Service design as a way of supporting a strategic transition in an organization moving towards service-centricity

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Summary

This dissertation explores how service design can support an organization's strategic transition from product-centricity towards service-centricity. The processes used by organizations to adapt, respond to, and thrive in rapidly changing and increasingly complex operating environments are associated with the need to balance tensions between various competing demands. This research examines the case of an organization that has been delivering financial services and software products for more than 50 years and is now in the process of shifting its core strategy towards a service-centered approach. The changes in organizational routines, approaches, and ways of seeing and thinking, emerging with the shift from product- to service-centricity, can bring about various seemingly conflicting demands and disorienting tensions.

Guided by an action research approach, this study adopts a service design lens and integrates extant organizational and management research on competing demands and tensions. By doing so, this study aims to expand the understanding of service design within the context of organizational transitions. The study argues that the use of service design approaches can support a strategic transition through nurturing deliberate engagement with tensions as generative forces that highlight possibilities as well as potential pitfalls. By nurturing strategy articulation, strategic thinking, and strategic agility service design enables processes of tinkering with and navigating temporalities, supporting dialogue amongst diverse stakeholders, and breaking out of routines. This study offers granularity and nuance to how such processes can promote sensitivity and foster distancing from existing processes, thereby simultaneously easing and fueling the transition.

Resumé

Denne afhandling undersøger hvorvidt service design kan understøtte transitionen af en organisations forretningsmodel fra produkt- til service-centreret. I en æra præget af øget kompleksitet og forandring må organisationer løbende tilpasse og udvikle måder at trives og handle på som evner at håndtere modsatrettede krav. Med udgangspunkt i aktionsforskning, inddrager denne afhandling et service design-perspektiv og integrerer heri begreber og teori fra organisations- og ledelsesforskning til at forstå hvordan modsatrettede krav og spændinger herimellem, spiller ind i organisationsforandringer. Afhandlingens bidrag er med til at udvide forståelsen af brugen af service design indenfor strategiske organisatoriske transitioner. Undersøgelsen argumenterer for at involveringen af service design-metoder og -tilgange kan supportere en strategisk transformation ved at engagere spændinger og gnidninger som kan opstå som generative styrker. En sådan tilgang kan hjælpe med at fremhæve muligheder i forandringen såvel som potentielle faldgruber. Service design-tilgange støtter strategiartikulering, strategisk tænkning og strategisk agilitet og tilsammen muliggør disse processer navigering på tværs af tidshorisonter, støtte af dialog mellem forskellige interessenter og synspunkter, samt et brud med rutiner forankret i et produktorienteret mindset. Denne afhandling giver et nuanceret indblik i hvordan sådanne processer kan fremme sensitivitet samt distance til eksisterende processer som er med til at løfte transitionen.

Table of contents

Part I: Introduction cover

1 Introduction

Transitioning and achieving balance and stability in turbulent operating environments conditioned by increased complexity and uncertainty and interconnected production and distribution systems (Castells, 1996) can place organizations in a tensional space of having to balance competing demands (Gaim et al., 2018). For example, how can organizations engage with the current market needs of an existing service while also balancing future demands (Gaim et al., 2018; Schad et al., 2016)? Approaches and responses to how organizations and individuals address uncertainties and cope with change have been extensively investigated by organization and management researchers (see, for example, Calabretta et al., 2017; Dameron & Torset, 2009; Lüscher & Lewis, 2008; Smith & Lewis, 2011). Tensions can be prompted when organizations and individuals must respond and decide between two seemingly opposite poles. Balancing tensions requires responses that approach contradiction and ambiguity as conditions of work and as persistent and co-existing constitutive elements (Gaim et al., 2018; Lewis, 2000). Organizations that manage simultaneous engagement with competing demands have been linked to higher performance in the short run, while also establishing and nurturing conditions for their long-term success (Gaim et al., 2018; Smith et al., 2010; Smith & Lewis, 2011). A challenge still remains as to how such responses and abilities can be fueled and ignited (Calabretta et al., 2017; Goldman et al., 2015; Neuhoff et al., 2021) and whether design could potentially support such developments. Indeed, the ability to balance and hold in mind opposing and conflicting poles simultaneously has been ascribed as a positive feature of design approaches (Whitbeck, 1998), stimulating the need to continuously engage tensions instead of avoiding them (Dorst, 2006; Thorp Hansen et al., 2009). Within the realm of design traditions, service design has proved itself as a promising approach and means to innovate new or existing service designs and foster long-term sustainable transitions in organizations and beyond through human-centered, holistic and system-conscious approaches (Drew et al., 2021; Kurtmollaiev et al., 2018; Rodrigues, 2020; Vink et al., 2021).

This study explores how service design can support a software company transitioning its strategy from centering on software as IT products towards service-centricity. Shifting a business model towards service-centricity not only manifests itself in adopting new technology but can also imply a shift in perspective for employees where an external perspective on the company – through a more user- and customer-centered focus – becomes crucial. Shifting a business model can imply the need to, at least partially, let go of routines and experiences anchored in the existing product-centered orientation and mindset and can surely bring forth disorienting tensions. This action research study has unfolded over a three-year engagement with a large Danish IT company which, at the time when the project began, established a new

design team within its R&D department. The dissertation starts at the vantage point of design research and adopts a service design lens, but it also integrates advanced concepts from organization and management studies to approach tensions between competing demands and explore how service design can help lay the foundation for a long-term strategic shift.

The following reading guide provides an overview of how the dissertation is structured.

1.1 Reading guide

Chapter 1 presents the aims and research questions of the dissertation. It describes and justifies the action research approach applied in answering the research questions. The chapter then situates the research in relation to the Industrial PhD format and introduces the research setting, along with its empirical foundation, and the adopted definition of design and service design. Lastly, it provides an overview of the publications that form the contribution of this article-based dissertation.

Chapter 2 introduces concepts derived from organizations and management studies that have been used to study strategic transitions. It describes the understanding of a strategic transition in the context of this project. Secondly, it introduces how transitions can subject organizations to tensions between competing demands and propose how challenges of transitioning an organization can be approached through the lens of service design and by integrating concepts derived from organizations ad management studies.

Chapter 3 describes the methodology by first introducing action research as a collaborative and change-oriented approach to research that seeks to address practical issues while simultaneously producing scholarly knowledge for the design research community. The chapter then introduces the methods of inquiry, data analysis, and project activities through three data collection processes. Lastly, it includes a reflection on the reliability of the study.

Chapter 4 summarizes the findings and contributions through five publications that form the foundation of this dissertation. It discusses the implications for research and practice.

Chapter 5 discusses the contributions of the dissertation, focusing on answering the overall research question of how service design can support an organization that is transitioning from product-centricity towards service-centricity.

Finally, *Chapter 6* concludes the dissertation by summarizing its contributions and the extent to

which it has answered its research questions. It suggests potential directions for future research.

When I refer to 'we' I refer to co-authored publications.

1.2 Research aims and questions

The study examines how service design can support a company's strategic transition from a product-centered towards a service-centered focus. The research questions were operationalized and prompted by the company's strategic transition, initiated at the beginning of the research project, and evolved in collaboration with me and my university and industry supervisors to ensure a match between the research strategy and the company's goals and ambitions. The outcome was the following primary research question: *How can service design support organizations in their strategic transition from product-centered towards service-centered offerings?*

To address the question, I further developed four sub-questions:

1. *How can design workshops, using the customer journey map, support an initial discussion on moving from products towards services?*
2. *How can design workshops support strategic thinking?*
3. *How does conceptualizing competing demands according to paradoxes impact the way they are approached in design practice? How can paradoxes be engaged through design?*
4. *How can design support strategic agility?*

1.3 Research approach

This dissertation is an industrial PhD project. The industrial PhD program aims to co-create knowledge that impacts both business and academia. This means that the PhD is sponsored partly by Innovation Fund Denmark and a company. The project applies action research to honor this objective and was selected because of its practical emphasis on research application and orientation towards promoting organizational change and development (Bradbury et al., 2019; Coghlan, 2019; Subbiah & Buono, 2014). I steered the project in close collaboration with supervisors from my university and the company. We have had regular project meetings throughout to plan and discuss alignment between objectives and project activities. The project activities have followed an overall plan but have continuously been modified to include and adapt to learnings as they emerged from the research project or to adapt to external factors, such as COVID-19. Overall, the structure of the project has been fluid to honor the

"unknowable, social realities with research problems that are constantly evolving and defined in the situation by a variety of stakeholders with dynamic and mixed values" (Hayes, 2014, p. 51). To adopt the role of action researcher, I have found that a thorough understanding of the applied phenomenon under study, as well as the context in which it is being studied, has been highly valuable and important. I have been explicitly working on a research project while maintaining a functional role as 'Experience Designer' in a design team. This role duality has in practice felt fluid (Bruskin, 2019). To carry out the project activities, my role can be described as: 1) collaborative when engaging with stakeholders such as supervisors, the design team, and managers; 2) facilitative when conducting design workshops and interviews; and 3) value-laden and expert-oriented when evaluating findings that integrated theoretical concepts beyond empirical insights from the company's own context. Finally, the goal of the project was twofold: to explore how a newly established design team can support a company in a strategic transition towards service-centricity and to develop scientific knowledge relevant to design research in how service design can be a means to support strategic transitions.

1.4 Research setting

The research was carried out in a globally operating Danish IT company successfully delivering financial services and software solutions to the investment management industry for more than 50 years. The research has been carried out in the R&D department, headquartered in Copenhagen, where about 750 of its almost 2000 employees work. The company has several products and services in its portfolio, of which one takes up most of the pipeline. The 'main' product has been developed for many years and was built organically from scratch, optimized for on-premise operations. This aspect is changing towards a more service-centered focus. The design of the product has been built on business expertise and software engineering practices, providing it with a rich catalog of functionality. At the time when the research project began, design and design methods were new to the organization. User interfaces and supported workflows have received sparse consultation or involvement from professional designers and end-users. The company has a strong engineering culture with more than 550 software engineers. Up until 2015, the software was developed and tested following a structured methodology with 6 months of development and 6 months of testing, resulting in 2 yearly releases. R&D underwent an 'agile transformation' of their software development processes, which included the introduction of agile principles, such as continuous testing, more frequent releases, and new roles and restructuring of development teams. As part of this transformation, the company hired two full-time designers who worked with product management. In 2018, I was employed as a full-time designer in a development team before the research project was initiated in January 2019. In 2021, the design team counted five designers and one PhD

researcher. Being employed as a designer before the PhD project sustained a continued engagement with the design team and familiarity with the dynamics, practices, and people in product management.

In 2019, a strategy focusing on services and customer-centric outcomes was initiated, aimed at extending existing and enabling new service offerings. This direction in the company's strategy became a frame for the PhD project and inspired its research aims of investigating how the newly established design team and practice could support the organization in transitioning from a product-centered towards integrating a more user-, customer-, and service-centered mindset and approach. Throughout the research project, I have been attentive to and engaged in meetings and workshops that were relevant to the design team and useful for the research project. The strategic direction has evolved alongside the research project and solidified into narratives that leverage software-as-a-service, catering to diverse clients' needs by mixing existing products with services and establishing the company as a technology-enabled service company. Since the beginning of the project, core strategizing processes have been centered on enabling customer outcomes and success and stressing that the company's value proposition is not solely software. For example, when developing offers, a holistic perspective has been embraced as going across customers value chains, which has impacted how departments collaborate and are structured.

1.4.1 Preliminary project activities

I transitioned into the role of researcher in January 2019. Prior to the research project, I had been working as a full-time designer on a new digital tool as part of the company's service- and cloud-based offering of their product. The four months for which I worked as a full-time designer gave me the opportunity to understand the practices of the development team in R&D and build a reference case. In 2019, I joined what would become a centralized design team in R&D (internally known as Product Management) as an industrial researcher. My job title remained 'Experience Designer' to describe my functional role throughout my engagements in the organization. Having an embedded role in the design team meant participating in weekly team meetings, co-facilitating workshops, team workshops, and online communication (chat, emails), and processing documents and images (both virtual and physical), as well as attending recurring meetings with the team's direct manager, general meetings with management, user research interviews and internal research interviews. While I have not reported directly on many of these activities, they sustained and increased my sensitivity and understanding of the evolving and ongoing dynamics in the organization surrounding the design team and the strategic transition.

1.4.2 Empirical foundation of the project

I applied qualitative research methods as well as design methods as part of my engagements in the company. In practice, this has taken place through participant observation, interviews and by co-facilitating workshops, including planning and evaluation activities with my colleagues and management. I have captured observations in fieldnotes. Secondly, I have made use of interviews, which have aimed at understanding the history of design in the company and designers' and managers' experience of including design in the context of software development projects in the company. The empirical foundation would not have been possible without having an embedded role during the three years. In Figure 1, below, I refer to these activities as 'continuous engagement activities in the company'.
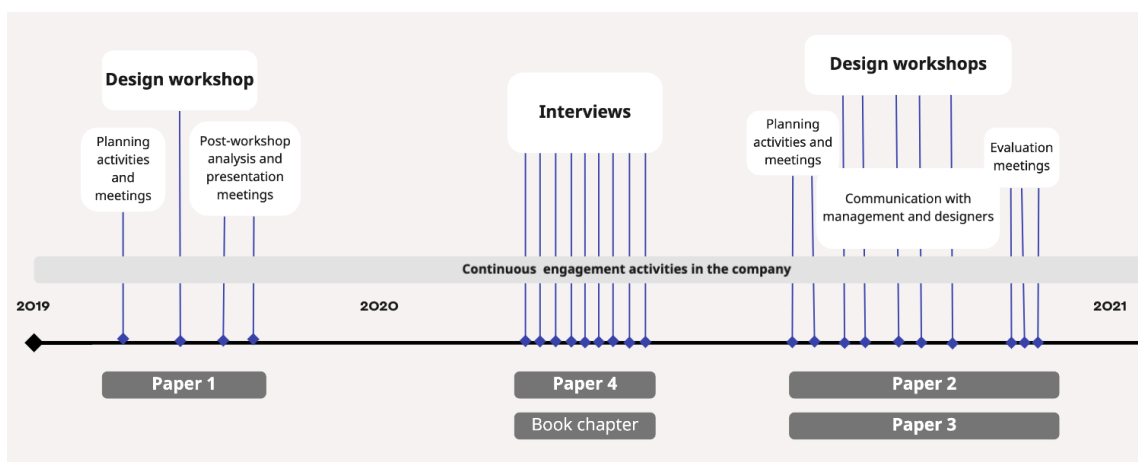
Figure 1: Simplified timeline of project activities, also showing how the papers that I wrote (presented in the next sections) are linked to specific moments in time

1.5 Defining design and service design for this dissertation

Design methods have a prominent focus on ways of changing situations towards more ideal or preferred conditions (Bayazit, 2004; Wetter-Edman et al., 2017). This orientation, shaping design approaches, can be traced to when Simon (1988) stated that: *"everyone designs who devises courses of action aimed at changing existing situations into preferred ones"* (Simon, 1988, p. 67). Since then, the problem situations with which design activities engage have been reframed to target system transformation and to address the increasing complexity of challenges in today's world (Dorst, 2019). Recent developments urge designers to rethink their approaches to incorporate system-consciousness and nurture approaches that turn away from solutionism to instead honor the complexity of a problem situation, and integrate relational thinking (Dorst, 2019; Drew et al., 2021; Forlano, 2017). Holding this transformative agenda in mind, design can be

understood as a set of approaches and methods that deliberately seek to *"identify, frame, and address problems which make intensive use of modeling and other visual and physical representations (at varying levels of definition)"* (Simeone et al., 2020, p. 7). Such approaches and methods are typically conducted through a participatory, iterative approach, anchored in the humanities and with a life-centered perspective (Giacomin, 2014; Laursen & Haase, 2019). Thus, design professionals often carry responsibilities of ensuring a customer- and user-centered focus in software development processes (Bruun et al., 2018). When applied, design has been described as an embodied experience that can pave the way for leveraging lived experiences and foster empathy through the inclusion of multiple, diverse perspectives (Stompff et al., 2016; Vink, 2019). These observations form the foundation of my understanding of design.

Two aspects of the research setting have further been influential on how I contributed to design research and practiced design in the company. Firstly, the study is situated in a software company that had low familiarity with the design profession and design methods at the start of the research project. Secondly, the company initiated a strategic direction focusing on embracing service-centricity in the context of software development. To render these aspects useful, service design has been a necessary and relevant field to draw on. I understand service design as a profession and a human-centered approach to the development of new services through an iterative creative methodology inspired by design thinking (Blomkvist, 2014; Blomkvist et al., 2010; Stickdorn & Schneider, 2014). Recent perspectives on service design foreground its multidisciplinary, experimental, and reflective dimensions (Vink, 2019). Such perspectives have linked the potential of service design as embedded in processes, rather than outputs (e.g. the new or improved services) and urged researchers to further explore how the use of service design methods can disrupt and catalyze changes (Kurtmollaiev et al., 2018; Wetter-Edman et al., 2017). In the following, I elaborate on recent streams from the service design literature that reflect upon service design methods, as well as transformative aspects of the role of service design.

1.5.1 Service design methods

Services are co-produced and co-created by multiple actors through complex relations, sustained by actors' shared rules, norms and beliefs (Rodrigues, 2020; Vink et al., 2021). Methods of service design have developed to support design activities in visualizing and assembling relational aspects amongst multiple actors (Kimbell, 2009a; Vink, 2019). Within the discourse of service design, the emphasis has been on its potential to drive innovation (Holmlid et al., 2017; Ostrom et al., 2021). As a field, service design integrates scopes from non-design fields and challenges methods from other disciplines: thus, taken together, extensive research

has focused on developing shared service design techniques, tools, and processes (Blomkvist et al., 2010; Yap et al., 2021). Service design methods emphasize ways of materializing how existing or future service concepts and experiences unfold over time (Stickdorn & Schneider, 2014). A service experience can be defined as *"the outcome of the interactions between organizations, related systems/processes, service employees and customers"* (Bitner et al., 1997, p. 193). Materializations of service experience can take place at multiple levels (Yap et al., 2021). For example, when designing for intersubjective experiences, journey maps can support organizations in visualizing how service experience and interaction unfold along an abstract timeline, e.g., between a user and a service provider.

1.5.2 Transformative aspects of service design

Multiple studies report on service design's transformative potential from an organizational perspective where the use of service design can aid organizations in their endeavors to adopt, enhance and sustain a service orientation (Bailey, 2012; Junginger & Sangiorgi, 2009; Kurtmollaiev et al., 2018; Warwick et al., 2021). An integrative dimension of service design is to maintain system awareness, nourish interdependencies and adopt a holistic perspective (Blomkvist et al., 2010; Kimbell, 2011; Rodrigues, 2020), urging research to refrain from seeing service design through a reductionist perspective (Vink et al., 2021): that is, as solely focusing on enabling intersubjective positive customer experiences. Designing in system-conscious ways takes its starting point in appreciating the complexity and interdependencies that underlie a problem situation, inviting designers to develop abilities that allow them to approach and balance diverse and conflicting statements (Dorst, 2006; Drew et al., 2021; Thorp Hansen et al., 2009). Acting on imperatives to examine a more situated understanding of those that design and animate services (Blomberg & Darrah, 2015; Vink, 2019; Wetter-Edman et al., 2017), scholars contend that, over time, the experience of using design methods can induce impactful ripples of long-term change (Stompff et al., 2016; Vink et al., 2019; Wetter-Edman et al., 2017).

To summarize, the adoption of a service design lens to study how design supports a strategic transition was motivated by the following components of the service design field: an emphasis on multistakeholder engagement, a human-centered perspective, a well-developed toolbox geared towards visualizing and experimenting with future service interactions and concepts, foregrounding the relational complexities and interdependencies that sustain large organizations, and a methodology that is grounded in user- and customer-centric symbols and vocabulary (Kurtmollaiev et al., 2018; Stickdorn & Schneider, 2014). Based on these components, service design was a relevant approach to explore: *How can service design support organizations in their strategic transition from product-centered towards service-centered offerings?*

The perspective that I adopt looks at the immediate, practical, operational effects of the design processes as well as considering how these processes play a role in enabling long-term changes.

1.6 Overview of publications

Four publications and a short peer-reviewed book chapter form the foundation of this dissertation by answering the four sub-questions presented in section 1.2. Table 1 provides an overview of each publication, the associated research sub-question, the core analytical concepts used in the analysis, the outlet in which it has been published, and its publication status.

Title	Associated research sub-question	Core concepts	Outlet	Status
From product-centricity to services: Design workshops and maps as tools in strategy articulation	*How can design workshops, using the customer journey map, support an initial discussion on moving from products towards services?*	Strategy articulation, Service design, Customer journey mapping	Service Design and Innovation Conference (ServDes) 2020	Published after peer-review (full text)
Moving from products to services: Supporting strategic thinking through design workshops	*How can design workshops support strategic thinking?*	Strategic thinking, Design methods	European of Academy of Design (EAD) 2021	Published after peer-review (full text)
Engaging with competing demands in systems through design: Fostering a paradox lens	*How does conceptualizing competing demands according to paradoxes impact the way they are approached in design practice? How can paradoxes be engaged through design?*	Competing demands, Paradoxes, Design methods	Design Research Society (DRS) 2022	Accepted after peer-review (full text)
Fostering resilience: The potential of design to support strategic agility	*How can design support strategic agility?*	Strategic agility, Design methods	Design Research Society (DRS) 2022	Accepted after peer-review (full text)

Organizations as material	Transversal reflection providing insights to service design practitioners	Organisations as material	Book chapter for 'The Design Material of Service' edited by Simon Clatworthy, Stefan Holmlid & Johan Blomkvist. To be published by Edward Elgar, UK.	Accepted after peer-review (full text)

Table 1: Overview of publications

1.6.1 Publication 1

From product-centricity to services: Design workshops and maps as tools in strategy articulation: The first publication explored how a design workshop using the customer journey map could support an initial discussion of the strategic transition for the company. It showed how the design workshop, using tools and visualization techniques from service design, grounded and supported discussions about the impact of a strategic transition. This publication allowed me to explore the potential of linking design workshops with strategizing processes and articulation.

1.6.2 Publication 2

Moving from products to services: Supporting strategic thinking through design workshops: As design has become an increasingly formalized part of the internal process of the R&D department in the company, this publication contributed to understanding how design workshops can support the concept of strategic thinking. Understanding how strategy emerges and how transitions can entail uncertainty for employees, we contributed to how the art of balancing such uncertainties can be framed through strategic thinking. We found that design characteristics could support the dimensions of strategic thinking by 1) playing with different temporalities, 2) including multiple perspectives, and 3) mediating the interaction. Moreover, this publication allowed further explorations of how concepts derived from organization and management studies could be integrated to understand the role of service design during strategic transitions.

1.6.3 Publication 3

Engaging with competing demands in systems through design: Fostering a paradox lens: The third contribution built on the understanding of how design can approach uncertainty and tensions by framing competing demands through a paradox lens. This publication advanced my

understanding of how design can support balancing tensions between competing demands and dive deeper into the linkages between design and competing demands, as a useful framing when designing for increasing systemic complexity and uncertainty.

1.6.3 Publication 4

Fostering resilience: The potential of design to support strategic agility: This publication explored how the competing demands implied in the concept of strategic agility have been linked to organizations' resilience. The publication offered a nuanced description of how involving design approaches in IT projects laid the ground for developing strategic agility and supported the company in transitioning from a product-centered to service-centered focus. The publication contributed to the understanding of strategic agility by exploring how design can support subprocesses that have been linked to the development of strategic agility.

1.6.4 Publication 5

Organisations as material: The final contribution is a short chapter that provides service design practitioners with key insights into how service designers and artifacts not only form a service, but also prompt a change in organizations from a fixed state to become fluid, able to change and nurture a service-orientation. We identified three stages that shift the focus of organizations from a product mindset to the perspective of someone else in a service-oriented way.

1.7 Area of contribution

To summarize, I will now highlight how I see that my compilation of publications contributes to the field of design research. I understand design research as a way of producing knowledge that is useful to those who design (Manzini, 2015) and to communities with a professional or scholarly interest in design (Binder & Redström, 2006). To these communities, I brought a research perspective and insights grounded into organization and management studies. Integrating perspectives from these supplementary fields and applying concepts that derive from and are grounded in extensive existing research on organizations and their strategic transitions provided a solid vantage point to look at the design processes analyzed in my PhD.

2 Analytical concepts

2.1 Introduction

This chapter presents the analytical concepts that I have integrated to study how service design supports a strategic transition. Particularly, I examine why these analytical concepts allow for a nuanced description and understanding of strategic transitions and their challenges. The chapter starts by introducing my understanding of strategic transitions and how they can subject organizations to competing demands; this is followed by an introduction to strategic thinking and strategic agility. Lastly, I describe how service design and design have been proposed as prominent approaches in supporting organizations in strategizing processes.

