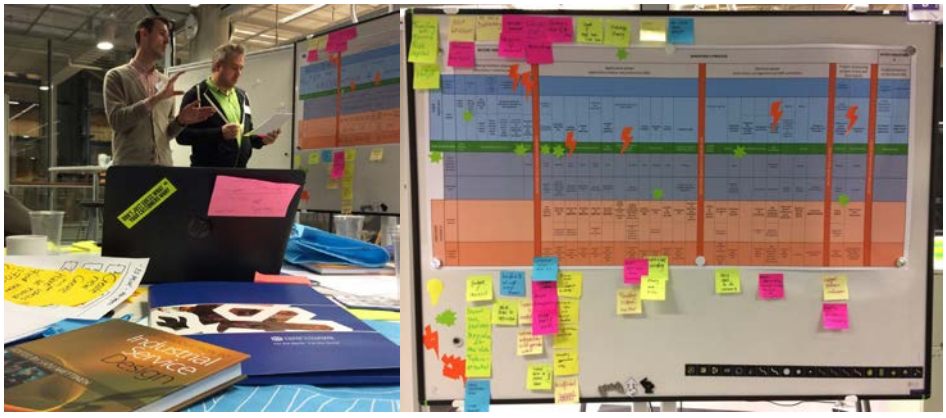


Figure 53: Marking pain points and opportunties on the current intrapreneurship program process (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016, 2016)

DAY TWO

The following day consisted out of learning how to prepare and use SINCO through experimental prototyping for forming customer journeys, which should solve the analyzed pain points. The storyboards conceptualized the journey of the intrapreneurship program applicants based on the created user profiles; see Figure 54. This immersion in the applicants' view provided the achievement of high-quantity new ideas by the 635 method for the intrapreneurship program, which then furthermore would be tested in the SINCO corners.

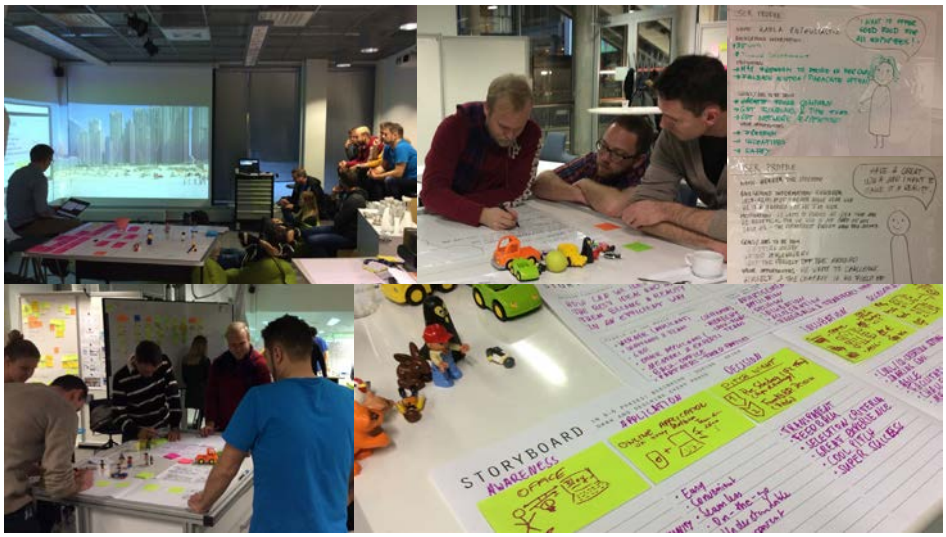


Figure 54: Preparation of experience prototyping in SINCO (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016, 2016)

DAY THREE

The third day involved the intrapreneurship program process's service prototyping to refine the intrapreneurship program concepts by prototyping the concepts in the SINCO corners; see Figure 55. It also involved the team learning how to utilize experimental service prototyping methods for concept testing and communicate Service Design outcomes. The blueprinting exercise built two versions of intrapreneurship program service processes, a completely new ideal visionary approach out of the applicants' viewpoints, and a minimal viable version with just incremental improvements for fast implementation in the organization.

Figure 55: Experience prototyoing in SINCO simulation corners for conceptual testing (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016, 2016)

DAY FOUR

The last day of the SINCO sprint was dedicated to finalizing the two intrapreneurship program process models as blueprints and concepts. It also involved an overview of the whole facilitation process needed for conducting SINCO sprints. To communicate the results, the participants created short videos to communicate the main value propositions of their ideas.

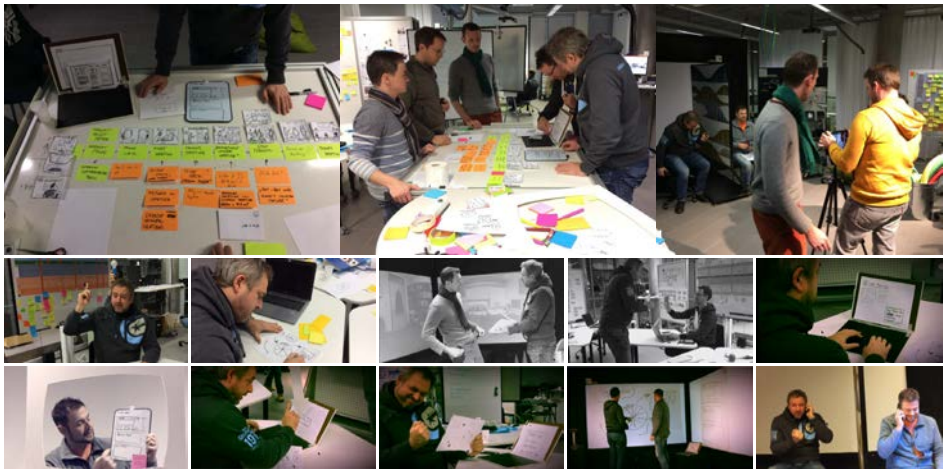


Figure 56: Development of concept videos for the communication of value proposition (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016, 2016)

CASE FEEDBACK

The SINCO sprint in the case of the intrapreneurship program served several objectives: 1) project-related improvement of the existing intrapreneurship program process of the intrapreneurship program, and beyond that, identifying future areas of development as the incubation and acceleration intrapreneurship program has had to be conceptualized; 2) Service Design education in the form of Masterclasses and learning by doing for the participating team during the Design sprint; and 3) Getting to know the SINCO framework for evaluation in terms of whether Volkswagen should utilize the framework and lab approach. Further, the focus had to lay in creating a common understanding, as the right definitions are a basis for communication, which is crucial to establish. Appreciation of learning Service Design was based on an informative session and working, enabling the participants to experience the why and how. The utilization is seen as important as it conceptualizes ideas in a participatory way towards the communication of concrete results while leaving out uneasy discussions about organizational politics. The participants mentioned that they behave differently and not in a hierarchy anymore, simply talking as people and about a good idea. This (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM, 2016) was conducted during and after the SINCO Sprint day allowed sharing feedback towards different concepts and contexts concerning SINCO and Service Design in applications for business purposes. Several themes revealed throughout the interview are summarized below. The below learnings of the facilitators are based on the participants' requested improvements as orientation demands were stated.

SERVICE DESIGN FACILITATION

A Service Designer as facilitator is seen as a new role in SINCO Design Sprint. Even if the participants have been accustomed to roles as coaches and moderators from previously experienced workshops, the Service Designer, being in a role of a facilitator and developer simultaneously, is seen as something new. It is seen as new expertise, as informal names given are "conductor of the orchestra," "director of theatre" or even "drill sergeant." As the participants have acknowledged the new role of facilitator as very important, they have seen facilitation as a critical enabler to keep the team on track and on time and also enabling the use of the whole SINCO environment professionally. However, it is also hard for the participants to define the skill set of a Service Design facilitator, as many nuances in different directions are combined in a transdisciplinary total. This also implies that the participants have learned more about Service Design, being a facilitator, and how facilitating works. The use of very little time and keeping on the schedule provided a perfect basis to refine the outcome created in the SINCO sprint. The facilitators' addition

of customer trigger questions is seen as important as it is a quality trigger of taking a customer perspective if the solutions are perceived as useful and clear. From a facilitation perspective, splitting the groups for efficiency has proven to be beneficial for the Volkswagen team; an introduced competitive set-up has accelerated the outcome. Splitting up talkative persons also prevented excessive discussions and meant constellations of new people formed new perspectives of combined concepts, which benefited the team-building aspect.

SERVICE DESIGN PROCESS & METHODS

The participants valued the existing preparation as extremely valuable as it was discovered that only a few people in the department were aware of how the intrapreneurship program process works, and how many challenges there have been in the past with the process. **Acknowledging that the provided frame to build a holistic picture of stakeholder relations of provider, user, and interaction has created an awareness of all the relevant information or all the relevant concepts that need to be considered.** The participants describe the way of working as conceptualizing an idea down to a USP, with being placed into the situation and context focusing on being part of the service and then being able to determine the essential added value. They experienced the iterative way of working as very important and accepted the possibility of not achieving 100 percent, being very satisfied with the 80/20 approach, as they valued the tangibility of outcomes.

The utilization of the Service Design approach, including methods, was seen as the best approach even if previous knowledge in Service Design has been limited. Learning by doing and experiencing a feeling of achievement was appreciated by the participants. Throughout the SINCO Sprint, multiple methods and tools were applied in the SINCO lab. Some of them stood out to the participants as new valuable ways to work. The SINCO as lab and framework of the Service Design approach is seen as beneficial to the development work process by participants, especially following a double diamond process of diverging and converging. **The participants appreciated learning new methods that they could directly apply in their project work. The mentioned benefits were described as eye-opening, as the process was mapped and visualized, which created a common understanding among the participants. The interdisciplinary way of bringing multiple perspectives to a holistic picture was emphasized as valuable as engineers, designers, and executives worked together, which served as a team-building exercise.** The focus on pain points in a human-centered way was evaluated as extremely valuable, as was having an overview of all the created information displayed on walls with post-its and being able to iterate and ideate and develop on the spot. This felt to the participants to be the right way to work. How-questions were formulated about addressing these pain points, with everyone working on the pain points within the

process. Using the Service Design approach with its tools and methods is the best way to convince people to immerse themselves into these methods. Further, changing methods in an agile manner from the action-based towards more theoretical-based or analytical-based is seen as an advantage. The aspect of user feedback and validation by having a probe for the interviews has been appreciated as an excellent approach because it provides validated data to build on. This also established an understanding for participants of HCD to overcome their personal biases towards the project.

Using the SINCO simulation, the role-playing, body-storming, and experience prototyping generated new thoughts and produced per scenario a lot of data quickly. In addition, prototyping and quick mock-up building created a tangibility for the participants, triggering their imagination and feeling of how things could be. Role-play adds further depth in the process as it unravels real-life actions and causal chains that might be missed. As theatrical methods are action-based methods, the experience prototyping and the whole body-storming increased their way of working very concretely on a specific issue to improve. Concrete scenarios provided how customers could move in, where they could do things, and what they could work on, and this process enabled a flow. This could be directly applied and gave the basis for the comprehensive and continuous transforming of customer journeys. The creation of journeys towards service blueprints was seen as highly efficient as it has been directly perceived as an outcome.

Further, the comprehensive toolbox can serve to accelerate a lot of business topics. For example, appreciation by the participants has been seen in the approach of framing results in the form of a video. **The making of videos of the rough concepts enabled the participants to communicate the value proposition of their conceptualized solutions and frame the points that the participants wanted to achieve. The participants felt it encouraging to pinpoint the whole idea down to a unique selling proposition.** The participants emphasized that it enables involving everybody's idea creation process as it was easy to present results and to show and share information. It also introduces iterative working, with the focus of 80 or 90 percent of the results. Further, the benefits of documentation are stated and enable the follow-up on those results easily and preserve all the data and all the material so that later the concept can be built on.

REFLECTION ON EXISTING BUSINESS CULTURE

The following premises have to be considered concerning cultural reflections and awareness implications when having experienced the SINCO sprint. **As the participants come from a corporate surrounding with a limited amount of knowledge in Service Design, this human-centered approach and process working inside the SINCO lab seemed entirely new to the participants.** As the participants did not know what to expect, the participants were also surprised

about how effectively the process worked. Furthermore, they stated that a concrete solution for the customer was achieved in a short time and was a four-times-better outcome than the usual brainstorming technique. **The participants often stated the keywords: format, efficiency, time pressure, process preparation, and positive feedback concerning the time pressure: "the faster you go, or the higher the time pressure, actually the more and the more efficient you would get done."** The participants showed they felt pressure for goal achievement as well as that everything should happen all at once to utilize the SINCO sprint to maximum effect. **The participants see it as a cultural transformation from efficiency culture to innovation culture, which is not seen as the opposite but more complementary as they have a different purpose, time scope, roles, and strategy for working.** Considering the overall process of development for services and hardware at Volkswagen, the questions arise from the participants: **"How a SINCO Sprint format be integrated into the overall process and transfer the outcomes into the next process phase?"**

In reflecting the facilitator's point of view, the participants questioned: **"How can Service Design help develop strategies and how can strategic questions be answered while using Service Design?"** The facilitators answered that Service Design could either help put the strategy into action or develop the strategy for action. It builds the strategy for the company through concrete things and thinking about the future with vague ideas first, and then combine both bottom-up and top-down, in parallel and interactively. The question of how it works in a big corporation is also a question for the organizational hierarchy and management structure.

DEMAND FOR ADJUSTMENT FOR IMPLEMENTATION

As this SINCO sprint was also a testing scenario of how Service Design in SINCO is perceived for a multinational corporation, their feedback for improvements has been manifold concerning business. **As Service Design is new to the corporate culture, the participants see that trust in Service Design and its way of working and methodology are missing and established. The SINCO sprint process has to be improved and appear more professional to be taken seriously in the business culture.** Service Design, in its recognition, has to appear very professional in its way of thinking and working. It is its own discipline and has to be promoted as well as introduce new roles and responsibilities such as Service Design facilitators. **The participants stated this is a transformational challenge that needs top management commitment and support to enable the integration in the organization and processes. The higher top management emphasizes its strategic importance as the organizational culture as its legacy in Taylorism tends to reject new ways of working.** For example, a rough service prototype while quickly prototyping is new and would take a much longer time because there are

no established Service Design processes on a professional level. As the participants clearly stated that there is no professional Service Design status at the organization, it is seen as necessary that employees are trained to become facilitators. Furthermore, for expectation management, this has to introduce a way of working more framed by smaller packages to tackle and keep more significant challenges discovered as the basis for following SINCO sprints. This has to be enabled by Service Design training.

The SINCO equipment is valued as being as easily accessible as possible. It was stated that all the tools and things at hand have to be very easily accessible, from technology up to small tools, to help jump into the situation. This also includes the request of having a library with SINCO backgrounds available for easy use, to have standard pictures for common situations already in the library, and to make it very easy to create the right atmosphere in situations, even background noises. The aim is for SINCO at Volkswagen to have 80 percent of the everyday standard situations already in libraries and to make them very easy to access. As for establishing SINCO in the organization, the SINCO technology is missing and space is limited. The participants requested a seamless link and connectivity between all technology, meaning the participants have iPads, computers, beamers, cameras, and related devices connected and connected together seamlessly.

With the business background in new business and innovation, the participants' suggestions were about how to interlink Service Design with Business as business model prototyping tools and to visualize revenue streams. The participants' requested that Service Design should interlink a bottom-up ideational perspective and a top-down strategic perspective at the same time. As an idea for strategy purposes, they also focused on design strategy functions that have the potential to develop strategies through prototyping the future scenarios for mission and vision building. This also emphasized the corporate demand towards Service Design, which has to have strategic conceptual modeling methods for designing platforms for strategic conceptual work. **The participants also mentioned their own business plan framework, including competitor analysis, to combine both approaches to fulfill demands, not just the human-centered approach, but more the extension towards business and technology demands. The participants repeatedly mentioned the terms of efficiency and effectiveness, seeing the potential of the reuse of pre-existing methods and tools in an overall accessible library with a framework consisting of a process for orientation.**

Preparation, Framing, and Structure: As the facilitators state, generally a pre-requisite for SINCO sprints is to consider: **"What is the knowledge level of Service Design of participants, meaning in which way are they familiar with the underlying human-centered approach, way of an iterative working, agile process of sprint framework, and can they apply tools and follow methodology?" Further, it is crucial to understand participants' expectations,**

project knowledge, definitions, objectives, agendas, mission, and vision before the sprint because otherwise, it would harm the sprint process itself and further outcomes. In this way, it is necessary to plan a dedicated slot so that everybody is on the same page and provide the participants tasks before the sprint to achieve this common understanding. This also requires the discipline of the participants so that they are prepared when the sprint starts; the better the preparation for starting point, the faster the deep-dive into the project work. This implies focusing on the previously agreed on objectives in the sprint, staying focused and not making overly abrupt changes in the sprint process as it would harm the sprint's flow and diminish the outcome. This situation can be caused by distrust in the new approach of Service Design, no common understanding in the sprint team, misaligned expectation management, and interference by hippos (opinions of the most important person in the room). Further, the preparation phase should determine the suitable methodology for the desired outcome and then enable the trust of the participants in the methodology and let them work using it, because it will eventually get to the point where they reach their objectives. In the **preparation phase, the participant's team constellations and roles should be considered; if not, diverse expectations and interests may occur. This also includes the role of facilitators, which are their responsibilities and function in the SINCO sprint. Further, the challenge in Service Design and SINCO sprints occurs in how to balance learning about Service Design and working with it.** For instance, as an organizing facilitator, the timetable can be too tight due to the fact that the structure focuses on education in methods and not much to the actual working on the case.

As this SINCO Design Sprint showed expectation and objective alignment issues in the participants and caused a disagreement among the team at the start of the SINCO sprint, this feedback for improvements tackles several issues concerning the preparation, framing, and process for SINCO Design Sprints. The participants wished for more structure and orientation in the form of constantly clearly visually shown state of sprint process, agenda/schedule, and objectives with delivery work packages and an agenda for the coming sprint days with a complete roll-out plan framing the SINCO sprints. Even if this information has been presented in the SINCO sprint, this demand also implies that no trust in **Service Design has been established at this point. The participants often questioned specific methods and the outcome; the responsibility to control the situation was handed over to the facilitators. This also indicates the sprint format is not a re-occurring format for project acceleration in long-term project development. Further, more intermediate summaries were requested to provide the participants the chance to re-orientate for goal alignment. They wanted a structure and aim for the day, indicating what they have to achieve and letting them measure themselves and have an orientation to drive forward. The participants demanded that the output of the previous method be the input of the following one to drive forward**

through the concepts and build on the previous results immediately, showing a mindset of process-driven characteristics, which still have to acknowledge a new, iterative, and agile way of working as the outcome may not be defined, as the work towards the desired outcome has not happened. As a sprint is a time-boxed event, the participants felt they were under time pressure and requested more time to discuss and intermediate wrap-ups and for orientation, as their expectation for a professional SINCO in a corporate context was orientated to reach the goals and be able to measure success.

2.1.2.4 Spatial prototype of SINCO space

Prior to this SINCO sprint, the management decision was already determined that the SINCO approach should be adopted at the organization. The participants recommended adopting a surrounding like the SINCO to Volkswagen as it is needed for all possibilities in service development. The decision has been based on the aim to enable the Volkswagen team: a seamless switch between individual and collaborative work to increase efficiency, performance times, and utilization in order to create a workflow for conceptual development. The methods and approaches that have been researched together with the University of Lapland provided the basis as a leading process to develop services better in the future.

As part of the SINCO sprint for the intrapreneurship program, one side session included how to conceptualize the SINCO space for Volkswagen, to review and refine setup, process, and needs for use and provide feedback for bringing in prospective applications. The following table in Figure 57 shows the feedback of the team in consideration of the SINCO space.

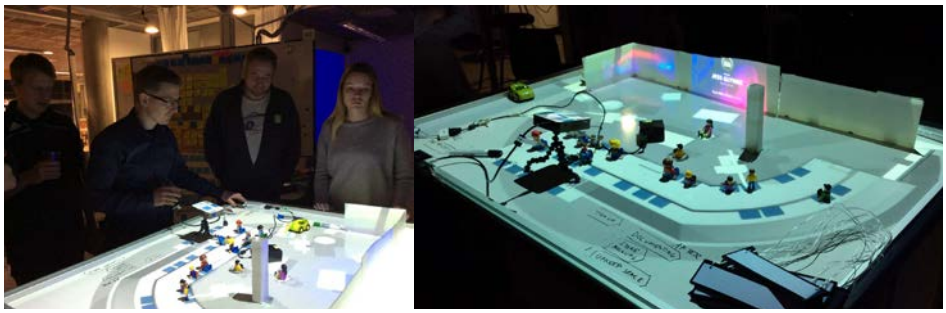


Figure 57: Prototyping of SINCO layout for Volkswagen - as a model (Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016, 2016)

Segments	Before	During	After
ACTIONS	SINCO sprint planning prior 2-3 weeks ahead Planning meeting, defining goals, methods, and tools Booking the SINCO space Invitation of sprint - inviting participants - description of how to get to SINCO - agenda: time, goal, methods - introduction (letting participants know about the sprint & ways of working Preparation of SINCO sprint process & methods Evaluating the level of understanding of the participants about Service Design Preparation of the space: Tools and Tech in the setup	Presentation about the topic Explaining the functions that are used Testing the idea / concept in the corner Setting the remote connection (Skype) Running the sprint	Documentation of the sprint
REQUIREMENTS FOR USE	A responsible person for booking calendar (rights for overriding bookings if needed) Intranet page for SINCO Set of rules & tools to use the space Show status of the space	Fast & easy remote connection Participation to the prototyping remotely Web access to DEON for remote participants Videos about SINCO –> How does it work? Movable furniture	Storage for tangible prototypes & results Fast way of documentation of conclusions of the sprint as video & presentation Storage of outcomes through DEON
METHODS & TOOLS	Definition of the sprint parameters (participants, time, methods) Toolbox for methods & materials (sounds, pics) INFO about Service Design available --> presentation Catalogue of methods & tools (library) Planning templates for using methods Compact field research kit	Modules as sample forms for different sort of sprint Content library: sounds, pictures Movable remote presence system Agile tools easily accessible Ready templates for the tools (digital and analog)	

Figure 58: Table of all requests by participants while spatial prototyping of SINCO for Volkswagen

The design challenges were defined as which kind of process it would follow, which kind of frameworks to include, how the architecture would be set, which technologies to consider, how the operational model should be included, and the more practical consideration of how space should be accessible and whether

a calendar for booking would be feasible. Prototyping a SINCO layout as a scale model on a table served in investigating the team's needs as to how to further utilize the space, as Figure 58 shows.

2.2. Derivation of findings: Analysis of needs and challenges

The cases **2.1.2.1 Case | Urban Mobility | SINCO SPRINT 12/2015, 2.1.2.2 Case | Mobility Ecosystem Design | SINCO Mobile SPRINT 04/2016, 2.1.2.3 Case | Intrapreneurship Program | SINCO SPRINT 12/2016** have targeted describing the current organization practices in reflection of analyzing the need for Service Design of applied context but also the demand to allow Service Design to unfold its potential for business purposes. Even if the SINCO has proven a valuable solution for an organization to become more human-centered and innovative in development, several significant challenges arise out of diverse perspectives as to how to implement Service Design in the Volkswagen organization, as stated in Chapter **2.1.2: Utilization of SINCO**. This chapter aims to frame the findings and challenges to confront the implementation of the SINCO approach in the Volkswagen organization and furthermore to set the how-to questions that are the basis for the development of the SINCO transforming into the 10X-Service Design lab.

2.2.1 Key premises for the application of Service Design

SINCO is seen as valuable for the whole organization as the participants recommend SINCO for Volkswagen, not only for mobility services but also for applications in employee experience or production environments. The SINCO laboratory, with its physical, technological facilities and working principles, has proven to be an approachable method for the Volkswagen business teams to realize Service Design in practice. The possibilities of the SINCO approach are seen as enabling changes quickly and producing showable results. The participants were convinced that Service Design benefits the organization as it is based on reality and customer feedback and considers the situation and context. **Even the participants directly stated that this iterative process is a new way of working and SINCO should be institutionalized to be more creative and innovative at Volkswagen. As SINCO as space is seen as very flexible in its learning environment, its possibilities of combination of furniture and tools are seen as accurate, which is beneficial.** SINCO as simulation corner is seen as outstanding as it supports immersion and imagination of the customer situation and enables specific needs and demands and understanding them. It has been stated that this has been very powerful in comparison to regular Design Thinking workshops conducted in the company. **Furthermore, as it is an eye-opening experience for the participants to step into the situation, to**

see the service from the stakeholder's eyes or the customer, it is seen as something precious compared to just sitting at the desk and conceptualizing a Service Design blueprint. In this way, SINCO has provided the multi-sensual reference of an authentic environment, the service takes place and the participants can sense the service experience due to of prototyping. This creates input by ideas and suggestions to improve the service that otherwise might have been left uncovered. **The Service Design methods and the SINCO proved to be valuable for the participants as it quickly enabled a playful way to establish access and empathize with the user, customer, and stakeholder perspective. In this way, it allowed understanding and experiencing what people say and do, which is essential to create empathy between those who use and offer products, services, and information systems. The attribution of SINCO is also seen in the exchange and involvement of stakeholders as participants can be engaged in the actual situation as using the SINCO corner enhances the understanding of contexts and relations.** SINCO can be applied for business development, especially starting new projects to create a shared and joined approach between all the stakeholders and departments as tech, business, and design have to work together. What has also been noticed is the potential benefit when a company representative would participate in the development and prototyping process, as his/her resistance towards change would be transformed into participative co-creation. For implementing a SINCO at Volkswagen, this would also mean designing a benefitting participant stakeholder model so that the needed expertise and perspectives in the SINCO sprint are supported and enable a holistic approach. **Bringing all stakeholders into the design process to consider their abilities to participate in the most conducive manner creates a surrounding in which they can learn from each other. The co-creation sprint surrounding enables all interdisciplinary stakeholders to be involved in the design process; this created appreciation that everybody could provide their unique perspective.**

The SINCO facilitation especially has shown its benefits in it enabling collaboration inside the team that was not just focused on technical support. One of the main findings of this case study is that Service Design is seen as a new role and competency. The combination of tools and media in SINCO needs guidance or it will confuse participants, but the hybrid role of Service Designer as developer and facilitator is also not apparent to the participants, as the facilitator enables the team, and as a developer, she/he designs.

NEW WAYS OF PARTICIPATION AND CO-CREATION IN FORMING AGILE TEAM CONSTELLATIONS IMPLYING NEW FORMS OF THINKING & WORKING

➜ How can a Service Designer be introduced as a new role of the facilitator and developer and have competency in the organization?

- ➜ How can employees be trained to become Service Design facilitators?
- ➜ How can learning be balanced with working in Service Design?
- ➜ How can a participant and stakeholder model be designed to support the needed expertise and perspectives and enable a holistic approach in the SINCO sprint?
- ➜ How can early integration of project partners be enabled, which is requested as mandatory?
- ➜ How can a methodology-driven toolbox implement a facilitated format of design sprints for focus, impact, and speed?
- ➜ How can a SINCO Sprint format be integrated as a reoccurring format in running business processes?
- ➜ How can a SINCO sprint format and Service Design be introduced and implemented in a new approach in a sustainable way into the Volkswagen business culture to transform pre-existing business processes and behaviors simultaneously?
- ➜ How can the SINCO sprint format be adjusted to function well in the dedicated business context?
- ➜ How can more structure and orientation of the sprint process, agenda/ schedule, objectives, and all related data at once be provided?

The team has clearly emphasized that working in SINCO has been very different from their usual working approaches and formats. In the reflection on SINCO the participants defined the change that has to happen inside the organization to enable the learnings. The participants state that it is mandatory to experience this kind of work to evaluate its benefit. As it takes time to convince the business culture about the benefits of the utilization of Service Design, the organization and staff have to be introduced to SINCO tools and methods carefully if they are not experienced with them. The sprint preparation phase should include a clarified mission, defined by the objectives and tasks while guided by methods and tools. There is also a need for more suitable digital software for prototyping to be formalized, which could be used to control the digital aspects of the simulation, comprehend the service process, and gather the results of ideation simultaneously.

MANIFESTATION OF SERVICE DESIGN AS LAB IN FORM OF THE OF LEARNING ENVIRONMENT TO ENABLE HUMAN-CENTERED DEVELOPMENT FOR ORGANIZATION

- ➜ How to manifest Service Design as a modular lab which enables developing new and optimize existing business processes?
- ➜ How can education be provided about Service & Business Design?

- ➜ How can the way of working be transformed, as it is no longer sufficient because the considerable amount of data in different media formats must be clustered and segmented and put into relation in a visual form? How can efficiency and effectiveness be increased through digital design knowledge work?
- ➜ How can new digital tools be utilized for collaboration to enable faster conceptual information processing?
- ➜ How can a library with SINCO methods and backgrounds be made available for easy use?
- ➜ How can a seamless link and connectivity be enabled between all technologies in the SINCO lab?
- ➜ How can the complexity be improved? How can it be broken down into simple tasks and a structure to provide increased orientation for the participants?
- ➜ How can all the fast-changing information in dependency across media formats and media presentation forms be visualized?
- ➜ How can interaction and collaboration be enabled with all the needed information?
- ➜ How can all comments and findings across all information be documented and information sharing enabled?

As Service Design is new for the corporate culture of Volkswagen, the participants see that trust in Service Design and also its way of working and methodology is missing and has to be established. Furthermore, the application of Service Design towards business has to be directly convincing or evident to the organization's management. It has to appear professional in its way of thinking and to work while using the Service Design approach. The objective has to create a framing in advance of the SINCO sprint that all participants have a shared understanding and can start working together in a deep dive. The participants state this transformational challenge needs top management commitment and support to enable the Service Design integration in the Volkswagen organization and processes and introduce new roles and responsibilities as Service Design facilitators. Service Design in its application as SINCO is entirely new to the organization, especially prototyping, as the term **"prototyping"** itself in the organization is associated with building technical prototypes related to the automotive heritage of technocracy. The approach of SINCO has to get translated for corporate context to function well; it has to be an interpretation of the core aspects of SINCO. It is a transformational challenge to embed Service Design into the rest of the company as it has to integrate into the processes and organizational culture; the staff has to be educated in Service Design approach and methods.

THE DEMAND FOR TRANSLATION OF SERVICE DESIGN PRACTICE FOR BUSINESS THINKING AND CORPORATE CULTURE

- ➜ How should the existing business working culture heritage be changed to a more open innovation working culture?
- ➜ How should a Service-Dominant-Logic be introduced?
- ➜ How should trust be built in the new way of iterative working and new working style of participation?
- ➜ How should the meaning of human-centered development be communicated?
- ➜ How should the transformation of becoming a human-centered design-driven company be supported?
- ➜ How should the SINCO application be improved as it appears more professional to be taken seriously in the Volkswagen culture?
- ➜ How should the organization be convinced that the method lead process provides valuable outcomes?
- ➜ How should trust be built in the Service Design approach to convince employees and management about its value for the business?
- ➜ How should a SINCO be integrated with the aim that employees can experience its benefits to be convinced about the approach? How should the employees be convinced to participate in the SINCO Sprints?
- ➜ How should a SINCO Sprint format be introduced into an organization that is conditioned to work differently? How should biases in the appearance of looking playful at work be overcome?
- ➜ How should top management enable commitment to support the Service Design integration in the Volkswagen organization and processes?
- ➜ How should a more vital business perspective be integrated into Service Design to integrate Business Design in SINCO Sprints?
- ➜ How should the demanded business tools be integrated within the Service Design?
- ➜ How should different kinds of business models, payment modes, etc., be prototyped?
- ➜ How should validation for viability in Service Design be enabled?
- ➜ How should the business model in economic effects and value streams be visualized to prove the business case?
- ➜ How should a more bottom-up ideational perspective and a top-down strategic perspective be interlinked in Service Design?
- ➜ How should a strategic conceptual modeling method be applied in designing platforms for strategic conceptual work?

The challenges as stated in Chapter **2.2: Derivation of findings: Analysis of needs and challenges** have been the basis to translate them into objectives for the 10X-SDL and the connected vision for further development of the SINCO as a guiding frame. This vision describes how the Service Design should be implemented inside the organization in a sustainable way that it can implement the proposed value for the organization.

2.2.2 Framing a vision to manifest Service Design

As a strategic approach, it has been chosen to establish a lighthouse project to spark interest and build trust in Service Design in the organization. As proposed, the lighthouse project manifested a Service Design lab inside the organization to function as an attractive source of inspiration and a driving force for establishing new working methods like Service Design for human-centered innovation. All departments and job levels need to experience the lab to know the new way of working. This gathered support from the employees and management. As the lab promotes new technologies, tools, and work approaches, it also communicates results and success stories in the corporate surrounding to promote the benefits. A creative space with digital tools and physical tools in one place takes people out of their daily business and helps them to focus on future topics and create tangible results. Due to the closed exclusive atmosphere of the lab, the focus is on the design sprint topic and minimizing distraction. The creative space has to take the participants out of their daily business into another world. One space has to provide access to digital and physical service design tools supporting the full range of working methods for business purposes. This enables changes of perspectives and mindsets, while visual working enables the participants to produce tangible outcomes directly. The value of facilitation has to be established by professional support, method expertise, and neutral moderation, enabling managing the design sprint's focus and leading to efficient and effective outcomes. Professional sprint preparation and advanced knowledge of methods lead to better, more efficient workshop results. Neutral facilitators speaking the same business language as the participants and encouraging the focus on the sprint objectives as well as strict time management drives the success of the working session. Design sprints enable Volkswagen employees to develop innovative concepts on their own instead of giving the work to external agencies. A barrier for in-house development is the time needed to prepare and set up design sprints, as they are seen as an addition to the daily business practices. Another obstacle is the lack of time capacities of the diverse experts to attend the design sprints.

Additionally, limited Design Thinking and Service Design skills harm the adaptation of the design sprints at Volkswagen. In-house support can process sensible projects much better, speaks the same business language, and is integrated into the running processes. Easy access to in-house partner support is mandatory to

become an inherent part of the daily work at Volkswagen. Service Design training to enable all departments to work with the agile and collaborative working methods and regular timeslots for preparing and attending design sprints formats have to be established. New software and tech devices support agile and efficient workflows and help colleagues to develop tangible outcomes quickly. Technology follows the methodology and accelerates productive working. The visualization and availability of all data in one workspace enable a seamless digital workflow. All input can be documented, edited, and shared quickly. Collaboration of different departments, interdisciplinary project teams, and co-creation lead to efficient solutions with shared visions and clear task plans. Collaboration of different experts promotes engagement to work across silos. Co-creation leads to faster results with shared visions and a clear allocation of tasks and responsibilities. This requires a mind shift of leaders and product owners to less hierarchy for more enablement and cooperation, as an open learning culture at Volkswagen would enhance collaboration. This ultimately leads to creating products and services faster, which meets market needs, as iterative processes lead to better business value, enabled by a constant feedback loop of stakeholders', customers', and users' needs and business demands. Integrating the human-centered approach in the whole development process is a key success factor in creating valuable products, services, and systems.

3 Chapter: 10X-SDL | Development documentation

This chapter serves as documentation of the project development in aggregated form and shows the development, technological, and project management highlights. Details have been left out to optimize the summary. The previous **chapter on awareness** focused on identifying and defining the needs and demands of the organization for a Service Design solution. This chapter provides an overview of how the 10X-SDL as a solution has been developed and stands about the proposed Service Design Research Model in chapters **1.4: Research questions** and **1.5.1: Research approach, process and analysis: Service Design Research Model**. As described in Chapter **2.1.1: Getting to know | Service Innovation Corner (SINCO)**, the SINCO as Service Design lab itself has already framed the basis that has been adapted and further developed for their own business purposes.

In relation to the vision previously framed in Chapter **2.2.2: Framing a vision to manifest Service Design inside the organization,** the premises frame how to implement Service Design as a lab approach. This also serves as a pilot through which iterative testing and refinement enable a scalable and proven framework for further dissemination throughout the organization. Still unsolved challenges of the organization have remained open for discovery of potential solutions.

FOLLOWING THE OBJECTIVES

- ➜ Foster strategic decision making
- ➜ Improve business hit ratio by fostering human-centered innovations
- ➜ Increase motivation and innovation
- ➜ Improve communication between all the stakeholders
- ➜ Increase transparency in the organization
- ➜ Reduce costs in late design changes by enabling earlier failing and learning
- ➜ Piloting and launch will consume less of other resources
- ➜ Advances in innovative solutions for business sectors were experimenting with novel ideas in practice is difficult or impossible
- ➜ Identifying implementation problems earlier and reducing risks with pilots
- ➜ Improved quality in launch phases and reduced investment risks in implementation
- ➜ Shorten time-to-market
- ➜ Evaluate different service idea options inexpensively

3.1 The use cases frame the lab

Naming the lab **"10X-Service Design lab"** stands in reference to **"10 times doing,"** the co-creative lab has aimed to enable teams to analyze, experience, design, and test products, services, systems, and strategies by integrating all physical and digital tools needed for the service design process in one digital workflow and workspace. The 10X-SDL framework is an open workspace platform lead by facilitators. It is a combination of modular lab space, facilitation enhanced process, methodological driven tool-box, and operational model, supported by the visual collaboration software. The project has focused on the human-centered development of services through agile Service and Business design processes. This space provides a framework for designing future elements for innovation development based on running business projects. The conceptual approach has been to create a multi-purpose digital collaboration and co-creation space that serves as a lighthouse function to develop new concepts and test new forms of work processes for digitalization.

Figure 59: Enablement objectives of the lab approach (Schaaf, 2020b)

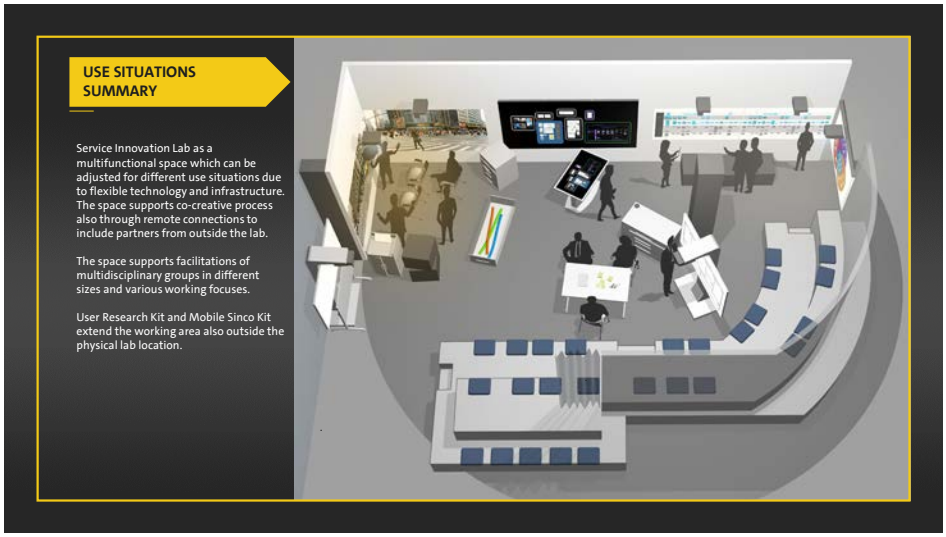


Figure 60: Use situation summary (Schaaf, Rontti, Lindström, Jylkäs, & Talsi, 2016;2017)

Internal ideation: The lab is used in the ideation phase, the equipment supporting visual thinking with creative mood and interactive whiteboards.

Figure 61: Use situation 1 | Internal ideation (Schaaf et al., 2016;2017)

Sharing insights: The lab serves as a space for visualizing and sharing information as well as outlining abstract entities in focus.

Co-creation workshops: The lab is used for service path simulations with equipment to support iterative prototype building, testing and analysis, and internal or external stakeholders.

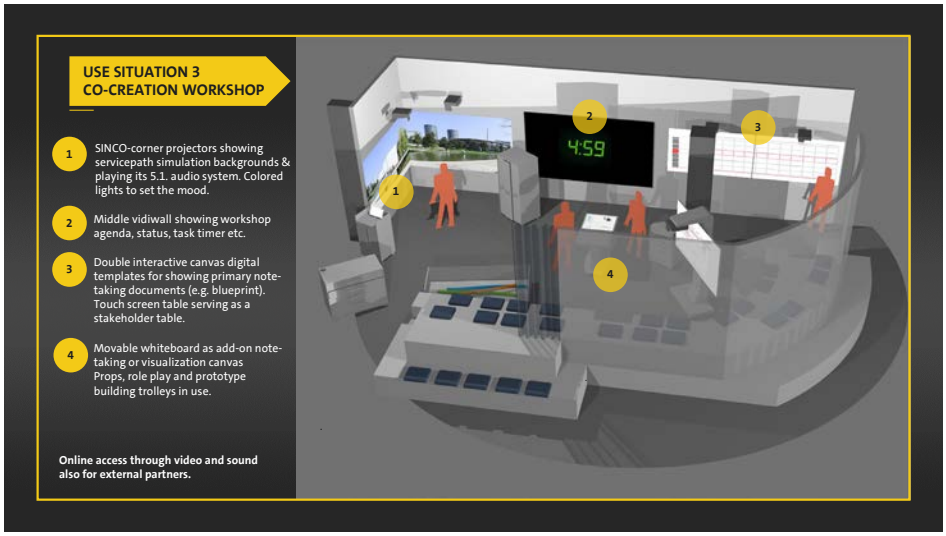


Figure 62: Use situation 3 | Co-creation workshop (Schaaf et al., 2016;2017)

Presentations: Space is used for traditional presentations for various audiences.

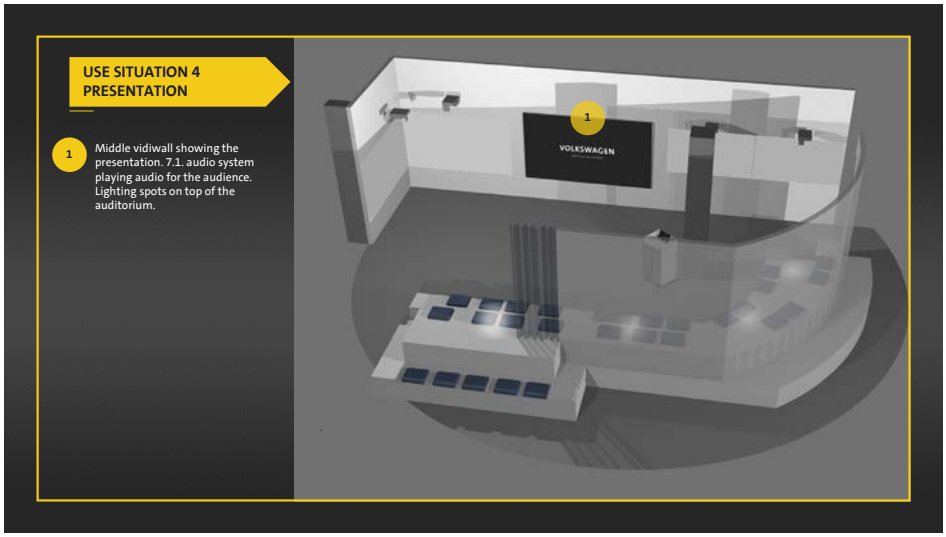


Figure 63: Use situation 4 | presentation (Schaaf et al., 2016;2017)

User research kit gathers qualitative user data in the field (observation, mystery shopping, interviews) and reproduces the findings through participatory simulation. The conducted data is later the basis for the design sprints.

Figure 64: User research kit (Schaaf et al., 2016;2017)

3.2 Software- and technology-enabled lab

Based on the functionalities from SINCO with media visualization for experience immersion (see also Chapter **2.1.1.1: SINCO as a technology-enabled co-creation space**), the technology side had to be considered to enable a digital workflow in the defined objectives of the lab. The information interaction and processing were fostered digitally to increase acceleration in the development work. For this purpose, the software DEON was used to establish an infinite workspace for visual collaboration.