2.2 Strategic transition from products to services

Complexity and uncertainty underpin transitions (Hölscher et al., 2018). 'Transitions' is often applied as a term to describe nonlinear changes in complex adaptive systems and employed to analyze changes in a sub-system – for example, mobility or energy (Hölscher et al., 2018). A transition can imply managerial challenges, as it engages with uncontrollable future events (Oliva & Kallenberg, 2003). For the context of this dissertation, I understand a strategic transition as the shift of an existing business model, which obviously also has an impact on the existing operational processes (Melnyk et al., 2010). In my case company, as already mentioned in the previous sections, the strategic transition was a shift from a product-centered focus to a service-centered business model. When I refer to a product-centered perspective, I refer to an organization that is geared towards sustaining functionality and features as characteristics of an IT product. In contrast, a service-centered paradigm often emphasizes the importance of users' and customers' service experience, as the business model focuses on relieving customers' product-related burdens and instead emphasizing their core value-generating activities (Gebauer & Fleisch, 2007; Marzia & van der Togt, 2016). In such cases, challenges from transitioning can stem from a shift in principles and structures that sustain a business model (Gaiardelli et al., 2015). Switching to a service-centered focus also encompasses a shift for software development processes from focusing on features (understood here as characteristics of a product) towards centering on enabling outcomes and solving problems for customers (Casasola, 2020; Newton Rex, 2018). For the service provider, the potential in shifting can be connected to developing a sustainable competitive advantage, as a means to achieve differentiation and retain and attract customers (Gaiardelli et al., 2015; Heskett et al., 1997). Drivers behind pursuing a service-centered business model align with the focus from the management field, where the transition can imply changes to the internal value architecture of

an organization (Frank et al., 2019). To thrive in a service-centered perspective entails the adoption of a service mindset which can both require learning how to empathize with customers and understanding needs, context, goals, and processes to customize a potential service offering (Marzia & van der Togt, 2016; Roscam Abbing & van der Togt, 2017). Such a mindset can be nurtured through training and inspiring employees to focus on users, build service design capabilities and tune internal processes towards focusing on the customer (Roscam Abbing & van der Togt, 2017). Achieving such a transformation in practice requires long-term efforts, as it necessitates a change in focus on both macro and micro levels in an organization (Kurtmollaiev et al., 2018).

To summarize, when referring to a strategic transition from products to services, I am referring to a shift and innovation of a business model towards a service-centered perspective, where internal organizational processes and employees' mindset pursue a user- and service-centered focus to develop holistic solutions with the goal of enabling higher added value as compared to an existing system or product (Manzini et al., 2001).

2.3 Organizational challenges of transitioning

Challenges of transitioning have been linked to the tensions it can subject organizations and individuals to, indicated by having to achieve a balance between two seemingly opposing poles (Lewis et al., 2014). In the following, I introduce how framing such tensions as competing demands offers a conceptual foundation for how they can be positive resources (Gaim et al., 2018).

2.3.1 Competing demands in strategic transitions

Achieving a state of balance and stability can seem like an oxymoron in an era where systems are ever-changing and interrelated, with increasing complexity (Nardi, 2019; Sevaldson, 2013). For organizations, competing demands can present themselves as opposing poles: for example, how do you decide whether to pursue innovation or efficiency, global or local needs, to cater for a social mission or financial outcomes, or to focus on breadth or depth of products (Smith et al., 2010)? How organizations respond to such demands and the cognitive abilities of individuals that enable them to better cope during such conditions have an extant history within organization and management studies (e.g. Bonn, 2001; Calabretta et al., 2017; Goldman et al., 2015; Lüscher & Lewis, 2008; Smith et al., 2010).

Concepts such as strategic thinking and strategic agility have been proposed as ways to address individuals' and organizations' abilities in managing and balancing competing demands (Lewis

et al., 2014; Liedtka, 1998). Strategic thinking addresses activities that individuals undertake to manage uncertainties and continuously cope with changes (Bonn, 2001, 2005; Goldman et al., 2015; Liedtka, 1998). In doing so, individuals can be simultaneously constrained and enabled by organizational conditions (Liedtka, 1998). Strategic thinking is a multidimensional construct that can be broken into four streams of interrelated activities: vision thinking, divergent thought processing, reflective thinking, and systems thinking (Bonn, 2005; Liedtka, 1998; Mintzberg, 1994; Neuhoff et al., 2021).

The development of ways to adapt to and sustain radical change has also been explored at the organizational level. Despite being faced with complex managerial challenges, companies that thrive in chaotic environments move with strategic agility: that is, an ability to remain flexible and continuously tune and adjust strategic direction (Elali, 2021; Weber & Tarba, 2014). Strategic agility is associated with three core components: strategic sensitivity, leadership unity, and resource fluidity (Doz & Kosonen, 2010). Strategic agility can be considered as complementary and interrelated to strategic thinking, as processes and with components that sustain strategizing processes (Heracleous, 1998; Salih & Alnaji, 2014).

However, developing and powering strategic agility and strategic thinking present the challenge of having to hold in mind and balance seemingly opposing poles (Calabretta et al., 2017; Lewis et al., 2014). This can be due to underlying paradoxes implied by the abovementioned constructs (Lewis et al., 2014). In the following, I elaborate on how tensions between competing demands can offer ways of understanding how individuals and organizations respond to them (Gaim et al., 2018) and inspire how service design can potentially foster engagement with tensions.

2.3.2 Tensions between competing demands

Tensions are pervasive and interdependent features of organizing and managerial practices (Gaim et al., 2018). The management and acceptance of competing demands can be approached through responses that regard them as positive and persistent (Gaim et al., 2018). When accepted, their existence and underlying paradoxes can have synergistic potential (Berti & Simpson, 2021; Gaim et al., 2018; Jarzabkowski et al., 2013). Indeed, the management of paradoxes has been directly linked to fostering creativity and increased performance (Lewis et al., 2014). However, as humans, we can tend to approach situations as biding us to choose between opposing poles through 'either/or' thinking where we evaluate and approach decisions as right or wrong (Smith & Lewis, 2011). Instead, by nourishing a 'both/and' mindset, competing demands can be approached in ways that encourage and welcome their push-pull relationship, where those opposites exist within a unified whole, and where one side defines the

other (Lewis et al., 2014; Smith & Lewis, 2011). A 'both/and' approach favors and embraces both sides of a demand simultaneously to leverage their synergistic potential (Lewis et al., 2014). Tensions can be fruitful when engaged with deliberately and proactively identified (Lewis et al., 2014). Table 2 exemplifies how the concepts of 'strategic thinking' and 'strategic agility' imply competing demands. Deliberately bringing forth prominent competing demands that arise during transitions can offer ground for better understanding how they can be balanced during transitions and whether design can engage, support, and nourish them.

Concept	Conceptual dimensions	Underlying competing demands
Strategic thinking	Vision thinking	Time: The vision dimension entails the ability to navigate and explore multiple temporalities. Paradoxes related to this dimension link to 'time' and tension between the past, the present and the future (Buehring & Liedtka, 2018; Heracleous, 1998; Liedtka, 1998).
	Reflective thinking	Social interaction: Within the reflective dimension, tensions can arise in social interactions. This dimension has an intersubjective pole, as it ties to the ability to reflect on one's owns beliefs, perceptions and experiences while also reflecting on those of others (Dameron & Torset, 2009; Smith & Lewis, 2011; Srivastava & D'Souza, 2021). This process can take place introspectively as well as extrospectively (Pisapia et al., 2005).
	Divergent thought processing	Cognition: This dimension of strategic thinking refers to the cognitive processing ability of both opening and exploring while also analyzing and selecting, and can be described as a cognitive paradox: that is, navigating and shifting between diverse modes of thinking (Pisapia et al., 2005; Srivastava & D'Souza, 2021)
	Systems thinking	Focus: Competing demands associated with focus raises the tension of identifying and recognizing specific elements while acknowledging them as interdependencies and as being parts of a whole. This implies an ability to zoom in on events and elements and issues in detail on the one hand, while on the other hand also zooming out and considering those elements as parts of a whole (Liedtka, 1998; Srivastava & D'Souza, 2021).
Strategic agility	Strategic sensitivity	Competing demands underpin the concept of strategic agility (Doz & Kosonen, 2010). For example, strategic sensitivity involves the ability to be alert and open to integrating possibilities. The following tensions are raised in the first dimension of strategic agility: reflecting, learning from and letting go of experiences; time-related tensions of looking both forward and backward; and identifying and engaging with ideas from both a top-down and a bottom-up perspective (Lewis et al., 2014). This dimension is nurtured through both an external orientation and an internally facing participatory process (Doz & Kosonen, 2010).
	Leadership unity	The second dimension focuses on decision-making processes and points to a polarity between individuality and teamwork (Lewis et al., 2014). This dimension raises competing demands between, on the one hand, nurturing

		collective agreements and a homogenous perspective, while on the other hand honoring diverse, multiple perspectives and potentially conflicting opinions (Eisenhardt, 1989; Lewis et al., 2014).
	Resource fluidity	The third dimension entails the ability to change, reshuffle and shift resources, while in contrast, also being able to rely on and stabilize what exists (Lewis et al., 2014).

Table 2: Mapping of concepts and their underlying competing demands derived from organization studies

2.4 Service design and design as way to support organizations in embracing change

Transitions of business models imply change to existing practice and organizational routines; however, this mere fact does not necessarily offer guidance in experimenting with the implications that change can bring (Chesbrough, 2010). Within the last two decades, the potential of design to support organizations in strategizing processes has been emphasized by an extensive body of literature (see, for example, Ewenstein & Whyte, 2009; Kaplan, 2010; Knight et al., 2020; Liedtka, 2000; Liedtka & Kaplan, 2019; Liedtka & Mintzberg, 2006; Neuhoff et al., 2021; Simeone & D'Ippolito, 2022). Attention has been given towards how design approaches can support organizations across strategizing processes such as strategic planning and decision-making (Calabretta et al., 2017), foregrounding how design can support a more emergent approach to the future through prototyping activities and scenario building (Buehring & Bishop, 2020; Buehring & Liedtka, 2018). Research has been curious about design processes and artifacts as means for supporting strategizing sessions, which can support new and existing perspectives (Eppler & Platts, 2009). 'Design thinking' has been pushed as a design methodology that offers support and help for managers in decision-making and as a more emergent approach to strategy work, which simultaneously has shown potential in igniting the transformation and development of organizational culture (Elsbach & Stigliani, 2018; Liedtka & Kaplan, 2019) as well as reducing cognitive bias (Acciarini et al., 2020; Liedtka, 2014). Thus, researchers have foregrounded the importance of embedding design and design thinking in organizations (Elsbach & Stigliani, 2018; Wrigley et al., 2020). Maturity models have been proposed to generalize the operational outcome of integrating design, but these often overlook the complex, reflective aspects of nurturing and design capability building (Björklund et al., 2018; Doherty et al., 2014; Holmlid & Malmberg, 2018). While it is known to be challenging to embed service design in the private sector and integrate a service-centered perspective, several studies have linked design to fueling sustainable organizational transformations (Kurtmollaiev et al., 2018; Seidelin et al., 2020; Warwick et al., 2021). Service design has been emphasized as a promising approach in transforming organizations towards a

service-centered perspective (Blomkvist et al., 2010). The service design field has advanced as a terminology and toolbox favoring creative and human-centered approaches to the development of services. Service design tools and methods can foster service innovation (Bitner et al., 2008; Clatworthy, 2011; Ojasalo et al., 2015) and over time the appropriation of service design tools and approaches can be connected to their integration and development of design culture (Seidelin, et al., 2020). Indeed, standardized service design tools should be introduced with caution, to avoid fixation but instead to honor the situated and emergent nature of service as temporary states (Agid & Akama, 2008). A recent trajectory within service design research shows how the experience of using service design methods can be a catalyst to change and reshape mental models (Vink et al., 2019; Wetter-Edman et al., 2017). Enabling changes through service design in organizations can take place across layers such as artifacts, patterns of behavior, norms, values and assumptions (Junginger & Sangiorgi, 2009). When designing system-consciously, service designers may however intervene at both individual, organizational and system levels (Rodrigues, 2020). At an organizational level, service design can nurture a destabilization of habits and routines, facilitate system sight and enable network relationships through participation (Rodrigues, 2020).

2.5 What this dissertation's perspective brings to design research

Chapter 2 builds on my understanding of service design presented in section 1.5 and introduces the potential of design to support strategizing processes and transitions. I have argued that organizations, managers, and designers can face tensions between competing demands that make themselves apparent in uncertain environments in strategic transitions. To balance responses, I contend with the integrated literature from organization and management studies that favor approaches that see tensions between opposing poles as positive and potentially generative forces. This lens on transitions refrains from approaching competing demands as binary either/or situations, dilemmas, or trade-offs, but instead consciously acknowledges the complexity and uncertainty of transitions where tensions are inherent and pervasive features (Gaim et al., 2018). While this study does not address paradoxes specifically, organization and management studies have inspired my perspective on tensions as productive in nurturing those specific components and dimensions that can enable individuals and organizations to better cope with, manage, and balance uncertainty between competing demands. I have introduced 'strategic thinking' and 'strategic agility' as advanced conceptual frames to approach the components of managing tensions which are rarely studied from the lens of service design. Lastly, Chapter 2 has summarized the impact and transformative potential of service design to foster a more user- and customer-centered focus in organizational processes. However, few researchers have studied how a strategic transition can be supported by service design to offer a

more nuanced, granular way of understanding how organizations can develop and nurture ways of balancing tensions of transitioning towards a service-centered focus.

3 Methodology

This chapter introduces action research as the methodological choice for this dissertation. It provides a brief historical overview of action research as a research approach that aims to induce and study organizational development and change. It describes how action research has formed the project and its methods of inquiry. Lastly, the main data collection processes are described, followed by a reflection on reliability.

3.1 Introducing action research

Action research is a set of research practices that respond to practical issues of organizations or communities (Reason & Bradbury, 2008). The purpose of action research is to produce practical knowledge with participants, useful for those involved (Hayes, 2011; Reason & Bradbury, 2008). Action research thus aims at creating change in a specific context by engaging with participants to address and deepen understanding of practical issues while also expanding scholarly knowledge (Hayes, 2011). Representations typically portray action research as a cyclical research process consisting of phases and iterations of planning, acting (intervening), observing and reflecting (Baskerville & Wood-Harper, 1996; Hill, 2014). An intervention is understood as an action or series of changes that aim to change the status quo (Coghlan, 2014). Action research is not a single academic discipline but an approach to research that has emerged over time (Brydon-Miller et al., 2003). Lewin's theory of change and group dynamics has been highly influential on the action research tradition (Hayes, 2014) and is often cited as providing a foundation for understanding the drivers of action research: to create social change and organizational development and learning. Lewin viewed the goal of social change as tied to breaking well-established social habits embedded in people's behavior and believed that change could take place through group encounters (Bargal, 2014). Group encounters thus became a leverage for bringing change in organizational development, and this perspective is tied to a component of action research: that human systems can be understood and changed if a member of the system is involved in the inquiry process itself (Brannick & Coghlan, 2007; Brydon-Miller et al., 2003). Intended outcomes from action research typically focus on changing what practitioners do, their understanding of practices, and conditions for these practices (Coghlan, 2019; Kemmis, 2009). For this study, action research has been a relevant approach to ensure the continuous relevance of project initiatives and involvement of the project's stakeholders, as it focuses on generating contextual solutions (Hayes, 2014).

The application of action research can be guided by three characteristic *"(1) The researcher is actively involved, with expected benefits for both researcher and organization. (2) The knowledge*

obtained can be immediately applied. [...] (3) The research is a cyclical process linking theory and practice" (Baskerville & Wood-Harper, 1996, pp. 5–6). To realize immediate benefits of project activities, it is recommended that the action researcher is active in the change processes and localized context in which the change takes place (Coghlan, 2019; Subbiah & Buono, 2014). I have been actively involved in design activities as an embedded design professional and researcher. The project activities have taken place in the company with the continuous focus of operationalizing design to support the ongoing strategic transition. The second aspect was further strengthened through the pre-project activities described in section 1.4.1. My background in the company, or 'lived experience' (Brannick & Coghlan, 2007), was a helpful resource to enable my design colleagues to translate internal terminology and provide information on historical aspects and identify stakeholders. The third characteristic touches upon the tight links between theory and practice, doing and knowing, and intervening and learning, which underpin action research's pragmatic intellectual foundation (Brydon-Miller et al., 2003; Hayes, 2014) where ideas and theories are seen as tools for action and their value and meaning can be known through applying them (Dalsgaard, 2014). The project activities have been cyclical and overlapping, and as with most action research projects, they have been compiled through many concurrent cycles spanning diverse temporalities (Brannick & Coghlan, 2007). For example, there is the project (which could evolve over several years), there are phases of sections within the project and specific concrete actions within the project (e.g., a meeting or interview), and there are the learning cycles of the action researcher herself. Within these cycles, knowledge evolves and research questions and methods must continually evolve alongside the context of the setting (Hayes, 2014). This is to contribute to knowledge that is both useful for paricipants and the company and robust enough for scholars (Coghlan, 2019). In this regard, an immediate application of knowledge also means valuing collaboration and ongoing feedback from stakeholders to help ensure more democratic outcomes from research activities (Reason & Bradbury, 2008). I give examples of such activities in section 3.4.3. In the following section, I introduce the methods of inquiry.

3.2 Methods of inquiry

Action researchers make use of a variety of methods to understand the changes that they study and are part of (Hayes, 2014). As this is a qualitative study, the methods I have applied have allowed for the study of social realities and processes that are dynamic, constantly evolving, and *"defined in the situation by a variety of stakeholders with dynamic and mixed values"* (Hayes, 2014, p. 51). I have taken active part in planning and staging design activities in the organization with the design team to support the transformative agenda towards service-centricity. Participant observation is widely used in action research (Czarniawska, 2012;

Stringer, 2007), and was applied to gain insights into designers' and organizational members' activities and observe the effect of these. Moreover, interviews have been used to inquire about beliefs and experiences in retrospect (Brinkmann & Kvale, 2018). Table 3 summarizes the term and year core activities took place, the approach, and the rationale for selecting the methods. Table 3 is an expansion of the simplified timeline of activities presented in section 1.3.2.

Term	Approach, duration	Rationale
Spring 2019	Design workshop, full day. 40 hours of planning, evaluation, and dissemination activities.	To make tacit knowledge explicit through activities aimed at creating a holistic overview and visualization of current and future customer journey experience. The workshop had practical relevance to the company, as the journey map was deemed important for the articulation of strategy towards service-centricity.
Spring 2020	Semi-structured interviews, nine in total, with a duration of 60 minutes each.	Interviewing designers and managers to understand the actors' meanings of design and to enable comparison between their experiences across five software development projects. The interviews focused on how professional designers experience the act of designing in the company; and how do managers experience the involvement of design methods (as introduced by the professional designers).
Fall 2020/ Winter 2021	Design workshops, five in total, 90-120 min each. 240+ hours of planning, evaluation, and dissemination activities.	To make tacit knowledge explicit through activities aimed at creating shared understanding amongst teams in the early stages of five projects. The introduction of design approaches in core processes within product management was aimed towards operationalizing the service- and user-centered strategy.

Table 3: Project activities divided by the periods when they took place, their approaches, and the rationale behind them

3.2.1 Qualitative research methods

Active participation has helped to bring understanding within the specific context where the project has taken place. Participant observation enabled me to record those details, which could potentially help to formulate the descriptions from which stakeholders produced their accounts (Stringer, 2007). I do not consider participant observation as having a detached observational role, instead I have been an active member in the team, and focused on developing deep rapport with the participants of the study (Adler & Adler, 1987; Brannick & Coghlan, 2007). As described in section 1.4.1 my prolonged engagement in the company and design team enabled

me to follow Stringer's verbatim principle: I have used terms and concepts from the field itself (Stringer, 2007). Having a functional role in the design team provided access to both observing and participating in everyday activities. As design was new to the organization, the activities in which we participated became generative occasions to observe and experience the challenges of transitioning towards a user- and service-centered perspective through recognizing differences between design approaches and existing processes and routines. This was observed within the team following encounters with other roles in the organization and management. Participant observation was applied intensely from the project's start in January 2019 until March 2020. Physical presence in the company allowed for probing and shadowing people in the organization and observing their reactions, as well as establishing connections and collaboration across the organizations in more informal ways. Throughout this process, I have relied on fieldnotes to capture places, people, artefacts, activities, events, and feelings about my observations. Interviews were applied to allow participants to describe situations in their own terms and triangulate such data with my observations (Stringer, 2007). I have interviewed participants to capture and explore values, beliefs, and experiences from design workshops and being involved in IT projects. Interviews have supplemented and deepened my understanding of the everyday activities of the design team and collaborators. Moreover, as the pandemic disrupted planned research activities, interviews became an important way of accessing, exploring, and gaining insight into experiences and events that had happened retrospectively in parallel and that were no longer 'visible' as our interactions became virtual.

3.2.2 Design workshops and design methods

Design workshops have been found to be a promising approach for organizations to explore and make knowledge around strategy explicit and accessible (Knight et al., 2020; Paroutis et al., 2015) and allow researchers to develop theory and generate knowledge in a naturalistic context (Bang & Eriksen, 2014). Design workshops are highlighted as an essential element in design processes that favor participatory and collaborative aspects as well as the inclusion of multiple diverse perspectives (Stickdorn & Schneider, 2014; Westerlund, 2007). Moreover, design workshops can be a generative way of making tacit knowledge explicit in ways that are light and easily operationalized, given the extensive literature on preexisting service design approaches (Stickdorn & Schneider, 2014). This aspect was particularly useful in operationalizing design in the organization, as the knowledge created could be immediately obtained by participants. The design workshops on which this study reports mostly took place internally in the company. Additional experiments were conducted outside the company to further explore how service design supports strategic transitions and the fruitful engagement with tensions (Publication 3). The format of the design workshops was staged in ways that incorporated design methods and approaches as described in section 1.5. For example, the first

design workshop used the customer journey map as a service design tool to structure workshop activities and as a visual outcome of the workshop.

3.3 Data analysis

Action research projects that aim to move towards mutual and shared solutions developments (e.g., how to operationalize service design in R&D) typically draw on interpretivist data analysis (Hayes, 2011). I have applied a data analysis strategy fitting to the continuous evolvement of research questions and methods alongside the setting (Hayes, 2014). Stringer (2007) identifies two major processes of analyzing data relevant to action research projects: 1) categorizing and coding; and 2) selecting key experiences. As a rule of thumb, I have analyzed the initial outcomes of actions through engaging directly with participants in the company to honor the inherent localized nature of the actions we have taken together and ensure inclusion of multiple perspectives. For the first procedure, when categorizing and coding, I have applied meaning condensation (Brinkmann & Kvale, 2018; Stringer, 2007). This serves as a means to identify the significant elements that make up the experience and perceptions of those involved. Following such an approach has supported the application of the verbatim principle: *"using terms and concepts drawn from the words of the participants themselves"* (Stringer, 2007, p. 99). The second procedure was selecting key experiences, for example events that have had an impact on people like an experience that, *"provides people with greater clarity about puzzling events or phenomena, or leave them with deep-seated feelings of alienation, distrust, affiliation, or hope"* (Stringer, 2007, p. 103). This procedure has been useful to trace and note events and experiences in the interviews that have appeared as significant.

3.4 Project activities and data collection processes

The project activities have had different foci, but all served to answer the overall aim of the research project. In the following, I introduce chronologically three larger data collection processes that have laid the empirical ground for the publications.

3.4.1 Spring 2019

The first design workshop explored and identified relations between design and processes of strategy articulation. In collaboration with employees from the strategy team and design team, we concluded that in relation to the new service-centered direction, it was a challenge that there did not exist a coherent and holistic overview of how a customer experiences the interaction with the company from start to end of a buying journey. The first intervention explored how a design workshop could support the company in its initial discussions of the new

service strategy. The activities in this intervention were grounded in a cross-departmental customer experience journey map workshop. As part of planning activities, I conducted an extensive analysis of existing documents on the company's personas, focusing on creating an overview of existing personas and how they were used in each department. Moreover, together with a design colleague, I synthesized and created a set of personas, including new updated qualitative research, which were used as protagonists in the workshop, to encourage a user-centered focus throughout (Nielsen, 2011). These activities provided an understanding of how existing processes and challenges were anchored in a product-centered perspective. The workshop was prepared in collaboration with the strategy team and facilitated by a fulltime designer, co-facilitated by me. Subsequent meetings analyzed the maps and observations from strategy discussions. A full description of the cycle of activities and its intended and unintended outcomes can be found in publication 1.
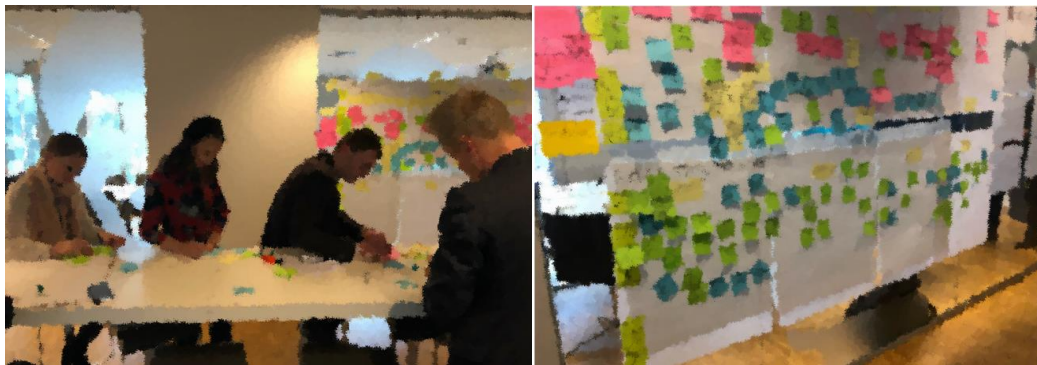
Figures 1 and 2: Pictures from the customer journey workshop. On the left: participants engaging in individual activities; on the right: the visual output of the workshop.

3.4.2 Summer 2020

Following a period of collaborating closely with the design team, I initiated a series of interviews with designers and managers who had been collaborating on IT development projects in R&D. While the involvement of designers and design approaches was deemed valuable by our stakeholders, it was also clear from the designers' perspective that practicing design in an organization where designerly approaches were new did not come without challenges. In total, nine semi-structured interviews (Brinkmann & Kvale, 2018) were conducted with designers (n=5) and the agile software development role 'product owners' (n=4) from the organization focusing on how they would describe their experiences of design. I conducted the interviews between July and October 2020, each lasting between 60 and 75 minutes. All interviews were audio recorded and transcribed verbatim. Each interviewee was asked about a specific project in which they had been involved. An interview guide was used to

guide the conversations across the two disciplines. Questions focused on the participants' recalling an activity and the interviewer asking them to describe this activity, artefacts, and their experience of doing the activity at that point in time. Participants were made aware that their equivalent collaborator on the project, designer, or product owner, would be interviewed. To prompt the interviewees to remember and talk about their experience of the process, they were asked to outline the activities they were involved in, or made aware of, during the project, as well as artefacts used or created in the activities. It was not possible to study the projects *in situ*, as the five projects took place in parallel. The interviews thus captured experiences in retrospect. To probe interviewees to articulate and describe activities and artefacts in their own words, I build a timeline of the projects, on which the interviewees were asked to place the activities and outcomes. I evaluated my analysis of the projects through a sharing session with all participants. The outcomes of my analysis and the impact of design are described in publications 4 and 5. Subsequent meetings with management about one of the projects indicated that the involvement of design demonstrated the value of using more visually grounded, experimental approaches. These indications were further pursued in the subsequent project activities.

3.4.3 Autumn 2020 – Winter 2021

Following the positive involvement of design approaches in IT development projects, a senior manager formalized and further advocated the involvement of design as important to change core processes in product management towards service-centricity. To operationalize design approaches and support a more user- and service-centered focus, the design team was asked to facilitate five kick-off workshops for IT projects that had been prioritized by management. The senior manager believed that design methods would nourish a more user- and customer-centered perspective. Together with three designers, I planned and conducted the workshops. We evaluated the outcomes of the workshops continuously with management. I continued following the projects through weekly team meetings to observe reactions and ask about the designers' experiences. The workshops have been described in greater detail in publications 2 and 3. At the beginning of 2021, I initiated sharing sessions called 'design salons' as a way of including and involving stakeholders more closely in my analysis of our actions. I deem this phase as an important aspect of the action research project to "give back" to the participants of the project and to offer a space for checking and debriefing insights. Formats like these have been tied to a way for action researchers to maintain respect for people's knowledge: *"their ability to understand and address the issues confronting them and their communities"* (Brydon-Miller et al., 2003, p. 16). In total, I hosted five design salons, the first of which incorporated an interactive aspect by inviting the design team to prioritize and vote on topics from my research

project to explore further. As an example, I will briefly describe one design salon, titled 'Scaling Design Practice'. In this session, I presented my analysis of design workshops to measure the maturity of design in the organization using the 'Design Ladder' as a frame of reference (Doherty et al., 2014) and inspired by the work of Malmberg (2017) on design integration and design capability-building. The presentation prompted a discussion of how designers and managers internally perceived what design is and how it could be used. I argued that design is used to design for the 'right now' with a risk and pressure of having to prove that the design process could work and a pitfall of not gathering patterns across projects. Participants discussed whether everyone could learn how to design. One designer used the metaphor of cooking to exemplify that just because you have the tools, it does not imply a successful outcome. A senior manager followed up by stating that 'everyone can learn to cook'. Following this session, in one of the design teams weekly meetings, the session was referred to as a *"Trojan horse"* that could *"help show where others are about design"* and as offering a dedicated space and time to interact with the team's manager. In subsequent observations, I heard my role and research being referred to as particularly valuable in creating a "neutral" space to talk and discuss across disciplines and hierarchies about the establishment of the design team and design approach in the organization.

3.5 Reliability of the study

The outcomes of action research are rooted in a practical reality, and it offers contextualized and local information, which means that principles of generalization are often deliberately deemphasized in such projects (Stringer, 2007). Instead, principles of transferability should be applied (Hayes, 2014). A strength of adopting an action research approach is the embedded role of the researcher, which can offer rich and nuanced descriptions, opportunities and help to ensure workability of the efforts. The trustworthiness of an action research project must therefore be provided by ensuring transparency in developing, collecting data and analyzing the outcome of a project so that others trust the results and can compare and replicate outcomes across settings (Hayes, 2014). In the following, I will describe credibility and transferability of the study.

In my project, *credibility* has been addressed by my long persisting engagement with the company, which has provided me with familiarity and tacit knowledge. This experience has enabled me to follow Stringer's verbatim principle. I have used terms and concepts from the organization itself in order to *"minimize the propensity to conceptualize events through [my] own interpretative lenses"* (Stringer, 2007, p. 99). Credibility also includes the deliberate inclusion of multiple perspectives. In my project, I have ensured this by involving stakeholders from the

company in activities related to planning, acting, analyzing, and evaluating. The first three came effortlessly, as my activities have been directly linked to the design team's responsibilities and tasks. Evaluating took place through presentations and sharing sessions. Such sharing sessions (like the design salon) offered a space where data triangulation could occur through checking and debriefing with stakeholders and where they were encouraged to voice their concerns (Hayes, 2014; Stringer, 2007). This was also a deliberate approach to test my beliefs and assumptions against other possible interpretations (Stringer, 2007).

Transferability refers to the possibility of applying outcomes to other contexts. The goal of transferability is achieved through dependability and confirmability: that is, that data is collected, analyzed and described transparently, and enough evidence is presented to confirm that events occurred as described (Hayes, 2014). The data collected from design workshops were all digitally archived (photos, digital files) and described based on my concrete experience of the event, focusing on describing a timeline of events and emphasizing what was said by whom. To capture all data, I used the digital tools NVivo, Evernote and Miro, and for physical events, photos. Moreover, interviews were all recorded and transcribed verbatim.

Several activities were not directly used in the contributions of this study. However, my continued engagement with managers and the design team ensured that I could sustain relations and familiarity, as well as ensure that my research question and activities would evolve and ensure the workability of my activities as the setting evolved. Reflections on my learnings from being an active member in the organization were captured throughout the project through fieldnotes, which have served as a tool for capturing *"feelings, reactions, questions, observations and judgments"* (Coghlan, 1993, p. 90). Fieldnotes captured both concrete experiences and my own reflections, which I have aspired to keep separate to my best ability.
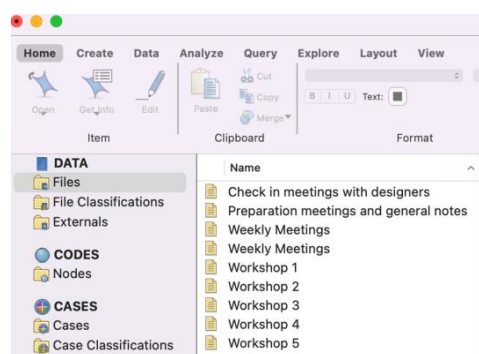
Figure 4: Example of how I have structured notes related to concrete experiences using the tool NVivo
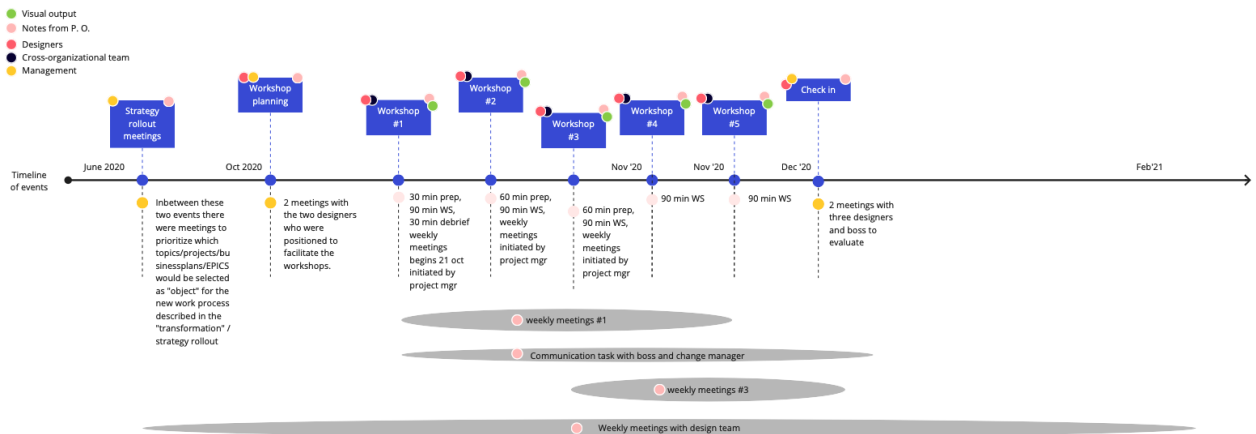
Figure 5: Example of how I have documented events using the tool Miro

4 Research findings and contributions

This chapter summarizes the contribution offered by my PhD. It starts by presenting the abstracts of the first four publications and a brief introduction to publication 5. In the following section 4.2, the theoretical contributions of these publications and their implications for practice are fleshed out.

4.1 Abstracts of publications

4.1.1 Publication 1

From product-centricity to services: Design workshops and maps as tools in strategy articulation: This paper explores how an IT company wants to change from product-centricity to servitization. A cross-functional customer journey workshop mapped the current state from the customer's point of view, and by identifying opportunities, it identified gaps in becoming a service organization. Activities in the workshop focused on mapping a current customer journey and a proposition of a customer journey. The case explores how a service design workshop and tools can be used in strategic work, to support and facilitate a discussion on changes needed to be customer-centric, going beyond technology and features. The workshop

and maps proved useful in facilitating and visualizing the current organizational state and identifying opportunities for what it takes to shift to servitization. This case contributes to practical aspects of how service design tools can support organizational transformation towards servitization. Keywords: service design, design workshop, customer journey mapping, servitization, organizational change

4.1.2 Publication 2

Moving from products to services: Supporting strategic thinking through design workshops: Transitioning a company from product-centricity to a new service-centered offering requires substantial changes, which can have deep implications for the company's processes, structure, and technology. Strategic thinking can help managers and employees to plan and cope with change. Our paper offers empirical insight into how a Danish IT company that is transitioning to being service-centric hosted and facilitated a set of design workshops to foster strategic thinking across the organization. Such design workshops were structured to invite participants to adopt multiple perspectives and think through different temporalities, while mediating the interaction to allow diverse perspectives to emerge. Keywords: strategic thinking; design workshops; service centricity

4.1.3 Publication 3

Engaging with competing demands in systems through design: Fostering a paradox lens: This paper aims to foster a paradox lens on competing demands to ensure their productive engagement in design. Competing demands are inevitable and ubiquitous features of today's systems. Thus, being subject to competing demands is a pervasive and inherent feature of designerly work. Drawing from organisational studies, we first outline four main streams of competing demands underlying today's systems, related to time, cognition, social interactions, and focus. We demonstrate the importance of a purposeful conceptualization of competing demands by exemplifying how different conceptualizations can lead to different responses. We suggest employing a paradox lens on competing demands, which stresses that seemingly contradictory or even mutually exclusive factors can and should coexist and therefore should be leveraged simultaneously. Through a series of research-through-design experiments, we explore how framing competing demands according to paradoxes impacts the way they are approached in design practice, and how paradoxes can be engaged with through design. Keywords: Design research, system-conscious design, competing demands, paradoxes

4.1.4 Publication 4

Fostering resilience: The potential of design to support strategic agility: 'Strategic agility' – i.e., how organizations can strategically plan and cope with uncertainty through a continuous tuning, monitoring, and re-balancing of their operations – has been characterized as a critical component to foster organizational resilience. This paper aims to investigate whether and how design can support organizations to acquire greater strategic agility. Our analysis is grounded in a case, a globally operating software company, which has recently established a design team and introduced design methods in its development processes. The paper shows how design favored processes that are generally linked to strategic agility (distancing, anticipating, reframing, experimenting, decoupling, and dialoguing). Taken together, these processes were key in building the strategic agility needed in transitioning from a product-centric orientation towards a user- and service-centered approach. Keywords: Strategic agility; service design; service-centered

4.1.5 Publication 5

Organisations as material: This is a short chapter written for a forthcoming book for service designers titled 'The Design Material of Service'. In the chapter, we offer key insights for service designers and introduce three stages that describe how service designers introduce and use artifacts to initiate a change in an organization, here conceptualized as a 'material' for design.

4.2 Theoretical and practical implications

In the following, I describe the theoretical and practical outcomes of the project's contributions. I will introduce them chronologically, following the four sub-questions behind my PhD trajectory. The contributions have all helped in answering the overall research question of how service design can support a strategic transition from a product-centered towards service-centered focus.

4.2.1 Publication 1: Design workshops and maps as tools in strategy articulation

The research question associated with this publication was: *How can design workshops, using the customer journey map, support an initial discussion on moving from products towards services?* In this study, I explored how a design workshop, using the service design tool 'customer journey map', could support an initial discussion about embarking on the strategic transition for the company. The publication showed how the design workshop, using tools and visualization techniques,

grounded and visualized the impact of a strategic transition, providing participants with a tangible frame for discussing the challenges and opportunities associated with transitioning.

4.2.1.1 Theoretical contribution

The first publication explored how a design workshop using the customer journey map could support an initial discussion about the strategic transition for the company. As such, it contributed to the field of service design methods by showing how the customer journey mapping tool can offer a starting point for supporting organizations that wish to change from focusing on tangible products to intangible service offerings. We extended the literature on customer journey mapping (Følstad & Kvale, 2018) by: 1) showing how the design workshop using the customer journey map is useful to visualize a tangible starting point for strategy articulation; and 2) the topics that were discussed pointed to known implications of transitioning a business model towards service-centricity (Frank et al., 2019; Overkamp & Holmlid, 2018) in a manner that was relevant to the company and grounded in potential service interactions.

This first workshop allowed me to explore the potential of linking design workshops with strategy articulation processes. I understand strategy articulation as a continuous process, in line with Simeone (2019), who describes strategizing processes that are not strictly taking place in the initial phases of a project but rather are continuously *"re-evaluated and re-adjusted along the way"* (Simeone, 2019, p. 1066). In summary, the design workshop helped to support the company as a strategy articulation activity that was grounded in a service-centered perspective. I proposed the maps as a starting point for determining the potential value proposition of a new strategic direction which has been reported as challenging (Frank et al., 2019).

4.2.1.2 Practical contribution

The customer journey map is a technique that represents a customer's touchpoints with an organization, products and services end-to-end along an abstract timeline (Stickdorn & Schneider, 2014). Internally for the company, having an overview of a typical customer's interaction was deemed valuable for the initial strategy articulation process by senior managers and external consultants. While the workshop provided a visual output in the form of two abstract maps (one visualizing the current customer journey and one imagining the future customer journey after the company had transitioned), we found that the practical contribution went beyond these outputs. In an effort to nurture and show the value of inhouse service design capabilities, the opportunity to facilitate the workshop can help to show the potential of design to stakeholders across the organization. The workshops can be a helpful tool in transitioning organizations, as it can offer a space where participants can tinker with time in a light manner,

identify current negative experiences, as well as imagining positive solutions and opportunities framed in an imaginary future state of a company. In organizations new to design methods and the service-centered perspective, we found it important to consider how the interaction amongst participants is facilitated. We noticed an overall positive response from participants, who were encouraged to reflect on their own experiences and beliefs while also enabling group reflection. This was enabled by the format of the workshop, where participants were guided through a process of writing down their own experiences and reflections, which in turn made them accessible for others to engage with through group discussions. Through such exercises, crucial patterns of insights of how a customer experiences interacting with the company in the current state were made accessible – but they were also a way of bringing awareness to, nourishing, and supporting individual and groups dynamics that brought a safe and inclusive atmosphere. We found it important to consider how participants can safely tinker with the implications of the profound changes implied by the new strategy. We found this critical, as participants were gathered across departments and some had never met each other. In summary, we found that the customer journey map:

- Provided an end-to-end overview of how a customer experiences the company;
- Identified and discussed pain points in the current state of the company as well as potential solutions to the negative points;
- Envisioned and tinkered with how the customer experience would be improved in the future;
- Established an opportunity to gather and collaborate in new ways, across departments.

4.2.2 Publication 2: Supporting strategic thinking through design workshops

The second publication addresses the question: *How can design workshops support strategic thinking?* Building on the findings that design workshops could support processes related to strategy articulation, we further explored whether and how design workshops could encourage and nurture activities related to developing strategic thinking.

4.2.2.1 Theoretical contribution

Exploring the link between design workshops as a way of supporting an organization in their initial strategizing practices and potential long-term strategies led to further investigations into concepts from the field of organization and management studies. The second contribution extended the understanding of how the art of balancing uncertainties can be approached through the concept of strategic thinking and approached strategy as an emergent and ongoing process, which can entail uncertainty for managers. It also introduced a new lens on how strategic thinking can be approached.

Strategic thinking defines activities that can help individuals to better plan for and cope with changes (Bonn, 2001; Liedtka, 1998). Within management studies, scholars have stressed the importance of developing strategic thinking, as it describes the ability to navigate and manage uncertainties that changes can bring, such as when transitioning a business model. Service design became an increasingly formalized part of the internal process of the R&D department in the case organization, which became an opportunity to understand how design workshops can support the concept of strategic thinking. Through five design workshops that were staged to kick off changes to core processes in product management, we explored how the design workshops could potentially support the development of strategic thinking, which has rarely been approached from the lens of service design. Drawing on the recent consensus model by Srivastava and D'Souza (2021), which aims to define strategic thinking, enabled us to explore the concept along three distinct, but interrelated dimensions: reflective thinking, systems thinking, and divergent thought processing (Srivastava & D'Souza, 2021). Although strategic thinking abilities are deemed valuable for organizations (Bonn, 2001, 2005; Goldman & Scott, 2016; Liedtka, 1998), it remains underexplored whether and how the abilities are developed, and whether design can play a role in urging such developments. The study extends the work by Srivastava and D'Souza (2021) by exploring how design can support the dimensions of strategic thinking through three characteristics of the design workshops by: 1) playing with different temporalities, 2) including multiple perspectives, and 3) mediating the interaction. Table 4 includes a detailed description of each characteristic and its link to strategic thinking. Taken together, the characteristics showed promising potential in how design workshops can be linked to strategic thinking.

4.2.2.2 Practical contribution

The design team was invited by management to facilitate the five initial workshops that were staged to kick off a change to a core process in product management. This change was part of the formalizing and operationalizing service design approaches in the process, which were valued as important drivers for the strategic transition towards a user- and service-centered focus. The purpose of the workshops was to build team cohesion through a shared understanding of the key strategic aspects of shifting from a product- to a service-oriented approach. I noticed how the workshops helped participants to develop strategic considerations in relation to problems, risks, and resources for each project. In practice, the three characteristics that support strategic thinking supported participants in managing the tensions from transitioning.

The practical contribution to the design community is summarized in Table 4 below. I see this contribution as especially relevant for those service designers who design within the complexity of organizational change.

Core characteristics of design workshops	How it supported participants in managing the tensions from transitioning in the context of IT projects
Mediating the interaction	The workshops included tools and techniques to establish a space where participants could share their beliefs and experiences. By supporting reflective thinking, they invited participants to engage and participate on equal terms. For example, participants were given time to individually complete a short story, write it down, and share it with the group. Allowing participants to first reflect individually and making their experiences explicit by writing down and completing prompts furthermore helped to avoid biases.
Including multiple perspectives	The tools that were used deliberately emphasized and asked participants to imagine the problem and visions from the perspective of someone else, outside the company. This way of acknowledging and including different perspectives on how to progress fostered a sense of hope and possibilities from transitioning. Moreover, it made participants consider how the company was and could be perceived from external positions.
Tinkering with temporalities	The workshops took their starting point in the company's current situation and reframed the situation by imagining a more desirable future. Participants included and compared multiple perspectives and opportunities while also selecting and deciding how to progress. Playing with the time horizons of the projects, I noticed how participants expressed both fears about not pursuing possible directions and hope of potentially succeeding.

Table 4: How design workshop characteristics supported participants in managing tensions through strategic thinking

4.2.3 Publication 3: Engaging with competing demands through design: Fostering a paradox lens

The research question associated to this publication asks: *How does conceptualizing competing demands according to paradoxes impact the way they are approached in design practice? How can paradoxes be engaged through design?*

Developing strategy thinking abilities is tied to the ability to manage and balance situations that encompass seemingly contradictory competing demands. The third contribution aims at understanding how design can support the balancing of uncertainty and brings a new lens to

the design community by framing competing demands through a paradox lens. The strategic transition did indeed present managers with competing demands. This publication built upon and increased my familiarity with management and organizations studies. This study both conceptualized tensions as competing demands, building on extensive literature, and advanced the understanding of how design can engage with and support balancing competing demands.

This third contribution dives deeper into the linkages between design, paradoxes and competing demands, as a useful framing when designing for increasing complexity and uncertainty. The study was also an opportunity to advance and strengthen the trustworthiness of the action research study (see more in section 4.6 – Reliability), as I collaborated closely with Rike Neuhoff from Aalborg University in analyzing and comparing design workshops across settings (Neuhoff et al., 2021).

4.2.3.1 Theoretical contribution

The preliminary findings propose how applied design approaches showed potential in fostering ways of engaging with paradoxes corresponding to four streams of competing demands. Within design research, there has been an emphasis on how to develop cognitive capabilities that allow designers and employees to balance conflicting and interrelated demands in times of transitions (Drew et al., 2021; Rodrigues, 2020). Building on the preliminary findings in publication 2 and Neuhoff et al. (2021), we synthesized literature from organizational studies to present four distinct, yet interrelated, streams of competing demands related to: time, cognition, focus, and social interaction (Dameron & Torset, 2014) – see also Table 5. We extended current design discourse (Dorst, 2019) by showing how paradoxes can be staged and engaged with through design methods, which in turn helps to avoid solutionism and jumping to conclusions too easily. To my knowledge, this has not been shown before, and thus we contributed to developing new knowledge. Grounded in design workshops, we show how design can play a positive role in engaging with the paradoxes implied in the four streams of competing demands that we synthesized from organizational studies. Indeed, it has been found that fostering creativity and increased performance have been connected to managing paradoxes (Lewis et al., 2014).

4.2.3.2 Practical contribution

Our study contributes to the design community by offering practical approaches for how design approaches can support the engagement with multiple, conflicting opposites that are prevalent and inherent features of the systems in which designers are situated. Motivated by and conceptualizing competing demands according to a paradox lens, we explored how existing design methods could be employed and the role design played with four paradoxes synthesized

from organization studies. We argue that fostering a paradox lens should be deliberate and nurtured to manage intensified competing demands implied in complex transitions. Mapping such streams to design approaches can provide designers with inspiration for how to engage competing demands and their underlying paradox as a response to the system transforming task of designers (Dorst, 2019; Drew et al., 2021; Forlizzi & Zimmerman, 2013).