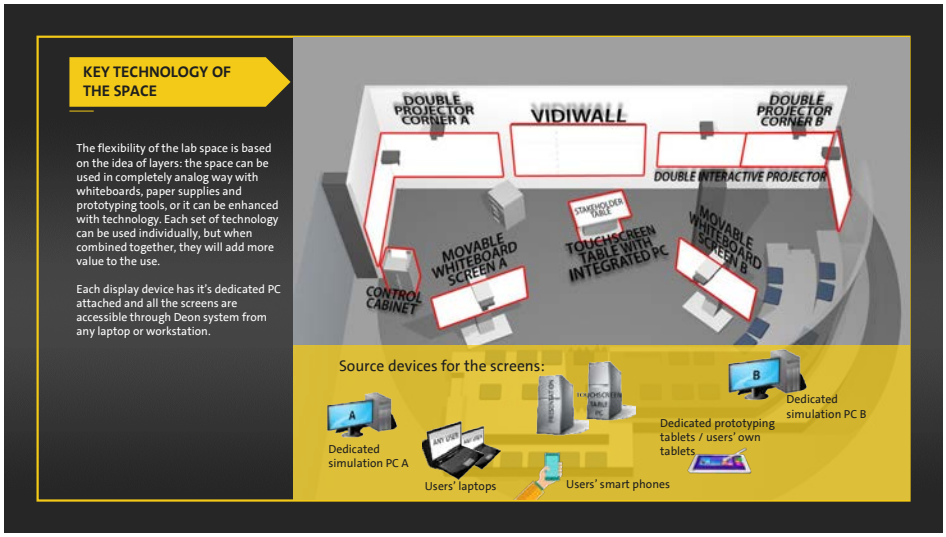


Figure 65: Key technology of space (Schaaf et al., 2016;2017)

As figures 69 and 70 show, to enable the functionality of the use situations, space has been divided into the sound and light zones, which can be combined and divided per use situation.

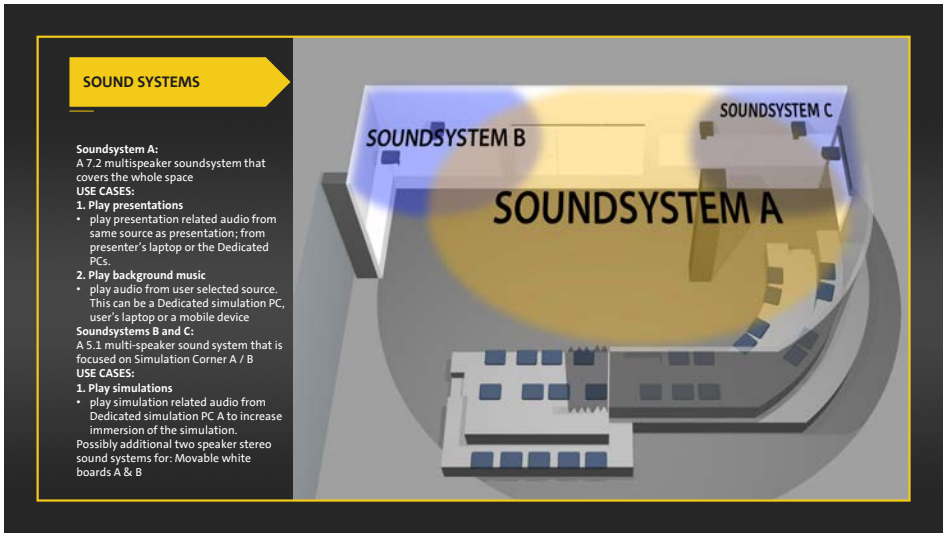


Figure 66: Sound systems (Schaaf et al., 2016;2017)

This combination is of key importance for the experience simulation corners as it enables an ambient experience of the contexts and presentation of multi-media data.

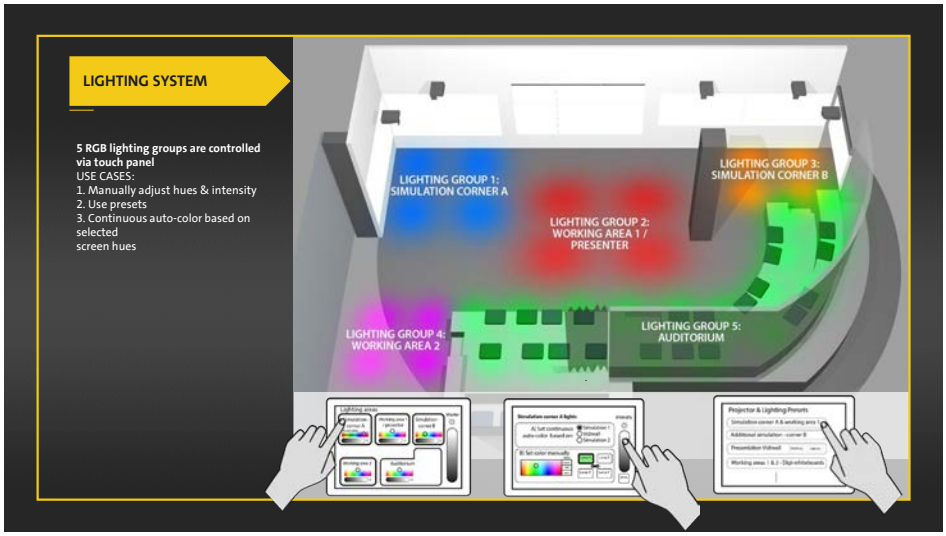


Figure 67: Light system (Schaaf et al., 2016;2017)

DEON—THE INFINITE WORKSPACE FOR VISUAL COLLABORATION

DEON is a Berlin-based software company that provides a digital, zoom-able, and unlimited workspace for visual collaboration. DEON is not a tool for a specific use-case but rather a platform (aggregator) that combines the appropriate tools as DEON provides fast access to information through digital workflow and information transparency through visual presentation. In general, DEON provides the freedom of working as it offers an unlimited canvas. It enables effective and efficient knowledge management over an all-digital working space across all devices for connected users.

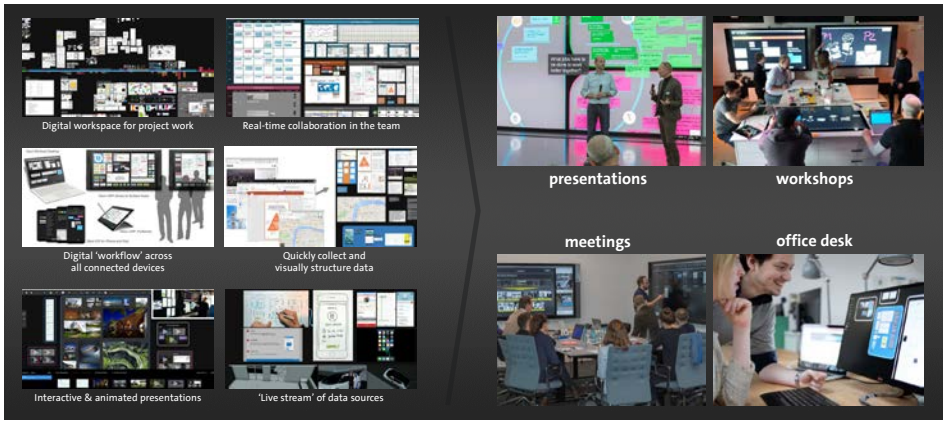


Figure 68: DEON is like a real desk with all the digital advantages (Schaaf, 2020b)

➜ As visual aggregator it provides holistic data visualization, showing the relations and correlations of data in one infinite workspace and enables the dragging and dropping of files in the workspace for visualization, for example, large multi-page documents, spreadsheets, images, videos, text, websites, live sources, scribbles, drawings, etc.
  - Synergies are enabled by the offered information transparency, which unmasks challenges.

➜ **As collaboration software** it enables co-creation and data-sharing in co-location or in the distance. Multiple users can see and edit different areas/files of the same desktop simultaneously, just like meeting in a real project room.
  - Productivity is increased collaboration and cooperation

➜ **Digital workflow** by a seamless switch between individual and collaborative work. No tedious scrolling or clicking on individual pages or folder structures. All content is immediately visible and together in context. If needed, easy export to PDF or PPT formats is possible.
  - Efficiency in the form of declining subtasks and establishing flow

➜ **Digital workspace** with various media formats and real-time data as accessible and editable. Persistent desktop instead of re-summoning: after returning to the desktop, all relevant content is in the same place.
  - Co-creative development and endless use-cases for agile work formats

➜ **Data Space** connects all devices as one digital content hub. No redundant copies, but original files are linked to network drives, Microsoft Office 365 integration and OneDrive/SharePoint or local storage. Server infrastructure is possible on the premises or in the cloud. Aggregation of data fully exploits the potential of web-based applications such as Office 365, Jira, etc. All content is immediately visible.
  - Integration in running processes and infrastructure

As Figure 69 shows, DEON provides an unlimited digital workspace interface that enables, for example, placing and writing sticky notes, drawing scribbles, linking files in the space and so on. This workspace is a collaboration space on which the user can log on and work together in real-time. DEON's interface is set on a **"dark mode"** to be ergonomically friendly for long working durations on displays

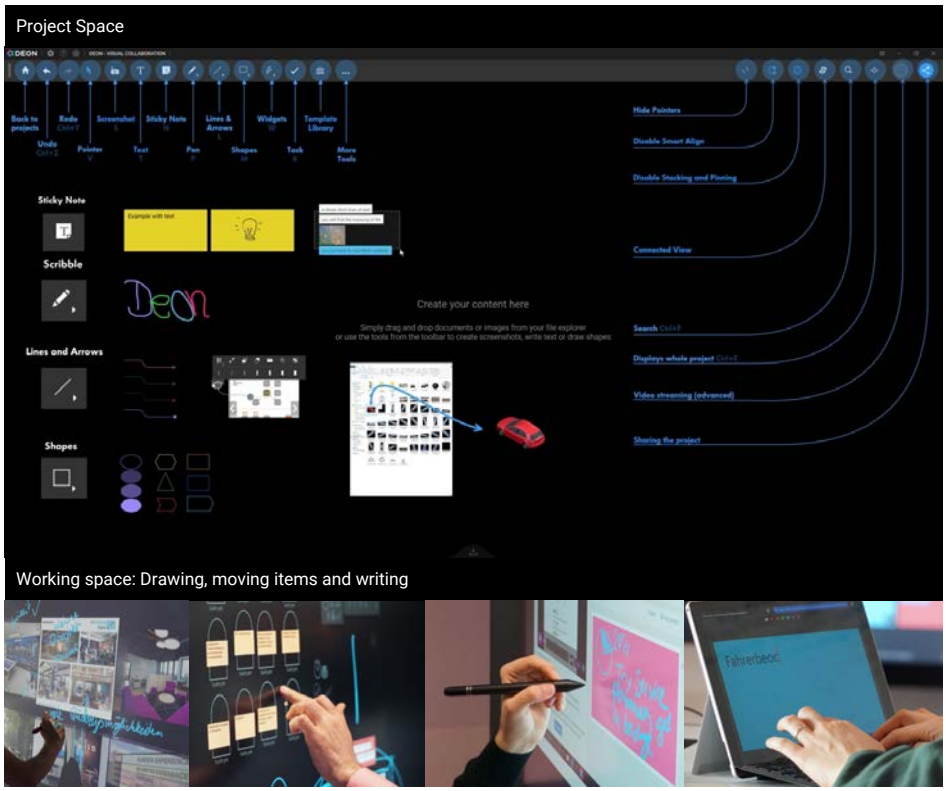


Figure 69: DEON user interface (Schaaf, 2020b)

DEON has been utilized in the 10X-SDL as a digital collaboration platform to make all information visually accessible and content edible. As Figure 71 shows, this offers the functionality to interact with information across multiple use-cases on the spectrum of the individual towards collaborative working.

- ➜ Project planning, management, presentation: overview and transparency
- ➜ Process mapping & documentation: organization and structure
- ➜ Creative and visual working: design and documentation

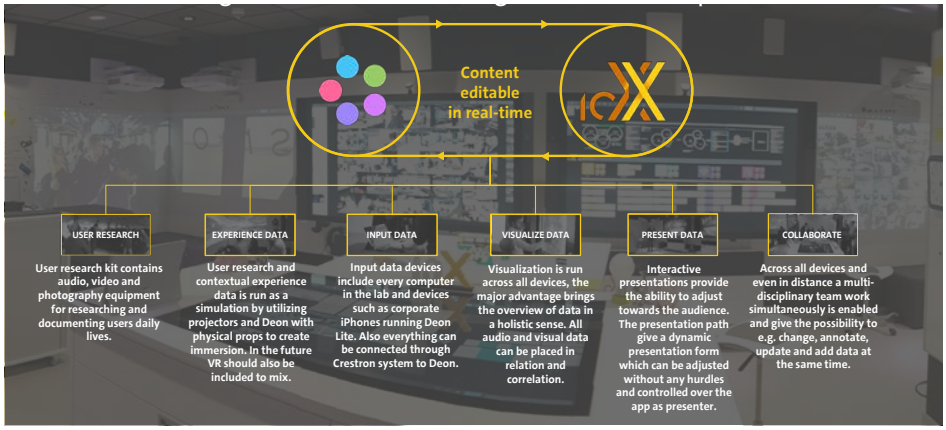


Figure 70: DEON as digital collaboration platform (Schaaf, 2020b)

3.3 Working modules adaptable towards use situations

As shown in Figure 71, different use situations had to be defined under the consideration of the potential functionality. The session of **"Lego prototyping on a projector table"** with a plan of the future workspace served to try out different scenarios for how the furniture could function in the best way concerning the given space provided. This approach also helped to detail the specifications in defining demands for the furniture to have the characteristics of being intelligent, flexible, and integrated. The workshop furniture, for the purpose of creative development, also had to provide media technology integration. All of this aimed to conceptualize a creative working lab that supports multiple modes of working in relation to how many people could work in different working situations.

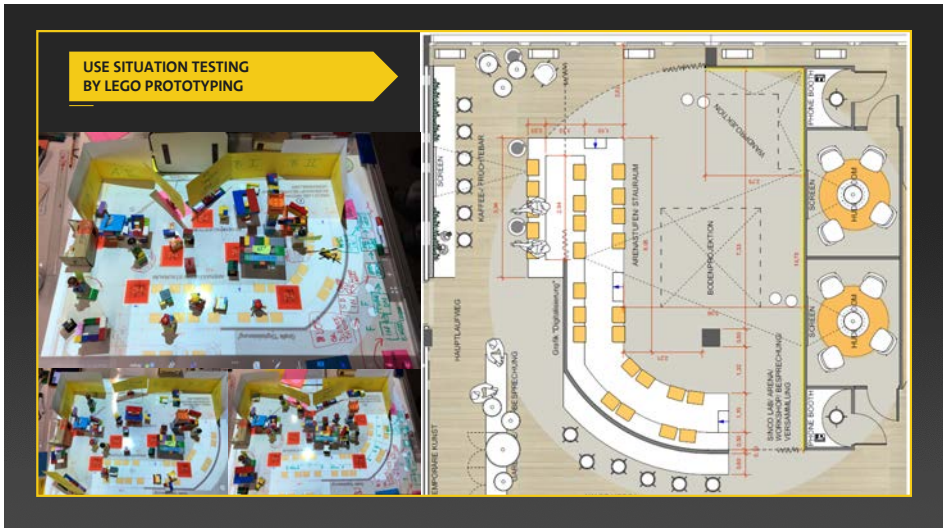


Figure 71: Prototyping use situations (Schaaf et al., 2016;2017)

This defined the specifications and guidelines on how the furniture should function in single-use, in combination, and in the whole set as working modules that have to function together.

Intelligent flexibility

- ➜ All "easily" movable (with lockable castors)
- ➜ Writable, durable, cleanable, scratch-resistant, matte surfaces
- ➜ Easily accessible (ergonomics) and safe (no sharp edges)
- ➜ Modular-combinable (modules can be lined up -> flexible room play)
- ➜ Functionality-focused workshop trolley
- ➜ Flexible storage space (ample to small compartments integrated)
- ➜ Drawers/compartments quick to open/close and compartment dividers arrangeable
- ➜ The appearance of a closed unit but functionally accessible
- ➜ Metal cover with ventilation

Media technology integrated

- ➜ Cable guides for media technology
- ➜ Connector strips (integrated network data hubs)
- ➜ Cables can be easily docked and coiled on floor tank (suspension on furniture)
- ➜ Workstations on the inside easily accessible with ventilation (grid metal cover on both sides for airflow)

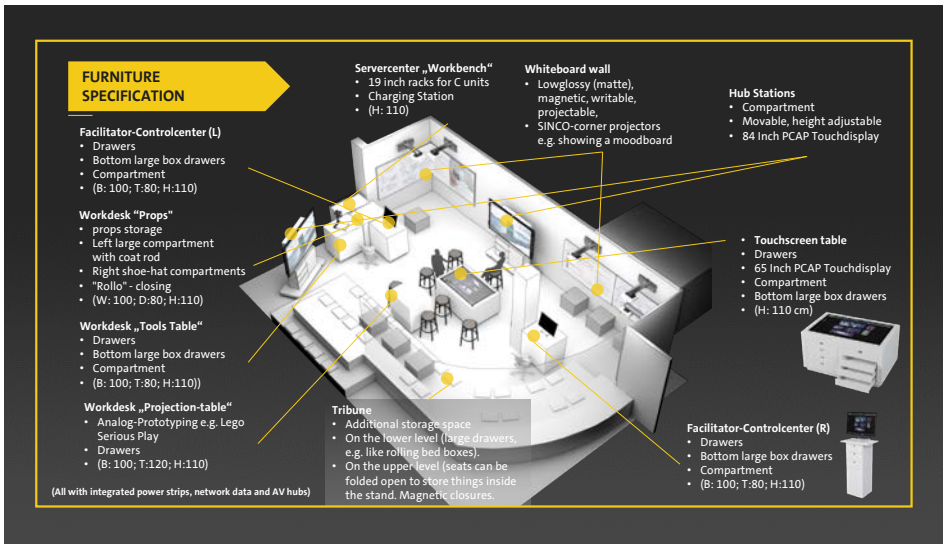


Figure 72: Workspace modules specifications (Schaaf et al., 2016;2017)

In Figure 72, the working modules have been specified in more detail and roughly visualized in 3D-visualization to optimize the usage space ratio. Having all items in one holistic visual proved to be essential to the technology side as more depth in planning was needed to work in combination. As shown in Figure 73, the furniture is based on working modules that can be moved around the space and connected together. As the lab is technology-dependent, the IT infrastructure was integrated into the furniture as each working module had cable connectors for floor or wall tanks providing electricity, video/audio signal, and data connection.

Figure 73: Furniture integrating technology (Schaaf et al., 2016;2017)

3.4 Accelerating business processes

The working format was based on the SINCO design sprint model (see also Chapter 2.1.1.2: SINCO driven by agile design sprint process) has been further developed. The working format and process were aligned to fit the acceleration format of the organizational working routines. The created overall process focused on being highly adaptive regarding methodology and workflow. Further, the design sprint format had to be adjusted to a maximum duration of three days to be suitable to be utilized by the organization. As Figure 74 illustrates, each design sprint is able to be customized depending on the framing of purpose, objectives, and the initial situation in the preparation phase. Following the objective to enable creative problem-solving and accelerated decision-making, the three main phases of the design sprint format

were split to optimize the conjunction of co-creational project development work to provide seamless integration in running business routines.

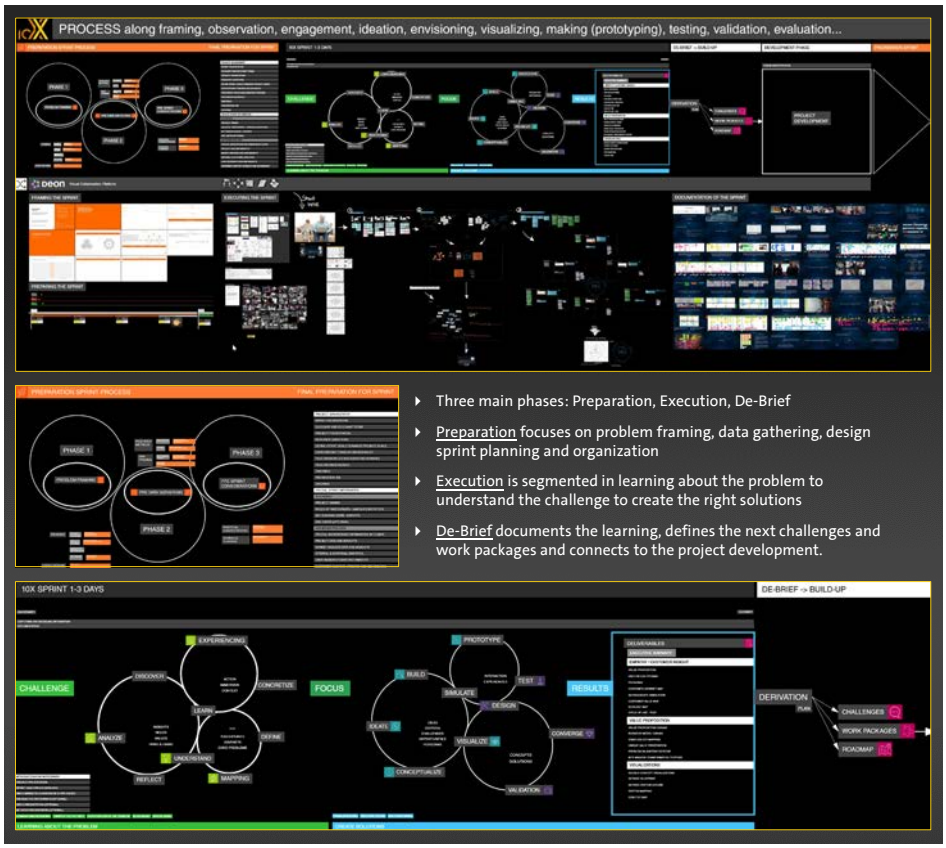


Figure 74: 10X-SDL design sprint process (Schaaf, 2020b)

The tools fitted to the process have been structured in and classified into the types **Ignite, Understand, Explore, Validate, and Evaluate,** each type being further divided into subclasses for more straightforward structuring and deepening for the given purpose. Especially considered was the fact that Business Design tools have focused on unifying Business and Service Design tools. Different guidebooks should support the learning of the human-centered design methods as well as business development. Furthermore, tools as icon sets, visual charts, and card sets have been integrated based on which of these would have the most usage during design sprints.

Topics ranged from design, development, and stakeholder engagement to different interactive co-creative and interdisciplinary methods. All items were directly accessible as templates from the library to enable easy use and ensure the customizability of the design sprint formats.

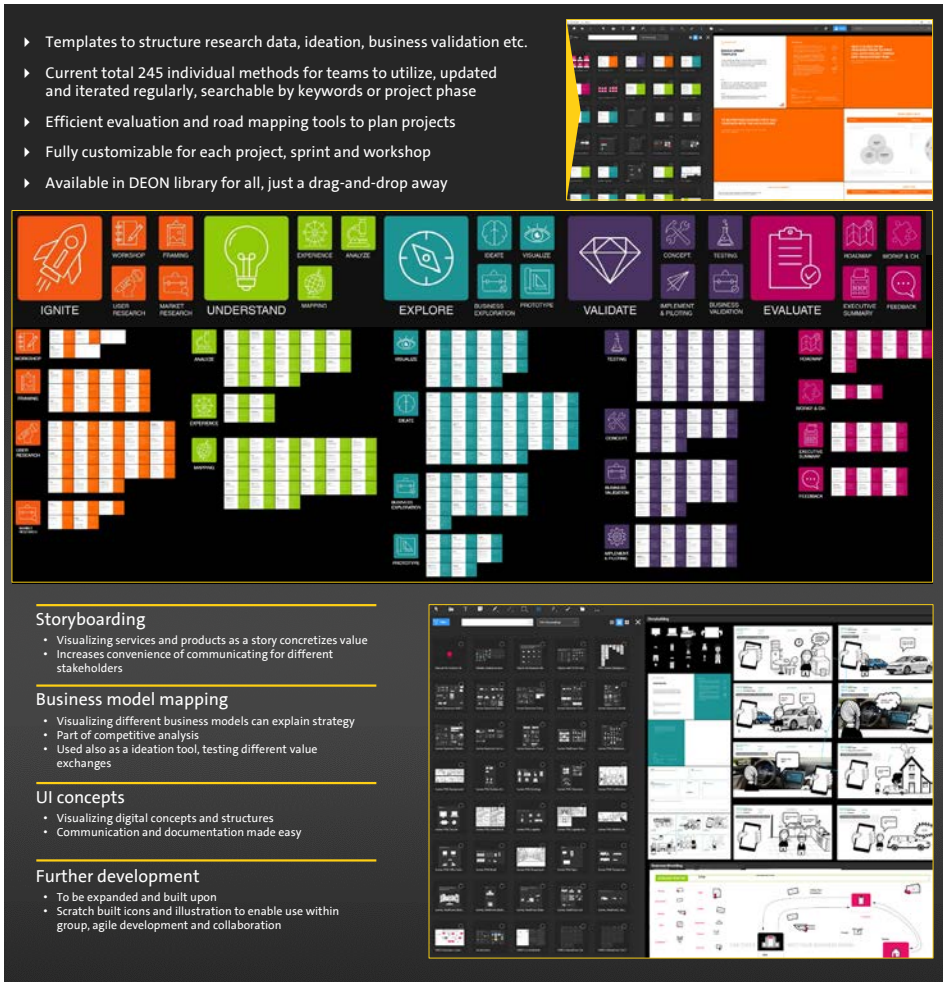


Figure 75: Tools along the 10X-SDL process (Schaaf, 2020b)

3.5 Holistic overview of the 10X-SDL

Integrating digital tools to replace analog ones was a pivotal requirement to support and establish a seamless development workflow through the combination of AV technology, touchscreens with multi-touch and multi-pen capabilities, and DEON as a central tenet in enabling digitalized work processes. All the hardware chosen has been linked to pre-defined development-use situations and their requirements for a digitized workflow.

Especially for visualizing all relevant data quickly and easily, and further to collaborate digitally in real-time to access, exchange, edit, and create all the data in an unlimited digital workspace; an infinite canvas to place all information needed prior, during, and after the design sprint cycle.

Figure 76: Overview of working modules in the 10X-SDL (Schaaf, 2020b)

Facilitators in each session in the lab are responsible for the methodology, process, tools, and the technology of the workshops. As Figure 76 shows, the 10X-SDL as a system consisted of multiple working modules. Each device can access the digital workspaces and the hardware was designed and chosen in line with the defined methodology. The 10X-SDL consisted of different zones. The first zone, with two 84-inch touchscreen displays, was for visualizing and editing the contents. In zones 2 and 3, participants could visualize and edit ad-hoc customer situations, scenarios, journeys and processes using interactive projectors. In zone 4 a touch table contained large drawers in which materials such as post-it notes and workshop material could be stored. As Figure 77 shows, the lab also contained haptic material as analog prototyping material needed for the development processes.

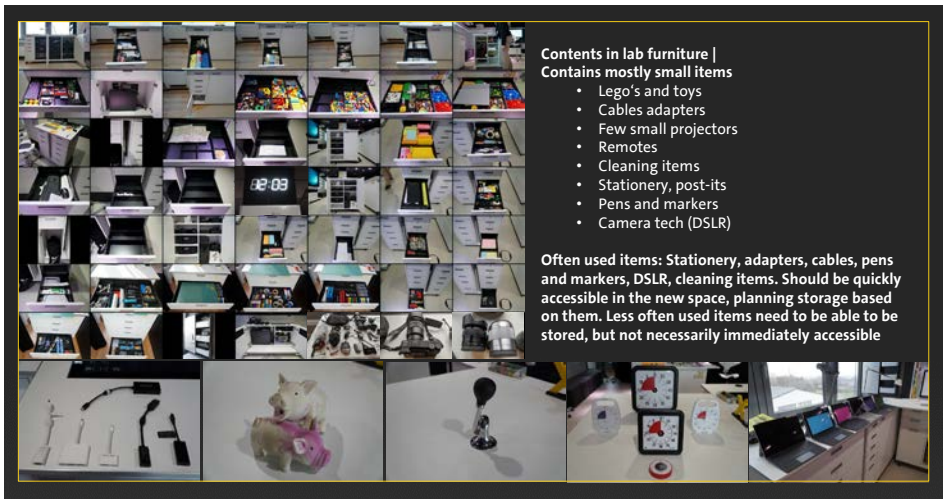


Figure 77: Additional inventory in the 10X-SDL (Schaaf, 2020b)

A user journey could be displayed on the touch table using maps and Lego figures that could then be placed interactively on the table. Participants could use pens to directly add digital annotations to the individual steps of the user journey on the connected interactive touch devices. On a separate facilitator workstation, the facilitators could monitor all digital areas within DEON and control the workshop contents. The central media control and the operation of the technical building services via an interface are also located there. Audio in the lab was provided by loudspeakers, amplifiers, and ceiling and wireless microphones.

The challenge to establish the 10X-SDL was to support as many use situations in the lab as possible, which required much planning with the business partners, as the technology hardware and software and architectural, methodology, and

business side had to be coordinated (for overview of stakeholder engagement please see Chapter **1.1.1: Positioning researcher and stakeholder involvement and organizational setting**). Bridging the audio-visual hardware with the DEON software side has primarily been a hurdle in planning in tandem how to set up the whole digital signal distribution system to have the opportunity to link every source to every screen. Further, DEON allows placing the content within the software on the connected devices but did not cover all the needed rooted signal distribution at the time. An advantage of DEON was that it runs on the premises within the internal network, which alleviated any concerns over the security issues that could arise from collaboration software.

The 10X-SDL features a mix of interactive touchscreens and interactive projections on white walls but did not digitize the whole room to preserve the opportunity to work with analog tools. If the interactive projection was shut down, the analog surface was still available to write on.

Another challenge was moving from analog tools to digital tools and breaking the long-term habits of users who felt comfortable with sticky notes. The challenge was to build a bridge to the digital realm, meaning to provide tools and solutions that bring the ongoing processes of those analog systems into the digital workplace, such as how to digitize sticky notes and how they can be easily digitized brought into a digital workplace. For this situation, DEON has created a mobile app making it possible to take pictures, separate the sticky into single elements, and bring them onto the digital canvas of DEON.

Despite these challenges, transformational projects like the 10X-Service Design Lab must juggle and align various aspects simultaneously: expectations of outcome, people's capabilities to learn, methodology, IT infrastructure, and restrictions of space.

4 Chapter: In-Use Phase

This chapter focuses on the actual in-use phase of the 10X-SDL as a demonstration of implementation. This phase aims to evaluate the 10X-SDL as an applied solution of Service Design within the organization. The objective is to observe the performance and collect feedback from employees on the solution, as the process of measure-reflect-change to create optimizations to iterate back and improve the 10X-SDL. The group interviews were conducted during and after the co-creation sessions and analyzed using qualitative content analysis to determine the needs and demands of the organization regarding the 10X-SDL. This continuous evaluation process has provided direct adjustment of the 10X-SDL, as it impacted the use of the collaboration software, methodology, structure, facilitation, tools, processes, framework, and its application in various business fields inside the organization.

➜ **Notification: For further information about the case's conduct and context and an overview of all cases, please visit Chapter 1.6.: Data collection.**

4.1 Deployment

The first phase, deployment of the 10X-SDL, focused on understanding the lab as an application, moving from the deployment stage towards implementation as an in-use situation. It has to be emphasized that transforming the Service Designers' work practices from analog to digital working was a major shift in working processes. The application of digital tools opens up new opportunities for application as information handling and data management are differently processed. Design sprints are newly prepared and structured as well as facilitation processes changing in general. In total, the Service Design practice changes because of the implications of digital working. This targets **how to learn to use the solution and how the solution is perceived and applied in the given context and situation for business purposes.**

4.1.1 Case | Multimodal Mobility | 27.09.2017 | Participants: 12+

Volkswagen pursues the perception of products, services, and business models as no longer separated but more developed as holistic solutions for urban mobility (Volkswagen AG, 2018b). The objective of this one-day design sprint has been to create a shared understanding of multimodal mobility platforms as well as

exchange strategies across multiple representatives, creating a common ground and information basis for current multi- and intermodal mobility activities, requirements, and barriers. The design sprint enabled deeper discussion on the identified topics, generating a shared understanding of similarities and differences.

The design sprint followed the leading questions:

- ➜ What kind of multi- and intermodal services already exist?
- ➜ Which stakeholders are involved? How is the cooperation structured?
- ➜ Are the multimodal activities mainly driven by strategic reasons or by market potentials?
- ➜ What different functions and levels exist in multi- and intermodal services?
- ➜ How can an end-to-end experience for peers be realized on the platform?

At the start of the design, the product owner introduced the topic of mobility platforms. The participants' presentations introduced multimodal service activities to the group from their respective perspectives to lay the basis for joint discussions. Based on the guiding questions, the participants discussed vital topics in small groups. The discussion framed opportunities for mobility services and potential challenges that require deeper analysis.

GALLERY WALK

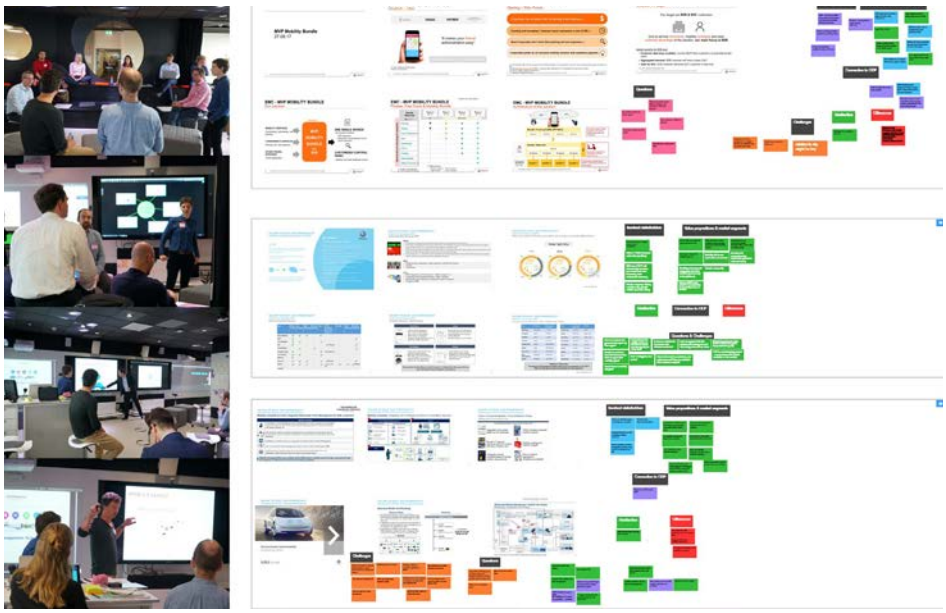


Figure 78: Data handling in DEON while design sprint

The group was enabled to utilize the 10X-SDL to know how to work with each other in sprint-like workgroups. All information was structured and shared throughout the DEON project for the design sprint so that all information could be accessible, presented and edited. The information was displayed on projectors and touch displays within the 10X-SDL to be accessible to the broader audience to evaluate the information quickly. The participants commented on and further placed ideas and remarks directly on the presentation slides, as Figure 78 shows. This enabled structuring of all input by the participants and building color-coded segments using the sticky note functions of DEON. The participants walked from one presentation station to the next and discussed the presented input deeper. As a result, a service landscape was quickly derived (Group-Interview of Case | Multimodal Mobility, 2017b).

VALUE PROPOSITION MAPPING

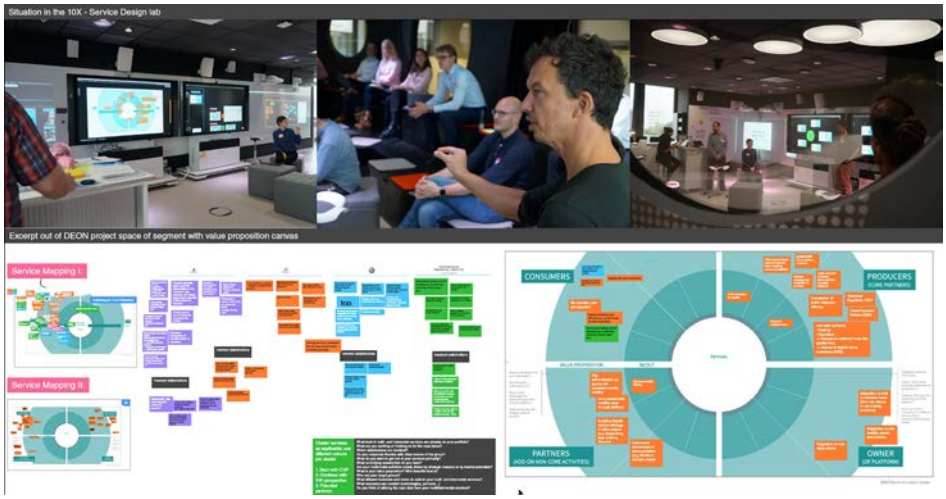


Figure 79: Value proposition canvas in DEON

As shown in Figure 79, the participants created transparency of existing service activities, and services were categorized by project status, indicated by background colors. A first attempt for identifying desired value propositions to different stakeholders was made by mapping them in a platform value canvas. For the mapping exercise, the group was split into two small groups in which they worked simultaneously in the DEON workspace. The participants continued to draw relationships between services to create a holistic overview and mapped them out based on proximity to critical factors. The value proposition mapping served to identify and map potential value propositions of multimodal service offerings from

the perspective of various stakeholders. A successful orchestration of such business models requires the consideration of value propositions from the perspectives of various stakeholders. A discussion from various facets about business models associated with multimodal mobility solutions took place (Group-Interview of Case | Multimodal Mobility, 2017b).

WORKSHOP RESULTS

The presentations and the subsequent discussions enabled the participants to understand each stakeholder's activities in the area. Sharing each other's concepts served as stimuli for service development activities across the stakeholders. Still, several challenges needed to be addressed and required a deeper understanding. Analogously, different customer group segmentation may be required for services. While joint service activities were perceived as positive, it needs to be clarified how the co-operation is to be designed to become more collaborative in the future.

CASE FEEDBACK

The conducted group interview (Group-Interview of Case | Multimodal Mobility, 2017a) provided insight into how the participants perceived the 10X-SDL. The questions aimed to discover the pros and cons of the working experience and what could be improved. It further inquired how the participants differentiated the experience across previous workshop experiences and how they conceived application or utilization methods in their own setting. It targeted the space itself and used methodology and tools, processes, facilitation, technology, and digital ways of working.

THE BENEFITS

Despite the 10X-SDL being used for the first time, the feedback was quite positive as the format worked well. The participants mentioned that **increased visualization and interactivity by digital presentation motivated the team to participate and enabled teamwork.** The facilitators' point of view has enabled **ease of organizing data and quickly switching between information data sets.** A significant benefit that was emphasized was **not having the latitude of analog sticky notes anymore and not having to type them and transfer them into digital data, as they are already in digital form.**

The participants discussed the comparison with previous experiences with analog workshops, in which the information has been lost. The problem with analog workshops is that if pictures on sticky note walls get taken, information gets lost in the digitization process and the conducted material is processed no

further. Captured images on sticky notes do not enable continuous working without the transformation of data. Furthermore, as workshop processing afterward is quite a time-intensive, the hurdle is too big to overcome. The most important benefit of the 10X-SDL system with DEON is that it supports all the information in digital form at once and provides a seamless workflow.

The facilitation supported the participants as it provided a clear structure and overview of tasks. For the participants, it was surprising how much the facilitation helped, how fast it was, and how quickly they got into the topic; the visualization of all data supported the process. Working provided a transparent overview of what every stakeholder was doing, providing a beneficial opportunity by having all information at hand. The participants stated it was impressive to do everything digitally and its implementation would be uncommon. Digital working created the expectation in the participants that it gets much easier to process all conducted information afterward so as also to be able to communicate the results with all the participants much faster.

THE DOUBTS

As **the information visualization** was a significant benefit for the group, balancing between providing information in a holistic view and focusing on information by limiting the scope has been challenging. **In comparison to analog workshops, some participants mentioned that the 10X-SDL is "far too visual," for example, having up to seven different pictures displayed at once. This visual traffic has caused stress, suggesting that only what is needed should be shown.** Furthermore, planned exercises and structure presented on the screens seemed to pressure the participants, as some argued that it takes flexibility out of workshops. As working digital was relatively new to the participants, the participants were doubtful about how flexible this system ultimately is. This indicates a mistrust in the new form of digital working.

The discussion about **the space** was diverse. As the 10X-SDL is designed in a very compact way to utilize the limited space given, space might be too small for 15 or more people. Participants felt crowded and wished for more breakout sessions to separate working groups. While standing at the screen, they missed simply having a table at which they could type more comfortably. One primary concern has been the space climate, as all the technology produced heat in the space, creating a hostile space climate, as the participants requested more fresh air.

Further, the technology produces a noise when running, which causes lousy acoustics and trouble understanding what people say. Furthermore, as the 10X-SDL space is filled with technology, the participants felt intimidated, which causes fear of touching things. As some participants had had experience with the original SINCO at the University of Lapland, they compared both spaces. 10X-SDL as space is more

professional and factual, providing a more IT-centered atmosphere with a black and white scheme and perceived as more astonishing. Instead, the SINCO was seen as more cozy and comfortable with a "garage" character, with more exciting creativity. In conclusion, the 10X-SDL was perceived as more professional from both a positive and negative perspective.

FACILITATOR FEEDBACK SUMMARY

For the facilitators, the new way of working in the 10X-SDL **provided a self-explanatory, structured and accessible format**, providing **a crucial advantage in organizing the boards and information about the whole project in the unlimited digital workspace throughout the whole process of the design sprint.** It enabled moving very quickly from A to B to C. There must be aware of information overflow to balance the suitable range of information for the participants. **The space climate issues such as heat and acoustics are significant concerns that have to be solved in the future. The usual working habit of the participants, with one person and then the next presenting in a linear way, indicates the need for transformation, meaning there has to be learning of new working approaches enabled.**

The participants had not been familiar with hard time-boxed design sprints as applied to methodology, tools, process, and facilitation**.** A design sprint of **one day was too short, as it felt too intense for the participants.** Some discussions were quite long, which indicates an alignment between them had not been established. Furthermore, the participants suggested that the value proposition would be better to use in a later stage as even some standard definitions had not been established. In conclusion, it was stated by the participants that the 10X-SDL as a system would provide advantages with more practice.

4.1.2 Case | Digital Workplace | 06.10.2017 | Participants: 4

The following case of a one-day design sprint focused on the "digital workplace" topic under the theme **"new work."** The team wanted to look into opportunities for the development of new working area modules as a framework. This should consider how to utilize various co-creation areas that should enable employees to work effectively and efficiently with others, supporting the interdisciplinary way of working in a co-located space and the development processes. Furthermore, as new technologies have predominantly been in focus, through enabling flexibility throughout the utilization of digital tools to form workflows, the 10X-SDL has provided a digital learning experience of using these kinds of tools in one space for the participants.

Premises for the project have been:

- ➜ Improving efficiency and effectiveness of communication for productivity through increased collaboration
- ➜ A shared understanding of how to support and spark innovation and create a new learning culture
- ➜ Space enables a mindset to enable serendipitous interactions between different stakeholders
- ➜ Space has to support innovation in all respects and be continuously rebuilt to fit the purpose by open and flexible workspace design based on activities and working archetypes under the holistic view of employee experience
- ➜ Virtual collaboration should expand collaboration along the innovation development process

The design sprint followed the research process of gathering inspiration for best practices. This enabled the discussion of what could be adapted and what an overall framework should look like and how to build clusters for each module per the functional, emotional, and technological requirements, as the work phases of focus work, communication, interaction, collaboration, co-creation, and presentation had to be considered to define added value for each module and derive the definition of room modules for 1–50 persons.

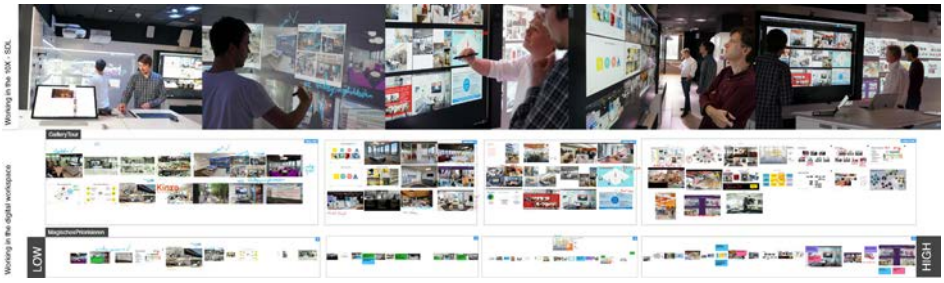


Figure 80: Gallery walk across several projections and screens (Group-Interview of Case | Digital Workplace, 2017a)

As Figure 80 shows, the participants utilized the 10X-SDL to assess the collected and clustered research of best practice information on new workspaces. For this purpose, all information was sorted digitally in one DEON project and clustered so that it was presentable on the various digital displays in the 10X-SDL. In this way, the participants could walk around and evaluate the information and directly comment on the digitally placed information. All comments and ideas on the presented information in the DEON project were live-documented. This enabled working in an infinite workspace for visual collaboration as all devices across had to

access the same information instantly. The visualization ran across all devices. The significant advantage of this was to provide an overview of data in a holistic sense. In the second step, the findings were prioritized and condensed to determine the most valuable insights. All in all, this provided the rapid processing of information to comment on and cluster all generated insights in one digital workspace.

As stated in Figure 81, in the second half of the design sprint, the participants discussed how to cluster the insights in a matrix of mobile work towards collaborative work, keeping in focus functional and emotional requirements and defining the added value for each segment. Commenting, editing and structuring played a significant role in the process. The participants switched to the facilitator desks or the main touch table to conceptualize the matrix. The advantage of this digital working could be seen in the combination of being able to utilize pictures, sticky notes, graphic elements, and drawing or scribbles at the same time, enabling quick conceptualization and everything being continuously documented in one shared digital workspace.

Figure 81: Working across multiple devices in the lab (Group-Interview of Case | Digital Workplace, 2017a)

CASE FEEDBACK

The (Group-Interview of Case | Digital Workplace, 2017b) targeted the impression of the 10X-SDL and how useful and supportive the participants perceived the lab to be overall and how they differentiated the space from others was operated. This had a technology focus, as the participants had come from an information technology sector and were already information technology users and suppliers internally as well as being DEON users. The duration of a design sprint has to be at least two days to create valuable results with focus and concentration.

As they reflected on the experience in the 10X-SDL, a demand formed for more in-depth knowledge about using DEON. The participants were previously DEON users, but they had utilized it in an unstructured way as a PowerPoint replacement. **The combination of a consistent digital workflow, structured process and technology-enabled the learning of its potential value. DEON is a collaboration-based operating system that seemed to have a lot of potential for the participants. For example, the digital space could be expanded throughout the DEON project but also through video conferencing applications. This enabled remote applications. The participants' problem was that the sorting information had to be as intuitive as possible with the best usability concerning touch functionality. To be satisfying, however, the usability has to be better than the analog process in order to be accepted.**

The participants stated that even though there was quite a strong tentativeness at the beginning, and orientation was needed, commencing fast working was possible. **Still, guidance by a facilitator is needed as the 10X-SDL is dependent on user guidance. All in all, the participants summarized that "you are incredibly effective after just one day and that's what matters." This was also eye-opening because this was clearly due to the facilitator role providing preparation, guidance, and structure. As the participants reflected on their use of the project rooms, the view developed that a facilitator to support the teams in the methodology combined with the technology was missing.**

As the participants had the opportunity of experiencing different collaboration technologies in direct comparison as the Surface hubs, projections, the Surface studios, and touch table, the participants noticed very quickly which technology served the best touch and pen usability as well as how the input works across different devices. **The participants were interested in the opportunity to experience the combination of different technologies simultaneously, especially to see its combinations in use and evaluate the best combination for productive use depending on the purpose.**

As the focus has also been to test different collaboration technologies, usability has a direct influence on how the system enables interaction. The statements were about how different types of digital pens feel and how fast the systems respond.

"Incredibly quick to use with the mouse and keyboard" was said about the surface studios as they combine the mouse, keyboard, touch, and stylus simultaneously. The combination of the Surface hub and studio proved the best combination.

The design sprint has shown how the space supports different working practices as well as how the participants utilized the tools in the application. If any technical difficulties occurred, this would directly harm the working experience as it depended on the technology. The participants recommended that the bring-your-own-device strategy would have an impact on the usage of the lab, as it supported working with a trusted device that they knew. **This would provide the flexibility "to just dock into the system of the 10X-Service Design lab by enabling a functionality extension of your own device."**

The feedback towards space showed that the 10X-SDL was seen as a multifunctional space for presentations and workshops equally. The experience corner was seen as something new to be adapted. The 10X-SDL was seen as a flexible space in which one quickly moves the furniture around to reconfigure the space itself. This created the opportunity to test new working constellations. Even if the space seemed quite condensed, space could be utilized in a more extensive form than was first assumed. **The flexibility of the 10X-Service Design lab can be tested with interdisciplinary working groups and how fast space can be rearranged, what gets used, and what is needed.**

4.1.3 Case | Digital Employee Experience | 10-11.10.2017 | Participants: 10

As the Volkswagen strategy is to be an excellent employer (Volkswagen AG, 2021), the aim of the two-day design sprint was to define the task fields for the topic of **"digital employee experience," as it is essential to enable the transformation to become a tech company,** connecting the needs of employees with new technologies and new ways of working. This approach targets motivate their workforce and, in addition, enable the transformation process. **The key is to give current and new employees a working environment in which they are able to create innovative concepts and work motivated, efficiently, flexibly, and responsibly. The employee experience is how an employee perceives the interactions with the organization and her/his meaningful work. Thereby, interactions with the company comprise all touchpoints of an employee with and within the organization. Analyzing these aims, the factor of innovation is important because fast innovation cycles create competitive advantage and thus are one of the critical competencies of a tech- company.**

To systematically design the employee experience, a company has to consider two different employee journeys. The first one is the working life journey, from being attracted to the company until retirement and all touchpoints in between. The second employee journey is the working day. This simply is one day in a working life of an employee and everything within this day. Easy-to-use-digital tools for

collaboration, networking, remote meetings, or (re-)search need to be provided to design an employee experience during this working day as well as tools employees use every day. These should be deeply integrated into the holistic way of working in the company and the company culture. The responsibility to design this perspective of employee experience is typically distributed by several company units such as IT, the whole organization, or general administration. However, it is essential to coordinate the efforts to create a holistic and integrated employee experience within the company's identity. When designing the employee experience, a special consideration is to be aware of digitalization because emergent IT possibilities enable companies to offer new dimensions of employee experience. Digitalization principally means using the best digital capabilities of digital processes and tools and skills and competencies. **Consequently, the digital employee experience means designing employee touchpoints with the best digital capabilities. The aim is to focus on employee needs and give them resources to deliver innovations for the customers without being distracted by inefficient administrative overhead.**

As stated in Figure 82, all data, including presentations and prepared material, was accessible in one DEON project for the design sprint and followed the methodical approach:

- ➜ **Empathize:** Identifying the needs during an exemplary working day of an employee using five different personas and their employee experience touchpoints (in small groups)
- ➜ **Define:** Clustering of needs into fields of action
- ➜ **Ideate:** Development of vision and mission per field of action, allocation, and analysis of current projects for fields of action

Figure 82: DEON workspace of digital employee experience (Group-Interview of Case Digital Employee Experience, 2017a)

As Figure 83 shows, the design sprint started after an information input session with the analysis of employee needs based on the prepared employee personas. The group was divided into five subgroups to increase efficiency while working. Further, they were placed into different groups throughout the work sessions so that they were able to focus on the given tasks entirely. The working groups looked into the provided material as a working journey to derive for each persona with a set of needs concerning mobility, tools, workspaces, mobile and office work, collaboration, administration, and organization of schedules, IT software and hardware, qualifications, work-life balance, leadership, skills, and competencies. As an employee experience is diverse depending on each employee's structure and objectives, this has provided a wide range of needs.

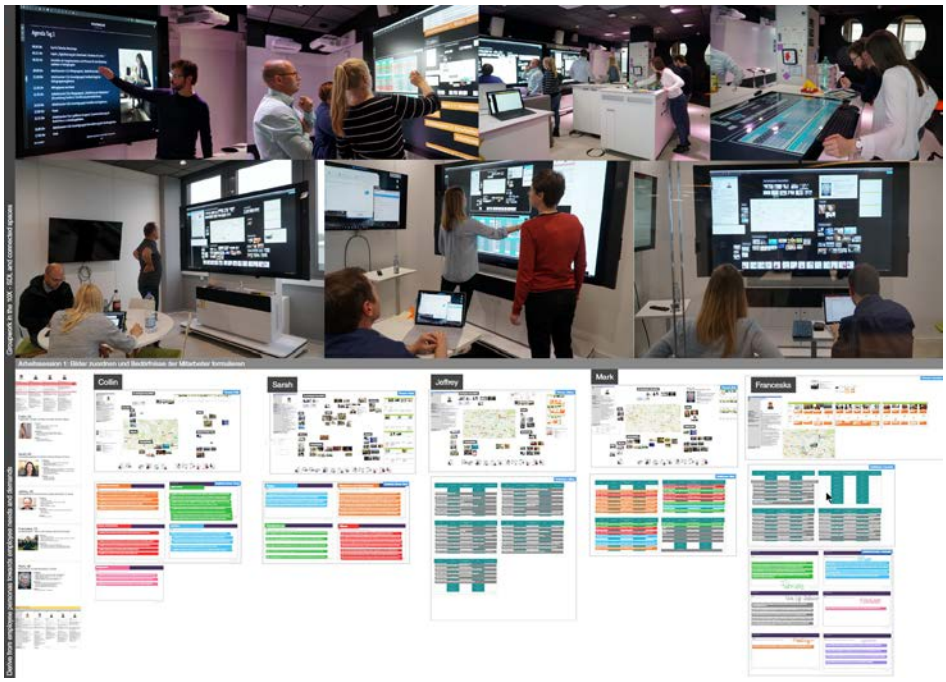


Figure 83: Working on the employee personas to derive with employee needs (Group-Interview of Case Digital Employee Experience, 2017a)

Furthermore, the groups each presented work to consolidate their findings. Again divided into two more prominent groups, the participants worked on building a bigger picture to map their findings in relation to each other. This was a challenge as the groups had to consider various findings that were interconnected with each other. As a result, the participants managed to build fields of action in several iterative steps while discussing the steps within the group. **The advantage of working in the**

10X-SDL as a digital working desk across all connected devices can be seen in the opportunity to access and edit all information needed, reconfigure and map the information, build clusters, and derive a consolidated bigger picture for the organizational strategy.

Figure 84: Mapping the fields of action for the digital employee experience (Group-Interview of Case Digital Employee Experience, 2017a)

CASE FEEDBACK

The (Group-Interview of Case Digital Employee Experience, 2017b) of the "digital employee experience" design sprint revealed challenges. As the group was not used to working with Service Design and completely digital across the development process with new software and technology, this equally produced advantages and disadvantages.

A digital workflow demands a learning process from the participants. It is more about reducing fear of the technology than actually learning the software. **In the beginning, the participants felt overwhelmed by all the technology.** This shows the importance of the starting phase of a design sprint, as it is not as intuitive for the participants to work digital for the first time. The combination of hardware and software is entirely new as the participants mentioned that this was completely different. **The participants clearly stated that assistance is needed to get to know the tools and technology in 10X-SDL. For this purpose, a facilitator is needed to provide guidance. The facilitator's responsibility is not just to guide through the design sprint with the methodology and tasks but also to explain technology and software.**

The positive aspects of the participants were that they found it interesting to see technology and software combined in one workspace in the 10X-SDL and how supportive this can be. **As everything was built on top of each other, it was interesting for them to move and copy the digital items.** Some participants were skeptical about working entirely digitally, and some problems with glitches, synchronization, and latency appeared in the software DEON during the design sprints. Still, the participants saw the advantage of working along a development process in a digital workflow. The participants stated that it was an excellent experience to be able to experiment with DEON and were afterward positively convinced of how the 10X-SDL system works as a whole. **The advantage was seen in the connectivity as compared to analog workshops; there were no chores as the participants did not have to carry items or charts around to present the results to others.** The participants compared it to their previous work routine of writing on paper, with the problem of drawing and throwing the sheet away. **Having the opportunity to move items around digitally, write and draw, and re-arrange and delete information in the digital workspace was seen as an advantage; all kinds of information could also be presented and documented visually.**

The collaboration and motivation among the team were excellent. Still, there was the possibility of losing focus if the facilitator did not guide the participants. The participants found it mentally and physically exhausting to work in the 10X-SDL over two days. They demanded a change to something analog and paper-based as this would provide a change from the screen time, which caused headaches and eye strain. They demanded to change the space to have some flexibility and change in set-up. **There was a need to go back to paper in-between as more paper-based tools were requested, but this was also dependent on how much the participants worked with digital tools in general.** Even if the PowerPoint templates proved successful in providing fast input, it seemed to be even faster to have generic textboxes with the templates directly editable in DEON. Some issues occurred in that not enough digital space in the DEON project had been prepared, which caused misunderstandings in the working groups, as the participants did not know the difference between zooming and scaling the items.

Concerning space itself, the participants saw a need for improvements in the climate environment for a better overall working experience, wishing for additional lighting to bring more daylight to the space that would also change throughout the day.

In summary, the design sprint has to be built as a step-by-step guide with clearly defined roles, tasks, and structure as this led to problems. Still, the participants stated that it works very well and that they have to find a way to use the new tools and methodology in their processes. The participants valued the ability to experiment with digital tools. The participants concluded that the 10X-SDL showed what the future of work could look like, stating that they had

just seen the tipping point of the iceberg in the two days, with a large amount of technology-driven working opportunities on hand. **In total, some have offered their prognosis that the 10X-SDL would offer up to 70% of what will be needed in the future of work. This system should be utilized in an overall workflow of preparation and during and after the design sprint, but they have to learn and try to determine what works best for them, considering that the digital employee experience is diverse and complex.**

4.1.4 Case | AI Assistant | 13.10.2017 | Participants: 20+

The topic of AI and Service Design in creating human-centered digital service solutions has been of general research interest to Volkswagen (Jylkäs, 2020). This one-day design sprint has addressed the question: **"How can a seamless user experience be provided to customers with an AI Assistant that provides access to the offerings of the whole digital ecosystem?" This design sprint targeted an alignment of all the stakeholder groups.** The design sprint goal followed outlining and reaching a shared understanding of a preliminary scope, **translate the ideas into a systemized structure and supporting the attendees' ideas (vision) back into their organization and reaching a shared understanding and buy-in of the participating stakeholders.** To approach the objectives, a description of the user perspective of a future AI assistant has been in scope, including a comprehensive collection of structured ideas. The proposed vision has been to provide **"personal assistance for sustainable mobility, anywhere, anytime,"** to understand implicit and explicit customer needs, offer a user experience that naturally integrates customers' daily routines, and provides access to a comprehensive mobility ecosystem.

After input presentations, the first task for the participants has been a critique session to evaluate three different possible future scenarios. They imagined a future world enabling various triggers and questioned possible future scenarios. As shown in Figure 85, the future scenarios were visually displayed throughout the space in which all participants could access the information. Furthermore, they were welcomed to comment on the provided material with analog post-its, which quickly became digitalized for further processing by the facilitators. The advantage in this set-up was to display a variety of information across all devices throughout the DEON workspace and document all ideas and comments for further processing.

Furthermore, in the ideation session, the group was split up into four teams. Each team dealt with one persona in detail, figured out the persona's needs, desires, and pain points, brainstormed about typical activities, chose two of them for further elaboration, and derived requirements for the ecosystem assistant. This happened with the support of mood pictures displayed at the projector walls, as this enabled the participants to get faster access to the user's context.

As Figure 86 states, for this purpose, the 10X-SDL was quickly rearranged so that the two groups could work separately in the space and each utilize one Surface hub, Surface studio, and experience corner with projectors. On this basis, for the second ideation session, the group split up into two teams. Lead by a facilitator, each team dealt with two personas in detail as they merged activities of both personas into one story and designed storyboards for experience prototyping. Based on the activities and derived requirements for the AI assistant from particular storyline situations, they each utilized the prepared templates to document and conceptualize their ideas to derive general requirements from the ideation results.

This ideation design sprint of one day can be seen as a kick-off for further project development as the discussed features formed a basis to sharpen the assistant's purpose. The assistant had to be devised considering the context (situation-dependent decisions) and had to adapt to the user as the emotional and personal relationship had to be considered as answering the question of how to enable value exchange. The transformation from desires towards solution options was about creating a narrative for the project, in which mobility options were based on the orchestration of services.

Figure 85: Processing the future scenarios as gallery walk (Group-Interview of Case | AI Assistant, 2017a)

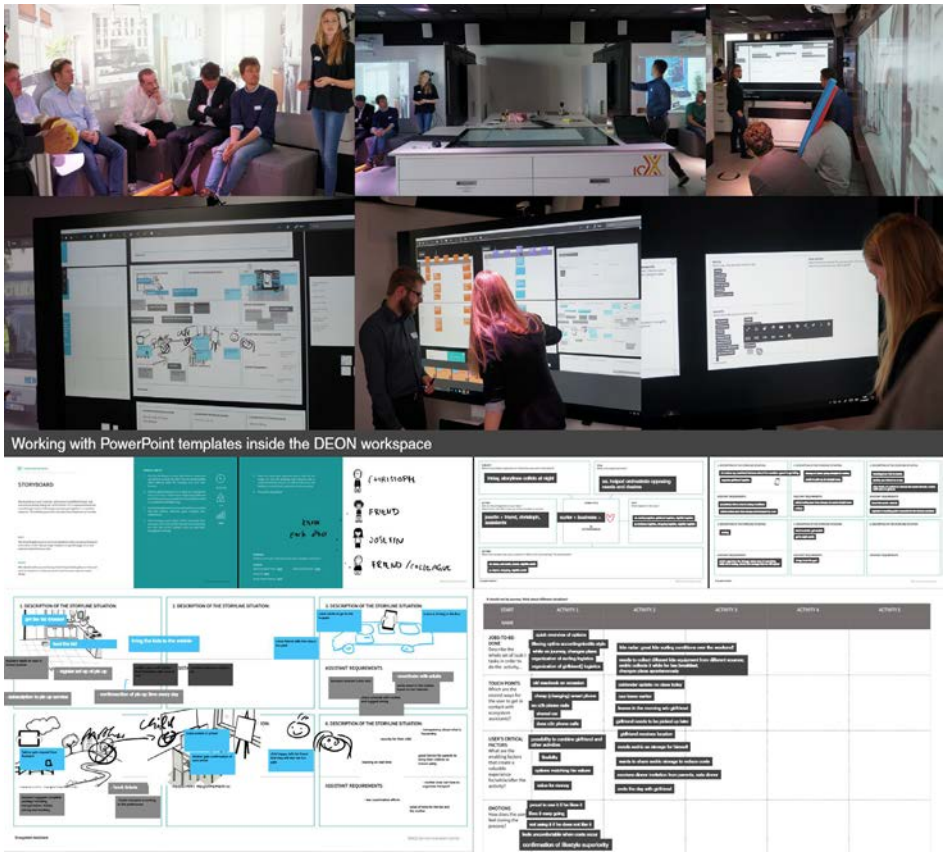


Figure 86: Working on the user stories (Group-Interview of Case | AI Assistant, 2017a)

CASE FEEDBACK

The (Group-Interview of Case | AI Assistant, 2017b) showed insights about the experience of the space, working digitally and feedback towards process and structure. As general feedback, the participants experienced the session as overall success as well as applying the tool of personas to understand the needs of the users. **The participants stated that the display of images of the user context provided them faster access to get into the mood of certain situations and contexts of the user; this supported contextual ideation.** The format as a collaborative approach was highly appreciated as working together by discussing and creating results. The participants were amazed by the space and found the technical setup quite interesting. **As the participants analyzed the advantages and disadvantages of how practical it is to work a digital workflow, it was mentioned that "some might think it would be just easier to use analog sticky notes to create input as they are used to it."**

Even if connectivity problems occurred, it was seen as **valuable to have everything saved for the future; there was no transcribing of analog sticky notes anymore; everything was just saved. The digital workspace showed the progress of a design sprint; it was valuable to have all the documents and everything created during the design sprint on hand in one digital workspace as everything is connected,** as was having a "sneak peek" at what the other working groups were doing and seeing how everything was evolving and building up.

This design sprint showed that working digital did not successfully enable all the participants, it has been more a facilitated approach. In some sessions, the participants simply provided information by saying and not by writing as the facilitators conducted the information. The participants stated that the combination of digital handwriting and typing of information into text boxes as templates in combination might be the most effective way, as at this point, it was not as fast as wished for in the workflow. **However, a premise could be that all participants have to be enabled so that all the people have the opportunity to co-create.** All participants would have to have the opportunity to work with DEON on their own devices.

Considering the feedback on the 10X-SDL as space, the participants acknowledged that they had not experienced a space like this before; the main difference is the high technological level that is utilized compared to other creative spaces. The participants also valued the flexibility and configurability of the space as it was possible to make more minor separations for working groups in being able to move and adjust the furniture around them. At the same time, being able to present in the traditional style for bigger groups and having a co-creative space was seen as an advantage.

Considering the time pressure and having only one day available, as it had been planned for two days, the participants stated that it worked exceptionally well as it provided the expected outcome. "**In a short amount of time, every session had a meaning, always clear what to do and what to deliver." The structure was beneficial as it did not waste time. Some participants mentioned in comparison that "the traditional design thinking workshops are way outdated as it is too much detail, it is too much fluff and not goal orientated."**

Further, the facilitation and moderation earned positive mentions by the participants. Still, the participants wished for more time for the tasks as it felt too compressed and sometimes too superficial as the customer journeys. It was seen as valuable to immerse into the thinking and see some points to get real stories. One participant mentioned that the day's purpose was not very clear as it was a kick-off project day. This arises a challenge; even if participants complain that they wished for more time, it was difficult for them to set the right amount.

4.1.5 Case | Ride-sharing | 19-20.10.2017 | Participants: 15+

One of the interests of Volkswagen has been to provide commuter mobility services for employees (Wolfsburger Allgemeine Zeitung, 2015). The objective of the design sprint targeted generating new ideas for possible additional value propositions in the field of ride-sharing with the focus of commuting use case. An aim was to identify additional value propositions and enable acceptance of ride-sharing by finding effective motivation triggers so that the possible additional pain points in the user journey were balanced out. The expected deliverables were to create pretotypes with new elements compared to existing services. As this design sprint consisted of multiple stakeholders, this design sprint had the purpose of aligning the diverse group of interest, meaning that via co-creation in the 10X-SDL, a common understanding for the topic of ridesharing, trust, and an open mindset between the participants from the brands could be built. Additionally, of interest has been to share the experience, tools, and methods of the 10X-SDL as it could enable a commonly accepted basis for how to work in the future across multiple stakeholders.

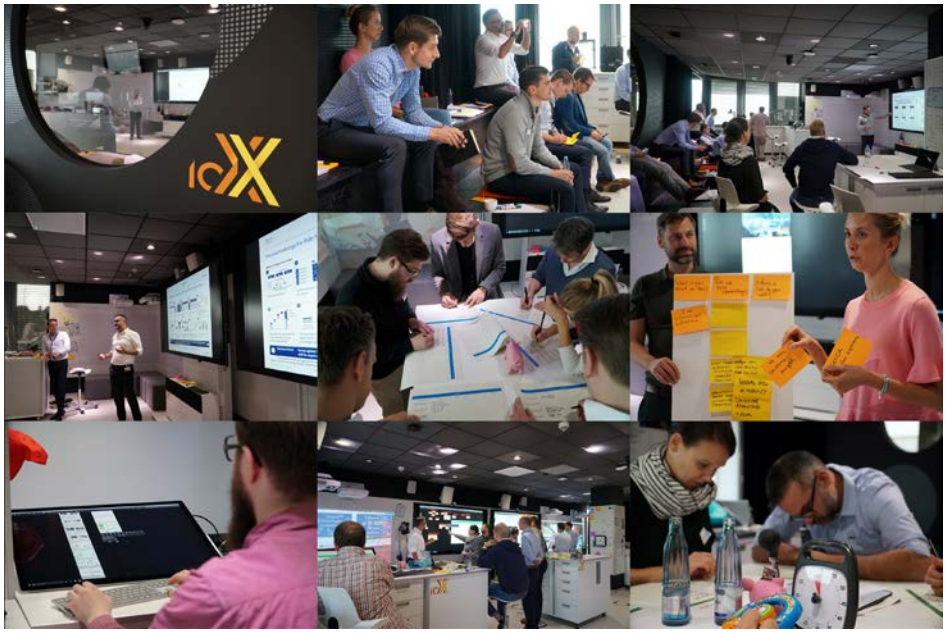


Figure 87: Working in the 10X-SDL (Group-Interview of Case | Ride-sharing, 2017a)

DAY ONE

Figure 87 shows how day one consisted of introductory presentations about ridesharing services and evaluating demands and idea requests. The second half of day one targeted immersion in the customer's experience by simulating a ridesharing user's journey.

Day one (Group-Interview of Case | Ride-sharing, 2017b) showed that the participants valued the co-creative process of combining many different perspectives, as all the participants were engaged to create a shared vision. A benefit of co-creation was seen in a diverse group working together on one goal. The participants were positively surprised how the group got into the flow when the participants shared their experiences while emerging in the bodystorming. As for some participants, it was a new experience. It took time before acting like a real customer unfolded its value through bodystorming. The participants valued the immersion approach as it supported the process of finding interesting ideas, and the technical equipment was found helpful for the process. Some participants had had experience with this kind of design sprint before, they compared it as well guided as it did not allow going off the track and getting lost in discussions. This involved the shared roles of one person focusing on typing ideas, noting them down, while others focused on just leading the customer's life. This established a flow of **"just say what you feel and how you feel"** and also enabled identifying pain points and evaluating possible potentials. This definitely brought to certain light aspects that would not have come to the surface without it. The trigger questions coming from different sides stimulated imagining the situation of the customer. The participants were surprised by how interesting ideas were created throughout the process. Working with the journey achieved an excellent working result as it was almost completed. The participants acknowledged that the technology of DEON is beneficial, moving information quickly from one side to another and adding comments. In comparison, the analog workshop involved much more manual labor. As it was for some of the first experience making a design sprint at 10X-SDL, the participants were surprised at how well the working group in that experience corner got to work with the technology and actually produced quite many valuable insights Figure 88.

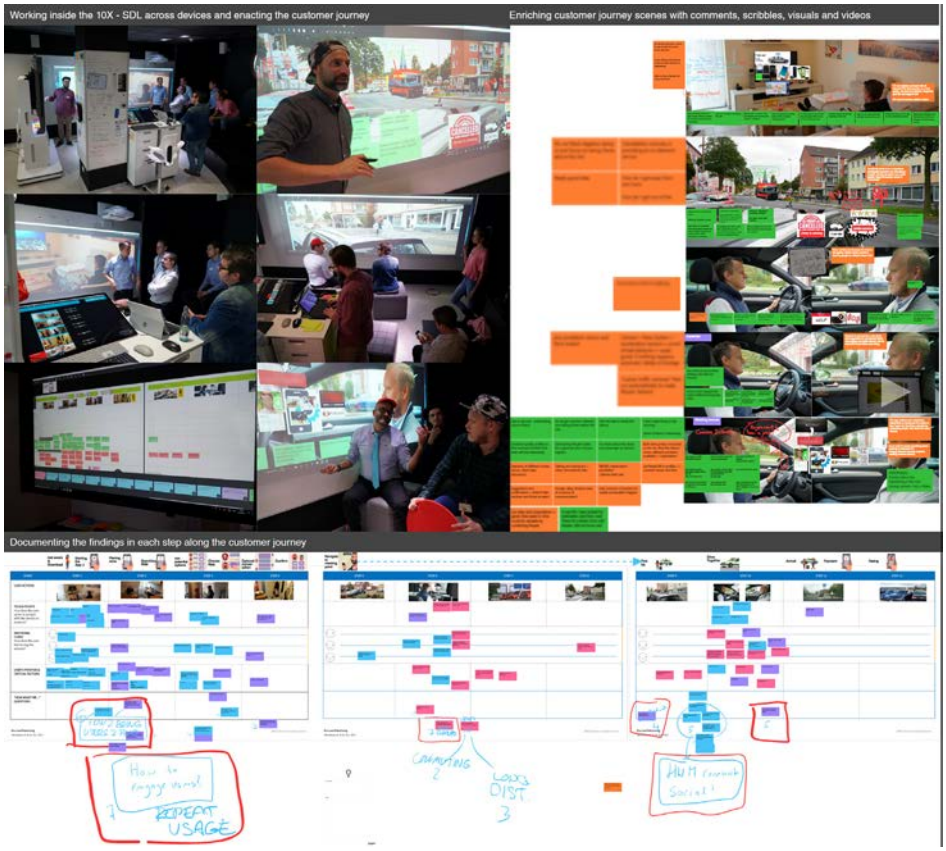


Figure 88: Experience prototyping while body storming (Group-Interview of Case | Ride-sharing, 2017a)

DAY TWO

The second day (Group-Interview of Case | Ride-sharing, 2017b) continued the prototyping session of finding new ideas with the focus to transfer pain points into concrete solutions. The difficulty was to understand the synthetization of the brain and capture it in the 6-5-3 method of fast creation of potential solutions. The group enjoyed seeing how the group developed with every activity; the groups learned to interact effectively, learn and work throughout playing, bring ideas together, and turn them into something tangible such as a prototype or a sketch. The participants evaluated the work as a great experience, as they explained that "interesting ideas were just popping up to integrate them there in the process later on." The participants were fascinated that the roleplaying in combination with the technical facilities to do this prototyping could produce so much empathy for the pain points and opportunities in the situations. Further, the positive feedback stated that when the participants

were sitting in some of the corners or on the side, they really felt the emotion, as if they were in the situation. As they appreciated the structure of the design sprint, the funnel of ideation identified the opportunities and challenges by building upon the team's co-creative work. The most appreciation was stated about the simulation of the problems, the discussion of the problems, and that simulations have triggered later ideas. Further, both operational teams followed different approaches, one focused on functions and services, and the other developing more complex B2B solutions. Still, to evaluate the service ideas from a business perspective throughout business modeling should have been a complementary tool. Superior value to the customer is provided by understanding the pains and gains of the customer journey, but the challenge also lies in transforming it through a business lens, as it challenges the solution as a whole.

As Figure 89 shows, the DEON project enabled documenting all the data produced over the two days in one project to quickly enable the processing after the design sprint and share all information across the stakeholders in one transparent form.

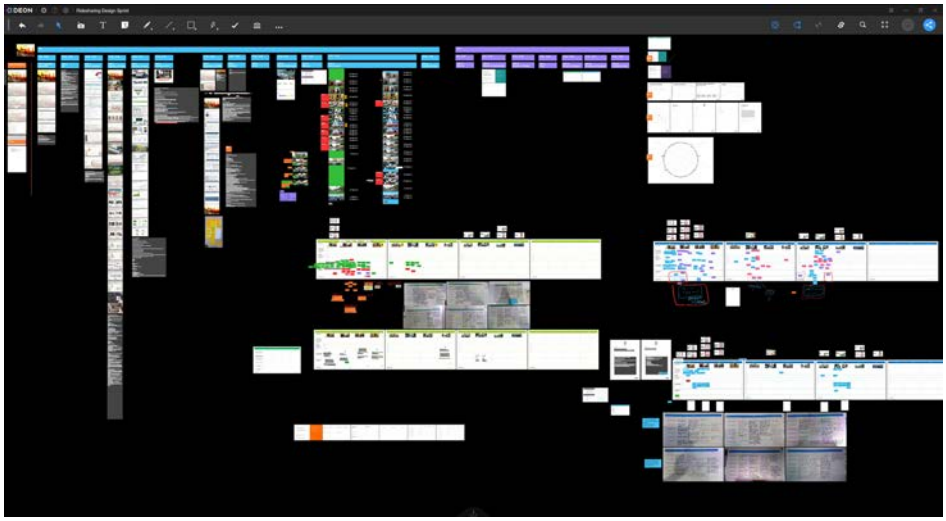


Figure 89: DEON project overview of Ride-sharing (Group-Interview of Case | Ride-sharing, 2017a)

CASE FEEDBACK

The feedback sessions (Group-Interview of Case | Ride-sharing, 2017b) of the two-day design sprint for ridesharing targeted how the participants experienced the design sprint compared to their previous experiences towards collaborative working.

The question was aimed towards the general impression of 10X-SDL: **"How supportive did they experience the setting as, and how did they differentiate it from other creative spaces?"** This was for the purpose of stating the advantages and disadvantages of the process of facilitation and how the participants felt guided. It also explored which of the learning they would adopt or transfer to their own future development work as they might see applications of such a methodology and process.

The first impression towards the 10X-SDL was of an "attractive and intriguing" space, but the participants also were skeptical of whether the technology would be helpful. However, as **diverse perspectives and insights of the experts could be gathered throughout the process, the working group felt very inspired by bringing all the information together**. **The 10X-SDL is seen as a valuable space as it enables one to be immersive and reenact particular situations within the service. As this is operationally and methodologically driven, it is seen as very powerful as it is valuable for design sprints for service innovation and enables reaching good results quickly by having all the different devices running simultaneously. For instance, it enables running the service experience and the visualization of the customer journey simultaneously.**

GETTING TO KNOW HOW TO WORK DIGITAL

Compared to most creative environments being analog in nature, the 10X-SDL is seen as a fascinating space with extensive technology that is supportive. The equipment in the 10X-SDL is universal with supports for its digital format. **However, it also needs facilitators for operations to use the system professionally. As the participants started enjoying the technology on the second day, this indicates that people become familiar with the environment of this kind of new interaction and using the technologies.** As some participants were overwhelmed with the technology initially, a quick how-to was requested as it provides faster access in working within the 10X-SDL system while being introduced to space, as it is essential to enable a workflow for the participants in the design sprint. It has been suggested that everybody should do a test run at each position as it is helpful to swap roles until everybody feels comfortable utilizing the space. **The participants enjoyed working digital in the 10X-SDL. They previously experienced how stressful it is to work analog and document everything afterward in digital form, meaning that any kind of interaction with the software and hardware had to be instantly processed. Further, any kind of information collection or note-taking was essential for fast processing.**

As improvements, the participants wished for digital pens to write everywhere. The participants even suggesting expanding this through virtual reality while providing an overview of the journey displayed with the allocated steps. Having virtual reality

or even voice recognition enables a more immersive experience have been suggested as improvements. The participants' expectations are a premise to enable a workflow across all devices without any break in the work; everything has to happen instantly and enable a fast-forward workflow, enabling fast access to the system and one's own work and work note-taking of all comments. **Even if the participants were skeptical in their first impression about the technology in the space, the digital working practice was established due to the assistance of the facilitators, which convinced the participants about the benefits of no more piles of paper to be later on processed. The long-term advantages of digital working were obvious to the group as everything is directly digital accessible.**

Further, mixing digital and analog working has to be considered, which works the best for the participants. After reading the design sprint agenda, the participants mentioned that this sprint would take much longer than expected. They were fascinated by how the technology was integrated into the process to accelerate the design sprint.

FACILITATION

The facilitation was valued as providing the right balance of structure, result-focused approach, and enablement of participants by utilizing the space to come up with ideas. The participants suggested that future design sprints prepare a how-to and introduction upfront to enable an even faster dive into the topic. **Some participants were amazed at making the group working together as this takes time in a new setup. The participants valued the process and applied tools towards what they planned to deliver as the outcome. By combining the expertise and opinions of the participants with many different backgrounds, the bodystorming throughout experiencing prototypes led to one solution to create something new. This co-creative approach has been evaluated as outstanding, as the participants valued the outcome with increased interactions within the working group. The mixture of working together in a diverse team, bringing together different perspectives, experiences, and levels of understanding of a particular topic provided valuable new ideas.**

For the roleplaying session, as the separation of roles was not transparent for all participants, they wished for more definition of roles in the design sprint, that is, who was documenting, who was the moderator, and who was moving the scenes around. The facilitating roles in the design sprint have to be defined, meaning supportive roles that are taken over by the participants.

The participants were satisfied with the professional facilitation as they learned that this kind of work needs **to follow a Service Design methodology with a systematic approach, creating the ideas with a solution focus. This also triggered the interest in getting to know more about Service Design. As some**

of the participants were not familiar with the Service Design development process, this showed a kind of distrust as working with Service Design was not transparent, or they could not imagine its outcomes. As a result, the participants had to understand how to utilize the development process and use it as input for the project development. One central point has been how to wrap the design sprint up in consistent documentation to transfer to the next project phase. As the participants mentioned, sometimes it is challenging to manage a new solution.

4.1.6 Case | Premium | 25-26.10.2017 | Participants: 6+

The design sprint focused on defining a set of service attribute criteria. In addition, it focused on identifying tools for ideation and concept development as it should also evaluate the usability of results as a toolbox in the daily work. For this purpose, the design sprint focused on elaborating methods and a tool framework of the 10X-SDL.

The design sprint objectives:

- ➜ Development of service attribute criteria sets by understanding future trends and how they will affect customer values and needs
- ➜ Employees can develop new service concepts that are target-oriented and based on a set of standard company-wide criteria by analyzing existing ideas and identifying gaps in terms of service positioning.

DAY ONE

The design sprint started with an introduction to the 10X-SDL framework and an overview of the current mobility services' project activities to map the current service portfolio within one ecosystem radar to enable building a holistic picture. Mapping the existing offering aimed for a common understanding between participants and enabled analyzing the gaps in the service portfolio. Capturing and modeling the information and combining it with future offerings enabled an overview of how all initiatives stand to each other. As Figure 90 shows, the template, presented in circular layers, provided an orientation from vision and missions in the center towards layers of product-service-system to service ecosystem.

The next session focused on analyzing future trends and customer segments, as studies have been conducted on market changes due to changing customer behavior. This enabled a deep-dive into working with the template **"drivers of change,"** highlighting the analysis of basic needs, emerging consumer expectations, and innovation potential to answer the questions of what would be possible solutions to address these trends.

The (Group-Interview of Case | Premium, 2017b) indicated that the 10X-SDL was perceived as an impressive space because of the technology present. **The**

participants stated that it was pretty easy to conduct a design sprint as the lab provides easy interaction with the displayed visuals and information, which enables a discussion on "how a workshop is supposed to be." The participants appreciated the 10X-SDL infrastructure and facilitation support in guiding them through the process and methodology. **The whole setting kept the discussion running and enabled progress in addressing all the ideas to integrate them into the big picture.** The participants learned new approaches and methods and appreciated the templates due to the structured or guiding approach.

Figure 90: Mapping of current service portfolio in one ecosystem radar (Group-Interview of Case | Premium, 2017a)

DAY TWO

Based on service offering mapping as well as trend and customer problem analysis, the experience prototyping of use case scenarios enabled the evaluation and refinement of the "new" customer journey and service portfolio. The storyfication in the journey mapping as well as simulating the customer journey in the experience corner deepened the understanding by the participants of customer pain points and finding criteria for future service experience indicators. As the simulation progressed, notes were written digital and combined and mapped in real-time with customer journeys on the screens; see Figure 91. By reflecting the key learnings of the bodystorming, a simplified Kano model categorization of emotional value was conceptualized. The three categories provided the lowest minimum requirement field indicators to the highest experience field to situate the findings.

The set of service experience attributes enabled the first draft of key differentiators. The participants achieved a framework with all attributes collected. As a result, the

notion of **"emotional performance"** defined the concept of the wow factor and an effective way of communicating the key features. Although skeptical initially, the participants (Group-Interview of Case | Premium, 2017b) **were surprised to find that repeatedly visualizing two different scenarios while role-playing provided added value, as different perspectives on the different needs captured new insights.**

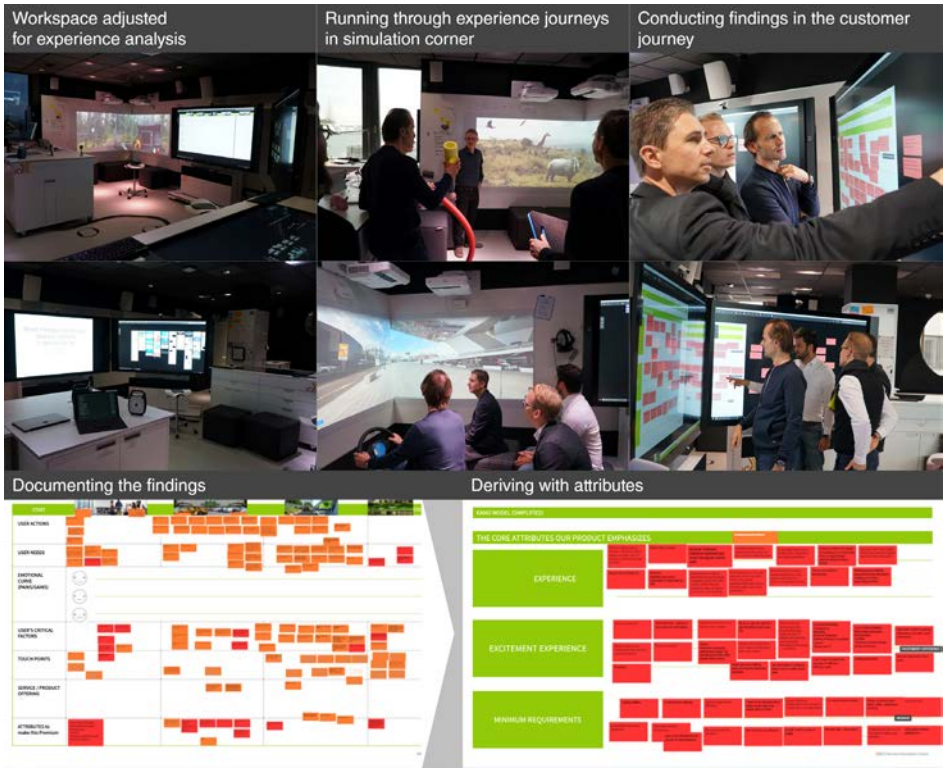


Figure 91: Experience evaluation to enable understanding (Group-Interview of Case | Premium, 2017a)

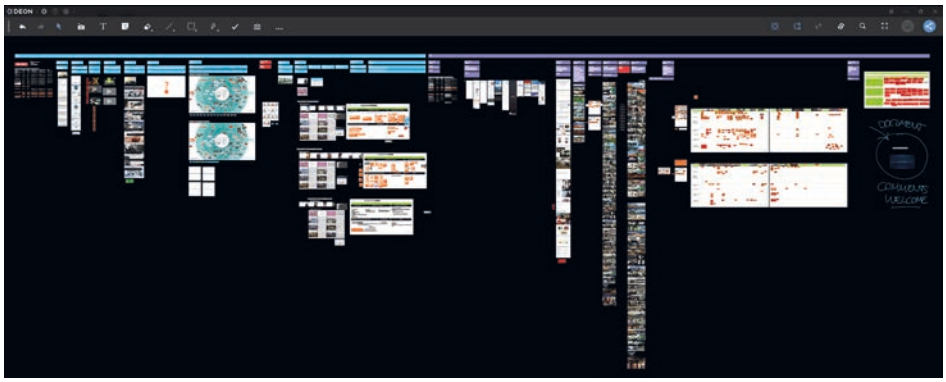


Figure 92: DEON project of the design sprint in one overview (Group-Interview of Case | Premium, 2017a)

CASE FEEDBACK

The two-day design sprint (Group-Interview of Case | Premium, 2017b) targeted gathering feedback concerning space, methodological approach, and design sprint process itself. Also considered was the preparation work phase before the design sprint, which investigated whether the participants had received enough information in advance and how to prepare for the challenge. Furthermore, the feedback targeted how the participants perceived the acceleration in the early stage of the innovation process and how they would compare this with what they had previously experienced in developing processes. Questions addressed included **"How would they see the differences, advantages, and disadvantages in a process model?" and "Would it be a model to integrate into their existing business processes?"**

ADOPTION POTENTIAL OF THE 10X-SDL FRAMEWORK

The participants valued the preparation, guidance, and expertise throughout the two days of the design sprint. The participants saw it as essential to experience this methodology as experience prototyping first hand. **As the outcome was above expectations, the participants learned a new methodology and found trust in a new approach.** As the outcome of progress and elaboration of many shared ideas exceeded their expectation, it also provided a higher level of knowledge and perspectives on the service landscape. The content of the toolbox and methodology mainly supported the participants in structuring their thoughts.