Design method employed	Storytelling prompts, time travel, trend exploration, scan cards, future scenarios, policy interventions, thinking hats, artistic prototypes, brainwriting, mind maps

Competing demands conceptualized according to paradoxes	The role played by design when engaging with the paradox
Time paradox	Design as navigational practice, stirring diachronic investigations and interpretations of multiple temporalities and time horizons.
Cognition paradox	Design as stimulating practice, allowing convergent as well as divergent modes of thinking and doing to simultaneously emerge and be sustained in an integrative manner.
Social paradox	Design as reflective practice, activating, juxtaposing, and interweaving partially consistent and partially conflicting, introspective and/or extrospective perspectives, values, experiences, belief systems, and mental models.
Focus paradox	Design as a relational practice, nurturing awareness of and moving along the interconnections and interrelations of the systemic dimensions.

Table 5: How competing demands can be conceptualized according to paradoxes and the role played by design

4.2.4 Publication 4: The potential of design to support strategic agility

The research question behind the fourth publication was: *How can design support strategic agility?* Acknowledging strategy as a continuous emergent process of re-articulating and re-adjusting, we explored how organizations' resilience and ability to sustain radical changes can be understood through the concept of strategic agility and how design can be seen as an approach to engage the tensions between competing demands implied by the concept (Doz & Kosonen, 2010; Lewis et al., 2014). The publication offers a nuanced description of how involving service design in IT projects established situations through which subprocesses associated with

strategic agility were supported and helped in transitioning from a product-centered to service-centered focus.

In the fourth contribution, we extended studies on strategic agility (Doz & Kosonen, 2010; Elali, 2021; Weber & Tarba, 2014) and introduced a new approach to how it can be nurtured by demonstrating the potential of design as a way of supporting processes associated with achieving strategic agility. Strategic agility addresses how organizations might leverage turbulent and radical changes within their operating environment to manage competing demands (Elali, 2021; Lewis et al., 2014). Integrating the concept of strategic agility elaborated the competing demands underpinning the three components of strategic agility (strategic sensitivity, leadership unity, resource fluidity). Strategic agility has not yet been thoroughly examined from a design perspective to my knowledge. By bringing in this perspective, our findings suggested that design supported the three dimensions of strategic agility in the following ways: (1) design supports processes linked to developing strategic sensitivity by representing and exploring multiple scenarios of use across temporalities to anticipate various ways in which the future can play out; (2) design supports processes linked to leadership unity by encouraging the deliberate inclusion of multiple perspectives and introspective reflection, and thus fostering distancing from existing routinary ways of thinking and biases; (3) design supports processes linked to resource fluidity through a visual language that fosters translational processes through which design artifacts ignite and sustain dialogue among stakeholders with different backgrounds. We found these dialogues particularly relevant in moments in which organizational resources and processes need to be decoupled and reconfigured.

4.2.4.2 Practical contributions

In Table 6 below, I summarize the specific aspects of the design process that we found could support an organization to acquire strategic agility. We found that design can both 1) push an organization to move resources and skills fluidly towards a service-centered perspective, 2) make it easier for a team and leadership to unite and align based on dialogues grounded in visual artifacts. Table 6 serves as a reference and includes the aspects of design associated with supporting the development of strategic agility which can be key for organizations to better thrive in adapting and reorienting their business model.

Processes linked to strategic agility	How design supported these processes

Distancing and anticipating	Capturing and visualizing concepts and ideas in a user-centered way, thereby encouraging the deliberate inclusion of multiple perspectives and introspective reflection, and thus fostering distancing from existing routinary ways of thinking and biases
	Representing and exploring multiple scenarios of use across temporalities to anticipate various ways in which the future can play out
Reframing and experimenting	Fostering a more open-ended, exploratory approach, which builds on multifaceted views to reframe challenges and opportunities and to go beyond routinary ways to look at problems and business models
	Encouraging continuous and iterative experimentation through activities that favor early prototyping oriented towards progressively shaping value-offering opportunities
Decoupling and dialoguing	Offering a visual language that supports translational processes through which design artefacts ignite and sustain dialogue among stakeholders with different backgrounds. These dialogues are particularly relevant in moments in which organizational resources and processes need to be decoupled and reconfigured

Table 6: How design supports processes linked to strategic agility

4.2.5 Publication 5: Organizations as material for service design

In this short book chapter, we reflect on how service designers introduce and use artifacts to initiate a change in the organization, here conceptualized as a 'material' for design. Service designers not only orchestrate a service experience but also support a change in mindset and focus that influences the organization. In the chapter, we propose that artifacts simultaneously represent the present 'what is' and propose a future 'what could become'. In our case, we show how designers change the material (an organization) and support a strategy shift from a product orientation towards a service orientation through three stages: 1) collecting; 2) abstracting, selecting, and reframing; and 3) anchoring, presenting, and awakening. Taken together, the stages prompt a change in the organization from a fixed state to becoming fluid, service-oriented, and able to change. In the cases discussed, we have not yet seen what final form this takes. What we have observed is that the new form: 1) includes a perspective that is complex in its human-centered perspective; 2) embraces an outside-in perspective; 3) provides vision and coherence through narrative components; and 4) creates a shared and cemented service orientation.

5 Discussion

The following chapter discusses the findings of the dissertation in relation to the overall research question of how service design can support a strategic transition from product-centricity towards service-centricity.

5.1 The role of service design in supporting strategic transitions

Strategic transitions are complex, full of uncertainty, and engage with future events beyond our control. Staying alert to opportunities, and continuously adapting and navigating troubled and volatile environments, can subject individuals and organizations to competing demands (Gaim et al., 2018). For organizations, transitions can present themselves as tensional and promoting abilities tuned towards simultaneously needing to learn from and let go of experience and routines in order to adapt to future demands and integrate new possibilities (Lewis et al., 2014). To better cope with such polarities and thrive in uncertain environments, it is deemed vital to nourish approaches that are geared towards leveraging synergies from managing opposing competing demands, and approach them as inherent and potentially positive resources (Smith & Lewis, 2011). Design has been found to be promising in supporting the development of such approaches (Calabretta et al., 2017; Neuhoff et al., 2021; Simeone et al., 2020; Simeone & D'Ippolito, 2022). In the following, I expand upon these streams by introducing three aspects of how service design can support a strategic transition by offering: 1) navigational approaches that allow for alternating time horizons and investigating the impact of transitioning bounded in materials that explore potential future trajectories; 2) support of dialogue and reflection amongst diverse stakeholders and 3) fostering distance from routines and existing processes. These aspects are grounded in the use of visuals representations that take a human-centered perspective, which are defining aspects of design and service design (Blomkvist, 2014; Simeone et al., 2020). This dissertation expands the understanding of service design as a way of supporting organizations towards service-centricity by offering nuance and granularity to processes that can potentially ease and engage tensions from embarking on a strategic transition.

5.1.1 Tinkering with and navigating temporality

The study contributes to understanding service design as offering approaches that engage different time horizons. The ability to tinker with temporalities in experimental and experiential ways, e.g. through scenarios and foresight methods, can be highly influential on and supportive of strategizing processing and fostering vision thinking (Buehring & Bishop, 2020; Buehring & Liedtka, 2018; Heracleous, 1998; Pisapia et al., 2005). Emphasizing the

navigational aspect of service design is important during strategic transitions, as these engage with future events beyond our control. Creating and imagining future representations has been found to enable a space where participants can be relieved of the constraints of the real world, creating ways to safely explore, access and experiment with 'what is to be understood' (Blomkvist, 2014; Rodrigues, 2020). We illustrated the importance and need for navigating temporalities using service design methods in publications 1, 2, 3 and 4. This includes navigating and visualizing potential future use concepts anchored in the organization's current state. We found that engaging with such approaches helped the organization to anticipate and experiment with various directions of transitioning. For example, in publication 4, we showed how incorporating future-oriented modes of thinking nurtured the first dimension of strategic agility, gaining strategic sensitivity, by representing multiple scenarios of use. Similarly, in publication 1, the impact of transitioning was represented and visualized using a customer journey map, proposing that service design workshops grounded discussions of transitioning by projecting a future in a way that was lightweight, imaginative, and yet anchored in the current state. The navigational aspect was evoked by guiding participants through activities of alternating between going back and forth between the current state and imagining a future state through the perspective of someone else. Encouraging such moves enabled participants to better grasp and gain a sense of control of how future directions might unfold. Tinkering with the uncertainty of time horizons positions service design approaches as ways of investigating the components and mechanisms of what exists, leading to imagining and identifying how it can be reshuffled. A key feature of engaging the navigational aspect as a continuous movement is bound to visual representation. Design's ability to guide and support the translation of multiple interpretations and meanings, to facilitate conversation and create safe spaces, has recently been tied to the use of tangible design artefacts and visual representations (Simeone & D'Ippolito, 2022). This dissertation extends such views on service design as a way of grounding conversations and guiding interaction amongst participants. In publications 1 and 4, we showed the importance of creating and materializing future concepts as a means to spark discussions on resource fluidity and reframe orientation towards a more user- and customer-centered focus, thus pushing towards the new service-centered perspective.

5.1.2 Supporting multistakeholder dialogue

Being exposed to and deliberately including diverse and multiple perspectives is deemed valuable in continuously tuning and adapting organizations' strategic orientation and vision (Doz & Kosonen, 2010; Lewis et al., 2014). Nurturing a reflective dimension implies that individuals can both reflect on their own beliefs, experiences and perceptions and stay tuned and open to those of others (Bonn, 2005), which is associated with gaining strategic sensitivity (Doz & Kosonen, 2010) and strategic thinking (Liedtka, 1998). This aspect has been proposed

as a key feature of using service design methods (Vink et al., 2019; Wetter-Edman et al., 2017) and enables the recognition of several interpretations of one situation (Vink et al., 2019). By stimulating diverse modes of thinking and guiding participants to reflect upon their own experiences, beliefs and perceptions as well as interacting with those of others, this study extends the perspective on service design as an approach to nurture a reflective dimension (publications 2, 3, and 4). In publications 2 and 4, we highlighted that mediating social interaction and grounding tacit knowledge using visual artefacts sparked reflections on past experiences while also articulating hopes and fears about transitioning towards a user- and service-centered orientation. Tensions related to social interaction and dynamics were supported through individual reflection and group discussion: for example, through artefacts such as structured brainwriting, narratives, and prototypes. This aspect extends studies foregrounding the translational qualities of design to connect and negotiate different meanings and interpretations (Simeone et al., 2018). Creating safe conditions and using visual tools and artefacts is essential to cultivate such reflections (Simeone & D'Ippolito, 2022; Vink et al., 2019). We found the relational qualities of mapping techniques especially useful for this, as maps can hold multiple perspectives and (re-)assemble relations (Kimbell, 2009b; Sevaldson, 2013), offering a tangible starting point for strategy articulation processes. This pattern was noted in Publication 1, where the collaborative creation of a map helped to ground and translate tacit knowledge amongst diverse perspectives from various stakeholders. Taken together, the translational qualities of engaging with user- and service-centered visualizations supported social interaction and mediated discussions amongst diverse, multiple stakeholders and views.

5.1.3 Breaking out of routines

Reorienting a business model towards a service-centered focus can imply a shift in routines and mindset. Service design has been found promising to help shift and destabilize organizational routines and habits over time (Kurtmollaiev et al., 2018; Rodrigues, 2020). The research extends such perspectives as, for example, in publications 2 and 4, where we showed how the deliberate inclusion of perspectives external to the organization, as well as deliberate facilitation and inclusion of internal voices in the organization, helped to awaken participants' sensitivity and limitations of routines, challenging biases towards a product-centered perspective, thereby breaking out of and fostering distance from routines to ignite a destabilization of habits (Rodrigues, 2020). In publication 1, we showed a moment of breaking out of routines, as participants gathered across the organization in new ways, establishing a way to meet from a service-centered perspective. We elaborated on this aspect in publication 4, where we argued that by materializing tacit knowledge using service-centered artifacts, service design can ground dialogues in moments where resources and processes need to be decoupled

and reshuffled to harness insight from, for example, user research. We linked these processes to gaining flexibility in resources and skills towards a service-centred perspective (Doz & Kosonen, 2010; Elali, 2021). Establishing safe conditions where interactions are mediated and anchored in human-centered artefacts, can be a way to foster distance from routinary ways of working anchored in a product-centered orientation.

5.2 Limitations

The study comes with limitations that should be recognized in terms of its empirical foundation, approach and concepts applied. Firstly, the study was grounded in one company and one limitation therefore has to do with having only one field site. While aspects of the case are unique I believe that some insights emerging from my study can be applied to other contexts for example, in organizations that are new to design and design methods. The theoretical concepts and frames derived from organization and management studies were integrated to better address general challenges of transitioning an organization. Other organizations adapting and changing their business models as responses to volatile operating environments might draw on how to integrate and leverage design approaches and concepts as inspiration to further explore how service design can support and sustain transitions. This was the case in publication 3, where I collaborated with other researchers from Aalborg University who brought empirical data from another context. This gave us the possibility to compare how design workshops could potentially ensure deliberate engagement with competing demands across cases. My hope is that researchers and service designers might use the research presented in this dissertation as inspiration to approach tensions in their respective settings, and to consider how their practice might change organizational processes as they intervene and potentially spark a redesign of their organization (Llamas, 2022) which indeed can be a space where designers meet strong resistance (Junginger & Sangiorgi, 2009).

Secondly, I acknowledge that all human inquiry is complex and incomplete (Stringer, 2007). Many of the contingencies and synergies I participated in building up with the design team during my field engagements were partially disrupted in March 2020 by COVID-19 which impacted my accessibility. My activities had, up until the pandemic, relied on being embedded in a physical setting in the company. This approach sustained my membership in the design team as observer and participant in our collective actions and of their effects. The shift to virtual participation meant learning new digital tools to support facilitation. As we were still an emergent practice, it somewhat impacted our visibility in the organization, which had benefitted from connecting through informal encounters leading to initiatives also beyond the teams' immediate scope of the activities (such as staging the workshop in publication 1).

Throughout the pandemic, I continued to take part in weekly meetings to partially capture an understanding of activities and experiences. This continuous virtual engagement enabled me to identify and evaluate projects between designers and managers as well as help to facilitate virtual workshops tuned towards changing core processes in product management. However, I acknowledge that the insights could have had a very different outcome.

6 Conclusion and future research

To conclude, service design approaches can support processes that are essential to a strategic transition, seeing the latter as a space of uncertainty bound to bring forth tensions between competing demands. This study expands the understanding of service design by bringing granularity and nuance to how service design can support a strategic transition. Staying open to new opportunities and continuously having to adapt to future demands can subject organizations and employees to the disorienting tension of having to shift and reshuffle routines, approaches and ways of thinking anchored in a product-centered mindset towards a service-centered focus. The contributions of this dissertation argue that service design supports strategy articulation processes, fuels strategic thinking and fosters organizational agility, all of which support and help organizations to better address tensions that arise while transitioning. Fostering service design approaches during a strategic transition can awaken and promote sensitivity, encourage reflection, and guide strategic actions by 1) enabling navigational approaches to tinker with how future directions might unfold, grounded in visual representations that 2) support dialogues amongst diverse stakeholders and integrate external perspectives and 3) foster needed distance from existing processes and breaking out of routines.

The dissertation argues that such aspects are invaluable in managing and engaging with the competing demands of a strategic transition, awakening sensitivity and breaking out of established routines and processes through the inclusion of diverse, multiple perspectives grounded in visual material. The findings of the dissertation are preliminary and only emerging from one empirical research setting. For future research, the potential of the concepts explored in this study could be further expanded upon and broadened to other cases.

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Part II: Publications

Publication 1

Harre, O., & Nielsen, L. (2020). From product centricity to services : Design workshops and maps as tools in strategy articulation. In Y. Akama, L. Fennessy, S. Harrington, & A. Farrago (Eds.), *ServDes.2020 – Tensions, Paradoxes, Plurality*. Linköping University Electronic Press.

From product centricity to services: Design workshops and maps as tools in strategy articulation

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Abstract

This paper explores how an IT company wants to change from product-centricity to servitization. A cross-functional customer journey workshop mapped the current state from the customer's point of view, and by identifying opportunities, it identifies gaps in becoming a service organization. Activities in the workshop focused on mapping a current customer journey and a proposition of a customer journey. The case explores how a service design workshop and tools can be used in strategic work, to support and facilitate a discussion on changes needed to be customer-centric, going beyond technology and features. The workshop and maps proved useful in facilitating and visualizing the current organizational state and identifying opportunities for what it takes to shift to servitization. This case contributes to practical aspects of how service design tools can support organizational transformation towards servitization.

Keywords: service design, design workshop, customer journey mapping, servitization, organizational change

Introduction

Shifting strategy from delivering a feature-rich software product to providing a customer-centric service requires a significant organizational transformation. This case study sets out with a new strategic initiative which envisages changing to a customer-centric service organization. This paper is concerned with applying the customer journey mapping technique to support early strategy work. Within service design, the literature draws on different fields. The two main approaches to research within service design focus on 1) integrating the scope of non-design fields such as marketing, leadership, and engineering and 2) exploring and challenging methods from other disciplines (Blomkvist et al., 2010). Within information systems, the focus on the service presents a shift away from traditional system thinking (Orlikowski & Scott, 2015). The shift from focusing on tangible products to intangible service offerings has gotten researchers to ask what then constitutes the object of study in services. In the following, we review literature focusing on service design as a field and servitization within business model innovation.

Service design as a field

As a field, the design of services is interdisciplinary. It integrates multiple contributions on theory, insights, and techniques from the design discipline as well as marketing, information systems, management and business administration (Teixeira et al., 2017). Design is the practices involved when making material and immaterial products (Clarke, 2011). Service design focuses on enabling a seamless experience for customers (Teixeira et al., 2017). This experience is a crucial competitive advantage in the service sector (Følstad & Kvale, 2018). Maps can help visualize and translate service material from immaterial to tangible representations (Blomkvist et al., 2016). Methods for representing services can be done through maps but familiar analytical tools, such as spreadsheets, cannot support relational complexities (Boyer et al., 2011). Maps help explicate business models and can encompass complexity as they support multi-perspectives and relational aspects (Simeone, 2019). Integrated cross-disciplinary models have been suggested and include the MINDS method (Teixeira et al., 2017) and Gigamaps (Sevaldson, 2011; 2015). Customer journey maps focus on depicting a customer's journey through a service with a focus on experience (Blomkvist et al., 2016) and are a visualization technique that represents the unfolding of the service process across abstract time (Følstad & Kvale, 2018). Customer experience is understood as being shaped during the interactions between the customer and the

2

service provider (Berry et al., 2002) and is, in nature, holistically constructed (Verhoef et al., 2009).

Servitization and transformation

Servitization is a trend that has challenged how companies are doing business with customers as well as how products are developed (Frank et al., 2019). It refers to a transformational process from product-centric to service-oriented business models, centring on customer value and originating from the management research field (Frank et al., 2019). A servitization strategy shifts the focus to not only focus on product development itself but broadens the capacity to offer services that follow customer needs (Fabian Ayala et al., 2019). The journey to services has been explored in whitepapers foregrounding the benefits of servitization, such as an increase in customer retention and revenue growth (Livework, 2016) as well as higher profit margins, income & revenue and a stronger differentiation from competitors (Fabian Ayala et al., 2019)

The transformation of shifting to servitization implies both structural changes and an internal business transformation of the company's value architecture (Fabian Ayala et al., 2019; Frank et al., 2019). One challenge is to manage the transition to services, which from a change perspective is emergent and evolutionary (Martinez et al., 2017). Changes do not only affect organizational processes but also have implications for the roles of the actors in the service system (Overkamp & Holmlid, 2018). It affects a change in divisions of labour among service providers and recipients (Blomberg & Stucky, 2017). Overkamp & Holmlid (2017) argue that the implementation of new services should be part of the service design processes. Servitization as a business model is in itself insufficient in helping with the organizational processes that need to change and does not offer guidance in experimentation (Chesbrough, 2010). Design methods propose iterative approaches to articulating strategy in design, going beyond the idea that strategy can be pre-planned and controlled through frameworks (Simeone, 2019).

Research question

Servitization as strategy entails a comprehensive transformation for product companies. Service design offers an array of methods for studying and representing the immateriality of service. Customer journey mapping can be a useful tool to get valuable insight into how a service is

3

Olivia Harre, Lene Nielsen
From product centricity to services: Design workshops and maps as tools in strategy articulation

experienced (Følstad & Kvale, 2018). It is a tool that can help bring together individual parts of the organization into a singular vision capturing the whole customer experience (Polaine, Løvlie & Reason, 2013). However, we know little of how existing methods and tools from service design can support and facilitate the discussions of pursuing a servitization strategy. This paper explores how design methods can support the initial steps of formulating a strategy within the transformational process of shifting from product centricity to achieve the benefits of servitization. The research question is, *how can design workshops, using the customer journey map tool, support an initial discussion on the challenges of shifting to a service organization?*

Case description

The case company A is a globally-operating financial technology company that successfully delivers an enterprise software solution to its clients. The system was developed over a 40 year period. The company employs 1500 people globally and has 200 clients. The product runs on-premise and supports financial professionals in their daily business operations and decision processes in a regulated and changing environment.

To remain adaptive to fast-paced changes in clients' needs, as well as in the business environment, the company has initiated an ambitious transformational strategy. The transition includes an increasingly holistic approach with a strong focus on clients' business outcomes. The new strategy has implications for the company's technology. It extends the delivery of a software product towards hosting and operating service offerings to continue empowering and enabling their clients' success. The company is new to the discipline of service design.

Workshop approach

A cross-functional workshop to map the customer journey was part of the early stages of the strategy creation process. The goal was to map how a customer experiences company A end-to-end and to identify opportunities for improving the service experience. The workshop took one full day (program in Appendix A). The workshop followed the narrative structure of a holistic customer journey (see Appendix B, figure 2) (Blomkvist et al., 2016). The workshop was facilitated by a newly-established design team

from R&D with the support of newly-hired strategy employees. One of the authors acted both as facilitator and notetaker[1]. Among the 13 participants, 11 were physically present, and two were present via videocall. Nine participants represented the organization, all drawn from senior management. Due to the dynamic nature of the activities and some participants being online, the workshop was not recorded.

The first part focused on mapping the customer's worst and best experiences from a current perspective, and the second part focused on a proposed customer journey through generative activities towards a possible service "to be" (Følsted & Kvale, 2018). The company had no consolidated set of personas. Through comparative document analysis of existing personas, the design team and Strategy Office created two abstract roles to represent the company's customers (Appendix B, Figure 1).

Coding and analysis of maps

The objects of study in this paper are the customer journey maps, generated during the workshop, consisting of colour-coded post-its, as well as the dialogue among participants captured in notes by one of the authors. Appendix C shows a timeline of interactions between the design team and representatives from the Strategy Office who collaboratively compared and combined the maps. The maps were inductively coded, and summarized in seven categories. The maps were introduced at a Strategy Session with around 25 people who had not participated in the workshop. One of the authors helped present the maps and observed the following discussion. The authors analyzed the seven categories along with the maps and observational notes following a grounded research strategy (Strauss & Corbin, 1990). The categories were reduced to five after the maps had been transcribed through condensation of meaning (Kvale & Brinkmann, 2009).

1One of the authors is a researcher taking part in an action research study in the organization. The case study is part of an externally funded industrial PhD project with the company

Analysis

The analysis will focus on what insights the customer journey mapping technique can bring to participants from a company that has a desire to change from being product-centred to being a service organization. In the following, we introduce the five categories. The source of statements in *italics* is from the transcribed maps unless indicated otherwise in parenthesis.

Personas as a shared tool

Applying personas as a shared tool was new to the organization. The workshop began with a discussion on who of the personas should be the protagonist of the journey. The participants selected a buyer persona different from the persona introduced by the facilitators. The stages were discussed with a point of departure in the participants' knowledge, and the persona was seldom mentioned. The discussion during the Strategy Session pointed to insecurity in working with personas expressed through questions such as, *Who do we start with? Who should we build? What differentiates them?* (Notes, Strategy Session). During the discussion, the participants gained the insight that to sell a service, the skills of internal work roles would be affected. Selling a service should be driven by a *future sales profile* which understands customers' *outcome needs* (Notes, Strategy Session).

Understanding a customer's business

The lack of a 'unified' understanding of their customers and business was the largest category. The participants noted that when new customers approach the company, there is a *lack of evidence to substantiate business benefits.* Participants stated that *clients want the company to understand their business challenges and not technical challenges better in the first stage of the customer journey.* The company is good at identifying trends and sharing their roadmap but *poor at executing against the roadmap*. Moreover, there is a *low discovery of functionality* with the customers. The experience of the company's sales department is that customers perceive the solution as complex and as a system aimed at experts. Customers experience unfamiliar terminology that is internal and company-specific.

6

Solutions

Discussions about solutions evolved around a better understanding of how customers interact with the company's solution through a *business intelligence discipline for data-driven dialogues with clients.* On the proposed state map, the participants imagined positive quotes from a future customer, stating:

> It is great to feel as a customer that you both get the benefits of a standardized system while still feeling your specific business needs are met:

> It has been such a great experience feeling how engaged the company has been in training and competences to develop my organization for optimal use of the solution.

The quotes express the expected benefits of shifting to a service organization. Furthermore, it was discussed that understanding best practice would lead to positive quotes from a future customer such as: *I always follow the recommendations of the company, because I trust they know about the process- optimization much better than I do.*

Overcoming complexity

A recurring theme across the entire customer journey was discussions of complexity. *Standardization* and *configuration versus customization* were brought up to address the challenge of a complex and configurable system (Notes, Strategy Session). An *'all-inclusive' pricing model* was suggested as a solution to address the complexity of the current pricing model. It was discussed how a *'sell it right'* bundle of software services could be created as a *solution package across the organization* to help *ensure lifetime client value* and *expand global clients to [address] new local areas*. This holistic understanding as a premise for being a service provider was new to the participants.

Flexibility was discussed from both a positive and negative perspective. When the company sells and negotiates with customers, they *never say 'no' to a customer*. The company is known as a trusted partner that is flexible, it always fixes first and settle later, and offers committed support. The flexibility comes with a downside when it comes to configuring the product, which can be done in many different ways.

7

Product adoption

With the company operating as a service organization, there was a need to discuss how expanding and renewing services with existing customers is challenged by not knowing what functionality of the system they use. There is a lack of shared insight into patterns of workflows after the product is bought and implemented. Furthermore, *onboarding end-users* was perceived as painful, and implementation projects as agonizingly long. Upgrades were seen as a negative experience, that can take between 3-6 months, and the word *stickiness* was repeated.

Solutions discussed to address the challenges included:

- To *make a dedicated effort for co-adoption of the solution with clients.*

- Implement *client success teams.*

- The company should *go cloud to better update experience and data-driven insights.*

- Switching to *service means flipping to renew-retain* (Notes, Strategy Session).

Silo-based organization

Participants in projects discussed how customers, during implementation, experience the organization's internal silos, as their point of contact is fragmented – they experience that they *shop in shops*. During the discussions in the Strategy Session, it was emphasized that a holistic reorganization was needed to *end 'silo' experience for clients.* Additionally, the *product-centred R&D development* should have an *outcome focus* as well (Notes, Strategy Session). Shifting to a service organization requires that the company needs to better *understand client business models* from their perspective and focus on the *development of a new delivery model* (Notes, Strategy Session).

Findings

Exploring this method inspired discussions of what it requires to be a service organization. In summary, the conclusions of the analysis show that:

- Mapping the customer journey creates an understanding of the current complexity of onboarding, terminology, pricing models and organizational design - from the customers' point of view.

- Mapping the customer journey helps to identify potential solutions to negative experiences in the current state.

- The map helps to take a holistic approach to understand how the company's product and delivery model affects the customer's experience.

- Discussions of the change needed have implications for the skills required internally and for organizational design.

Discussion

The strategy of organizationally changing from focusing on tangible products to intangible service offerings was materialized and discussed through two customer journey maps. We argue that this tool can offer a strategic starting point to support discussions on topics of the servitization needed, and in determining the new value proposition where the last is a significant challenge reported by the literature (Frank et al., 2019). The insights show the potential of design workshops to support the initial steps of articulating a strategy. The mapping of processes provided valuable insights into service provisions for both designers and managers (Følstad & Kvale, 2018). Imagining the proposed state, the participants realized they were far from delivering a service. The process revealed the implications of change at an organizational level.

How to reconfigure a business model and achieve the benefits of servitization is challenging (Frank et al., 2019) and the servitization strategy can have many orientations (Fabian Ayala et al., 2019). The maps offer a tangible frame for discussing the benefits and enablers, within and beyond the capabilities of the company in its current state. The discussion of the shift towards servitization, from a strategic level, confirms that its main focus is adding value to the customer (Frank et al., 2019). The workshop facilitated discussions on where and how there was a lack of understanding customers, e.g. during usage of the product. The topics in the discussion point to essential areas of the internal business transformation that the literature on servitization reports, e.g. its implications for the internal workforce (Overkamp & Holmlid, 2018;

9

Bordoloi et al., 2018). Other important topics that should inform the service strategy include discussions on the product design (e.g. standardization), revenue models (e.g. pricing model) and technological benefits such as cloud computing (Frank et al., 2019). Moreover, the tool supports the servitization focus of adding value to customers through the proposed solutions of extending and supporting product usage, to retain customers (Fabian Ayala et al., 2019).

Although the paper does not explore the subsequent phases of the strategy, these will have implications for how the service strategy is implemented. In this regard, the approach to strategy articulation becomes important. Integrating service design processes will require that strategy is an iterative process where strategy articulation is evaluated continuously, as Simeone (2019) found. When implementing the new strategy and integrating initiatives with design processes, it must be acknowledged that the nature of strategy is emergent (Simeone, 2019), as well as the service journey transition (Martinez et al., 2017). A way to integrate design in the following phases could be to explore the proposed customer journey with specific scenarios which can support, "articulating value (co-)creation process, actor roles and responsibilities" (Overkamp & Holmlid, 2017, p. S4418). The generative activities of creating a proposed customer journey map includes participants discussing what is required to be a service organization, and offers a tangible starting point for exploring future scenarios and possible reconfigurations of servitization as business model innovation.

Conclusion

The expected benefits of servitization depend on determining the value proposition of the servitization business model. The business transformation to servitization is challenging, and as companies explore ways to diversify their portfolio through service strategies, this case shows how service design tools through the customer journey map can support discussions on the shift from product centricity to servitization. The findings conclude that customer journey mappings are useful to visualize a tangible starting point in the initial steps of discussing expectations of shifting to servitization. The topics discussed can support ongoing strategy articulation and point to areas of reconfiguration evolving in the current state of the organization. This paper contributes to the field through a

practical case of how a service design technique can support strategic work in organizational transformation.

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Appendix A

Table 1. Workshop overview of activities

Introduction	**Plenary**
Selection of **persona, plenary**	Plenary
Current State: Activity 1: Customer's worst experience	Individual
Current State: Activity 2: Customer's worst experience	Groups
Current State: Activity 3: Customer's best experience	Individual
Current State: Activity 4: Customer's best experience	Groups
Presentation of Current State map	Plenary
Iteration of maps	Groups
Proposed State: Activity 5: Opportunities – individual view	Individual
Proposed State: Activity 6: Opportunities – collective view	Groups
Presentation of **the Proposed State map**	Plenary
Iteration of maps	Groups
Proposed State: Activity 7: Selecting and building scenarios	Groups
Presentation of scenarios	Plenary
Wrap up and feedback	Plenary

Appendix B

CTO / CIO

Charles

"I need to...
- Optimize front office performance to drive overall business performance
- Validate application performance before prod go live
- Ensure front office roles have the best possible experience with the company's solution
- Accelerate time to value when implementing the company's solution
- Minimize the cost of implementing the company's solution
- Focus scarce resources on our core business instead of testing activities"

PORTFOLIO MANAGER

Paula

"I need to maintain an optimal balance of portfolio assets so that I can achieve and exceed investment goals."

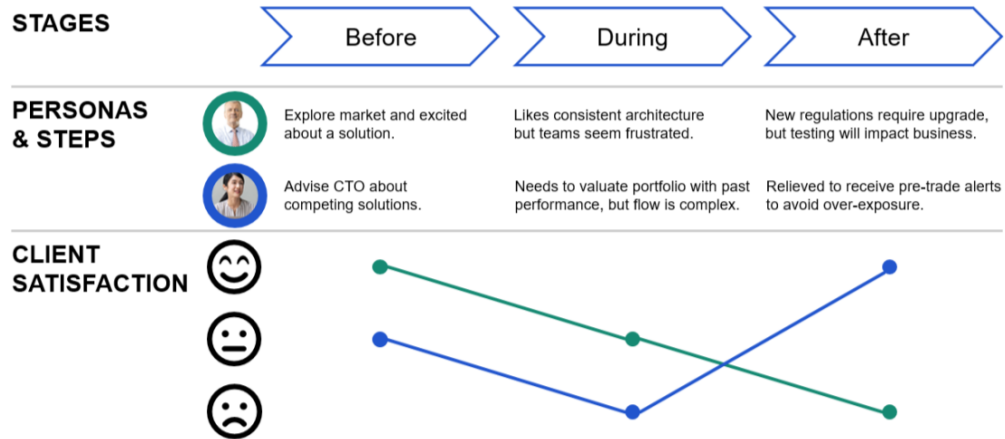Figure 1 pre-selected personas: buyer and end-user

STAGES — Before | During | After

PERSONAS & STEPS

Before	During	After
Explore market and excited about a solution.	Likes consistent architecture but teams seem frustrated.	New regulations require upgrade, but testing will impact business.
Advise CTO about competing solutions.	Needs to valuate portfolio with past performance, but flow is complex.	Relieved to receive pre-trade alerts to avoid over-exposure.

CLIENT SATISFACTION

Figure 2 Customer journey map template

15

Appendix C

Timeline of activities and interactions between the design team and representatives from the strategy office

Preparation meetings with design team and strategy office	Workshop	Meeting with strategy office to thematize and combine the maps	Strategy session: Design team and strategy office present maps followed by discussion
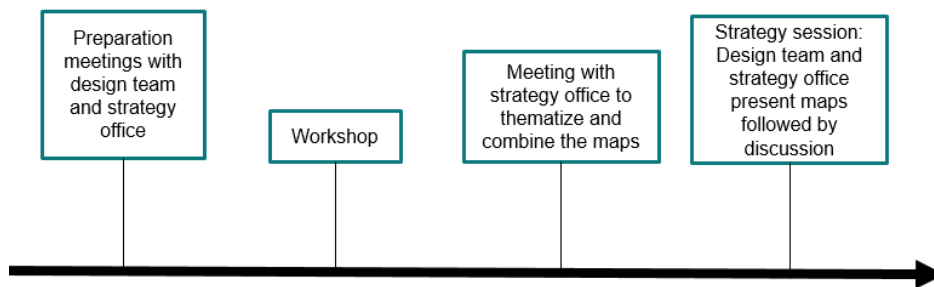
Publication 2

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Moving from products to services: Supporting strategic thinking through design workshops

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Transitioning a company from product-centricity to a new service-centred offering requires substantial changes, which can have deep implications for the company's processes, structure, and technology. Strategic thinking can help managers and employees to plan and cope with change. Our paper offers empirical insight into how a Danish IT company that is transitioning to being service-centric hosted and facilitated a set of design workshops to foster strategic thinking across the organization. Such design workshops were structured to invite participants to adopt multiple perspectives and think through different temporalities, while mediating the interaction to allow diverse perspectives to emerge.

Keywords: strategic thinking; design workshops; service centricity

1. Introduction

We live in a time of profound changes and socio-economic crises, which challenge organizations and companies to rethink and adapt their business models to encompass the impact of uncertainty. Planning for proactive long-term strategies and new ways to depict and represent future possibilities for strategic positioning is necessary (Buehring & Bishop, 2020). Strategic thinking has been proposed as a core capability of companies to be adaptive and drive sustainable strategies (Srivastava & D'Souza, 2021).

Previous research has been attentive towards how components of design can support organizations in their strategizing practices (Buehring & Liedtka, 2018; Liedtka & Mintzberg, 2006), e.g. researchers have proposed that design can play a significant role in how organizations plan, decide and act to influence and take a more emergent approach to the future (Buehring & Bishop, 2020). Specifically, design tools have been proposed as approaches to help frame relevant issues and favour the emergence of creative possibilities to address these issues; the fact that the processes tend to rely on prototyping and other design representations give organizations the possibility to engage and

experiment with an array of possible and desirable futures (Buehring & Liedtka, 2018; Elsbach & Stigliani, 2018).

Empirical studies on how design thinking can effectively back strategy formulation and development exist within design research (Elsbach & Stigliani, 2018; Liedtka, 2000; Liedtka & Mintzberg, 2006). Some of these studies examine how specific design tools or processes can support the practice of strategic management (e.g. Eppler & Platts, 2009; Heracleous & Jacobs, 2008; Knight et al., 2020). However, fewer studies have focused explicitly on the construct of strategic thinking. Indeed, design research has rarely engaged with the various models of strategic thinking elaborated in management studies (Bonn, 2005; Liedtka, 1998; Srivastava & D'Souza, 2021). As such, the specific ways in which design can support strategic thinking – and cultivate organizational transitioning from product centricity to services – remain underexplored.

This paper is grounded in a case study – a globally operating Danish software company that delivers a business-to-business enterprise solution. Within this organization, a new design team was established and asked to facilitate workshops where employees had to reflect on how core processes of the company could be restructured (from being product-centered to being service-centered). Within this context, design was valued as an approach to embrace and test future directions (Buchanan, 1992; Lalaounis, 2018) and to experiment with new business models (Hands, 2018). This case study gave us the opportunity to investigate the following question: How can design workshops support strategic thinking in an organization transitioning from product-centricity to services?

The remaining of the paper is organized as follows. In section 2 we present literature on strategy and strategic thinking and connect these concepts with design. Section 3 introduces the case study, which is followed by a more granular analysis in section 4. Lastly, we discuss our findings in section 5 and briefly conclude in section 6.

2. Related work

2.1 Strategy and strategic thinking

While providing an overview of prominent conceptualizations of strategy in history, Freedman characterizes strategy as "[about] maintaining a balance between ends, ways, and means; about identifying objectives; and about the resources and methods available for meeting such objectives" (Freedman, 2013, xi). Core aspects of strategy relate to the resources and capabilities ('means') available (or that can be achieved and developed) and to defining goals and objectives ('ends') that can be realistically met by mobilizing these resources and capabilities in specific manners ('ways') (Simeone, 2020). Rumelt (2011) proposes a way to operationalize strategy and states that "the core of strategy work is always the same: discovering the critical factors in a situation and designing a way of coordinating and focusing actions to deal with those factors" (Rumelt, 2011, 3).

Strategic thinking is that specific way of thinking oriented towards identifying such critical factors and articulating and executing strategy (i.e., by balancing means, ends and ways) (Stubbart, 1989). Especially within management and organizational studies, several authors tried to define strategic thinking and the core characteristics of it. Liedtka (1998) proposes that strategic thinking can be described through five elements: 1) keeping a systems perspective, 2) focusing on a clear intent, 3) being open to emergent and unplanned opportunities, 4) thinking in time by imagining how past, present and future can be connected, 5) proceeding through cycles of hypothesis generation and testing (Liedtka, 1998). Liedtka's work is interesting because it highlights that even if strategic thinking is something that individuals do, organizational structure and processes can both constrain

and enable individuals in their strategy practice (Liedtka, 1998; see also Mintzberg, 1978). Following this line of thought, a recent study has been presented by Bonn (2005), who highlighted the importance of designing organizational processes at the group level to enable individuals to jointly think strategically. Bonn (2005) sees strategic thinking as emerging from the combination of three aspects: 1) systems thinking, 2) creative thinking and 3) vision orientation thinking (Bonn, 2005). Consequently, thinking strategically implies the ability to manage the tensions that can occur, for example, when different views (e.g., present vs. future or zooming in and out on a problem) are required to elaborate fully on the complexity of systems. When these tensions are managed and nurtured through a "paradoxical thinking" (Calabretta et al., 2017) that brings together intuitive and rational thinking, they can be vital in driving strategic decision making. Tensions are also indicated in a recently proposed consensus model of the core dimensions of strategic thinking by Srivastava & D'Souza (2021). The authors suggest operationalizing strategic thinking through three core dimensions: (a) systems thinking, (b) the "divergent thought processing", i.e., the idea that strategic thinking must adopt and integrate different views to comprehend and elaborate organizational complexity and (c) the "reflection" dimension, in which divergent and competing views and hypotheses are reconciled. We find this conceptualisation particularly helpful because it represents strategic thinking as a process that – like in the case of some prominent characterizations of design (Brown, 2009; Cross, 1985) – unfolds through phases of divergent and convergent thinking.

2.2 Linking design and strategy

Especially in the past two decades, researchers have pinpointed several ways in which design processes and artefacts can broadly support strategy (Ewenstein & Whyte, 2009; Kaplan, 2010) and strategy-related ideation sessions, often fostering the emergence of multiple and divergent perspectives (Eppler & Platts, 2009). Design approaches have been suggested as ways that could help managers and strategists make better business decisions and approach risks (Elsbach & Stigliani, 2018; Liedtka, 2014) and design has indeed been characterized as an integral resource to corporate success (Lockwood, 2010). Design thinking has been compared to Liedtka's (1998) strategic thinking (Elsbach & Stigliani, 2018) and design skills are proposed as central to management practices (Bonn, 2005; Liedtka, 2000) as part of a call for a new paradigm in business strategy (Boland & Collopy, 2004; Cooper et al., 2011; Elsbach & Stigliani, 2018; Liedtka & Mintzberg, 2006). Particularly, design thinking has gotten much attention as an approach composed of specific tools that can be systematically applied to support strategy development in organizations (Elsbach & Stigliani, 2018; Liedtka, 2014), through an iterative creative process that allows for identifying opportunities and learning through visualizations and prototyping (Knight et al., 2020; Liedtka & Kaplan, 2019). Moreover, design thinking has been considered as an effective instrument to reduce those cognitive biases (Liedtka, 2014) that might affect strategic decisions (Acciarini et al., 2020; Hirshleifer, 2008). The link between design and strategy has also been closely scrutinized by researchers linked to design management (Lockwood, 2008) and strategic thinking has been characterized as an important capability in the process of building effective design goals and strategy and transforming a business (Lockwood, 2009). However, while researchers have studied and argued for the support of design in relation to developing and executing strategy, not many studies were directed towards a more fine-grained investigation of the construct of strategic thinking. Our work aims at providing a contribution to this understudied area by linking design and strategic thinking and, particularly, by enriching the understanding of how design workshops can support the development of strategic thinking.

2.3 The format of design workshops

Departing from the recent consensus model elaborated by Srivastava & D'Souza (2021), our paper aims to give empirical insights as to how some characteristics of design workshops can help support the three dimensions of strategic thinking (systems thinking, divergent thought processing and reflection). The particular focus on the format of design workshops emerged by surveying recent literature. In this paper, our specific interest is in exploring the format of design workshops as part of sustaining a new design practice in an organization. Design workshops are emphasized as an essential part of the design process (Westerlund, 2007) and can be easily operationalised both in terms of resource, effort and activities needed (Stickdown & Schneider, 2012). Design workshops are typically characterised by a collaborative, participatory aspect (Westerlund, 2007) whereby users and designers co-design (Sanders & Stappers, 2008). However, for a service organization, the inclusivity of people has broadened to also include internal members of organizations that enable the service delivery (Polaine et al., 2013). Design workshops have been found to be effective in setting a space where company workers can produce knowledge about strategic issues (Paroutis et al., 2015) and articulate a service strategy (Harre & Nielsen, 2020).

However, the risk with such a format is that these design workshops remain the only moments in which the participants and the whole company employ a design approach. This makes it difficult for design to become a key component of the organizational culture (Elsbach & Stigliani, 2018). For a design practice to be sustained in the long run, researchers have found that there is value in building internal design capabilities to avoid "one-off" design projects (Holmlid & Malmberg, 2018; Wetter-Edman & Malmberg, 2016). Sustained design practice is of vital importance to support organizations in moments of profound change (like the shift from product- to service-centricity of our case study company), which affects employees' work practice, terminology, and routines (Kurtmollaiev et al., 2018).

In summary and connecting the threads elaborated in this literature review, this paper intends to explore the following research question: *How can design workshops support strategic thinking in an organization transitioning from product-centricity to services?*

3. Research methods and case description

The study uses a single-case study approach (Yin, 2018) to richly describe a phenomenon within real-life contexts (Eisenhardt & Graebner, 2007) and explore the space between theory and experience of practice (Breslin & Buchanan, 2008).

The case company is a globally operating software organisation that successfully delivers a business-to-business solution to financial professionals. Recently, the company embarked on an ambitious journey to change towards being service-centric and emphasized that their processes and vision focus on delivering holistic customer outcomes through software and related service offerings.

The first author of the study maintains a part-time engagement with the design team of the case company, and this gave the chance to collect empirical material over the period of 24 months. Taking an ethnographic approach, the first author has been a participant-observer with full participation (Spradley, 1980) in all workshops and meetings in between. She is still employed in the company and, therefore, highly immersed in her role as both insider and outsider (Bruskin, 2019) by "shadowing" the design team as a source of insights (Czarniawska, 2008).

In 2020, the case company organized five design workshops aimed at various teams in different business areas. The scope of these workshops was to gather participants and jointly reflect on 1)

defining a new vision for the team with regards to the broad company orientation, 2) analysing the current problems specific to the projects' business areas that motivate the transition from products to services, 3) understanding the assumptions and risks of this transition, as well as 4) the internal resources needed. The workshops were framed in relation to how the company's new strategic direction was articulated in the product management department, where the design team is established. The workshops initiated how core processes could be restructured to focus on customer outcomes. The team was asked to facilitate workshops with representatives from across the organisation, organized in five project teams. The workshops combined presentations with group activities and were structured around similar core characteristics (see Figure 1).
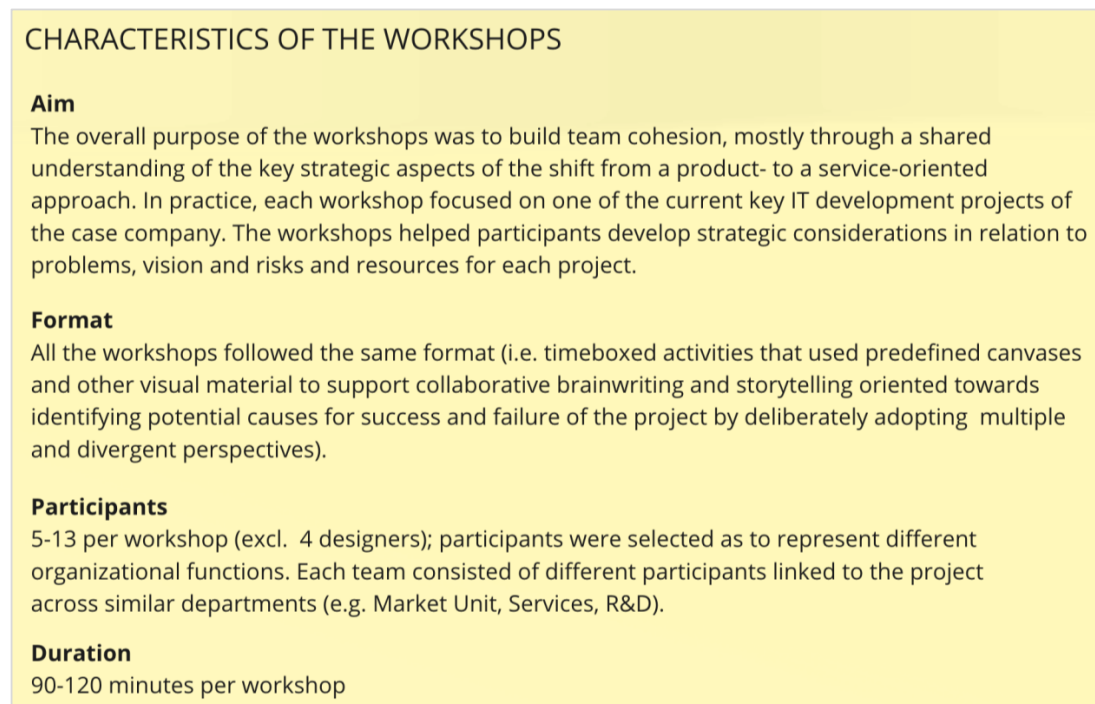
CHARACTERISTICS OF THE WORKSHOPS

Aim
The overall purpose of the workshops was to build team cohesion, mostly through a shared understanding of the key strategic aspects of the shift from a product- to a service-oriented approach. In practice, each workshop focused on one of the current key IT development projects of the case company. The workshops helped participants develop strategic considerations in relation to problems, vision and risks and resources for each project.

Format
All the workshops followed the same format (i.e. timeboxed activities that used predefined canvases and other visual material to support collaborative brainwriting and storytelling oriented towards identifying potential causes for success and failure of the project by deliberately adopting multiple and divergent perspectives).