The participants did not know what to expect of the design sprint in terms of the project's outcome as they were not familiar with the Service Design in general. **The expected outcome of the participants was "to have a kind of toolset, get to know each other, and learn something about the Service Design methodology**

and how to work in digital ways." Regarding the methodology, the participants were positively impressed at how much they learned from the two days, asking the question: "How can we work more digitally and use this human-centered approach?"

The 10X-SDL framework was perceived as different in that it involves working on concrete services and enabling ideation processes in detail. **The participants saw product ideation as a different approach to service development.** This raises the challenge that understanding the development of a product idea is not reflected among the participants within the 10X-SDL. As for the expectation for defining criteria for experience success factors, the participants suggested focusing on one specific service as it is challenging to examine the whole service portfolio with its different aspects. For the participants, this was a new way of thinking for how to arrive at new services and a new way to initialize or create. **They also acknowledged that they had had other expectations initially, which now formed their motivation to engage much more in Service Design to create services more rapidly and securely.** The participants acknowledged that they learned to do many things to work like Service Designers. They saw it as not only a technical problem but much more a methodology topic. **They were convinced that deep knowledge about methodology enables doing exercises and tasks as proposed in the design sprint. Further, they proposed that many other departments inside the organization wish to experience how servicing ideas in an early stage of development could work.**

Concerning the premise of utilizing design sprints on their own, as the participants saw the design sprints and workshop as **spontaneous, they wanted to create new ideas immediately and not wait and prepare workshops for a long time.** This implies an expectation gap in understanding the design sprint's overall purpose of the working format. This raises the challenge in that the more prepared a design sprint is provided, the more the participants can be effective in design sprints. Meaning not have an ending having just a spontaneous wild brainstorming rather more an elaborated practical co-creative working approach.

The benefits of the support of external facilitators were not universally perceived. The participants stated it is difficult for an external facilitator to support as they are not familiar with the whole existing portfolio and internal discussions and insights. Conversely, it is valuable to have external inputs and new perspectives to evolve. The participants also saw a potential to transfer this new kind of collaboration and methodology back into their organization. **Hence, the benefits were evident to the participants, and they acknowledged that they would not be able to succeed without guidance. The participants saw the need for Service Designers, as they could not merely copy and transfer competencies: "This is a success factor for transformation, just providing a toolbox without guidance won't be feasible."**

Compared with previous workshop experiences, the advantage in the 10X-SDL is the level of digitalization in the overall process across all devices, which is stated as more powerful than brown paper or a flipchart. As the experience prototyping with role-playing proved valuable, the participants acknowledged that the actual "making" is more valuable than conceptualizing on presentation slides. **Furthermore, new for the participants was the application of experience prototyping and role-playing as it enabled getting into the situation and understanding the customer perspective. The experience corner application with the contextual immersion was seen as a compelling combination. As the participants' organization took a similar lab approach to build an environment to showcase user experience for development purposes, they saw the importance of a framework in the 10X-SDL that can enable achieving effectual output as an open and flexible co-creational format.**

EXPERIENCE PROTOTYPING

The **"vital"** methodological center of this design sprint from a facilitator perspective has been the experience prototyping. At first, **the experience corner, with the functionality of displaying visuals and enriching it with sounds and lights, was perceived as merely playful and straightforward. However, the more the participants felt immersed, the more impressed they were with the results' fast outcome. It provided the participants a fast access to the context of the customer and enabled them to understand the pain and gains and simultaneously enabled rapidly creating "concrete ideas."** The more the participants became familiar with the approach, the more they started acting out the situation. **As triggers in the service moments, the reflective questions enabled the understanding of core aspects of the service experience for the participants; this formed the basis of the service experience attributes. This facilitator engagement with the participants is crucial as it can trigger different perspectives or views of the situation. This enables the participants to understand the service moments and service experience holistically.**

An additional observation was that even if the experience prototyping paths or journeys have been prepared in advance, the facilitator's ability to act quickly and adjust the experience in a moment is crucial to seize the instant workflow of idea creation of participants as new valuable insights can reveal new associations of context and situation. This forms the need to quickly create new scenes in an experience prototyping path based on the story generated, not earlier during the design sprint. Potential digital libraries with DEON can enable this process for a variety of scenes so the facilitators can find the scenes that support the experience prototyping in various cases.

Finally, the combination and constant switching between experience-focused work and the analytical processing in the form of the strategic mapping was shown as a result-driven combination. This showed that it is crucial to consider the experience factors in the customer experience path and then to analyze this and compare the mapping of the existing services. The 10X-SDL work setup with DEON as visual collaboration software, the experience corner, Surface hubs as information edit stations, and the Surface studio on the facilitator desk enabled an efficient workflow. This combination even enables the possibility of accelerated knowledge management.

FACILITATOR ROLE MANAGEMENT

As this design sprint has been a test of which kind of facilitator role management for operations is beneficial, the findings show that clear definitions of roles of master, mock-up wizard, and scribe executed proves to work well while it enables a performative workflow; see Chapter **2.1.1.3: SINCO: A facilitated environment.** When an insufficient number of facilitators is in the design sprint, additional supportive and shared roles can also be assigned to the participant team when participating representatives hold adequate knowledge and expertise. The guiding principle is that a seamless workflow has to be obtained throughout the whole design sprint.

In general, this also implies a trust in the facilitator team, which shows that the system of different facilitator responsibilities as note-taking, experience prototyping assistance, moderation, and guiding the participants can be executed efficiently as one constant workflow if the responsibilities are clearly divided. Defined roles enable performance and better outcomes in the design sprint.

The strengths of each facilitator are diverse. This implies specific preferred modes of facilitators depending on their motivation and strength in relation to the facilitator task they want to conduct. In contrast, it would harm the workflow of the design sprint if one facilitator conducted the whole sprint on his/her own, as it is exhausting to maintain high performance in a multi-tasking mode.

LEARNING SERVICE DESIGN THROUGH PRACTICE

This design sprint focused on two objectives equally: to show and educate about the 10X-SDL framework and apply this in an actual project of the visiting department to create business value for the organization. This strategy has been chosen for several reasons. The availability of time is limited and has to be put to the company's best use. Merely having an educational design sprint might not motivate the prioritization of the design sprint by the visiting participants. **Using a running project as a case, the engagement by the participants is higher as this has positive effects on the**

project development itself and can prove to the company that the 10X-SDL can create valuable business outcomes throughout the application and utilization of Service Design. This strategy formulates the top priority on the agreed deliverables, which were defined in the preparation phase of the design sprint through expectation management with the leading visiting team representative. Secondly, the right set of methods as a tailored approach are chosen to deliver the results of the design sprint. Throughout this approach, the visiting team can directly experience how Service Design supports their work and they can experience direct impact through their running projects. This might also increase the possibility of transferring this newly learned framework to their running projects in the future. Still, it has to be considered that the corporate organization capabilities concerning human-centered design are limited and the 10X-SDL is a lighthouse project to enable driving towards user-centricity by creating interest in motivations to apply and educate themselves in the direction of Service Design.

Still, a more prominent discussion between the facilitator group occurred, as the design education in the form of Design Thinking workshops or Service Design masterclasses would have less preparation work. More "standardized" processes and toolboxes are used, more "typical" ideation and design thinking processes are applied.

4.1.7 Case | Process Optimization | 10.11.2017 | Participants: 12+

The one-day design sprint focused on the optimization of a purchase platform. The working group from the diverse departments was especially interested in utilizing the 10X-SDL for its technology capabilities to visualize data. Expertise is brought together to visualize how the systems exist at present and develop a new vision. The expectation was to optimize both the quality and speed of the platform process by aiming to reduce administrative activities and automatize the decision-making processes. The potential of AI solutions was also considered to achieve the expectation (Group-Interview of Case | Process optimization, 2017b).

Three challenges defined the design sprint:

- ➜ How can decisions be accelerated if necessary?
- ➜ How can the controlling function be supported through AI in the approval purchase process?
- ➜ How can the employee experience in the workflow be improved?

As findings from the previous workshops have set the basis for the design sprint, it started with the review of the analyzed pain points and requirements towards an ideal process to form a matrix of prioritization; see Figure 93. The day continued with a deep dive into the current process and analysis of each interaction point in

the software platform itself. **For this purpose, the administrator interface of the software was connected to the DEON project so that at each step, a screenshot could be taken to create a mapping of the status quo and process in detail. The working group used this approach to find the requirements for an ideal process for the status quo analysis.** With these findings, the several working groups aimed to build an ideal process aiming for the perfect interface for the user. The design sprint ended with the merger of all conceptual processes for one ideal form.

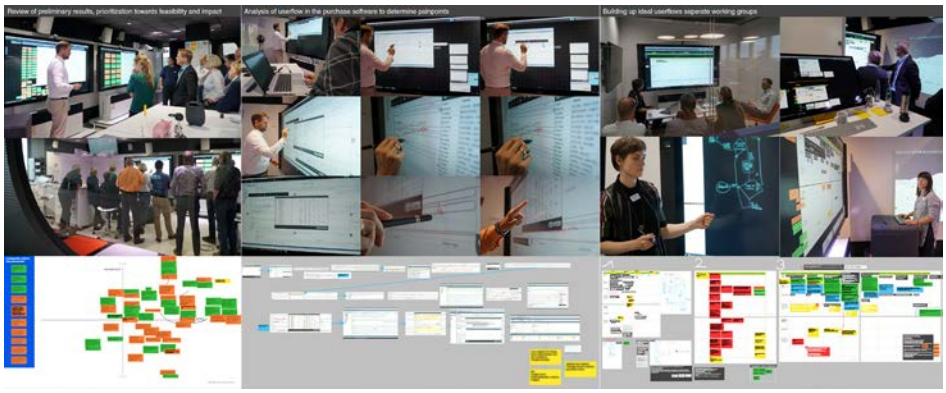


Figure 93: Working from target performance analysis towards an analysis of the booking process to building a first ideal journey (Group-Interview of Case | Process optimization, 2017a)

CASE FEEDBACK

The one-day design sprint targeted reflecting on the questions "How do the experience of previous workshops and design thinking differ from the experience of today?" and "How do the collaborative formats differ from those today? The participants stated that **"the 10X-SDL working experience seemed for them as 'time travel' in comparison to their usual work"** (Group-Interview of Case | Process optimization, 2017b).

The participants stated that the 10X-SDL as a space with the digital experience of new technology enables starting to think differently than the usual office spaces, enabling only thinking in old categories and mindsets. The participants compared their previous experiences of analog workshops that were executed on flip charts and brown paper. **The advantage of the 10X-SDL is seen in the technical support to visualize and document; this proves to be very efficient as one can practically copy documents and then regroup them in another context. This enabled collaboration as it initiates a process of participation that gets positively influenced by the group.** Despite the well-known agile methods, digital working has made the whole development process much faster, much more agile, and more

flexible. Even the participants stated that "they felt a bit scared" by working in the 10X-SDL as the speed increases throughout the whole development. As the participants stated, the 10X-SDL provides more than a factor of 10 of acceleration for project development. **The acceleration of the whole project lies in the fact that it enables continuously working faster, which dissolves a threshold. The participants admitted that utilizing a whole day with entire focus on one topic provides acceleration. Having defined roles of idea givers and note-takers also provides efficiency.** As the participants have often worked on analog whiteboards with different visualization techniques and sticky notes, **"it stays more static than working digital."**

In comparison, it seemed that the existing workshop spaces were static and inflexible to the participants. Further, a fundamental problem with current workshops is that there is a process limitation after the workshop documentation is sent out to the participants. There is no feedback by the participants afterward; **instead, the 10X-SDL process together with DEON enables collaboration in the long term as it enables constant further development, as all the data is accessible.**

The modernity of 10X-SDL as space inspires creativity. Putting various media at our disposal enables individually to express thoughts in different ways. Compared to other workshops, the tools in the 10X-SDL like the Surface hubs enable the participants to work with an **"easiness, incredibly fun and completely different as everything is open and a relaxed environment." Furthermore, it enables engagement throughout the working group as it motivates work in such a setting.** The participants argued that throughout working digital, the person does not have to start repeatedly; **the system enables an overall bigger picture of a developing project. It enables a shared vision, with a common denominator in each step. The participants see it as very important to enable the transformation for the organization's future and that more 10X-SDL spaces are provided for the employees. Meaning if "we as a big corporation of individual divisions and opinions don't create such space as the 10X-SDL, we cannot shape the future together"** (Group-Interview of Case | Process optimization, 2017b).

4.1.8 Case | Ride-pooling | 13-17.11.2017 | Participants: 6

The five-day design sprint focused on the optimization of the ride-pooling service, the PickXGo-Shuttle project. This is a shuttle-on-demand service that targets an improvement of mobility offerings for Volkswagen employees (Volkswagen AG, 2017). The service offers employees a smartphone app to enter their location and destination and book the shuttle service digital. Travel requests are pooled together using a route optimization algorithm, the fastest route is planned, and travel and arrival times are calculated individually. The concept of the project is that bundling individual journeys and achieving the maximum vehicle capacity utilization will

reduce traffic volume and CO_2 emissions per passenger. PickXGo-Shuttle combines the flexibility of a private car with the environmental friendliness of public transport and operates in two modes: commuter mode, "PickXGo-Shuttle Commute," and short-distance mode, "PickXGo-Shuttle On-Demand" (Volkswagen AG, 2017).

THE DESIGN SPRINT WEEK

Monday | Deep-dive of the customer journey: Visualization enhancement of the customer journey by photos of the user diary to enable a common and holistic understanding of the service. Mapping of opportunities and pain points inside the customer journey (based on user research) to enable ideation of new opportunities.

Tuesday | Ideation: Crazy Eight with the focus on the quantity of ideas from multiple perspectives. First visualization of ideas in the form of screen scribbles and placing these inside the customer journey. Reflection on and prioritization of the potential solutions and discussion about the functional requirements of the screens inside the application.

The work consisted of customer journey mapping, for example, photos of situations placed on journeys with assigned service application screenshots (Group-Interview of Case | Ride-pooling, 2017b). Deriving from opportunity areas generated a design challenge that created the basis for ideation. This work was a mixture of individual ideation and group ideation. It was a more open broad ideation because it proved to be much more effective when the participants just started scribbling and making visuals on paper and then discussing it afterward, enabling a constant process of contribution in the working group and building on each other's ideas and comments. The participants mapped customer journeys to identify pain points with a straightforward process and specific input parameters such as photos or user feedback. Standing as a group close together at one table created unity. Working with paper and pen and then sharing on the wall still worked the best way for each participant.

INITIAL HURDLES IN WORKING DIGITAL

Using analog sticky notes, paper, and pens, the group decided to work in the analog mode and transfer the results as documentation later to the digital project. At this point, it has to be considered that the usage of paper and pen firmly imprinted all participants and facilitators, and working digital was relatively new to the working group in general. The working group consisted of experienced designers who had analog working habits imprinted, meaning that the use of new media and technologies had not been second nature to them at this point. The participants even stated it would have been beneficial to have all created content digitalized without photographing everything and sending it directly

into the DEON project; see Figure 94. The participants reasoned that the use of sticky notes allowed the working group the necessary reduction in complexity. By reducing the drawing and writing, the digital text could be used to describe ideas or comments. However, they stated that simplicity was a key takeaway as different possibilities increase the danger of distraction. **The working group believed that the work process could be digitalized, but that reduction was more supportive. Being offered digital text boxes and additional elements felt distracting to the participants.**

Furthermore, the participants argued that there are still better ways to use pen and paper, especially during the ideation, as the participants noticed that it was not reasonable to put much effort into tweaking, changing colors, etc., but instead just to take a pen and scribble one's thoughts and exchange them with one's partner directly. The participants explained further that **"when someone has good abilities to draw something, there stands virtually or literally nothing against than to apply it on paper as these things are meant for that purpose."** Working digital also caused technical mistakes as when not having the expertise to handle them, the participants felt stuck, which hindered establishing a workflow. Furthermore, the participants noticed that at some point, they did not go back to working digital and actually stayed with the analog post-its and did not even think about how it would make sense. **Being trained to work with a pen and paper, the participants also stated that digital drawing did not provide the kind of user feedback that they wished for, also arguing that the creation of the idea in an analog way was preferred as it is most clearly representative and carries the least digital ballast with it. At this point, the working group acknowledged that working with certain habits made it hard to change.**

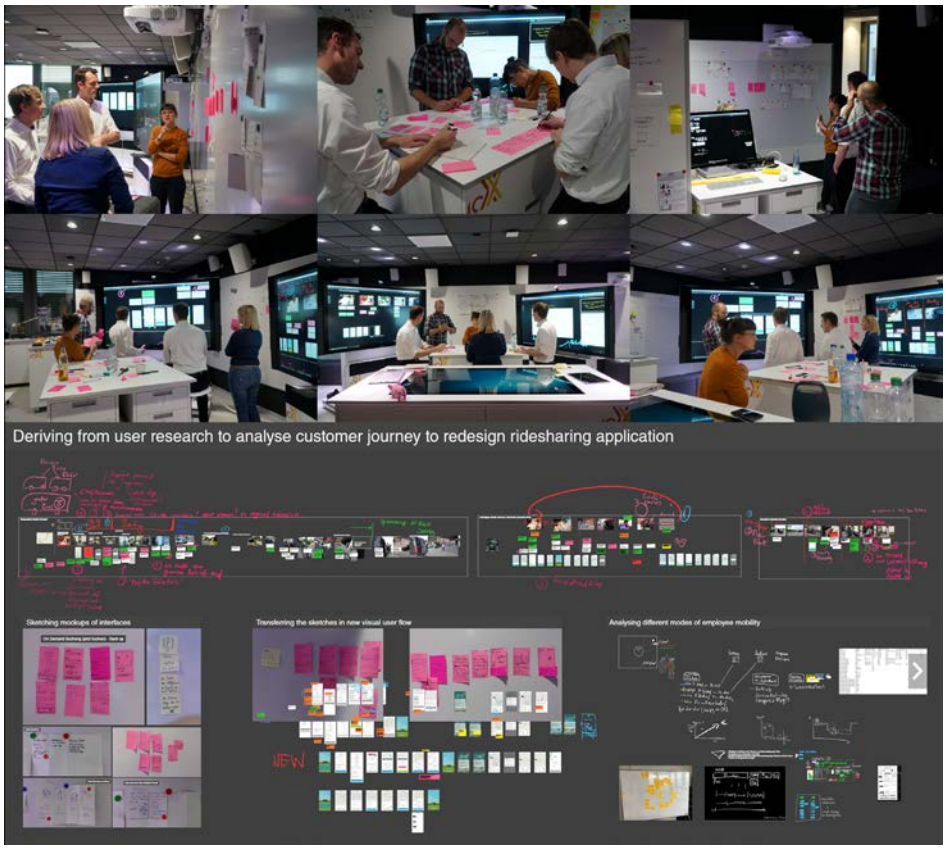


Figure 94: Combining working analog and digital at once (Group-Interview of Case | Ride-pooling, 2017a)

Wednesday | Consolidation: Recap of all findings, discussion about the service system and evaluation partnerships, preparation for the coming user testing, and finalization of the screens.

Thursday | User testing: User testing and experience prototype simulation, reflection on the findings and derivation of the customer journey, iteration of service concepts and screens and transfer in the overall customer journey, and checking for dependencies and new requirements.

Friday | Consolidation: Looking into a macro perspective of the service system, action plan, and road map, stakeholder map of responsibilities, and video of click dummy for new, improved application.

LEARNING PROCESS FOR WORKING DIGITAL

(Group-Interview of Case | Ride-pooling, 2017b) indicated that the 10X-SDL offers a wide range of working tools. At the beginning of the design sprint week, the participants were overwhelmed in that sense with the options that were given to them; see Figure 95. The main tools that the group used were the two Surface hubs with the table at the center. **For the participants, this showed that it was a kind of a learning process for interacting with the software and the hardware and when to use what and that with practice, the routine comes in the workflow. The working group learned how to use the 10X-SDL, calling it the "multimedia center." The usage of pictures, sketches, and notes in a digital manner has been mentioned as quite convenient. This demonstrated throughout the design sprint week the possibilities of the 10X-SDL.** The participants appreciated working digital as they could place pictures or any kind of media and connect them. The digital work consisted of empathy and user journey building. The work proceeded well on the touch screens with DEON as it enabled quick scribbles on the journey. The participants concluded that compared to other environments and in respect of usually having whiteboards and printed-out templates, the digital drawing was user-friendly, easily allowing scribbling and still providing a kind of analog touch because it was not meant to be a replacement of a piece of paper.

Further, the participants stated that the opportunities in the 10X-SDL are beneficial for the topic of immersion in a user world. **An advantage of the digital workspace was seen in its virtually infinite space where one can place all kinds of data and information. The participants defined it as unlimited as compared to having five to ten whiteboards at once. A general agreement was to have a digital landscape of all information in which one can zoom in. As a result, early design can be very well supported by working digitally in the 10X-SDL environment, especially in terms of photographs, stimulus material, and other opportunities.**

FACILITATION ENABLES A STRUCTURED PROCESS

Having facilitators with differentiated perspectives to support restructuring thoughts and ideas was mentioned by the participants as a great experience. The power of the 10X-SDL fully came into place when it went into user journeys, where the working group could work directly with pictures on the touchscreens. In this case, the digital capabilities of the space in connection facilitation worked very well hand-in-hand. **As mentioned, they could have been even much more lost with the technology or otherwise overwhelmed without any facilitation support. Further, the participants loved having everything in order, cleaned up, and color-coded. All these were possible but not necessary at this moment.**

The participants agreed that it is necessary to have one facilitating person responsible for bringing everything together on the screen. **"To have one person responsible as an active listener and interrupting discussions and reminding to note the ideas and putting the comments in order."** The facilitating is also about documenting and guiding so that the participants do not have to care about where to put which sticky note or template to use. This worked reasonably well when it came to working in detail on something.

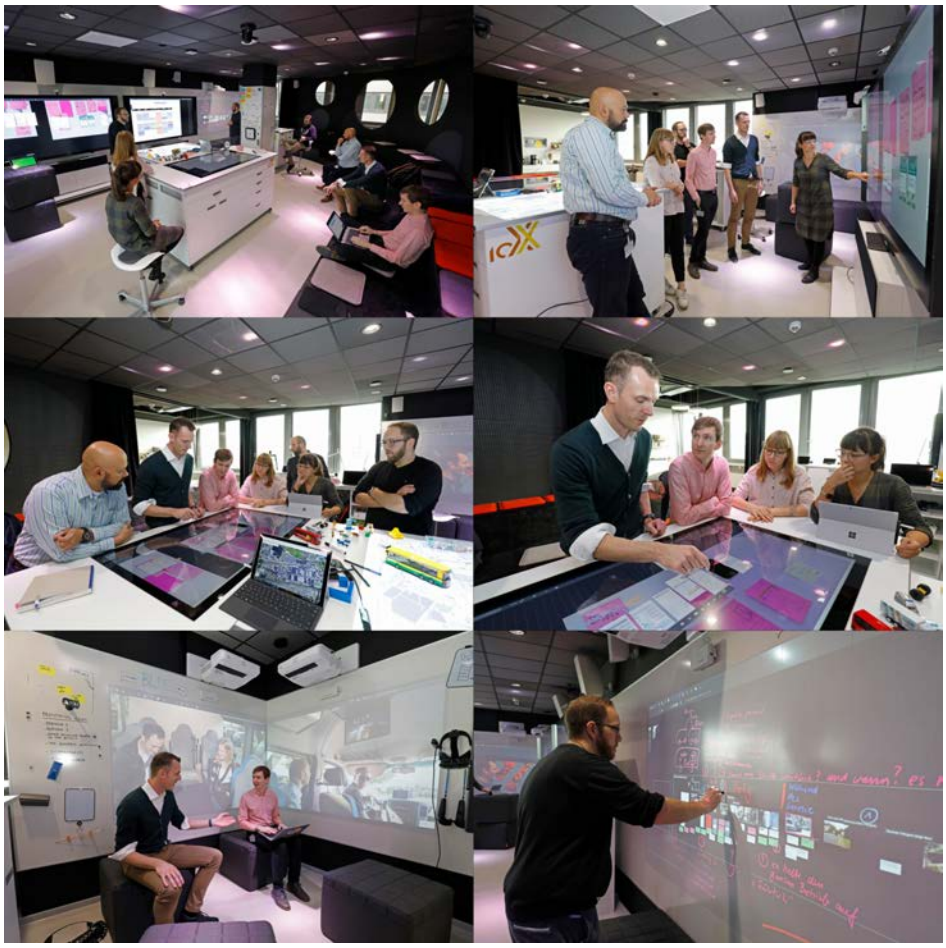


Figure 95: Working on a variety of devices depending on the use case (Group-Interview of Case | Ride-pooling, 2017a)

FEELING ACCELERATED BY FOCUS

Facilitation is a key enabler to achieve a successful outcome by acceleration "by having a technical facilitator, someone who looks after and knows how everything works" as the 10X-SDL is a facilitation-intense room, "having a lot of technology which needs to be mastered, having the availability of a lot of different, methodological approaches." Further, having many physical prototyping tools on hand is demanding of facilitation expertise. The participants also noticed that it takes discipline to use a virtual space as all information should be structured and sorted or harm further processing. The full-focus format of a five-day design sprint was the basis for the project development acceleration, dedicated to the project and nothing else, even having an out-of-office work notice active. Furthermore, some phases in the empathy part provided acceleration by utilizing the digital workflow as no translation/transition of data was needed, such as printing and putting documents on the wall or re-documenting the customer journey. **Further, using the DEON app, taking snapshots of sticky notes and directly uploading them into the project saved time. As all the data and ideas were included in the DEON project, this enabled an acceleration to process the design sprint further.**

FEEDBACK FROM THE FACILITATORS' PERSPECTIVE

The five-day design sprint (Group-Interview of Case | Ride-pooling, 2017b) revealed challenges for facilitators as the facilitators new to the 10X-SDL struggled to get to know and use the lab. As the facilitating Service Designers had had long-term experience with conducting design sprints, the frame of the digitally and technologically driven setup of the 10X-SDL showed indicated hurdles in the interaction as they were used to the analog routines of working. This implies that experts who have intrinsic work routines might struggle or need a long learning process to adjust to working in new digital ways. For them, it was a new approach, as their instinct told them that it is better to work on paper than transferring content digital or documenting it afterward. **One challenge was the hybrid role of Service Designer, a facilitating role as an enabler of working together and being a designer at the same time. The facilitating role must be clearly defined and the person must be available to support if something does not work so that the others are not displaced from the working flow.**

As the facilitators stated, as the participating group did not use any framing in the form of a template, instead just mapping freely, it ended up in quite a **"mess." The project and items needed structuring, as it would be challenging to continue a project that was not structured correctly. It is also necessary to enable reports, as documentation is needed. This provided the lesson that next time the participants should work in a more structured way.**

Furthermore, two situations in the process indicated that the participants worked with different devices on the same DEON project in this focused flow of ideation. For the facilitators, it seemed challenging to get the group together because different participants were working on different things but not working together. **This was an incredible difficulty for the facilitators as they wanted the group to focus, but because of there being so many different devices and input possibilities, this proved to be a challenge. At the start of the design sprint and in the facilitator's point of view, the equality of working tools in the analog approach helped to define the expected level. They argued that if every participant had only a sticky note and pen, the working basis for everyone would be equal,** whereas with digital media, the options in sorting, colors, alignment, font sizes, and different backgrounds can lead to confusion as too many options might harm the ideation process. The facilitators further argued that due to the quality of experienced participants and their deep understanding of the design process, templates for customer journey mapping were not needed. Everyone knows what to do with their sticky notes and pen, proving the fastest way of working. This also meant that they did not tend to work in a structured way, much more in free ideation. For them, this simplistic way proved to be an excellent quality mode, able to deal with the questions very intensively and directly without clarifying too many problems of understanding, neither methodically nor in terms of content.

4.1.9 Case | Onboarding | 21-23.11.2017 | Participants: 12+

The three-day design sprint "Onboarding" focused on optimizing the onboarding process of B2B customers for a fleet management system; see Figure 96. The second purpose of the team was to evaluate the framework of the 10X-SDL for potential future adoption and transfer it into their business processes. In preparation for this design sprint, user research was conducted by a part of the visiting team. Additionally, informational material was prepared in the form of a market and product study, including an overview of the needs of the B2B customers.

Questions to be answered

- ➜ How might we create an efficient and practical way of broadening the understanding
  of onboarding so that the solution fits the target market more?
- ➜ How do different markets onboard their customers and what can we learn from our previous research?
- ➜ How would a universal onboarding process function?
- ➜ How could we use this standard as a basis for designing for multiple markets?
- ➜ What tools and methods can we use for learning about different markets?

Goals of the design sprint

- ➜ Reach a common understanding for fleet management and different stakeholders, sharing insights of the user research phase. Deep dive into the study, broaden the result of the research findings and establish a standardized "best practices" onboarding process
- ➜ Apply tools and methods of the 10X-SDL, share experiences, and create a toolbox for future research
- ➜ Work in an open, transparent, and trustful atmosphere

Sprint expectations and premises

- ➜ **Must have:** A way to broaden the results of the study and enrich the research findings
- ➜ **Nice to have:** A toolbox with working tools ready to apply. Understanding of user research and Service Design tools and their applicability for future work. Straightforward, standardized methods (toolbox) of learning about onboarding in different markets. Standardized "best practices" onboarding process for further development and testing in different markets
- ➜ **If possible:** Try out the tools within the working group, Hands-on learning experience in the 10X-SDL setting
- ➜ **Out of scope:** Try out the tools "live" on the market, re-evaluate, and improve

Methods used in the design sprint

- ➜ Analysis and information sharing of research to create enriched personas of platform stakeholders, and quick roleplay with Lego serious play to understand stakeholder motivations, pains, and gains
- ➜ Journey mapping of the current fleet management onboarding process
- ➜ Needs statements to pinpoint customer pains, "How might we" questions to reframe challenges, and ideation method 6-3-5 to create new solutions
- ➜ Rapid iterative prototyping and testing of these solutions
- ➜ Roadmap of future development and evaluation of critical tasks

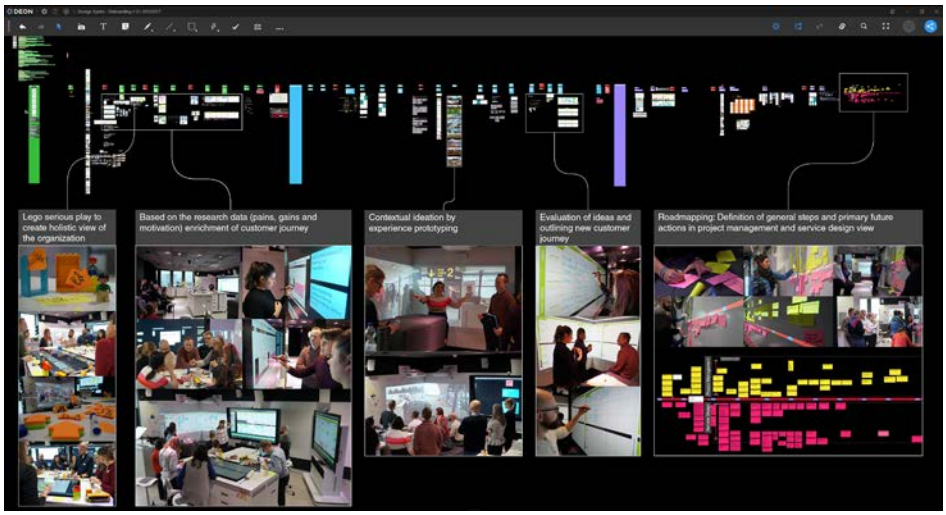


Figure 96: Design sprint overview (Group-Interview of Case | Onboarding, 2017a)

DAY ONE: CREATING A COMMON UNDERSTANDING

The first day started to create a common understanding of the fleet management system study by sharing information across the working group and utilizing Lego serious play to give a holistic view of each team member's function in the organization to enhance the team's alignment. The persona enrichment based on the customer research provided an overview of the pains, gains, and motivations of the B2B customers in relation to the stakeholders' viewpoints as business partners, salespeople, and system experts. Doing a deep dive via mapping enabled a frame to identify sequences of the onboarding process and possible pain points in the customer journey in alignment with the multiple stakeholder viewpoints.

The journey mapping was divided into two perspectives as front- and backstage; see Figure 97. Frontstage journey mapping of the current onboarding process took place in process segments with selected need statements of the customer. The backstage journey map was based on the need for training and how it differs in different markets and the customer's diverse opportunities in interactional touchpoints with the stakeholders.

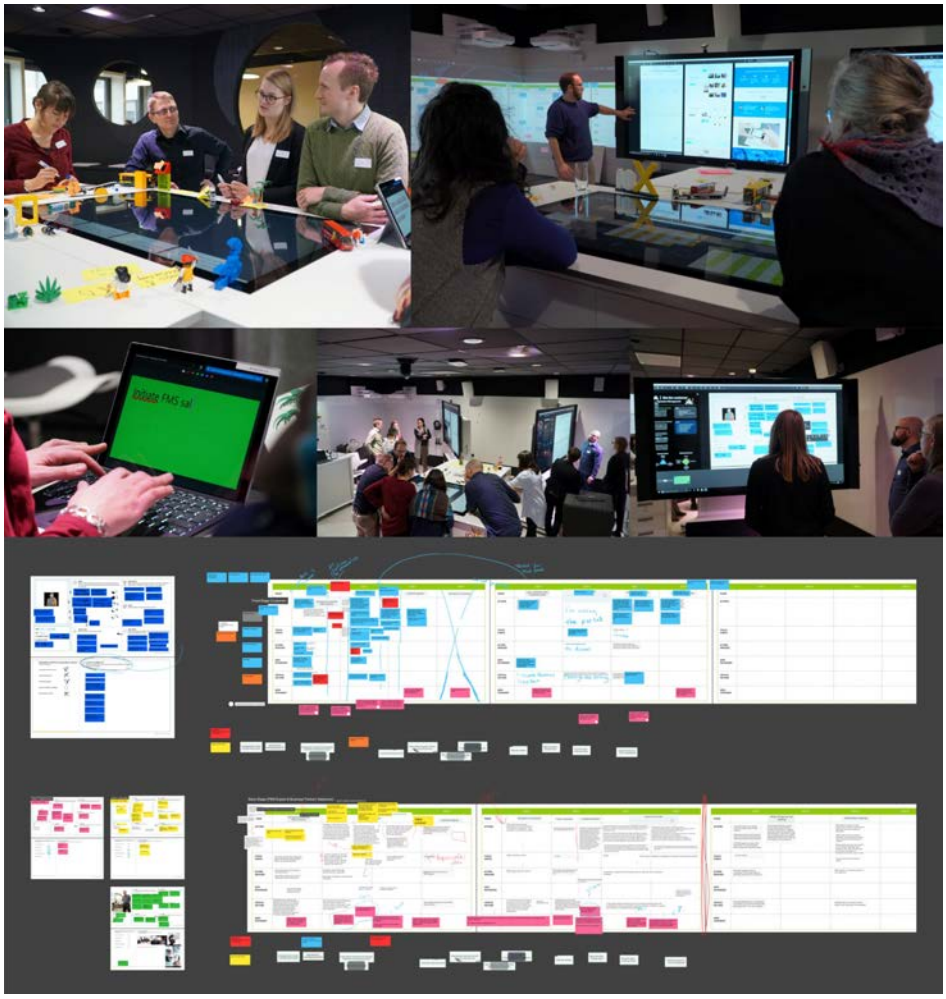


Figure 97: Creating an understanding of the customer groups (Group-Interview of Case | Onboarding, 2017a)

GROUP FEEDBACK FROM DAY ONE

Being a large group of approximately 12 people from diverse backgrounds and departments caused a limited alignment previous to the design sprint (Group-Interview of Case | Onboarding, 2017b) within the working group. On reflection, this revealed several issues concerning alignment and a diverse set of expectations towards the design sprint itself. Some participants requested to learn much more about Service Design itself and why tools had been chosen, while others also wanted to learn about Service Design facilitator experiences in general. **This design sprint revealed how important it is to have aligned expectation management in the**

preparation phase as it lays the foundation for a fast up-scale in productivity of the working group.

The day was packed full of activities with a limited timeframe for the participants, and the participants acknowledged the necessity of a tight schedule. The facilitators tried to provide advice on how to move on in order to finish all the steps. On the positive side, building a holistic overview in the form of a customer journey enabled the working group to see the needs and pains in each touchpoint. Drilling in the personas and the customer journey served for everyone to achieve a common understanding. The working group mentioned that some of the exercises provided too little time for the persona examination and they mentioned they would have liked to spend much more time on looking at the pains and the gains, as deepening this work could have revealed more insights to find the real customer value.

In retrospect, the group worked productively but also stated that they would have liked to have worked more independently, with everybody working on their own, giving their input, and then consolidating it in the group. The participants suggested this would be a more efficient and faster approach. These stated concerns revealed a routine working style being imprinted. Still, the participants enjoyed experiencing the 10X-SDL, as it provided a first work experience in the modern environment, workspace, and tools. Not **knowing how to utilize digital working caused particular issues as it seemed to hinder the working group in placing data quickly. However, considering that this was the first learning, it provided the participants the experience of the pros and cons of digital working, depending on the situation.**

DAY TWO: ANALYZE, IDEATE, PROTOTYPE, ITERATE

The second day focused on sharing information about the 10X-SDL framework. In order to align the work on terminology, the participants reflected on and wrote down their definitions for onboarding. This was analyzed for similarities and converted into a generally shared viewpoint. Establishing common grounds aligned the working group for further discussion and the rest of the design sprint.

The working group continued to define "How might we" questions for the basis of ideation, ideating possible new solutions and quickly prototyping these solutions. This allowed the working group to distill the findings into statements for opportunity and solution-finding. Most critical or interesting statements were then chosen as a basis for ideation. The ideation method 6-3-5 (6 rounds, 3 ideas, 5 minutes per round) created a high volume of ideas. The approximately 150 different ideas for solutions based on user needs were then analyzed and voted on for rapid prototyping and testing. These ideas were turned into one-page descriptions of possible solutions for more accessible communication of the concept. Participants' pretotypes were built and tested, feedback was gathered, and the concepts were

iterated and improved; see Figure 98. Then, these ideas were mapped in sequences to see what would be needed to create them and make them realizable.

Figure 98: Testing by experience pretotyping (Group-Interview of Case | Onboarding, 2017a)

GROUP FEEDBACK FROM DAY TWO

The second day of the design sprint (Group-Interview of Case | Onboarding, 2017b) was divided into presentations of colleagues showing practice examples, Service Design education, and project work itself. For instance, the participants appreciated theory sequences explaining the whys, learning through exercises about the methods and the process. The immersion corner provided them an insight into contextual ideation and immersion in the customer view. The participants acknowledged that the time pressure was demanding but also understood the reason why it was needed. The ideation part opened up a discussion on how to ensure quality in ideation: **"How can the most valuable ideas be selected, especially under the circumstances of working in an accelerated development process?"** For instance, 150 ideas were broken down to five in a concise time.

Still, the participants stated a joint agreement to understand the potential of the environment and how it can boost creativity. DEON as a tool was seen as very useful through experiencing a more comprehensive range of features. The participants valued flexibility in the needs of the diverse working group. Further, the tasks and the results were an outstanding experience as they showed the participants the potential of having this kind of environment as a 10X-Service Design lab. The participants acknowledged that joint or aligned expectations are essential, rather than no discussion occurring in the group. It also allows the working group orientation to have a brief overview of the processes and tools used.

DAY THREE: SUMMARY AND PLANNING OF NEXT STEPS

As Figure 99 shows, the third day consolidated the previous work in a new and improved customer journey map that would be the best possible frame for guiding future development. Market-specific questions could be easily turned into future research questions and used as a baseline for gathering market-specific

differentiations. For planning the following steps, a roadmap for future actions and assigning tasks, roles, and setting a mission for the next half-year was devised to keep the momentum after the design sprint.

As requested, a research kit that contained guides, research planning, and conducting methods was also presented for further use. The research kit included multiple viewpoints on journey mapping, a customer journey mapping template, a service blueprint template, and user research and visualization tools.

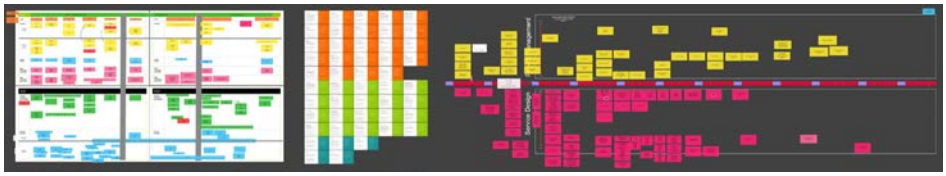


Figure 99: Ideal customer journey for the fleet management system, research tool kit and roadmap (Group-Interview of Case | Onboarding, 2017a)

GROUP FEEDBACK FROM DAY THREE

The third day of the design sprint provided a summary on reflection of all three days spent in the 10X-SDL (Group-Interview of Case | Onboarding, 2017b). The participants found the various presentations and working exercises handy and efficient during the design sprint as they enabled the working group to test and try new tools. The utilization of working digital with DEON was evaluated as inspirational. In summary, various learnings of the participants covered multiple findings.

A DIVERSE WORKING GROUP MISALIGNED—LEARNINGS FOR THE PREPARATION PHASE

Even when briefing material was provided and preparation meetings "have taken place," there was insufficient preparation and alignment amongst the visiting team internally before the design sprint. As **the participants were from different departments and different working projects, the working group did not follow the same interests as the design sprint, which caused divided interests. Still, they acknowledged that the expectation was diverse, as the participants had different ideas about the purpose of attending the design sprint, stating a stronger need to focus on preparations for a design sprint. Concerning the diverse group dynamics, the group acknowledged that not the whole group followed the same purpose in the design sprint. The participants agreed that the beginning**

of the design sprint was time-consuming, acknowledging that they had limited knowledge about the onboarding project itself. Some participants even seemed somewhat frustrated as they expected that they could have used other tools to be more aligned and acknowledged that their understanding was increased by gathering new knowledge. The Lego serious play as warm-up especially enabled the participants to show and tell the others where they were placed in the organization. **This also revealed that there was limited information within the working group about each member. As the participants did not know much about the topic itself, a completely different group of people might have been better or at least efficient for the topic.** The participants admitted they were an unacquainted group of people and that it was difficult to have the right expectations, creating an initially dysfunctional social environment. The participants suggested that the same objectives should form a premise for the participating working group for the next design sprint.

The suggestion came up that better expectation management would be critical to inform the participants what was expected from them to set a common understanding, **as alignment before the design sprint is essential when so many different people from different departments have to have a common understanding of expectations about objectives, schedule, rules, etc. This also means that from the facilitators' point of view, they are as prepared as efficiently as possible for the limited time span of the design sprint, understanding the duties of the product owner and participants beforehand.** This would have saved the participants, product owners, and facilitators many discussions and frustration. The participants suggested that a Skype presentation beforehand would be sufficient to provide a faster deep dive into the design sprint. The working group agreed on this statement, as the clearer the instructions, the smoother the design sprint runs in coordination.

Furthermore, introductory guidance texts have been requested to explain the methods and project. Further, the design sprint rules could be good to guide how the group should behave toward each other, avoiding the use of phones, how the facilitator pig works and how to work in the space in an open-minded and aware way out of respect for differences. The presentation and the methods could be introduced before the workshops and some kind of theory before the practice.