Participants
5-13 per workshop (excl. 4 designers); participants were selected as to represent different organizational functions. Each team consisted of different participants linked to the project across similar departments (e.g. Market Unit, Services, R&D).

Duration
90-120 minutes per workshop

Figure 1: Core characteristics of the workshops

There was no logical order of the workshops, but the five projects selected were the result of a prioritization process undertaken by senior management. The specific format of the workshops was chosen to favour participatory dynamics within teams consisting of multiple disciplines and organizational functions. In addition, the techniques were selected with the aim of gathering multiple perspectives in a way that allowed for equal participation.

The arguments presented in this paper draw on multiple sources of data centred around five workshops. In the following, we elaborate on how the workshops were organized and structured.

4. Analytical description of the workshops

4.1 From a product-centered view to a user-centered view

Following the first workshop, designers noticed similarities in how the current problem was perceived and described by participants. The manager explained that this could be due to the fact that participants were deeply ingrained in organizational processes and routines and that their view

was preconceived and biased. The manager linked the consensus view to frustrations that the participants accumulated over the years from not being able to serve the client needs; this has led to a strong belief that 9 team members already know how to solve the challenges. From this, the manager emphasized that the design workshop should be oriented towards breaking this way of thinking. Consequently, the design team included activities in the workshops in which participants were asked to adopt the perspective of a single, specific end-user and to empathize with their needs and wants. To break group biases, the workshop participants were asked to work on this exercise independently. In other words, the workshops were trying to break the participants' existing view (i.e., the team in charge of the product knows best how to develop and maintain the product) and to invite the participants to look at the product offering through the lens of a user-centered perspective. Adopting such a user-centered view was a new approach for most of the participants and aimed at shifting their way of seeing things, making them more open to accept the need to change the current company processes.

4.2 Deliberately including multiple perspectives

As a follow up exercise, participants were asked to formulate both the problem that could be solved by the company's software and the vision on how to address this problem from the perspective of multiple users outside of the organization. This was done by asking the participants to work individually and complete a short narrative. It was important that the participants did not focus on the same user profile but rather considered multiple perspectives (e.g., a specific work role, customer, or customer segment). For example, as an activity to establish a shared understanding of the perception of the current problem, the following narrative template was completed (Figure 2).

DEFINE PROBLEM

The current [process/workflow/solution] is leading to [negative business result] because [specific people] currently can't [measurable behavior]

The current [solution A] with workarounds is leading to operational risks and poor workflows because [work roles B and C] cannot manage [functionality D] and are exposed to signitfact operational risk

Figure 2: Template (left) and example from workshop 2 (right)

The exercise uncovered similar patterns across all five project workshops showing how the current solution was described as inefficient manual processes, workarounds and operational risks. Figure 2 shows an example of how a participant considered the current solution from various outsiders' perspectives (work roles B and C) and inspired an empathetic aspect of the risks as seen by customers.

4.3 Thinking across temporalities

The storytelling activities in the workshops served as a frame for the participants to tinker with different temporalities. Starting with the current situation of the organization, the participants were asked to imagine a desirable future outcome emerging when completing the project (Figure 3).
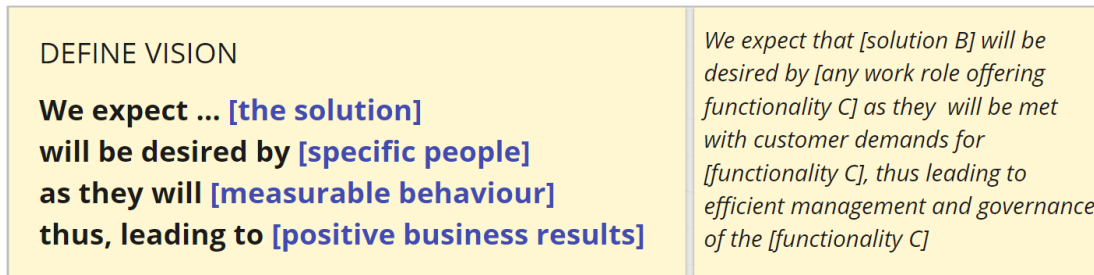
DEFINE VISION **We expect ... [the solution]** **will be desired by [specific people]** **as they will [measurable behaviour]** **thus, leading to [positive business results]**	*We expect that [solution B] will be desired by [any work role offering functionality C] as they will be met with customer demands for [functionality C], thus leading to efficient management and governance of the [functionality C]*

Figure 3 Template (left) and example from workshop 5 (right)

Figure 3 shows an example from workshop 5. The characteristic of thinking through temporalities did not only invite participants to focus on the service design of the solution but also pointed inward to organizational challenges of transitioning towards delivering projects with the new process. Participants were invited to share assumptions of why the project might fail and how to mitigate the risks (Figure 4).

DEFINE ASSUMPTIONS & RISK **The biggest risk we face is...** **Imagine we see the future and it shows** **we've failed: why?** **What is the most important thing we need** **to learn?**
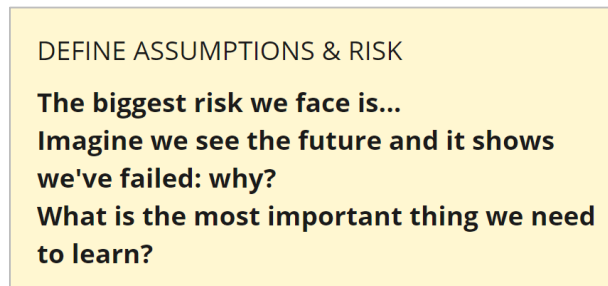
Figure 4 Template

The pattern across workshops showed that participants worried about having enough resources and were curious to learn about the project's scope and to understand how the project might evolve into something that can have a bigger positive impact on the life of the customers and organization.

4.4 Mediating the interaction

The third characteristic focuses on techniques that invited participants to engage on equal terms. The interaction in the workshops was mediated by using a virtual tool and activities. The group exercises were all completed by using a timeboxed structured brainwriting approach. As a technique, brainwriting helped build shared understanding amongst participants. In timeboxed sessions, each participant was asked to complete a sentence independently. This technique meant that each participant was given a set time to complete a writing prompt and then a set time to read aloud their stories to the team. The mediated format helped establish a space where each participant took part on equal footing and created a sense of collaboration. The virtual environment meant that participants could not physically see each other but 'hide' behind their virtual avatars. Nonetheless, participants demonstrated being at ease with expressing their hopes and frustrations from being part of the project team. For example, one participant noted down that they were struggling in front of clients (workshop 4). The workshops offered a "safe" or "open" space to vet fears and concerns while also allowing participants to speak their minds and share ideas on how to reframe the current situation.

5. Discussion

Transitioning a company from product centricity to being service-centric requires substantial changes. These changes can have deep implications for the company's processes, structure, and technology. But, more importantly, the transition can affect employees' mindsets and routines. The ability to think strategically has been proposed to help individuals during times of uncertainty. Our study extends and contributes to existing work on strategic thinking (Srivastava & D'Souza, 2021) by showing how characteristics of design workshops can support individuals to think in a strategic way about a company transition. We elaborate on our argument below.

Including multiple perspectives

Delivering an enterprise software solution to a diverse customer segment operating in a complex environment requires multiple disciplines to collaborate and a holistic, empathetic understanding of customer's challenges. For a company transitioning to services, it is important to integrate an outside-in perspective in its organizational processes (Polaine et al., 2013). The workshops encouraged participants to think beyond a current situation and created a safe space where participants could bring and appreciate multiple, contrasting perspectives on the project. This means that participants were asked to not consider the product itself, but to consider it from the perspectives of someone else. This brought forward a diversity of views both external to the project (e.g., customers, end-users) as well as internal voices (management, other team members). This multiplicity broke the participants' pre-existing cognitive biases (Liedtka, 2014) and rendered the company offering as a complex system, whose functioning depends on the views and actions of a multitude of actors with their own needs and wants. As such, exposing and inviting participants to include multiple perspectives supports the systems-thinking dimension (Srivastava & D'Souza, 2021) as participants shifted between zooming in on internal perspectives within the organization and zooming out on external perspectives, such as the market. An important aspect of systems thinking is precisely the ability for managers to develop an understanding of interdependencies within the organization and across organizations (Srivastava & D'Souza, 2021).

Tinkering with temporalities

Adopting and integrating divergent views is an important aspect of strategic thinking (Srivastava & D'Souza, 2021). Aside from embracing multiple, contrasting perspectives on the projects, the workshops also tinkered with contrasting temporalities. The changes of a company in transition towards a new way of operating can unfold along multiple trajectories. By using a hypothesis-driven approach in the workshops, participants diverged into possible ways in which the project could unfold and competing perspectives were compared. Participants were guided through exercises that, at times, were grounded in the present while other times considered future possibilities. In this way, the format of the workshops probed participants to play with different time horizons through juxta positioning, e.g., the current situation vs. a vision for the future, what we know vs. what we do not know, risky assumptions vs. learnings needed. Through this format, the workshops fostered and supported the 'divergent thought processing' dimension (Srivastava & D'Souza, 2021) as participants included and compared multiple perspectives and opportunities while also selecting and deciding how to progress. The outcomes of the workshops (e.g., considerations on problems, visions, assumptions and risks) allowed for the identification and inclusion of diverse perspectives that assessed the organizational situation.

Mediating the interaction

Through mediated interaction, the workshops created a space for participants to safely share their beliefs and perceptions related to the restructuring of a process focusing on being service-centric. Through storytelling techniques, participants were offered an opportunity to share their experiences

in a way that balanced reality with imagination. The fictional aspect of these stories helped mediating participants' frustrations and critiques, as the stories offered sufficient distance from the participants' reality and mediated a space through which sharing experiences could be done in a less direct way. While scenarios and narratives are common design tools (Buehring & Bishop, 2020; Stickdown & Schneider, 2012), our case showed that they can also help to translate individuals' tacit knowledge in a more explicit way. As such, they can support individuals in their reflective thinking dimension (Srivastava & D'Souza, 2021) as they expose participants to other participants' perspectives while also reflecting on their own.

The format and use of virtual tools gave participants equal access to discuss and share hopes, dreams and fears in transitioning the company towards services. The workshops supported a collaborative reflective practice as individuals were invited to complete the storytelling prompts in writing by building on their knowledge about the projects and the organizational situation. In turn, these reflective components allowed for team collaboration and interactions with the experiences of other participants.

6. Conclusion

To conclude, for an organization transitioning from product centricity to services, we have argued that design workshops can support three dimensions of strategic thinking (systems thinking, divergent thought processing and reflection) by (1) deliberately pushing participants to adopt a view of their organization as a complex, multi-perspective system, (2) by inviting them to think through different temporalities and (3) by creating a safe space for expression and collaborative reflections.

We qualify this study as preliminary and acknowledge the limitations of our findings. For future research, it would be relevant to look more deeply into some of the specific tensions that can be elicited by design. In this sense, theoretical conceptualizations on creating productive tensions (Calabretta et al., 2017) or on the co-existence of multiple characterizations of temporalities (Czarniawska, 2004) can be used as analytical lenses to go deeper into our study.

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Publication 3

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Engaging with competing demands in systems through design: Fostering a paradox lens

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Engaging with competing demands in systems through design: Fostering a paradox lens

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Abstract: This paper aims to foster a paradox lens on competing demands to ensure their productive engagement in design. Competing demands are inevitable and ubiquitous features of today's systems. Thus, being subject to competing demands is a pervasive and inherent feature of designerly work. Drawing from organizational studies, we first outline four main streams of competing demands underlying today's systems; related to time, cognition, social interactions, and focus. We demonstrate the importance of a purposeful conceptualization of competing demands by exemplifying how different conceptualizations can lead to different responses. We suggest employing a paradox lens on competing demands, which stresses that seemingly contradictory or even mutually exclusive factors can and ought to coexist and therefore should be leveraged simultaneously. Through a series of research-through-design experiments we explore how framing competing demands according to paradoxes impacts the way they are approached in design practice, and how paradoxes can be engaged with through design.

Keywords: Design research, system-conscious design, competing demands, paradoxes

1. Introduction

Designers are being called to design in more system-conscious and -shifting ways (Drew et al., 2021). According to a commonplace definition, a system is a set of interrelated elements that is organised in a coherent way to achieve a purpose (Meadows, 2008). As systems become more interrelated, complexity increases (Leadbeater & Winhall, 2020; Sevaldson, 2013) and competing demands intensify, being subject to which becomes a pervasive and inherent feature of designerly work (Dorst, 2006). Previously pursuing mainly form-giving aspects, designers are now being urged to develop cognitive capabilities that allow them to simultaneously hold in mind and balance various diverse, often seemingly conflicting, yet interrelated demands in a more integrated manner (Dorst, 2019). As a result, discourses addressing competing demands have gained considerable attention within design research and practice, which is not not only mirrored by this track theme. For example, Johansson et al.

(2017) report about competing demands in a healthcare service design project related to the explicit goal of developing new services versus a hidden agenda of wanting to support new ways of working. Tromp & Hekkert (2014) point out a competing demand underlying the predominant notion of designing for the prevention of undesired consequences rather than for the realisation of desired ones, and Buchanan (2019) foregrounds the challenge of designing for *what is*, while also considering proactive design approaches addressing *what if*.

Synthesizing from organisational studies, section 2.1 suggests a categorisation of competing demands according to four streams; related to time, cognition, social interactions, and focus. In section 2.2, we stress the potential of developing a clear and coherent conceptualization of competing demands within design. In section 2.3, we first integrate the notion that viewing competing demands through a paradox lens is productive. Then we articulate the research gap that this paper explores, i.e., how conceptualizing competing demands according to paradoxes changes the way they are approached in design practice, and how paradoxes can be engaged with through design. Section 3 describes the research methodology and section 4 presents the findings. Section 5 discusses the implications of the research, and section 6 concludes by outlining limitations and future research directions.

2. Literature review

2.1 Competing demands as inevitable and ubiquitous features of systems
Organizational studies have conducted extensive research on competing demands (e.g., Calabretta et al., 2017; Clegg et al., 2002; Dameron & Torset, 2010a; de Wit & Meyer, 2010b; Lewis, 2000; Poole & Van de Ven, 1989; Smith & Lewis, 2011; Smith & Tracey, 2016). Synthesizing from this body of research, one can identify four distinct, yet interrelated, streams of competing demands; related to time, cognition, social interaction, and focus. Table 1 elaborates on them.

We suggest that these four streams are not only present in organizations but manifest in socio-ecological, -technical, -political, and -economic systems as well, and are therefore at the core of designerly work aimed to shift those systems (Drew et al., 2021). Put differently, we pose that designing in system-conscious and/or -shifting ways (ibid.) comes with engaging with competing demands. Therefore, we aim to help develop a better understanding of competing demands to create a coherent body of design theories and practices that will enable productive engagement with these demands.

*Table 1. Four main streams of competing demands synthesised from organisational studies with ex-
amples of how these streams are mirrored in discourses in design.*

Competing demands related to …	Description of competing demands	Examples of how the competing demands are mirrored in designerly and/or societal discourses
Time	Competing demands related to time are linked to continuously having to shift between and navigate across different time horizons, namely reflecting on past experiences, present realities, and envisioning and synthesizing desirable future states (Bonn, 2005; Bühring & Liedtka, 2018; Heracleous, 1998; Liedtka, 1998; Matic & Matic, 2021; Neuhoff et al. 2021; Pisapia et al., 2005).	The design field has for long been and is increasingly stressing the mismatch between the future we are creating and the future we must create (e.g. Balamir, 2021; Papanek, 1973). Drew et al. (2021) note the discrepancy between current business models and the kind of longer-term engagement that is needed for a sustainable future; and the demand that is currently presented as most pressing is "to meet the needs and aspirations of the present without compromizing the ability to meet those of the future'' (WCED, 1987, p. 43).
Cognition	Competing demands related to cognition are linked to the need to constantly shift, differentiate, think beyond, and integrate various diverse modes of thinking and doing to reframe a situation in a given context (Neuhoff et al. 2021; Pisapia et al., 2005; Srivastava & D'Souza, 2021).	Design researchers have for long been stressing the importance of harnessing the interplay of divergent and convergent thinking (Cross, 1985) and, therefore, created a structured framework in which design methods support the respective modes within design practice (Cross, 2008; Drew, 2019).
Social interactions	In human-shaped systems (Drew et al., 2021), competing demands related to social interactions are inevitable. They are linked to the recursive interaction, analysis and utilisation of one's own beliefs, perceptions, and experiences, and those of others, to synthesise new knowledge and arrive at conclusions (Dameron & Torset, 2010a; Matic & Matic, 2021; Neuhoff et al. 2021; Smith & Lewis, 2011; Srivastava & D'Souza, 2021). Pisapia et al. (2005) note that interaction can occur introspectively, i.e., within one's own mind, and extrospectively, in community with others and with things external to one's own mind.	Also in current design debates, systems are associated with assemblages of different understandings, intelligences, perceptions and worldviews, which must be equally assessed and valued, including those of non-human and non-living actors (Drew et al., 2021). Simeone (2016) offers a take on design as translational practice in which the material dimension is key in (dis-) connecting and negotiating meaning, interpretations, and ways of operating among various stakeholders.

| Focus | Competing demands related to focus result from the need to recognise, stay open, and make sense of issues and events happening across the system's scales. Dealing with these kinds of competing demands requires the ability to zoom in and out, and to recognise interdependencies within the system and relationships among the system's elements that, taken together, comprise the whole (Liedtka, 1998; Neuhoff et al. 2021; Srivastava & D'Souza, 2021). | The design field continuously explores approaches, methods, and techniques that enhance designers' abilities to cope with systemic complexity (Sevaldson, 2011), and to shift systems into more desirable states (Drew et al., 2021). Approaches such as systems-oriented (Sevaldson, 2011), or system-shifting design (Drew et al., 2021) emerged. The former approach proposes e.g. GIGA maps, i.e., extensive maps that visualise multiple layers and scales of a system, to investigate and grasp relations between seemingly separate systemic elements (Sevaldson, 2013, 2011). |

2.2 The potential of conceptualizing competing demands within design research

Organizational studies contend that a clear conceptualization of competing demands, e.g., according to dilemmas, conflicts, dialectics, etc., is important, as the conceptualization prescribes how the demands are responded to (Achtenhagen & Melin, 2003; Gaim & Wåhlin, 2016). While defining each of these concepts goes beyond the scope of this paper (for a more detailed conceptual depiction see Gaim & Wåhlin, 2016), we want to illustrate that notion with an example. Within organizational studies, dilemmas, for example, are often seen as either-or situations in which one [unpleasant] alternative must be favored at the expense of another (Gaim & Wåhlin, 2016). They occur in situations, where it is difficult to choose which demands to attend to (Achtenhagen & Melin, 2003). This binary either-or characterization of dilemmas implies the inclination towards one of the elements to reduce complexity, uncertainty, and suppress tension (Gaim & Wåhlin, 2016).

In design research, competing demands are more rarely conceptualized but rather interchangeably referred to as, for example, dilemmas, conflicts, dichotomies, or dialectics, or in terms of their underlying tensions (e.g., Bau, 2010; Björgvinsson et al., 2010; Dorst, 2006; Ozkaramanli et al., 2020; Wong & Tan, 2021). Design scholars increasingly recognize the productive potential embedded in the space between competing demands. For example, dilemma-driven design utilizes personal dilemmas as stimulation for creativity and reflection (Ozkaramanli et al., 2020). Emilson et al. (2011) use prototyping to evoke, highlight, and explore dilemmas and opportunities connected to moral implications or stakeholders' different agendas in design for social innovation. Similarly, Björgvinsson et al. (2010, p. 4) utilized socio-material assemblages that deal with "matters of concern" (Latour, 2005) to surface dilemmas. Inspired by management literature, Bau (2010) suggests designing for strategy dichotomies and paradoxes to approach the fuzzy front-end of innovation and design projects. The RSD symposium held in November 2021 in Delft was titled "Playing with Tensions", and Drew et al. (2021, p. 56) describe how engaging with competing demands should resemble a "graceful dance" between poles. All these scholars point towards an underlying value of

competing demands, something that is fruitful, can be leveraged, embraced, and engaged with through design.

We believe that in an era in which competing demands are here to stay, in an era in which their potential is increasingly recognized and aimed to be leveraged, it is important to foster a clear and shared conceptualization that, per definition, permits the simultaneous co-existence of multiple competing demands. Such a conceptualization would open an opportunity space in which we can more productively and sustainably explore, catalyze, and leverage approaches to them (Jarzabkowski et al., 2013; Smith & Lewis, 2011), approaches that utilize the potential of competing demands and that allow designers to play with them (van der Bijl-Brouwer, 2021), and dance with them (Drew et al., 2021).

2.3 Fostering a paradox lens on competing demands

Inspired by organizational literature, we contribute to the debate by proposing to view competing demands through a paradox lens. A paradox is a situation in which two or more seemingly contradictory, or even mutually exclusive, yet interrelated, demands are held to be true simultaneously and over time (de Wit & Meyer, 2010a; Smith & Lewis, 2011). A paradox lens implies "rethinking the relationship between competing demands and exploits the complementarity and interdependence" (Gaim & Wåhlin, 2016, p. 35). Engaging with paradoxes involves embracing and evoking the complexity, uncertainty, and tensions that lie in-between the competing demands, and recognizing that these demands can and ought to coexist (Clegg et al., 2002; de Wit & Meyer, 2010b; Gaim et al., 2018; Smith & Lewis, 2011). A paradox implies shifting from an either-or, if-then logic towards a synthesis approach that draws on both-and, best-of-both, and neither-nor thinking that simultaneously engages and fulfils all demands to their full potential (Clegg et al., 2002; Dameron & Torset, 2010b; Dorst, 2015; Gaim & Wåhlin, 2016; Smith & Lewis, 2011). Thus, a paradox lens is a cognitive meaning- and sense-making frame, i.e., an applied view on the problematic situation (Dorst & Hansen, 2011), to make it possible to productively enact complex systems (Dameron & Torset, 2014; Luscher & Lewis, 2008). Evidence illustrates that organizations, which approach competing demands as paradoxes, i.e., who juxtapose, reconcile, and simultaneously engage both forces, are more successful in today's constantly changing environments (Gaim et al., 2018; Lewis & Smith, 2014; Tse, 2013).

While referring to competing demands as paradoxes is not entirely uncommon in design, it is quite common to equate them with, or interchangeably refer to them as for example dilemmas (as outlined in the previous section). Some scholars, such as Drew et al. (2021) note a conceptual difference, when they describe some competing demands as non-binary positions that the designer should not try to find compromise between: "Rather, they form a paradox from which a new type of skill or capability can grow, like a graceful dance between these spaces" (p. 56). Also, Dorst (2006) contributes to decluttering the lexicon. Inspired by Whitbeck's remark (1998) that "[t]he initial assumption that a conflict is irresolvable is misguided because it defeats any attempt to do what design engineers often do so well,

namely, to satisfy potentially conflicting considerations simultaneously", Dorst makes use of a paradox lens to address situations where designers and engineers have to deal with competing demands "through their design thinking" (p.14). He recognizes that "[t]he creation of solutions to a paradoxical design situation often requires the development and creative redefinition of that situation" (p.14) which poses opportunities within and for the design process. DiSalvo (2016) employs design to deliberately construct irony. According to him, irony entails paradox, and paradox ignites inquiry. As such, for DiSalvo, using design to construct irony is a way to perform inquiry: "It is the perceived inconsistency of a situation, and the desire to engage, understand, express and appreciate the conflicting aspects [...] that [...] motivate the investigation and experimentation that comprise inquiry" (p. 147).

We have tried to bring forward the argument that the distinction between the various conceptualizations of competing demands is important. Inspired by organizational literature we integrated a paradox lens as a productive conceptualization of competing demands. To emphasize the integration of a paradox lens we will from here on refer to the four competing demands outlined in section 2.1 as paradoxes, namely the time paradox, cognition paradox, social paradox, and focus paradox. We think it is precisely this conceptual sensitivity that allows us to productively engage with competing demands, i.e., to synthesize, balance, and play with the complexity and tension that is situated in the space between the competing demands. However, what remains still underexplored is how a paradox lens may be enacted in practice and how design can be utilized to productively engage with paradoxes. Therefore, we pose the following research questions:

How does conceptualizing competing demands according to paradoxes impact the way they are approached in design practice? How can paradoxes be engaged with through design?