Still, the participants appreciated the experience in general as they learned not only methods but also new insights on how to facilitate and handle such a mixed group, especially flexibility in handling the different needs and aligning the working group and making sure that everyone is satisfied.

COMPARISON TO PREVIOUS WORKSHOP EXPERIENCES

The participants compared this design sprint to previous workshop experiences as a multi-model approach. The participants used a toolbox to evaluate multiple markets and steered more towards finding solutions that improve the onboarding process itself. One of the main learnings of the participants had concerned feeling accelerated, as the group stated the main benefit has been to dedicate focus three days in a row, as the participants had not experienced an environment like the 10X-SDL before and were able to see the benefits of it. The exercises and the outcome showed that they were able to achieve results in a concise time. **Further, they found it interesting to get all this input from different angles as perspectives of their working peers, even stating that perhaps the actual case of onboarding project might not have gotten that far if they had not done it like this.** The participants valued the learning experience that provided all this input, as it allowed them to see how they should move forward with the project when they got back to the company afterward.

Further, the immersion corner enabled them to immerse into the customer environment and understand the problem. As the participants had never done it before, they valued that it allowed them to see all the details and what is important in service. They valued the approach as very cost-efficient and wanted to adopt it in the company. The visualization enabled by projectors with the visual collaboration software DEON opened their eyes as to what is possible by projecting visuals on the wall with the right sound to increase the immersion.

LEARNING SERVICE DESIGN THROUGH PRACTICE

The learning aspect was seen as the most valuable in relation to the utilization of tools in customer journey mapping, techniques, and the challenges in this kind of work. The feedback toward the first part with the Lego serious play and the role play was diverse, as some did not see it as helping to bring the group right to the starting level, but also acknowledged that this depends on the working group itself. The participants approached the presentations to see how tools can be used, how **"how might we"** as a tool could improve the service development, and how the terms could be defined. The participants appreciated **"how might we,"** which provided an excellent exercise to bring up many ideas. Still, some participants requested more orientation as to what to do next in a laid-out schedule. They also requested adding more examples, clear instructions, and guidelines in the design sprint as an explanation to make it easier to understand what the participants were going to do. Some participants mentioned that it is important to try out the entire tool instead of drilling down on specifics. Other participants stated they were eager to dig into more details of the technique and the actual process itself, also requesting some physical posters

as an orientation to keep it simpler. During this customer journey, they needed to have some examples of verbs to explain the actions, the touchpoints, the critical factors, etc. The participants also mentioned the lack of the definition of some steps in the project. For instance, the language and definitions used were clarified to the participants. They were also not sure why they were doing the customer interviews and mapping the customer journey only to be told what the customers need and like. They requested more focus on Service Design: **"Why are the methods suitable for this project in this phase?"** Still, opening up towards the customer enabled, from multiple perspectives, the creation of a shared understanding by learning from each other.

The participants valued the double diamond as a process as it fulfilled the need for orientation and provided an understanding of what they were working on and how everything comes together by looking at the double diamond and locating where they were situated. The participants learned how valuable critical feedback is for constant improvement of service and how tools, in theory, are quite different compared to their practical application. They saw how all the methods were implemented in a customized process depending on the case. The participants mentioned that they got into a completely different feeling of the flow by seeing where each exercise was taking them.

Another challenge participants mentioned was that the organization was complex and needed to engage all these angles with many stakeholders to succeed in development. As service development in relation to interaction, infrastructure, and a system is complex to develop, many factors in all areas need to be considered in a holistic sense. The participants stated that an environment such as the 10X-SDL creates a way to handle this better than the way it had been so far.

LEARNING SERVICE DESIGN BY DEDICATION AND FOCUS IN A DESIGN SPRINT

The participants felt accelerated because they learned about many new methods as it opened their eyes to other tools. The second learning was about getting new perspectives and insight from all the team on diverse topics, which helped gain a great deal more insights than the participants would have gotten on their own. This increased the quality of the findings due to multiple perspectives providing a holistic view on the topic.

The participants had had seminars on how to use customer journey mapping but stated that they would have never learned so much at home as applying it in an actual project gave them a deeper understanding of the tool that they could also apply in other projects; applying theory in practice. In this way, spending the whole day with one focus was something that they learned to value as previous workshop experiences had been frustrating, with shorter periods available.

The group also argued that focusing for a couple of days in a row enabled deeper discussion during these periods as **"it is a great sharing and learning experience."** This enabled a basic understanding in the group of what a design sprint is: **"How it is done and how much you can achieve in a short time."**

The participants stated that it was great to listen to the actual experience and inspire it. It is good to have inspiration moments and to see the potential of the techniques. The participants valued learning about many good tools and methods and also formulated tasks and ideas for a service design roadmap for companies to use. The participants also requested role definitions in the instructions and to have clear roles in the design sprint, such as who was doing what, on what day, and with what tools, as they found it confusing, and it needed to be clarified who had which role. Some participants wished that, especially with the customer journey mapping sections, facilitators would have controlled or steered the group a bit more.

DIGITAL WORKING CAN BE HINDERING DEPENDING ON THE HABITUAL WORKING STYLE

DEON has been seen as an exciting tool with potential, especially for gathering all information in one place. However, the working group was skeptical about the collaborative qualities, in that there was the only person who could edit at a time on the touch screens. Working parallel at the touch displays was requested to enable mutual influence. The team proved that it had very independent working styles as everybody wanted to participate actively and engage in the co-creation. They argued that they would have progressed much faster if they all had just ordinary post-its and ordinary pens. The digital setup hindered this as it was built by the facilitators who conducted and sorted the information.

Further, some participants mentioned that working digital has been frustrating and slow. Even if working digital with DEON showed advantages, the participants reflected that it might not be the best tool for some tasks. **The participants agreed that to achieve co-creation, the barriers to the approach need to be very low that everybody has to be able to create simultaneously.**

CHALLENGES OF IMPLEMENTING SERVICE DESIGN AND DESIGN SPRINTS

As different departments participated, the views on adopting or implementing the 10X-SDL framework were diverse. Transferring this kind of design sprint into the business culture is seen as a challenge.

The participants also stated that the current business culture is based on a mix of meetings, telephone calls, and daily requests by colleagues for other things. This creates a challenge to implement or adapt a design sprint format

based on days dedicated to one project, forming the need for adaptability in the given business culture. The participants suggested that they could adapt the process and divide them into smaller flexible segments. From the 10X-SDL, directly applicable items were tools such as time-boxing and other simple nudging tools like the facilitator pig.

The department in charge of services and solutions stated that they were fortunate enough to have a business culture that understands that workshops bring value and that understanding of the user and customer is essential. Having a valuable user experience is a success factor in the entire process. They stated that all the prerequisites exist for making design sprints with the entire team. In this way, they are very compatible with all of the solutions offered by the 10X-SDL framework.

From a financial services perspective, the participants stated that they could directly apply the toolbox with a good understanding of the entire library required in the short term. In the long-term, however, working in design sprints and using advanced collaboration technology would necessitate more significant steps towards improving working ways.

Further, the participants stated that in their personal experiences, cultural factors have to be considered when considering the implementation of new working styles, meaning that there might be conflict around scheduling projects at a fast pace, and there is a need for consensus to be found first. For example, as the purpose of the SINCO Pig as a facilitation tool is to break up discussions by honking and making a funny sound, it can be seen as interfering with the consensus building in the group even if the purpose of breaking up discussions is leading the working group back to the main objectives. **A further challenge the participants mentioned was how to connect the design sprints to the pre-existing decision processes, as this design sprint has to interact with the running development processes to accelerate project development. Even if the organization is very open to transformation, a mindset for change has to accompany this.**

Still, the group's learning revealed that they have already implemented a way of working towards a more short-term focus or one product at a time. Therefore, by experiencing this, it would be much easier for them to correctly implement and maintain this way of working, as they will have learned new tools and, more importantly, how to work with the tools in an efficient way, which enables understanding of which kind of mistakes to avoid that they would otherwise have made in their actual projects. They also mentioned the importance of planning and preparation, group constellation and size, the skill set of facilitators, and chosen tools as factors that have to be orchestrated simultaneously.

IMPROVEMENT SERVICE DESIGN OF FACILITATION

The three-day design sprint (Group-Interview of Case | Onboarding, 2017b) showed diverse findings from the facilitators' perspective towards preparation and group alignment. It resulted in future improvements of the 10X-SDL framework, **especially learning how to improve the facilitation in general, as a limited period was available to prepare the design sprint between the product owner team and the client, which caused issues in the preparation phase itself.** The participant group had no coordinated expectation management before the design sprint, which caused a misexpectation of the design sprint. The different interests were a challenge for the facilitators, as this design sprint was quite complex as it is a multi-stakeholder business case. The primary focus was on how the fleet management platform onboarding process could be improved, including finding the suitable methodology for ideation. Later, the facilitator team learned that basic Service Design education would also play a significant part in the design sprint, as the facilitators would have a role of a trainer of Service Design by showing and providing training with the working group tools. The preparation phase included delays in finalizing the DEON project in which all data, tools, and overall schedule should be prepared. In general, the learning of this design sprint has enabled the deep-dive in the preparation phase of the overall 10X-SDL development process, as different design sprint templates have been developed and changes in the preparation phase itself have happened. The key learning has been that preparation is extremely important to have efficient design sprints.

PROBLEMATIC SITUATION WITHIN THE FACILITATOR TEAM

In the preparation phase, within the facilitator team of four persons was confusion as to who was in charge and which responsibilities everybody had, but the main issues involved interpreting the objectives of the design sprint itself. **Further, as there were alignment issues with the product owners on the client-side, the facilitator expectation was that the project owner side was in charge of defining and framing the objectives and doing the alignment and expectation work with the participating working group before the design sprint.** Furthermore, an issue was not being clear as to who was the one making decisions within the facilitators' team. The situation worsened as the product owner of the client-side was sick before the design sprint went through the final touches in response to final feedback on the agenda.

Ultimately this caused confusion as to what methods to use, how much time should be allocated, and who had which facilitation role. An uncertainty was which kind of previous knowledge the participants had in conducting user research, like basic field research. This previous user research conducted by the designers from the company side was a crucial dataset in understanding their target B2B customers.

Also unclear was how much the visiting participants analyzed the data beforehand and how much they agreed with the data and how much effort was invested validating them. **As some facilitators were new to the 10X-SDL, the possibilities and digital workflow were unclear, which caused further confusion. As the preparation time for some facilitators was limited by late access to actual data for the design sprint, this increased the preparation problem as even the main objectives of the design sprint were not clear.**

ADJUSTMENT OF THE PREPARATION PHASE

As a lesson, the facilitators suggested that the timing structure of the day, including expected objectives, results, and connected methodological setup, be improved as the confusion about the work split has caused the actual delays. This also revealed that clarification is needed in the responsibilities within the facilitator team but also within the alignment of the information that has been prepared with the client. **Further, the time consumption for building modules for the design sprint has to be adjusted to provide a better overview of how much time is needed to conduct a design sprint throughout the preparation and execution phases after work. Further, to enable an efficient frame for working together, a premise was established that everybody should have access to all the project data in one DEON project to enhance collaboration.** Enough time for preparation is also needed for the facilitators, as some have only been able to jump into the case a day before; this is not sufficient preparation time.

For facilitator responsibilities, it is crucial to have clear role definitions from the beginning on who has the lead and who makes the final decision. There was demand from the facilitators to define the main facilitator responsibility. The facilitators also have to stay in their responsibilities and not take over for others if there is a situation of doubt. Having defined facilitation roles enables making decisions and sticking with the decisions without getting too affected by the participants' request. **This could be solved with a clear responsibility check in-between the facilitators to define a lead facilitator or lead organizer of the sprint, someone who is very deeply involved in the project and who can also evaluate how those decisions affect the project. Further assistance would be a checklist of what the facilitators need to prepare before the design sprint and define what the assistant facilitators have to prepare.** Also important is the structure of the preparation phase when it comes to facilitation planning. The set of the execution plan and defined work packages is crucial as it enables working in parallel with each other. This would enable preparation to execute parallel work items and purposefully allocate the time. In the upcoming design sprints, the definition of the sharing of responsibilities has to be defined to create the right expectation management within the facilitator's team.

Furthermore, preparation deadlines should be set for the facilitators and client-side so that the schedule is not adjustable anymore, as not many changes are possible anymore. As a result, the project management of the preparation phase and facilitators' work schedule has to be organized. This creates the basis for a design sprint planning template so that this problem does not occur in the future.

NEED FOR IMPROVEMENT OF FACILITATION

The facilitator team acknowledged that to enable seamlessly working together needs a familiarization phase. The facilitators said that it takes practice to enable performative working. **It has also been a challenge for the facilitators to work digital, mastering new technologies and digital tools. With a new set of roles, the facilitators requested more explicit role definitions but also flexibility.** In the end, one person has to have the final call. The facilitators requested that the preparation phase is considered as necessary, as a customized design sprint needs more time to prepare, more detail in the basis of the suitable methodologies, and the division of the working setup most efficiently and effectively. The preparation should be finalized at least one week before to create an alignment between the facilitators so that everybody has the same understanding of responsibility and expectations.

4.1.10 Intermediate summary of deploy phase: Key findings & learnings

In retrospect, the deployment phase, including the cases from **Chapter 4.1.1-4.1.9** and the intermediate feedback sessions towards the deployment phase, can be considered as a learning phase for the Service Design facilitators, participants, and organization itself (Group-Interview of Case Service Design Education Day & Group-Interview of Case 10X-SDL Pilot Feedback Session, 2017). Several interacting factors have been revealed during the deployment phase; these have shown the advantages and also challenges to overcome.

By using running business projects as cases, the focus has been to prove to the organization that the 10X-SDL can create business value throughout the application and utilization of Service Design. Throughout this approach, the visiting teams could directly experience how Service Design supports their work and also evaluate its direct impact on their running projects. This might also increase the possibility of transferring this newly learned framework to their running projects in the future. Still, it has to be considered that the corporate organization capabilities concerning human-centered design are limited and the 10X-SDL is a lighthouse project to enable driving towards human-centricity by creating interest and motivations to apply and educate in the direction of Service Design.

4.1.10.1 The advantages of the 10X-SDL approach

The 10X-SDL is seen as a practical approach for the organization and for the employees simultaneously as the approach **provides the potential to do any kind of creative work, and in a very short timeframe, being enabled to create results.** As it is difficult in the organizational structures to **focus on the doing side**, the 10X-SDL enables building up concrete things in a co-creational sense to transform ideas into concrete, tangible solutions. The 10X-SDL design sprint format focuses on result-driven development and **project acceleration while it integrates running business processes.**

A MULTI-FUNCTIONAL AND ADAPTIVE SPACE

A space such as the 10X-SDL has not been experienced by the participants before. The main difference is **seen in the high technological level compared to other creative spaces,** especially as it **enables immersion in and reenactment of particular user experience situations**. The 10X-SDL as space is seen as a **multifunctional space for presentations and workshops equally.** Being able to present in the traditional style for bigger groups and having a co-creative space at the same time is seen as an advantage. It is a flexible space in which its functional elements, for example, the furniture, can be easily reconfigured depending on the needed working constellations. Further, the participants valued the flexibility and configurability of the space as it is possible to make more minor separations for working groups through moving and adjusting the furniture around them. The 10X-SDL as space in its **modernity inspires the creation of something unique**. Having various media at its disposal, enables individually expressing thoughts in different ways. **The digital experience of new technology enables thinking differently** compared to the usual office spaces, which enable only thinking in old categories and mindsets.

DIGITAL WORKING ENABLED BY FACILITATION

The participants were **skeptical in their first impression as to whether the technology would be a barrier or supportive**, as they expected to be slowed down. Due to the assistance of the facilitators, the participants were enabled to achieve fast digital workflow and were also convinced of the benefits. In contrast to their expectation, the participants were fascinated by **how digital collaboration was integrated into the process to accelerate the working development. Combining a consistent digital workflow, structured process, and technology especially enabled the learning of its potential value. The increased visualization and interactivity by digital presentation motivated the team to participate, as it provided transparency and enabled teamwork through digital collaboration.**

The key factors listed below provide the summary of added values concerning information handling mentioned by the participants:

Access to all information at once—accessibility: The most important benefit has been that it supports accessing **all the information in digital form at once.** Through the support of facilitation, it provided the participants a **clear structure and overview of tasks.** As diverse perspectives of the experts could be gathered throughout the process, the working group felt very inspired in **bringing all the information together.**

Information transparency—overview: The very transparent way of working provided an overview of each stakeholder. This is seen as a huge benefit by **having all information at hand, as the DEON project provides unlimited digital space.** The participants argued that throughout working digital, the person does not have to start repeatedly; **the system enables an overall bigger picture of a developing project. It enables a shared vision together.**

Easiness in organizing information—organization: From the facilitators' point of view, it **enabled an easiness in organizing data and switching between information sets and media formats. It organized the boards and information of the whole project throughout the whole process of the design sprint.**

Digitalization is a limitation of chores and an increase in efficiency and motivation: As there are no piles of paper sticky notes anymore to be later processed. This eventually saves a significant amount of time for the facilitators to have all data available in digital form. Previous experiences have shown how stressful it is to work analogously and later to have to transfer everything in digital form. The advantage is seen in **the connectivity; compared to analog workshops, there are no chores,** such as the participants having to carry items or charts around to present the results to others.

Faster processing and communication of information: The advantage of the 10X-SDL is seen in **the technical support to visualize and document**. This proves to be very efficient as one can easily copy documents and then regroup them in another context. **This enabled collaboration as it initiated a process of participation** that the group positively influenced. One central point has been how to wrap the design sprint up for **consistent documentation to enable a transfer in the next project phase.** Working digital created the expectation by the participants that it gets much easier to process all conducted design sprint material afterward as the expectation is to be **able to communicate and share the sprint results much faster.** This is seen as an advantage as **the results are easily shared; everybody can access it as the information is spread amongst all the stakeholders.**

Interacting with information through software and hardware: Having all the different devices running simultaneously **enables running the service experience and the visualization of the customer journey simultaneously. Further, it combines working with analog and digital means effortlessly by providing**

the opportunity to write on the screens. The participants compared this to their previous work routine of writing on paper to use new paper and throw the previous paper away. **Having the opportunity to move items around digital, write and draw, and rearrange and delete information in the digital workspace is seen as an advantage. All kinds of information can be presented and documented.**

The input also works across different devices. Seeing combinations of ideas in use and evaluating the best combination for productive use depending on the purpose is especially useful. The problem to the participants was that **sorting of information had to be as intuitive as possible with optimum usability for touch functionality. It was stated that it had to be better than the analog process to be accepted.**

Expanded collaboration: DEON as a collaboration operating system also enables collaboration outside the space, meaning **it dissolves the limitation of co-location.** The digital collaboration **enables bringing together distributed teams due to the sharing capabilities** throughout the digital DEON project and also expands collaboration by also connecting it through video conferencing applications.

CO-CREATION FORMS COMMITMENT AND IS A KEY SUCCESS FACTOR FOR MULTI-STAKEHOLDER PROJECT MANAGEMENT

Throughout the co-creation process, the stakeholders have **built one common picture that aligns the stakeholders and a common goal. As working challenges in corporate settings are demanding an increased alignment across multi-stakeholder project management, the participants stated that this demand forms the necessity that all employees should work like this and that stakeholders show more commitment the earlier they are involved. The usual business practices of high usage of ordinary PowerPoint meetings are insufficient and more tangible documentation of results is needed to create a common picture.**

In this way, the participants suggested that projects should **directly start from the beginning to involve stakeholders in this process because of the potential of more substantial commitment,** as the aim is to give everyone the same understanding and feeling about the demands and needs of the project. Enhancing motivation and enthusiasm enables an emotional involvement in a project that builds an important project foundation **based on the project vision.** Further, the level of commitment for a project is ensured throughout **the process of enabling an understanding of stakeholders and management for customer value's emotional and experiential side.**

As soon as stakeholders work together, they build on the ideas of others, and this **enables a team that gives the project a much stronger way to build communication multiplicators.** The participants stated that, as a team is building an idea together, they will be the ones to defend this idea in front of others and **will carry it out as multiplicators into an organization.** As it is mandatory to achieve

the commitment and get everybody on board, the co-creational design sprint also reveals who will be part of the team and who will not be part of the team. **As the 10X-SDL enables the human emotional perspective, it automatically enables involvement. By involving the stakeholders in the project definition phase early, the stakeholders feel more like one team as they participate from the beginning and the project is defined together.**

FACILITATION IS A KEY ENABLER

Facilitation has been valued as the right balance of structure, result-focused approach, and enablement of participants by utilizing the space to develop their ideas. Some participants have been amazed at the time needed for a group to properly work together in a new setup. The participants valued the process and applied tools towards what they planned to deliver as an outcome.

As the facilitation provides effectiveness, it is necessary to enable a focus by guiding and leading the participants through a design sprint. This demands the discipline to stick very strictly to a schedule; otherwise, the working group will not achieve the agreed-upon objective of the day. Participants working by themselves tend to delve very deeply into an idea, which can exceed a timeframe and involve forgetting the overall objective. **The facilitator's responsibility is to ensure that the working group has a result at the end.** Further, the value lies in facilitation as it lets people think from a different perspective and adds inspiration. This is very helpful, especially in increasing the efficiency, as every idea of the participants is brought to the table for discussion. This psychological component of triggers enables getting the maximum out of the participants. This also engages the stakeholders by making them understand the complexity of the customer's experience.

This co-creative approach has been evaluated as outstanding as the participants valued the outcome in relation to increased interactions within the working group. Working together in a diverse team and bringing together different perspectives, experiences, and different levels of understanding of a particular topic has provided precious new ideas.

EXPERIENCE PROTOTYPING—IMMERSION INTO THE USER PERSPECTIVE

What has also been new for the participants in applying experience prototyping and role-playing is that it enables getting into the situation and understanding the human perspective. The experience corner-enabled immersion is seen as a powerful asset. **The participants stated that the display of images of the human context provided them faster access to the user's mood of certain situations and contexts.** First, the experience corner, with the functionality of displaying visuals and enriching it with

sounds and lights, was perceived as playful and straightforward, but **the more the participants felt immersed, the more impressed they were by the fast outcome of results as it enabled understanding of the pain and gains and the capacity to rapidly create.**

The reflective questions as triggers in the service moments enabled the understanding of core aspects of the service experience for the participants; this formed the basis of the premium service experience parameters. This facilitator engagement with the participants is crucial as it can trigger different perspectives or views towards the situation; this enables the participants to see the service moments.

Finally, the combination and constant switching between experience-focused work and analytical processing in the form of strategic mapping has been proven as a result-driven combination. It has been shown that it is vital to conduct the experience factors in the customer experience path and then to analyze this and compare the mapping of the existing services. The 10X-SDL work setup with DEON, as visual collaboration software utilizing the experience corner, with Surface hubs as information editing stations with the support of the Surface studio on the facilitator desk, enabled an efficient workflow. This combination has impacted the accelerated knowledge management.

IN COMPARISON TO OTHER COLLABORATIVE FORMATS

As the 10X-SDL followed the mission to create something in a short amount of time, it is essential that **"every session has a meaning, always trying to be clear what to do and what to deliver."** The structure of a design sprint follows the premise to not waste time. Some participants also mentioned that the traditional design thinking workshops were very outdated as they involve too much detail, contain too much fluff, and are not goal-orientated.

The acceleration of the whole project lies in the fact that it enables continuing to work faster, which dissolves a threshold. **The participants admitted that utilizing a whole day with full focus on one topic provides acceleration.**

Compared with other workshops, the advantage in the 10X-SDL is **the level of digitalization in the overall process across all devices, which was stated as more potent than a brown paper or a flipchart, as it brings efficiency. As the participants have often worked on analog whiteboards with different visualization techniques and sticky notes, they were used to staying static rather than working digital. All existing workshop spaces were static and inflexible.** An essential problem with the current workshops is that there is a process break after the workshop documentation is sent out to the participants. There is no feedback by the participants afterward. **Instead, the 10X-SDL process and DEON enable collaboration in the long term as it allows constant further development as all the data is accessible.**

The comparison with the **previous experiences with analog workshops shows that information gets lost.** The usual workflow was to take pictures of sticky notes, as workshop processing afterward is quite time-intensive, so **this means the hurdle was too big to solve and there has been no seamless workflow.** The problem with analog workshops is if pictures of sticky-note walls get taken, information gets lost and usually, the material further is processed no further, **as the still-captured images of sticky notes do not enable further working without transformation of data.**

4.1.10.2 The challenges of implementation of the 10X-SDL approach

The challenge for implementing the 10X-SDL approach is seen in persuading the organization of a new working approach. Further, the language of the existing business culture of the organization must be used to convince the staff about the benefits of the 10X-SDL. A majority has limited experience with Service Design or Design Thinking, including knowledge of its potential business value to the organization. The value of a design sprint as a format for focus instead of going to multiple meetings has been acknowledged as the business culture follows its own habitual business rituals of having 20 or more meetings a day. The challenge is to convince a staff member that they should take three days off for a design sprint with one focus, meaning that they could not participate in, for example, 60 meetings. It is even a challenge to set up a regular workshop as the next free time slot can be very far in the future, depending on who has to be involved. This means a challenge of implementation as it is hard to communicate the benefits of making a design sprint.

LEARNING TO WORK DIGITAL

Although some participants' prognoses stated that the **10X-SDL would offer 70% of everything work-related that will be needed in the future**, they also provided a bigger picture of the digital employee experience and how diverse and complex it would be. One central premise formed was that all participants have to be enabled to co-create.

As information visualization has been a significant benefit for the group, **balancing providing information for a holistic view and focusing on information by limiting it, so it does not overload the participants has been a challenge.** In comparison to analog workshops, some participants mentioned that the **10X-SDL is far too visual**, displaying, for example, up to seven different pictures at once.

Furthermore, a digital workflow demands a learning process from the participants, but **it is more about reducing fear about the technology than learning the software.** In the beginning, the participants felt overwhelmed by all the technology. This needs more preparation at the start of the design sprint as it is not as intuitive for the participants and pre-experiences with digital working have

not existed. The combination of hardware and software in digital collaboration is something utterly new to the participants and does not reflect their usual working routines.

The participants clearly stated that assistance is needed to know the tools and technology in 10X- SDL. For this purpose, a facilitator is needed to provide guidance. **The facilitator's responsibility is not just to guide through the design sprint with methodology and tasks but also to explain the technology and software. However, facilitators for operations to use the system professionally are also needed.** The participants starting to enjoy the technology on the second day indicate that people get familiar with the environment and the technologies of this new interaction. **This system should be utilized in an overall workflow before, during, and after the design sprint, but participants have to learn and try what works best for them.**

ADDITIONAL RESPONSIBILITIES OF BEING A SERVICE DESIGN FACILITATOR

The feedback sessions of the facilitators especially proved to be the start of **reflecting on and learning how to improve the facilitation in general.** Even if the benefits were evident to the participants, they also acknowledged that it would not be able to function without the guidance of facilitation.

Understanding the role of a Service Designer: Depending on what the organization and project cases demand, the definition of the role of a **Service Design facilitator can be seen and understood in different ways as a moderator, coach, or instructor, while it is also stated that it is mostly a new role in the organization. By considering the purpose the Service Design facilitation is applied to, it can focus on a strategic level, organizational level, or business development level. In general, the contextual setting, surroundings, and business culture of the organization define the role of a Service Design facilitator.** Further, it stands in direct relation to the transformative initiatives of agile and lean frameworks being applied in the various business departments, meaning Service Design has to be compatible with the other working frameworks. Still, this requires building trust for implementing Service Design inside an organization and this trust is mainly built by success in the conducted projects.

The need for Service Designers: The participants saw the need for Service Designers as they could not merely copy and assimilate their competencies. The competencies are seen as a success factor for transformation, as just providing a toolbox without guidance will not be feasible. Further, as most participants were not familiar with the Service Design development process, as working with Service Design is not transparent, it showed a kind of distrust o**r inability to imagine its outcomes or benefits. As a result, the participants had to understand how to**

utilize Service Design in the development process and how to use it as a basis for the project development.

Furthermore, the participants **requested assistance with preparing and executing such design sprints as it was seen as demanding to prepare and execute them. It also needs to be carefully decided which project this approach is suitable for.** As the participants stated, it is necessary to prepare it professionally for a design sprint one day. In some cases, at least five days are needed to prepare it, depending on the interacting departments. **Further, professional documentation and background research in the preparation phase is needed to facilitate it. As the resources are limited, this prevents using this approach too often, as if executed professionally, it is seen as very time-consuming.**

Strengthen digital skills: For the facilitators, it has also been a **challenge to work digital, mastering new technologies and digital tools, meaning working changes for a facilitator due to the technological aspects. This is a learning process of handling the complexity of all the information accessible and facilitating at the same time by providing a methodological structure approach to enable the participating team in problem-solving.** The opportunities of digital acceleration in the 10X-SDL also involve new challenges compared to analog space, as the facilitators have to handle much more information in a much shorter time. The digital opportunities increase the possibilities to work with information as many different media formats can be utilized; this makes it challenging for facilitators as the analog approach is more limited. **Now the facilitator can react much more quickly to changes and work even more holistically as more digital data and media formats can be placed in a DEON project. One project can contain pictures, presentations, spreadsheets, PDFs, videos, web content, etc. Having access to a broad range of media enables working more holistically, and digital working itself provides the advantage of being scalable and accelerating.**

This also means **the facilitator has to balance the technology's empathy and methodological sides. This is challenging as much more information is accessible. It puts a strain on intellectual capabilities. This indicates the importance of preparation as it enables making a design sprint manageable.** For example, the templates support the structuring process of knowledge gathering; each tool template fulfills the purpose of supporting the process of conceptualization. A crucial difference at SINCO compared to other spaces can be seen in the combination of experience prototyping and digital collaboration.

The more independent the participants get, the better the design sprint goes and the more effective and efficient it gets. Even if working digital shows advantages in performance and possibilities **The participants have to be enabled to trust working digital and work on their own. The more independent the participants are, the more they can take over their own smaller facilitator roles in their working team, such as transferring a scribe role to a participant.** Especially if

participants are inexperienced in Service Design, the facilitator needs to lead and build trust for the participants in the approach, in space, in the technology, in the process itself, and in the working team in general.

Even if working with DEON is a fast-learning approach and very intuitive for the first-time user, the skill of digital working still has to be learned by the participants, which creates a barrier to enable a self-working team. In comparison, the analog way of working with sticky notes was already a skill that the majority of the new users had implemented. **This means that the co-creation was enabled from the start, as everybody knew how to write and post these notes as a fundamental skill.**

Until the skill of digital working is developed, the facilitator takes over the documentation of comments and ideas. At this point, the only task or duty of the participants is to think about and share their experience and to come up with new ideas, led and enabled by the facilitator. **The primary responsibilities of a facilitator are to enable the process of concretization, to define terms, actions, and meaning; to concretely enable the participants to articulate their thoughts, comments, and ideas; and to create a shared understanding within the working group.**

One challenge has been the hybrid role of Service Designer, a facilitating role as an enabler of working together and a designer at the same time. **However, with this high-demand and diverse set of factors inside a corporate organization, the expectations from a facilitator are quite comprehensive, which also means the different subset of facilitator roles come into being such as design sprint master, technology prototyper, or scribe; see also Chapter 2.1.1.3: SINCO: A facilitated environment. As the demands of these skills are not possible to achieve for one person, a team of facilitators is needed to offer this variety of skills. As this team of facilitators needs to be performative, the key is the role definition considering the people's strengths. Another critical difference compared to analog workshops is that more datasets or media formats have to be considered to build up a well-structured design sprint; preparation is a crucial enabler to be performative.** The constant documentation is also a key advantage to have a holistic overview of the development in total.

As orchestrators of the design sprint, the facilitators must have emphatic communication skills, engaging with all stakeholders. They must also lead the participants throughout questioning by asking the right trigger questions, be supportive, and defend their position, even if they receive critique. They must also have the ability to be strict, break down discussions, and ensure result-driven time-boxing.

The role also involves a mixture of standing in the spotlight or sometimes in the background while also standing one's ground. The facilitators need to stick to the roles but also be flexible depending on the social dynamics of the working group. It has been shown that having one team-lead among the facilitators who makes the

final decision is necessary as the preparation phase can be discussion-intensive and the product owner counterpart has to be enabled and steered with the aim that the design sprint provides a structured and beneficial approach for problem-solving. **The facilitators need the ability to be curious to very quickly understand the ongoing problems, evaluate a large amount of information in complex cases, and think from different perspectives about a topic. This involves analytical thinking and intellectual flexibility in grasping complex cases.**

PREPARATION, PREPARATION, PREPARATION

In general, **a limited time span** was available to prepare the design sprints with the product owners. This **caused a ripple effect of issues of alignment and expectations.** This showed the importance of definition and framing of objectives and alignment and expectation management with the participating working group and leading product owner in the preparation phase of the design sprint.

Further, the project management side with the facilitator team showed potential for improvement. **Some issues could be solved with a clear responsibility check between the facilitators so as to define a lead facilitator or lead organizer of the sprint.** Further, a checklist of what the facilitators needed to prepare before the design sprint could have been used and defining what the assistant facilitators had to prepare. Furthermore, preparation deadlines should have been set for the facilitators and client-side so that the schedule was not adjustable when changes were no longer possible. **In summary, the project management of the preparation phase and facilitators' work schedule had to be organized. With a new set of roles, the facilitators requested more explicit role definitions and the balance of flexibility.** Further, the time consumption for the design sprint needed to be adjusted to provide a better overview of how much time was needed to conduct a design sprint throughout the phases of **preparation, execution, and after work.** Further, to enable more efficient collaboration, a premise was defined that everybody should have access to all the project data in one DEON project.

Further structuring of the project and items was needed to avoid messiness. Reports should also be enabled as documentation was needed. This provided the lesson that next time the participants would work in a more structured way.

SPACE

One major concern was that all the technology was producing heat in the space, creating a hostile space climate. The participants requested more fresh air. The running technology also produces noise, which causes lousy acoustics and trouble understanding what people say.

4.1.10.3 Retrospective: Digitalization enables efficiency and Service Design creates effectiveness

The learnings show that the 10X-SDL provides advantages for the organization concerning the involvement of stakeholders in co-creation, enhanced visuality of information through digital accessibility, and experiential tangibility of results through a process of concretization. It enables a shared vision to come up with a common denominator in each step. The key beneficial factors of co-creation as far human relationship management is concerned is the stakeholders' or participants' commitment being built on transparency, participation, forms of involvement, alignment, and trust. Furthermore, working digital enables enhanced collaboration in combination with workflow, which provides acceleration in the development process itself. **In conclusion, the combination of all factors leads to the enablement of the organization for better and faster decision-making.** The 10X-SDL as space inspires creating something unique; having various media at our disposal enables individually expressing thoughts in different ways. At the same time, this also challenges the Service Design facilitators, participants, and organization as this is a new way of digital working and demands change in the working behavior, roles, and processes and, in the end, impacts business culture.

As the 10X-SDL has a mission statement of **"ten times doing,"** this also defines the success factor on which it is evaluated as providing business value in the corporate setting, which plays a significant role. Leaving behind the stigma of the Design Thinking workshops being merely social events without business impact, the 10X-SDL tries to prove how it can successfully create business value, as focusing on the aim for the deliverables brings acceleration to project development. This is also reflected in the operationally and methodologically driven facilitation style applied in result-driven business impact. This strategy formulates the top priority in the agreed deliverables, which were defined in the preparation phase of the design sprint as expectation management with the leading counterpart of the business project management side. Secondly, the right set of methods as a tailored approach are chosen to deliver the agreed-upon results of the design sprint. This frames the focus as being about the result-orientated Service and Business Design methods, enabling ideation towards evaluation along the whole development process. The condensed design sprint format serves as an acceleration boost for project development in a co-creational setting. **Furthermore, the 10X-SDL is also based on the knowledge of technology to enable or support the participants in a digital workflow in which they can realize their ideas in a very structured, focused, and fast way. As digital technology support in combination with the visual collaboration software DEON provides orientation, it especially outlines the holistic view of a process of working. The approach is to focus on the concretization by doing and making it visual and tangible until everybody understands the problem in the same way and finds the right solution.**

In summary, a 10X-SDL sprint in this context is defined as a limited timeframe and collaborative effort that produces clear deliverables serving both as a direct-action plan for the current business process and an efficient and effective knowledge transfer mechanism to create alignment between the stakeholders. In summary, the participants see it as very important to enable the transformation for the future of the organization so that more 10X-SDL spaces are provided for the employees.

4.2 Use

After the learnings of the deploy phase, the use phase focused on the professionalization and optimization of the 10X-SDL, such as processes, operations, framework, methodology, library, technology, software, facilitation, and space. The focus in this **"use phase"** has been on the preparation phase to enable better framing, structure, and expectation management for the design sprints on the basis of the previous learnings.

This targets the questions: **"How do we professionalize the 10X-SDL to create more business impact? How is the 10X-SDL utilized for different contexts, situations, and purposes? How can opportunities be expanded for the application? How can the digital capabilities be utilized in the most effective way?"**

In particular, the learnings in the deploy phase showed that an improvement in the preparation and expectation management of the design sprints is essential, as issues with alignment, expectation, and objective diffusion arose. By providing the product owner the tool of a design sprint template, all crucial questions should be answered and the objective of the design sprint should be defined and framed to enable an effective and efficient format for business outcomes. As Figure 100 shows with the design sprint template, the framing process quickly plans, frames, and gathers relevant information. The product owner and leading facilitator set a structure beforehand, set goals and targets, as well as get an understanding of all the relevant information for participants and stakeholders. Still, this document has been seen as an iterative living document as it changes throughout the process of understanding the actual problem to be solved.

The problem framing consists of:

- ➜ **The problem** | description of the problem in one sentence
- ➜ **Users** | Who is the user (including stakeholders)? For whom are you designing?
- ➜ **Challenges** | What are the challenges you want to find answers or solutions to during this sprint? Rank these questions from most critical to non-critical (TOP 1, 2, 3, ...)

The expected outcome and purpose:

- ➜ **Sprint goals** | What are feasible, measurable goals that you want to achieve with the sprint?
- ➜ **Deliverables** | What concrete results do you expect from the sprint?
- ➜ **Utilization of outcome** | For what purpose and where will the sprint outcomes be used?
- ➜ **Success criteria** | What level of fidelity do you expect for results or deliverables? What key points should it include? In what format?
- ➜ **Specified deliverables for sprint** | Must have, Nice to have, Out of scope

Furthermore, this serves to show the scope and setup of team diversity, responsibilities, and expertise and which material or previous research exists and can be a knowledge basis for the sprint. It also defines the expectations of the scope of the sprint and the level of openness towards the solutions. Further, it serves as a project overview as contextualization of the setting of the design sprint within the timeline of the broader project background and coming deadlines.

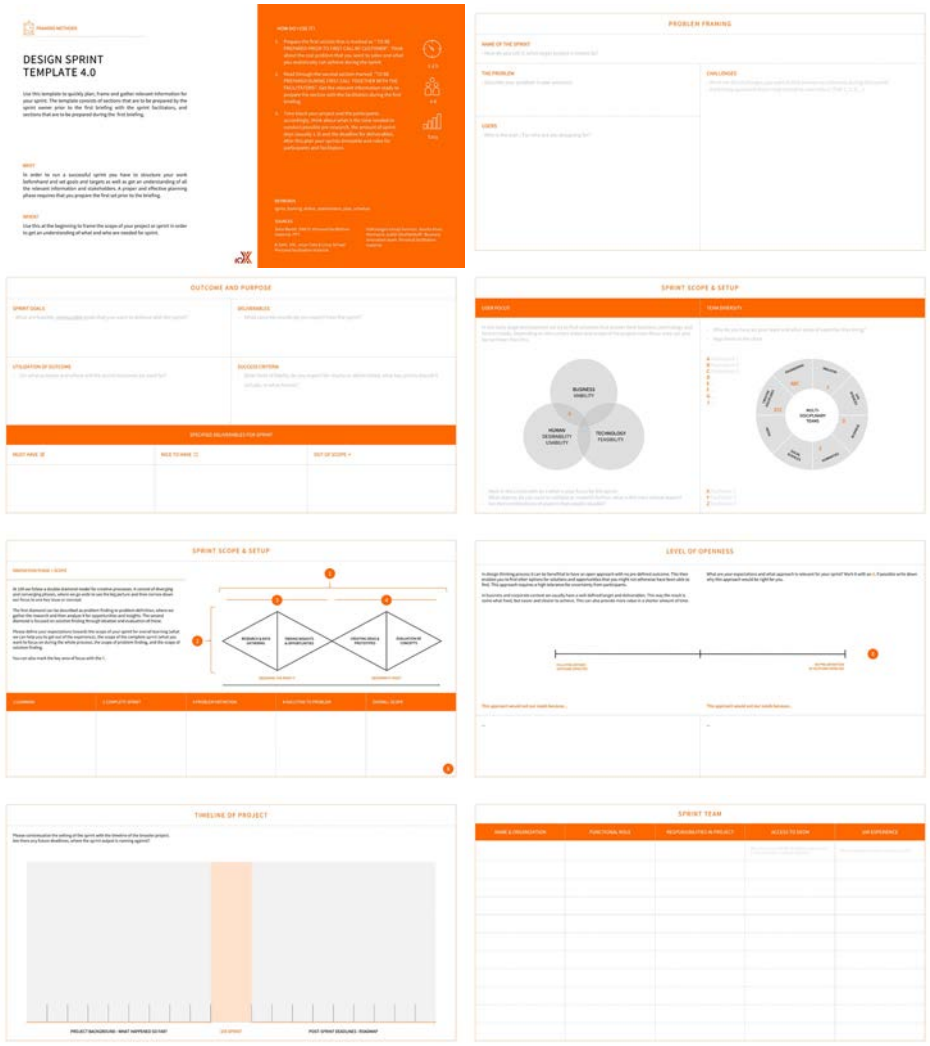


Figure 100: Design sprint template for framing the format (10X-SDL Template Library, 2021a)

4.2.1 Case | Digital Access | 21-23.02.2018 | Participants: 8+

The design sprint **"digital access"** (Group-Interview of Case | Digital Access, 2018a) aimed to look deeper into the meaning, needs, and demands of the holistic user experience in the digital accessibility of a vehicle. As a strong customer focus is mandatory to fulfill market demands, the goal of the design sprint focused on creating an ideal journey for user experience value requirements from all areas, depicting different use case scenarios. The aim was to craft the ideal journey and experience for vehicle access and authentication from a user's point of view. Creating a target picture that articulated clear goals for the business use cases had to cover

different objectives. The ideal journey should show the prioritization of the journey per touchpoint. The design sprint consisted of three days. The first day focused on key experience in private use cases. The second and third days focused more on ridesharing and fleet management use cases.

The utilization of outcome should lead to:

- ➜ Requirements of the ideal experience formulating the target image
  - Not only collecting requirements but weighting and focus
  - Ideal journey along the chain with solution options
- ➜ Challenge development and showing alternatives
- ➜ Showing the importance of UX factors and deriving the technology later
- ➜ Expression of use cases with different requirements

Figures 101 and 102 show the methodological approach in summary:

- ➜ For creating alignment, expert talks with participants covered relevant use cases
- ➜ Once a focused viewpoint was achieved, the working group dived into customer viewpoints through personas and decided on use-cases that would describe the daily life basis
  - User needs and use cases were condensed to jobs to be done and statements that defined the critical user needs
  - The statements framed the stories to be a basis for journey mapping and storyboarding
  - Assumptions of optimal user journey and experience were tested and the working group went into the field to prototype and test the user journeys
  - The prototyping was photographed and used as a basis for ideal storyboarding
  - In the end, the journeys with different focuses and touchpoints were merged to create an optimal baseline to follow and use for future development and storyboard work

A similar process was repeated on other days to iterate the stories, to create new ones, and to focus on the key experience from the lenses of private end-user, car-sharing, and fleet management.