3. Methodology

3.1 Approach

Our study employs an abductive approach that draws on theoretical and empirical inputs (Van Maanen et al., 2007). On the one hand, it builds on discourses on paradox theory in organisational studies (Lewis & Smith, 2014; Smith & Tracey, 2016). On the other hand, and noting the need to integrate these theoretical discussions in practice (Friedman, 2008), our study combines them with empirical input by employing a 'research through design' approach that draws on the implicit knowledge of design through contextual design experiments (Bang & Eriksen, 2014; Frayling, 1993). Applying a research-through-design approach enabled us to investigate the research question in a process that posed us with an opportunity to reflect on the process and the specifics of the design (Bang & Eriksen, 2014). We chose to conduct these investigations in a real-life context to ensure their relevance. *How* and *why* questions were asked to open a space in which a theory-building process could occur (Eisenhardt & Graebner, 2007). Moreover, the design experiments supported the explor-

atory nature of our research. The embedded position of the authors allowed for the generation and analysis of rich qualitative material through participant observation (Czarniawska, 2012), two focus groups (Frey, 2018), and interviews (Trochim et al., 2016).

3.2 Research context

This paper draws from insights from eight design experiments. The experiments were staged through a series of participatory design workshops that the authors conducted and in which people came together to explore issues of concern. Five experiments took place in an organization as part of an ongoing three-year action research project (Frayling, 1993). Three experiments were embedded in an academic context, i.e., in classes for service design master students. In two of the experiments conducted in academia, students were asked to develop future-proof circular city concepts. In the third experiment, the assignment was to develop a business idea with positive social and environmental impact.

The experiments were organized around the four paradoxes, i.e., we staged a process that attempted to deliberately expose the participants to one or more of the paradoxes outlined in section 2.1. The participants worked co-creatively in groups and employed designerly approaches to engage with the paradoxes and accomplish the task of the respective experiment. Table 2 describes the designerly approaches used in the experiments, most of which have been inspired or adopted from other design methods or approaches. Table 3 summarizes the research-through-design experiments and specifies which designerly approaches were employed.

Table 2.   Designerly approaches employed in the design experiments.

Designerly approach	Description
Storytelling prompts	Participants fill-in incomplete sentences to create a short story from the perspective of someone else focusing on a current problem, future success, and risks.
Time Travel	Meditation-inspired visioning exercise using storytelling, breath, and sound to make people envision various future states as alternative entities to the present.
Trend exploration	Identifying signals, trends and drivers of change and prompting participants to reflect and speculate on their systemic implications.
Scan cards	Participants write scan cards to reflect, speculate on, and communicate possible implication of various trends and drivers of change.
Future scenarios	Participants write future scenarios to reflect, speculate on, and communicate possible dystopian as well as utopian futures.

Policy interventions	Prompting participants to ideate and propose policy intervention that can potentially contribute to desired systemic change.
Thinking hats	Prompting participants to take on perspectives of diverse and excluded actors (human, non-human, non-living) to make them reflect on, and empathize with other point of views.
Artistic prototypes	Collectively developing artistic prototypes that communicate an idea to integrate and nurture emotive, intuitive, and creative thinking.
Brainwriting	Idea generation exercise where participants individually produce ideas in written form before sharing with a group.
Mind map	Visual representation of systemic relationships.

Table 3. Overview of design experiments.

No. of experiments	Context	No. of participants	Date	Duration	Designerly approaches employed
2	Academia	32 – 40	02/03 2021	3 hours	Trend exploration, future scenarios, policy interventions, time travel
1	Academia	28	09/2021	1 week, full time	Trend exploration, future scenarios, thinking hats, artistic prototypes, mind map
5	IT company	8 – 13	10/2020	1,5 hours	Storytelling prompts, brainwriting

We conducted cross-context experiments to increase the generalizability of the generated insights, e.g., to understand whether the same effects of a given design intervention occur in other contexts and to another set of individuals (Blair & McClendon, 2021). As such, our study tries to generate knowledge through design experiments that can, potentially, be employed elsewhere (Koskinen et al., 2013).

4. Findings

In the following, we present our analysis of the eight experiments focusing on how conceptualizing competing demands as paradoxes changes the way they are approached in design practice, and how paradoxes can be engaged with through design.

4.1 Time paradox

The time paradox was established by asking participants to thoroughly explore and navigate multiple time horizons, to stay open while simultaneously make sense of emergent realizations and their contextual and temporal implications. For example, in one experiment participants were asked to iteratively explore and speculate about how various present cross-contextual trends and signals might impact a specific context in the near and far future. Based on these explorations participants had to invent a service idea that was situated between and addressed both present and emerging challenges as well as present and future opportunities. One participant reflected on the paradoxical nature, the complexity, and tension of that task: "It had at times felt like a roller-coaster. Creating a service idea, re-evaluating the idea every time some numbers or realization of the reality changed the foundation". The approaches that were employed to productively engage with this paradox were trend exploration, time travel, scan cards, future scenarios, and storytelling prompts.

That some approaches worked better than others became apparent, for example, when one participant asked: "Do we have to develop future scenarios now?", whereupon the facilitator answered: "No, you can also choose any other format to capture your speculations about the future, for example the scan cards". The participant seemed relieved and said: "Good, because that would have been difficult". In the conversation and process that followed, it became evident that scan cards (Figure 1) or storytelling prompts (Figure 2) appeared to be perceived as more fluid, non-binding, and agile formats, compared to scenarios. Opposed to scenarios, scan cards, for example, do not rely on a well-written narrative, but value and promote incompleteness and imperfection. They are quickly developed and revised, thereby allowing groups to collaboratively elaborate on multiple temporalities and interpretations. As such, they prevent a group from committing to a single fully-fledged scenario. Instead, they nurture an openness and continuation of explorations, interpretations, and speculations. In that way, these more fluid approaches placed more value on the process in which a group collaborates to derive meaning, rather than on the actual outcome.
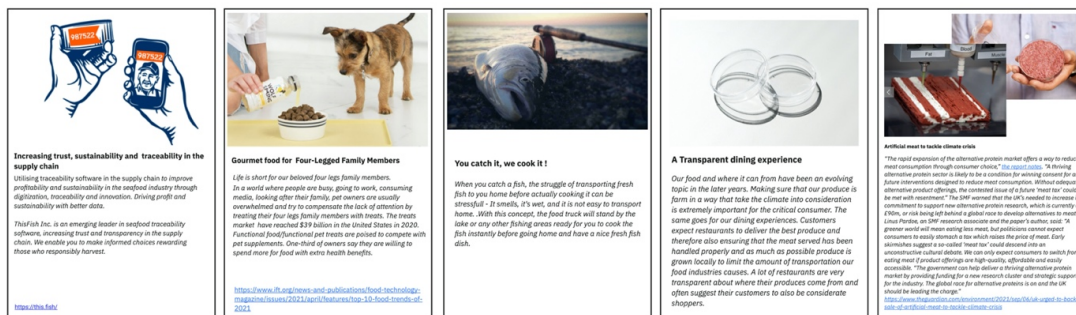

Figure 1. Scan cards.

Figure 2. Storytelling prompts.

4.2 Cognition paradox

The cognition paradox was evoked by nurturing cognitive processes that are associated with, both, divergent as well as convergent thinking. While divergent thinking is linked to, for example, being unconventional, shifting perspective, seeing the known in a new light or taking risks, convergent thinking is associated with being logical, clustering similar elements, recognizing patterns, and playing it safe (Cropley, 2006). While design is often characterized in terms of a structured framework that harnesses alternating modes of divergent and convergent thinking (Cross, 2008; Drew, 2019), we aimed to nurture more continuous and fluid cognitive shifts that at times might even feel random. For example, participants first had to work analytical and make rational financial calculations and simulate expected cash flows in excel to develop a sustainable business model. Thereupon, we asked them to co-create an artistic physical prototype to explore, represent and convey the feelings that a potential customer should have and should not have when interacting with the service they were inventing. The development of the prototypes was a radical break from the previous exercise and was deemed paradoxical in that it begged the question of why engage in art while developing a serious business idea?

Figure 3 shows photos of the process in which participants developed artistic prototypes as a vehicle to explore and communicate the feelings their service should or should not convey to its potential users. Various participants shared reflections, such as "[w]orking analytical within excel with group members was tough but the art-based, creative approach was like a refreshing, recovering experience". Another participant emphasized that many novel and rich ideas emerged during the process, in which the other participants interpreted the artistic prototypes in relation to the feelings it nurtured in them. While initially not really seeing the point in switching so radically between activities, the second exercise fostered a creative and energetic atmosphere in the room, in which the participants appeared to loosen up and started looking at their ideas from new angles. As such, the designerly approaches aided in tuning and balancing the cognitive modes of the participants and (re-) directed them in various interpretive directions. This was also voiced by the participants (e.g., "it created a nice

change when the work started to be too one-sided and when we, in retrospect, fell into a more single-minded state. It was nice to get an unnoticeable external factor that gave us a fresh perspective").
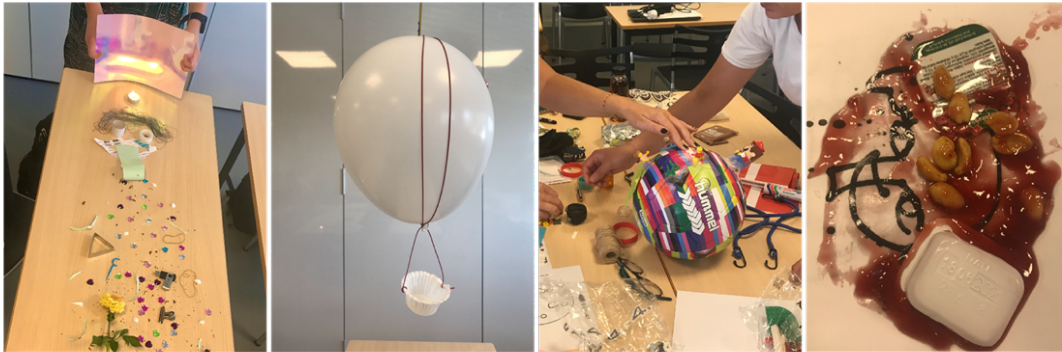

Figure 3. Artistic prototyping. From left to right: Artwork representing curiosity; artwork representing emptiness; participants in the prototyping process; artwork representing disgust.

4.3 Social paradox

The social paradox was staged by nurturing awareness and interaction of both the participants' own beliefs, perceptions, and experiences and those of others. For example, we used the time travel or brainwriting approach to create room for mindful observation of personal feelings, desires, and fears in a process based on intensive collaboration and social interaction among participants. Another approach was to ask participants to adopt thinking hats of diverse actors who had not been considered as a beneficiary of the service idea that was being developed. These actors included human but also non-human, and non-living actors, such as birds, rivers, or the air. The aim was to make participants reflect on the diverse consequences of what they were designing. Approaches like these have led participants to be attentive and curious, to engage with and seek out diversity of perspectives rather than being trapped in a single perspective. Figure 4 exemplifies the kind of realizations that emerged from the thinking hats approach. The groups used it to revise their service idea to include stakeholders not previously considered.

Figure 4. Exemplary realization emerging from the thinking hats approach.

Having to assess and value an assemblage of diverse perspectives was deemed a fruitful tension ("a lot of questions came up […] which need answers and highlight blind spot not considered before"; "I think changing perspective and ways of thinking has been really useful in the design process to investigate and consider different aspect, uncover other possible ways and understand what works and what doesn't"). One participant reflected that this process "can eat up the energy of the group members". This exemplifies the importance of balancing the paradox, i.e., nurturing appreciation of diversity but preventing a feeling of being blocked by it.

4.4 Focus paradox

The focus paradox was enacted by asking participants to engage with various issues across systemic scales, to zoom in and out, to acknowledge details while considering how these details relate to broader dimensions of a system. For example, one experiment asked participants among other things to work on the nitty-gritty details of a business idea, to situate its business model in relation to the market and potential user groups, to identify a desirable future vision to contribute to with the idea, and to analyze the social and environmental impact of that idea. We aimed to make participants gain insights into how their idea relates to the system it is situated within. One participant expressed that "it can be challenging to shift between the different parts of the project". A way participants engaged with this paradox was through mind maps. Figure 5 shows exemplary mind maps that a group employed to explore and visualize how other industries relate to the industry they were aiming to situate their business idea in (food service industry). The mind maps were then enriched and augmented with e.g., scan cards (Figure 1) that communicated speculations about how various trends and signals identified in the industries could potentially impact the food service industry. A pattern we noticed across some groups is that the process of exploring the systemic consequences of certain trends sometimes resulted in ideas aimed to promote system learning in others. For example, one group, motivated by the disconnectedness between the

production and consumption of food, developed a concept that aimed to strengthen knowledge about the origins of food by building bridges between families and farms providing sensory and experiential visits.
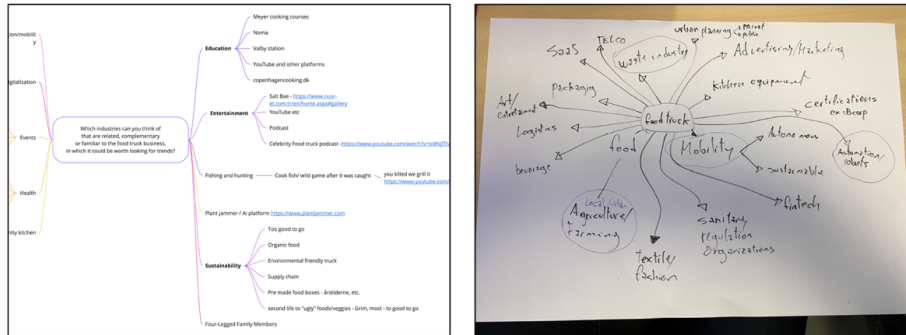

Figure 5. Mind Maps.

What was generally recognized as important when engaging with paradoxes is moving beyond a right or wrong thinking into a state that embraces complexity and tensions, recognizes them as inevitable, allows for mistakes, and balances them by continuous iteration ("[T]he process [...] allowed us not to think about whether we were doing things wrong but helped to push us, to give everything a go, and iterate along the process as we made mistakes. I think that enabled us to help navigate the tensions that arose and facilitated the process").

5. Discussion

This paper explored the following research question: *How does conceptualizing competing demands according to paradoxes impact the way they are approached in design practice? How can paradoxes be engaged with through design?*

A premise for a productive engagement with paradoxes in design was an understanding of what constitutes a paradox, i.e., the coexistence of seemingly contradictory poles. Participants, who were aware of the nature of paradoxes, tended to embrace the paradox as more harmonious, comparable to yin and yang, and appreciated the tension underlying the paradoxical elements as creativity-nurturing. Those participants could engage with the paradoxes longer, more consistently and enthusiastically.

In line with DiSalvo's (2016) findings, we observed that when we stage paradoxes, we nurture inquiry. The inconsistency and friction between the paradoxical elements ignited a will and curiosity, to explore, understand, and engage with the paradox. Design in this context did not emerge as much as a problem solving approach, but rather as a dialogic practice, enabling a fluid conversation with the respective contradictory elements. Taken together, design resembled continuous and multidimensional investigative moves that aimed to reveal and unfold the ambiguous (inter-)relationships and -dependencies constituting the paradox.

This multidimensional dialogue allowed for new understandings, thoughts, and insights to occur that could not have emerged from a singular engagement with an individual element. Synthesizing from our experiments, Table 4 summarizes the role that design played in engaging with the respective paradoxes. Our research points towards a role of design, less in terms of its ability to support decision making and problem solving, but rather to stimulate fluid, multidirectional, and relational inquiries performed in the ambiguous in-between spaces constituting a paradox. These inquiries allow for multiple interpretations to emerge and co-exist, prevent inertia caused by commitment, and permit actors to reach temporal agreements that can be revised as new understandings occur. Anchoring our research to designerly debates (DiSalvo, 2016; Dorst, 2019), we argue that staging paradoxes has the potential to decelerate the designerly tendency of solutionism and counteract the impulse to jump to conclusions all too easily.

Table 4. The role of design in engaging with the respective paradoxes.

Competing demands conceptualized according to paradoxes	The role design played when engaging with the paradox
Time paradox	Design as navigational practice stirring diachronic investigations and interpretations of multiple temporalities and time horizons.
Cognition paradox	Design as stimulating practice allowing convergent as well as divergent modes of thinking and doing to simultaneously emerge and be sustained in an integrative manner.
Social paradox	Design as reflective practice activating, juxtaposing and interweaving partially consistent and partially conflicting, introspective and/or extrospective perspectives, values, experiences, belief systems, mental models.
Focus paradox	Design as a relational practice nurturing awareness of and moves along the interconnections and interrelations of the systemic dimensions.

The simultaneous engagement of various paradoxes requires processing and engaging with considerable amounts of complex, inconsistent, and ambiguous information (Tse, 2013). Design processes and artefacts materialized this information and supported the participants to experiment with and between them. A characteristic deemed important among many of the designerly approaches was that they did not impose a singular commitment but allowed for multiple interpretive directions. In that way, the focus was not so much on the output (e.g., on crafting a singular scenario), but more on fluid shift between the paradoxical poles aiming to inquire and (re-)frame the paradoxical space. If we use the metaphor of Drew et al. (2021), engaging with the paradoxes indeed showed resemblances to dancing.

We recognized that most participants, after going through the process, acknowledged and appreciated the creative potential underlying the paradoxes. Paradoxes are an inherent feature of complexity. As such, staging paradoxes can, potentially, be harnessed to train people to embrace complexity, which is a prerequisite for a productive designerly engagement with the world.

Competing demands are becoming more and more pervasive. Our research expands our understanding of how to productively engage with competing demands through design. We have introduced four categorizations of competing demands and argued for why they should be looked at through a paradox lens. We have shown that conceptualizing competing demands as paradoxes leads to inquiry rather than problem solving in design practice. This inquiry is supported by design that appreciates the coexistence and engagement of multiple opposites and takes seriously their underlying potential.

6. Conclusion

In an era, in which complexity increases and competing demands intensify, we believe that methodologies and approaches that more deliberately focus on competing demands in terms of paradoxes are needed. In that way we may foster a 'paradoxical thinking' capacity or mindset, i.e., one that is not afraid of but embraces and actively engages with complexity and that recognizes, aims to reveal, and leverage the productive potential underlying the oppositions.

A limitation of our work may be underlying the four streams of competing demands that we outline in Table 1. This list should not be understood as exhaustive, but rather as an invitation to use it as an initial lens that is open to revisions. Potentially, there are other streams of competing demands beside the ones we have outlined that deserve examination.

One could claim that another limitation of our study is that we deliberately created paradoxes that participants had to deal with during the design process, although we argue that paradoxes are inevitably present in systems. As this theory-building process is still in its infancy, we expected that a controlled environment is more likely to generate information that could help us find answers to our research questions. However, we contend that future studies would benefit by a comparative analysis that directs awareness to and examines those paradoxes and tensions that are embedded in the respective design context.

Our study sheds light on the role of design in confronting paradoxes. It highlights how design can support greater openness to and engagement with paradoxical poles. We suggest that future research further explores how design can support efforts to integrate opposing poles, foster imagination, and unconventional thinking, and find creative solutions to fill the promising interstices of paradoxes.

We acknowledge that our ideas and findings are preliminary, and that future research is needed to validate them. This paper should therefore be considered as an invitation to discuss, challenge, and forward our thoughts, claims and arguments.

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Fostering resilience: The potential of design to support strategic agility

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Fostering resilience: The potential of design to support strategic agility

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Abstract: 'Strategic agility'– i.e., how organizations can strategically plan and cope with uncertainty through a continuous tuning, monitoring, and re-balancing of their operations – has been characterized as a critical component to foster organizational resilience. This paper aims at investigating whether and how design can support organizations to acquire greater strategic agility. Our analysis is grounded in a case of a globally operating software company that has recently established a design team and introduced design methods in its development processes. The paper shows how design favoured processes that are generally linked to strategic agility (distancing, anticipating, reframing, experimenting, decoupling, and dialoguing). Taken together, these processes were key in building the strategic agility needed in transitioning from a product-centric orientation towards a user- and service-centred approach.

Keywords: Strategic agility; service design; service-centred

1. Introduction

Within management and business studies, the acronym 'VUCA' – volatility, uncertainty, complexity and ambiguity (Bennett & Lemoine, 2014) – is increasingly used to characterize the current environments in which organizations have to operate: interconnected production and distribution pipelines across transnational linkages (Castells, 1996), which have to continuously readapt to ever-changing markets, socio-technical conditions and disruptive events (e.g., extreme weather, pandemics, shortages of raw materials, etc.). These conditions underpin and impact the functioning of businesses, who respond to potentially disruptive patterns by applying new models, methods or frameworks, such as design thinking (Cousins, 2018). Resilience – i.e. "the ability to prepare for and adapt to changing conditions to withstand and recover rapidly from disruptions" (Dragoicea et al., 2020: p. 185527) – is becoming a critical organizational feature (Elali, 2021). Although the concept of resilience has been studied across different fields of knowledge (Ham, 2020; Jabareen, 2013; Liu et al., 2021;

Manzini & Thorpe, 2018), scholars still wonder whether the concept needs to be more clearly defined and operationalized to not become yet another buzzword (Davoudi et al., 2012).

One way to look at how to operationalize and support resilience is by adopting the concept of 'strategic agility'. Strategic agility refers to the ability of organizations to strategically plan, remain adaptive, react fast and shift their business models radically in spite of having to cope with, and manage uncertainty, unpredictable changes, and competing demands (Ismail et al., 2011, Lewis et al., 2014, Mont, 2000; Seetharaman, 2020, Weber & Tarba, 2014). Strategic agility is nurtured through a continuous tuning, monitoring and re-balancing of an organization's operations (Ismail et al., 2011). As a key component to foster organisational resilience (Ismail et al., 2011), the concept of strategic agility has received considerable focus from scholars within both the field of management (e.g. Weber & Tarba, 2014) and design (e.g. Tkaczyk, 2015).

Within design research, a large amount of studies have investigated how to integrate strategy in design (Simeone, 2020), however, little focus has been given to whether the integration of design in organizations can help strengthen their strategic agility. Therefore, we are curious about whether design – seen here as a structured co-creative process based on methods such as user research and user testing, rapid and frequent prototyping, visualization and other modelling techniques (Buchanan, 2004) – may support and strengthen some key components of strategic agility in an organization undergoing profound changes in relation to its business model. We ask this question in the context of a large Danish software company that is shifting its business model from product-centricity towards services and that, until lately, had not employed a design approach in its development processes. Drawing on data from a series of design workshops and reflections emerging from the establishment of a new design team within that company, we *ask whether and how these design processes supported strategic agility*. Our findings are grounded into analytical descriptions of the design process and foreground moments that are deemed relevant to the ability of strategic agility to sustain an organization along a healthy long-term trajectory (Jackson, 2009).

The paper is structured as follows. In section 2, we look more deeply into the concepts of strategic agility and resilience, and we explore how design research has so far referred to these concepts. In section 3, we briefly describe the research setting and methods. Section 4 presents an analytical description of our findings, which will be discussed in section 5, followed by a conclusion in section 6.

2. Related work

2.1 Strategic agility and organizational resilience
Strategic agility is a management concept that describes the ability to "rapidly reposition the organization to exploit new opportunities springing up in the course of non-linear changes in

the environment in which the organization operates" (Elali, 2021: p. 3). Elali (2021) distinguishes between strategic and operational agility. According to Elali (2021), a prerequisite for sustainable operational agility (e.g., imagine a university improving its existing curricula), and long-term competitive advantage, is strategic agility, i.e. a combination of leadership, flexibility, proactivity, and competitiveness (which, e.g., could completely reposition a university by shifting their entire education online). In 2010, Doz & Kosonen presented a leadership agenda framework that conceptualizes strategic agility as the "thoughtful and purposive interplay" of senior managers through three fundamental capabilities: strategic sensitivity, leadership unity, and resource fluidity. Building on this conceptualization, Elali (2021) proposes the following summary of three key components of strategic agility:

1. Strategic sensitivity: "[T]he organization's ability to understand and perceive its external environment and the changes that are occurring to them through openness, sensing, insight, and seizing opportunities faster than competitors" (Elali, 2021: p. 5)

2. Partnership in responsibility and commitment to teamwork (leadership/team unity): "[M]aking decisions in cooperation with agile and highly intelligent work teams and granting them broad powers to solve problems and make decisions" (Elali, 2021: p. 5)

3. Resource fluidity: "[E]ncapsulating the ability of the institution to attract and move flexibly to the resources, skills, and expertise necessary for its survival and the sustainability of its growth and competitive advantage" (Elali, 2021: p. 5).

Strategic agility comes with competing demands and inherent contradictions (Lewis et al., 2014), such as the need for stability versus the need for flexibility, commitment versus change, and established routines versus novel approaches. Strategic agility is linked to the ability of thinking strategically and being proactive and responsive (and thus achieving resilience) (Ismail et al., 2011). Figure 1 shows an integrative summary of key components of strategic agility (strategic sensitivity, leadership/team unity, and resource fluidity) and some activities associated with the three components.