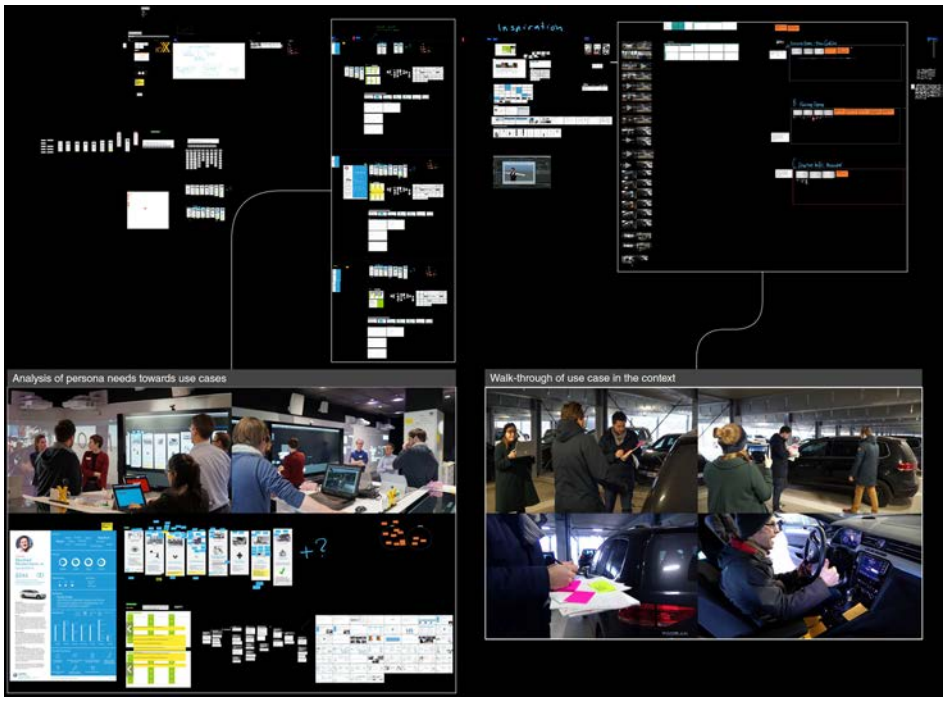


Figure 101: Design sprint part one (Group-Interview of Case | Digital Access, 2018a)

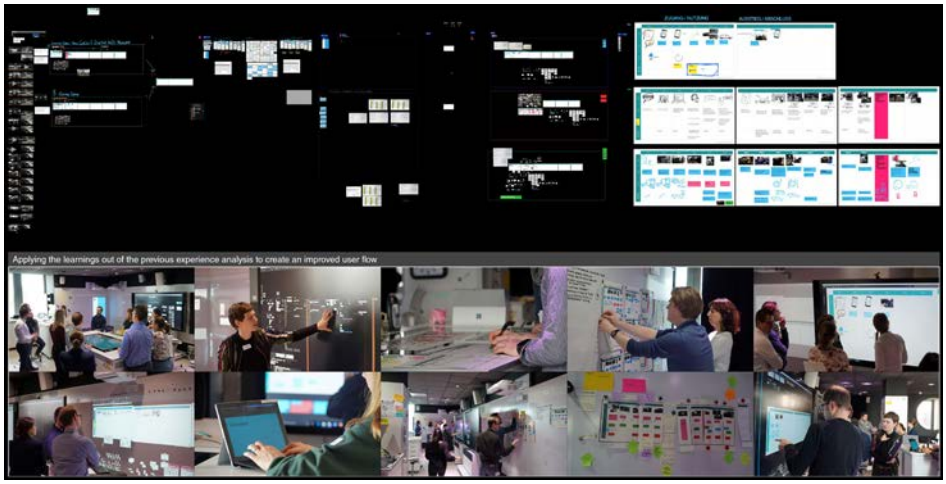


Figure 102: Design sprint part two (Group-Interview of Case | Digital Access, 2018a)

At the start of the third day, the group mapped multiple scenarios from the user and customer point of view, identified similar steps, and were ready to combine and match similar aspects into one optimal journey. The journey was then examined through different viewpoints to gain more insight into how it ultimately functions. As Figure 104 shows, as an overview, the working group looked at multiple use cases and viewpoints, identified common steps and combined these into an overall story that could be used as a basis for further storyboarding and user journey mapping. At the end of the workshop, a roadmap was created to realize this new customer experience and storyboard.

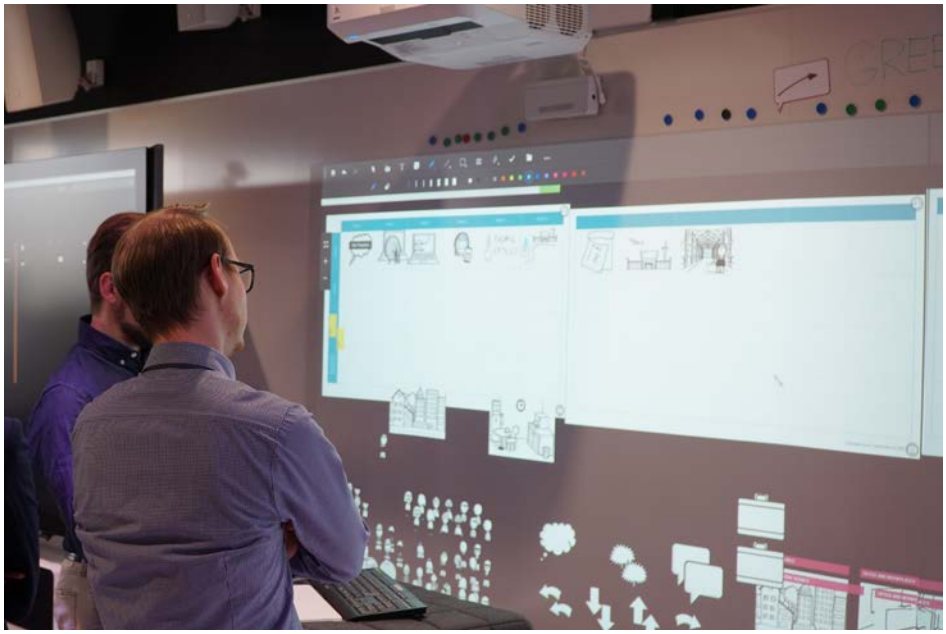


Figure 103: Working on the storyboard digital (Group-Interview of Case | Digital Access, 2018a)

At the start of the third day, the group mapped multiple scenarios from the user and customer point of view, identified similar steps and were ready to combine and match similar aspects into one optimal journey—the end results of mixing and matching above, the main optimal aspects. The journey was then looked through different viewpoints to gain more insight into how it functions at the moment of truth. As Figure 104 states, in an overview, the working group looked at multiple use cases and viewpoints identified common steps for all and combined these into an all-around story that should be used as a basis for further storyboarding and user journey mapping. At the end of the workshop, a roadmap was created to realize this new customer experience and storyboard.

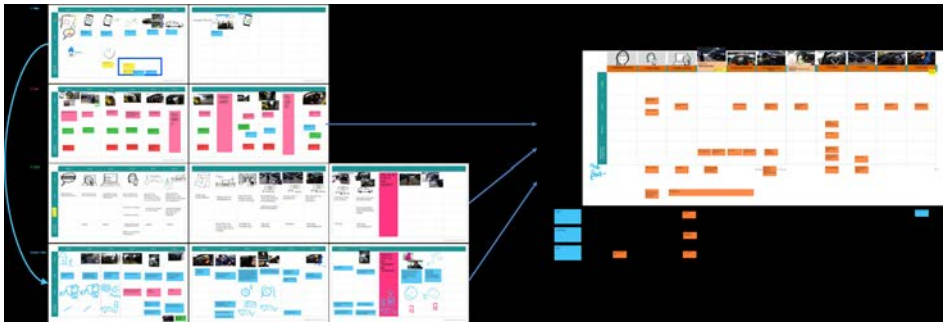


Figure 104: Multiple use-cases and viewpoints combined (Group-Interview of Case | Digital Access, 2018a)

CASE FEEDBACK

The (Group-Interview of Case | Digital Access, 2018b) showed that the 10X-SDL lab was **valued for the holistic combination in its whole offering as it combined the methodology, hardware and software, space, facilitation supports, and development process.** The participants were amazed how such a **large and diverse group of people was enabled to work creatively and productively on solutions with a toolset, also admitting that it would not work without facilitation and support.** The strict adherence to **time (time-boxing) supported** the stopping of discussions, moving on to more demanding topics, and focusing on outcomes.

On the first day, it was imperative that the participants got **into the flow of working**, were shown the tools and were guided in how everything works with, for example, the digital sticky notes and the touch displays. On the second day, the team suddenly noticed how they became more productive. The multitude of topics the team worked through in the design sprint excited them about how everything is brought together at the end of the day.

COLLECTIVE PROCESS OF CONDUCTING INFORMATION AND BUILDING CONSENSUS

The participants valued the process of how the information in the sticky notes was managed in the background. **As previous experiences by the participants indicated, the problem with paper sticky notes is that a note is written and formulated by the participant, which also implies that the participant fights for their idea. The participants explained that another problem occurs if the same thing is written multiple times in different formulations and each person is fighting for their own idea.** In comparison, the 10X-SDL is a collective process as the others say something and then it is formulated and brought to the post-it by someone who specifies,

sharpens, and formulates it again. This approach **achieves greater consensus within the group.** This enables a process of maintaining good progress with focus. At the same time, the participants noticed how everything was connected.

ENHANCED BY DIGITAL FUNCTIONS

The participants were fascinated by the potential of working opportunities in the 10X-SDL. The participants defined the value of working in the 10X-SDL as **being able to communicate in a much better form,** as digital drawing capabilities conceptualized their concepts in a better way and were able to present their developments in constant documentation to upper management. The whole DEON document was seen as **necessary, being able to include many details that usually would not fit a document.** Even if there were some technical limitations in working digital, the participants valued the workflow in being able to frame the processes as very pleasant and also effective. The participants were impressed by the digital capabilities of the DEON system and the combination of the facilitation and space created a charming atmosphere.

The participants still admitted **a learning curve was needed at the beginning** to utilize its full potential and be able to get into a focused and creative mode of working, also mentioning that this way of working digital in one project **needs a good structure to enable an overview and be able to find items in a fast manner.** It is crucial to emphasize that working in one digital project is the basis for collaboration, **especially being able to collaborate even if the teams are divided by physical space.**

A challenge lies in the further processing of the information conducted and how to plan the next steps of the project. For faster orientation, the digital playground serves the purpose of providing a fast overview. As improvements for DEON, the participants suggested that the zoom size indicator for the standard-setting should be increased as sticky note items, for example, seemed partially too small.

UNDERSTANDING SERVICE DESIGN APPROACH AND PROCESS

The participants appreciated **being able to experience and understand the Service Design approach entirely, which allowed them to understand the double diamond as a process.** An important insight for the participants was that they acknowledged **that design thinking could actually work**. In comparison, **they often did not understand what to do with all the generated ideas and how to take the following steps in the process.** The facilitation team was supportive in facilitating agreement on the size, breadth, and variety of ideas to summarize and **map them in one journey and plan the next steps**.

In summary, the participants noticed that they were more productive and getting

into a rhythm with the method. In the ongoing process of conceptualization, certain aspects kept crystallizing that could fill the gaps and, in the end, create priorities. In all scenarios, the agreement process for the best solution worked, fulfilling the objective to get into the doing phase relatively quickly.

UNDERSTANDING THE IMPORTANCE OF USER RESEARCH AND USER EXPERIENCE

The process of **building and testing in an iterative manner was impressive to the participants, as it enabled achieving a result in a short time with attention to detail.** Being able to evaluate the user experience directly and **feel and see the user's pain points was seen as crucial.** The participants **did not expect to have built such a detailed user flow in the form of a journey.**

EXPERIENCE PROTOTYPING AND EXPERIENCE SIMULATION

The technique of projecting photos of the situation helped to immerse into the user perspective very quickly. After **getting back from the user field test, it enabled the team to very quickly put together the customer journey in one flow in a focused way. The participants valued being able to replay it and try out their ideas for improvement.** The experiential part enabled the participants to research and observe how the process actually works. **The participants were able to immerse themselves in the situation and understand the actual problem and formulate a quick idea to solve an issue to build a solution.**

In reflection on the experience validation in the simulation corner, the participants wondered why they had to replay the simulation again. **They acknowledged and understood that it made sense and noticed the difference of flow when all ideas fit into the user flow. They also had the opportunity to examine this in detail so that no improvements were lost.**

4.2.2 Case | Mobility Experience Center | 07-08.03.2018 | Participants: 11+

The exhibition center for mobility offers opportunities to experience brands in unique pavilions or discover exhibitions focusing on sustainability, the history of cars, and other mobility themes. The design sprint **"Mobility Experience Center of Tomorrow"** (Group-Interview of Case | Mobility Experience Center, 2018a) followed the aim to develop a strategic vision map including illustrated ideas for potential solutions for creating new attractions. The desire was to make technology aspects and topics relating to mobility and digitization more tangible and accessible to a broader audience. The guests are enabled to try out new technology for the first time. In this way, digitization and trend topics such as electric mobility, micro-mobility, etc., should be made tangible for audiences in the future.

PROJECT GOAL

The goal was to restage the company's exhibition areas technically and to be an impulse generator for the brands and their pavilions to find opportunities for a new vision utilizing new technologies to visualize digital and future mobility solutions. A further aim was to enable the visiting team to enable and learn about Service Design methodology and get to know new forms of work and digital collaboration. The results should be presented to the management as a visualized strategic map for envisioning the future of the mobility world.

Questions

- ➜ How can we present technology and the development of new forms of mobility in a permanent staging concept?
- ➜ What does a themed world of a new orientation (vision) look like?

Deliverables

- ➜ Visualization of the vision and strategic harnessing of digital themes, based on the plan of the city, mood boards, and concept visualization
- ➜ Afterward, if necessary, processing of the visualization into idea sketches for business management
- ➜ Build a shared understanding and importance of the topic within the team as well as new forms of work and collaboration.

Scope of design sprint: Vision of mobility of tomorrow

- ➜ Devise visitor-based thematic focal points by making design tangible and experiential
- ➜ Experience new technologies for the first time
- ➜ Reduce fears of new technology, show its benefits, and set experience points

Figure 105: Design sprint overview (Group-Interview of Case | Mobility Experience Center, 2018a)

As Figure 105 states as an overview, the first day was dedicated to discovering and defining phases and the second day to develop and deliver phases. The design sprint followed the convergent-divergent model of Double Diamond, where different modes of thinking alternated. This allowed switching quickly between creating a volume of ideas and selecting a few to develop further and analyzing deeply certain relevant areas and stepping back to view the big picture. It also integrated as an iterative development to evaluate and test solutions quickly.

DAY ONE—DISCOVER OPPORTUNITY AND DEFINE FOCUS

Introduction to the design sprint

- ➜ For creating alignment in the group, expert talks were conducted with participants and relevant topics and technology discussed
- ➜ Recapped the goals and deliverables of the design sprint
- ➜ During the design sprint, knowledge was shared on service design methodology and processes
- ➜ As Figure 106 shows, the first day focused on the cultural probes to discover visitor needs, deriving themes, needs, and wishes. They were translated into "empathy maps" for "jobs to be done." From the data, the prioritized main user groups were identified to focus on empathy mapping: young digital first-time visitors (age 14–30), regular visitors (age +50), and families with children (aged 6 to 10).

Analysis and clustering to topics

- ➜ Previously gathered information from tour guides was analyzed and condensed into insights that were discussed in a group and clustered by topics

➜ These clusters formed the basis for empathy mapping, where different stakeholders and customer segments were analyzed
➜ For each user group, teams condensed the motivations and goals of the users into needs statements to summarize their findings and dig deeper into the customer mindset.

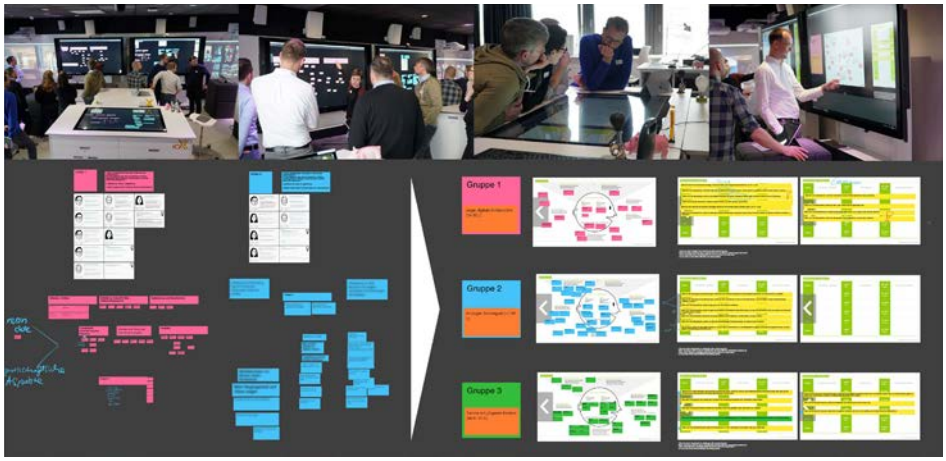


Figure 106: Looking into previous research about customers and deriving with JTBD (Group-Interview of Case | Mobility Experience Center, 2018a)

Empathy map and JBTD

➜ The focus was to understand what customers feel and think during a visit and to empathize with their goals and things they want to experience
➜ To dig deeper into the underlying objectives and goals of visitors, we then condensed these findings into Jobs-To-Be-Done statements
➜ The JBTD focused on tasks and goals that users would like to achieve, and these statements helped the team to develop ideas and concepts that answer the customer needs of Strategic fit/Why, What, & How
➜ From earlier defined topics, we built a map of strategic goals with which we then compared our findings and conducted early ideation
➜ The goal was to see how these clusters and groups interact and connect to different themes.
These themes than would be ideated to build concepts
➜ By using a strategic fit analysis in the form of a Why, What, & How map, we could evaluate and group different topics and concepts to structure what we would prototype and develop further on the second day of the sprint

DAY TWO—DEVELOP CONCEPTS AND DELIVER A VISION

The second day started with ideation and enriching pre-gathered mood boards. Ideas were sent to DEON as digital post-it notes and clustered to fit the topics and context of the mood board, as Figure 107 illustrates. Trends were analyzed first to build a holistic overview of themes to target the user needs and discover white spots for further ideation of potential solutions. This enabled building a strategic map of a central vision of the mobility experience center of tomorrow. All findings and early ideas were then mapped by using a What, How, & Why map. The goal was to see how these clusters and groups interact and connect different themes, ideated further into concepts.

From mood board to strategic vision map

- ➜ The second day was dedicated to developing our concepts and visualizing ideas
- ➜ For this the gathered mood-boards of different inspiring technology, digital, and mobility-related trends and imagery were expanded as new topics were revealed
- ➜ After brainstorming with inspirational imagery, we started combining and writing down our ideas into the Purpose of Service template
- ➜ Later on, the visual material was used for building a mock-up of a website advertising the new concept

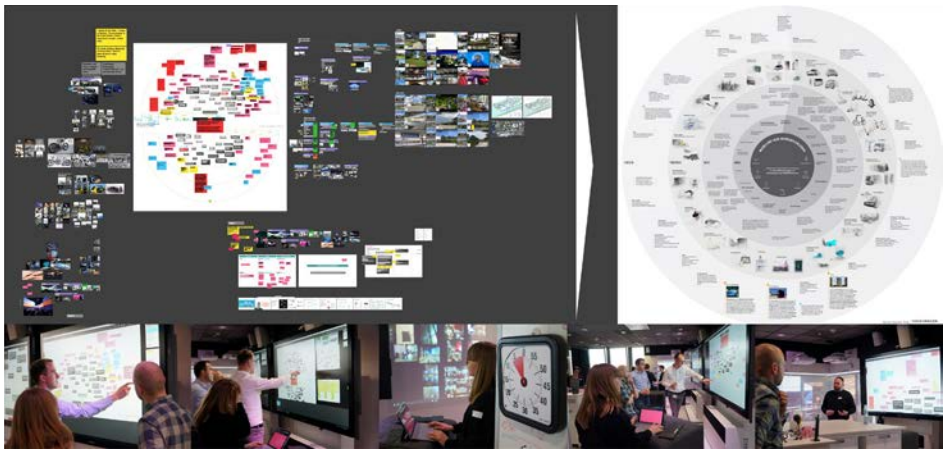


Figure 107: Gigamapping of themes in a strategic vision canvas (Group-Interview of Case | Mobility Experience Center, 2018a)

Purpose of service

- ➜ To deep dive into ideas and solutions documented in the Why, What, & How. In the brainstorming, we utilized a template to deep dive into customer and business benefits by using a Purpose of Service template
- ➜ This is effective for summarizing the customer and business objectives and benefits, and to use it as a basis for building a Unique Value Proposition

Unique Value Proposition

- ➜ To summarize our vision, we created a Unique Value Proposition for each of the group's concepts
- ➜ These were used to create easy-to-grasp points about what makes our concept stand out from the crowd and to briefly explain the core values of the concepts and benefits to the customer

The ideas were then deep-dived with a **"Purpose of Service"** template to further develop them into concepts, which allowed conceptualization based on mutual benefits for the business and the customer and created a concept that fulfills their different goals. This was then turned into a **"Unique Value Proposition,"** a summary of what makes this concept stand out from the competition.

Once the frameworks for concepts had been created, they were summarized in the form of **"PR FAQ,"** a press release format that evolves and is updated as the project moves forward. This exercise proved to be useful for communication between different stakeholders as well as a basis for building the first **"Minimum Viable Product" (MVP).**

PR FAQ

- ➜ To start concretizing our future service, we created a press release for the concept
- ➜ This method is used to quickly recap all relevant information that the customer and business would need to know and makes the concept more tangible and concrete
- ➜ It is a communication tool but also a summary for the team to update as the project progresses and evolves.

All groups went through the feedback round, with comments made on yellow post-its for future iteration. All concepts that made it to the PR FAQ phase were then visualized as Autostadt front-page advertisements. Visualizations were then commented on during a gallery walk where people could place notes and comments on the ideas (see Figure 108).

Website mockups

- ➜ To visualize a future concept, we imagined a front-page advertisement for this new attraction
- ➜ This method of visualizing the idea provides tangibility and combines all earlier work into an approachable and easy-to-grasp format
- ➜ These mock-ups were then evaluated in the group through a gallery walk, where groups would evaluate and comment on each other's work for the next iteration

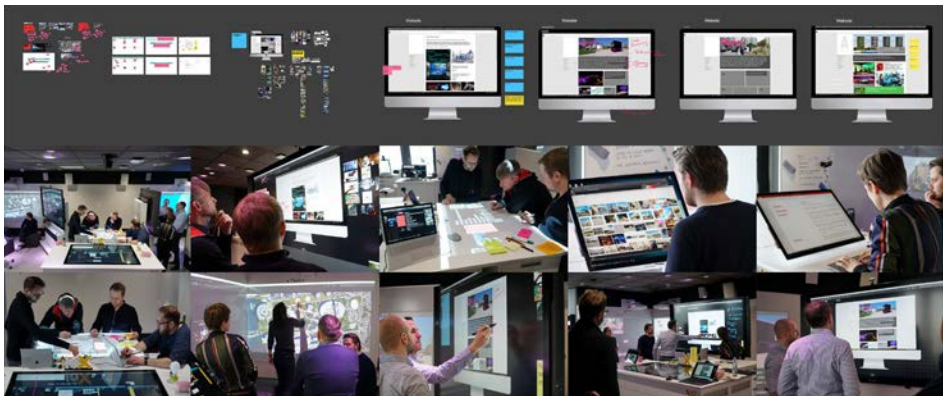


Figure 108: Deriving from the PR FAQ with website mock-ups (Group-Interview of Case | Mobility Experience Center, 2018a)

Iterative feedback loops

- ➜ During the whole sprint, integrating feedback from others was seen as critical. By gathering insights and comments from others by taking a step back and letting others comment, the participants learned a great deal about the communication of their created concept but also how to improve it further.
- ➜ The final step of the sprint was to take the concepts and evaluate them by impact and feasibility

These concepts were then evaluated based on their impact and **"wow-factor"** and also on feasibility and ease of implementation. For future development, we also established a roadmap for the coming steps. In summary, many interesting topics and ideas were created by systematic ideating, evaluating, and testing to provide new ways to engage with visitors.

CASE FEEDBACK

The feedback towards the two-day design sprint showed (Group-Interview of Case | Mobility Experience Center, 2018b) that a strong focus on framing, preparation, and organization of the design sprint especially proved to be important.

10X TIMES DOING FORMAT

The participants evaluated the results as very good and **very efficient due to the tight time scheduling, clear methodological plan, and working digital within DEON across the whole development process. The working group did not lose themselves in details and did not feel limited in the methodology or perspectives, instead having a feeling of having done many different things in the two days. They were amazed at what could be realized in such a short timeframe as two days, with a finished concept and a website mockup being ready to be tested on the market and feedback received.** They created something presentable and tangible at the same time, being able to prototype a user experience query.

They were also surprised by the strict time-boxing, which interfered with the sessions with intricate cuts to the next session. Still, the time management proved to be successful as the team valued the overall working result. The participants **valued the time management combined with each working group having a facilitator** on their side to guide the development work.

The effectiveness of the design sprint format was proven in **working together across departments and teams, combining very different input from different areas and perspectives.** It channeled the ideas by implementing something tangible. The four website mock-ups were results with which the participants could continue to work. Especially noteworthy is that the participants themselves had many ideas but were not used to this conceptual work at all. Additionally, it can be seen that the working groups worked on relatively similar topics even within a comprehensive portfolio. This is indicative of where the demand of the customers is going.

In summary, the participants valued their experience as inspiring, motivating, and thrilling and would have liked to continue: **"It is a pity to stop the whole thing after two days." The combination of the interdisciplinary team members with different perspectives created a positive impact on the operating results.** Still, the participants reflected on the level of depth in working on details, the overview, and writing a press FAQ. Another positive mentioned by the participants was that working, so to speak, freely and open-minded, had a positive influence.

➜ Mixed format: **"bring everyone together, unveil the knowledge in employee's minds, enabling thinking freely, engaging the group, co-creating the group, different input from different perspectives."**

- ➜ Organization: Great time management, structured and prepared template, mixed format
- ➜ Human-centered: Take the perspective of the customer
- ➜ Result-driven: **"did not think to implement so much with so few people, something tangible, presentable implemented."**

4.2.3 Case | Innovation Development | 27-29.03.2018 | Participants: 8+

An exhibition in which new products, features, and designs are presented serves as a pre-innovation development event. All these exhibition items are experiential and tangible and are to be put into context. As a format for the initial ideas for the exhibit are one-page fact sheets. These selected one-pagers are converted into exhibits with the support of business partners.

THE PROBLEM

The coordination for the development of fact sheets rests on a limited group of people and leads to an extended backlog in terms of pre-innovation development management. This workload for the team is seen as too high to use the fact sheets, as one-pagers, for implementation. Furthermore, the users and stockholders are not yet integrated into the fact sheet design or as input givers.

PROJECT GOAL

Main goal

- ➜ Optimization of the pre-development process
- ➜ Redesign the one-pager as fact sheet format

Sub-goal

- ➜ Create time and space for the pre-development process
- ➜ Integration of users in the process
- ➜ Distribute work on one-pagers on several shoulders
- ➜ Understand and motivate employees to work on one-pagers
- ➜ Create transparency among the team of employees
- ➜ Develop method know-how
- ➜ Create initial understanding regarding implementation

Questions to be answered

- ➜ How can we further strengthen the field of pre-development with our own input and
  ideas in addition to series development?
- ➜ What methods can we try out and test to become more efficient?

- ➜ How can we approach implementation actively?
- ➜ How can we bring about change?
- ➜ How can we internalize methods and procedures for a concept design sprint within a team?

UTILIZATION OF OUTCOME

The primary outcome should lead to a conceptual consolidation of the one-pager (input brief). Here the main idea, USP and implementation are found and defined. The application of the outcome is reflected in prototypes and simulations. A common design understanding can be further communicated and multiplied within the entire team.

The secondary outcome should lead to learning effects and experience based on the design sprint. This serves the internalization of methods and procedures for a concept sprint within a team. Future topics can thus be implemented more efficiently and in a more team-oriented manner.

SUCCESS CRITERIA

When is a one-pager good? When can it clearly outline the idea as well as communicate value in detail?

DAY ONE

As Figure 109 shows, the design sprint started with the analysis of the current briefing process for the pre-development process. The working groups analyzed the status quo and mapped and defined each step of the current process to find pains and gains. The findings of all three working groups were consolidated in the problem and pain point statements. The second part focused on the analysis of the current one-pager briefing material for the purpose of optimization, especially applying multiple perspectives of users, stakeholders, and customers to identify their needs and demands for effective communication. Furthermore, it was determined whether all possible questions concerning framing had been answered regarding USP, value definition, demands, requirements, etc., and derived for the missing and open questions in the briefing material.

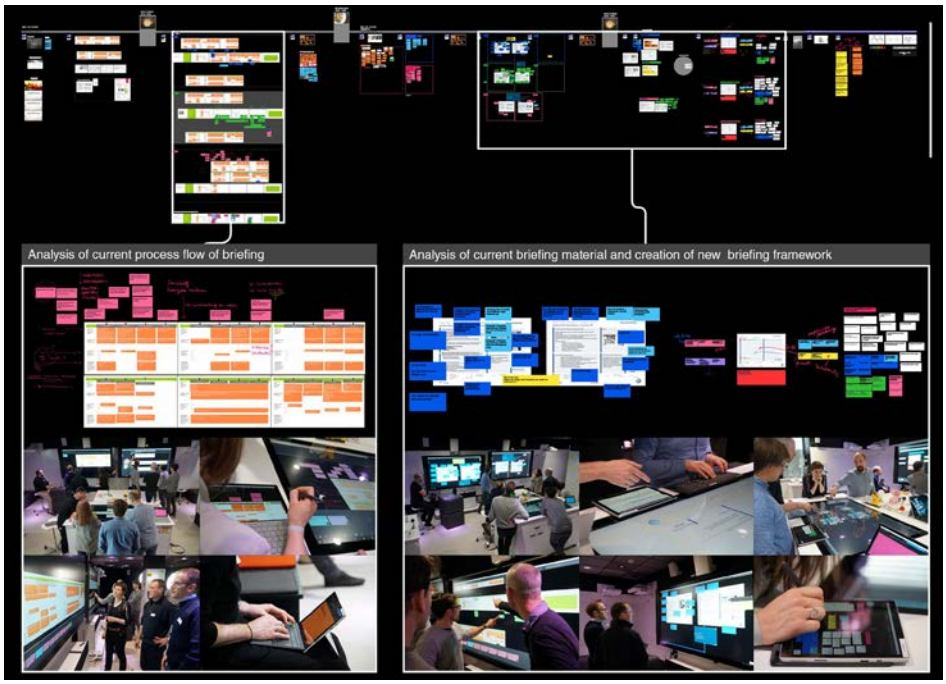


Figure 109: Design sprint—day one (Group-Interview of Case | Innovation Development, 2018a)

Secondly, redefining the goal of the one-pager itself, as the format of communication was in question, might have led to misinterpretation. Questions arising were: **"Are the text, pictures, and layout suitable to communicate an idea? Does it solve complexity?"** The participants discussed the questions regarding the briefing material: **"Why is the idea? What is the great added value behind it? What is the added value for the customer? What added value does the business get out of it?"**

DAY TWO AND THREE

As Figure 110 shows, a further focus tried to answer: **"How can we derive a concrete design concept from a rough idea description (profile/one-pager) that can be used to brief a business partner?"** For this purpose, a semantic analysis combined with design charrette was a tool used to enable a holistic understanding. The design charrette segmented the different groups of users with their connected user need statements and underlying themes in the development process. This served as a basis for an interview guide for the coming stakeholder interviews conducted in the second half of the design sprint on day two. Each interview framed their own story

of how they experienced the pre-development process and how they saw demands towards the one-pager briefing material. This led to a new understanding that the actual problem lies not in the briefing material but more in the exchange format, which should be more personal and interconnecting between all stakeholders. This reframed the challenge and the working groups decided to develop, on day three, several new approaches for how the co-creational working format could be improved.

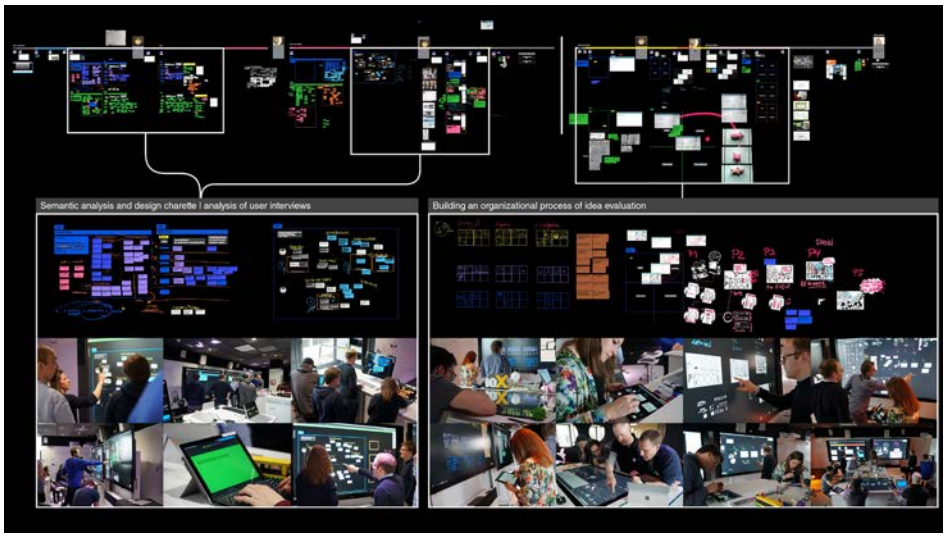


Figure 110: Design sprint - day two & three (Group-Interview of Case | Innovation Development, 2018a)

CASE FEEDBACK

The three-day design sprint (Group-Interview of Case | Innovation Development, 2018b) showed a development in the group itself. Having defined this set of deliverables, the working group adjusted their focus in the process as the understanding of the problem changed.

HOLISTIC ANALYSIS OF THE PROBLEM OUT OF MULTIPLE STAKEHOLDER PERSPECTIVES

The design sprint has been evaluated as a **tangible, fast working, concrete, and interdisciplinary format,** aiming to identify the possibilities of making the process more fluid, meaningful, and productive.

The initial questions aimed towards the working group expectations in terms of the process of optimization of the briefing material. They understood that the actual

problem was not about optimizing the briefing material for their business partners, but more that there were also related problems in the briefing process. It also changed the point of view that the briefing material serves as a framing document for descriptions and expectations, meaning the final solution touches many aspects of collaboration with the business partners in general.

This has shown the importance and example of teamwork and **applying multiple perspectives, as more participants could provide a bigger picture of a solution.** The participants also acknowledged that they learned that Service Design focuses on the end-user and all related stakeholders, **considering their problems and relations in a holistic sense.** The participants saw the **advantages of having an interdisciplinary working group**, as they suggested that next time, they would prefer to have even more experts across various departments attending.

"AHA" EXPERIENCE BASED ON THE INTERVIEWS

As an **"aha" experience,** the participants stated that **talking to the users and stakeholders was helpful to open up perspectives,** especially finding out reasons and problems in just a short time by asking. The participants further mentioned that **an open format of the interview is much more insightful than any closed meetings.**

As these user research interviews have a relational social dependency, the participants suggested that it might be better to ensure neutrality by the involvement of an external agency that conducted the interviews as the participants tended to ask also suggestive questions in the interviews.

FORCED TO COME TO THE POINT OF AN INTERMEDIATE CONCLUSION

It was noticeably difficult for the participants to get to the point, condense significantly and formulate the ultimate sentence, and **remain clear in the reduction.** The participants found it challenging to **formulate point-of-view statements, synthesize user experiences and impressions,** and reformulate something from the user's point of view in a condensed and concrete form while considering different audiences and addressing the topics in consideration.

The participants stated further that the importance lies in choosing a precise language for the means of communication to work, as the briefing material in its process of usage should be informed by the functionality, meaning also adjusting the form or format. The participants stated that the format should be utilized as effectively as possible to enable working together across departments more closely and more concretely, with focus.

The participants stated that it was difficult for them to prioritize the main issues or ideas and would request more time. Still, they also appreciated the time-boxing

as it led the working group to focus and condense their findings. **Time-boxing induces stress to come to an intermediate conclusion while ideas are also teased out through methodology.**

Even if the two and a half days were a limited time, the participants valued the format. The participants found it obvious that they had far too little time to tackle things in depth. **The facilitators ensured that the participants kept on task with hard time-boxing to focus on the major issues.** The results recognized and concretized at which touchpoints lay potentials and what can be improved. Still, this design sprint served as a format to create awareness, also acknowledging that more time should be available in the following design sprint.

LEARNING A STRUCTURED APPROACH OF ITERATIVE PROCESS OF IMPROVEMENT

Furthermore, coming from a very concrete task at the beginning in the optimization of the briefing material and examining **the topics in a mini-cosmos, the working group arrived at a holistic picture** and questioned the collaboration model inside the pre-development process in itself, as sometimes the big picture simply does not fit. **They concluded that this methodology fits quite a lot of other business problems as well, evaluating the methodology as also applicable in everyday business life.**

Further, the participants **noticed the importance of structured conceptual development as they admitted in the regular everyday work that they rarely follow methodologies. They stated that they would adopt these methodologies more in the future and enforce them in a collaborative format and integrate them in running processes.** The participants evaluated their development experience of the diverge-converge pattern as valuable. It showed them that new findings constantly occur against their biased expectation, **meaning that the obvious solution dissolves in a new solution in an iterative process of improvement.** They also stated that they would like to integrate this way of working much more in their everyday work to enable more depth.

The participants saw that it also takes discipline to implement a methodological approach like this. Several examples were stated, such as that time-boxing should be followed, ensuring that nobody gets lost in the process and the working group does not become disparate. Further, the expectations were different originally and a further personal meeting inside the working group might have helped in advance to clarify the framing before the design sprint.

EVALUATING THE 10X-SDL AS A FRAMEWORK

The 10X-SDL as space enables **collaboration and emphasizes differentiated input options a very accelerating co-creation process.** Learning many new insights in terms of methodology and tools, the participants stated that the design sprint showed how **to structure an ideation process for implementation instead of just being a "wild" brainstorming.** As the results show, there were many possibilities evaluated to improve the briefing process in total.

The participants **defined the process of Service Design as thinking and doing as combining, recombining, and adding elements out of multiple perspectives so that everything fits together.** Rather than sitting alone at the table and sketching drafts, it is a process of co-creation.

As some of the participants had completed the internal qualification as Design Thinking Coach, they found new methodologies and **evaluated the 10X-SDL as the right way to sharpen the Design Thinking approach. As the combination of providing framework and structure, the time-boxing component and the co-creation basis with other disciplines enable harmonious conceptual development progress.**

This has provided a whole framework to go deeper into a topic, but it also needs more orientation for participants who are not as familiar with this practice. Some participants suggested that it has sometimes become clearer what comes next by sharpening the introduction.

The 10X-SDL atmosphere and **setting created a motivational experience** for the participants. Positive effects were **effective digital capabilities, so no inhibition thresholds build up. It showed them a vast set of possibilities and opportunities to enable a constant fluid workflow for development work. The participants were excited that they could work in a fast manner and in a seamless workflow on the devices such as tablets and touch displays. They were able to integrate photos and sketches and have no limitation in the workflow, such as having to switch to other software tools in between.** The participants showed they worked very well collaboratively and made excellent use of the tablets and the screens. They also found new ways to work collaboratively with the different input devices.

4.2.4 Case | UX Guidelines | 8-9.05.2018 | Participants 8+

As **"Volkswagen is consistently preparing itself to become the most user-centered mobility brand (Volkswagen AG, 2018a),"** the overall objective was to increase the quality of the user experience of the products and services of the organization. The design sprint aimed to define a format and holistic user experience values to serve as clarification of customer-relevant needs for experience quality control in the development process chain (Group-Interview of Case | UX Guidelines, 2018a),

especially considering expectation, conception, preferences, perceptions, emotions, effectiveness, efficiency, and satisfaction from the user side.

PROJECT GOAL

Design a format for internal stakeholders that translates customer needs across all touchpoints in a way that is understandable, applicable, concrete, experiential, and tangible for internal stakeholders to be incorporated into product and services development.

- ➜ The application should serve the development departments and UX quality control
- ➜ Recommendations for actions and specifications are part of the basis for decision-making

Defined success criteria

- ➜ A common understanding and commitment towards the guidelines
- ➜ Problem-solving of UX specifications

Questions

- ➜ How must guidelines be created?
- ➜ What would be a suitable format?
- ➜ How must guidelines be communicated?

Deliverables

- ➜ Create an overview through insights of the involved stakeholders in the development process
- ➜ Create applicability of UX values

Must have

- ➜ Analysis of the needs of the stakeholders
- ➜ Specifications and working methodology
- ➜ One overarching solution that fits all

Nice to have

- ➜ Guidelines in the form of a translation of the guideline

If possible

- ➜ Innovative applications for stakeholders

Out of scope

- ➜ Guidelines with content

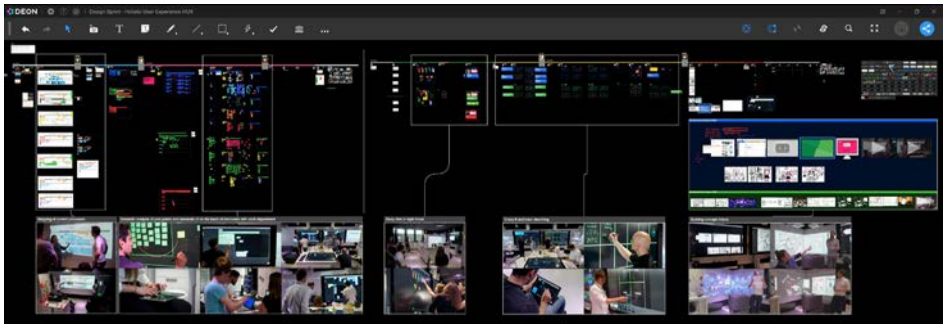


Figure 111: Overview of UX design sprint (Group-Interview of Case | UX Guidelines, 2018a)

DAY ONE

As Figure 111 shows, the two-day design sprint was divided into two segments: understanding and ideation, which resulted in storyboards of a new format for holistic user experience pitch days. The design sprint started with creating an understanding of the current development process by mapping and semantic analysis. It created transparency between different departments, as well as developed an understanding of the problem area. Next, working teams mapped the day-to-day workflow in the product development process to understand departmental dependencies and areas of responsibility in the product development process. This aimed to answer the questions:

- ➜ What UX-relevant decisions are we making?
- ➜ What are the current UX specifications, decision criteria, or requirements?

Building on the findings, a circle of interacting influence, a deeper analysis, and questioning the needs of the other department representatives within the mixed teams have taken place. The identified topics were then jointly prioritized within the team and interview guidelines for expert interviews of the internal stakeholders were prepared.

DAY TWO

The second part of the design sprint started with the reformulation of the challenge based on the findings from the interviews. In this way, based on the selection of the main insights, the challenge, the point of view, and "how might we" were defined. It continued with ideation with tools as brain sketching and negative brainstorming to further enable the selection of ideas by clustering and prioritization. Afterward, negative ideas for the challenge were developed and in another eight minutes, the

opposites to them were identified and thus turned into positives. After a feedback round in the plenary, the teams commented on the existing ideas in a deep dive. The development of initial solution ideas and their implementation towards prototypes for the identified problem area enabled building communication prototypes as pitches with visualization of the new process to be reflected by the audience. As shown in figures 112 and 113, the teams developed an experiential prototype using the analog and digital capabilities of the 10X-SDL with a combination of storyboarding and visualization. This also served as a test of their prototypes by presenting them in plenary to receive questions and feedback, which could be integrated into an iteration loop in prototyping.

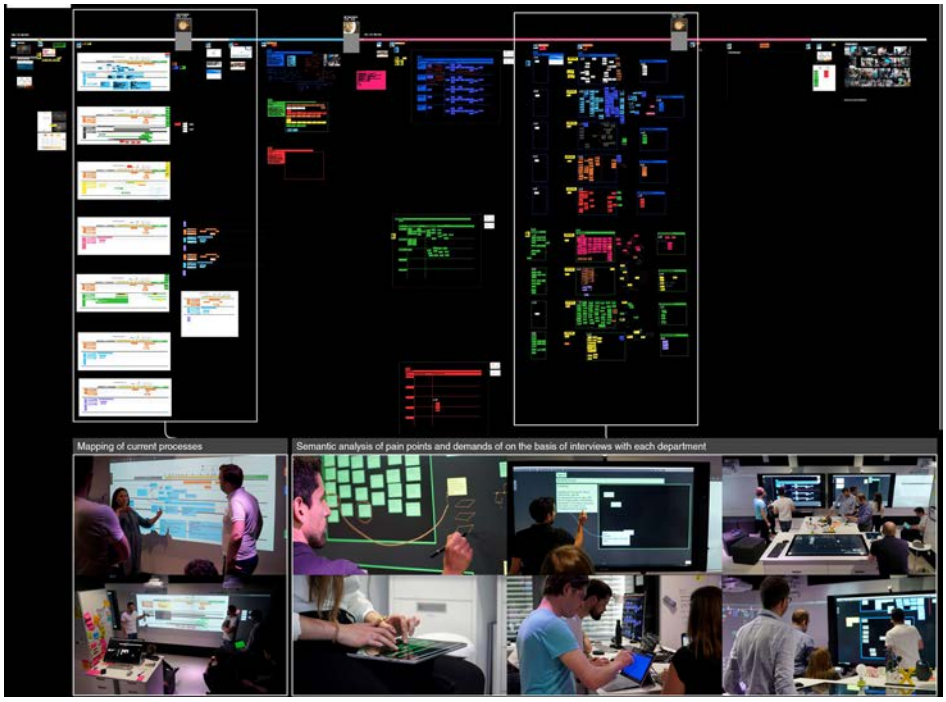


Figure 112: Day one of UX design sprint (Group-Interview of Case | UX Guidelines, 2018a)

Figure 113: Day two of UX design sprint (Group-Interview of Case | UX Guidelines, 2018a)

CASE FEEDBACK

The feedback towards the design sprint UX guidelines (Group-Interview of Case | UX Guidelines, 2018b) showed, in general, positive feedback towards the capabilities of the 10X-SDL. The first day focused on research about the needs and demands of the internal customers and the second day focused on ideation and prototyping.

In the beginning, the participants mentioned **they felt a bit lost in orientation; from the agenda, they could not imagine the sessions and expected results.** Working digital was challenging for the participants, but with time and **due facilitation, guidance, and methodological and technical support, the participants were able to concentrate fully and get into the workflow.**

ADVANTAGES TO WORKING DIGITAL

Some of the participants were in the **10X-SDL for the second time. To them, the technology in combination with facilitation support was seen as highly valuable. The participants stated that "the experience in the 10X-SDL has been the 'most' digital working format." They valued the use of the technology, the unlimited areas in which to co-create, and the sharing and collaboration aspects. They especially valued immediately seeing everything that the individual participants had recorded.** Even when very familiar with digital tools, the participants needed some practice to get into a workflow, being challenged by the technology to work digital. They **asked themselves if this working approach was valuable, whether it would be effective, and whether they would be able to produce much quickly on paper.**

In conclusion, they were **convinced that working digital has short- to long-term advantages and that it was the right choice of workflow. The participants agreed that the advantage of the technology and software combination was simply that, in the end, it kept all the material available with no losses.** As the facilitators also documented the ideas or comments, the DEON project provided live documentation of the development process. The participants stated the importance of being enabled as a working group so that one could go back to the digital canvas to retrieve information, which beforehand had gotten overboard.

Even if **some participants were relatively skeptical at the beginning, the participants experienced live the progress of digital working in the group, seeing how much happens and how fast the storyboard scenes could be created.** In addition, while some participants had limited drawing or sketching capabilities, they could still express their thoughts and ideas due to the provided backgrounds and icon sets. **The participants also stated that the digital work was 95% of the time without any limitation, simply providing a smooth working experience.**

The participants agreed that the **beauty of this system provided an easiness of structuring information: "In comparison in the analog way of co-creative working you cannot re-adjust information so easily: You have to make photos to document the status and then erase the writing and then readjust the information."** The software DEON in combination with the Surface hubs as touch displays, was seen as a beneficial solution to design digital journeys. As the unlimited digital workspace enables putting the screens side by side, it can display the whole storyboard in each interaction/touchpoint. This is a compressive basis for user testing. **Further, it enabled connecting a mobile phone and visualizing its live-captured screen in the working project to enable the team in the user testing to document and comment on each finding in a fast and precise manner.**

Another **advantage was to have all information as live documentation available on demand by the participants to check later how the work results had been used in the forthcoming development of the project: "A usual problem occurs with previous workshops that after some time the attendees ask the product owner 'What has happened afterward?'" Instead, DEON provides documentation of the whole development because it is all available digital. The participants stated that design sprints in digital form created an impact as the information is not stranded but expanded across the organization and further developed.** The participants also mentioned it as a positive aspect **to be able to simply use DEON to look at all data and information after the design sprint and resume working at the same spot where they left off,** still being offered an excerpt in the form of a PowerPoint presentation of all the information.

The only disadvantage the participants stated was **the climate issue that the technology of the 10X-SDL creates. As the space gets warm and the air quality decreases over time, the performance of the working team is impacted. This**

issue has to be optimized to ensure high-performance conceptual work. As a suggestion for improvement, the participants requested that after the design sprint or at the end, there should be a kind of road map showing the next steps to continue the project and possibly giving homework to the participants. The other participants confirmed the statements of the technology aspect being an impressive, logical approach, facilitation being very professional, and the time-boxing being necessary, considering the 10X-SDL within the framework of Volkswagen as being the most feasible approach possible.

IMPORTANCE OF USER RESEARCH

The participants understood the importance of **researching the customer context first and then proceeding to the solution building. The participants were convinced that the mix of experts interviewed were insightful.** They also found out that in some business departments, the term and concept of **"holistic user experience"** were not yet established, nor was the mindset behind it.

The participants evaluated the interview sections over the phone as beneficial compared to face-to-face interviews or observing experts, as that takes an extremely long time. **Having the opportunity to interview experts in 30-minute segments produced much data in a very quick manner.** Additionally, having personal distance over the phone was seen as an advantage as the interviewees' answers were more neutral. The participants stated that they learned a lot in the process, also evaluating the balance of taking a closer look vs. getting a bigger perspective throughout the interview process.

ACCELERATION OF CO-CREATION

Even if the **acceleration format was demanding for the participants, the participants evaluated it as beneficial to generate data quickly to learn much in a short time.** The participants found it exciting how a collaborative and participatory model across different departments can be established and learn from each other, getting insight into the different perspectives. **The participants noted that with the 10X-SDL framework, they could tackle any kind of challenge and provide fast results within two to three days of a design sprint.**

Still, the participants saw it as a challenge to get an overview of all the methods and tools available, still needing time for learning by doing. They also still saw it as difficult to properly initiate a design sprint format, as to have three days of full focus available meant pulling out of the running work processes.

COMPARED TO OTHER WORKSHOP FORMATS

The participants stated that the whole design sprint and **the whole concept with the exercises was positive, even though the participants had limited experiences in working in this kind of format. Compared to previous workshop experiences, the participants stated that they would have done significantly less with more time given and that it would be hard to exceed this benchmark in the 10X-SDL.** Further, the **strict time-boxing at the end was considered an advantage, as, often in other workshop formats, more time was given, but this did not lead to results. The participants valued the deadline given to them as it triggered commitment to finalize the session and go into the next phase of the design sprint.** The participants agreed that **"it definitely makes sense to keep these times and really have to do it that way. As one hour will become two, the whole design sprint concept does not work anymore."**

The participants evaluated it as very **important to have someone as an external moderator or facilitator who was not from the internal team, as it is incredibly valuable to fill this role: "to have profound support in these workshops is absolutely worth gold."**

UNDERSTANDING THE FORMAT

The participants experienced the second day as very good methodically, and they were able to follow the working process in better form. They also stated that the leading question and overall task would not be feasible to solve in two days, as it was very time-consuming and would lose quality and depth. The participants also stated that they had to stop their working sessions too early and would have needed more time.

This led to a short discussion about the aim of the design sprint format in general. **The participants understood that the whole process is actually designed to have iteration loops, meaning several days with each main emphasis, such as user research, ideation, prototyping, etc. The assignment in this design sprint focused on understanding the problems expressed in the interviews.** At the end of the second day, to consolidate the data and create results, the aim was to push the work in this direction.

4.2.5 Case | Personal Assistant | 16-18.05.2018 | Participants 10+

The design sprint served the purpose of ideation and definition of a "personal assistant application" (Group-Interview of Case | Personal Assistant, 2018a). In this early stage of development, solutions were sought to address business, technology, and human needs based on understanding the customer journeys and use cases that would define and enhance the interaction. Furthermore, the visiting participants

were interested in getting to know the 10X-SDL methodologies, process, technologies, and framework in general and how the approach could be integrated and applied in their running processes to maximize efficiency and effectiveness in innovation development.

The problem

- ➜ Provide a unique and valuable user experience and improve the customer interface with everyday tasks and actions, as the focus has to be predictive, reactive, and empathic
- ➜ Define pains and gains of customer interface to aid the completion of tasks and actions

Project goal

- ➜ Explore customer experiences and refine the value proposition
- ➜ Specify a "To Be" state that describes customer pains and gains and meets them with a unique offering
- ➜ Define concepts that define the scope of potential pilot

Success criteria

- ➜ Map out several customer journeys to illustrate the value proposition with use cases
- ➜ Identify monetization opportunities/examples—value exchange and create a business case
- ➜ Definition and scope of pilot/proof of concept

Questions

- ➜ How can a deeper understanding of luxury customer's journeys be developed? How is the experience of interaction for the customer and how is it aligned with the value delivered? How can it be made contextually relevant for the customer; what are the use cases?
- ➜ How do we ensure data privacy and security? How could this interface be integrated within an existing service ecosystem?
- ➜ How can the customer interact through a personal assistant; what value does it deliver? How can we use a service assistant to simplify interaction?

Deliverables

- ➜ Identify customer journeys to illustrate the value proposition with use cases
- ➜ Show opportunities for predictive or empathetic behavior
- ➜ Identify monetization opportunities or examples of value exchange
- ➜ Definition and scope of a pilot for proof of concept

DAY ONE

The day started with the product owner presentations about the project backgrounds, objectives, and pre-research results. Furthermore, the group continued revising and crystallizing sprint objectives and deliverables to create an alignment with the diverse set of participants. As shown in Figure 114, to extend the alignment within the group, a stakeholder and business system map analysis was created. The second part of the day focused on defining, refining, and completing existing customer personas to dive into the customer journey analysis with experience prototyping walkthroughs. This enabled defining value opportunities for customer experience for further conceptual development.

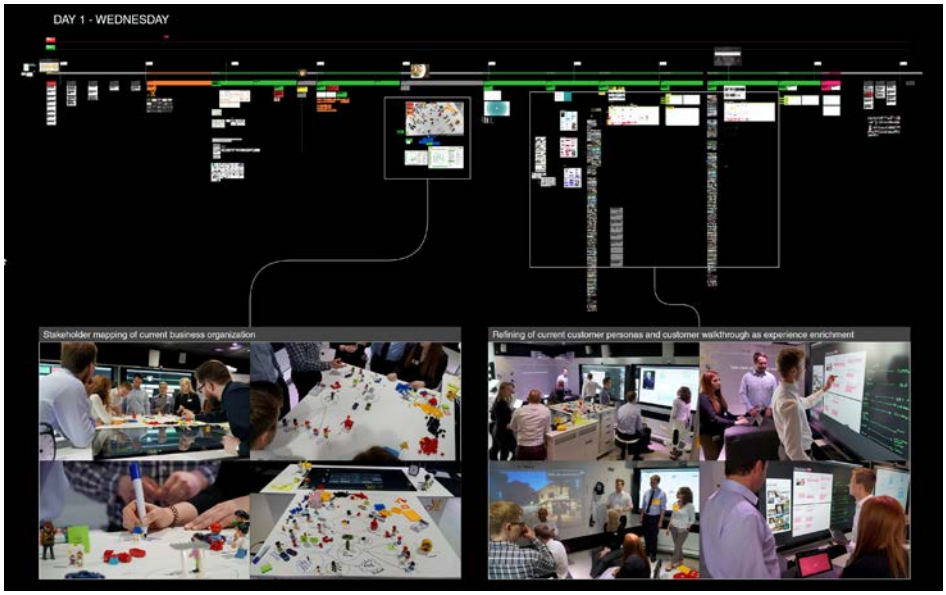


Figure 114: Personal assistant design sprint—Day one (Group-Interview of Case | Personal Assistant, 2018a)

DAY TWO

The design sprint continued with a diverse set of walkthrough scenarios and deriving higher-value opportunities that were put into a relational system of customer needs, opportunities, and brand attributes. The digital capabilities of the 10X-SDL enabled rapidly changing the scenes, placing audio files, scribbling, and making adjustments to the prototyped user interface attributes. As shown in Figure 115, this accelerated the imagination and ideation of the participants, allowing them

to visualize and conceptualize their ideas quickly and derive new findings directly about the customer journey.

The second part of the design sprint focused on the ideation of value opportunities and "how might we" to select the best ideas and build unique value propositions for the future personal assistant experience. Concretizing this, UVPs for concept definition happened in the form of the PR-FAQ, framed as a press release. The PR FAQ should also consider the business model, competitor check, and key performance indicators for the customer experience.

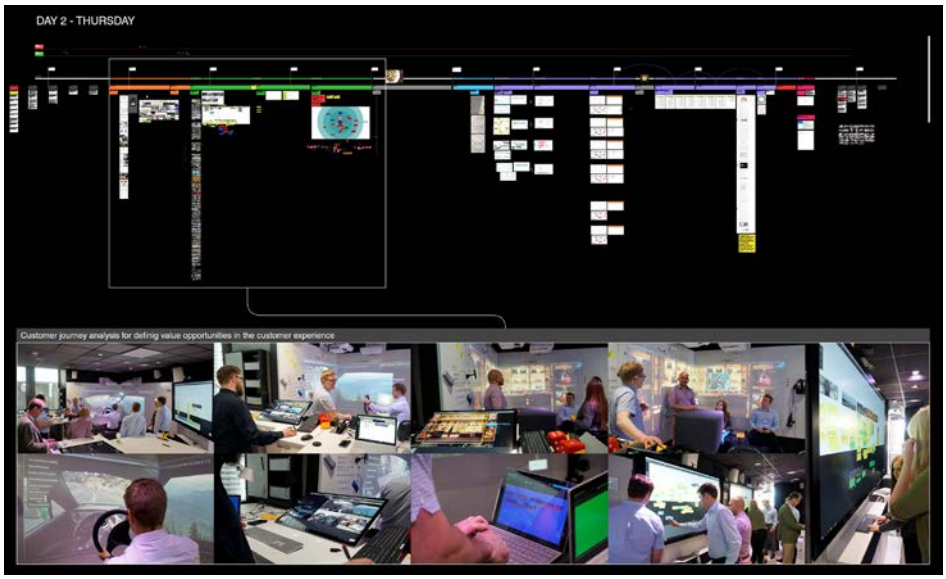


Figure 115: Personal assistant design sprint—Day two (Group-Interview of Case | Personal Assistant, 2018a)

DAY THREE

The last day started with the introduction to storytelling and how to prepare concept videos. Three working groups each picked their concept to video shoot, which was followed up with a premiere of concept videos and feedback by the audience. As Figure 116 shows, the working group used a mixture of devices and different scenes to create a story to communicate the value proposition in a short video.

Figure 116: Personal assistant—Day Three (Group-Interview of Case | Personal Assistant, 2018a)

CASE FEEDBACK

The three-day design sprint enabled the visiting team to accelerate their project and experience the possibilities of Service Design in the 10X-SDL (Group-Interview of Case | Personal Assistant, 2018b). On reflection, the participants stated that the design sprint allowed them to more deeply understand what the personal assistant should like to create a vision and define and develop the following cornerstones.

For the participants, it was **beneficial to work in the 10X-SDL as it enabled them to evaluate the framework and its digital working capabilities.** On reflection of the adaptation, the participants stated that it should be possible to transfer this way of doing tasks into their own organization. The way the tools and the group worked together to keep the energy going and to keep trying the different ways of doing things was highly motivating. Everybody committed to the activities and the facilitation enabled the group to be steered through the role play. For the participants, the approach felt organic, immersive, and insightful.

CREATING ALIGNMENT AND HOLISTIC VIEW BY STAKEHOLDER MAPPING

The participants focused on the discovery part on the first day, finding the right questions to ask. The "how might we" supported the process of framing the problem and defining the issues properly. In particular, the participants **experienced the Lego serious play with physical objects as the characters as a very inclusive exercise.**

The working group engagingly surrounded the center table**.** The participants explained further that the **analysis of the social ecosystem in the organization provided them an insight and understanding. The stakeholder mapping proved to be useful as it taught the participants about organizations as diverse sets of people working together on the same mission.** The stakeholder mapping as a tool was also helpful beyond just ideas about services, processes, and how to develop vehicles.

Learning how the organization operates by having colleagues from different functions attending and doing the Lego activity was valuable as it uncovered elements that might have been forgotten. Some even suggested it might be worthwhile for the top management level of the organization to do the same exercise again with more specific objectives, as certain things are incorporated in networks within the organization and how this links to the customer has been a critical question.

EXPERIENCE PROTOTYPING AS STEPPING INTO SOMEONE ELSE'S SHOES

The participants evaluated the role-playing as highly valuable **as gaining empathy enabled an outside perspective. The participants admitted that they had never done bodystorming before. By putting themselves in the customer's shoes in the interaction, their understanding of which problems to solve was assured.**

They could see ideas being co-created spontaneously, which would not have happened in a static environment. The participants appreciated the relationships' dynamics and that they would not have necessarily come across the issues if they had not done the role play. **While talking about the role in the experience scenarios, the working groups realized that there are a number of different possibilities and outcomes to the situation each actor is involved in. The participants stated that the opportunity for multiple and simultaneous inputs is very powerful. The human-to-human interaction revealed evidence that would not have been reached otherwise. This also implies that all the opinions and ideas of each working member were heard and documented in the project.** Further, the participants identified unexpected happy elements as differentiators that were later stated as essential factors for the organization, taking more advantage of being part of such a large and diverse group.

CO-CREATING DIGITAL—MAKING DECISIONS TRANSPARENT

DEON was clearly seen as a powerful collaboration and visualization tool. The advantages stated **were having everything in one place and the ability to drag the information around and comment on it. This proved to be very helpful compared to going in and out of different presentations, as usual work would look like.**

The participants gave further insights that the benefits of digital working also lay in the DEON project as a **live written development contract. Former issues have been that previous agreements or decisions have been discarded in later project development. However, given a chance in the digital format to go back in time, project development disputes can be dissolved by pointing to the decision-making process. This means the enablement of transparency and traceability in the chronological order of decision-making and being able to follow it through and pick up the original train of thought.**

COMMUNICATING THE CONCEPT

The participants evaluated the concept videos as brilliant solutions and the outcome of the videos as entirely professional considering the time and tools available. **They acted shy and tentative, but actually looking at the videos and being in the customer's shoes helped the participants define the products and define what kind of customer issue they were solving.** When the concept videos were presented to other uninvolved colleagues at feedback sessions, they provided new perspectives from people who had not seen it at all before. This immediately provided insights on aspects the creator had not thought of. On reflection, it gave the participants feedback to understand much further how the concept could provide value. **The participants admitted that understanding is not reached until having to communicate the idea in a condensed form to a community.**

TIME-BOXING

The participants evaluated the time-boxing as beneficial as it **proved to keep the momentum going.** During the focus on the topics, there were distractions. The time limitation was beneficial to define a point to trigger moving on to the next topic. The working group also enjoyed the sound pigs for getting back on track.

Another beneficial aspect of the time-boxing was that **the participants acknowledged that 100% achievement did not matter; it was more about achieving 70% of the goal in a short time.** This can be compared with the Pareto principle that, for many outcomes, roughly 80% of the outcomes can come from 20% of the work.

LEARNING EXPERIENCE OF NEW WORK AND SERVICE DESIGN

The participants appreciated the learning experience, as their first time in **10X-SDL showed them a completely different view on working.** It allowed them to learn

and live the activity and take a value proposition and develop it focusing on the experience.

The introduction to the research methods supported the participants in improving their future way of working. The actual use of the tools as "how might we" questions helped the participants to get a deeper understanding of Service Design. **The storyboard videos especially got the participants into the mindset of what the customer was doing, helping to crystallize the ideas. The user research methods applied to the luxury tourism sector provided a new perspective, as being very product-focused was evaluated as refreshing.**

For some participants, this way of working was a complete **"eye-opener"** when it came to designing services, being completely different from how they have seen and done things in the past, especially committing to real customer input to actually focus on the real problems and the potential problems that exist in the luxury sphere. **Leaving the zone of assumptions and checking and testing whether the interpretation was correct, and seeing how things worked in the scenarios were similarly helpful. This involved designing services and comprehensively testing them throughout the stages to make sure that the ideas were valid.**

The participants reflected that the aspect of living the process was definitely achieved and that the group now understood better how to prepare and how to do more of specific activities to enable working quicker. They also suggested that if the group could have integrated real customers, this could have accelerated straight through into better insights. The participants admitted that by having to keep the momentum going and follow up on the learning, the following steps forward would be how to repeat this in the home organization and continue to evolve using what was learned during the week.

IMPROVEMENTS

The participants' expectations were very ambitious in taking from a relatively broad idea and developing this into a fully fleshed-out business model canvas with all required elements in three days. The product owner was not clear about what to expect from the design sprint results in general. However, understanding the processes, the advantages, and the benefits were clearly outlined by allowing an experience that indicated what to expect from the process and the timeframe.

As the focus was on what the customer would want, some participants missed a more substantial balance with what revenue opportunities would be and objectives around revenue and the business model. Still, questions arise such as **"How do we actually make money from what we are providing?"** as viability is a crucial indicator for success for the organization. The learnings have to be translated to redefine the process of development to answer this question and how to make it fit for the organization. The participants have gone through the process and seeing what

the team came up with to derive all the insights is a valuable takeaway of learning.

Further, the participants discussed the group sizes and found that smaller groups were given more opportunity for balance in interaction as well as getting better value in outcomes, as the large groups tend to be dominated by two or three people.

4.2.6 Intermediate summary of use phase: Key findings and learnings

In retrospect, building on the previous learnings from the deploy phase, the use phase concerning the cases from Chapter 4.2.1-4.2.5, including the feedback sessions, can be considered **a professionalization phase of the 10X-SDL. As optimization focused on integrating the design sprint format in the running of business processes, the design sprint project management side within its preparation, execution, and after work, as well as expectation management, has shown importance.**

Another accelerating improvement for Service Design practice can be seen in the use of digital working capabilities as increased visualization and collaboration potentials. As it was still in the deployment phase, DEON showed some technical difficulties and workflow limitations. In the use phase, the participants stated that digital working was 95% of the time without any limitation, only providing a smooth working experience. In the timespan of September 2017 to May 2018, the software was constantly updated. Forty-six versions and two major releases have been deployed **to improve the digital working experience towards performance, stability, and usability.** Based on the findings in the design sprints, new features were also developed, such as exporting presentation paths to editable multipage documents, preserving the positions of annotations on document pages while they are reordered, and displaying live video inputs in multiple instances at the same time.

From the facilitation point of view, it focused on providing structure and orientation inside the DEON project itself. **The design sprint projects were built in a horizontal chronological order agenda, including breaks, time-boxing, presentations, templates, and content. This has shown advantages in the balance of providing an overview and enough space for creative work and potential readjustment,** as the library function inside DEON provided not only templates but also guidebooks, icon-sets, graphic elements, and even full pre-build design sprints, as Figure 117 shows. The pre-build design sprints format being available in the library fulfilled the purpose of increasing efficiency in the preparation phase of the design sprint and provided the opportunity to be flexible in adjustments when other content was needed ad-hoc.

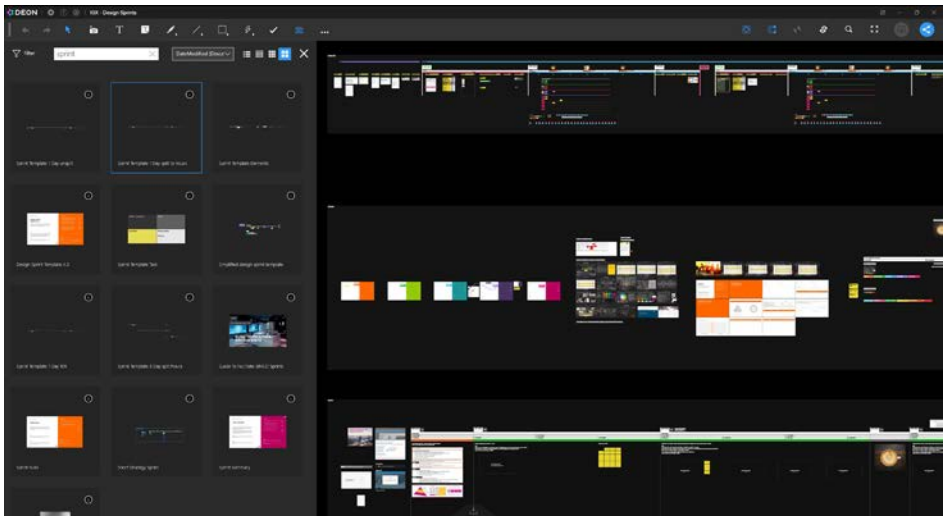


Figure 117: Library function in DEON (10X-SDL Template Library, 2021b)

Still, participants admitted that digital co-creation implies a learning curve at the beginning to utilize its full potential and also be able to get into a focused and creative mode of working. They also mentioned that this way of digital working in one project needs a good structure to enable an overview and find items quickly. It is crucial to emphasize that working on one digital project is the basis for collaboration, especially collaborating even if the teams are divided by physical space.

The design sprint template provided the needed guiding support to frame and sharpen the focus for business impact. The intermediate evaluation of the use phase shows that the 10X-SDL was valued as the holistic combination of its whole by offering the methodology, hardware and software, space, process, format, and facilitation. The 10X-SDL as space enables digital collaboration in connection to co-creation; this provides an accelerating development process with its emphasis on differentiated input options. The framework is experienced as efficient and effective due to the tight time scheduling, methodologically structured plan, and working digital within DEON across the development process as a whole, being evaluated as a tangible, fast, concrete, and interdisciplinary format to structure an ideation process for implementation.

4.2.6.1 Understanding Service Design as an approach guided by qualities

As a significant portion of the participants were relatively inexperienced with human-centered design development, the participants appreciated being able to experience and understand the Service Design approach in a holistic sense, thereby understanding the double diamond as a process. **The participants defined the process of Service Design "as thinking and doing as a combining, recombining,**

and adding elements out of multiple perspectives so that everything fits together." The participants stated that the 10X-SDL showed them a completely different view of working as living through an activity that develops a value proposition by focusing on the experience. Within this were identified unexpected happy elements as differentiators that were later stated as essential factors for the organization.

The cases of **Chapter 4.2.1–4.2.5** reveal a solid relation to guiding Service Design qualities. The participants defined the Service Design practice qualities based on how they experienced the 10X-SDL. These were also stated in Service Design literature as principles; see also Chapter **1.2: Defining the field: Service Design—A transdisciplinary practice.**

HUMAN-CENTERED: ALL PEOPLE'S EXPERIENCES CONSIDERED

The importance of user research is seen as essential to be effective; to research the customer context first and then go on to the solution building. As gaining empathy is stepping into someone else's shoes enabled by an outside perspective, by immersing into a person's life, they could understand the value interaction performed and within this define what kind of issues they are solving, also realizing that within their social and cultural contexts there are a number of different possibilities and outcomes to the situation each actor is involved in. The participants stated that talking and active listening with the users and stakeholders was helpful to open up perspectives; finding out reasons and problems through an open interview format was insightful. The participants stated that the human-to-human interaction revealed evidence that would not have been reached otherwise, ensuring the right problems to solve.

HOLISTIC VIEW: CONSIDERING THE WHOLE SYSTEM WITH ALL ITS DIFFERENT PARTS

The participants acknowledged that they learned that Service Design does not just focus on the end-user but rather all related stakeholders, considering their problems and relations in a holistic sense. Applying multiple perspectives allows more participants to provide a bigger picture for a solution, zooming in in a mini-cosmos but also zooming out in a macro-cosmos. Analysis of the social ecosystem in the organization provided them insight and understanding. As certain things are incorporated in networks within the organization, how it further links to the customer has also been a critical question.

INTERDISCIPLINARY CO-CREATION: TAKING ADVANTAGE OF DIVERSITY

The working format has proven to enable interdisciplinary co-creation by working together across departments and teams with very different areas of expertise and perspectives. Taking advantage of the insights of a large and diverse group, has automatically provided a positive impact on the operating results. The participants appreciated the dynamics of the relationships; ideas were co-created spontaneously, which would not have happened in a static environment. Learning from each other about how the organization operates by having colleagues from different functions attending has been seen as valuable as it uncovered elements that might have been forgotten. The stakeholder mapping proved to be useful as it taught the participants about organizations as diverse sets of people working together on the same mission. This also implies that all the opinions and ideas of each working member are heard and documented.

The participants stated that facilitating co-creation has been of crucial importance for engagement, especially having someone as an external moderator or facilitator who is not from the internal team. The participants stated that the way the tools and the group worked together kept the energy going. The participants trying of doing things in different ways has been highly motivating, with everybody committed to the activities. **The participants valued the 10X-SDL as a collective consensus process, the facilitator enabling a team process of specifying, sharpening, and reformulating towards consolidation.**

ITERATIVE TESTING: A PROCESS OF IMPROVEMENT

The process building and testing in an iterative manner was impressive for the participants, **to enable the achievement of a result in a short time with sharpness of detail. The patrcipants also acknowledged that the apparent solution dissolves in a new solution in an iterative process of improvement.** Also leaving the zone of assumptions and whether checking and testing with the interpretation is right, to test it along those stages to make sure that they are valid. **For some participants, it has been a complete eye opener as this kind of way of Service Design practice is utterly different to how they have seen things and done in the past. Especially committing to real customer input to actually focus on the real and the potential problems.**

COMMUNICATION: TO SYNTHESIZE AND TO REMAIN CLEAR IN THE REDUCTION

The participants admitted that understanding is not reached until having to communicate that in such a condensed form to a community, **"to have to boil it**

down to its essence, to get the message across." Especially visualizations got the participants into the mindset of what the customer is doing; helped to crystallize the ideas. For the participants it has been a challenge to formulate point-of-view statements and to synthesize the user experiences and impressions. **While considering to have different audiences in consideration, addressing topics to reformulate something from the user's point of view in a condensed and concrete form has been a challenge. Further, to condense significantly and formulate the ultimate sentence; to reduce and to remain transparent in the reduction.**

4.2.6.2 Qualities of Service Design practice for business purposes

Considering that the 10X-SDL is a framework put into practice for business purposes, qualities such as effectiveness and efficiency come into play as it has to provide business value for the organization. In comparison, the participants stated that the 10X-SDL design sprint was not just "wild" brainstorming but evaluated it as the right way to sharpen the pre-existing design thinking practice in the organization. The participants also noticed the importance of structured conceptual development, as they admitted that they rarely followed methodologies as such in the regular everyday work. The combination of the provided framework as structure, process, the time-boxing component, and the co-creation basis with other disciplines enabled harmonious progress of conceptual development. **In particular, compared to previous workshop experiences, the participants stated that they would have done a lot less with more time, and it would be hard to excel. It also set a new benchmark in efficiency and effectiveness. The participants stated that the 10X-SDL acted as the most viable and feasible approach possible for the organization.**

DETERMINED TO CREATE RESULTS

Overall, the participants valued the time management applied in the 10X-SDL design sprints combined with each working group having a facilitator on their side to guiding the development work while ideas are teased out through methodology. They were even first surprised by the strict time-boxing, which interfered the sessions with intricate cuts to move to the next session. Still, the time management proved to be successful as the team valued the overall working result. **The time-boxing has shown that it induces a joyous setting of stress among the participants to come to the point of intermediate conclusion.** Another beneficial aspect of the time-boxing has been that the participants acknowledged that not 100% achievement matters. It is more achieving the goal of 70 % in a short time. This can be compared with the Pareto principle that roughly 80% of the outcome can come from 20% of the causing work for many outcomes. The facilitators make sure that the participants kept in line with hard time-boxing to focus on the significant issues.

In combination with facilitation support, the technology, while **enabling unlimited areas to co-create, provided sharing and collaboration aspects that were seen as highly valuable.** The 10X-SDL was evaluated as the most digital based format in the organization.

Enabling workflow: At first, working digital was challenging for the participants, but within a short time and due to the facilitation, guidance, and methodological and technical support, the participants were able to concentrate fully and get into a productive workflow. It was also demonstrated that the software DEON is very intuitive as the participants usually got into a productive state after half a work day.

The 10X-SDL with DEON has created a motivational experience, playfully and with no inhibition thresholds building up. The effective digital capabilities showed a vast set of possibilities and opportunities as they **enabled a constant fluid workflow for development work.** The participants could work in **a fast manner and seamless workflow across the devices and without any limitation in the workflow, such as having to switch to other software tools in-between.**

Integration in the running processes: A problem often occurred in that after a period of time, the attendees asked the product owner about the previous workshop: "What has happened after the workshop with the created results?" **No seamless transfer of project data was enabled for the subsequent development phases of a project. The participants stated that design sprints in a digital form create impact as the information is not stranded and much more expanded across the organization and further developed. DEON provides digital documentation of the whole development. It is a positive aspect to be able to simply look at all data and information after the design sprint in the DEON project and resume working at the same spot. A challenge lies in the further processing of the information conducted and how to plan the next steps of the project. For faster orientation, however, the digital playground serves the purpose of providing a fast overview.**

Live documentation: The participants agreed that the advantage of the technology and software combination was simply that, in **the end, they have all the material available with no losses. As the facilitators also document the ideas or comment on the DEON project, it provides live documentation of the development process. They primarily see immediately everything that the individual participants had recorded. As advantage is seen to have all information as live documentation existing is the demand by the participants to see also later on how the work results have been used in the forthcoming development of the project.**

Transparency of decision making: Former issues have shown that previous agreements or decisions have been discarded in later project development in projects. **However, by given the chance of the digital form of going back in the time of project development, agreements & disagreements can be already dissolved by proving the decision-making process, which means the enablement of transparency and traceability of decision-making chronological order; a 'live written' development contract—being able to follow it through and pick up the original train of thought.**

Enhanced visualization: The whole DEON document was seen as necessary, as it is **able to include many details that usually would not fit a document, as the unlimited digital workspace enables enhanced visualization of information.** For example, putting the screens side by side, can display the whole storyboard at each touchpoint interaction. This is a comprehensive basis for user testing as features such as connecting a mobile phone and visualizing its live-captured screen in the working project enable the team in the user testing to document and comment on each find quickly and precisely manner in the user flow. **The advantage of this system is that it provides easiness of structuring information. Having everything in one place, the ability to drag the information around and comment on it proved to be very helpful compared to going in and out of different presentations, as usual work would look like.**

Further, the digital canvas enables retrieving snapshots of information, which beforehand might have gotten overboard. **It also offered to communicate in a much better form as the digital drawing capabilities realized their concepts in a more versatile way and was able to show their developments through constant documentation to upper management.** In comparison, the analog way of co-creative working cannot be so easily adapted. For example, it necessitates taking photos to document the status of a project board of sticky notes, then erasing the writing and readjusting the information.

Immersion into the situation: The ability to display a vast set of information, including a variety of media formats, at the same time enables faster conceptual processing. The participants stated that the technique of projecting photos or movie clips of the situation helped to immerse them into the user perspective quickly. When getting back from the user field test, it enabled putting together the customer journey in one flow in a very focused and quick way. The participants valued being able to replay and try out their ideas for improvement. The experiential part enabled the participants to research and observe how the process actually works. They were able to understand the actual problem and thereby formulate a quick idea to solve an issue and build a solution.

Combination of hardware and software: The software DEON in combination with technology such as the touch displays, was seen as a beneficial solution to design digital journeys within wireframes. The participants stated that the

opportunity for multiple and simultaneous inputs was compelling. They were amazed at being able to build such a detailed user flow in the form of a journey, stating that the experience of evaluating the user experience directly around the product and feeling and seeing the paint-points of the user was crucial.

The participants concluded that the 10X-SDL framework fits exactly many other business problems of the organization and evaluates it as suitable to be applied in everyday business life. The participants stated that they would adopt these methodologies more in the future and also try to enforce them in a collaborative format and integrate them into the running processes. The participants noted that with the 10X-SDL framework, they were able to tackle any kind of challenge, providing fast results within two to three days of the design sprint. The participants evaluated the development experience of the diverge-converge pattern as valuable, as it showed them that new findings occur constantly against their biased expectation. They also stated that they would like to integrate this way of working much more in their everyday work to enable more depth.

5 Chapter: Evaluation

The aim of the exploratory approach was to provide insights in order to understand how Service Design should be applied in business practice. This research aimed to acquire knowledge based on the interaction with and in reflection on the 10X-SDL. In reference to **Chapter 1.4: Research questions**, this chapter serves to provide an overview of the findings that the 10X-SDL as a research project generated for the discipline of Service Design. The main research questions include a set of sub-questions that have been answered throughout **the Service Design Research process**.

The first part focuses in essence on how Service Design as an approach and methodology has been applied in the form of **the 10X-SDL as a business accelerator**; see also Chapter **4.1.10 Intermediate evaluation of deploy phase: Key findings and learnings** and **4.2.6: Intermediate evaluation of use phase: Key findings and learnings**. As digital transformation has influenced the Service Design practice, the 10X-SDL enabled co-creation through design-led innovation through technology. **In this way, the 10X-SDL has functioned as a "digital experience demonstrator" in action and more to enable Service Design practice inside the organization.**

R1 | How does Service Design practice has to be applied and executed to be perceived as a valuable approach for business purposes for the organization?

The second part provides the final evaluation of the 10X-SDL's **applicability inside the organization.** The broader focus of the research lies in how Service Design practice has to be made accessible and enabled for sustainable implementation in the organization. **As the reach and impact of 10X-SDL have been in focus, the findings show which kind of organizational barriers and requirements need to be overcome to integrate Service Design practice into the organization.**

R2 | How does Service Design practice has to be enabled to overcome organizational barriers to create change inside the organization?

The third part, as the **conclusion** defines how the research has contributed to the Service Design field, also positioned its limitations concerning validity and reliability. This part also makes suggestions for potential future research in the Service Design field.

5.1 The 10X-SDL as an accelerator for business development

This chapter provides a summarized overview and evaluation basis of the research findings as well as how they are connected and derived. The needs and demands of the organization for which the 10X-SDL has been developed have to be considered; see also Chapter **2.2.1: Key premises for the application of Service Design,** which provided the frame of Chapter **2.2.2: Framing a vision to manifest Service Design inside the organization**. This vision has been described as a leading picture on how Service Design practice should be implemented inside an organization to unlock the proposed business value. It has to address the challenge of ongoing creation of business value with the focus of supporting further implementation and execution of project development; this means Service Design has to focus on the "doing."

From a business perspective and reflection on how the 10X-SDL has been qualitatively measured for its success, Service Design practice has to contribute to digital transformation and ultimately profitability. The 10X-SDL followed the function to fulfil multiple roles in supporting the organization in human-centered design for business purposes. The 10X-SDL is open to fit the context, situation, and culture in relation to organizational needs and demands. The cases conducted have tackled issues in a balance of exploration as development of innovation in new business fields and optimization of existing business processes. These activities have targeted humanizing products, services, systems, and processes but also helped overcome strategic innovation challenges, precisely to envision desirable futures by innovating, creating, reshaping, and overcoming given organizational barriers. This also has revealed challenges in facilitating a cultural and behavioral transformation in cross-department and brand collaborations.

The 10X-SDL has promoted the new attributes of working as human-centered, flat in hierarchy, agile and lean in operation, open to experimentation, and working digital by combining the key characteristics of being agile, explorative, coping with complexity, and creating understanding, making it a suitable solution-orientated approach. An emphasis has been on connecting people, processes, and users by initiating new and innovative ways of collaboration involving internal and external stakeholders to create alignment. The approach has led to multiple perspectives that can motivate big changes in designing and executing holistic solutions.

By utilizing running business projects as cases, the research focus has been to prove to the organization that the 10X-SDL can create business value throughout the application and utilization of Service Design **while integrating seamlessly into established business processes**. The evaluation criteria for successful Service Design practice are defined by the organization itself and how it accelerates business processes and how it can be integrated into pre-existing business culture, processes, and purposes.

The 10X-SDL is **valued as a holistic combination and by offering the methodology, hardware and software, space, process, format, and facilitation. The 10X-SDL as acceleration format is enabled by digital collaboration in connection to co-creation; this provides an emphasis of differentiated input options for an accelerating development process. Further, the framework is experienced as efficient and effective due the tight time scheduling, methodologically structured plan, and digital working methods within DEON across development processes as a whole; being evaluated as a tangible, fast working, concrete, and interdisciplinary format to structure an ideation process catering to implementation. The learnings show that the 10X-SDL provides advantages for the organization concerning involvement of stakeholders by co-creation, enhanced visualization of information by digital accessibility, and experiential tangibility of results by a process of concretization. In conclusion, the combination of all factors leads to the enablement of the organization for better and faster decision-making.**

In comparison, the participants stated that the 10X-SDL design sprint showed itself as **not just a "wild" brainstorming, but a better way to sharpen the pre-existing design thinking practices within the organization.** Service Design is seen as a process of thinking and doing, as **"combining, recombining, and adding elements out of multiple perspectives until everything fits together**." This has emphasized the importance of methodically structured conceptual development as the participants admitted that in the regular everyday work, they rarely follow such methodologies. Compared to previous workshop experiences, the 10X-SDL with its acceleration through digital working components set a new benchmark in efficiency and effectiveness. The participants stated that the 10X-SDL is **"acting as the maximum viable and feasible approach possible for the organization**."

5.1.1 Derivation of evaluation criteria for Service Design practice

Especially in this context, Service Design in application and utilization in practice has to follow the business premises that directly influence its execution of a becoming a result-driven approach. **Considering that the 10X-SDL is a framework put into business practice, qualities as effectiveness through structured methodology and efficiency by digitalization come into play, as it has to provide business value for the organization, effectiveness is defined as the ability to be successful and produce the intended results, and efficiency is defined as the condition or fact of producing the results you want without wasting any resources such as time, labor, or materials.**

10 TIMES DOING

As business impact stands at the center of attention in the corporate setting, the potential to do any kind of creative work as well as enabling the creation of tangible results has led to the main value proposition **"10 times doing."** The mission statement of project acceleration is to **"create an outcome in a short amount of time. Every session has to have a meaning, to be clear what to do and what to deliver**." This has shown the importance of the definition and framing of objectives as well as **"facilitating alignment and expectation management**." This also forms the key performance indicators for the Service Design practice as to which outcomes have been achieved and to what extent. This is also achieved by providing acceleration of project development by 10X-SDL design sprints connecting human-centered, lean, and agile design for project acceleration in a transdisciplinary way. As Figure 118 shows, 10X-SDL design sprints as an acceleration module have to fit into early and later stages.