Figure 1. The components and subcomponents of strategic agility. Based on Doz & Kosonen, 2010 and Elali, 2021

The ability of an organization to be strategically agile can be linked to its ability of being resilient (Ismail et al., 2011). Resilience bears many connotations but has its origins in ecology as the persistence of a system (Walker et al., 2004). The idea of 'being resilient' has since made waves through design research as a deliberate and required feature of a system-shifting design practice (Rodrigues, 2020) and is deemed as a "collective capacity for intentional action in responding to ongoing change, coordinated across scales in order to create value" (Rodrigues, 2020: p. 17). Resilience has been described as an outcome of strategic agility and as a capacity in itself that can act as a prerequisite for companies to thrive in dynamic environments (Lengnick-Hall & Beck, 2009; McCann et al., 2009).

2.2 How design research has looked at resilience and strategic agility
For an organization to become resilient, established routines and habits might need to be destabilized in order for new ways of thinking and operating to be established at multiple levels: micro-individual, meso-organisational and macro-system levels (Rodrigues, 2020). Within design research, several studies provide insights into how resilience can be supported through design. According to Wetter-Edman et al. (2017), design processes can help to productively destabilise organizational routines and habits. Harre et al., 2021 indicates the potential of design to facilitate systems thinking, and it has been emphasised that design can enable network relationships to emerge (Rodrigues, 2020; Steen et al., 2011) and support a shift in mental models (Vink et al., 2019). Design capabilities, such as the ability to frame complex problems and envision logical architectures for broad interventions, can be particularly critical for resilience (Morelli et al., 2021).

Some other studies, more broadly, looked at the need to integrate strategy and strategic thinking with design (Cooper et al., 2013; Simeone, 2019). Design provides organizations with the means (i.e. frameworks, methods, and principles) to support an adaptive and emergent strategy, which is "a pragmatic blend of thinking ahead and end-route adaptation" (McCullagh, 2008: p. 67). Design as a practice and as a mindset can support businesses in

becoming more resilient in their ability to steer their processes in a flexible and adaptive fashion (Kempenaar & van den Brink, 2018) and to quickly change and readapt business designs (Van Der Pijl et al., 2016). However, scholars also found that it can be challenging to weave design processes into a company's daily practices and operations (Elsbach & Stigliani, 2018; Seidelin, et al., 2020) as continuous training is needed (Madsen & Lund, 2021).

While design research has closely examined the interplay of design and strategy, not many studies have particularly focused on the concept of strategic agility. Therefore, this is precisely the area of investigation for our paper, which explores the following research question: *How can design support strategic agility?*

To answer that research question, we analyse whether and how design supported a large Danish software company in its ongoing shift from a product-centred focus towards a service-centred offering. The empirical material emerging from the case was analysed according to the three core components of strategic agility – strategic sensitivity, team unity, and resource fluidity. We make use of the subcomponents in Figure 1 to inform a more granular description of how processes associated with the subcomponents were supported by design.

3. Research setting and methods

3.1 Our case
Our case is a global business-to-business software organization headquartered in Denmark successfully delivering an enterprise platform that has been built for many years. In 2015, the organization initiated a transition towards more agile and innovative practices for software development, shifting towards a service-centred (rather than product-centred) approach. To support this transition, two designers were temporarily employed by the company, who joined a pre-existing team of product managers and software engineers. In 2019, the company made a further significant step towards integrating design by establishing a design team which, nowadays, counts 5 designers and 1 PhD design researcher (the first author of this paper). While describing our case, we will refer to three groups of participants: designers, senior management, and product owners. 'Product owner' refers to a role who oversees the development and marketing of a software application. Our analysis will focus on the period in which the company decided to push further on design and established the design team. It is worth noting that, at that time, design was not part of the typical development processes of the company and, as such, most of the employees were not familiar with design methods.

In this paper and within that company, 'design' is used to refer to processes and activities that favour a user-centred and iterative approach to software development and that make intensive use of visualization and early prototyping and user research and testing (Buchanan, 2004). These processes support a distinctive 'designerly' way of thinking and doing (Buchanan, 2015) and aim at producing fitting solutions through a process that alternates moments of convergent and divergent thinking (Cross, 2008; Elsbach & Stigliani, 2018).

3.2 Our research methods

The study is part of an ongoing industrial 3-year action research study (Coghlan, 2019). Action research was chosen as an approach given its attention to problem-solving, multistakeholder collaboration and anchoring of change initiatives through the development of localized solutions; this makes it a promising fit for industry-related collaborations (Coghlan, 2019; Hayes, 2014). The first author is a full member as a researcher in the above-mentioned design team since January 2019. Full membership has allowed her to participate in and observe the design processes through an ethnographic approach (Bryman, 2003). Her role as a researcher has been overt throughout the research project. The foundations of her findings include notes and interviews with designers and product owners in the context of five software development projects carried out within the company. The projects were not studied in situ as they took place in parallel, but our data capture experiences of designers and product owners in retrospect.

This study includes observational notes from the projects and 9 semi-structured interviews (Brinkmann & Kvale, 2018) with designers and product owners. The interviews were conducted by the first author between July and October 2020 and lasted between 60 and 75 minutes. All interviews were audio-recorded and transcribed verbatim. Each interviewee was asked about a specific project in which they had been involved. Questions focused on the participants recalling an activity and the interviewer asking them to describe the activity, the related design artefacts, and their experience at that point in time. In our analysis, we included observation notes from the first author's fieldwork to ensure triangulation (Yin, 2018).

4. Findings

In the following, we describe some key moments in which a designer engaged with product owners and senior managers. The designers introduced a perspective that emphasized a user-centred approach and included activities that favoured the creation of artefacts, such as sketches and refined prototypes, which were used for user research and testing. This approach supported processes, such as distancing and anticipating, reframing and experimentation and decoupling and dialoguing, that, as we will more clearly show in the discussion, can be connected to strategic agility.

4.1 Distancing and anticipating

We start by describing a first encounter with a product owner's customary way of modelling future software features, which was destabilised through operations of visual translation carried out by a designer. A common way for the product owner to represent a potential solution was through a diagram that depicted a software development process from a technical perspective and with low indication of how this process would have implications for its future end-users. In fact, routinely, the perspective of the end-users was not systematically

considered during such development processes. When the designer joined the software development team, she started translating these technical documents and diagrams into paper sketches that visualized an interface and a workflow from the perspective of a potential end-user. On the one hand, the act of conveying and translating the technical diagram into a user interface provided a user-centred perspective, which offered insights that integrated the technical considerations of the product owners. On the other, the visualization helped to represent software features through a visual language that could be more easily understood across teams and individuals with different technical backgrounds. This was also noticed in a project where a storyboard was imagined from the perspective of an end-user. This visual outcome helped the product owner to acquire distance from his routinary techno-centric perspective. In addition, the product owner expressed enthusiasm about the relational characteristic of the visualizations created by the designer, which brought together and combined multiple components into a coherent whole and workflow; particularly, he explained that: *"What was really helpful is that I had a structure to put data in"*. As such, these visualizations provided the product owner with a broader perspective on the software solution. A series of subsequent interviews with end-users (facilitated by a designer) gathered valuable insights about the problems end-users could have in their daily workflow and, thus, helped the product owner to further appreciate the value of design. He also expressed surprise towards the ability of the designer to lead interviews on technical software features without being herself a technical developer. Both the process of user-centred visualizing and the interviews made the product owner reflect on and distance from his own biases and brought awareness to how multiple perspectives (rather than staying focused on his own pre-existing perspective) are valuable in product development processes. This distancing has been qualified as a vital part of gaining strategic sensitivity (Doz & Kosonen, 2010).

Sharpening strategic sensitivity can also be fostered through anticipation, e.g. through activities that favour long-term thinking. Design supported this process supporting imagination on how potential concepts (e.g., software features) could evolve in the future and along different trajectories. To adopt a more future-centred outlook, the designer created storyboards to explore varied scenarios of use. In addition, some storyboards were transformed into an interactive prototype, which was subsequently showcased to potential end-users. Introducing this approach helped tune the product owner's understanding of his role and bias and furthered his reflections on his routinized ways of working, which were more geared towards an incremental development of technical functionalities rather than towards anticipating possible and unforeseen uses. The designer was able to facilitate a space of experimentation in which the end-users interacted with the prototype and its workflow without guidance. These designerly moments of experimentation helped the product owner to acquire an anticipatory and multifaceted view on key software features in the pipeline and validated that the depiction of a potential future concept would be valuable to develop.

4.2 Reframing and experimenting

The insights gained through visualizations and user research made reframing – seeing the need for business model renewing (Doz & Kosonen, 2010) – of one of the project's business cases inevitable. Design mostly supported processes of reframing by encouraging and pushing for the inclusion of external perspectives and insights, again through user research. In one project, the insights gained from further interviews with end-users were deemed as "game-changing". The product owner became convinced that the software development strategy had to change as it became clear that the team got a new "ability to articulate the problem we were trying to solve" (Product Owner). The insights from the interviews with end-users made it clear that the software features describing the scope of the software development project did not reflect the end-users' perspective and challenges. To integrate the insights from user research and deliver a more "holistic" solution, existing and new features had to be reframed to reflect the development of "a more complete workflow offering as opposed to [...] a small tool." (Product Owner). We see this transformation of the product owner's planning activities as a signal of reframing, i.e., shifting the focus towards a more user-centred value-based perspective, urged by the outcome of a more open-ended, exploratory approach.

While establishing situations that allow for experimentation is common for a design process, this was not the standard way of operating for the projects in the company we studied. The product owner told us that while customer involvement was not uncommon, the typical approach was that research would occur in ways where his own assumptions were confirmed as opposed to being challenged. The product owner exemplified this by saying: "It's like, I have this idea, look at this screen, do you like it? Yes. Which is not the right way to do it because you are just getting [the users] to agree with your predetermined solution to a problem" (Product Owner). However, the product owners became aware of the value of a design approach by observing how user testing sessions could be an occasion to invite end-users to be an active part in the design process (e.g., by proposing tweaks and new ideas). The interviews and user testing sessions were an occasion to try working in ways that would foster continuous and iterative experimentation and brought in activities of prototyping earlier in their software development processes. By placing the end-user at the centre, this more experimental way of working invited for a granular look into value-creation processes and helped to imagine a company offering that was less oriented towards building predefined software products and more oriented towards providing a service to the end-users. The use of research to test the product owners' assumptions can be connected and extended to research that propose design as a way to reduce cognitive biases (Liedtka, 2015). The shift from product- to service-orientation pushed by design was particularly critical and allowed the company to realize and imagine how value could be created in specific situations of use. Experimenting with user-centred design processes enabled the company to explore future

scenarios of service interactions as a vital component to ensure how to deliver a meaningful user experience.

4.3 Decoupling and dialoguing

When the designers joined the projects, the organization was anchored to existing product-centred processes and the organizational resources in R&D were geared towards supporting these processes. These existing processes and resources needed to be decoupled from their existing configurations and reconfigured to support a more service-centred approach. Disrupting existing organizational structures and processes (e.g., re-assigning development budgets or re-shuffling human resources) generally stirs tensions and frictions. In these moments, it is vital to foster communication and dialogue across the organization. Design supported these processes of decoupling and dialoguing mostly thanks to its translational property, i.e. the ability of design to model and visualize ideas and solutions at early stages. Visualizations (e.g., sketches, diagrams, storyboards) and prototypes at various degrees of refinement enhanced communication among various stakeholders. Such design artifacts were understood and appreciated by employees from various departments and by teams with a different technical background. These design artifacts made clear to non-professional software engineers (e.g., senior managers or end-users) what it meant for the company to integrate a user-centred focus. In addition, the designers' models and prototypes helped the product owners and their teams to envision multiple different possible directions for software development (and, therefore, multiple ways to re-configure the related organizational processes). These directions were shared with senior managers, who were able to ignite and sustain a dialogue around pros and cons of each possible direction. This helped to make an informed decision about how to proceed with the decoupling of existing resources and the establishment of new organizational processes. We see this as an indication of how design impacted on and was valued at the strategic level in the organization. As a result, flexibility was gained and switching the orientation towards a more service-centred perspective was supported.

5. Discussion: How design supports strategic agility

The findings that emerged from our analysis show how design can support processes of distancing, anticipating, reframing, experimenting, decoupling, and dialoguing. These processes have been linked to three key components of strategic agility: strategic sensitivity, leadership/team unity and resource fluidity (Doz & Kosonen, 2010). Our findings show how design can support strategic sensitivity described through the following four processes: A) *Distancing*, understood here as realizing the limitations of routinary ways of thinking and operating. In this context, starting to appreciate that the adoption of new, multifaceted perspectives can be beneficial. B) *Anticipating*, which focuses on ways to incorporate future-oriented ways of thinking. C) *Reframing*, which refers to the ability to rearticulate challenges and opportunities and, consequently, the offerings of an organization. D) *Experimenting*, which

points to an iterative way of proceeding through quick cycles of design, development, and testing. These four processes can have a profound impact on the way in which organizations function and are structured (Doz & Kosonen, 2010). Generally, these processes require re-source fluidity, i.e., the capacity of an organization to *decouple* existing configurations and quickly reconfigure the distribution of its resources (e.g., budget, human resources, or other important assets). Building resource fluidity can help in responding more quickly when an organization needs to readapt its scope, offering, and functioning. Such adaptation pro-cesses – and the related organizational reconfigurations (e.g., in terms of distribution of re-sources) – can, of course, raise tensions and frictions. Therefore, igniting and maintaining an honest, open, and rich *dialogue* with all the actors involved is of critical importance to sup-port leadership/team unity (Doz & Kosonen, 2010). Our case showed how design played a role in supporting these processes, as summarised in Table 1.

Table 1.   How design supports processes linked to strategic agility.

Processes linked to strategic agility	How design supported these processes
Distancing and anticipating	Capturing and visualizing concepts and ideas in a user-centred way, thereby encouraging the deliberate inclusion of multiple perspectives and introspective reflection – and thus foster-ing distancing from existing routinary ways of thinking and biases
	Representing and exploring multiple scenarios of use across temporalities to anticipate vari-ous ways in which the future can play out
Reframing and experimenting	Fostering a more open-ended, exploratory ap-proach, which builds on multifaceted views to reframe challenges and opportunities and to go beyond routinary ways to look at problems and business models
	Encouraging continuous and iterative experi-mentation through activities that favour early prototyping oriented towards progressively shaping value-offering opportunities
Decoupling and dialoguing	Offering a visual language that supports trans-lational processes through which design arte-facts ignite and sustain dialogue among stake-holders with different backgrounds. These dia-logues are particularly relevant in moments in which organizational resources and processes need to be decoupled and reconfigured

Our work contributes to various streams of literature. First, we extend current studies on strategic agility (Doz & Kosonen, 2010; Elali, 2021; Weber & Tarba, 2014), which rarely examine this construct from the perspective of design. Our study integrates the current conceptualizations of strategic agility by proposing a fine-grained view on how designerly approaches can support strategic sensitivity, leadership/team unity and resource fluidity. As such, we extend the work of Elali (2021) by showing how design can (a) push an organization to move fluidly resources and skills towards a service-centred perspective, (b) make it easier for team and leadership to unite and align based on dialogues grounded in visual artefacts.

Second, our take is that – even though there are numerous studies that examine the interplay of strategy and design (Simeone, 2020) – the specific construct of strategic agility has not yet been thoroughly employed within design research. Yet, as suggested by Ismail and colleagues (2011), strategic agility is key in fostering resilience, and resilience is, indeed, a recurrent theme in design research (e.g. Dragoicea et al., 2020; Manzini & Thorpe, 2018; Manzini & Till, 2015). We hope that our study can further add to the construct of strategic agility and its discourse by showing design researchers that strategic agility could be effectively used to address questions of how resilience can be operationalized within organizations. In this perspective, our paper contributes to a few existing studies that examine resilience in design research. Wetter-Edman et al. (2017) suggest that design methods can be a catalyst of change, through visualization and tangible artefacts, leading to destabilization of habits, which we also saw in our case. Rodrigues (2020) found that designers have the potential to intervene at an organizational level and can inspire a shift in systems through destabilisation and become more resilient. We extend the argument of these authors by showing how the integration of design can destabilise organizational routines by decoupling existing processes and reshuffling them towards new configurations, which, in turn, can make participants aware of how existing processes have to change. Lastly, we believe that the future discourse on strategic agility could be enriched further by exploring the interplay between its specific components and design, seeing the latter not only as a supportive mechanism, but potentially also as a means to engage the construct's underlying paradoxes (Lewis et al., 2014).

6. Conclusion

Within our case, design played an important role in supporting strategic agility, which, in turn, provided the potential to inspire resilient responses. As such, our take is that in the current turbulent environments and during uncertain times, organizations can greatly benefit by leveraging design to support their strategic agility. However, rather than offering definitive and consolidated solutions on how to employ design in relation to strategic agility, we believe that our paper offers initial and exploratory reflections. As this paper is grounded in one case study, we acknowledge its limitations in scope and propose that future investigation could explore the linkage between design and strategic agility and how it could possibly

unfold in different ways within other organizations or other geographic, social, and cultural contexts.

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Publication 5

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Organisations as material

As a service designer you operate with and within change. In this chapter we consider what it is that changes when service design is introduced into an organisation. We argue that it is not only the product that is transformed, but also the organisation itself. Our definition of material is "that which is being changed" and in this case, it is the organisation.

Empirically, we draw on the first authors experiences as design researcher in an organization and combine the experiences with insights from nine semi-structured interviews with professional designers (n=5) and managers (n=4). The aim of the interviews was to understand the involvement of a professional designer and the applicated design methods in five IT development projects. At project start the company was new to working with design methods.

Service designers address the context of service encounters, envision new services and business models and engage stakeholders. For these purposes the service designer uses service design methods and tools and produce artifacts that visualize the product as it is and future visions. We argue that the introduction and use of the artifact initiates a change in the material – the organization. We explore the artifacts produced by service designers and observe how they not only orchestrate a service experience but support a change in mindset and focus that influences the organisation. We show how artifacts simultaneously represent the present 'what is' and propose a future 'what could become'. In our case, the visualizations were formed by designers through three distinct, but interrelated, stages. The three stages are 1) collecting 2) abstracting, selecting, and reframing 3) anchoring, presenting, and awakening. These stages show how service design artifacts change the material (an organization) and support a strategy shift from a product orientation towards a service-orientation.

1. Stage 1: Collecting

At the collecting stage, the organization is pre-set and feature-driven, focusing on functionality with little understanding of users and other stakeholders. The typical artifacts collected at this stage are visualizations from a business and system point of view. The analysis and the questions the service designer asks, uncover the present ways of working and the present understanding of the product.

The artifacts used at stage 1 form a bricolage consisting of handwritten meeting notes, PowerPoint slides, screen shots of system functionality, descriptions of system functionality, project timelines, emails etc. The service designer asks the question: *What is known?*

In the cases I studied, a designer typically collects (and produces) artifacts such as slides with process diagrams, screenshots of the system interface, and wireframes. The designer at this stage would describe the collection as being dominated by "existing wireframes and screen captures mainly focusing on functionality and system capabilities". The artifacts at this stage present the understanding that the organisation has of being product focused.

The collecting stage is important, since artifacts are formed by different members of the organisation and the organisation does not have a shared or holistic overview of use situations, the service encounters, and the service moments.

As service designer you are not only collecting material, but you are also situating yourself within the organization and starting the process of showing how a service orientation requires shared knowledge. At this stage, it is important for the designer to ask 'stupid questions' and to be prepared that this new approach might cause friction with colleagues. However, the result pays off in two ways: The designer gains a rapid overview, and the organisation takes its first steps towards a service orientation.

Having an overview of the as-is, leads to the next stage: Abstracting, selecting, and reframing.

Figure 1 illustrates the artifacts at the three stages:1) a collection of existing artifacts 2) an as-is user journey 3) the to-be user journey
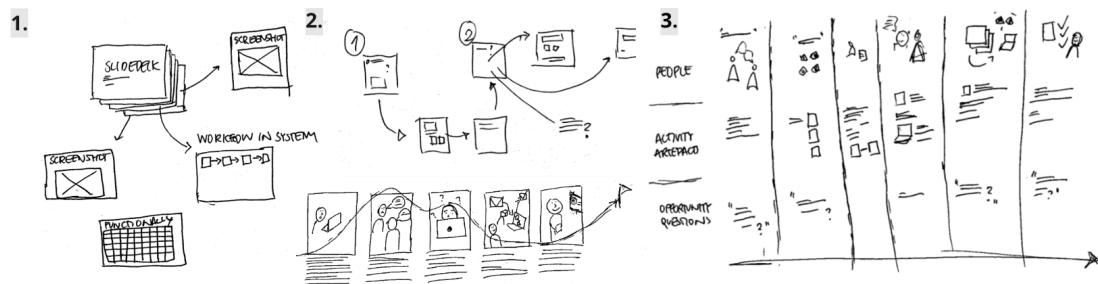
2. Stage 2: Abstracting, selecting, reframing

In the second stage the designer changes the collection of artifacts gathered at stage 1 through abstracting and organizing. The designer looks beyond the existing functionality, beyond what already exists and asks: *Who is this for? What does this mean to someone else? What implications can this have for the future use of the service?*

The new understanding of the product as service becomes aligned between stakeholders during this stage. This might create tensions in the project group as knowledge gaps and problems are unravelled. The tensions are a first sign of the change of the material – a destabilization of organizational routines (Rodrigues, 2020).

In a specific case, the designer reshuffled and selected elements from the collection, tied them together and translated them to envision the perspective of the customer. The designer used the collected material from stage 1 and created what he called: "a coherent narrative and storyboard". He described the activity of reframing as challenging due to the intense effort of analysing and synthesizing the disparate material into a narrative. In the process he kept refining and asking questions of the business expert. For the business expert this provided a new understanding resulting in enthusiasm within the team regarding the broader and more holistic perspective.

This stage not only makes gaps in knowledge clear to all, it also encourages agreement for those aspects that need to be addressed.

At this stage, the change in the material is a move from the individual perspectives to common understandings. The service orientation becomes shared within the project group by framing what a service orientation can be. These two aspects are important when moving to stage 3: Anchoring, presenting, and awakening.

3. Stage 3: Anchoring, presenting, and awakening

The last stage is the most important. Here the artifacts focused upon the to-be situation must be disseminated, anchored, and integrated within the ongoing project. At stage 3 the designer asks: *What is it I can change? How I can I change the material?* and *Who are my stakeholders?*

The developed artifacts are anchored within the organisation and often presented to someone external to the organization, i.e., through a user research interview or user validation session. This is all part of the designer's approach of depicting and envisioning future use concepts. Awakening occurs both as a process of inter-reflections of the designer's and the manager's practices. The designer reflects upon what the design practice includes and realises that pushing the organisation, changing the material, is part of the design discipline. The manager reflects upon how interviewing and testing with customers, facilitated by someone without technical knowledge, can initiate a change.

In another case, artifacts that described a service-oriented perspective of being "in the shoes of the customer" were used with the business expert to ask his opinion. The sketch was refined into a digital version that was used in an interview with a user. Based on the interview insights, the business expert stated that "the whole business case was changed". The business expert later used the final user journey map all the time, both internally with managers and his team, but also with customers to support the conversation.

This last stage is the most challenging for the designer. The diverse perspectives and external voices make the involved managers start to reflect. It challenges existing methodological approaches and brings awareness to the organization's routinized ways of working. Here the material starts to become fluid and able to change into new forms. The service design artifacts have started a rapid transformation of the material. The ability to enact future concepts with someone else, might be obvious to a designer, however the organization must absorb this user- and customer perspective. Having a service perspective does not only change the product, but also how it is designed and the process of designing. The designer is clearly not only designing the service, but at this stage also actively changing the organisation that is building the service.

4. Conclusion

Service design artifacts not only form a service, they also prompt a change in the organisation from a fixed state to becoming fluid, service oriented, and able to change. In the cases, we have not yet seen what final form this takes. What we have observed is that the new form 1) includes a perspective that is complex in its human-centred perspective, 2) encompass an outside-in perspective 3) provide vision and coherence through narrative components 4) creates a shared and cemented service orientation.

But what is it exactly that is being changed? We conclude that service design is fuelling organizational change towards a user- and service-centred perspective. The preliminary results shown here emphasize the invisible structures, beliefs, mindsets, and routines that service design influence and transform. We have identified three stages of change that shift the focus of the organisation from the product mindset to the perspective of someone else in a service-oriented way. In this way, the service designer is forming the organisation.

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