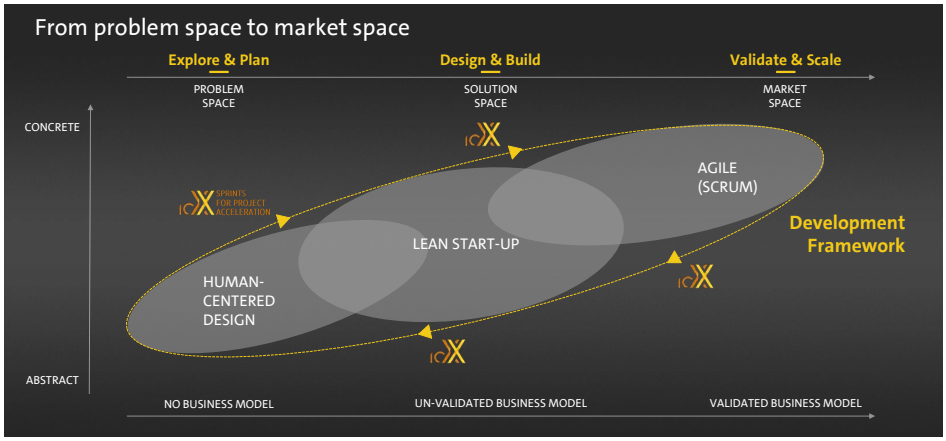


Figure 118: Acceleration sprints within the development stages of a project (Schaaf, 2020b)

Further, the interrelating maxims of principles such as "designing the right things" and "designing things right" focus on Service Design practice. Each process of conceptual development starts with endless questions or hypotheses such as **"Do not know or could be?"** but has transformed into **"Do know or should be!"** For this reason, understanding the reason and/cause for "designing the right things" for prototyping, testing, learning, and iterating for **"designing things right"** is essential for solving uncertainty. Over the years, the "double diamond" design process model (Design Council UK, 2005) has developed itself as a guiding basis and has also been further devolved by practicing designers.

Multiple innovation process frameworks are applied in the field and have been reframed for contextual purposes. The seamless integration of the 10X-SDL design sprint format in the running business processes is essential to achieve successful business outcomes, especially to enable clarity at the fuzzy front end of the innovation process and streamline the decision-making process overall lead-time. As Figure 119 illustrates, it has revealed the finding that the design sprint project management is essential to execute in Service Design practice and within its preparation, execution, and after work. The participants evaluated the development of the diverge-converge pattern as valuable as it showed them that, against their biased expectation, new findings occur constantly. **In this context, the 10X-SDL is defined as a limited timeframe and collaborative effort that produces clear deliverables serving either a direct-action plan for the current business process or as an efficient and effective knowledge transfer mechanism to create alignment between the stakeholders.**

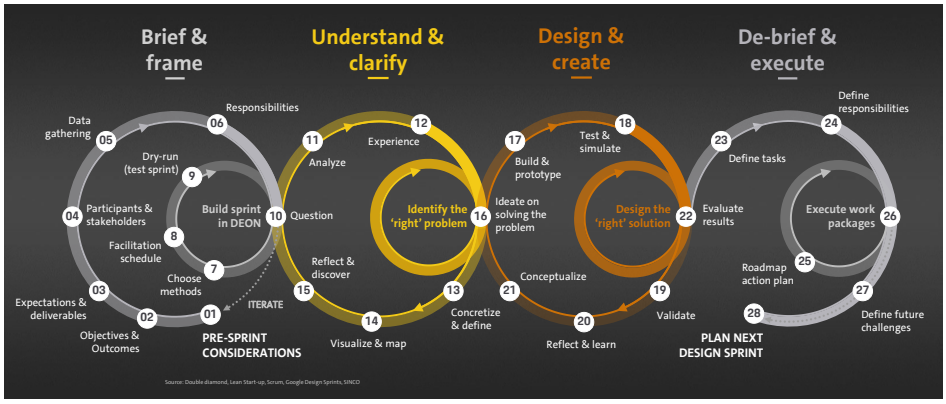


Figure 119: The 10X-SDL design sprint format defined in phases (Schaaf, 2020b)

CO-CREATION FORMS ALIGNMENT AND COMMITMENT

As business dynamics are demanding in a corporate setting, an increased alignment across multi-stakeholder project management is essential. Working together in a diverse team and bringing together different perspectives, experiences, and levels of understanding of a particular topic provides new ideas. The working format proved to enable interdisciplinary co-creation while taking advantage of diversity by working together across departments and teams with different areas of expertise and perspectives. By taking advantage of the insights of a large and diverse group, has automatically provided a positive impact on the working results. The participants appreciated the dynamics of the

relationships, such as ideas being co-created spontaneously, which would not have happened in a static environment.

This co-creation forms commitment and is a key success factor for multi-stakeholder project management. It enables a shared vision together in coming up with a common denominator in each step. The key beneficial factors of co-creation regarding human relationship management is the stakeholders or participants' commitment being built on transparency, participation, and engagement, which form involvement and alignment to trust, as the business objective is to instill upon everyone the same understanding and feeling about the demands and needs of the project. Enhancing motivation and enthusiasm for a project foundation are of key importance as it enables emotional involvement in a project. Further, the level of commitment for a project is ensured throughout the process of enabling an understanding through the emotional experience of stakeholders and management. The participants stated that facilitating co-creation formed key importance for engagement. **In this way, Service Design enables the human emotional perspective as it fosters involvement and self-ownership, which automatically leads to "stakeholder alignment."**

IMMERSION INTO THE HUMAN PERSPECTIVE WHILE CONSIDERING THE WHOLE SYSTEM WITH ALL ITS DIFFERENT PARTS

Overall, the participants acknowledged that Service Design not only focuses on the end-user but rather all connected stakeholders, considering their problems, interactions, and relations in a holistic interrelating system, applying multiple perspectives toward a holistic solution, zooming in in a mini-cosmos and zooming out in a macro-cosmos. This also involves realizing that there are a number of different possibilities and outcomes to each situation each actor is involved in within their social and cultural contexts.

As gaining empathy through stepping into someone else's shoes enabled an outside perspective, by immersing into a person's life, the participants could understand the value interaction being performed and better define what kind of issues they were solving. The participants stated that the display of images or video of the human context provided them faster access to the mood of specific situations of the user. This enabled them to understand the pain and gains as well as to create concrete outcomes rapidly. The combination and constant switching between experience-focused work and analytical processing in the form of strategic mapping were demonstrated as a result-driven combination. It was shown that it is important to conduct the experience factors in the customer experience path and then analyze this and compare it with the mapping of the existing services. Additionally, seen as being important is the process of reformulation to condense and formulate the ultimate sentence from the user's point of view, to reduce and remain concrete in the

reduction while considering different stakeholder views. The importance of research is seen as essential to be effective; to research the customer and market context first and then go onto solution building.

FACILITATION IS A KEY ENABLER

Overall, the 10X-SDL has been valued as a collective process of consensus building, the facilitator enabling a team process of specifying, sharpening, and reformulating towards consolidation to enable concretization to define terms actions, and meaning, and to ensure a programmatic result-driven approach. The major responsibility is to ensure the business outcome, and this is the foundation of the facilitator role within the 10X-SDL framework. The facilitation ensures operational effectiveness by guiding and leading the participants through a design sprint. Further, the facilitation was valued as the right balance of structure and enablement of allowing participants to utilize the 10X-SDL to come up with their ideas. In addition, facilitation creates value by inspiring the stakeholders to think from a different perspective and more concretely enable the participants to articulate their thoughts, comments, and ideas to create a shared understanding within the working group. Facilitation also engages the stakeholders by making them understand the complexity of the human experience.

The participants especially valued the time management applied in the 10X-SDL design sprints combined with each working group having a facilitator guiding their development work. The applied time-boxing was shown to produce positive stress among the participants, bringing them to the point of an intermediate conclusion. This psychological component has been shown to attain the maximum output of the participants.

This strategy supports the prioritization of the agreed deliverables defined in the design sprint's preparation phase. The expectation management is framed with the leading counterpart of the business project management side. The right set of tools in a tailored approach is chosen to deliver the agreed-upon results of the design sprint. The approach is to focus on the concretization by being visual and tangible until everybody understands the problem in the same way and is unified in finding the right solution. This frames the focus on the result-orientated methods of Service and Business Design, enabling ideation toward evaluation along the whole development process, an operational and methodologically driven facilitation style being applied for enhanced business impact.

The facilitators need the ability to very quickly understand the ongoing and underlying problems, evaluate a vast amount of information from complex cases, and think from different perspectives towards a topic. This requires abilities in analytical thinking, intellectual flexibility in grasping comprehensive cases, and also being professional with the utilization of digital tools.

WORKING DIGITAL OPENS UP NEW POTENTIALS IN SERVICE DESIGN PRACTICE

A digitalization approach of working routines was utilized to achieve the mission statement of "10 times doing." The 10X-SDL framework combined with visual collaboration software DEON opened up new working potentials due to working digital, mainly transferring or extending the existing analog based-practice of Service Design with its tools and working routines into digital workflows. Working digital enables enhanced visual collaboration toward digital co-creation, which provides acceleration in development processes. Digital collaboration brings together dispersed teams sharing capabilities of the digital DEON project and also expanding collaboration through integrated video conferencing applications. In the manner of co-creation, the IT infrastructure helps to involve external participants, for example, remote in user-testing or expert discussions. This leads to integrative thinking as it leverages participatory design. **DEON as a collaboration operating system extends cooperation outside the space, meaning it dissolves the limitation of co-location.**

Previous findings show that analog collaborative working practices such as paper-based sticky notes, brown paper, and whiteboards have limitations and entail wasteful work, defined as work or chores that do not add any value for a specific product or service. **Eliminating this waste is the most significant potential source of improvement in corporate performance and also customer service. Specifically, leaving analog collaborative working practices helps to dissolve psychological barriers, reducing the required effort to fulfill non-value-added demanding tasks.** As previous experiences have shown, analog workflows entail photo documentation of sticky notes. This analog post-workshop documentation is labor-intensive and does not enable further working without the transformation of data into a digital format. **This translation also introduces the risk of conducted information getting lost due to, for example, the inability to read handwritten sticky notes. In the analog way of co-creative working, information cannot be easily adjusted.** Additionally, analog collaborative practices inherently require a physical infrastructure, creating the problems of transferring data from space A to B or connecting different workshop spaces with each other. **By removing the analog limitations, the 10X-SDL has provided a process optimization while also simultaneously creating more attractiveness for the co-creational approach.**

The 10X- SDL framework, together with DEON as the digital content hub, enables constant further development as all the data are accessible and all the relevant data are effortlessly preserved. The intuitive use and the wide range of possible use cases offer considerable potential for use in location-independent project work in all business areas. Improving decision-making processes as supporting necessary information transparency increases progress, which can

be tracked on an ongoing basis even when decentralized. This also solves the pain points of corporate organizations in knowledge management as a challenge is transferring knowledge efficiently inside the organization or building on existing know-how instead of starting from scratch. This results in a completely new quality of collaboration towards co-creation.

KEY PERFORMANCE INDICATORS FOR DIGITAL CO-CREATION

This research has identified key performance indicators for Service Design practice when applying **"digital co-creation**." Service Design practice is based on fast processing and organization of information. The unlimited workspace areas used to co-create expand the sharing and collaboration aspects in Service Design practice. The combination of a consistent digital workflow with its structured process primarily provides accelerated information handling, which reveals business value. As **the unlimited digital workspace enables enhanced visualization of information**, the whole DEON document is able to include essential details that usually would not fit within previous documentation formats. This system removes previous working limitations as well as reduces the effort required to structure information. By having all information in one digital workspace, the ability to drag the information around and comment on it enables increased information processing, as does being able to better communicate through digital drawing capabilities while reducing the effort to show the development documentation. **For Service Design practice, this combination enables the possibility of accelerated knowledge management in human-centered design and work remotely or in hybrid or face-to-face or cross-location formats. Additional value is seen in employees being taught digital skills that also form a digital mindset "through use," and this leads to sustainable transformation.**

Access to all information at once—accessibility: The most important benefit is to be able to access all the information in digital form at once by having all information at hand as the DEON project provides unlimited digital space. By the support of facilitation, it provides a clear structure and overview of tasks in design sprints. As diverse perspectives of the participating experts can be gathered, it is inspiring to have all the information holistically on hand.

Information transparency—overview and understanding: The transparent way of working provides an overview of each stakeholder. Instant visualization of different information and data sources (e.g., videos, websites) enables a shared vision together. Full information transparency enables unmasking challenges earlier and encourages teams in an open, constructive exchange, **which also clearly promotes research/data-based decision making. As the digital text is faster to process in comparison to handwritten sticky notes,** digital post-its lead to less room for interpretation and discrepancies.

Further, the ability to display a vast set of information, including a variety of media formats, at the same time enables faster conceptual processing and immersion. During synthesis, it is possible to map correlations and structure a large quantity of data without spatial limits. With the technique of projecting large-scale photos or movie clips of a situation, Service Designers can build immersive experience prototypes to foster the human-centered perspective. The participants were able to immerse themselves in the situation and thereby better identify and understand the actual problem. **This enhanced understanding translates to speed in idea formulation and solution building.**

Easiness in structuring information—organization: From the facilitators' point of view, it has reduced the effort required to organize data, to switch between information sets and media formats, and to organize the boards and information of the whole project throughout the whole process of a design sprint.

Faster processing and communication of information: The technical capability to visualize and document proves efficient as documents can be copied and then regrouped in another context. This enables collaboration as it initiates a process of participation of the group. **One central pain point has been how to wrap the design sprint up inconsistent documentation to enable a transfer in the next project phase or other future work. The digital working methods reduce the effort in the documentation and thereby speed up the distribution and communication of documented results.** The results are easily shared and increase information accessibility amongst all the stakeholders.

Interacting with information through devices: By having all the different devices running at the same time, the service experience and the visualization of the customer journey can be reviewed "through different lenses" simultaneously. **The participants stated that the opportunity for multiple and simultaneous inputs is seen as very powerful. Additionally, the participants stated it is crucial to evaluate the user experience directly around the product and feel and see the paint-points of the user. The results form detailed user flows toward the customer journey. By providing the opportunity to write on the screens, it combines analog working routines with digital efficiency.** Having the opportunity to move items around, write and draw, rearrange, and delete information in the digital workspace shows the advantages of having all kinds of information visually presented and having everything documented.

Enabling workflow: At its core, it offers **a fluid workflow for co-creational development work. DEON allows every team member a digital workflow by accessing, sharing, editing, and creating data in one holistic visualization of an infinite workspace; this enables two-dimensional and nonlinear working processes through direct interaction of multiple users on one platform.** This supports the participants in a digital workflow in which they can build their ideas towards concepts in a structured, focused, and fast way. Due to the facilitation,

guidance, and methodological and technical support, the participants are able to concentrate fully in a holistic view while progressing into a productive workflow. The speed is enabled by the seamless workflow across the devices and the ability to integrate photos and sketches without workflow disruption usually caused by switching between various software tools.

Live documentation: The instantaneous visualization of everything that the individual participant has recorded provides the advantage to have all information existing as **"live documentation**." **The advantage is to have all the material available with no losses as the facilitators continuously document the ideas and comments within the DEON project. Through digital working, the system enables an overall bigger picture of a developing project and provides live documentation of the development process.** The participants later see how the work results have been used in the later development of the project.

Transparency of decision making: As previously stated, previous project agreements or decisions have been discarded in later project development. However, by being given a chance in the digital form to go back in time, project development agreements and disagreements can be already resolved by providing documentation of previous decision-making processes, **meaning the enablement of transparency and traceability of decision making in chronological order; providing a "live written" development contract.**

Integration in the established business processes: T**he participants stated that design sprints in a digital form create impact as the information is not stranded and the information can be distributed across the organization and further developed in planning the next steps of the project. DEON provides documentation of the whole development because it is all digitally available. This also means that there is a seamless transfer of project data into the next development phases.** Further, simply looking at all data and information after the design sprint in the DEON project enables direct continuation to build up and process the original **"train of thought**." **This allows participants to pick up original trains of thought efficiently.**

Due to digitalization, an increase in efficiency and motivation is possible. Previous experiences have shown how stressful it is to work in an analog co-creational way and then later transfer everything into digital form. As there are no more piles of paper sticky notes to be later processed, it saves time to have all data already in digital form. The advantage is seen in the connectivity compared to analog workshops, as there is reduced effort when the participants do not have to carry items or charts around to present the results to others. Working in a digital workflow supports the facilitators in preparation through documentation and, as a result, along the whole process. Having most materials like templates and icons already integrated into the 10X-SDL library and being able to duplicate best practices from other projects reduces setup times

and enables quick reactions during workshops when adaptations are necessary or advantageous.

Utilizing the experience corner combined with Surface hubs as information edit stations and the Surface studios as the facilitator desk has enabled an efficient workflow. For the participants, sorting information has to be as intuitive as possible with the best usability. Digital working especially has to be experienced in use depending on the purpose as it enables evaluating the best working module and work process combination for productive use.

FINANCIAL ASPECTS OF DIGITAL CO-CREATION FOR SERVICE DESIGN PRACTICE

For this research, it has been essential to evaluate the direct impact of Service Design practice on business projects. The 10X-SDL as a framework in conjunction with using DEON with Microsoft Office 365 has led to a significant cumulative savings potential of resources. It creates the opportunity to break down technical and human collaboration barriers and work together both effectively and efficiently across the organization and with external business partners. **The main benefits of digital co-creation have to be seen as interrelating factors. The acceleration in knowledge management reduces the time-to-decision ratio by improving information transparency and access, overall digital workflow, enhanced collaboration, and reduced labor effort, mainly enabled by the combination of digitalization and applied methodology.** Resource-saving working routines are achieved by switching to purely digital document processing and savings can also be expected in real estate management, shortening travel times, travel costs, workshop materials, catering, etc.

Over 30 design sprints over 12 months have been measured in comparison: **"analog versus digital design sprints**." In focus has been the **"time reduction"** for Service Design facilitators due to digital co-creation under the premise that the 10X-SDL as the framework is executed under the premises of full professional execution without any third-party interference. In the day-to-day design sprint work for Service Design practice alone:

- ➜ it **reduces preparation time by approx. 40 to 50%**, as, e.g., there is no need for auxiliary work such as printing templates/posters, preparation of the workshop space, or even reduction of traveling;
- ➜ **it shows a productivity increase (input/output) in execution by approx. 45 to 55%**, as, e.g., all relevant data are digitally available and up-to-date, clearly structured, and visualized, acceleration is provided by overall digital workflow;

➜ **almost complete elimination of post-processing time (approx. 75 to 90%)** as, e.g., no need for digitization of sticky notes and transfer of analog data into digital form, acceleration of sharing results, and direct continuation of working in the next working phase

It is expected that these savings estimations can also be transferred into other collaborative formats when a similar working approach as the 10X-SDL is applied.

5.1.2 Answering research question | R1

How does Service Design practice has to be applied and executed to be perceived as a valuable approach for business purposes for the organization?

Service Design practice has to be aspirational and engaging, but the practice also has an emphasis on business orientation to be perceived as valuable, leaving aside that Service Design practice stands for human-centeredness, which is the foundation to transform to a human-centered organization. Furthermore, the application of Service Design towards business has to be directly convincing or evident to the organization's management. It has to appear professional in its kind of thinking and working.

The findings have shown that the business perspective is essential to convince and persuade the organization to adopt a new working approach, as it is of crucial interest to the organization to improve development processes in general. Based on the existing business culture language, which has a financial focus, it enables the staff and management to be convinced about the benefits. All results must be translated as actionable and tangible impact, meaning the business goals have to be translated into a purposeful programmatic solution. Service Design practice has to be integrated into the organization's forms of frameworks and methodology and into existing business processes as this enables defining future processes. In this connection, the advantages of new digital technologies play a significant role to make Service Design practice effective and efficient in its working procedures while following the objective to enable accessibility so that it can reach more comprehensive parts of the organization, in **its core to enable acceleration of project work by digital co-creation and at the same time enable a holistic macro and micro perspective on multi-level systemic value stream management for the organization**. The resulting combination makes it possible to induce change and foster adaptability and mastery in response to the complexity of the digital transformation in the organization.

ORGANIZATION-RELEVANT CRITERIA FOR EVALUATING SERVICE DESIGN PRACTICE

- ➜ Reduction of time-to-decision ratio to increase project implementation speed
  - by the involvement of all persons and across all hierarchical levels relevant to decision-making
  - by process of facilitation of alignment and commitment
  - by building networks to improve cross-functional collaboration in projects
  - by integration in the running of business processes and infrastructure
  - by the acceleration of development due to digital co-creation
- ➜ Improved knowledge and information management
  - Effectiveness and efficiency in planning and development activities
  - Provide transparent and comprehensible documentation and visualization of the decision-making process
  - Significantly improve information exchange with increased speed through real-time communication without breaks, enabled by overall workflow

Figure 120: The 10X-SDL enables holistic business development accelerated by digital workflow and workspace (Schaaf, 2020b)

5.2 Applicability inside the organization - The reach and impact of 10X-SDL

As Chapter **1.3: Research gap: Understanding the context** states, the difficulties and challenges inside an organization define how to implement Service Design practice sustainably. The impact of Service Design can be considered in relation to its contribution to organizational change. Depending on whether the majority of the organization has limited experience with Service Design, including Design Thinking, this puts the organization at an entry-level in the design maturity index. This formulates the challenge of implementation as it targets a holistic picture of changing competencies and processes. Further, the transformation of people takes both a long time and the ability to adapt specifically to situations and context to enable change. As Service Design as a transdiscipline is new to the corporate culture of Volkswagen, the participants stated that trust in Service Design and also its form of working and methodology is missing and has to be established by proving its business value.

5.2.1 Evaluation approach: Learn from lead users about the impact

The research has shown that **the 10X-SDL can solve a diverse set of business problems of the organization. The findings indicate that the organization is willing to adopt this approach and to enforce the digital co-creational formats. Its potential needs to be applied in everyday business life challenges and integrated into running processes.** Still, in order to evaluate the reach and impact of the 10X-Service Design Lab in terms of Service Design utilization and the status of human-centered development in the organization, semi-structured telephone interviews were conducted with lead users across the organization. This has happened a minimum of six months after visiting the 10X-SDL (Schaaf, 2018; 2019).

Goals

➜ Evaluate the reach and impact of 10X-SDL since the starting point in September 2017.
- Use and perception
- Integration of Service Design practice
- Barriers towards implementation
- Requirements and ideal image for implementation
- Requirements for an in-house partner for Service Design

➜ 14 interviews were conducted with 21 product owners and participants who have experienced design sprints in the 10X-SDL

Findings

The driving force to use the 10X-SDL is curiosity for a new creative, digitally accelerated way of working. Lighthouse projects such as the 10X-SDL are sources of inspiration and driving forces to establish new working methods as design sprints. The 10X-SDL as a lighthouse is a benchmark for service innovation at the Volkswagen Group. Lighthouse projects are promoting new technologies, tools, and work approaches and are essential to be at the forefront of innovation. Participants put newly learned methods into practice. A shared curated method library especially brings benefits for their daily work. Nevertheless, implementing new methods through lighthouse projects still needs to be adapted to the Volkswagen standards and well-coordinated.

Demands: People from all departments and job levels need to experience the 10X-SDL to get to know the new way of working digital. Communication of results and success stories in the organization promotes the benefits of the 10X-Service Design Lab.

"The 10X has an ambassador function for digital work in the context of Service Design. You have to give more people the opportunity to use this format (space and process support). That was impressive. This increases efficiency and professionalism."

"We got to 10X to try out new Service Design methodology, learn how to speed up the process, get new insights, and learn new methodology."

A creative space with digital tools and physical tools all in one place. It takes people out of their daily business into another world and helps them focus on future topics and create tangible results. Due to the minimized distraction of the closed exclusive atmosphere of the lab, the focus is on the active topic. One space is giving access to digital and physical Service Design tools and supports the full range of working methods. This enables changes of perspectives and mindsets, while visual working enables the participants to produce tangible and concrete outcomes directly.

Demands: All departments must have access to professionally equipped Service Design labs. A mobile version of the 10X-SDL (pop-up version) or 10X-SDL modules to support the running processes.

"An environment with everything needed, all tools support the mindset to develop. Providing a boost instead of doing this work at a regular office."

Facilitation as professional support, method expertise, and neutral moderation enable managing design sprint's focus. This leads to efficient and effective outcomes. Professional preparation and advanced knowledge of methods lead to better, more

efficient results. The facilitators fulfill a neutral role and speaking the same business language as the participants. Further, their role ensures an encouraging focus on the design sprint objectives as well as strict time management driving the success of the working session.

Demands: Provide support in the workshop preparation and execution but also along the whole development cycle. Enable easy access to facilitators to empower all divisions and teams to carry out design sprints.

"The tools, methods, and moderation have encouraged us to clearly focus on solving the problem."

"Especially the preparation helped us to translate our vague ideas into a proper sprint format. It took much effort to prepare all input accordingly, but it was absolutely worth it. The results were much better. This approach should become standard."

Design sprints enable employees to develop innovative concepts on their own instead of giving the work to external agencies. A barrier for in-house development is the time and effort required to prepare and set up design sprints in addition to the daily business. Another obstacle is the lack of time capacities of the diverse experts to attend in the design sprints. Additionally, limited Design Thinking and Service Design skills harm the adaptation of the design sprints at Volkswagen. An in-house agency can process sensible projects much better, speak the same business language, and is integrated into the running processes.

Demand: Output-oriented workshop formats and design sprints become an inherent part of the daily work. Service design trainings enable all departments to work with agile and co-creational working methods. A regular timeslot for preparing and attending 10X Sprint formats shall be implemented.

"With externals, I start from scratch. It saves much time with an internal partner in the organization. Through lighthouse projects as the 10X, we are enabling new ways of working and in-house development of new services."

"The 10X is a lighthouse for optimization. We need Service Design champions and experts to train the employees in the methodology and tools."

New software and technology devices support agile and efficient workflows and help colleagues to develop tangible outcomes quickly. The 10X-SDL technology accelerates productive working as the technology follows methodology. The visualization and availability of all data in one workspace enable a seamless workflow. The 10X-SDL users experience DEON as a valuable and collaborative

tool. All input can be documented, edited, and shared quickly. Thus, the 10X-SDL promotes the usage of the software. Limitations arise due to insufficient onboarding with technologies such as connected screens and VR headsets. However, the more considerable hurdles are slow processes and missing resources to introduce new software tools in the organization.

Demand: Advanced tech trainings for moderators to fully benefit from the technology advancements. Easy access to DEON is a critical factor to realize collaboration and potential time savings fully.

"The vision is to work with human-centered design methods on an advanced level. Shifting away from the past requires consistent decisions, resources, and new processes as well as state-of-the-art technologies. New software and technologies need to be accessible much faster than is today's case."

Co-creation of different departments and interdisciplinary project teams lead to efficient solutions with shared visions and clear task plans. Collaboration of different experts promotes engagement to work across silos. Co-creation leads to faster results with shared visions and a transparent allocation of tasks and responsibilities. An open-learning culture at the organization enhances co-creation. This requires a mind shift of leaders and POs to less hierarchy for more enablement and cooperation.

Demand: Demand involvement of stakeholders from different teams to develop key projects in a multi-centered way. A network within the organization and outside the company to leverage a shared learning experience.

"Cover the entire value chain together with customers and stakeholders, working on customer problems and developing solutions together."

"The results were, in any case, more effective, due to the interdisciplinary expertise which came together in the workshops. The proposed solution found a greater acceptance as all stakeholders were involved and worked better together."

Iterative processes lead to better business value by enabling a constant feedback loop of user needs and business demands. This leads ultimately to creating products and services faster, meeting market needs. Still, implementation is a key challenge. It is hard to get the necessary MVP development and user testing resources if the project was not considered in the yearly planning. Integration of the customer in the whole development process is considered key to creating products and services with value. Barriers are research skills and access to real customers.

Demand: An agile and iterative lean start-up approach replaces lengthy analysis and decision-making processes. Capacities and budget for rapid MVP development. Allow user research and testing during the whole development process.

"The challenging part is not to apply Service Design tools to develop new concepts, but rather to create tangible results and build MVPs which can also be tested in regard to finding out customers' willingness to pay."

"It will require a transformation from long-term decision processes to a culture of trying and adopting things. To be future-proof, we need to think in short cycles and develop things together with our customers."

5.2.2 Answering research question | R2

How does Service Design practice has to be enabled to overcome organizational barriers to create change inside the organization?

Introducing digital services and agile ways of working in a silo-structured managed organization is bound to result in conflicts and uncertainties as any transformation initiatives do. The participants state this transformational challenge needs top management commitment and support to enable the Service Design integration into the organization and processes. By introducing human-centered and design-driven innovation processes, Service Design professionals enable and implement the transformation. **The synthesis of the learnings and recommendations (Group-Interview of Case | The reach and impact of the 10X-SDL, 2018; 2019) of the reach and impact of the 10X-Service Design Lab has produced management recommendations on how to enable the organization for Service Design practice, especially to enable the transformation of modern working approaches, in particular with the agilization of waterfall processes.** As the 10X-SDL is defined as a framework from a variety of modules, the defined list of implementation success factors is based on the learnings from the 10X-SDL. This formulates the objectives for each segment to consider to implement Service Design in a corporate organization.

LIGHTHOUSE PROJECTS—ENSURE ATTRACTIVENESS AND ENHANCE VISIBILITY

Manifest Service Design practice as lighthouse projects like 10X-SDL as these are a source of inspiration and driving force for establishing change through new working methods like design sprints of human-centered innovation. Collaboration within interdisciplinary project teams of different departments and further co-creation lead to effective and efficient solutions with a common and shared vision. The participation model in an agile setup serves as an efficient knowledge transfer mechanism to create alignment between the stakeholders. This means that learning happens together with the key stakeholders who hold the best knowledge (tacit and explicit) regarding the project. **The value proposition as a mission statement has to function as aspirational and engaging but also business-orientated.**

- ➜ A purpose-driven mission statement that focuses on how to translate people needs into business solutions for becoming a human-centered company while providing acceleration of decision making by effective and efficient knowledge management through digital-enhanced visual co-creation
- ➜ Propose communication concept to educate about Service and Business Design with its methods and processes and the meaning of human-centered development and enhance the organization's agile mindset. Promote communication for human-centeredness, agile, and lean by starting best practice projects
- ➜ Promote and provide 10X-Service Design lab experience tours and workshops free of charge for teams
- ➜ Promote co-creation as a core principle: "code of conduct for co-creation" and key performance indicators for human-centered design
- ➜ Establish an excellence center for user experience quality assessment
- ➜ Create and foster an internal Service Design Network with responsible community managers equipped with the needed resources
- ➜ Organize open learning and recap sessions and form a community of practitioners with additional communication channels (teams, etc.)

THE VALUE OF FACILITATION—EASY ACCESS AND EXPERIENCE CO-CREATION

Professional support, method expertise, and neutral moderation enable managing a collaborative format with focus and lead to efficient and effective outcomes. The space functions as a lab in which employees can actively participate by being enabled to work with Service Design and supported by professional Service Design facilitators. In this way, they can experience and learn new approaches by doing and being enabled to adopt and transfer these learnings in their future work. Facilitation enables the participants to be in a workflow of continuous concretizing to increase tangibility of their working results, identify and frame the next challenges, and break them down into executable and solvable tasks.

- ➜ Provide a co-creational format that produces clear deliverables serving as a direct-action plan for the current business process (product, service, business or system design, etc.).
- ➜ Introduce new working discipline of Service Design including the new responsible roles of facilitator and designer
- ➜ Build up a multidisciplinary business unit to consult in implementation of 10X-SDL framework. Offer Service Design trainings to enable all departments to work with the agile and collaborative working methods

- ➜ Coach and educate staff in framework, methodologies, process and mindset to develop more internal capabilities in Service Design, Lean Start up, Scrum
- ➜ Provide access for teams towards facilitator capacities
  - Hire Service Designers (with a focus on facilitation) and place them in the teams
  - Build and scale internal Service and Business Design in-house partner

CREATIVE SPACES—FOSTER AWARENESS AND LEARNING

Space has to function as a lighthouse for innovation and spark interest inside the organization. A creative space with digital tools and physical tools in one place takes employees out of their business as usual and helps them to focus on future topics and to create tangible solutions. Modernity inspires us to create something creative. Having various media at its disposal enables individually to express thoughts in different ways.

- ➜ Space can support as a conceptual laboratory for diverse working purposes such as presentation and co-creation.
- ➜ Space has to be a learning environment in a modular setup that supports all working modes, processes, tools, and methods that are applied. The furniture is highly flexible, adjustable, and rearrangeable to support diverse working scenarios
- ➜ The hardware store is quickly accessible and provides in an organized form all tools and gadgets for prototyping as a garage for conceptual development
- ➜ The information technology builds a symbiosis of software and hardware that can support analog and digital working at the same time
- ➜ Establish 10X-SDL as modular and mobile system working standards and scale approach across the organization

DIGITAL CO-CREATION WORKSPACE

A new way of digital working and demands for change in the working behavior, roles, processes, and business culture. New software and tech devices support agile and efficient workflows, and help people to develop tangible outcomes quickly. Combine this with a digital workspace in which all data is interactively accessible to enhance participation towards co-creation in co-location and/or remote. Supports conceptual development by providing holistic information overview for transparency, organization, and structure and creating, designing, mapping, and documenting content. Establish seamless digital workflow between individual and collaborative work by diminishing chores and subtasks such as data transfer from analog to digital forms to increase efficiency

- ➜ Connect all devices as one digital content hub
- ➜ Various documents and media formats are visualized, presentable, editable, and shareable in one infinite digital workspace that enables real-time collaboration and information aggregation
- ➜ A platform (aggregator) that combines the appropriate multiple use-cases, depending on the way the teams work
- ➜ Establish a tool box to accelerate the preto-/prototyping process to build tangible outcomes for business purposes. Use the digital method, tool, and template library to increase Service and Business Design methodology utilization to support effectiveness and efficiency.
- ➜ Fast rollout and accessibility of new technologies and tools for all departments
- ➜ Optimize software and hardware offering to enable state of the art
- ➜ Form multidisciplinary business unit for new digital working tools
- ➜ Provide software and hardware experience sessions to learn how to work with AR, VR, 3D printing, etc.
- ➜ Foster the digital mindset and skillset as they are imparted to employees through use

INTEGRATE INTO PROCESSES—AN AGILE AND ITERATIVE APPROACH REPLACES LONG ANALYSIS AND DECISION-MAKING PROCESSES

The focus is not just to develop new concepts but also on MVPs and constant user feedback to create products and services faster and with better value for the customer. **Establish a working framework as a design sprint that can be integrated and utilized under pre-existing business culture, processes, and purposes. A design sprint has to lead to faster working results, contribute to accelerated decision-making, solve uncertainty in a VUCA world, and enable co-creation inside the organization. Further, iterative processes lead to better business value by enabling a constant feedback loop of user needs and business demands. This leads ultimately to create products and services faster to meet market needs.** It offers a multitude of use-cases for agile work formats and integration into running processes and infrastructure as it has to be seamlessly approachable for the broader audience inside the organization.

- ➜ Integrate into pre-existing IT infrastructure and toolchain of software tools to enable seamless accessibility for all employees and also adaptability into running business processes.
- ➜ Establish a result-driven design sprint format enhanced by Service Design facilitation and development process based on iteration that boosts co-creative development work in a short amount of time.

- ➜ Offer a systematic design sprint format that can be interlinked in the running business processes and short enough to be utilized by employees, as five-day design sprints are not feasible for the organization.
- ➜ The working format has to be open so that it can interlink with other development frameworks like Scrum and Lean Start-up. It has to enable also a bridge between different methodologies and technologies
- ➜ The format has to be open to enable the organization to solve complicated and complex problems of business development, business optimization, and business strategy
- ➜ Install working format of design sprints as standard
- ➜ Define fixed-time capacities for doing regular design sprints
- ➜ Develop an operational model for high utilization rate and prove the business case. Productivity as in increased collaboration and cooperation inside the Volkswagen Group
- ➜ Optimize the budgeting process for the iterative development process
- ➜ Development and implementation of "new service and business development" process
- ➜ Build up assessment center for customer experience quality and install stage gates in the development processes
- ➜ Provide access to user research platform and establish company builder unit for the development process

5.3 Conclusion

The 10X-SDL has fulfilled an explorative role and an optimizing role under the umbrella of digital transformation, and in this way, this research has demonstrated the importance of the merge between and effect of digitalization on Service Design. The findings have revealed how Service Design can be practiced by **"digital co-creation"** introduced due to new constellations of technology and software. This research has provided a practice-based view on the use of **"digital co-creation"** and how the practice changes through digitalization. The research has focused on learning the current state of knowledge on conducting co-creation workshops and has been based on reflection on the people and their experiences, demands, and needs for collaboration. Still, a limitation of the research can be identified considering how Service Design practice is perceived as valuable as each context's perception is bounded to determinants of the organization and its willingness to change.

In reference to **Chapter: 1.3 Research gap: Understanding the context** and (Augsten, 2020; Weisser, 2018), this research has shown that Service Design needs to take into account the environment in which it is applied and to train practitioners to understand and apply the approach, methodology, and techniques adaptively.

Further, the acceptance for change by employees is increased by organizational learning. The research results also indicate that Service Design must be transferred into a managerial fit of the organization to be accepted and perceived as valuable. As it has been identified that Service Design implementation requires organizational and cultural changes, the existing Service Design competencies might not be sufficient to guarantee sustainable implementation. The ability of business experience is essential to connect with top management and employees; a connection at all hierarchical levels must be ensured in order to be able to work efficiently, innovatively, and successfully in temporary project organizations. In reference to (Aricò, 2018), the research emphasizes that it requires in-depth knowledge of the different key stakeholders, as the contexts of operation and the power play are engaged in enabling change by empathizing with all key stakeholders. Embedding Service Design practices by engaging people is to enable Service Design practices to be embedded within stakeholders' habitual actions and routines.

Figure 121: Digitalization stands for Transformation (Schaaf, 2020b)

5.3.1 Supporting and expanding preliminary findings

The research has followed the Service Innovation Corner (SINCO) footsteps of the University of Lapland in Finland. An overview of research and deeper insight is provided in the chapter **Getting to know | Service Innovation Corner (SINCO).** The 10X-SDL is the continuous improvement and further development of SINCO. The 10X-SDL can support the preliminary findings and research around SINCO. 10X-SDL has proven to be an approachable method to utilize Service Design with its physical and technological facilities, establishing a flexible learning environment that produces representable results based on reality and customer feedback and that considers the situation and context. Further, a design sprint format has provided a focus on progress. Service Design tools are also flexible and adjustable to different contexts, which is the basis for the successful use of Service Design in business.

As an experience approach, it concretely enables immersion into customer experiences to determine pain points to create tangible business solutions further and at the same time, it can be used effectively in organizational learning and development processes. SINCO is a simulation corner that is seen as an outstanding item as it supports immersing in and imagining customer situations; this enables understanding the needs and demands in a specific way. **As a co-creation approach,** it makes use of internal expertise, saving resources and making the business process more efficient. The participatory methods support collaboration and facilitation of cross-disciplinary teams, bringing together different players in an organization. Combining all the capabilities necessary to work towards the recognized goals involving various people with different backgrounds in the process gives strength to the Service Design development. It also enhances commitment and engagement in the project. Bringing all collaborative stakeholders into the design process regarding their abilities to participate in the most conducive manner creates a surrounding in which they can learn from each other and the variety of professions. The co-creation sprint surrounding enables all interdisciplinary stakeholders to be involved in the design process; this creates appreciation that everybody can provide their unique perspective. At SINCO, as in the 10X-SDL, this organizational need is satisfied by the application of co-creation with stakeholders. **As a facilitated approach**, facilitation has shown its benefits because it enables collaboration inside the team, which focuses not only on technical support. One of the main findings of this research is that Service Design is seen as a new role and that additional competencies are needed in Service Design practice. In this way, the 10X-SDL is the proof that SINCO can be applied for the purpose of business development, especially starting new projects to create a common and joined approach between all the stakeholders and departments, like tech, business, and design have to work together.

5.3.2 Suggestions for further research

The COVID-19 crisis has shown how important the digital capabilities of organizations are. In **order to maintain business processes** such as the resilient collaboration has been enabled **through remote digital and hybrid working formats.** E.g., through the use of Deon and Microsoft Teams business processes have been allowed to continue seamlessly.

It can be concluded that a flexibilization of the working world is foreseeable and new forms of hybrid work orders will be in the organizations implemented. This will have a holistic influence on e.g., IT infrastructure, hardware and software, tool-chains, development processes, working formats and even collective labor agreements, national laws and regulations. The use of modern working methods is strongly promoted by the digital work tools as self-organized learning and sharing of knowledge support the transformational process in an organization. The research has shown that digital collaboration requires complexity-managing applications that are ergonomically easy to use and easy to learn cognitively.

The use of digital tools enables value streams to be adapted to e-business requirements and efficiencies to be leveraged while at the same time correcting for effectiveness targets where necessary. These complexities can no longer be adequately handled without the use of digital collaboration applications and their professionalized use.

This "new work order," the use of digital working methods and tools, and human-technology interactions must be actively planned and designed in order to secure the future of the operational business. In order to be able to use existing and new technologies efficiently in the working environment, curiosity and willingness to learn are required. The designed solutions must be employee-oriented offers with a high level of practical relevance to ensure transferability of best-practice to other business units. An agile organization has to promote an innovative work organization including suitable space concepts, to achieve results more efficiently and effective in sense of digital co-creation in co-location or in distance. This will require new roles and competencies to ensure this change process in the organizations in the following years. This introduces new research opportunities for Service Design as the expanded use of remote digital collaborations and new hybrid forms of collaboration intertwine.

Furthermore, this creates new responsibilities for Service Designers or forms the need to expand their competence with collaboration and visualization technologies and software. An expansion of this new **"digital co-creation"** can be foreseen in the transition from digital 2D-collaboration to virtual 3D-collaboration, as both would have to be seamlessly connected in one workflow to work efficiently and effectively together along one development process.

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Appendix

10X-SDL Template Library (2021a, January 4). Interview by L. Schaaf [DEON Library].
Group-Interview of Case | AI Assistant (2017a, October 13). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | AI Assistant (2017b, October 13). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Digital Access (2018a, February 21). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Digital Access (2018b, February 21). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Digital Workplace (2017a, October 6). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Digital Workplace (2017b, October 6). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Innovation Development (2018a, March 27). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Innovation Development (2018b, March 27). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | INTRAPRENEURSHIP PROGRAM (12.2016). Interview by L. Schaaf. Rovaniemi, Finland.
Group-Interview of Case | INTRAPRENEURSHIP PROGRAM | SINCO SPRINT 12/2016 (12.2016). Interview by L. Schaaf. Rovaniemi, Finland.
Group-Interview of Case | Mobility Ecosystem Design (04.2016). Interview by L. Schaaf. Wolfsburg, Germany.
Group-Interview of Case | Mobility Experience Center (2018a, March 7). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Mobility Experience Center (2018b, March 7). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Multimodal Mobility (2017a, September 27). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Multimodal Mobility (2017b, September 27). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Onboarding (2017a, November 21). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Onboarding (2017b, November 21). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Personal Assistant (2018a, May 16). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Personal Assistant (2018b, May 16). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.

Group-Interview of Case | Premium (2017a, October 25). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Premium (2017b, October 25). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Process optimization (2017a, November 10). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Process optimization (2017b, November 10). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Ride-pooling (2017a, November 13). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Ride-pooling (2017b, November 13). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Ride-sharing (2017a, October 19). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | Ride-sharing (2017b, October 19). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | The reach and impact of the 10X-SDL (2018; 2019). Interview by L. Schaaf, & Business Innovation Studio. Wolfsburg, Germany.
Group-Interview of Case | Urban Mobility | SINCO WORKSHOP 12/2015 (12.2015). Interview by L. Schaaf. Rovaniemi, Finland.
Group-Interview of Case | Urban Mobility | SINCO WORKSHOP 12/2015 (2016, January 8). Interview by L. Schaaf. Rovaniemi, Finland.
Group-Interview of Case | UX Guidelines (2018a, May 8). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case | UX Guidelines (2018b, May 8). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case Digital Employee Experience (2017a, October 10). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case Digital Employee Experience (2017b, October 11). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
Group-Interview of Case Service Design Education Day, & Group-Interview of Case 10X-SDL Pilot Feedback Session (2017, November 28). Interview by L. Schaaf. 10X-SDL, Wolfsburg, Germany.
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